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PREVALENCE OF SMALLPOX IN THE UNITED STATES

Telegraphic reports from the State health officers of 44 States for the three weeks ended December 10, 1927, show cases of smallpox as follows: Week ended November 26, 1927, 642 cases; week ended December 3, 604 cases; and week ended December 10, 769 cases.

Reports from 42 States are available for the second week in December of the years 1925, 1926, and 1927. These States reported 380 cases of smallpox for the week in 1925, 645 cases in 1926, and 741 cases for the week in 1927. Reports for the week ended December 17, 1927, will be found on page 3151 of this issue of the Public Health Reports.

PREVALENCE OF POLIOMYELITIS IN THE UNITED STATES

Since the middle of September the incidence of poliomyelitis has been decreasing in the United States, but the number of cases reported for the second week of December this year is several times the number reported for the corresponding weeks of the years 1925 and 1926.

For the week ended December 12, 1925, 40 States reported 38 cases of poliomyelitis; for the corresponding week of 1926 these States reported 39 cases; and for the week ended December 10, 1927, they reported 142 cases of poliomyelitis.

Reports from 42 States for the three weeks ended December 10, 1927, are as follows: Week ended November 26, 1927, 195 cases of poliomyelitis; week ended December 3, 1927, 193 cases; week ended December 10, 1927, 161 cases.

MUSCLE TRAINING IN THE TREATMENT OF INFANTILE PARALYSIS [1]

REVISED FROM AN ARTICLE WHICH APPEARED IN THE BOSTON MEDICAL AND SURGICAL JOURNAL AND REPRINTED BY PERMISSION OF THE EDITOR OF THAT JOURNAL

By WILHELMINE G. WRIGHT

INTRODUCTION

The recent epidemics of infantile paralysis have left behind them many victims.

The prevention of deformities and the restoration of these children to a useful amount of strength are the problems to be dealt with.

[1] EDITOR'S NOTE.—It is believed that the republication and wide circulation of this article will greatly aid the important work of rehabilitation which is necessary following every epidemic of acute poliomyelitis. Only the more useful exercises are given; others following the same principles will be suggested to the

The former is best accomplished by rest and mechanical relaxation of the affected muscles under the supervision of a competent orthopedic surgeon. Careful watch must be kept from the very start to prevent toe drop, toeing out, a sagging shoulder, or other positions which stretch weakened muscles. Sandbags and boxes in bed, and cradles to bear the weight of the bedclothes, are some of the devices which are useful for this purpose. The other problem of bringing back the maximum of strength to the weakened muscles can only be solved by carefully directed exercises.

In most cases this duty falls best upon parents, who must first be trained by the family physician. It is for his guidance in prescribing the exercises, and from time to time changing them as the muscles gain in strength, that this paper has been written. It therefore assumes a knowledge of muscle and joint anatomy, but goes into detail concerning the exercises, with which the physician is presumably unfamiliar.

It has been the writer's experience, during the years in which she has been the assistant of surgeons in the treatment of infantile paralysis, that better results have been obtained from the combination of physician and parent than where the management of the exercises has been left to an unskilled gymnast or masseur, who has neither the scientific knowledge of the physician nor the patience and enthusiasm of the parent. Accurate anatomical diagnosis is essential, not necessarily of the muscles affected, but of the exact movements which are weaker than normal. (See Reprint No. 1182 from the Public Health Reports for October 7, 1927, vol. 42, No. 40, pages 2431–2442).

The training of the muscles should be begun as soon as the patient's limbs can be moved freely without pain. In some cases this will be within three weeks after the initial attack and in some after a much longer period. It is possible also to accomplish a great deal for cases that have been neglected for years. Premature manipulations, on the other hand, and ill-directed exercise, have often greatly retarded or prevented the maximum recovery possible. Allowing patients to be on their feet too soon and too much has perhaps caused more

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physician by the less frequent types of paralysis. The international nomenclature for muscles (B. N. A.) has been used, but the old names have been added when these are not at once suggested by the new.

For a number of years various State health departments and local health authorities of communities where epidemics of infantile paralysis have prevailed have been advised by the United States Public Health Service of the usefulness of this article. It may be found useful, not only to health officers, but also to physicians and to some of the more intelligent of the families of poliomyelitis patients.

Just as with immunization against diphtheria, the aftercare of poliomyelitis, though theoretically a function of the private practitioner, is not usually given attention unless taken up by public-health agencies and urged and assisted by publication. Only in rare localities can a qualified nurse or physiotherapist be employed to assist in this aftercare or an orthopedic surgeon to supervise it. Many physiotherapists or orthopedic surgeons, in fact, have not given adequate attention to this particular problem to get the maximum improvement possible; the methods usually used in other orthopedic conditions are in general not to be applied in such a campaign. Aftercare is probably the most important public-health function in an outbreak of infantile paralysis. The results of its neglect are everywhere apparent.

crippling than any other factor in the care, or lack of care, of these patients. Weight bearing is very deleterious to weakened muscles.

REASON FOR THE USE OF EXERCISES IN INFANTILE PARALYSIS

Almost every muscular contraction is brought about by the stimulation of nerves from more than one spinal center.

In infantile paralysis "a localized myelitis has attacked the cord and has destroyed more or less at random certain areas of spinal nerve centers. Unless the cord lesion has been extensive the chances are rather against the total destruction of all the centers and associations of any large number of muscles, some centers or associations having perhaps escaped." For this reason "there exists in many paralyzed limbs a possible amount of muscular power that is not suspected and will not be available unless cultivated and developed." "The absence of function in a muscle or group of muscles does not necessarily mean permanent paralysis, even in the later stages of the affection."

The principles which underlie the training of muscles which have partially or wholly lost their power of voluntary contraction as a result of infantile paralysis do not in any way differ from those underlying the development of normal muscles. The result in both instances is an improvement in the nutrition of the muscle fiber and in the facility with which the nerves carry their impulses.

The contraction of muscles and the alternate flexion and extension of joints exert a pumping action on the veins and lymphatics which is necessary to the proper flow of the blood and lymph. Moreover, there is a reflex dilation of the arterioles of a contracting muscle and of the corresponding area of the skin. Whenever, therefore, a limb is in disuse its circulation is seriously impaired and the muscles waste from lack of nourishment.

In paralysis the beneficial effects of muscular contraction on the circulation may be in part supplied by massage, heat, passive movements, etc., and they undoubtedly do, to a certain extent, prevent the wasting away of the paralyzed muscles. Wherever there is, however, the ability to contract a muscle even slightly by an effort of the will, the muscle cells are more favorably affected by this contraction than by any quickening of the circulation by other means. When not used, the muscle cells degenerate, and the only way to increase their nutrition is to make them work.

If a lively circulation is started in the muscle before it contracts, the contraction will naturally be attended by greater benefit to the muscle fibers. For this reason it is advisable in treating cases of infantile paralysis to make use of the therapeutic measures mentioned above before giving the exercises, even when the voluntary

power of contraction is fairly good. Seriously weakened muscles should be protected against cold at all times.

In infantile paralysis certain nerve cells supplying a muscle are destroyed, and those which are left, being unaccustomed to work together, perform their work badly and without coordination.

The possibility of training nerves to work together with precision is shown in the formation of habits. In his Outlines of Psychology Royce says, "parts that have often functioned together tend to function more easily together again." The improvement of the nervous system is due to the perfection of the connection between the synapses and the nerve cells. Each time a partially paralyzed muscle contracts, it not only improves the nourishment of its fibers, but also the coordination of the nerves which stimulate it.

The amount of improvement possible for any given muscle is, of course, proportionate to the number of uninjured nerve cells which supply it. This is an impossible thing to determine accurately and by far the safest plan in directing the exercises is to assume that every muscle is capable of attaining the normal.

If any muscle shows no signs of attaining anything like a useful amount of function after the exercises have been faithfully carried out for a sufficiently long time (at least a year), it may be advisable to discontinue work on it, as it is an advantage to give as few exercises as possible, in order to avoid unnecessary mental fatigue in the patient. Whether or not to abandon exercises for any given muscle should be partly determined by the importance of the muscle. If it is essential for walking, the time, which is perhaps uselessly expended upon it, should not be grudged, as there is nothing to lose, and everything to gain, by giving it every possible chance for recovery.

PRACTICAL DETAILS OF THE TREATMENT

It should never be left to the patient to do his exercises alone, even when he is old enough to understand his own case. The response of muscle and nerve is dependent on the strength of the stimulus, and the volition of the patient is greatly aided by the outside stimulus of a word of command. When a muscle does not function at all it is a help if the physician puts his hand on the muscle to be contracted and performs the movement passively, while urging the patient to make the greatest possible effort. This is not what is usually understood by the term "passive movement," because as far as the patient's will is concerned it is active. The patient's mental attitude is always the first obstacle to be overcome. Whoever directs the exercises should discourage "I can't," and make the patient feel that "he never has, but he is going to." If they are to be a success at all a great amount of faith and enthusiasm is necessary on the part of the physician or parent who oversees the exercises.

While performing the exercises the paralyzed limbs should be uncovered, as the action of the muscles can not be accurately observed through clothing. When the paralysis is extensive, the patient, if a young child, should be entirely undressed for the treatment.

A table or other hard, smooth, horizontal surface, preferably not the floor, is absolutely necessary for the proper performance of the exercises, as it eliminates as much as possible the resistance of friction and enables a weak muscle to perform movements which would be wholly impossible for it on a soft, yielding surface like that of a bed or couch. The table should be wide enough to allow the full sweep of the leg in hip abduction when the patient is lying on the back, or in hip flexion when lying on the side.

In some cases, movements can be more easily made in warm water, or in warm salt water of increased buoyancy. It is usually best, however, to do the real training on the table, where the motion and position can be accurately supervised, leaving the water exercises for patients who have learned the movements which they need to practice and those which they need to avoid.

In all exercise periods, the whole attention of the patient should be required, or his ability to use his muscles will be much underestimated and the exercises will be much less effective. For this reason it is desirable that no person except the one who directs the exercises should be present. The presence of other children should be absolutely prohibited and no toys should be allowed. If the parents are ingenious the exercises themselves may be turned into an interesting game, without on that account making any sacrifice of precision in the performance of them.

The following exercises are given in order of progression from those which the weakest muscles are capable of performing to those which require normal strength. In fitting the exercises to the patient, each group of muscles must be tested as to what it can do, and given as hard an exercise as it is capable of performing without fatigue. As soon as the muscles outgrow the exercise first given, it should be discarded and the one next in order of strength should be taken up, and so on.

A rough method of classifying the muscles according to the amount of resistance they can overcome is the following:

1. Normal muscle—compare with other side if the latter is unaffected.
2. Muscle capable of overcoming gravity and outside force—good.
3. Muscle capable of overcoming gravity alone—fair.
4. Muscle capable of overcoming friction of joint and table—poor.
5. Muscle incapable of producing movement but showing contraction—trace.
6. Muscle showing no tightening of tendon or muscle belly—totally paralyzed.

This furnishes a simple means of recording and noting progress. Thus, if the knee can be extended while the patient lies on his side, the quadriceps belongs to class 4. If, later, it can be extended when the patient sits on the table with his legs hanging down, it belongs to class 3, etc.

In every case where the operator resists with his hand the action of a set of muscles, he should be careful to graduate his resistance from weak at the beginning of the movement to strong in the middle, and to weak again at the end of the movement, in accordance with the change in leverage that takes place during the movement. The resistance at every point should be just a little less than would stop the movement. It is time to begin resistance in any given exercise when the movement can be performed freely without resistance to its fullest extent. All movements should be carried smoothly through the full arc of motion, and assistance given at the end when the patient can not complete the arc actively.

It is a good rule to let the patient go through all his exercises once a day for six days in the week. The one day off prevents his becoming stale. Each exercise may be performed 10 or 12 times in succession with pause enough between the movements for complete recovery from fatigue, so that the second movement is done as strongly as the first and the tenth as the second.

Where contractures of joints exist, they should be done away with before exercises are attempted. When a weakened muscle is kept on the stretch by contracted antagonists there is no possibility of strengthening it until the resistance is removed.

In all exercises and positions the stretching of weakened muscles is to be carefully avoided.

EXERCISES

THE TRUNK

Flexors of the Spine

(*Obliquus externus abdominis, obliquus internus abdominis, transversus abdominis*—old name *transversalis*—*and rectus abdominis*)

plus

Flexors of the Thighs on the Trunk. (*Psoas, iliacus, rectus femoris, etc.*)

NOTE.—It is difficult to exercise the abdominal muscles (flexors of the spine) without at the same time making use of the hip flexors. It is often desirable to do so, however, since abdominal paralysis may be associated with hip flexion contracture which would be increased by any strengthening of the hip flexors. The following exercises are designed to strengthen the abdominal muscles while making as little use as possible of the hip flexors:

1. The patient lies on his back on the table, takes in a deep breath and forcibly expels it. The abdominal muscles are used in forcible exhalation.

2. The patient lies on his back on the table and contracts his abdominal muscles in an attempt to make the small of his back touch the table.

3. The patient lies on his back and lifts his head until his chin touches his chest. The abdominal muscles work in this exercise as a steadying force. This exercise can be made more difficult by having the patient reach his arms forward and lift his shoulders from the table, thus flexing his spine, but stopping short of coming to a sitting position.

4. The patient lies on his back with both arms stretched above his head grasping a stick in both hands. The operator grasps the middle of the stick and offers resistance while the patient pushes it up and forward to his thighs. The patient must keep his elbows straight during the exercise. The abdominal muscles are used as steadying forces and their contraction is proportionate to the resistance used.

If it is desired to exercise the abdominal muscles and both hip flexors simultaneously the following exercises may be used:

5. The patient lies on his back, draws both knees up to his chest, and lifts his hips from the table as if about to turn a back somersault. The resistance is the weight of the legs and hips.

If the back is hollowed, knees flexed, and feet drawn toward the body, but not lifted from the table, the flexors of the hips are probably doing most of the work and the abdominal muscles very little.

The movement may be done in three ways:

(*a*) With assistance from the operator who places his hand under the patient's knees and pushes them up, at the same time letting the patient do as much of the work as possible. When there is no visible contraction of the muscles the patient should still exert his will to perform the movement, while the operator performs it for him.

(*b*) By unaided contraction of the muscles.

(*c*) With resistance from the operator who places his hand on the patient's knees and pushes down on them with not quite force enough to stop the movement.

6. The patient sits in a reclined position, with the back resting against a slanting support, arms folded and knees held down. He then raises his body to a sitting position.

The resistance is the weight of the body and the progression with improvement in strength is toward a lying position as the starting point.

Care should be taken that all the preceding exercises are performed symmetrically, as there is often greater weakness of the muscles on one side than on the other.

Extensors of the Spine

(*Sacro-spinalis*—old name *erector spinae*—*etc.*)

plus

Extensors of the Thighs on the Trunk. (*Glutaeus maximus, etc.*)

NOTE.—These exercises are for paralysis of the back muscles, which can not be exercised without at the same time exercising the extensors of the hips:

1. The patient lies on his back on the table with a stick grasped in both hands, both arms stretched vertically upward. The operator grasps the middle of the stick and offers resistance, while the patient forces his arms back to the table. The back muscles work as steadying forces, their contraction being proportionate to the resistance offered.

2. The patient sits with the trunk bent forward, hips flexed, and raises the trunk to the erect position.

The resistance is the weight of the trunk.

The progression in strength is:

(*a*) With hands on hips.

(*b*) With hands behind neck, elbows back.

3. The patient lies face downward on the table with feet held down and hands clasped behind the back at the waist line and raises the trunk as high as possible, keeping the head thrown back and chin drawn in.

The resistance here is the weight of the trunk.

The exercise may be made more difficult by raising the center of gravity as in preceding exercise.

A unilateral paralysis of the spinal extensors, abdominal or shoulder muscles, always tends to produce a lateral curvature of the spine, which can only be guarded against by the use of a suitable support. As it is impossible to predict whether the convexity of the curve will be toward the weaker muscles or away from them, anyone unfamiliar with the treatment of lateral curvature by exercises might do more harm than good by an attempt to train the muscles. The exercises given above are, however, perfectly safe, if the patient's back is carefully watched to prevent twisting and bending in raising the trunk.

Lateral Flexors of the Spine

(*Quadratus lumborum, rectus abdominis, obliquus abdomini externus and internus, and sacro-spinalis*—old name *erector spinae*)

1. The patient lies face down on the table and draws the hip toward the shoulder of the same side, keeping the knee straight and dragging the leg up along the table.

(*a*) Without other resistance than the friction of the table.

(*b*) With resistance from the operator who holds the patient's ankle and pulls down on it, while the patient tries to draw the foot away from him.

2. The patient lies on his back on the table and adducts the arm on the affected side against resistance from the operator. This exercises the external trunk muscles on that side and has the advantage of not involving movement of the spine.

3. The patient lies on the unaffected side with the hand of that side grasping the opposite shoulder and with the arm of the affected side stretched down along the leg. The operator holds down the patient's leg while the patient attempts to raise his head and body from the table.

A unilateral paralysis of these muscles can cause a limp in walking when the leg muscles are very little or not at all affected. This is due to the fact that the hip on the paralyzed side is dropped when the foot is raised, instead of being slightly raised as it is normally.

THE LOWER EXTREMITY

Flexors of the Thighs on the Trunk. (*Psoas major, iliacus, rectus femoris, sartorius, pectineus, and adductor brevis and longus*)

1. The patient lies face down with his legs hanging off the table. The operator lifts the affected leg backward until both hip and knee are straight, and offers resistance on the ankle while the patient draws the knee under the table. In this movement gravity assists the action of the hip flexors, and the resistance should be just enough to neutralize its action and give work to the very weakest hip flexors.

2. The patient lies on his left side if the left leg is to be exercised, while the operator holds the right leg up out of the way, or vice versa. The patient then flexes the hip, bringing the knee up to the chest.

(*a*) With assistance from the operator.

(*b*) By unaided contraction of the muscles.

(*c*) With resistance on the front of the thigh.

3. The patient lies on his back and brings the knee up to the chest.

(*a*) Without other resistance than the weight of the leg.

(*b*) With resistance from the operator who exerts a downward pull on the ankle.

The operator should steady the patient's knee, as it is important that the leg should not be allowed to twist.

Exercises for the flexors of both thighs were given in connection with exercises for the trunk, sections 5 and 6.

Extensors of the Lower Leg on the Thigh. (*Quadriceps femoris*)

1. The patient lies on his back on the table and tightens the knee cap by contracting the quadriceps muscles, without moving the leg. This exercise is called "setting the knee" and is useful for weak or strong muscles.

2. The patient lies face down with his legs hanging over the edge of the table. The operator steadies the thigh with one hand and with the other holds the patient's heel against his buttock and offers resistance while the patient extends his knee. The principle is the same as in hip flexor exercise No. 1.

3. The patient lies on his side (left side for left leg, and vice versa). Starting with the knee completely flexed, he extends it until the leg is in a straight line with the thigh.

(*a*) With assistance on the back of the ankle.

(*b*) By unaided contraction of the muscles.

(*c*) With resistance on the front of the ankle.

4. The patient sits on the edge of the table with knees bent at a right angle, legs hanging down, and brings the foot up until the leg is horizontal and is in a line with the thigh.

(*a*) With resistance of gravity alone.

(*b*) With the resistance of the operator's hand on the front of the ankle.

Exercises for the restoration of knee extension power are of great importance. Until the quadriceps is strong enough to allow the patient to stand and bend the knee without falling, all walking must be done with the knee locked, and a genu recurvatum may result unless a brace is used.

Extensors of the Thigh on the Trunk

(*Glutaeus maximus, adductor magnus, biceps femoris, semitendinosus, and semimembranosus*)

1. The patient lies on his back and the operator lifts the affected leg, then offers resistance as the patient forces it down to the table as strongly as possible. The patient's knee should be straight and the operator should support the ankle with one hand, but should give resistance with the other hand placed under the thigh just above the knee.

2. The patient lies on his side (left side for left leg, and vice versa) with the hip flexed as far as is possible with the knee extended, and brings the leg back until it is in line with the body.

(*a*) With assistance on the front of the knee.

(*b*) By unaided contraction of the muscles.

(*c*) With resistance on the back of the knee.

3. The patient lies face down on the table with both legs from the hips down hanging over the edge. In this position he raises the leg with the knee straight until it is in a line with the body or slightly higher.

(*a*) With resistance of gravity alone.

(*b*) With the resistance of the operator's hand placed just above the knee.

4. The exercises given above for the extensors of the spine are also powerful exercises for the extensors of both hips.

The training of the hip extensors is very important, as good hip extensors and fair hip flexors enable the patient to walk with the help of braces, even when all other leg muscles are badly affected.

Flexors of the Lower Leg on the Thigh

(*Biceps femoris, semitendinosus, semimembranosus, gracilis, sartorius, gastrocnemius, and popliteus*)

1. The patient lies on his back on the table and the operator holds up his affected leg and steadies the thigh in a vertical position while resisting flexion of the knee by pushing with his other hand against the back of the ankle. The resistance may be slight enough to allow action by the weakest possible knee flexors, or great enough to give work to muscles nearly normal.

2. The patient lies on his side (left side for left leg, and vice versa), with the knee extended, and bends the knee, bringing the heel up until it touches the buttock.

(*a*) By unaided muscular contraction.

(*b*) With resistance on the back of the ankle.

3. The patient lies prone and bends the knee, bringing the heel up to the body.

(*a*) With the resistance of gravity.

(*b*) With the resistance of the operator's hand on the back of the ankle.

This movement is performed mainly by the hamstring muscles and can be very well done in the absence of all power in the gastrocnemius. A patient with a weak quadriceps and normal hamstrings can walk without hyperextending his knee. He does this by leaning so far forward that the action of gravity tends to extend and not to flex the knee.

If it is desired to exercise the inner hamstrings (semitendinosus and semimembranosus) alone, the patient should be asked to rotate the lower leg inward before flexing it; if the outer (biceps femoris), to rotate it outward.

Abductors of the Thigh

(*Tensor fasciæ latæ*—old name *tensor fasciæ femoris—glutaeus medius, and glutaeus minimus*)

1. The patient lies on his back, knees straight and legs together, and moves the leg to be exercised straight sideways, keeping the knee and foot directed upward to prevent rotation in the hip joint.

(*a*) With assistance on the inner side of the ankle.

(*b*) By unaided muscular contraction.

