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THE CONTROL OF HOUSEFLIES BY DDT SPRAYS [1]

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Until the advent of DDT, the control of houseflies was based primarily on mechanical and cultural control methods, space sprays, and stomach poisons. Since DDT has become available, it is now possible for an individual, a business, or a community to enjoy a degree of freedom from flies not likely to be attained by older methods. In initial performances as a residual insecticide, single DDT treatments have exhibited excellent control against houseflies for a period of several months. The fact that houseflies have been proven capable of transmitting such diseases as typhoid, amoebic and bacillary dysentery, and diarrhea, and that they are unsightly and a general annoyance, makes this new agent a boon to communities and industries having fly problems.

The investigations covered in this paper were made at milk and food establishments to determine the effective duration of DDT as a residual spray deposit on surfaces, the amount of treatment necessary to obtain practical control, and the most effective method of application.

MATERIALS AND METHODS

In most of this work, a xylene-DDT-emulsifier concentrate was prepared as follows:

DDT (technical grade)	pounds	3
Xylene (industrial grade)	quarts	3
Triton X-100 [2]	fluid ounces	6

[1] From Communicable Disease Center, Technical Development Division (Savannah, Ga.), States Relations Division.

[2] An aralkyl-polyether alcohol.

The materials mixed in the above proportions made slightly over 1 gallon of 35-percent-DDT concentrate [3], and water was added to obtain the desired concentrations. The odor from the diluted xylene was slight, so that in rooms with an open door or window it soon dissipated, and the spray deposit dried within 20 to 30 minutes. The quantities of the emulsion applied to surfaces were standardized to give a deposit of 200 mg. DDT per square foot.

A second DDT material that proved very satisfactory under certain conditions was a wettable powder consisting of 50 percent DDT and 50 percent inert ingredients. The wettable DDT may be added directly to water, and with sufficient agitation, used immediately for spraying. As the wettable powder forms a suspension spray, some agitation should be maintained to prevent its settling out in the spray tank. The fine screens of the spray line should be removed prior to operation to prevent the accumulation of suspended particles and thus the stopping of the spray line. A suspension containing 2½ percent DDT was used.

The DDT-wettable-powder spray is applied in a manner similar to the DDT-xylene-water emulsion. Upon drying, the inert ingredients remain on the surface as a white, heavy, bloom-like residue. Consequently, its use is limited to interiors having rough or semifinished material where the residue is not objectionable. The wettable powder may be used with considerable satisfaction in dairies, but not in better-class homes or in restaurants.

EQUIPMENT

In the control of houseflies with DDT sprays, both hand and power sprayers were used. In small establishments where only a small amount of spray material was needed, a 2-to-4-gallon-capacity compressed-air garden-type hand sprayer was convenient and effective. In larger establishments, or in the treatment of several places, an orchard-type power sprayer was found to be more economical in labor and time. When less than 15 gallons of spray material was needed, a small drum was substituted for the regular 50-gallon tank.

In all operations, nozzles producing a fan-shaped spray pattern were used. The aperture size of the nozzle was dependent upon the kind of surface to be treated and the amount of liquid to be applied per square foot. In homes and restaurants where there were high-gloss paints and varnishes, a 65–0.15 [4] nozzle was used. On such surfaces, a 7½-percent-DDT emulsion was applied in such a manner that the surface held many small minute droplets which, upon drying,

[3] When the term "percent" is used, it means so many grams of solid per 100 cc. of solution.

[4] When such figure designations are used for nozzles, the first portion of the figure refers to the angle of the fan pattern and the latter portion to the rate of discharge in gallons per minute at 40 pounds' pressure.

left no objectionable residue (fig. 1, left). The application of a sufficient quantity of spray to cause a run-off should be avoided, but if it does occur, the spray should be allowed to dry thoroughly and should then be rubbed briskly with a clean dry cloth to remove the excess spray deposit.

On roughly painted and metal surfaces, an 80–0.2 nozzle was used, and a 5-percent emulsion was applied at the rate of 1 gallon per 946 square feet of surface treated.

On rough or semifinished unpainted wood surfaces which absorb considerable amounts of spray, a 50–0.4 or 65–0.4 nozzle was employed, and a 2½-percent-DDT emulsion was used at the rate of 8 cc. per square foot, or 1 gallon per 473 square feet, of surface treated. In applying the spray at this dilution and quantity, the surface was wetted to the point of run-off, and the deposit formed was not objectionable. In practice, the rate of DDT application was governed by the degree of surface wetness with the proper nozzle and spray dilution, rather than by time and area calculations.