(*c*) With resistance on the outer side of the ankle.

2. The patient lies on his side (right side for left leg, and vice versa), and raises the leg straight sideways, keeping it in a line with the body.

(*a*) With the resistance of the weight of the leg.

(*b*) With the resistance of the operator's hand on the outer side of the ankle.

Adductors of the Thigh

(*Gracilis, pectineus, quadratus femoris, and adductor longus, brevis, and magnus*)

1. The patient lies on his unaffected side and the operator holds up his affected leg and offers resistance while the patient attempts to adduct, that is, to bring it down to the good leg.

This is an exercise for weak or strong muscles according as the resistance is light or heavy.

2. The patient lies on his back with the leg abducted, knee straight, and draws it in toward the other leg, keeping the knee and foot directed upward.

(*a*) With assistance on the outer side of the ankle.

(*b*) By unaided muscular contraction.

(*c*) With resistance on the inner side of the ankle.

3. The patient lies on his back with the knees and hips flexed, heels drawn up to the body, and soles resting on the table, knees spread apart, and brings the knees together, thus adducting the thighs.

(*a*) With the resistance of gravity (the muscles have by no means the whole weight of the legs to lift).

(*b*) With the added resistance of the operator's hands pushing against the inner sides of the knees.

4. The patient lies on the affected side and lifts the affected leg against gravity until it touches the good leg which the operator is holding up out of the way.

(*a*) With the resistance of gravity.

(*b*) With the operator's hand resisting against the inner side of the leg.

Inward Rotators of the Thigh

(*Tensor fasciæ latæ*—old name *tensor fasciæ femoris—glutaeus medius* (*anterior half*), *and glutaeus minimus*)

1. The patient lies prone with the knee of his affected leg bent to a right angle and rotates the thigh inward, so that the lower leg points outward. Slight resistance may be given on the outer side of the ankle. Care should be taken that the hips do not roll and that the knees are kept together.

2. The patient sits with his legs hanging from the knee over the edge of the table and rotates his thigh inward so that the lower leg turns outward, the foot moving away from the other foot.

(*a*) With the resistance of gravity.

(*b*) With resistance on the outer side of the ankle.

Outward Rotators of the Thigh

(*Glutaeus maximus, obturator externus, obturator internus, gemelli, pyriformis, and sartorius*)

1. The patient lies prone with the knee of his affected side bent to a right angle and rotates the front of the thigh outward, so that the half-flexed lower leg moves inward across the other leg. Resistance may be given on the inner side of the ankle. Care should be taken in this exercise that the hips do not roll and that the knees are kept together.

2. The patient sits with his legs hanging from the knee over the edge of the table and rotates the thigh outward, which causes the lower leg to move inward and across behind the other leg.

Dorsal Flexors of the Foot on the Lower Leg

(*Tibialis anterior*—old name *tibialis anticus—peroneus tertius, extensor hallucis longus*—old name *extensor proprius hallucis—and extensor digitorum longus*)

NOTE.—For paralysis of the anterior muscles of the lower leg. If it is desired to exercise the tibialis anterior without the extensors of the toes the patient should be made to concentrate his thoughts on moving the foot and not the toes, and the movement should not be resisted.

1. The patient lies prone with the knee flexed at right angles so that the lower leg is directed vertically upward. The operator should hold the patient's leg firmly and steady it, so that only the foot can be moved. The patient then draws the front of the foot down toward the knee.

(*a*) With the assistance of gravity alone.

(*b*) With the resistance on the top of the foot just above the toes.

2. The patient sits on the edge of the table with the legs hanging from the knee down, and while the operator steadies the leg, raises the front of the foot as high as possible.

(*a*) With the resistance of gravity alone.

(*b*) With the resistance of the operator's hand on the top of the foot just above the toes.

See note following the exercises for the extensors of the toes.

Plantar Flexors of the Foot on the Lower Leg

(*Gastrocnemius, soleus, plantaris, flexor hallucis longus, tibialis posterior*—old name *tibialis posticus—flexor digitorum longus, peroneus longus, and peroneus brevis*)

NOTE.—For paralysis of the calf muscles.

1. The patient takes the same position as for exercise 1 of the dorsal flexors of the foot, and raises the front of the foot till it points upward, at the same time drawing down the heel.

(*a*) With assistance on the top (dorsum) of the foot.

(*b*) With the resistance of gravity alone.

(*c*) With the added resistance of the operator's hand pushing down on the sole of the foot across the ball or pushing up on the back of the heel.

2. The patient lies face down with his toes over the edge of the table and performs plantar flexion.

(*a*) Against gravity.

(*b*) With pressure against the sole of the foot.

The tendo calcaneus—old name tendo Achillis—should be observed in the preceding exercises to make sure that the calf muscles are really working, as the flexors of the toes are able to draw the front of the foot down perceptibly when there is very little power in the other muscles.

The calf muscles are of very little practical use in walking until they are strong enough to allow the patient to stand on the ball of the foot with the heel raised from the floor. Until then the patient should never be allowed to stand without the protection of a high heel.

Supinators of the Foot—The muscles which turn the sole of the foot inward into the position of Varus

(*Tibialis anterior and tibialis posterior*—old names *tibialis anticus and tibialis posticus—flexor digitorum longus, flexor hallucis longus, soleus, and gastrocnemius*)

1. The patient lies on his face with his foot projecting beyond the end of the table and turns the sole of the foot inward, i. e., supinates it. Gravity is eliminated in this exercise.

2. The patient lies on the affected side and lifts the sole of the foot from the table, keeping the ankle in contact with the table.

(*a*) Without resistance.

(*b*) With resistance on the inner side of the foot.

See note following the exercises for the extensors of the toes.

Pronators of the Foot—The muscles which turn the sole of the foot outward into the position of Valgus

(*Peroneus tertius, peroneus longus, peroneus brevis, and extensor digitorum longus*)

1. The patient lies on his face as for the first supinator exercise and turns the sole of the foot outward or pronates it.

2. The patient lies on his sound side and lifts the sole of the affected foot sidewise from the table, or pronates it.

(*a*) Without resistance.

(*b*) With resistance on the outer side of the foot.

See note following the exercises for extensors of the toes.

NOTE.—Pronation of the foot can be done without using the extensor digitorum longus, and if the exercise is given for the purpose of strengthening the peroneals the patient should concentrate on relaxing the extensor.

Flexors of the Toes

(*Flexor hallucis longus, flexor digitorum longus, flexor digitorum brevis, quadratus plantæ*—old name *flexor accessorius—and lumbricales*)

1. The patient sits with the legs hanging from the table and curls the toes under, making a "fist" with the foot.

(*a*) Without resistance.

(*b*) With resistance from the operator, who places one finger across underneath the toes and pushes up against them.

With strong flexor muscles not only the toes are flexed but the whole sole of the foot is wrinkled.

See note following the exercises for the extensors of the toes.

Extensors of the Toes

(*Extensor hallucis longus*—old name *extensor proprius hallucis—extensor digitorum longus, extensor digitorum brevis, and lumbricales*)

1. The patient sits with the legs hanging off the table and raises the toes.

(*a*) With the resistance of gravity alone.

(*b*) With resistance from the operator who places one finger across the tops of the toes and pushes down against them.

NOTE.—For some time after the attack the patient should not be allowed to walk even if he is able to do so, but later on, if he can walk without braces, exercises in balancing, tip-toe walking, heel raising and knee bending, etc., are useful for the further training of the leg muscles.

THE UPPER EXTREMITY

Elevators of the Shoulder Girdle

(*Trapezius (upper part), and levator scapulæ*—old name *levator anguli scapulæ*)

1. The patient lies on his back with the arm at the side and shrugs the shoulder, bringing it as nearly up to the ear as possible.

(*a*) Without outside help.

(*b*) With resistance from the operator, who pushes down on the point of the shoulder with one hand.

2. The patient sits erect with the arm hanging at the side, and raises the shoulder as high as possible.

(*a*) With the resistance of gravity alone.

(*b*) With the added resistance of the operator's hand pressing down on the point of the shoulder.

Depressors of the Shoulder Girdle

(Subclavius, pectoralis minor, trapezius (lower part), and indirectly latissimus dorsi and pectoralis major)

1. The reverse of exercise 1 for elevators of the shoulder girdle.

2. The patient sits at the edge of the table and by pushing down with both hands lifts his hips and whole body from the table.

NOTE.—Depressors of the shoulder girdle are very important muscles for crutch walking and the use of crutches is often essential to protect weak muscles. (See "Crutch Walking as an Art." American Journal of Surgery, December, 1926, new issue, vol. 1, No. 6, pp. 372–374.)

Abductors of the Upper Arm

(Deltoid, supraspinatus, and possibly the long head of biceps brachii)

plus

The muscles which turn the Scapula so that the Glenoid Fossa points upward

(Trapezius and lower fibers of serratus anterior—old name *serratus magnus)*

1. The patient lies on his back with the arm at the side and moves it sidewise upward along the table until it is stretched above his head.

(*a*) With assistance under the elbow.

(*b*) Without outside help.

(*c*) With resistance above the elbow.

2. The patient sits erect with the arm at the side and raises it straight sidewise until it is stretched vertically above his head.

(*a*) With the resistance of the weight of the arm.

(*b*) With the added resistance of the operator's hand pushing down just above the elbow.

If it is desired to exclude movement of the scapula in the preceding exercises, the operator must hold the shoulder girdle down firmly with one hand, and the patient must allow his elbow to flex and forearm to drag along the table as he brings the elbow out only to shoulder height.

Any loss of power in the deltoid is apt to be more permanent than loss of power in other muscles, so that its training is often very discouraging.

Adductors of the Upper Arm

(Pectoralis major, latissimus dorsi, and coraco-brachialis)

plus

The muscles which turn the Scapula so that the Glenoid Fossa points downward

(Rhomboideus major and minor, and pectoralis minor)

1. The patient lies on his back with the arm stretched above his head, and moves it sidewise downward along the table until it touches the side.

(*a*) With assistance above the elbow.

(*b*) With the resistance of the friction of the table.

(*c*) With the resistance of the operator's hand below the elbow.

2. The patient sits with the arm stretched vertically above the head and brings the arm sidewise downward to the body, while the operator gives resistance on the under side of the arm just above the elbow.

This exercise may be used either for weak or strong adductors, according to the resistance given.

The Muscles which Move the Upper Arm Forward From a Position Parallel with the Trunk

(*Pectoralis major (upper part), deltoid (anterior part), coraco-brachialis, and short head of biceps brachii*)

plus

The muscles which turn the Scapula so that the Glenoid Fossa points upward

(*Trapezius and lower fiber of serratus anterior*—old name *serratus magnus*)

1. The patient lies prone with his affected arm hanging over the side of the table. The operator lifts the arm backward to a position parallel with the body and above the level of the table and resists as the patient tries to bring it down and forward. From the position of hanging straight down the arm is advanced forward upward to the head against gravity, and during this part of the movement weak muscles may require some help instead of resistance.

2. The patient sits erect with the arm at the side and raises it straight forward upward until it is stretched vertically above his head.

(*a*) With the resistance of the weight of the arm.

(*b*) With the added resistance of the operator's hand pushing on the front of the elbow.

To exclude movement of the scapula, the shoulder girdle must be held firmly down, and the arm will only be raised to shoulder level.

The Muscles which Move the Upper Arm Backward in a Plane Perpendicular to the Line of the Shoulders

(*Latissimus dorsi, teres major, deltoid (posterior part), and triceps brachii*)

plus

The muscles which turn the Scapula so that the Glenoid Fossa points downward

(*Rhomboideus major and minor, and pectoralis minor*)

1. The patient lies on his back at the edge of the table with the arm stretched above his head or else (if scapular movement is to be excluded) vertically upward. He brings it forward (if stretched above his head) and downward to or slightly beyond the table level while the operator gives what resistance can be taken on the back of the elbow. If the starting position is above the hand, gravity has to be overcome as far as the vertical and some assistance may be necessary.

2. The patient lies prone with the arm hanging over the edge of the table and lifts it backwards behind him as far as possible.

(*a*) With the resistance of gravity.

(*b*) With resistance on the back of the elbow.

Outward Rotators of the Upper Arm

(*Infraspinatus, teres minor, and deltoid (posterior part)*)

1. The patient lies prone with his arm hanging straight down over the edge of the table and turns the whole arm outward from the shoulder. Gravity is eliminated and the only resistance to be overcome by the outward rotators is the joint friction.

The elbow must be watched to see that it really turns, as turning of the hand may mean action of the forearm muscles only.

2. The patient lies prone with his arm projecting beyond the edge of the table, the upper arm supported by the operator at right angles to the body and hori-

zontal, the lower arm hanging down from the elbow, which is bent to a right angle. The patient raises his hand and forearm, rotating his upper arm outward.

(*a*) With the assistance of gravity.

(*b*) With resistance on the forearm.

Inward Rotators of the Upper Arm

(*Latissimus dorsi, pectoralis major, subscapularis, teres major, and deltoid (anterior part)*)

The exercises are the same as those described for the outward rotators, only given in the reverse direction.

Flexors of the Forearm on the Upper Arm

(*Biceps brachii, brachialis*—old name *brachialis anticus—brachio-radialis*—old name *supinator longus—pronator teres*—old name *pronator radii teres—flexor carpi radialis, flexor carpi ulnaris, palmaris longus, and flexor digitorum sublimis*)

1. The patient sits with the inner side of the whole arm resting on the table, and bends the elbow by sliding the forearm along the surface of the table.

(*a*) With assistance on the back of the wrist.

(*b*) By unaided contraction of the muscles.

(*c*) With resistance on the front of the wrist.

Care must be taken that the patient does not perform the movement by creeping with the fingers on the table.

2. The patient sits with the elbow resting on a cushion and raises the forearm until the hand touches the shoulder.

(*a*) With the resistance of gravity alone.

(*b*) With added resistance on the front of the wrist.

Extensors of the Forearm on the Upper Arm

(*Triceps brachii, anconaeus, extensor carpi ulnaris, and extensor digitorum communis*)

The positions for the exercises are the same as for the flexors of the forarm and the exercises themselves are exactly the reverse.

Outward Rotators of the Forearm

(*Biceps brachii and supinator*—old name *supinator brevis*)

1. The patient lies prone and lets the forearm hang over the edge of the table, the upper arm being supported on the table. He turns the hand and forearm outward, i. e., supinates it.

a. With help.

b. Unaided.

c. With resistance.

Inward Rotators of the Forearm

(*Pronator teres*—old name *pronator radii teres—pronator quadratus, and flexor carpi radialis*)

The exercises for pronation are exactly the reverse of those for the outward rotation (supination) of the forearm.

The Muscles Which Move the Hand and Fingers

The most important of these muscles are situated in the forearm; a few of the short muscles, which move the fingers, are in the hand.

The exercises should be given with resistance whenever the muscles are capable of overcoming it. It has not been thought necessary to describe them in detail,

as most of the paralyses of these muscles are of infrequent occurrence and the exercises needed are self-evident, following the principles used in the preceding sections. The following list includes all the movements of which the hand and fingers are capable:

1. Flexion of the wrist.
2. Extension of the wrist.
3. Movement of the wrist toward the thumb side.
4. Movement of the wrist toward the little finger side.
5. Flexion of the fingers and thumb.
6. Extension of the fingers and thumb.
7. Abduction of the fingers and thumb.
8. Adduction of the fingers and thumb.
9. Opposition of the thumb to the fingers.

CLONORCHIASIS INVESTIGATIONS

A SUMMARY OF SURVEYS AND EXPERIMENTS TO DETERMINE WHETHER CLONORCHIASIS MAY BE DISSEMINATED ON THE PACIFIC SLOPE OF THE UNITED STATES

By N. E. Wayson, *Surgeon, United States Public Health Service*

The investigations of which the following is a summary were undertaken to determine, if possible, whether there was danger of the spread of infestation with the liver fluke *Clonorchis sinensis* in United States environments. It was known that many persons thus infected had reached the western coast from the Orient, and they seemed to offer a potential menace. While these experiments fail to adduce evidence of the actual transfer of this infestation within the United States, they do not positively remove this possibility from consideration.

The investigations were pursued along two main lines. These might be considered as epidemiological observations and experimental studies. First, examinations were made to learn whether the disease had already become widespread in natives or in susceptible animals. Then surveys and collections were made of the indigenous molluscan and fish hosts in order to find out whether suitable hosts prevailed in the fresh waters of the Pacific slope; and observations were made of the sanitary practices in communities containing large numbers of alien orientals to learn of the potential contamination of the fresh water by sewage containing the ova.

The results of this phase of the work have been published by the American Society of Tropical Medicine [1] and by the Surgeon General of the United States Public Health Service.[2] No infection was found in native Americans nor in other residents who had never visited foreign endemic districts. Nor was infection found among

[1] Am. Jour. Trop. Med., III, 6, Nov., 1923.

[2] Annual reports of the Surgeon General of the Public Health Service of the United States, 1923 to 1926, inclusive.

the native susceptible lower animals, such as dogs, cats, rats, and hogs.

Indigenous snails and fish were found which were closely allied to those suspected as hosts in the waters of the foreign endemic areas. Also, there were methods of the disposal of sewage in practice which might serve to pollute the fresh waters from which fish were caught for consumption.

The second line of endeavor was the effort to accomplish the life cycle of the parasite in the laboratory. Most of the laboratory or experimental procedures were developed upon the hypothesis that the parasite reproduces in a manner similar to that observed with analogous flukes which are parasitic to mammals. The application of this method of reproduction to clonorchis involves the development, within the egg, of a larval form, which, upon maturation, emerges as a freely swimming animal of microscopic size, a miracidium. The miracidium seeks a snail host into which it enters for encystment and development into secondary larval forms. When these have reached maturity they are liberated as free swimming animals of larger size than the miracidia, and exhibiting some of the morphology characteristic of the adult worm, but differing, particularly, in having distinct organs of locomotion. These secondary larval forms are cercariæ. The cercariæ are presumed again to seek a host, a fish, under the scales of which they penetrate the flesh, encyst, and develop into the larval form of the adult worm. Maturation to the adult worm takes place when the uncooked flesh of the fish containing the encysted larval worms is ingested by a mammal, in the lumen of whose alimentary tract they are liberated and from which they can crawl into those portions of the tract affording conditions most favorable for their existence and for ovulation.

The only phase of the life cycle of *Clonorchis* which has been available for experimental study has been the ovum. This was obtained in specimens of feces, collected at the Angel Island Immigration Station, San Francisco Bay, from oriental immigrants who were infested. Efforts have been concentrated, therefore, toward establishing the conditions which would affect the hatching of the egg. To effect this, attempts have been made to provide an experimental environment which approximates, as closely as can be determined, that which prevails in nature where the parasite abounds. The suspected snail hosts have been imported from the districts of prevalence of the parasite. These have been maintained for continuous periods of at least six months in close proximity to the ova of the parasite, in balanced aquaria and with fish hosts analogous to those in which the encysted larvæ have been observed. Snails which abound in the waters of the Pacific slope have been similarly maintained and grown in these aquaria. These snails included large

numbers of those of the same families and of species allied to those imported. The acquarial conditions have been repeatedly adjusted to favor the life of the hosts, since these do not thrive, or survive long, under most of the artificial surroundings thus far created.

In addition to these attempts to reproduce the life cycle under conditions which may prevail in nature, many experiments have been conducted toward learning the optimum range of factors which favor the hatching of the eggs. These studies were made by varying single and combined physical, chemical, and mechanical factors in preparations which permitted of microscopical observation of many thousand eggs. The probable time required for hatching has also been considered in the experiments combining the variations in temperature, light, aerobiosis, and some chemical reactions of the medium. Under conditions which approximate those found in nature, eggs have been kept as long as from a month to two years.

Temperature.—The effects of temperature have been studied in still, running, and balanced aquaria, and in watch-crystal preparations. The range of temperature exposures has been from 0° to 35° C.

Running aquaria, out of doors, afforded a range of from 16° C. (8 o'clock morning temperature) to 22° C. (5 o'clock afternoon temperature) during the summer months; and from 9° to 15° C. and from 13° to 19° C. at corresponding hours during the winter months.

Balanced aquaria within doors afforded corresponding morning temperatures of 16° to 18° C. during the summer months and of 12° to 15° C. during the winter months; and afternoon temperatures of 18° to 23° C. during the summer months and of 18° to 21° C. during the winter months.

Temperatures of 28° to 30° C. were reached for a few hours on many afternoons in special indoor aquaria receiving long hours of sunlight during the months of August and September, though the morning temperature was 16° to 18° C. By insulation and artificial heat similar aquaria reached temperatures of 32° to 35° C. for periods of one to two hours during the day, and fell to 20° to 22° C. by the following morning.

All the eggs exposed to temperature variations in aquaria were periodically observed for three months, and those exposed to some of the variations for from eight months to two years. Two or more repetitions were made of the exposures under most of the environmental changes in the aquaria.

Watch-crystal preparations of eggs washed free from putrescible material have been exposed to the temperatures prevailing in the indoor aquaria and to other ranges.

Preparations were exposed to 0° C. for a few hours and gradually thawed. Exposures were made to ice-box temperatures of 6° to 10° C. for from one to nine months, followed by exposure to room temperature for several weeks. Constant exposures were made at 25° C. for six months in an incubator, both in darkness and in indirect light. Exposures were made under similar light conditions in an incubator brought daily to a temperature of 30° C. and allowed to fall to 20° C. during the succeeding 24 hours, through a period of 5 months. Several repetitions have been made of daily exposures for 10 days to 3 weeks in a running warm bath of from 24° to 30° C. for several hours, the temperature of the bath falling to that of the room during the evening and night hours. During these exposures in the warm bath continuous observations were made for several hours at a time.

A small percentage of eggs was found open and empty after being subjected to any of these procedures. However, only in those preparations in the running warm bath has spontaneous hatching with complete emergence of motile miracidia been actually seen, on two occasions. Most eggs remain apparently intact after months of storage at the temperatures indicated. The miracidia may be dead in these, but they do not disintegrate, since ciliated specimens can be expressed from the egg mechanically and by sudden chemicophysical changes in the medium.

Light.—The temperature exposures have been carried out in combination with varying conditions of light. Direct sunlight out of doors, indirect sunlight through a window, diffuse light near a window, and absence of light have each been tried in experiments continuing different temperatures, for prolonged periods. The light exposures have been made both in aquaria and in watch-glass preparations.

Reaction.—The media in which the temperature and light exposures were made have been varied in reaction to approximate the acid, neutral, and alkaline waters which may be found in nature and in the irrigation waters of agriculture. Distilled water, rain water, and tap water have been used, and greater ranges of acidity or alkalinity have been provided through the addition of mineral and organic acids or their salts, and of the hydroxides, carbonates, or bicarbonates of calcium, sodium, potassium, magnesium, and ammonium.

Those reactions which might prevail in waters under natural conditions were apparently without effect on hatching. However, the rapid change of reaction from an alkaline to acid medium generally produced dehiscence of many eggs, some with complete or with partial emergence of a "still" embryo. No motile embryos have been observed when obtained by this method. However, the miracidium

has often been found some distance from the egg, probably carried by currents or propelled in its expulsion from the egg. The most constantly effective reagent found in this method of opening the eggs was limewater, followed by overneutralization with dilute acetic acid.

Aerobiosis.—The experiments with temperature and light have also been made with different degrees of aerobiosis. This has been accomplished by the exposures in still, balanced, and running aquaria with water from 2 to 6 inches in depth, and in special still aquaria, with a depth of water as great as 30 inches. Preparations have also been made in narrow cylinders, both under septic and nonseptic conditions. Good oxygenation has been accomplished in watch-glass or stender jar preparations, and some limitation of oxygenation has been obtained by preparations under paraffin oil in stender jars. The oxygen saturation in the watch-crystal preparations was kept at a high degree by an automatic device which rocked the preparations about every 30 minutes for periods of from 2 weeks to 5 weeks. No constant or definite effect of these variations in oxygenation has been noted.

Chemico-physical agents.—Since the miracidium is very small and probably runs great hazards of destruction under natural conditions, it was thought that some chemotactic factor contributed by the snail might influence hatching. Hence, eggs were suspended in the washings of large numbers of dead snails, suspected of being hosts of the parasite in the Orient. Similar preparations were made in suspensions of these snails ground in water while alive, or in suspensions of the teased and macerated digestive glands of such snails. Preparations were also made in dilute formic acid, dilute sodium formate, and dilute uric acid and urates. Also, large numbers of eggs were suspended in watch crystals in which a few of these snails were held for from 12 to 24 hours, to detect any effect such proximity might have on hatching. None of these conditions seemed to have any effect on the hatching of the eggs.

However, during the periods that the snails were in such close proximity to large numbers of eggs, they ingested many of them. The snail droppings and intestinal contents, when washed clean and teased, were found to contain many eggs, both open and closed. Among some specimens as high as 500 eggs were counted in two droppings, of which as many as 43 per cent were open, or open and empty. Among 200 of the eggs remaining apparently uningested in the crystal, 7 per cent were open. One per cent were open among 200 counted in a crystal prepared and simply held under similar conditions without the presence of snails. The finding of open and closed eggs in the droppings and intestinal contents of both the oriental and indigenous snails in acquaria has also been frequent. Such

observations have been made on specimens of *Lymnia*, *Physa*, *Planorbis*, and *Goniobosis*, as well as on the imported *Bythinia striatula* and *Melania japonica*.

The explanation of this finding has been thought to be due to either mechanical or chemophysical interference with the egg in its passage from the water of the aquarium through the alimentary tract of the snail.

The dehiscence caused by abrupt changes in chemical reaction has been cited above. An opening of eggs with emergence of the "still" embryos has likewise been obtained by abrupt changes in the concentration of the suspending menstruum. This has been accomplished by allowing eggs to dry and immersing them again in the medium in which they were previously suspended. Also, almost uniformly, an opening of many has resulted from their suspension in different concentrations of glycerine, or sugar, followed by a rapid dilution with distilled water.

The effect of mechanical pressure on the egg has been repeatedly demonstrated by tapping on the coverslip of a microscopic slide preparation. The caps of eggs trapped under the coverslip spring off, and the embryo emerges in part or completely. Both the cap and the embryo are frequently carried some distance from the egg by the propelling tap and by the currents created in the suspending medium. No definite active motility has been observed in miracidia thus obtained. The tapping frequently springs the cap, and either the tapping or rolling of the egg presents an appearance of a partial emergence and recession of the miracidium. Dehiscence was also obtained, as previously reported, by suspending the eggs with fine sand in a soft rubber tube and gently rolling the tube between the fingers.

RESULTS

Following is a summary of the experimental observations:

Among a hundred or more imported and indigenous snails kept under aquarial conditions for from three months to a year, and subsequently examined by teasing them, no rediæ or cercariæ suspected to be those of *Clonorchis* have been found. The snails have been accessible to the miracidia, if they have hatched spontaneously, as has been shown by finding both open and closed eggs in their droppings and in their intestinal contents, as well as by the recovery of similar eggs from the sludge of the aquaria.

None of approximately 50 fish taken from the aquaria and examined under a dissecting microscope have shown any cysts; nor have three experiments been successful in which guinea pigs were fed with the teased flesh of several of such fish. The varieties of fish used included some in which the cysts are formed when in the district in which the disease is endemic.

What was apparently spontaneous hatching of motile miracidia has been observed among a very few eggs on two occasions. In many repetitions, under seemingly like conditions, on a warm stage at 24° to 26° C., in boiled tap water, such hatching was not again seen, though many eggs were found open, both empty and with the embryo partially emerged.

Dehiscence with partial or complete emergence of "still" miracidia has been frequently obtained by sudden changes of reaction, or of concentration of the medium in which the eggs are suspended, or by mechanical pressure on them.

Many open as well as closed eggs have been observed in the droppings and intestinal contents of snails kept in controlled contact with the eggs, and under aquarial conditions.

DISCUSSION

No definite conclusions have been reached, from these experimental investigations, as to the manner of development of *Clonorchis sinensis* or as to the probability of its dissemination on the Pacific slope. The repeated failure to obtain consistent spontaneous hatching of the eggs, and their ready opening under mechanical and chemical influences, together with the frequent findings described within the alimentary tract of the snail, suggest that the natural emergence of the miracidium may take place within the snail.

The snail *Vivipara vivipara* has been imported from the Orient in commerce and is flourishing in natural fresh-water lakes about San Francisco. It seems pertinent to state, therefore, that the suspected molluscan hosts of *Clonorchis* in the Orient, *Bythinia striatula*, and *Melania japonica* have been successfully imported, reared, and reproduced under aquarial conditions which approximated natural conditions on the Pacific slope.

It has been previously indicated that species of fish, similar to those found infested in the Orient, prevail in the fresh waters of the Pacific slope.

The spread of clonorchiasis in the United States would therefore appear to be possible only under the following combined conditions:

(1) Egg-bearing feces must reach natural waters in sufficient concentration to infect snails.

(2) Such feces must there reach either (*a*) oriental species of snails or fish not yet known to have been established in nature in this country, or (*b*) native species not yet known to be susceptible, but possibly adaptable.

(3) Infected fish must be eaten in a raw state or in an insufficiently cooked or cured condition not affecting the viability of the parasite.

MORTALITY FROM AUTOMOBILE ACCIDENTS, 1922–1926

The Department of Commerce announces that in the registration area in continental United States there were 18,871 accidental deaths in 1926 charged to automobiles and other motor vehicles (excluding motorcycles), and that the death rate from this cause was 17.9 per 100,000 population against 17 in 1925, 15.7 in 1924, 14.9 in 1923, and 12.5 in 1922.

It should be noted, however, that the deaths assigned to automobile accidents do not include those due to collisions of automobiles with street cars and with railroad trains. Therefore, as in 1926 there were 464 deaths due to collisions of automobiles with street cars and 1,556 due to collisions with railroad trains, these deaths if added to 18,871 assigned to automobile accidents would make for the registration area a grand total of 20,891 deaths due to accidents in which automobiles were involved and would raise the rate from 17.9 to 19.9 per 100,000 population.

As in 1926 the registration area included only 89.8 per cent of the total population of the United States, by assuming that the number of deaths from automobile accidents reported in the registration area comprises 89.8 per cent of the number of deaths from automobile accidents in the entire United States, it may be estimated that the total number of deaths in that year due to accidents in which automobiles were involved was approximately 23,264.

In the 36 States for which data are available for the five-year period 1922 to 1926, the number of these deaths as shown in the attached table, increased from 11,187 in 1922 to 17,321 in 1926, and the corresponding rates were 12.6 and 18.2.

In the 67 cities for which similar data are available, the number of deaths increased from 4,891 in 1922 to 6,669 in 1926, and the rate increased from 17.2 to 21.7.

As has been frequently pointed out, uncorrected figures of deaths from automobile accidents, especially in cities, may be very misleading, because fatal accidents frequently occur outside city limits, though the injured are hurried to the city hospital and so increase the city death rate. The second column in the table shows how many such deaths are known to have occurred in the year 1926, though for many of the cities these figures should undoubtedly be much larger, for the place of the accident is not always reported on the death certificate. How important this factor may be, however, is well illustrated by the figures for Camden and Trenton, N. J., and Wilmington, Del., which show that more than half of the deaths were due to accidents which occurred outside of the city.

Deaths and death rates in the registration area in continental United States, registration States, and 68 cities, from accidents caused by automobiles, motor trucks, and commercial motor vehicles: 1922 to 1926

[For each year total deaths are shown regardless of place of accident. For 1926 deaths are also shownw here accidents are known to have occurred outside of State or city limits]

Area	Number of deaths						Rate per 100,000 population				
	1927		Total								
	Total	From accidents outside*	1925	1924	1923	1922	1926	1925	1924	1923	1922
Registration area	18,871	-------	17,571	15,528	14,411	11,666	17.9	17.0	15.7	14.9	12.5
Registration States [1]	18,419	-------	17,149	15,221	14,157	11,466	17.8	16.9	15.6	14.8	12.5
Alabama	319	-------	252	(2)	(2)	(2)	12.6	10.1	(2)	(2)	(2)
Arizona	116	4	(2)	(2)	(2)	(2)	26.1	(2)	(2)	(2)	(2)
California	1,464	2	1,327	1,254	1,239	960	33.9	31.7	32.0	32.6	26.0
Colorado	175	2	146	158	157	159	16.5	14.0	15.7	15.9	16.3
Connecticut	307	4	340	277	249	216	19.1	21.6	18.4	16.9	14.9
Delaware	50	2	37	46	55	24	20.8	15.5	19.8	23.9	10.5
Florida	515	3	449	242	170	122	39.1	35.5	19.7	16.2	11.9
Georgia	(3)	(3)	(3)	307	259	215	(2)	(2)	10.1	8.6	7.8
Idaho	77	1	56	54	51	21	14.8	11.0	11.2	10.8	4.6
Illinois [1]	1,338	13	1,268	1,065	1,031	1,003	18.6	17.9	15.5	15.2	15.0
Indiana	547	6	509	480	433	306	17.5	16.4	15.8	14.4	10.2
Iowa	264	6	271	211	242	(3)	10.9	11.2	8.7	9.8	(3)
Kansas	241	4	240	169	217	175	13.2	13.2	9.4	12.1	9.8
Kentucky	277	4	237	197	166	128	11.0	9.4	8.0	6.7	5.2
Lousiana	271	2	241	210	158	104	14.1	12.7	11.3	8.5	5.7
Maine	100	1	98	91	91	79	12.7	12.5	11.7	11.7	10.2
Maryland	312	4	271	246	243	224	19.7	17.4	16.2	16.1	15.0
Massachusetts	682	7	729	685	611	496	16.2	17.6	16.7	15.2	12.5
Michigan	1,112	3	955	863	738	574	25.3	22.3	21.2	18.6	14.8
Minnesota	326	7	361	366	328	260	12.3	13.8	14.5	13.1	10.3
Mississippi	215	4	170	125	78	60	12.0	9.5	7.0	4.4	3.4
Missouri	493	10	509	449	398	321	14.1	14.6	13.0	11.6	9.4
Montana	93	2	84	69	49	48	13.4	12.5	11.0	8.0	8.1
Nebraska	154	5	125	113	123	131	11.1	9.1	8.4	9.2	9.9
New Hampshire	68	6	87	61	59	49	15.0	19.2	13.6	13.2	11.0
New Jersey	792	9	771	746	672	543	21.5	21.4	21.7	19.9	16.4
New York	2,178	8	2,111	1,985	1,930	1,788	19.3	18.9	18.0	17.8	16.7
North Carolina	453	2	376	328	258	169	15.9	13.4	12.0	9.6	6.4
North Dakota	70	3	59	45	(2)	(2)	10.9	9.2	7.0	(2)	(2)
Ohio	1,317	13	1,285	1,024	1,078	818	20.0	19.9	16.5	17.6	13.6
Oregon	187	1	144	144	120	113	21.3	16.7	17.3	14.6	13.9
Pennsylvania	1,734	23	1,576	1,535	1,592	1,260	18.0	16.6	16.7	17.5	14.0
Rhode Island	127	11	133	113	97	93	18.3	19.6	16.9	15.5	15.0
South Carolina	192	-------	179	167	119	76	10.5	9.9	9.5	6.8	4.4
Tennessee	312	11	278	232	171	160	12.6	11.4	9.6	7.1	6.7
Utah	80	1	89	81	60	59	15.6	17.7	16.7	12.6	12.6
Vermont	45	-------	56	48	46	39	12.8	15.9	13.6	13.1	11.1
Virginia	303	6	271	240	200	137	12.0	10.9	9.9	8.3	5.8
Washington	342	3	299	265	240	173	22.2	19.8	18.2	16.7	12.3
West Virginia	231	15	208	(2)	(2)	(2)	13.8	12.7	(2)	(2)	(2)
Wisconsin	384	3	397	363	292	271	13.3	13.9	13.1	10.7	10.0
Wyoming	56	1	67	59	51	28	23.7	29.3	27.2	24.1	13.5
Total, 67 cities †	6,669	1,013	6,390	5,869	5,599	4,891	21.7	21.2	19.8	19.1	17.2
Akron	62	13	60	39	40	25	(4)	(4)	(4)	(4)	12.0
Albany	41	17	35	28	27	21	34.5	29.7	23.9	23.0	18.1
Atlanta	68	17	65	53	55	54	(4)	(4)	(4)	24.7	24.7
Baltimore	178	42	158	129	131	130	22.0	19.8	16.4	16.9	17.1
Birmingham	57	25	51	55	49	31	27.1	24.8	27.4	25.0	16.2
Boston	149	19	154	143	133	129	18.9	19.8	18.4	17.3	16.9
Bridgeport	31	10	26	21	23	28	(4)	(4)	(4)	(4)	19.5
Buffalo	135	23	119	112	137	106	24.8	22.1	21.0	25.5	20.1
Cambridge	19	4	22	27	28	16	15.6	18.4	22.8	25.1	14.4
Camden	59	34	43	36	44	34	45.1	33.3	28.5	35.4	27.9
Chicago	693	20	645	560	589	623	22.7	21.5	19.0	20.4	22.0
Cincinnati	109	8	115	85	102	76	26.5	23.1	20.8	25.1	18.8
Cleveland	265	11	231	220	203	142	27.6	24.7	24.1	22.8	16.6
Columbus	70	14	71	59	58	37	24.5	25.4	22.0	22.2	14.5

[1] Including District of Columbia.
[2] Not added to the registration area until a later date.
[3] State registration law declared unconstitutional; State excluded from area in 1925.
[4] Population not estimated.
* As the place of accident was not always reported, the figures given as outside State or city limits are doubtless too small in some cases. Therefore, the figures in second column must be regarded merely as minimum numbers.
† Des Moines figures not included as data are not available for the 5 years.

Deaths and death rates in the registration area in continental United States, registration States, and 68 cities, from accidents caused by automobiles, motor trucks, and commercial motor vehicles: 1922 to 1926—Continued

Area	Number of deaths						Rate per 100,000 population				
	1927		Total								
	Total	From accidents outside	1925	1924	1923	1922	1926	1925	1924	1923	1922
Dallas	61	13	59	36	34	27	30.1	30.4	19.2	18.7	15.7
Dayton	52	13	44	26	27	27	29.4	25.4	15.4	16.3	16.7
Denver	48	11	37	40	45	56	16.8	13.2	14.5	16.5	20.9
Des Moines	30	5	23	17	18	(2)	20.6	16.3	12.1	12.8	(2)
Detroit	399	41	346	305	252	176	30.9	27.8	25.5	(4)	17.7
Fall River	19	7	17	16	22	13	14.5	13.2	12.5	18.2	10.8
Fort Worth	30	6	32	27	9	16	18.8	20.6	18.2	6.3	13.2
Grand Rapids	32	9	45	31	27	23	20.5	29.2	20.9	18.5	16.0
Hartford	46	19	53	33	40	31	28.0	33.1	21.1	26.3	22.5
Houston	40	7	31	31	25	27	(4)	(4)	19.4	16.1	18.0
Indianapolis	83	15	78	71	53	47	22.6	21.7	20.2	15.5	14.0
Jersey City	41	7	64	56	37	36	12.9	20.3	17.9	12.0	11.8
Kansas City, Kans	8	3	27	18	12	18	6.8	23.3	15.6	10.4	15.8
Kansas City, Mo	82	9	87	87	86	63	21.8	23.7	24.2	24.4	18.3
Los Angeles	286	74	258	267	224	187	(4)	(4)	(4)	(4)	29.5
Louisville	64	15	64	58	66	42	20.6	21.2	19.8	25.6	16.4
Lowell	22	6	26	23	18	6	19.9	23.6	20.8	15.6	5.2
Memphis	57	28	52	40	46	42	32.3	29.7	23.2	27.0	25.0
Milwaukee	101	10	102	83	62	65	19.5	20.0	16.8	12.8	13.6
Minneapolis	69	16	76	86	60	71	15.9	17.9	20.6	14.7	17.7
Nashville	39	17	38	34	28	20	28.5	27.9	27.5	22.8	16.6
New Bedford	11	2	18	13	8	21	9.2	15.1	10.9	6.2	16.5
New Haven	42	15	40	48	28	33	23.1	22.3	27.3	16.2	19.4
New Orleans	85	23	78	84	68	46	20.3	18.8	20.5	16.8	11.5
New York	1,082	8	1,060	1,000	964	896	18.3	18.0	17.2	16.3	15.3
Bronx Borough	119	(5)	117	122	129	81	13.2	13.4	14.4	15.3	10.0
Brooklyn Borough	338	(5)	341	327	279	266	15.1	15.5	15.1	12.9	12.6
Manhattan Borough	494	(5)	484	439	474	463	26.5	24.9	21.9	20.9	20.4
Queens Borough	102	(5)	102	90	66	68	13.4	14.3	13.4	12.3	13.2
Richmond Borough	29	(5)	16	22	16	18	20.3	11.6	16.3	12.5	14.5
Newark, N. J	109	11	110	104	107	81	23.7	24.3	23.3	24.4	18.8
Norfolk	25	9	24	16	13	11	14.4	14.2	(4)	8.2	8.8
Oakland	51	3	44	49	50	41	19.6	17.3	19.8	20.3	17.6
Omaha	33	9	35	29	40	24	15.3	16.5	13.9	19.6	12.0
Paterson	34	14	41	49	39	34	23.8	28.9	34.8	27.9	24.5
Philadelphia	329	7	296	263	294	267	16.4	15.0	13.5	15.3	14.1
Pittsburgh	163	38	166	186	146	123	25.6	26.3	29.7	23.5	20.2
Portland, Oreg	52	9	42	41	39	40	(4)	(4)	14.7	14.3	14.9
Providence	61	24	79	58	52	51	22.2	29.5	22.0	21.5	21.2
Reading	19	7	19	24	27	13	16.7	16.8	21.5	24.3	11.8
Richmond	37	17	41	33	26	20	19.6	22.0	18.0	14.2	11.3
Rochester	65	12	54	48	44	52	20.3	17.0	15.3	13.8	16.7
St. Louis	172	18	201	197	168	134	20.7	24.5	24.2	21.9	16.9
St. Paul	46	5	42	55	59	36	18.5	17.1	22.5	24.4	15.0
Salt Lake City	33	9	42	34	20	24	24.7	32.1	26.4	15.8	19.4
San Antonio	40	12	39	22	30	28	19.5	19.7	11.5	16.2	15.7
San Francisco	128	27	105	113	107	118	22.6	18.8	20.6	19.9	22.3
Scranton	32	8	33	24	41	29	22.4	23.2	17.0	29.2	20.7
Seattle	69	8	66	53	55	44	(4)	(4)	(4)	(4)	13.9
Spokane	27	5	21	22	15	10	24.8	19.3	21.0	14.3	9.6
Springfield, Mass	38	13	21	27	23	17	26.2	14.8	19.2	15.9	12.1
Syracuse	44	13	29	41	43	36	23.7	15.9	22.7	23.3	19.9
Toledo	74	24	67	46	63	45	25.1	23.3	16.4	23.4	17.3
Trenton	33	17	39	34	36	27	24.6	29.5	26.2	28.3	21.6
Washington, D. C	98	22	88	108	86	64	18.6	17.1	22.2	18.1	14.6
Wilmington, Del	29	17	21	29	29	15	23.3	17.2	24.2	24.6	13.0
Worcester	32	13	40	29	33	26	16.5	21.0	15.3	17.2	13.8
Yonkers	19	-------	15	16	17	13	16.3	13.2	14.4	15.8	12.3
Youngstown	42	11	43	39	37	27	25.5	26.9	25.1	24.6	20.4

[2] Not added to the registration area until a later date.
[4] Population not estimated.
[5] Not separately tabulated.

COURT DECISIONS RELATING TO PUBLIC HEALTH

Publication of notices required by sanitary district law.—(Illinois Supreme Court; People ex rel Swanson et al. *v.* Weinberg et al., 158 N. E. 407; decided October 22, 1927.) A statute relating to the creation of sanitary districts (Smith-Hurd Revised Statutes, 1925, ch. 42, sec. 299) required that notice should be given by the county judge of the time and place where the original commissioners would meet "by a publication inserted in one or more daily or weekly papers published in such proposed district, at least 20 days prior to such meeting." Notice was also required to be given of the election to organize a district "at least 20 days prior thereto by publication in one or more daily or weekly papers published within such proposed sanitary district." It was contended that, inasmuch as the number of publications was not specified, the following provision of law (Smith-Hurd Revised Statutes, 1925, ch. 100, sec. 3) applied:

> Whenever notice is required by law, or order of court, and the number of publications is not specified, it shall be intended that the same be published for three successive weeks.

The supreme court held that only a single publication was required.