TREATMENT EVALUATION

To obtain a basis for the most efficient application of a residual spray, a study was made of the resting habits of the housefly. Nighttime and daytime observations and studies of the accumulations of fecal spots indicated that the housefly prefers to alight on strings, wires, edges of projections, beams and supports, and along the cracks between sprung boards, particularly on the ceilings. Consequently, in all applications particular attention was given to spraying these locations (fig. 2).

In evaluating the control obtained, a grill device (*2*) was used to sample the pretreatment and posttreatment populations at various points of concentration. Two different-sized grills were used, a large 36-inch grill in dairy barns and outdoors, and a smaller 18-inch grill in restaurants and homes. Since fly concentrations shift throughout the day from one location to another on any given premise, certain sampling areas were established, and within these areas grill counts were made at points where the maximum concentration of flies was observed. Counts were made at weekly intervals and, because of the diurnal fluctuations in fly populations, at about the same time of day.

THE CONTROL OF HOUSEFLIES IN DAIRIES

Procedure and results.—The aim of controlling houseflies in dairies is primarily to decrease the possibilities of transmitting fly-borne diseases through milk contamination. With this point in mind, it was desirable to determine the extent of DDT spraying necessary to

reduce flies to a practical level of control, the most effective means of application, and the duration of effectiveness of a single treatment.

The pretreatment and posttreatment population levels were determined by the grill method, to which reference has previously been made. The sampling areas were the barn entrances, the center half of the barn floor, the stanchions, the entrance to the milk room (fig. 3), the milk room itself, and the feed storage room or shed. At each location, five counts were made to secure an adequate sample. The highest count at each location was taken, and from these seven highest counts, the four highest were averaged. This average or index figure was used as the weekly fly index for the establishment. The arbitrary selection of such a figure was based on the belief that the larger concentrations of flies give a closer indication of the maximum disease-transmission potentialities of the fly population.

In the dairies, a 2½-percent-DDT emulsion was applied with a power sprayer to the favored resting places of the flies, at the rate of 200 mg. per square foot. For experimental purposes, a 65–0.4 nozzle operating under 70–80 pounds pressure was used to obtain a more accurate application. Under nonexperimental conditions, an orchard-type spray nozzle with a larger aperture and much higher pressure could be effectively used.

In most dairies, the milk room was left untreated because of the possibility of contaminating the milk. The feed room was also left untreated because the dusts arising during the mixing of feed readily cover any DDT deposit.

An experiment using DDT emulsions was set up to compare the value of a partial and complete premise treatment, the effective duration of an over-wintering treatment, and an early season treatment. To secure information on the comparative value of partial and complete premise treatment, three dairies were handled under the conditions shown in table 1. All dairies were treated to the point of "run-off" (fig. 1, right) with a 2½-percent-DDT emulsion (200 mg. DDT per square foot). The partial treatment consisted of spraying only the milking barn in dairy No. 10, and only the horse, calf and bull sheds in dairies No. 26 and No. 12. In the check dairy, no attempt was made to interfere with the dairyman's usual control practices of using sodium-arsenite syrup on burlap.

The results of the partial dairy treatments during a period of 3 months subsequent to treatment demonstrated that, although the reduction of flies as shown by grill counts was roughly 50–70 percent, still the remaining population exceeded an index of 10 flies, a number selected arbitrarily as the upper level of satisfactory fly control A later complete premise treatment gave good control for the remaining 3 months of the fly season.

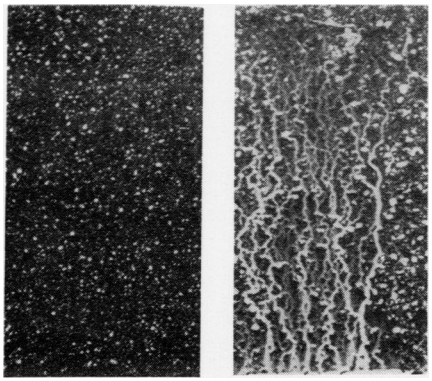

FIGURE 1.—Proper application of a DDT spray emulsion is shown on the left. Overspraying, or treatment to the point of "run-off," is shown on the right.