Ordinance providing for construction of sewage treatment plant held void.—(Illinois Supreme Court; Village of Lena *v.* Kable et al., 158 N. E. 409; decided October 22, 1927.) A village passed an ordinance for the construction of a system of sewers and a sewage treatment and disposal plant. One section of the ordinance provided:

> The treatment plant shall consist of a septic tank of the following form, dimensions and specifications, or its equal in efficiency.

Then followed at considerable length the specifications for the construction of the tank, but the alternative to build a tank of equal efficiency was not eliminated. The validity of the ordinance was challenged on the ground that the engineer's estimate and the ordinance left the character, dimensions, and specifications of the sewage treatment and disposal plant to be determined by the contractor. The supreme court held that, in respect of the treatment plant, the ordinance was indefinite and insufficient, and, therefore, void. The court said:

> * * * The treatment plant will be an integral and substantial part of the proposed improvement. There may be many ways in which such plants can be built. The engineer's estimate contemplates, and the provision of the ordinance permits, the substitution of a treatment plant altogether different from the one specified, subject only to the condition of equal efficiency. One plant may be as efficient as another, yet substantial differences between the two in cost and durability may exist. The right of substitution destroys the certainty that the treatment plant will be constructed in the manner and of the materials prescribed by the ordinance. * * *

* * * An ordinance for the construction of a local improvement may make a certain product, substance, or compound the standard of quality and fitness, and require that only material equal to it in all respects shall be used. [Cases cited.] This discretion, however, may only be exercised to permit the substitution of a particular substance or ingredient which meets the standard prescribed, but it is not broad enough to allow the construction of a substantial part of the improvement in a manner and of materials essentially different from the specifications of the ordinance. * * *

Award under workmen's compensation act for death from actinomycosis.—(Wisconsin Supreme Court; Pfister and Vogel Leather Co. *v.* Industrial Commission of Wisconsin et al., 215 N. W. 815; decided November 8, 1927.) The State industrial commission awarded a death benefit under the workmen's compensation act on account of the death of a tannery employee from actinomycosis. The award was affirmed by the circuit court and the plaintiff company appealed. The supreme court affirmed the judgment of the circuit court, saying:

The single question presented is whether there is any credible evidence which directly or by fair inference sustains the findings of the industrial commission. * * *

The proof established the fact that death was caused by an infection of the actinomycosis germ or fungus. It follows that deceased must have been exposed to this germ at some place. The inferences preponderate in favor of the finding that he was exposed to this germ in appellant's tannery. The preponderance of inferences is so great that the commission could say that it amounted to a reasonable certainty.

CASES OF SMALLPOX REPORTED BY STATE HEALTH OFFICERS NOVEMBER 20 TO DECEMBER 10, 1927, AND CORRESPONDING WEEKS OF 1925 AND 1926

The following table is a continuation of the table which appears on page 2953 of the Public Health Reports of December 2, 1927:

Cases of smallpox reported by State health officers November 20–December 10, 1927, compared with reports for the corresponding weeks of 1925 and 1926

State	Week ended— Nov. 26, 1927	Nov. 27, 1926	Nov. 28, 1925	Dec. 3, 1927	Dec. 4, 1926	Dec. 5, 1925	Dec. 10, 1927	Dec. 11, 1926	Dec. 12, 1925
New England States:									
Maine	0	0	0	0	0	0	0	0	0
Vermont	0	0	0	0	0	0	0	0	0
Massachusetts	0	0	0	0	0	0	0	0	0
Rhode Island	0	0	0	0	0	0	0	0	0
Connecticut	0	0	0	0	0	0	0	0	0
Middle Atlantic States:									
New York	8	3	1	8	21	0	1	18	0
New Jersey	0	0	0	0	0	0	3	0	0
Pennsylvania	0	0	1	0	0	0	0	0	
East North Central States:									
Ohio	5			25			24		
Indiana	93	143	94	57	151	34	94	147	23
Illinois	17	3	13	24	15	23	20	9	11
Michigan	12	9	5	41	9	13	29	14	13
Wisconsin	23	5	14	29	8	11	77	2	8
West North Central States:									
Minnesota	3	9	1	0	7	0	0	5	5
Iowa	49	3	29	45	15	36	41	8	21
Missouri	88	3	3	47	0	8	26	3	4
North Dakota	14	13	2	7	17	3		28	1
South Dakota	2	3	0	11	20	1	21	0	3
Nebraska	5	17	21	10	18	56	56	10	12
Kansas	32	12	6	34	26	4	40	18	4
South Atlantic States:									
Delaware	0	0	0	0	0	0	0	0	0
Maryland	0	0	0	0	0	0	0	0	0
District of Columbia	0	0	0	0	0	0		0	0
Virginia	0	0	1	0	0	0	0	0	0
West Virginia	5	1	0	6	2	0	16	11	0
North Carolina	28	42	9	39	72	26	42	37	10
South Carolina	5	15	1	7	6	4	4	1	
Georgia	0	16	1	0	20	1	0	65	7
Florida	0	14	6	2	28	2	0	24	15
East South Central States:									
Tennessee	7	6		5	0	5	6	7	0
Alabama	19	7	80	6	11	23	1	77	16
Mississippi	7	6	1	5	4	12	0	9	6
West South Central States:									
Arkansas	2	1	2	4	3	4	8	7	2
Louisiana	8	9	23	11	1	7	6	5	8
Oklahoma	36	56	6	41	42	17	54	31	7
Texas	13	1	1	6	2	3	27	12	21
Mountain States:									
Montana	59	3	2	27	16	13	16	0	15
Idaho	8	3		9	7		0	5	
Wyoming	10	5	14	5	0	6	10	0	7
Colorado	8	20	1	11	19	1	10	6	1
New Mexico	0	0	0	0	0	1	0	0	0
Arizona	0	0	0	0	0	0	0	0	0
Utah	30	5	2	19	1	0	54	1	1
Pacific States:									
Washington	35	20	65	31	39	76	30	66	82
Oregon	20	15	20	29	18	15	51	41	38
California	5	9	46	10	21	42	2	12	48

PUBLIC HEALTH ENGINEERING ABSTRACTS

What Denver is Doing to Abate Smoke. Charles B. Roth. *The American City*, vol. 37, No. 3, September, 1927, pp. 345–347. (Abstract by Leonard Greenburg.)

The smoke ordinance of the city of Denver, Colo., went into effect in 1917. In 1922 this city stood in thirty-seventh place among the 150 cities inspected by the Government from a point of view of smoke nuisance. Approximately two years ago, a time probably late in 1925, the city began to take active steps to abate the smoke nuisance, and somewhat later in this year (1925), when another smoke test was made by the Government, Denver occupied eighteenth place.

The smoke department of the city and county of Denver is composed of three men, a Mr. Williams, in charge, a chief boiler inspector, and a smoke inspector.

The department keeps a log of each building in the city, showing the results of the inspection of the heating plant and information concerning the type of fuel used and the method of operation of the buildings. This log is supplemented by photographs of the smokestack when it is issuing smoke. In dealing with violation of the smoke ordinance, the first step consists in the forwarding of a letter to the owner of the building, notifying him of the condition, and granting him a reasonable period, usually 30 days, in which to remedy the difficulty. During this interval the Government assists the property owner with suggestions and help for the removal of the nuisance. A second inspection is then made, and if the owner is found to be obstinate he is requested to appear before the smoke commission which meets each week. The owner is then conclusively shown by the log of his particular building just what the conditions are and is given 30 or 60 days in which to comply. Advice is rendered whenever requested during this period. In practically all cases, effort of this type has been successful without recourse to the courts.

During 1925 results of the following general type were obtained: Stokers were installed in 30 plants, 16 plants were equipped with mechanical doors, 6 plants were equipped with patent steam devices, flues were extended, defective flues were repaired, over 1,000 inspections were made, and 50 boilers were reset. During the year 1926 greater progress was made along these same lines.

It has been found by the owners of buildings in the city of Denver that smoke-prevention work is a real paying investment. Some have even commented that it is their wish that they had been forced to take steps earlier. Savings in fuel in one case amounted to $355 a month, and one of the hospitals of the city of Denver reports that they are saving over 20 per cent on fuel.

Studies of the Malaria Problem in Porto Rico. Anon. *Porto Rico Health Review*, vol. 2, No. 12, June, 1927, pp. 25–31. (Abstract by H. A. Johnson.)

This is part of a report of a mosquito and malaria survey of the island carried on by the International Health Board and the Insular Department of Health in 1924 and 1925.

Intensity of Anopheles breeding.—The paper points out that breeding of *albimanus* reached its greatest intensity at the time of high temperature, high rainfall, and low wind velocity. Grabhamii thrived best during the cooler and drier months. Vestitipennis was intermediate between the two but seemed much the more sensitive to heat of the three species and thrived best during period of greatest number of temporary water deposits.

Relation of cane culture to Anopheline breeding.—As a result of the studies the author found that (1) cane field ditches proved to be excellent breeding places; (2) lack of ditch cleaning favored breeding; (3) the effect of high cane and corresponding shade in reducing breeding in the ditches was very apparent. This applied especially to breeding of albimanus.

The seasonal variation of malaria was very difficult to determine, due to complications with grippe, colds, etc., but malaria was present in considerable amount at all times of the year.

Investigation of a Malarial Epidemic in Tegal During the First Months of 1926. E. W. Walch and R. Soesilo. (Meded. Dienst. d. Volksgezondheid in Nederl-Indie. 1927. Pt. 1, pp. 1–96.) From *Tropical Diseases Bulletin*, vol. 24, No. 9, September, 1927, pp. 723–724. (Abstract by Arthur P. Miller.)

"This characteristically thorough report is, in great part, necessarily of local interest only. It deals with parasite index, spleen index, rainfall, mortality, breeding places and house catches of anopheles, their dissection, the relation between them and malaria, and quinine distribution. The investigation was

called for as the result of a malarial epidemic beginning in January, 1926, the investigation being carried out from the middle of March to the middle of April. *A. ludlowi* was implicated as the chief vector—2 per cent infected as against 0.2 per cent for *A. rossii*. The former was found breeding freely in the coastal zone, its breeding places having extended here as compared with a previous investigation; yet the larvae were entirely absent from the town itself, although the imagines were found distributed throughout it. A new fact is recorded in the discovery of *A. fuliginosus* breeding in salt water up to 17 parts per thousand. There is doubt as to the implication of *A. aconita*, which breeds in rice fields and ditches. It is advised that attention be first directed to the breeding places of *A. ludlowi*, and that those of *A. aconita* be attacked only if the measures directed against *A. ludlowi* should fail in reducing the local malaria."

Yellow Fever. Rockefeller Foundation, International Health Board, Thirteenth Annual Report (1926), pp. 142–154. (Abstract by A. L. Dopmeyer.)

Recrudescence of the disease in Brazil.—Yellow fever appeared in epidemic form in four States of Brazil in 1926. Campaigns are carried out on the assumption that if permanent endemic foci of infection are eliminated, the disease will die out in smaller communities for lack of the human host. Antilarva activity in Brazil was therefore concentrated on the larger coast towns, which have been the endemic centers from which the disease has spread.

The fundamental basis of the yellow-fever-control campaign is the fact that endemicity can continue only in the joint presence of a large number of nonimmune persons and a large number of the Stegomyia mosquitoes. It was believed that the outbreak of yellow fever in 1926 was caused by the movement of soldiers from southern Brazil to the north. Information gathered indicates that nonimmune soldiers became infected, furnishing presumptive evidence that smoldering infection still existed in the interior of the country, which was augmented and spread by the passage of the troops.

Intensive antilarva work was maintained in all of the larger centers of population and many smaller towns located on well traveled highways, which on account of their location might serve to spread the disease.

Preliminary studies in West Africa.—The West Africa Yellow Fever Commission was organized in 1925 for the purpose of studying the disease with a view to wiping it off the west coast of Africa. There were eight members on the scientific staff of the commission, including a director, a pathologist, an entomologist, a laboratory technician at headquarters, and three medical men and a sanitary inspector in the field. By the end of 1926 there were 10 members on the staff. Surveys were made in southwestern Nigeria, the Niger Delta region the Port Harcourt area in Nigeria and on the Gold Coast. Surveys included collection of data on population; the movement of people; previous histories of yellow fever; the amount of mosquito breeding, particularly *Aëdes ægypti;* studies of types of mosquito breeding places, living habits of the people, etc.

Results of the West African studies.—The results of the studies are inconclusive. *Aëdes ægypti* is present in sufficient numbers to serve as vector. Endemicity of the disease among the native population has not been established. Attempts to isolate the infective organism or to transmit the disease experimentally have been negative and the serological tests only slightly suggestive. Further studies, must be made before inaugurating control measures.

Experience in Destroying Sewage Screenings by Burning. Robert A. Appleton. *Engineering News-Record*, vol. 99, No. 13, September 29, 1927, pp. 500–502. (Abstract by Ella G. White.)

The sewage screening and screenings disposal plant at Long Beach Calif., is located near a popular bathing beach, which necessitated careful designing and requires special operating attention to avoid the creation of a nuisance. Details

of the plant design and operation are given by the author, who was formerly superintendent of the sewage works at Long Beach.

The old plant was remodeled in 1924 and an additional unit built, so as to insure continuous operation on a 24-hour basis. The combustion chamber and the ash pit of the new unit are lined with refractory material, and all walls and roofs insulated with the same. The total cost of the additional unit was $2,500. Gas is used for fuel and a temperature ranging between 1,600 and 1,850° F. is maintained. This temperature was found to be most satisfactory, as higher temperatures produced a clinkerage hard to dispose of. The rate of burning in the old unit was around 10.5 pounds of screenings per minute, but in the new unit a much greater amount is handled at less than half the fuel cost. The screenings removed from Long Beach sewage average 30.7 cubic feet per m. g. but during the canning season (fish and tomatoes), peak loads run as high as 45 cubic feet. The cost of burning the screenings is estimated at 4.025 cents per cubic foot, this to include fuel and labor.

Although the nearest houses are only 75 feet from the incinerator stack, no complaints have been made against the operation of the plant.

Operation of Sewage Works of Pontiac, Mich. James R. Pollock. *Engineering News-Record*, vol. 99, No. 11, September 15, 1927, pp. 434–435. (Abstract by Ella G. White.)

The sewage treatment works at Pontiac, Mich., consist of grit chambers, Imhoff tanks, sprinkling filters, secondary tanks, and sludge drying bed. Revolving filters of the English type are used successfully with a head of only 14 inches, which obviates the necessity of pumping. The plant was designed for a population of 52,000 and with an additional Imhoff unit would serve 68,000. The 60-inch outfall sewer is designed for an ultimate population of 215,000.

Pontiac is an industrial city, and oil from automobile factories and finely shredded hay from the packing houses cause special problems at the sewage disposal plant. An analysis of cost data shows the per capita cost of operation to have been $5.55 for 1925 and $6.00 for 1926. Excessive foaming in the Imhoff tanks in 1926 ran the water cost to $1,259.50 as against $218.10 for the previous year.

Sewage Treatment Tank. Bulletin No. 4, Bureau of Engineering, Florida State Board of Health. (Abstract by A. F. Allen.)

This 30-page pamphlet, recently issued, contains a general discussion of household septic tanks; sketches for a rectangular concrete septic tank with one partition wall; dimensions of tanks for schools, apartments, residences, and tourist camps, based upon the number of people served; and also the recently promulgated State board of health regulations for septic tanks and absorption beds. The sketches show a tank having inlet and outlet tee connections, the vertical legs of which are of equal length, and the partition walls pierced by a few small openings at midwater depth. The regulations specify a basis of 50 gallons per person tank capacity, with a minimum of 250 gallons for a tank for residential use, and a minimum length of drain line of 75 feet.

Iodization of Public Water Supplies for Prevention of Endemic Goiter. Robert Olesen. Reprint No. 1158 from *Public Health Reports*, May 20, 1927, pp. 1355–1367. (Abstract by S. D. Collins.)

The theory that goiter is due principally, if not solely, to a relative or absolute deficiency of iodine is now widely accepted. The administration of small amounts of iodine to prevent goiter is also widely accepted as good practice, but not widely practiced for several reasons, the chief of which is disagreement as to the method of distribution or administration of the iodine.

Goiter prevention and goiter treatment must be sharply distinguished. The minute doses of iodine suitable for prophylactic purposes have little, if any, effect

upon existing thyroid enlargements, the sole idea being to maintain the equilibrium of the normal thyroid. Treatment of goiter is a matter for a physician with special skill and experience in the diagnosis of different forms of goiter.

Numerous preparations, combinations, and methods have been proposed for general distribution of prophylactic doses of iodine, but water and salt are the most common vehicles used. Water containing 10 parts of sodium iodide per 1,000,000,000 parts of water is sufficient to prevent goiter, but a region is considered to be amply supplied if the water contains half this amount of iodine.

The objections to the use of iodized water as a means of preventing endemic goiter are summarized, but none are regarded as fundamental: (*a*) The cost is reasonable, being in the neighborhood of 1 cent per capita per year; (*b*) waste due to the large consumption of water for other than drinking purposes is no more applicable than in the case of purification of the whole water supply; (*c*) there appears to be little evidence of any undesirable chemical reaction between iodine and chlorine in the water; (*d*) the taste of the water is not changed; and (*e*) of perhaps greatest importance, the minute quantities of iodine available in iodized drinking water are not considered harmful to any type of goiter.

At present there appear to be only two places in the United States where iodization of drinking water is now practiced—Rochester, N. Y., and Anaconda, Mont. The health authorities of both of these cities claim that goiter is less prevalent than before prophylaxis was inaugurated, but no adequate data are available to prove the result, although there has been some decrease in the number of visible thyroids observed among school children in Rochester. As iodized salt is recommended in Rochester and iodine tablets are used by school children in Anaconda, the alleged reduction could not be attributed definitely to iodized drinking water.

Reexamination of certain groups of children in Derbyshire, England, after a short period of the use of iodized water and iodized tablets revealed an apparent increase in the prevalence of goiter, but the period was too short (about nine months) to afford an accurate appraisal of either method.

The author's conclusions are that there is considerable doubt as to the ability of iodized water to reduce the incidence of endemic goiter, and although this lack of convincing evidence appears to be the result of poorly controlled experiments rather than any inherent defect in the procedure itself, the iodization of public water supplies, in its present state of development, can not be recommended for widespread adoption.

New Methods for Control of Coagulation of Water Supplies. *Profilakticeskaja medicina*, vol. 6, No. 1, 1927, pp. 1–8 (Russian). Translation of abstract by F. Dorbeck in Zentralblatt fur die Gesamte Hygiene, vol. 15, No. 11–12, August 10, 1927, p. 492.

The best method for precipitation of suspended matter of water of the Neva consists in the addition of from 0.04 to 0.06 g. aluminum sulphate to 1 liter water. For proper control of coagulation, the aluminum sulphate must be periodically examined. The content of the pure chemical should be 93 per cent. The mixture of ferrous salts must not be more than 1 per cent, and must not be present at all with traces of arsenic. Following coagulation no coagulating ingredients should remain in the water. The water must be perfectly clear, without opalescence, and must show no precipitate in 6 liters after standing 24 hours.

For examination of the aluminum sulphate, the methods of Atack and of Hatfield are used, preferably the latter, as 0.1 or even 0.01 part per million of metallic aluminum can be detected. These methods may also be used for the determination of aluminum in water that has stood or been cooked in aluminum

vessels, since it was ascertained that one liter of water after standing 10 days in an aluminum cooking vessel contained 0.31 mg. of Al. and after boiling 0.44 mg. of Al. For the qualitative determination of Al. in water the Alizarin method of Atack is useful.

The Disappearance of Typhoid Bacteria in Water. N. L. Wibaut and Isebree Moens. *Verslag d. afdeel. Natuurkunde koninkl. akad. v. Wetensch*, vol. 36, No. 1, 1927, pp. 129–139 (Dutch). Translation of abstract by E. Reichenow in *Zentralblatt fur die Gesamte Hygiene*, vol. 15, No. 11–12, August 10, 1927, p. 486.

For a study of the reasons for the disappearance of typhoid bacilli in water, water samples from different sources were inoculated with typhoid organisms and stored under similar conditions. The types and numbers of protozoa occurring in the water were also observed. The typhoid bacilli disappeared from tap water, rain water, and water from a swimming pool in from 7 to 10 days and their disappearance corresponded with a marked increase of a bacteria-eating protozoa, *Oicomonas termo, Cercobodo alexeieffi, Cyclidium glaucoma.* With ground water the result was less marked. In one of the experiments the bacilli disappeared only after 4 weeks in spite of the presence of the same protozoa, in another they were not present after 13 days, while in water from the same source that had been freed from protozoa by filtration they remained 4 days longer. It is concluded that at present unknown factors other than bacteria-eating protozoa are also responsible for the disappearance of the typhoid organisms.

Irregularities in the Test for B. Coli in Water. Rudolph E. Thompson. *Jour. Bact.*, vol. 13, No. 3, March, 1927, pp. 209–221. (Abstract by C. T. Butterfield).

This paper deals with true positive presumptive tests which fail to confirm. It is believed that failure is due to production of lethal H-ion concentration during preliminary enrichment. Describes preparation of standard lactose broth buffered with dipotassium phosphate. Results of comparative tests made with this medium and the standard, unbuffered, indicate that failures due to a lethal H-ion concentration are largely eliminated. Results are given which show that failure to confirm due to this error is frequently encountered.

A review of the literature dealing with this and other irregularities of the presumptive test is given.

The New Filtration Plant at Ronceverte, W. Va. Anon. *American City*, vol. 37, No. 3, September, 1927, pp. 291–292. (Abstract by D. W. Evans.)

Ronceverte, W. Va., recently completed a modern filtration plant to purify water from Greenbriar River. It is capable of handling a half million gallons per day.

Equipment consists of an intake well, mixing basin, sedimentation basin, two quarter million gallon filters, clear well, duplicate pumping apparatus operated by electric motors and a half million gallon standpipe.

Alum is used for removal of turbidity and at times color. Soda ash is used occasionally when the alkalinity in the raw water gets low. Chlorine is dosed to the clear well.

One innovation here is the small tile-lined basins which receive the water as it passes from the filters to the clear well. Each filter has its own basin and it enables the operator to observe at all times the character of the water passing each filter.

Disinfection of Water Mains. Charles H. Eastwood. *Journal of American Water Works Assn.*, vol. 18, No. 1, July, 1927, pp. 114–116. (Abstract by J. B. Harrington.)