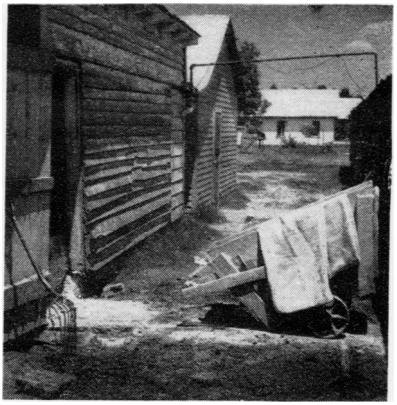

FIGURE 4.—Food strewn on the ground and sifting through the board runways provide the excellent fly-breeding conditions shown in this photograph.

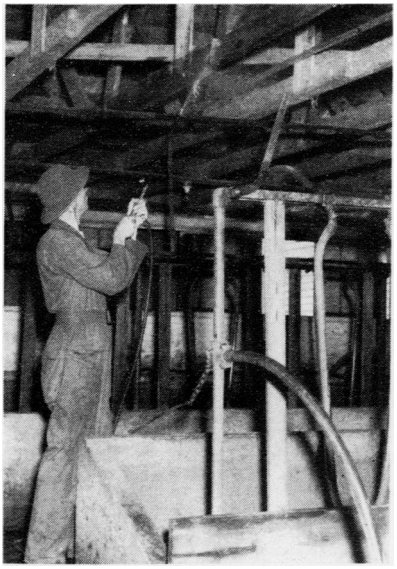

FIGURE 2.—Careful attention must be given to the spray treatment of all edges on which flies may rest. The photograph shows proper treatment of overhead resting places in a dairy.

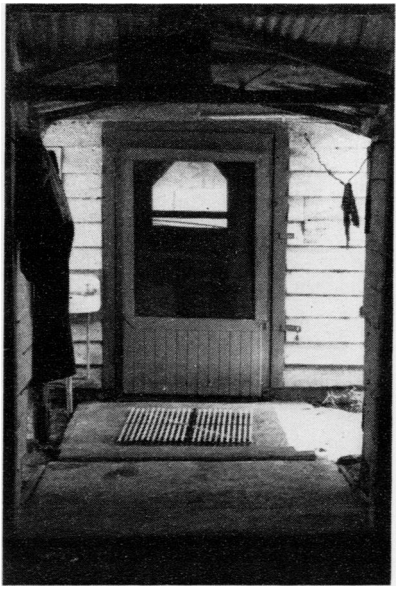

FIGURE 3.—Sampling point for the large fly grill on the walk just outside the milkroom door of a dairy.

TABLE 1.—*A comparison of monthly fly indices in dairies given partial and complete premise treatments with a 2½-percent-DDT emulsion at the rate of 200 mg. DDT per square foot*

Treatment period	Dairy No. 10	Dairy No. 26	Dairy No. 12	Dairy No. 2
	Sanitary conditions			
	Poor	Poor	Poor	Poor
PRETREATMENT-PERIOD FLY INDEX				
March–April (5 weeks)	99.2	95.8	69.5	31.3
May (4 weeks)			128.6	
	Partial treatment date			
	April 12	April 20	May 22	None
PARTIAL-TREATMENT FLY INDEX				
May (5 weeks)	57.7	25.4		112.3
June (4 weeks)	56.8	43.6	34.4	226.1
July (3 weeks)	47.5	42.5	27.2	102.5
	Complete premise treatment date			
	July 20	July 26	July 20	None
POSTTREATMENT-PERIOD FLY INDEX				
July (2 weeks)	6.7		2.9	
August (4 weeks)	7.9	8.3	2.4	99.8
September (4 weeks)	9.7	13.4	5.8	106.9
October (5 weeks)	10.7	9.9	5.5	47.7

A study of DDT applications in late autumn was made to determine the reduction of the succeeding spring-fly population in a dairy, by controlling the flies present during the late autumn and those that emerged during warm periods throughout the winter. To supplement such a treatment in a dairy with poor sanitary conditions, a second treatment was made in one dairy in the early spring. It was thought that a properly timed treatment might effectively reduce the hold-over population that serves as a nucleus for the next season's population.

Consequently, in two dairies such treatments were made with the results obtained as shown in table 2.

In view of the control results shown for these dairies, it was concluded that under the existing sanitary conditions, complete residual DDT treatments of premises in late fall and early spring are not capable of holding the spring population within a satisfactory level of control for more than 6 weeks.

The period of duration for which a DDT spray maintains the fly population within satisfactory levels was observed at seven dairies in which complete premise treatments were made in early April.

TABLE 2.—*Fly-control indices obtained in dairies of varying sanitary conditions treated with DDT in late autumn to control the early spring build-up of houseflies*

Treatment period	Period fly index, 1946		
	Dairy No. 20	Dairy No. 21	Dairy No. 16
	Sanitary conditions		
	Poor	Fair	Poor
	Type of treatment		
	Complete premise	Dairy barn only	None
	Treatment date		
	Oct. 10, 1945 Feb. 28, 1946	Oct. 11, 1945	None
March 23–May 14 (9 weeks)	9.8	----	24.9
May 21–July 16 (9 weeks)	38.3	----	56.1
March 22–May 5 (7 weeks)	----	12.4	17.7
May 10–June 19 (9 weeks)	----	48.0	54.0
	Treatment date		
	July 19	June 19	None
July 24–Oct. 8 (11 weeks)	20.6	----	50.1
June 27–Oct. 1 (14 weeks)	----	10.4	54.1

In four dairies selected for treatment (Nos. 18, 19, 27, 28) and in a check dairy (No. 22) the sanitation was very poor. In the check dairy, no attempt was made to interfere with the dairyman's practice of poisoning flies or using his own customary method of control.

In dairy No. 19, which had exceptionally poor sanitation, satisfactory control was obtained for only 5 weeks, whereas in dairies Nos. 18, 27, and 28, satisfactory control was obtained for 8 weeks (table 3). Although the treatment was definitely killing large numbers of flies after 8 weeks, the breeding and feeding areas were so extensive that the slower killing rate of the aging DDT did not reduce the fly population to the level arbitrarily established for satisfactory fly control.

To determine if the slower killing rate of DDT was responsible for the unsatisfactory control obtained, these dairies were retreated in early September. Dairies Nos. 18 and 27 were given complete premise treatments, and dairies Nos. 19 and 28 were given partial treatments, in which the diary barn alone was sprayed. All four dairies showed a considerable decrease in fly population during the succeeding month. When a complete premise treatment was made,

TABLE 3.—*A comparison of monthly housefly indices in dairies given partial or complete premise treatment with 2½-percent-DDT emulsion applied at the rate of 200 mg. DDT per square foot*

Month	Check dairy	Treated dairy					Check dairy	Treated [1] dairy	
	Dairy number								
	22	18	19	27	28	17	3	11	4
	Monthly averages of weekly fly indices								
April	32.9	8.8	15.9	7.2	7.8	12.6	16.9	2.0	6.0
May	54.0	18.5	19.6	12.1	5.2	12.7	34.6	7.7	11.8
June	90.6	21.5	40.1	36.6	43.8	17.9	55.2	18.4	19.2
July	68.6	24.0	29.5	27.4	45.3	19.6	30.8	11.0	11.2
August	45.9	31.7	35.1	27.6	37.2	36.1	26.8	10.5	9.3
September	58.7	[2] *6.0*	*17.6*	*5.5*	*15.6*	34.6	17.0	7.5	9.6
April–September average							34.1	10.1	11.2

[1] Partial treatment consisting of milking barn only.
[2] Italicized figures are indices subsequent to late season treatment.

the indices were reduced far below the maximum grill-count allowance of 10 flies, but when the milking barn alone was sprayed, the population was not reduced to that level.

These studies indicate that in dairies in which sanitation is very poor, the use of a DDT-xylene-Triton emulsion, containing 2½-percent DDT applied at the rate of 200 mg. per square foot to the milking barn and outbuildings, would give good control of flies for a period of about 8 weeks, and materially reduce the population level throughout the entire season.

In dairy No. 17, which had apparently good sanitation practices, large numbers of flies were found breeding in feed which had collected under a board walk between the barn and the feed room (see fig. 4 for a similar condition). The fly index for the latter part of March in this dairy was 115.75 flies. On April 2, a complete premise treatment was made, and although the fly population was not reduced to the satisfactory control level because of the heavy fly breeding, the reduction of flies (table 3) may be considered favorable through July.

In dairies Nos. 3, 4, and 11, the sanitation was considered good. Only the milking barns were sprayed in making a partial premise treatment in dairies Nos. 4 and 11 during the latter part of March, while dairy No. 3 was kept as a control.