This paper discusses somewhat in detail two methods for disinfecting new water mains. The first is that of introducing a small amount of calcium hypochlorite into each section of pipe as it is laid. The second method is by the use of

liquid chlorine. The section of main to be sterilized is tapped nearest the end at which the water enters and a connection between the auxiliary tank valve on the tank of chlorine and the main is made. Water is then turned into the section to be sterilized at the minimum possible pressure and the chlorine dosage is regulated to get a reaction to the orthotolidin test of an orange red color. In both instances the mains should be flushed after disinfection.

The Fort Pierce Filter Plant. F. P. Larmon. *Journal of American Water Works Assn.*, vol. 18, No. 1, July, 1927, pp. 112–113. (Abstract by J. B. Harrington.)

This is a description of the new Fort Pierce filter plant utilizing as a source of supply a highly colored water. The raw water is pumped into an aerating device consisting of 12-inch pipes having one-half-inch holes drilled in the top. From the aerator the water flows into a collecting basin where it is treated with alum and lime. It then passes through two settling basins and three 1 m. g. d. filters into a ½ m. g. clear well.

Operation figures show that it costs 9.5 cents per thousand gallons to pump and treat the water and 9.4 cents per thousand for distribution, billing, collecting, and supervising. A check up on meters and repairing leaks in lines and services increased the revenue $700 per month.

The Bacteria Found in the Filtered Water in the Case of the Filtration With the Preceding Chlorination. T. Kotoku. *Journal of the Public Health Assn. of Japan*, vol. 3, No. 6, June, 1927, p. 12. (Abstract by Fred Almquist.)

Experiments in the city of Osaka frequently showed higher bacterial scores after filtration on water that was first chlorinated than on water filtered but not chlorinated.

The author says that this was supposed to be due to incomplete formation of slime on the sand when chlorine is used, consequently allowing percolation of bacteria. Species of bacteria in raw water and in chlorinated and filtered water were isolated and found to be of different types. Thus the bacteria in the filtered water after chlorination were a new type growing in the sand layer of the filter.

DEATHS DURING WEEK ENDED DECEMBER 10, 1927

Summary of information received by telegraph from industrial insurance companies for the week ended December 10, 1927, and corresponding week of 1926. (From the Weekly Health Index, December 14, 1927, issued by the Bureau of the Census, Department of Commerce)

	Week ended Dec. 10, 1927	Corresponding week 1926
Policies in force	69, 603, 581	66, 332, 374
Number of death claims	12, 217	12, 486
Death claims per 1,000 policies in force, annual rate	9. 2	9. 8

Deaths from all causes in certain large cities of the United States during the week ended December 10, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, December 14, 1927, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Dec. 10, 1927		Annual death rate per 1,000 corresponding week 1926	Deaths under 1 year		Infant mortality rate, week ended Dec. 10, 1927 [2]
	Total deaths	Death rate [1]		Week ended Dec. 10, 1927	Corresponding week 1926	
Total (67 cities)	6,823	12.1	[3] 12.8	643	[3] 728	[4] 54
Akron	36			4	4	43
Albany [5]	47	20.4	14.9	1	4	21
Atlanta	73			4	9	
White	38			3	5	
Colored	35	(6)		1	4	
Baltimore [5]	216	13.8	13.9	25	18	79
White	162		13.0	14	10	56
Colore	54	(6)	19.3	11	8	172
Birmingham	64	15.5	12.9	8	4	
White	36		7.3	5	2	
Colored	28	(6)	21.4	3	2	
Boston	215	14.1	15.0	24	31	67
Bridgport	26			5	4	85
Buffalo	122	11.6	11.4	17	12	72
Cambridge	20	8.4	11.1	1	3	18
Camden	26	10.2	13.5	6	5	103
Canton	29	13.4	5.7	3	0	72
Chicago [5]	680	11.4	11.2	54	69	47
Cincinnati	158	20.0	19.3	14	15	85
Cleveland	177	9.4	9.8	21	19	56
Columbus	73	13.1	15.0	8	8	74
Dallas	43	10.7	11.1	5	7	
White	33		8.6	4	5	
Colored	10	(6)	27.3	1	2	
Dayton	49	11.6	10.6	2	4	33
Denver	89	16.0	15.2	10	7	
Des Moines	29	10.1	10.7	1	2	18
Detroit	248	9.7	11.7	30	38	46
Duluth	17	7.7	9.7	0	1	0
El Paso	24	11.0	12.9	2	4	
Erie	22			3	1	64
Fall River [5]	21	8.2	10.3	2	4	34
Flint	31	11.3	11.5	8	4	126
Grand Rapids	38	12.5	14.0	4	6	59
Houston	76			11	4	
White	45			5	4	
Colored	31	(6)		6	0	
Indianapolis	94	13.1	15.2	6	8	46
White	83		15.5	6	8	52
Colored	11	(6)	13.2	0	0	0
Jersey City	62	10.0	11.3	4	6	30
Kansas City, Kans	33	14.7	11.6	3	4	63
White	24		10.8	1	3	25
Colored	9	(6)	15.3	2	1	290
Kansas City, Mo	89	12.1	13.5	6	9	
Knoxville	35	17.9		6		
White	32			6		
Colored	3	(6)		0		
Los Angeles	310			33	22	94
Louisville	70	11.4	15.4	1	4	8
White	55		13.7	1	3	9
Colored	15	(6)	25.3	0	1	0
Lowell	17	8.0	10.4	4	7	85
Lynn	23	11.4	13.5	1	4	28
Memphis	70	20.4	15.6	7	4	
White	41		11.9	3	3	
Colored	29	(6)	22.3	4	1	
Milwaukee	106	10.4	12.2	14	16	64
Minneapolis	76	9.0	11.9	6	10	34

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Data for 66 cities.
[4] Data for 63 cities.
[5] Deaths for week ended Friday, Dec. 9, 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; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

Deaths from all causes in certain large cities of the United States during the week ended December 10, 1927, infant mortality, annual death rate, and comparison with corresponding week of 1926. (From the Weekly Health Index, December 14, 1927, issued by the Bureau of the Census, Department of Commerce)—Continued

City	Week ended Dec. 10, 1927		Annual death rate per 1,000 corresponding week 1926	Deaths under 1 year		Infant mortality rate, week ended Dec. 10, 1927
	Total deaths	Death rate		Week ended Dec. 10, 1927	Corresponding week 1926	
Nashville	50	18.9	16.0	3	5	
White	26		10.6	3	3	
Colored	24	(6)	29.4	0	2	
New Bedford	26	11.3	11.8	2	5	38
New Haven	47	13.2	10.6	5	4	70
New Orleans	160	19.7	14.8	17	11	
White	99		11.1	7	6	
Colored	61	(6)	25.3	10	5	
New York	1,306	11.4	13.1	109	128	46
Bronx Borough	170	9.6	9.7	9	14	29
Brooklyn Borough	462	10.6	11.4	41	39	43
Manhattan Borough	511	14.7	18.1	47	56	56
Queens Borough	130	8.4	8.8	11	16	48
Richmond Borough	33	11.7	17.2	1	3	19
Newark, N. J	96	11.0	12.0	14	13	70
Oakland	64	12.5	12.2	7	9	83
Oklahoma City	38			5	3	
Omaha	43	10.2	11.9	4	3	45
Paterson	26	9.4	11.3	3	5	54
Philadelphia	415	10.6	13.5	32	62	43
Pittsburgh	187	15.2	12.1	23	25	80
Portland, Oreg	76			7	6	75
Providence	62	11.5	10.8	5	12	43
Richmond	49	13.3	16.0	6	6	78
White	28		12.1	1	3	20
Colored	21	(6)	25.4	5	3	183
Rochester	70	11.3	15.6	11	9	93
St. Louis	207	12.9	14.9	16	17	
St. Paul	64	13.3	11.3	4	5	37
Salt Lake City [5]	37	14.2	13.3	6	6	96
San Antonio	61	15.1	14.0	15	7	
San Diego	46	20.9	12.8	2	3	44
San Francisco	159	14.4	14.4	8	7	50
Schenectady	25	14.0	12.9	5	1	150
Seattle	59			3	7	32
Somerville	26	13.3	11.4	1	2	29
Spokane	24	11.5	12.4	1	4	24
Springfield, Mass	30	10.6	7.9	2	3	32
Syracuse	37	9.8	12.4	3	4	39
Tacoma	28	13.6	13.3	2	2	47
Toledo	83	14.2	11.5	10	7	95
Trenton	18	6.9	13.6	0	4	0
Utica	38	19.2	18.8	4	1	93
Washington, D. C	127	12.3	13.4	5	15	29
White	80		11.1	5	12	43
Colored	47	(6)	20.3	0	3	0
Waterbury	17			6	1	140
Wilmington, Del	29	12.0	12.6	0	0	0
Worcester	57	15.2	11.3	9	4	109
Yonkers	18	7.9	4.9	1	0	23
Youngstown	24	7.4	9.5	4	2	53

[5] Deaths for week ended Friday, Dec. 9, 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; Houston, 25; Indianapolis, 11; Kansas City, Kan., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; and Richmond, 32.

PREVALENCE OF DISEASE

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

UNITED STATES

CURRENT WEEKLY STATE REPORTS

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

Reports for Weeks Ended December 18, 1926, and December 17, 1927

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 18, 1926, and December 17, 1927

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Dec. 18, 1926	Week ended Dec. 17, 1927	Week ended Dec. 18, 1926	Week ended Dec. 17, 1927	Week ended Dec. 18, 1926	Week ended Dec. 17, 1927	Week ended Dec. 18, 1926	Week ended Dec. 17, 1927
New England States:								
Maine	5	4	3	14	198	35	0	0
Vermont		4			111	3	0	0
Massachusetts	108	116	8	9	88	579	2	2
Rhode Island	8	20		2	1	4	0	0
Connecticut	28	59	17	9	67	43	2	0
Middle Atlantic States:								
New York	299	357	[1] 87	[1] 12	981	337	6	3
New Jersey	117	172	25	9	30	59	3	0
Pennsylvania	160	188			573	471	1	1
East North Central States:								
Ohio		117		7		74		1
Indiana	67	45	60	26	48	31	0	0
Illinois	115	188	22	28	625	25	2	12
Michigan	143	94		4	114	263	0	1
Wisconsin	36	50	57	64	438	104	3	4
West North Central States:								
Minnesota	33	25	1		151	4	0	1
Iowa [2]	26	12			48	26	0	0
Missouri	71	[4] 43	24	[4] 7	121	[4] 21	1	[4] 3
North Dakota	7				361		0	
South Dakota	1	1		4	61	39	2	2
Nebraska	7	20		4	8	9	0	0
Kansas	13	35	6	7	67	29	2	3
South Atlantic States:								
Delaware	2	4		4		1	0	0
Maryland [2]	58	30	25	24	22	78	1	1
District of Columbia	25		2				0	
West Virginia	55	31	59	14	75	34	0	1
North Carolina	79	84			91	1,344	0	0
South Carolina	33	49	544	670	3	473	0	0
Georgia	31	33	61	154	21	51	0	0
Florida	42	19	1	11	9	8	0	1
East South Central States:								
Kentucky		14				34		0
Tennessee	24	37	55	65	26	217	0	0
Alabama	49	60	49	130	8	142	2	0
Mississippi	22	33						
West South Central States:								
Arkansas	13	16	87	81	2	27	0	0
Louisiana	25	23	13	15		15	0	1
Oklahoma [3]	24	75	106	104	35	79	2	3
Texas	45	75	269	92		18	0	2
Mountain States:								
Montana	7				265	1	0	0
Idaho	1	1			35		2	0
Wyoming	6	1			28	9	0	5
Colorado	21	26	2		28	28	1	2
New Mexico	7	8			21	16	0	0
Arizona	7	23			16	1	1	4
Utah [3]	5	10			303		0	0
Pacific States:								
Washington	33	11			117	132	1	1
Oregon	35	18	22	24	41	23	1	2
California	163	147	25	25	824	46	1	2

[1] New York City only. [2] Week ended Friday. [3] Exclusive of Tulsa. [4] Exclusive of Kansas City.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended December 18, 1926, and December 17, 1927—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Dec. 18, 1926	Week ended Dec. 17, 1927	Week ended Dec. 18, 1926	Week ended Dec. 17, 1927	Week ended Dec. 18, 1926	Week ended Dec. 17, 1927	Week ended Dec. 18, 1926	Week ended Dec. 17, 1927
New England States:								
Maine	0	2	47	51	0	0	3	2
Vermont	0	0	15	5	0	0	1	0
Massachusetts	4	11	327	310	0	0	35	2
Rhode Island	0	1	13	35	0	0	0	0
Connecticut	1	2	77	70	0	0	1	1
Middle Atlantic States:								
New York	5	6	435	462	16	6	43	21
New Jersey	0	2	150	144	0	0	10	6
Pennsylvania	1	6	411	426	0	2	23	31
East North Central States:								
Ohio		6		222		6		26
Indiana	1	3	186	77	176	76	7	7
Illinois	0	2	323	283	9	15	19	15
Michigan	0	2	310	224	13	27	8	5
Wisconsin	0	0	113	153	13	19	1	1
West North Central States:								
Minnesota	0	0	247	121	4	4	2	4
Iowa [2]	0	8	64	96	11	58	0	1
Missouri	0	[4] 0	108	[4] 88	3	[4] 45	17	[4] 3
North Dakota	0		54		1		1	
South Dakota	0	0	41	38	5	11	2	0
Nebraska	1	2	47	46	13	17	5	1
Kansas	0	1	79	88	25	78	5	7
South Atlantic States:								
Delaware	0	0	15	5	0	0	0	1
Maryland [3]	1	2	61	35	0	0	13	14
District of Columbia	0		19		0		0	
West Virginia	0	3	73	79	6	48	9	55
North Carolina	0	0	51	62	73	22	6	2
South Carolina	1	3	11	7	7	2	16	14
Georgia	0	0	20	18	61	0	7	11
Florida	0	0	13	18	49	1	10	1
East South Central States:								
Kentucky		4		42		12		16
Tennessee	0	0	34	42	16	4	24	10
Alabama	0	4	25	26	17	2	22	31
Mississippi	0	1	29	12	6	0	5	6
West South Central States:								
Arkansas	0	1	19	11	3	1	12	9
Louisiana	0	0	31	17	1	13	13	10
Oklahoma [3]	1	1	25	56	16	147	17	26
Texas	0	5	29	59	24	18	4	8
Mountain States:								
Montana	0	0	53	22	55	29	3	1
Idaho	1	1	41	13	0	0	0	0
Wyoming	0	0	29	37	0	4	2	0
Colorado	0	1	110	51	13	6	1	1
New Mexico	0	0	37	16	0	1	4	12
Arizona	0	0	6	2	0	0	1	2
Utah [3]	0	0	17	7	0	29	1	0
Pacific States:								
Washington	0	10	82	52	24	53	3	4
Oregon	0	10	46	22	18	29	3	6
California	3	22	262	156	4	26	13	5

[2] Week ended Friday. [3] Exclusive of Tulsa. [4] Exclusive of Kansas City.

Reports for Week Ended December 10, 1927

DIPHTHERIA	Cases
District of Columbia	20
Kentucky	15

MEASLES	Cases
District of Columbia	4
Kentucky	37
North Dakota	1

MENINGOCOCCUS MENINGITIS	Cases
Kentucky	2
North Dakota	6

POLIOMYELITIS	Cases
Kentucky	3

SCARLET FEVER	Cases
District of Columbia	31
Kentucky	43
North Dakota	48

SMALLPOX	Cases
Kentucky	8
North Dakota	1

TYPHOID FEVER	Cases
North Dakota	2

Reports for Week Ended December 3, 1927

DIPHTHERIA	Cases
District of Columbia	29
North Dakota	6
MEASLES	
District of Columbia	1
North Dakota	15
MENINGOCOCCUS MENINGITIS	
District of Columbia	1

SCARLET FEVER	Cases
District of Columbia	19
North Dakota	54
SMALLPOX	
North Dakota	7
TYPHOID FEVER	
District of Columbia	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	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
November, 1927										
Arizona		74			57		1	19	0	9
Massachusetts	10	542	37		1,221		146	968	1	39
New Hampshire	0	15	62				5	37	0	1
New Jersey	7	747	42	2	212		19	477	0	41
North Carolina	1	615			2,479		3	520	90	64
North Dakota	0	16	1		20		3	195	35	6
Tennessee	1	247	192	112	386	24	18	223	19	128
Vermont	0	10			22		9	47	0	0

November, 1927

	Cases
Anthrax:	
Massachusetts	1
Chicken pox:	
Arizona	40
Massachusetts	958
New Jersey	738
North Carolina	351
North Dakota	136
Tennessee	128
Vermont	205
Dysentery:	
Tennessee	4
German measles:	
Massachusetts	57
New Jersey	44
North Carolina	6
Lead poisoning:	
Massachusetts	4
New Jersey	1
Lethargic encephalitis:	
Massachusetts	6
Tennessee	1
Mumps:	
Arizona	4
Massachusetts	402
North Dakota	8
Tennessee	22
Vermont	45

	Cases
Ophthalmia neonatorum:	
Massachusetts	161
New Jersey	2
Paratyphoid fever:	
Arizona	1
New Jersey	1
Rabies in man:	
New Jersey	1
Septic sore throat:	
Massachusetts	9
North Carolina	13
Tetanus:	
Massachusetts	3
Trachoma:	
Arizona	494
Massachusetts	3
New Jersey	1
North Dakota	3
Trichinosis:	
New Jersey	2
Whooping cough:	
Arizona	29
Massachusetts	606
New Jersey	630
North Carolina	448
North Dakota	10
Tennessee	59
Vermont	154

Number of cases of certain communicable diseases reported for the month of September, 1927, by State health officers

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	8	253	91	28	96	11	358	274	84
Arizona	4	4	5	4	1	0	57	29	9
Arkansas	48	52	33	150	38	1	[1] 71	230	34
California	218	330	135	200	295	33	630	79	435
Colorado	19	104	22	5	83	5	77	61	61
Connecticut	33	78	27	38	64	0	134	23	180
Delaware		7	4	2	8	0	9	9	10
District of Columbia	7	46	4		38	1	76	11	16
Florida	2	74	10	11	24	13	36	29	20
Georgia	11	181	57	15	72	10	49	220	46
Idaho	4	6	4	18	18	23	[1] 9	10	14
Illinois	204	314	75	154	400	52	1,391	251	904
Indiana	25	60	26	8	161	69	139	116	86
Iowa	11	80	16	0	48	32	54	15	29
Kansas	53	152	91	22	201	10	153	104	205
Kentucky [2]									
Louisiana	1	140	33	8	21	16	[1] 189	103	16
Maine	5	14	27	6	67	0	26	20	68
Maryland	45	117	35	17	64	0	256	115	174
Massachusetts	78	202	151	116	432	0	476	84	397
Michigan	95	229	55	98	345	53	305	68	563
Minnesota	57	177	17		230	2	286	25	99
Mississippi	167	192	362	146	98	11	200	136	780
Missouri	17	144	23	27	130	29	182	138	129
Montana	22	11	10		35	27	47	21	17
Nebraska	10	14	4	14	60	9	22	18	10
Nevada [3]									
New Hampshire		8			17			3	
New Jersey	89	330	25		170	6	399	73	458
New Mexico [4]									
New York	217	678	164	305	451	26	1,467	300	1,032
North Carolina	28	455	467		257	37		187	508
North Dakota	1	20	9		66	4	13	7	10
Ohio	162	420	56	161	437	34	545	206	359
Oklahoma [5]	7	274	54	8	87	55	90	385	80
Oregon	19	22	48	22	39	40	39	26	23
Pennsylvania [3]									
Rhode Island	3	31		5	56	0	34	11	14
South Carolina	33	403	169		66	12	137	356	235
South Dakota	4	12	5	7	62	15	6	18	49
Tennessee	50	163	142	10	155	17	218	425	76
Texas [3]									
Utah [3]									
Vermont	40	8	39	62	31	0	16	10	77
Virginia	77	194	71		220	1	[1] 47	195	320
Washington	72	63	112	75	71	37	169	41	52
West Virginia	28	75	22		167	28	29	175	91
Wisconsin	146	145	373	106	232	50	105	54	510
Wyoming	8	5	13	6	19	2	1	6	7

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

Case rates per 1,000 population (annual basis) for the month of September, 1927

State	Chicken pox	Diphtheria	Measles	Mumps	Scarlet fever	Smallpox	Tuberculosis	Typhoid fever	Whooping cough
Alabama	0.04	1.21	0.43	0.13	0.46	0.05	1.71	1.31	0.40
Arizona	.11	.11	.13	.11	.06	.00	1.51	.77	.24
Arkansas	.30	.33	.21	.95	.24	.01	[1].45	1.46	.22
California	.60	.93	.37	.55	.81	.09	1.73	.22	1.19
Colorado	.22	1.18	.25	.06	.94	.06	.87	.69	.69
Connecticut	.25	.58	.20	.28	.48	.00	1.00	.17	1.34
Delaware	----	.35	.20	.10	.40	.00	.45	.45	.50
District of Columbia	.16	1.04	.09	----	.86	.02	1.71	.25	.36
Florida	.02	.66	.09	.10	.21	.12	.32	.26	.18
Georgia	.04	.69	.22	.06	.28	.04	.19	.84	.18
Idaho	.09	.14	.09	.41	.41	.52	[1].21	.23	.32
Illinois	.34	.52	.13	.26	.67	.09	2.32	.42	1.51
Indiana	.10	.23	.10	.03	.62	.27	.54	.45	.33
Iowa	.06	.40	.08	.05	.24	.16	.27	.08	.15
Kansas	.35	1.01	.61	.15	1.34	.07	1.02	.69	1.36
Kentucky [2]	----	----	----	----	----	----	----	----	----
Louisiana	.01	.88	.21	.05	.13	.10	[1]1.19	.65	.10
Maine	.08	.21	.41	.09	1.03	.00	.40	.31	1.04
Maryland	.34	.89	.27	.13	.49	.00	1.95	.88	1.33
Massachusetts	.22	.84	.43	.33	1.24	.00	1.37	.24	1.14
Michigan	.26	.62	.15	.27	.93	.14	.83	.18	1.53
Minnesota	.26	.80	.08	----	1.04	.01	1.34	.11	.45
Mississippi	1.13	1.30	2.46	.99	.67	.07	1.97	.92	5.30
Missouri	.06	.50	.08	.09	.45	.10	.63	.48	.45
Montana	.37	.19	.17	----	.60	.46	.80	.36	.29
Nebraska	.09	.12	.03	.12	.52	.08	.19	.16	.09
Nevada [3]	----	----	----	----	----	----	----	----	----
New Hampshire	----	.21	----	----	.45	----	----	.08	----
New Jersey	.29	1.07	.68	----	.58	6	1.29	.24	1.49
New Mexico [4]	----	----	----	----	----	----	----	----	----
New York	.23	.72	.17	.32	.48	.03	1.56	.32	1.10
North Carolina	.12	1.91	1.96	----	1.06	.16	----	.79	2.13
North Dakota	.02	.38	.17	----	1.25	.08	.25	.13	.19
Ohio	.29	.76	.10	.29	.79	.06	.99	.37	.65
Oklahoma [5]	.04	1.57	.31	.05	.50	.32	.52	2.21	.46
Oregon	.26	.30	.66	.30	.53	.55	.53	.36	.31
Pennsylvania	----	----	----	----	----	----	----	----	----
Rhode Island	.05	.54	----	.09	.97	.00	.59	.19	.24
South Carolina	.22	2.66	1.11	----	.45	.08	.90	2.35	1.55
South Dakota	.07	.21	.09	.12	1.08	.26	.10	.31	.86
Tennessee	.24	.80	.70	.05	.76	.08	1.07	2.08	.37
Texas [3]	----	----	----	----	----	----	----	----	----
Utah [3]	----	----	----	----	----	----	----	----	----
Vermont	1.38	.28	1.35	2.14	1.07	.00	.55	.35	2.66
Virginia	.37	.93	.34	----	1.05	.00	[1].70	.93	1.53
Washington	.56	.49	.87	.58	.55	.29	1.32	.32	.41
West Virginia	.19	.54	.16	----	1.20	.20	.21	1.26	.65
Wisconsin	.61	.60	1.56	.44	.97	.21	.44	.23	2.13
Wyoming	.40	.25	.66	.30	.96	.10	.05	.30	.35

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

PLAGUE PREVENTION WORK IN THE UNITED STATES

Seattle, Wash.—The reports of rat-trapping operations of the United States quarantine station at Seattle for the period September 1 to November 30, 1927, show a total of 6,581 rodents taken and 1,685 examined. None were found plague infected during the period.

Los Angeles, Calif.—The rodent division of the Los Angeles Board of Health reports 7,534 rodents collected and 4,645 examined during the eight weeks from October 9 to December 3, 1927. None were found plague infected.

San Francisco, Calif.—The weekly reports of plague suppressive measures in California during the period September 25 to November 26, 1927, show a total of 7,211 rodents received and 6,150 examined. No plague infection was reported during this period. The last case of human plague occurred in July, 1927, in Contra Costa county.

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 99 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 30,610,000. The estimated population of the 93 cities reporting deaths is more than 29,940,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended December 3, 1927, and December 4, 1926

	1927	1926	Estimated expectancy
Cases reported			
Diphtheria:			
43 States	2,879	2,587	----------
99 cities	1,369	1,300	1,298
Measles:			
41 States	3,570	5,378	----------
99 cities	1,123	1,031	----------
Poliomyelitis:			
43 States	173	34	----------
Scarlet fever:			
43 States	3,785	4,222	----------
99 cities	1,085	1,404	1,067
Smallpox:			
43 States	586	619	----------
99 cities	100	83	40
Typhoid fever:			
43 States	423	532	----------
99 cities	56	61	71
Deaths reported			
Influenza and pneumonia:			
93 cities	728	779	----------
Smallpox:			
93 cities	0	0	----------

City reports for week ended December 3, 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 the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding 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 non-epidemic 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	3	2	2	0	0	0	2	
New Hampshire:									
Concord	22,546	0	0	0	0	0	0	0	0
Manchester	83,097	0	4	0	0	2	0	0	0
Nashua	29,723	-------	0	0	0	0	2	-------	0
Vermont:									
Barre	10,008	0	0	0	0	0	0	0	0
Burlington	24,089	0	1	0	0	0	2	0	0
Massachusetts:									
Boston	779,620	107	54	26	4	0	188	3	18
Fall River	128,993	2	5	8	0	0	0	0	4
Springfield	142,065	11	4	7	0	0	0	6	1
Worcester	190,757	13	5	19	1	0	1	55	3
Rhode Island:									
Pawtucket	69,760	3	2	7	0	0	0	3	3
Providence	267,918	0	10	27	0	0	2	22	3
Connecticut:									
Bridgeport	(1)	1	10	7	0	1	0	0	3
Hartford	160,197	-------	8	-------	-------	-------	-------	-------	-------
New Haven	178,927	11	4	4	0	1	41	8	6
MIDDLE ATLANTIC									
New York:									
Buffalo	538,016	66	24	37	-------	1	43	30	9
New York	5,873,356	164	186	319	10	11	64	15	151
Rochester	316,786	7	10	12	-------	0	2	1	4
Syracuse	182,003	29	10	1	-------	0	17	3	0
New Jersey:									
Camden	128,642	4	7	9	0	0	0	0	8
Newark	452,513	35	13	26	3	0	16	17	7
Trenton	132,020	0	6	0	1	0	5	0	6
Pennsylvania:									
Philadelphia	1,979,364	184	85	42	-------	10	6	83	44
Pittsburgh	631,563	53	29	60	-------	0	208	33	19
Reading	112,707	20	5	4	-------	0	4	0	1
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	409,333	18	19	11	0	2	7	0	14
Cleveland	936,485	94	57	107	1	2	21	91	15
Columbus	279,836	15	13	12	1	1	0	1	3
Toledo	287,380	112	17	1	2	2	20	4	5
Indiana:									
Fort Wayne	97,846	1	5	2	0	0	0	0	2
Indianapolis	358,819	20	13	4	0	0	7	29	12
South Bend	80,091	0	2	1	0	0	0	0	2
Terre Haute	71,071	2	3	2	0	0	0	0	1
Illinois:									
Chicago	2,995,239	116	122	114	16	4	7	39	53
Springfield	63,923	0	3	1	0	0	0	4	4

[1] No estimate made.

City reports for week ended December 3, 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	Case reported	Deaths reported			
EAST NORTH CENTRAL—Continued									
Michigan:									
Detroit	1,245,824	56	82	56	4	2	107	37	27
Flint	130,316	13	14	3	0	0	2	32	3
Grand Rapids	153,698	3	7	1	0	0	19	5	1
Wisconsin:									
Kenosha	50,891	15	2	1	0	0	2	3	0
Milwaukee	509,192	87	31	11	2	2	7	18	13
Racine	67,707	16	3	3	0	0	3	1	2
Superior	39,671	6	2	1	0	0	0	0	2
WEST NORTH CENTRAL									
Minnesota:									
Duluth	110,502	0	2	0	0	0	1	0	2
Minneapolis	426,435	91	32	22	0	0	1	5	8
St. Paul	246,001	21	20	4	0	2	2	37	12
Iowa:									
Davenport	52,469	0	2	1	0	-------	1	0	-------
Des Moines	141,441	0	7	0	0	-------	0	0	-------
Sioux City	76,411	2	3	0	0	-------	1	21	-------
Waterloo	36,771	17	0	0	0	-------	0	0	-------
Missouri:									
Kansas City	367,481	28	13	12	0	0	0	29	7
St. Joseph	78,342	8	3	0	0	0	0	3	0
St. Louis	821,543	21	53	46	0	0	7	12	-------
North Dakota:									
Fargo	26,403	21	1	0	0	0	0	3	0
Grand Forks	14,811	5	0	0	0	-------	0	0	-------
South Dakota:									
Aberdeen	15,036	0	0	0	0	-------	1	0	-------
Sioux Falls	30,127	2	1	0	0	-------	1	0	-------
Nebraska:									
Lincoln	60,941	13	2	2	0	0	1	17	0
Omaha	211,768	26	7	3	0	0	0	0	2
Kansas:									
Topeka	55,411	22	3	3	0	0	0	0	0
Wichita	88,367	13	8	0	0	0	0	0	3
SOUTH ATLANTIC									
Delaware:									
Wilmington	122,049	0	3	3	0	0	0	1	4
Maryland:									
Baltimore	796,296	127	39	29	11	1	46	1	30
Cumberland	33,741	0	2	1	2	0	0	0	2
Frederick	12,035	0	0	0	0	0	0	0	0
District of Columbia:									
Washington	497,906	32	24	29	0	0	1	0	14
Virginia:									
Lynchburg	30,335	4	2	9	0	0	1	0	1
Norfolk	(1)	-------	4	-------	-------	-------	-------	-------	-------
Richmond	186,403	2	17	21	0	0	6	0	3
Roanoke	58,208	0	5	1	0	1	0	0	4
West Virginia:									
Charleston	49,019	0	3	0	6	1	0	0	3
Wheeling	56,208	16	4	0	0	0	1	0	4
North Carolina:									
Raleigh	30,371	9	2	1	0	0	0	0	0
Wilmington	37,061	4	1	0	0	1	65	0	0
Winston-Salem	69,031	1	3	6	0	1	0	18	1
South Carolina:									
Charleston	73,125	0	2	1	39	0	0	0	2
Columbia	41,225	6	1	1	0	1	14	7	3
Greenville	27,311	2	1	0	0	0	8	6	1
Georgia:									
Atlanta	(1)	6	6	11	39	2	1	1	7
Brunswick	16,809	0	0	0	0	0	0	2	0
Savannah	93,134	0	3	4	14	0	26	0	0
Florida:									
Miami	69,754	2	-------	7	0	0	1	2	1
St. Petersburg	23,847	-------	0	-------	-------	0	-------	-------	1
Tampa	94,743	2	2	2	2	0	0	0	2

[1] No estimate made.

City reports for week ended December 3, 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			
EAST SOUTH CENTRAL									
Kentucky:									
Covington	58,309	0	3	0	0	0	0	0	6
Lexington	46,895	1	-------	1	0	0	0	0	1
Louisville	305,935	2	10	6	4	0	0	2	12
Tennessee:									
Memphis	174,533	3	9	2	0	5	41	3	8
Nashville	136,220	13	5	3	0	1	0	1	8
Alabama:									
Birmingham	205,670	16	7	14	11	1	0	5	5
Mobile	65,955	0	2	0	2	2	0	0	0
Montgomery	46,481	4	2	8	0	0	3	0	0
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	31,643	0	2	4	0	-------	0	4	-------
Little Rock	74,216	0	2	1	0	0	5	0	1
Louisiana:									
New Orleans	414,493	2	12	11	9	7	1	0	14
Shreveport	57,857	3	1	2	0	0	18	0	1
Oklahoma:									
Oklahoma City	(1)	5	3	10	9	0	1	0	7
Tulsa	124,478	4	6	4	0	-------	0	3	-------
Texas:									
Dallas	194,450	5	15	27	0	2	0	0	3
Galveston	48,375	0	1	1	0	0	0	0	1
Houston	164,954	0	6	12	0	1	0	1	5
San Antonio	198,069	1	4	7	0	0	5	1	0
MOUNTAIN									
Montana:									
Billings	17,971	2	0	0	0	0	0	0	0
Great Falls	29,883	4	1	0	0	1	0	0	0
Helena	12,037	15	0	0	0	0	0	0	0
Missoula	12,668	4	0	0	0	0	0	0	0
Idaho:									
Boise	23,042	1	0	0	0	0	0	4	0
Colorado:									
Denver	280,911	44	14	7	-------	2	3	17	4
Pueblo	43,787	26	4	1	0	0	0	0	1
New Mexico:									
Albuquerque	21,000	7	1	1	0	0	0	0	1
Utah:									
Salt Lake City	130,948	43	4	8	0	0	0	0	1
Nevada:									
Reno	12,665	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	(1)	33	8	31	0	-------	78	8	-------
Spokane	108,897	34	4	0	0	-------	0	0	-------
Tacoma	104,455	2	3	3	0	0	2	0	4
Oregon:									
Portland	282,383	38	12	7	4	0	3	4	9
California:									
Los Angeles	(1)	20	45	57	19	1	0	8	22
Sacramento	72,260	7	3	3	0	0	2	0	1
San Francisco	557,530	59	17	5	3	3	5	14	3

[1] No estimate made.

City reports for week ended December 3, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	2	3	0	0	0	1	1	0	0	14	15
New Hampshire:											
Concord	0	0	0	0	0	0	0	0	0	0	10
Manchester	2	3	0	0	0	1	0	0	0	0	
Nashua	1	0	0	0	0	0	0	0	0		12
Vermont:											
Barre	0	0	0	0	0	1	0	0	0	0	4
Burlington	1	0	0	0	0	0	0	0	0	1	4
Massachusetts:											
Boston	49	62	0	0	0	8	2	2	0	24	203
Fall River	2	6	0	0	0	5	1	0	0	0	38
Springfield	6	7	0	0	0	1	1	1	0	17	20
Worcester	12	6	0	0	0	1	0	0	0	2	36
Rhode Island:											
Pawtucket	1	1	0	0	0	0	0	0	0	0	22
Providence	7	21	0	0	0	4	1	0	0	6	62
Connecticut:											
Bridgeport	8	1	0	0	0	1	0	0	0	0	28
Hartford	5		0				0				
New Haven	7	7	0	0	0	3	1	0	0	20	62
MIDDLE ATLANTIC											
New York:											
Buffalo	20	34	0	0	0	13	1	1	1	13	133
New York	141	135	0	0	0	73	18	16	4	170	1,302
Rochester	10	3	0	0	0	1	1	0	0	2	75
Syracuse	11	8	0	0	0	4	1	0	0	7	42
New Jersey:											
Camden	4	2	1	0	0	0	0	0	0	0	31
Newark	16	15	0	0	0	5	1	1	0	40	94
Trenton	2	1	0	0	0	2	0	0	0	1	47
Pennsylvania:											
Philadelphia	71	82	0	0	0	36	4	2	0	31	537
Pittsburgh	37	29	0	0	0	10	1	0	0	16	169
Reading	1	5	0	0	0	4	0	0	0	9	29
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	15	11	1	0	0	7	1	1	0	1	152
Cleveland	33	14	0	0	0	13	2	1	0	33	163
Columbus	11	21	0	0	0	1	0	2	1	7	66
Toledo	14	6	1	0	0	5	1	2	1	4	67
Indiana:											
Fort Wayne	2	6	0	2	0	0	0	0	0	0	25
Indianapolis	13	18	4	2	0	5	1	0	1	3	96
South Bend	4	0	0	0	0	0	0	1	0	0	9
Terre Haute	4	1	0	9	0	1	0	0	0	0	14
Illinois:											
Chicago	112	97	0	1	0	47	4	1	2	76	719
Springfield	2	3	0	0	0	0	0	0	0	0	24
Michigan:											
Detroit	80	56	1	0	0	21	2	0	0	54	256
Flint	8	20	0	0	0	1	0	0	0	9	28
Grand Rapids	10	5	0	0	0	0	0	1	1	1	28
Wisconsin:											
Kenosha	1	5	0	1	0	0	0	0	0	1	8
Milwaukee	18	20	1	0	0	9	1	0	0	15	127
Racine	4	7	0	0	0	0	0	0	0	6	6
Superior	2	4	1	0	0	0	0	0	0	0	11
WEST NORTH CENTRAL											
Minnesota:											
Duluth	8	6	0	0	0	2	0	0	0	4	17
Minneapolis	40	36	5	0	0	1	1	0	0	1	95
St. Paul	23	8	3	0	0	3	0	0	0	0	63

City reports for week ended December 3, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—contd.											
Iowa:											
Davenport	2	1	2	0	----	----	0	0	----	0	----
Des Moines	7	23	1	13	----	----	0	0	----	0	----
Sioux City	3	2	0	0	----	----	0	0	----	3	----
Waterloo	2	3	0	0	----	----	0	0	----	0	----
Missouri:											
Kansas City	11	19	0	0	0	6	1	3	0	7	75
St. Joseph	3	1	0	33	0	0	0	0	0	0	15
St. Louis	36	19	0	0	0	0	3	2	0	8	234
North Dakota:											
Fargo	2	11	0	0	0	0	0	0	0	3	5
Grand Forks	0	1	0	0	----	----	0	0	----	0	----
South Dakota:											
Aberdeen	0	3	0	0	----	----	0	0	----	0	----
Sioux Falls	2	0	0	8	----	----	0	0	----	0	2
Nebraska:											
Lincoln	2	6	0	0	0	0	0	0	0	6	6
Omaha	6	10	2	3	0	3	0	0	0	0	67
Kansas:											
Topeka	2	4	0	0	0	0	0	0	0	11	10
Wichita	4	7	0	22	0	0	0	1	0	2	29
SOUTH ATLANTIC											
Delaware:											
Wilmington	4	2	0	0	0	3	1	0	0	0	29
Maryland:											
Baltimore	22	20	0	0	0	16	3	1	0	10	224
Cumberland	1	0	0	0	0	0	0	0	1	0	7
Frederick	1	0	0	0	0	0	0	0	0	0	3
District of Columbia:											
Washington	18	19	0	0	0	10	2	1	0	2	137
Virginia:											
Lynchburg	1	3	0	0	0	0	0	0	0	1	9
Norfolk	2	----	0	----	----	----	0	----	----	----	----
Richmond	7	6	0	0	0	1	1	0	0	6	35
Roanoke	2	5	0	0	0	0	0	0	0	0	18
West Virginia:											
Charleston	2	0	0	0	0	0	1	3	0	0	21
Wheeling	3	1	0	0	0	0	0	1	0	0	18
North Carolina:											
Raleigh	2	3	0	0	0	0	0	0	0	0	4
Wilmington	1	2	0	0	0	0	0	0	0	0	10
Winston-Salem	1	3	0	1	0	0	0	0	0	0	14
South Carolina:											
Charleston	1	2	0	0	0	5	0	1	0	1	38
Columbia	0	0	0	0	----	----	0	0	----	0	14
Greenville	0	1	0	0	0	1	0	0	0	0	9
Georgia:											
Atlanta	4	18	1	0	0	3	1	0	0	1	60
Brunswick	0	0	0	0	0	0	0	0	0	0	4
Savannah	1	1	0	2	0	2	0	2	0	0	20
Florida:											
Miami	----	1	----	0	0	0	----	0	0	0	20
St. Petersburg	0	----	0	----	0	0	0	----	0	----	8
Tampa	1	5	0	0	0	0	0	0	0	0	13
EAST SOUTH CENTRAL											
Kentucky:											
Covington	3	4	0	0	0	1	0	0	0	0	25
Lexington	----	2	----	0	0	1	----	2	0	0	12
Louisville	5	14	0	1	0	5	1	0	0	0	80
Tennessee:											
Memphis	6	4	0	1	0	0	1	0	0	1	63
Nashville	3	4	0	0	0	1	1	1	0	0	47
Alabama:											
Birmingham	4	1	1	0	0	6	1	2	0	2	78
Mobile	2	2	0	0	0	2	0	0	0	0	25
Montgomery	0	0	0	0	0	0	0	0	0	0	----

City reports for week ended December 3, 1927—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	2	0	0	0	----	----	0	0	----	0	----
Little Rock	2	5	0	0	0	2	1	0	0	0	----
Louisiana:											
New Orleans	7	3	0	1	0	9	1	4	1	11	155
Shreveport	2	4	0	0	0	1	0	0	0	0	23
Oklahoma:											
Oklahoma City	2	1	0	13	0	2	0	0	0	0	43
Tulsa	2	8	1	0	----	----	0	0	----	3	----
Texas:											
Dallas	5	6	0	0	0	3	1	1	0	2	57
Galveston	0	2	0	0	0	2	0	0	0	0	11
Houston	2	4	0	0	0	3	0	0	0	0	61
San Antonio	1	10	0	1	0	4	1	0	0	0	36
MOUNTAIN											
Montana:											
Billings	1	1	0	0	0	0	0	0	0	5	7
Great Falls	1	1	0	2	0	1	0	0	0	0	11
Helena	0	15	0	1	0	0	0	0	0	0	3
Missoula	0	0	0	0	0	0	0	0	0	0	3
Idaho:											
Boise	1	1	0	0	0	0	0	0	0	1	5
Colorado:											
Denver	11	14	2	0	0	5	0	0	1	3	76
Pueblo	2	2	0	0	0	0	0	0	0	0	8
New Mexico:											
Albuquerque	1	1	0	0	0	2	0	0	0	0	10
Utah:											
Salt Lake City	2	6	1	2	0	2	0	1	0	5	32
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	5
PACIFIC											
Washington:											
Seattle	9	3	2	1	----	----	1	1	----	0	----
Spokane	7	9	5	7	----	----	0	1	----	0	----
Tacoma	3	3	4	2	0	0	0	0	0	0	20
Oregon:											
Portland	8	12	5	15	0	2	1	2	0	1	----
California:											
Los Angeles	25	17	4	0	0	25	2	0	0	11	225
Sacramento	2	2	0	5	0	3	1	0	0	1	26
San Francisco	12	15	1	0	0	8	0	0	0	7	148

City reports for week ended December 3, 1927—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	0	1	1	1	0	0	1	5	1
Fall River	0	0	0	0	0	0	0	1	0
MIDDLE ATLANTIC									
New York:									
New York	4	2	4	1	0	0	2	4	0
Rochester	0	0	0	0	0	0	0	1	0
Pennsylvania:									
Philadelphia	1	0	0	0	0	0	0	2	0
Pittsburgh	0	0	0	1	0	0	0	0	0
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	0	0	0	0	0	0	0	1	0
Cleveland	1	0	2	0	0	0	0	2	0
Columbus	0	0	1	1	0	0	0	1	1
Toledo	0	0	0	0	0	0	0	1	0
Illinois:									
Chicago [1]	7	4	0	0	0	0	1	0	1
Michigan:									
Detroit	0	0	1	1	1	0	0	4	2
Wisconsin:									
Milwaukee	0	0	0	0	0	0	0	1	0
Superior	1	1	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	0	1	1	0		0	0	0	0
St. Paul	0	0	0	0	0	0	0	1	0
Iowa:									
Des Moines	1		0		0		0	1	
Nebraska:									
Omaha	0	0	1	1	0	0	0	0	0
SOUTH ATLANTIC									
Maryland:									
Baltimore	1	0	0	0	0	0	0	1	0
District of Columbia:									
Washington	1	0	0	0	1	0	0	0	0
West Virginia:									
Wheeling	0	0	0	0	0	0	0	1	1
North Carolina:									
Raleigh	1	0	0	0	0	0	0	0	0
Wilmington	0	0	0	0	0	1	0	0	0
South Carolina:									
Charleston [2]	1	0	0	0	0	0	0	0	0
Columbia	0	0	0	0	0	1	0	0	0
Georgia:									
Atlanta	0	0	0	0	0	1	0	0	0
Savannah [3]	0	0	0	0	0	1	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	0	0	0	1	1	0	0	0	0
Alabama:									
Mobile [3]	0	0	0	1	1	0	0	0	0

[1] Rabies (human): 2 cases and 2 deaths at Chicago, Ill.
[2] Dengue: 1 case at Charleston, S. C.
[3] Typhus fever: 4 cases at Savannah, Ga., and 1 case at Mobile, Ala.