The fly population in the treated dairies was kept under practical control throughout the entire season, with the exception of June, when natural population levels reached their maximum (table 3).

To compare the effectiveness of DDT wettable powder with DDT emulsion, two dairies were sprayed on June 21 with each of the respective formulae, both at the rate of 200 mg. DDT per square foot.

Subsequent to treatment, a marked reduction in the number of flies was observed in the weekly inspections (fig. 5). Throughout the

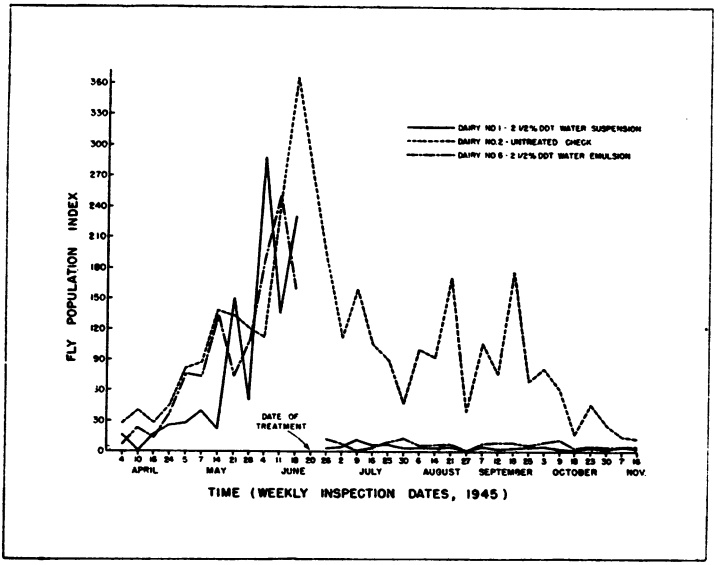

FIGURE 5.—DDT control of houseflies in two sprayed dairies, versus one check dairy, using different vehicles as indicated. DDT dosage, 200 mg. per square foot. Fly-population index computed on basis of grill-sampling technique.

remainder of the season, the fly-population levels in the emulsion and wettable-powder-treated dairies ran parallel to each other and well within the range of satisfactory control. Both materials were considered equal in effectiveness, and the slight variation in population levels was probably due to other factors.

Two more dairies were selected to determine the effectiveness of wettable DDT in reducing the fly population under dissimilar condi-

TABLE 4.—*Weekly indices of houseflies at two dairies before and after treatment with a 2½-percent water suspension of wettable DDT at the rate of 200 mg. DDT per square foot*

Dairy	Pretreatment weekly fly index										10-week index
	July 4	July 10	July 19	July 25	July 31	Aug. 7	Aug. 17	Aug. 23	Aug. 28	Sept. 7	
Dairy No. 3	71.0	25.7	17.5	13.7	25.7	26.0	26.3	35.7	19.0	13.5	27.4
Dairy No. 22	69.7	33.0	80.0	31.7	128.3	75.7	42.5	23.5	41.7	75.7	60.2
	Posttreatment weekly fly index									Nine-week index	
	Sept. 12	Sept. 20	Sept. 28	Oct. 4	Oct. 10	Oct. 19	Oct. 24	Nov. 1	Nov. 8		
Dairy No. 3	1.0	3.7	4.5	5.7	2.0	2.7	1.1	2.3	3.7	3.0	-------
Dairy No. 22	2.5	3.0	3.3	3.3	0.3	7.5	0.8	1.3	6.5	3.2	-------

tions. In dairy No. 3, a well-kept establishment, the milking barn alone was sprayed and in dairy No. 22, a very poorly kept dairy, a complete premise treatment was made. Both dairies were treated early in September with a 2½-percent suspension of the wettable DDT in water at the rate of 200 mg. DDT per square foot, and immediate and effective control was obtained (table 4).

THE CONTROL OF HOUSEFLIES IN RESTAURANTS

The use of DDT for the control of houseflies in restaurants was investigated in 16 establishments to determine both satisfactory methods of application and the degree of effectiveness of a DDT residue in reducing fly-population levels.