City reports for week ended December 3, 1927—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
WEST SOUTH CENTRAL									
Arkansas:									
Little Rock	0	0	0	0	0	1	0	0	0
Louisiana:									
New Orleans	0	0	0	0	3	2	0	1	0
Oklahoma:									
Oklahoma City	0	0	0	1	0	0	0	0	0
Texas:									
Dallas	0	0	0	0	0	2	0	0	0
Houston	0	1	0	0	0	1	0	0	0
San Antonio	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Colorado:									
Denver	2	1	0	0	0	0	0	0	0
Utah:									
Salt Lake City	2	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	0	--------	0	--------	0	--------	0	1	--------
Spokane	1	--------	0	--------	0	--------	0	1	--------
Tacoma	0	0	0	0	0	0	0	2	2
Oregon:									
Portland	3	0	0	0	0	0	0	13	3
California:									
Los Angeles	1	0	0	0	0	0	0	0	1
Sacramento	0	0	0	0	0	0	0	1	1
San Francisco	0	0	0	0	1	1	1	2	0

The following table gives the rates per 100,000 population for 101 cities for the five-week period ended December 3, 1927, compared with those for a like period ended December 4, 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 30,445,000 in 1926 and 30,966,000 in 1927. The 95 cities reporting deaths had nearly 29,785,000 estimated population in 1926 and nearly 30,296,000 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, October 30 to December 3, 1927.—Annual rates per 100,000 population, compared with rates for the corresponding period of 1926 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Nov. 6, 1926	Nov. 5, 1927	Nov. 13, 1926	Nov. 12, 1927	Nov. 20, 1926	Nov. 19, 1927	Nov. 27, 1926	Nov. 26, 1927	Dec. 4, 1926	Dec. 3, 1927
101 cities	224	214	228	[2] 215	230	228	212	[3] 204	224	[4] 233
New England	118	114	134	160	139	163	132	169	172	[5] 268
Middle Atlantic	143	226	163	205	159	234	155	213	177	252
East North Central	275	261	264	254	292	251	258	220	266	220
West North Central	252	195	222	161	214	153	192	179	210	179
South Atlantic	317	185	387	190	276	217	281	[3] 197	240	[6] 230
East South Central	424	153	264	209	367	239	217	122	300	168
West South Central	253	323	378	298	326	348	301	306	318	273
Mountain	219	99	182	279	146	207	201	171	228	144
Pacific	287	141	230	[2] 224	324	223	303	162	268	259

MEASLES CASE RATES

101 cities	81	77	106	[2] 96	135	125	134	[3] 137	177	[4] 191
New England	66	241	31	341	47	390	57	499	101	[5] 582
Middle Atlantic	16	72	44	124	28	93	30	129	37	180
East North Central	80	29	101	27	120	54	135	60	151	122
West North Central	151	14	147	16	196	22	109	24	113	24
South Atlantic	20	132	24	136	54	283	22	[3] 202	48	[6] 326
East South Central	26	234	10	76	31	148	16	163	26	224
West South Central	9	21	26	13	26	71	103	88	142	122
Mountain	798	9	1,531	18	1,950	72	2,543	27	2,844	27
Pacific	313	79	279	[2] 76	488	212	338	175	699	228

SCARLET FEVER CASE RATES

101 cities	188	149	206	[2] 150	212	177	213	[3] 159	242	[4] 185
New England	264	200	351	204	330	248	285	181	325	[5] 286
Middle Atlantic	94	110	125	110	130	152	138	122	157	155
East North Central	186	173	182	177	201	202	196	196	237	192
West North Central	415	165	347	185	407	232	411	204	436	250
South Atlantic	197	159	177	183	143	156	156	[3] 173	181	[6] 176
East South Central	248	168	295	153	228	112	238	87	243	149
West South Central	112	151	142	105	116	105	196	168	210	142
Mountain	583	180	702	153	638	234	784	180	930	360
Pacific	204	141	279	[3] 117	335	154	249	131	265	128

SMALLPOX CASE RATES

101 cities	3	18	5	[2] 16	5	19	5	[3] 22	14	[4] 17
New England	0	0	0	0	0	0	0	0	0	[5] 0
Middle Atlantic	0	0	0	0	0	0	0	0	0	0
East North Central	6	6	10	4	3	6	7	1	21	10
West North Central	2	159	10	157	4	161	30	202	48	115
South Atlantic	0	14	2	5	4	9	4	[3] 2	19	[6] 6
East South Central	10	0	10	0	0	5	5	0	0	10
West South Central	9	4	30	4	4	4	4	4	9	8
Mountain	0	36	9	27	0	27	0	54	18	45
Pacific	3	18	5	[2] 3	48	29	5	45	35	39

[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] Seattle, Wash., and Spokane, Wash., not included.

[3] Frederick, Md., not included.

[4] Hartford, Conn., and Norfolk, Va., not included.

[5] Hartford, Conn., not included.

[6] Norfolk, Va., not included.

Summary of weekly reports from cities, October 30 to December 3, 1927.—Annual rate per 100,000 population, compared with rates for the corresponding period of 1926—Continued

TYPHOID FEVER CASE RATES

	Week ended—									
	Aug. 7, 1926	Aug. 6, 1927	Aug. 14, 1926	Aug. 13, 1927	Aug. 21, 1926	Aug. 20, 1927	Aug. 28, 1926	Aug. 27, 1927	Sept. 4, 1926	Sept. 3, 1927
101 cities	24	19	21	[2] 15	16	15	12	[2] 10	10	[4] 10
New England	17	16	9	16	7	23	7	14	7	[5] 8
Middle Atlantic	12	20	21	15	21	14	13	10	9	10
East North Central	13	7	10	9	5	7	3	6	6	5
West North Central	26	24	16	28	6	20	8	14	10	12
South Atlantic	45	31	35	20	22	25	19	[3] 9	17	[6] 17
East South Central	103	36	52	5	36	15	31	15	41	15
West South Central	21	59	34	34	13	29	17	13	9	21
Mountain	91	36	27	9	27	18	18	27	9	9
Pacific	46	5	29	[2] 7	29	13	21	5	16	5

INFLUENZA DEATH RATES

95 cities	11	9	14	8	10	9	10	[7] 11	14	[4] 13
New England	12	5	2	2	2	5	9	2	7	[5] 5
Middle Atlantic	9	8	10	9	10	7	7	10	13	11
East North Central	6	9	10	5	10	2	9	5	9	9
West North Central	6	10	13	2	6	10	2	6	4	4
South Atlantic	15	7	17	17	8	20	15	[3] 13	21	[6] 14
East South Central	21	15	26	15	31	20	41	46	41	46
West South Central	40	26	66	17	31	34	31	34	40	43
Mountain	18	18	27	18	9	36	36	18	46	27
Pacific	7	7	14	0	4	3	0	[8] 14	11	14

PNEUMONIA DEATH RATES

95 cities	101	90	106	104	123	112	126	[7] 97	123	[4] 114
New England	99	63	90	95	104	102	132	60	118	[5] 103
Middle Atlantic	114	87	115	113	136	119	138	98	151	123
East North Central	85	93	87	89	104	96	98	89	89	103
West North Central	84	62	76	75	120	81	74	87	74	71
South Atlantic	121	118	140	120	144	160	166	[3] 148	106	[6] 153
East South Central	98	112	165	138	171	148	103	127	134	199
West South Central	115	90	110	129	154	142	207	112	163	108
Mountain	164	117	155	144	109	99	146	99	210	54
Pacific	49	100	99	100	74	76	124	[8] 76	152	103

[2] Seattle, Wash., and Spokane, Wash., not included.
[3] Frederick, Md., not included.
[4] Hartford, Conn., and Norfolk, Va., not included.
[5] Hartford, Conn., not included.
[6] Norfolk, Va., not included.
[7] Frederick, Md., and Los Angeles, Calif., not included.
[8] Los Angeles, Calif., 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	30,443,800	30,966,700	29,783,700	30,295,900
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	7,650,200	7,810,600	7,650,200	7,810,600
West North Central	12	10	2,585,500	2,626,600	2,470,600	2,510,000
South Atlantic	21	20	2,709,500	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

BRAZIL

Leprosy.—In a lecture on leprosy which Dr. Aguiar Pupo, of the Medical College of Sao Paulo, has delivered on various occasions in the antileprosy campaign which is being carried on in the State of Sao Paulo, Brazil, the following statistics in regard to leprosy in Brazil are given:

Locality	Population	Cases verified		Probable cases	
		Number	Index per 1,000	Number	Index per 1,000
Northern focus	2,221,010	3,447	1.55	3,447	1.55
Southern focus	13,633,317	6,924	.50	22,483	1.63
Other States	14,531,278	1,372	.09	1,372	.09
Total	30,585,605	11,743	.38	27,302	.89

The northern focus mentioned is made up of the three States of Amazonas, Para, and Maranhao, while the southern focus includes the Federal District and the States of Rio de Janeiro, Sao Paulo, Minas Geraes, and Parana. The populations given are those of the census of 1920.

A number of small asylums and hospitals for lepers are maintained in the State of Sao Paulo, some of which receive financial assistance from the State. Some lepers, however, are segregated in small isolated settlements. The State government has recently let the contract for the completion of a leprosarium some miles east of the city of Sao Paulo.

Mortality from certain diseases—Para—June 26–November 29, 1927.—During the period from June 26 to November 29, 1927, mortality from certain diseases and general mortality were reported at Para, Brazil, as follows: Gastroenteritis, deaths, 200; leprosy, 4; malarial affections, 176; tuberculosis, 146. Total number of deaths from all causes, 1,535.

CANADA

Communicable diseases—Week ended December 3, 1927.—The Canadian Ministry of Health reports cases of certain communicable diseases from seven Provinces of Canada for the week ended December 3, 1927, as follows:

Disease	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	Total
Cerebrospinal fever			1					1
Influenza	11							11
Poliomyelitis				3			2	5
Smallpox				90	3	15	3	111
Typhoid fever	3	8	7	21			1	40

Communicable diseases—Quebec—Week ended December 3, 1927.—The Bureau of Health of the Province of Quebec reports cases of certain communicable diseases for the week ended December 3, 1927, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	1	Scarlet fever	74
Chicken pox	48	Smallpox	5
Diphtheria	114	Tuberculosis	40
German measles	3	Typhoid fever	7
Influenza	7	Whooping cough	17
Measles	97		

COLOMBIA

Health conditions—Influenza—Santa Marta.—Information received under recent dates from Santa Marta, Colombia, shows as follows: During September, 1927, prevalence of malarial diseases and tuberculosis; in October and to November 15, prevalence of influenza with a number of fatalities in the native population; during the last two weeks of November, improved health conditions and decreased death rate.

CUBA

Communicable diseases—Habana—November, 1927.—During the month of November, 1927, communicable diseases were reported in Habana, Cuba, as follows:

Disease	New cases	Deaths	Remaining under treatment Nov. 30, 1927	Disease	New cases	Deaths	Remaining under treatment Nov. 30, 1927
Chicken pox	6	----	2	Paratyphoid fever	1	----	1
Diphtheria	6	----	3	Rabies	1	1	0
Leprosy	----	----	18	Scarlet fever	1	----	0
Malaria [1]	88	3	58	Typhoid fever [1]	30	7	44
Measles	11	----	5				

[1] Many of these cases from the interior.

Malaria—Water supply—Santiago de Cuba.—Under date of December 10, 1927, 751 cases of malaria were officially reported present at Santiago de Cuba, showing an increase of 283 new cases over the number reported for the previous week. It was stated that these figures could not be considered to be accurate, as many cases are home-treated and are never reported to the local authorities.

Water supply.—Analyses of samples of water taken from two of the principal reservoirs of the city show from 1010 to 1190 *B. coli* per cubic centimeter. The city water has been declared unfit for consumption unless previously boiled for at least five minutes.

HAWAII TERRITORY

Second plague-infected rat—Pohakea, Hawaii.—The finding of a second plague-infected rat was reported at Pohakea, Hawaii, November 10, 1927.[1]

IRAQ

Cholera—October 16–November 5, 1927—Summary.—Cholera has been reported in Iraq as follows:

Place	Week ended Oct. 29, 1927		Week ended Nov. 5, 1927		Summary to Nov. 5, 1927	
	Cases	Deaths	Cases	Deaths	Cases	Deaths
Amarah	4	6	8	8	178	140
Baghdad			10	5	11	6
Basrah					417	337
Diwaniyah	4	2	3		88	49
Hillah	7	6	3	2	29	20
Kerbala	1	1	4	5	39	27
Kut	9	4	1	1	29	19
Muntafiq					189	119
Ramadi	19	10	18	23	37	33
Total	44	29	47	44	1,017	750

JAMAICA

Smallpox (alastrim)—October 30–November 26, 1927.—During the four weeks ended November 26, 1927, one case of smallpox (reported as alastrim) was notified in the Island of Jamaica, occurring in a locality outside of Kingston.

Other communicable diseases.—During the same period other communicable diseases were reported in the island as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
	Cases	Cases		Cases	Cases
Cerebrospinal meningitis		1	Puerperal fever		2
Chicken pox	1	1	Tuberculosis	18	45
Dysentery	5	1	Typhoid fever	23	92

Population: Island, 926,000; Kingston, 62,707.

MADAGASCAR

Plague—September 16–30, 1927.—During the two weeks ended September 30, 1927, 86 cases of plague with 78 deaths were reported in the island of Madagascar. The occurrence was distributed according to type as follows: Bubonic, 38 cases; pneumonic, 29; septicemic, 19. The distribution according to locality was: Provinces—*Antisirabe*, cases 3; *Itasy*, cases, 7; *Moramanga*, cases, 3; *Tananarive*, cases 60 and in *Tananarive Town*, 13.

[1] Public Health Reports, Dec. 16, 1927, p. 3103.

MALTA

Communicable diseases—September–October, 1927.—Communicable diseases have been reported in the island of Malta for the months of September and October, 1927, as follows:

Disease	September, 1927, cases	October, 1927, cases	Disease	September, 1927, cases	October, 1927, cases
Bronchopneumonia	7	2	Measles	1	3
Chicken pox	2		Pneumonia	7	5
Diphtheria	4	9	Puerperal fever	1	
Erysipelas	2	15	Scarlet fever	21	30
Influenza	1	2	Trachoma	148	166
Lethargic encephalitis		1	Tuberculosis	20	26
Malaria	[1] 2		Typhoid fever	76	95
Malta fever	62	88	Whooping cough	4	4

Population: Civil, estimated, 227,440.

[1] Contracted abroad.

PERU

Mortality from communicable diseases—Deaths from all causes—Lima—September, 1927.—During the month of September, 1927, deaths from all causes and from communicable diseases were reported at Lima, Peru, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	3	Tuberculosis	89
Gastroentetitis	36	Typhoid fever	2
Influenza	5	All other causes	202
Malaria	4		

Population: 196,767.

RUMANIA

Poliomyelitis—November 16, 1927— Summary of fatalities and localities affected during epidemic.—On November 16, 1927, 531 cases of poliomyelitis (infantile paralysis) were reported present in Rumania, with 56 fatalities from the disease during the prevalence of the epidemic; 51 counties and 25 cities were affected. On December 12 the epidemic was said to be decreasing rapidly.

SENEGAL

Decreased prevalence of plague—Yellow fever.—During the week ended November 20, 1927, decrease in plague prevalence was reported in the districts of Baol and Cayor, interior of Senegal.

Seven cases of yellow fever were reported during the same period, 5 cases with 4 deaths occurred at Dakar, and a fatal case at Thies and one at Khombole (both in Syrians).

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 list of countries included or the figures for the particular countries for which reports are given.

Reports Received during Week Ended December 23, 1927 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
China:				
Canton	Oct. 30–Nov. 5	1	1	
India				Sept. 25–Oct. 8, 1927: Cases, 8,962; deaths, 4,644.
Calcutta	Oct. 23–Nov. 5	63	47	
Rangoon	do		1	
Iraq				Oct. 23–Nov. 5, 1927: Cases, 91; deaths, 73.
Amarah	Oct. 23–Nov. 5	12	14	
Baghdad	do	10	5	Week ended Nov. 5, 1927.
Diwaniyah	do	7	1	
Hillah	do	10	8	
Kerbala	do	5	6	
Kut	do	10	5	
Ramadi	do	37	33	
Java:				
Batavia	Oct. 29–Nov. 5	1	1	City.
Siam				Oct. 23–29, 1927: Cases, 14; deaths, 10. Apr. 1–Oct. 29, 1927: Cases, 783; deaths, 535.

PLAGUE

Hawaii Territory:				
Pohakea	Nov. 10			Plague-infected rat.
India				Sept. 25–Oct. 8, 1927: Cases, 1,370; deaths, 740.
Rangoon	Oct. 23–29	5	5	
Java:				
Batavia	Oct. 23–Nov. 5	70	70	Province.
East Java and Madura—				
Surabaya	Oct. 2–22	14	14	
Madagascar				Sept. 16–30, 1927: Cases, 86; deaths, 78. Cases: Bubonic, 38; pneumonic, 29; septicemic, 19; deaths, bubonic, 30; pneumonic, 29; septicemic, 19.
Province—				
Antisirabe	Sept. 16–30	3	2	Bubonic.
Itasy	do	7	7	Bubonic, cases and deaths, 4; pneumonic, 2; septicemic, 1.
Moramanga	do	3	3	Pneumonic, 1; septicemic, 2.
Tananarive	do	60	55	Bubonic, cases, 26, deaths, 21; pneumonic, 19; septicemic, 15.
Tananarive Town	do	13	11	Bubonic, cases, 5, deaths, 3; pneumonic, 7; septicemic, 1.
Siam				Apr. 1–Oct. 29, 1927: Cases, 12; deaths, 8.
Union of South Africa:				
Cape Province—				
Richmond District	Oct. 23–29	2	2	Native.

SMALLPOX

British South Africa:				
Northern Rhodesia	Oct. 15–28	28	44	Native.
Canada	Nov. 27–Dec. 3			Cases, 111.
Alberta	do	3		
Edmonton	Nov. 20–26	6		
Manitoba	Nov. 27–Dec. 3	3		
Winnipeg	Dec. 4–10	1		
Ontario	Nov. 27–Dec. 3	90		
Hamilton	do	2		
Ottawa	do	19		
Toronto	do	25		
Quebec	do			Cases, 5.
Saskatchewan	do	15		
China:				
Manchuria—				
Fushun	Nov. 6–12	1		
Tientsin	Oct. 23–29	8		

[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 December 23, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Great Britain:				
England—				
Bristol	Nov. 20-26	2		
Leeds	do	3		
Manchester	do	2		
Nottingham	do	1		
Sheffield	Nov. 6-19	5		
India				Sept. 25-Oct. 8, 1927: Cases, 1,516; deaths, 238.
Calcutta	Oct. 29-Nov. 5		1	
Rangoon	Oct. 22-29	4	1	
Iraq:				
Baghdad	Oct. 30-Nov. 8	2	1	
Jamaica	Oct. 30-Nov. 26	1		Outside of Kingston.
Java:				
East Java and Madura	Oct. 2-15	7	1	
Siam				Oct. 23-29, 1927: Cases, 10; deaths, 1. Apr. 1-Oct. 29, 1927: Cases, 263; deaths, 68.
Spain:				
Malaga	Nov. 19-25		1	
Syria:				
Damascus	Oct. 22-Nov. 10	35		
Union of South Africa:				
Transvaal—				
Johannesburg	Oct. 23-29	7		

TYPHUS FEVER

Chile:				
Valparaiso	Nov. 6-12	1	1	
Mexico:				
Guadalajara	Nov. 22-28		1	
Poland	Oct. 9-22	25		
Union of South Africa:				
Cape Province	Oct. 23-29			Outbreaks in 5 districts.

YELLOW FEVER

Senegal:				
Dakar	Nov. 14-20	5	4	
Khombole	do	1	1	Syrian.
Thies	do	1	1	Do.

Reports Received from June 25 to December 16, 1927 [1]

CHOLERA

Place	Date	Cases	Deaths	Remarks
China:				
Amoy	May 22-Oct. 15	119	11	
Canton	May 1-Oct. 29	102	67	
Foochow	July 24-Oct. 22			Present.
Hong Kong	July 17-Sept. 3	3	3	
Kulangsu	June 21	1		
Shanghai	June 19-25	2		
Do	July 31-Oct. 22		119	In international settlement and French concession.
Swatow	May 15-Oct. 29	138	13	
Tientsin	Aug. 27-Oct. 1	14		
India	Apr. 17-Sept. 24			Cases, 179,664; deaths, 97,933.
Bombay	May 8-Sept. 17	127	57	
Calcutta	May 8-Oct. 22	828	490	
Karachi	May 29-June 4	1	1	
Madras	June 19-Oct. 22	833	442	
Rangoon	May 8-Oct. 22	26	21	

[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 June 25 to December 16, 1927—Continued

CHOLERA—Continued

Place	Date	Cases	Deaths	Remarks
India, French Settlements in	Mar. 30–Aug. 27	253	168	
Indo-China (French)	Apr. 1–Sept. 20			Cases, 15,564.
Annam	do	4,509		
Cambodia	do	403		
Cochin-China	do	1,606		
Saigon	June 4–Oct. 2	13	4	
Laos	July 11–Sept. 20	223		
Tonkin	Apr. 1–Sept. 20	9,818		
Iraq:				
Amarah	Oct. 2–22	45	26	
Baghdad	July 24–Oct. 22	30	19	
Basra	July 17–Oct. 22	385	282	
Diwaniyah	Oct. 2–22	72	43	
Hillah	do	13	7	
Kerbala	do	14	10	
Kut	do	12	8	
Muntafique	do	9	4	
Japan:				
Yokohama	July 31–Aug. 6	1	1	
Java:				
Batavia	Reported Nov. 19	25	15	
Persia:				
Abadan	July 21–Aug. 13	215	183	
Ahwaz	July 31–Aug. 13	20	13	
Minab	Aug. 7–13		23	
Mohammerah	July 17–Aug. 27	194	155	
Nasseri	July 19–31		10	
Philippine Islands:				
Bulacan Province	June 7–July 8	3	2	
Leyte Province—				
Barugo	June 29	1	1	
Carigara	June 23	1	1	Final diagnosis not received.
Palo	May 18	1		
Manila	July 17–Aug. 27	2		
Siam	May 1–Oct. 22			Cases, 382; deaths, 227.
Bangkok	do	54	18	
On vessel:				
S. S. Adrastus	Reported Aug. 6	1	1	At Yokohama, Japan.
S. S. Montreal Maru	Sept. 20			At Muke, Japan.
S. S. Tabaristan	Oct. 6	1		Case in coolie removed at Basra.
S. S. Morea	Sept. 2			At Hong Kong; cholera-infected.
S. S. War Mehtar (oil tanker).	Aug. 4	1	1	At Saffagha, Egypt.

PLAGUE

Algeria:				
Algiers	Aug. 21–Oct. 20	3		
Oran	Aug. 21–Nov. 5	6	4	
Argentina	Jan. 1–Aug. 2			Cases, 80; deaths, 44.
Bahia	Nov. 21	1		In vicinity.
Province—				
Buenos Aires	Apr. 10–May 7	4	3	
Cordoba	Jan. 11–Aug. 6	52	29	
Do	Nov. 21	10		Reported as having occurred 3 weeks previously.
Corrientes	June 1	1	1	
Entre Rios	Mar. 29–Aug. 13	8	1	
Sante Fe	Apr. 28–May 16	4	3	
Territory—				
Chaco—				
Barranqueras	May 29	2	2	
Formosa	June 25	3	2	
Pampa	July 27–Aug. 2	4		
Rio Negro	Aug. 6	1		
City—				
Merou	Reported July 14			Present.
Quilino	Nov. 26	1		
Rosario	May 7	1	1	
Do	Nov. 26	1		
Santa Fe	May 16	4	2	
Azores:				
St. Michaels Island	May 15–Oct. 29	12	1	
Ribeira Grande	June 12–18	1		
Brazil:				
Sao Paulo	June 3–9	1	1	

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

Reports Received from June 25 to December 16, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
British East Africa:				
Kenya	Apr. 24-July 31	73	14	
Mombasa	July 24-30	1	1	
Nairobi	May 22-28	6		
Tanganyika	Mar. 29-May 28		37	
Do	July 24-Oct. 1		70	
Uganda	Jan. 1-Feb. 28	138	121	
Do	Mar. 27-June 30	782	593	
Canary Islands:				
Laguna district—				
Tejina	June 17	1		
Las Palmas	Oct. 8-11	8		
Ceylon:				
Colombo	May 1-Oct. 22	24	14	Plague rats, 5.
China:				
Amoy	July 3-23			Present in surrounding country
Mongolia	Reported Oct. 11		200	Approximate.
Tientsin	Aug. 14-20	2		
Tungliao	Reported Oct. 11-15.	200		
Ecuador:				
Guayaquil	June 1-Oct. 30	7		Rats taken, 95,408; found infected, 53.
Egypt:				
Alexandria	June 4-Sept. 2	4		
Beni-Souef	June 4-July 13	5	2	
Biba	June 4-10	1		At Nama.
Dakhalia	June 24-July 9	6	1	
Minia	Aug. 8-9	4		
Port Said	June 24-July 21	4	1	
Suez	Sept. 4	1		
Tanta district	June 4-10	1		
Greece	May 1-June 30	4	3	
Athens	June 1-Aug. 29	3		Including Piraeus.
Mytilene	Aug. 9-Sept. 26	6		
Patras	May 30-Nov. 5	10	3	
Hawaii Territory:				
Hamakua	July 15-Aug. 30			2 plague rodents.
Pohakea	Nov. 10			1 plague rodent.
Honokaa	May 17-23	2	2	
Kapulena	Oct. 22			Do.
Kukuihaele	Aug. 12-17	1	1	Do.
Paauilo	July 26-Aug. 1		4	
India	Apr. 17-Oct. 24			Cases, 25, 403; deaths, 11,164.
Bombay	May 8-Oct. 22	106	89	
Calcutta	Aug. 21-Sept. 3	18	10	
Madras	May 1-Oct. 15	1,858	864	
Rangoon	May 8-Oct. 22	81	75	
Indo-China (French)	Apr. 1-Aug. 10	50		
Saigon	Sept. 2-16	2		
Kwang-Chow-Wan	May 21-July 31	73		
Iraq:				
Baghdad	Apr. 8-May 28	12	1	
Java:				
Batavia	May 1-Oct. 22	419	399	Province.
East Java and Madura	May 22-Oct. 1	31	30	
Pasoeroean Residency	May 9			Outbreak reported at Nagdiwano.
Surabaya	Apr. 17-Sept. 24	94	92	
Madagascar				Mar. 16-Apr. 30, 1927: Cases, 256; deaths, 135.
Province—				
Ambositra	Mar. 16-Aug. 15	100	93	
Antisirabe	Mar. 16-Sept. 15	44	44	
Miarinarivo (Itasy)	do	94	83	
Moramanga	May 16-Aug. 31	32	31	
Tananarive	Mar. 16-Sept. 15	350	308	
Tananarive Town	Mar. 16-June 30	22	20	
Mauritius:				
Port Louis	May 1-June 30	1	1	
Nigeria	Mar. 1-May 31	228	117	
Peru	Apr.-May 31			Cases, 22; deaths, 8.
Departments—				
Ica	Apr. 1-30	1		
Lambayeque	do	1		
Libertad	Apr. 1-May 31	7	4	
Lima	Apr. 1-July 31	13	8	
Lima City	Apr. 1-30	5	1	

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

Reports Received from June 25 to December 16, 1927—Continued

PLAGUE—Continued

Place	Date	Cases	Deaths	Remarks
Senegal	May 23–Oct. 16			Cases, 1,159; deaths, 646.
Baol	June 2–Oct. 16	235	109	
Cayor Frontier	July 4–Nov. 13	1,040	569	
Dakar	June 20–Oct. 2	147	94	
Facel	July 6	17	8	
Guindel	June 20–26	11	2	
Louga district	Sept. 18–Oct. 16	13	4	
M'Bour	July 6–10	28	23	
Medina	June 13–19	2	2	
Pout	July 4–10	1		
Rufisque	May 23–Sept. 25	223	167	
Thies district	May 23–Nov. 13	35	15	
Tivaouane	June 2–July 17	50	32	
Siam	Apr. 1–June 25			Cases, 12; deaths, 8.
Do	Oct. 2–22	2	1	
Bangkok	May 8–June 11	2	1	
Do	Oct. 2–22	2		
Syria:				
Beirut	June 11–Sept. 10	4		
Tunisia	Apr. 21–July 10	144		
Tunis	July 25–Aug. 1	1		
Turkey:				
Constantinople	May 13–19	1		
Do	Sept. 18–Oct. 1	2	1	
Union of South Africa:				
Cape Province—				
Maralsburg district	May 1–14	2	2	Native.
Orange Free State—				
Edenburg district	July 17–26	3	3	Natives; on farm.
Rouxville district	July 24–Aug. 6	2	2	
On vessel:				
S. S. Avoroff	June 24–30	1		Greek warship at port of Athens.
S. S. Capafric	Aug. 23	3	1	At Duala, French Cameroons, from Nigeria.
S. S. Elcano	Aug. 19	1		At Piraeus, Greece.
S. S. Madonna	Aug. 24	1		At Dakar, Senegal, from ports south.
S. S. Ransholm	Aug. 5	3		At Gefle, Sweden, from Rufisque, Senegal.

SMALLPOX

Algeria	Apr. 21–Sept. 20			Cases, 955.
Algiers	May 11–June 30	8		
Oran	May 21–Nov. 12	88		
Angola	June 1–Aug. 31	47		
Loanda	Sept. 1–15	1		
Portuguese Congo	do	4		
Arabia:				
Aden	July 17–Aug. 1	2	1	
Brazil:				
Bahia	Aug. 7–13	1		
Porto Alegre	July 1–Sept. 30	11		
Rio de Janeiro	May 22–Oct. 29	26	22	
British East Africa:				
Kenya	Apr. 24–May 14	7	14	
Tanganyika	Mar. 29–June 18		22	
Do	Aug. 7–Sept. 17		29	
Zanzibar	Apr. 1–Aug. 31	121	41	
British South Africa:				
Northern Rhodesia	Apr. 30–Oct. 15	331	16	
Canada	June 5–Nov. 26			Cases, 1,129.
Alberta	June 12–Nov. 26			Cases, 250.
Edmonton	Oct. 23–29	1		
Calgary	June 12–Aug. 27	9		
British Columbia—				
Vancouver	May 23–Sept. 4	4		
Manitoba	June 5–Nov. 26			Cases, 65.
Winnipeg	June 12–Nov. 26	26		
Nova Scotia	Sept. 11–Oct. 15	2		
Halifax	Oct. 8–15	1		

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

Reports Received from June 25 to December 16, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Canada—Continued				
Ontario	June 5–Nov. 26			Cases, 605.
Kingston	Nov. 13–19		1	
Ottawa	June 12–Nov. 26	249		
Sarnia	Aug. 7–13	1		
Toronto	June 19–Nov. 19	55		
Windsor	Oct. 2–15	9		
Quebec	June 19–Nov. 26	40		
Riviere du Loup	Oct. 29–Nov. 19	6		
Saskatchewan	June 12–Nov. 26			Cases, 193.
Moose Jaw	Aug. 14–Oct. 22	24		
Regina	July 17–Nov. 12	16		
Ceylon	May 1–7			Cases, 3; deaths, 2.
Colombo	July 31–Aug. 6	1	1	
China:				
Amoy	May 8–28	1		
Do	July 3–16			Present in surrounding country.
Antung	July 4–31	3		
Canton	Sept. 18–24	1	1	
Chefoo	May 8–14			Present.
Do	Oct. 9–29			Do.
Foochow	May 8–Oct. 22			Do.
Hong Kong	May 8–Sept. 17	22	21	
Manchuria—				
Anshan	May 22–28	1		
Changchun	May 15–July 30	8		
Dairen	May 2–June 3	10	5	
Fushun	May 15–Sept. 17	11		
Harbin	June 13–July 10	4		
Kaiyuan	July 3–9	2		
Mukden	May 22–Oct. 29	9		
Pensihu	July 3–Oct. 1	2		
Ssupingkai	May 8–July 9	2		
Tientsin	May 8–Oct. 22	31	4	
Chosen	Feb. 1–July 30			Cases, 526; deaths, 211.
Chinnampo	Apr. 1–May 31	2		
Fusan	Apr. 1–30	1		
Gensan	May 1–31	1		
Seishin	Apr. 1–30	1		
Curacao	May 29–June 4	1		Alastrim.
Ecuador:				
Guayaquil	June 1–Oct. 31	5		
Egypt	May 7–Sept. 30			Cases, 21; deaths, 4.
Alexandria	May 21–June 17	4	1	
Cairo	Jan. 22–Apr. 15	14	3	
France	Apr. 1–Aug. 31			Cases, 207.
Lille	July 24–30	1		
Paris	May 21–July 31	14	2	
Gold Coast	Mar. 1–July 31	42	7	
Great Britain:				
England and Wales	May 22–Nov. 19			Cases, 4,702.
Birmingham	Aug. 14–Sept. 30	2		
Bradford	May 20–June 11	2		
Do	Oct. 23–Nov. 19	11		
Bristol	Oct. 16–Nov. 19	10		
Cardiff	June 19–July 2	4		
Do	Oct. 23–29	1		
Leeds	July 17–Nov. 19	28		
Liverpool	July 17–30	1		
London	May 15–June 18	2		
Manchester	Oct. 2–Nov. 22	5		
Newcastle-upon-Tyne	June 12–Nov. 19	14		
Sheffield	June 12–Oct. 29	37		
Stoke-on-Trent	Aug. 21–27	1		
Scotland—				
Dundee	May 29–Sept. 3	6		
Greece	June 1–30	14		
Saloniki	July 12–Aug. 15		2	
Guatemala:				
Guatemala City	June 1–30		9	
Guinea (French)	June 4–10	9		
India	Apr. 17–Sept. 24			Cases, 77,885; deaths, 20,509.
Bombay	May 28–Oct. 22	254	160	
Calcutta	May 8–Oct. 22	418	319	
Karachi	May 15–Aug. 6	10	5	
Madras	May 22–Oct. 29	42	9	
Rangoon	May 8–Oct. 22	209	160	

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

Reports Received from June 25 to December 16, 1927—Continued

SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
India, French Settlements in	Mar. 20–Aug. 27	174	155	
Indo-China (French)	Mar. 21–Sept. 20			Cases, 332.
Saigon	May 14–Sept. 9	4	1	
Iraq:				
Baghdad	Apr. 10–Oct. 22	10	5	
Basra	Apr. 10–Oct. 15	11	10	
Italy	Apr. 10–May 21	13		
Rome	June 13–July 17	3		Including consular district.
Jamaica	May 29–Oct. 29	47		Reported as alastrim.
Japan	Apr. 3–May 7			Cases, 19.
Nagasaki City	June 20–Aug. 14	26	7	
Taiwan Island	May 21–31	1		
Java:				
Batavia	May 22–Nov. 12	36	15	
East Java and Madura	Apr. 24–Oct. 1	46	1	
Latvia	Apr. 1–30	1		
Mexico	Mar. 1–June 30			Deaths, 621.
Acapulco	Aug. 28–Sept. 17	2	2	
Durango	June 1–30		1	
Guadalajara	Nov. 15–21		1	
Monterey	July 1–31	6	4	
San Luis Potosi	May 29–Aug. 13		11	
Tampico	June 1–July 31	1	2	
Torreon	Aug. 7–Oct. 1		2	
Morocco	Apr. 1–Aug. 31	283		
Netherlands India:				
Borneo—				
Holoe Soengei	Apr. 21			Epidemic in 2 localities.
Pasir Residency	Apr. 30–May 6			Epidemic outbreak.
Samarinda Residency	May 21–27			Do.
Nigeria	Mar. 1–July 31	2,844	653	
Paraguay:				
Asuncion	July 10–23		2	
Persia:				
Teheran	Feb. 21–July 23		16	
Poland	Apr. 10–Aug. 6	20	2	
Portugal:				
Lisbon	May 29–Nov. 5	32	1	
Oporto	Sept. 3–9	1		
Senegal:				
Medina	July 4–10	7		
Siam	Apr. 1–Oct. 22			Cases, 256; deaths, 67.
Bangkok	May 1–Sept. 10	16	8	
Spain:				
Madrid	Aug. 1–31		1	
Malaga	Nov. 11–18		1	
Valencia	May 29–June 4	3		
Do	Sept. 25–Oct. 1	1		
Straits Settlements	June 12–18			Cases, 3.
Singapore	Apr. 1–June 18	7	2	
Sumatra:				
Medan	June 5–Aug. 20	3		
Switzerland:				
Berne	June 26–July 2	1		
Syria:				
Damascus	Aug. 11–Oct. 20	30		
Tunisia	Apr. 1–June 10			Cases, 10.
Tunis	June 1–10	1		
Union of South Africa:				
Cape Province	July 7–Aug. 20			Outbreaks.
Do	Oct. 2–8			Do.
Elliott district	May 11–June 10			Do.
Idutywa district	July 3–9			Do.
Kalanga district	May 11–June 10			Do.
Mount Ayliffe district	July 31–Aug. 6			Do.
Orange Free State	Aug. 7–13			Do.
Transvaal—				
Barberton district	May 1–7			Do.
Venezuela:				
Maracaibo	July 12–Oct. 3		4	

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

Reports Received from June 25 to December 16, 1927—Continued

TYPHUS FEVER

Place	Date	Cases	Deaths	Remarks
Algeria	Apr. 21-July 20			Cases, 399; deaths, 39.
Algiers	May 11-Oct. 20	34		
Oran	May 21-Aug. 31	34		
Argentina:				
Rosario	Aug. 1-31		1	
Bulgaria	Mar. 1-Aug. 10			Cases, 245; deaths, 21.
Sofia	June 4-Nov. 11	22	1	
Chile:				
Antofagasta	Apr. 16-May 31	1		
Do	Sept. 25-Oct. 1		1	
Concepcion	May 29-June 4		1	
La Calera	Apr. 16-May 31	1		
Ligua	Mar. 16-31	2		
Puerto Montt	Apr. 16-May 31	2		
Santiago	do	5	1	
Talcahuano	July 10-16		1	
Valparaiso	Apr. 16-Sept. 3	5	3	
China:				
Manchuria—				
Harbin	July 25-Aug. 21	5		
Mukden	May 29-June 4	1		
Tientsin	July 10-24	3		
Chosen	Feb. 1-July 31			Cases, 793; deaths, 68.
Chemulpo	May 1-Aug. 31	3		
Gensan	do	4		
Seoul	Apr. 1-Aug. 31	35	3	
Czechoslovakia	do			Cases, 55.
Egypt	May 28-Oct. 21			Cases, 139; deaths, 24.
Alexandria	May 21-Aug. 5	13	5	
Cairo	Jan. 15-July 1	43	16	
Port Said	Sept. 24-30	1		
Estonia	Apr. 1-June 30			Cases, 5.
Greece	June 1-30	2		
Athens	June 1-Sept. 30	2	9	
Guatemala:				
Guatemala	Aug. 25-31		1	
Iraq:				
Baghdad	Apr. 24-30	1		
Irish Free State:				
Cork County	July 3-9	1		In urban district.
Donegal County—				
Letterkenney	Oct. 16-22	4		
Italy	Year, 1926			Cases, 34.
Naples	do	31		
Latvia	Apr. 1-July 31	32		
Lithuania	Feb. 1-Aug. 31	365	50	
Mexico	Feb. 2-June 30			Deaths, 166.
Mexico City	May 29-Nov. 5	95		Including municipalities in Federal District.
San Luis Potosi	July 31-Aug. 6		1	
Morocco	Apr. 1-Sept. 20	981		
Palestine	May 24-Oct. 31			Cases, 38.
Haifa	do	10		
Jaffa	Aug. 2-Oct. 3	3		
Jerusalem	June 28-Aug. 15	3		
Mahnaim	May 17-23	1		In Safad district.
Nazareth	July 19-25	1		
Safad	May 17-Aug. 8	10		
Tel Aviv	Oct. 1-10	1		
Peru:				
Arequipa	Apr. 1-30		1	
Do	Aug. 1-Sept. 30		3	
Poland	Apr. 10-Oct. 8	1,142	106	
Portugal:				
Lisbon	May 29-June 4	1		
Oporto	Aug. 20-27	1		
Do	Oct. 23-29	1		
Rumania	Apr. 3-Aug. 27	1,000	69	
Spain:				
Seville	Aug. 19-25		2	
Syria:				
Aleppo	Sept. 11-17	2		
Tunisia	Apr. 22-July 20			Cases, 158.
Tunis	July 5-Aug. 21	2		
Turkey:				
Constantinople	May 13-19		2	

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

Reports Received from June 25 to December 16, 1927—Continued

TYPHUS FEVER—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa	Apr. 1-30			Cases, 55; deaths, 8, native. In Europeans, cases, 2.
Cape Province	Apr. 1-Oct. 22	42	5	
Albany district	June 5-11			Outbreaks.
East London	May 22-28	1		Do.
Glen Gray district	May 1-7			Do.
Kentani district	June 26-July 2			Do.
Port Elizabeth	Aug. 7-13	1		Do.
Qumbu district	May 1-7			Do.
Umzinkulu district	June 26-July 2			Do.
Natal	Apr. 1-Aug. 6	7	3	
Do	Oct. 16-22			Do.
Impendhle district	June 5-11			Do.
Orange Free State	Apr. 1-Oct. 1	5		
Transvaal	Apr. 1-30	1		
Johannesburg	July 3-Aug. 20	19	5	
Do	Oct. 9-15	5		
Yugoslavia	May 1-Oct. 31			Cases, 25; deaths, 5.

YELLOW FEVER

Ashanti:				
Obuasi	Aug. 6	1	1	
Dahomey (West Africa):				
Porto Novo	July 1	1	1	In Syrian woman.
Gold Coast	Apr. 1-June 30	60	22	
Do	Aug. 4	2		
Ivory Coast	July 29	1	1	
Liberia:				
Monrovia	May 29-Sept. 10	5	5	
Senegal	Oct. 3-Nov. 13			Cases, 60; deaths, 55.
Dakar	July 9	1		
Do	Aug. 8		2	
Do	Sept. 17			Present.
Do	Oct. 3-Nov. 6	21	16	
Geoul	Sept. 26-Oct. 2	1	1	
Island of Goree	Aug. 22-Sept. 4	2	2	
Kebemer	Oct. 9-23	2	2	
Kelle	Oct. 9-30	3	2	
Keur Samba Kane	Oct. 31-Nov. 6	1	1	
Keur Madiop	Oct. 24-30	1	1	
Khombole	Aug. 1-Oct. 9	6	3	
Louga	Sept. 26-Nov. 13	5	5	
Mehke	Oct. 17-Nov. 13	6	3	
M'Bour	May 27-June 19	5	5	
N'Dande	Oct. 17-Nov. 6	4	3	
Ouakam	June 2-Aug. 14	4	2	
Pout	Sept. 19-25	1	1	
Rufisque	Oct. 9-16	1	1	
Sebikotane	Oct. 17-Nov. 13	4	2	
St. Louis	Aug. 1-Oct. 2	3	3	
Thies	July 10	1	1	In European.
Do	Sept. 12-Nov. 13	15	15	
Tiaroye	Aug. 22-Sept 4	1	1	
Tivaouane	May 27-Sept. 11	6	5	
Togoland:				
Meiatza	Aug. 15-21	1	1	
On vessel:				
S. S. Desirade	Sept. 16	1	1	At Leixoes, Portugal, in passenger from Dakar, Senegal.