Procedure.—In restaurants, the high-gloss interior surfaces necessitate a spray application that will amply cover the surfaces involved without marring the finish or leaving a visible deposit. Under such circumstances, it was found that when a 5-percent spray material was used to obtain the desired deposit of 200 mg. DDT per square foot the total quantity of liquid applied to the glazed surfaces caused coalescing of spray droplets and "running" of the spray material. This oftentimes left a visible residue after drying. To overcome this condition, a xylene-Triton-X-100-water emulsion containing 7½-percent DDT was applied with a 65–0.15 nozzle having an aperture that produced an even spray pattern without solid edges. In most instances, a power sprayer was used because of its convenience as a time- and labor-saving device.

The nozzle used gives a spray pattern of many small droplets sufficiently dispersed to prevent coalescing and subsequent "running" on the verticle surfaces (fig. 1). The fairly narrow angle of the spray pattern enables the operator to manipulate the spray stream to much greater advantage in close quarters, and thus to reduce the occurrence of overlapping spray strips.

In the dining room and kitchens of all restaurants, the ceilings, walls, and any upholstery were sprayed. Cover cloths were used to prevent spray deposition on mirrors and other glass objects, table tops, food, cooking utensils, meat blocks, and food preparation tables (fig. 6). It was found desirable to treat the side walls before the ceilings, as this prevents the operator from tracking through the spray droplets falling to the floor. In those restaurants having a rear exit, the screen door and the woodwork or bricks around the outside door were sprayed.

The 7½-percent-DDT emulsion, applied at the rate of 200 mg. (3 cc.) per square foot, gave no noticeable disfigurement on a wide variety of paints and varnishes. On light-colored finishes, no exceptional caution is necessary. On dark finishes, care should be taken to

prevent overlapping of spray streams and "run-off." If "run-off" does occur, the spray material should not be touched or rubbed until dry, otherwise a white smear will result. When the spray material is permitted to dry without disturbance, the crystals remaining on the treated surface are not noticeable.

The greatest limiting factor in restaurant fly control is in making a treated surface available to flies during the day. At night, the flies rest on the ceilings and walls, and come into contact with a lethal amount of DDT, so that a treated restaurant is completely free of flies each morning. However, the flies that enter during the day have an opportunity to build up in numbers, for they may frequent food, untreated equipment, and furniture in both kitchen and dining room, without coming into appreciable contact with a treated surface until evening. Kitchens and storage areas have so much equipment and so many attractant materials that the total surface area that can be treated is relatively small and unattractive.

In each establishment, five fly counts were made with the 18-inch-square grill at points of maximum concentrations on unoccupied tables, meat blocks (fig. 7), preparation tables, soiled dishware or linen, and boxes of fruit or vegetables. The average of the highest fly count from each of the three most populated locations was used as a weekly index of the establishment. An index of three was arbitrarily selected as the upper limit of satisfactory control.

Results.—Restaurants and luncheonettes, varying considerably in type and grade, were selected for DDT treatment at various times during the season. In a group of better-grade restaurants having proper screening, good sanitation, and air conditioning, a treatment of the kitchen, food-preparation rooms, and the rear entryway, including the screen door and outer area around it, was found to give good control for a period of 4 months and in some instances for the entire season (table 5, establishments Nos. 1, 4, 8, 16, 20). In a newly opened restaurant, No. 16, the air-conditioning system broke down 6 weeks after treatment, and the doors were opened to the street. Following this, the influx of flies to the main dining room rose above an index of three flies per grill count, until the air-conditioning system was restored to working order. Restaurant No. 8 had no air-conditioning system, but in its place had large fans which prevented the concentration of flies.

In a second group of restaurants (Nos. 2, 6, 9), the doors of the establishment were opened to the streets at all times. In these restaurants, the main dining room was treated, as well as the kitchen, preparation rooms, and rear entryway. Under such conditions, the treatment maintained a satisfactory fly level for approximately 3 months, after which retreatment was necessary. In restaurant No. 6,

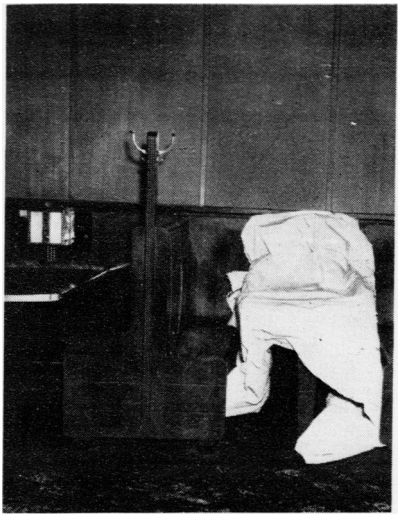

FIGURE 6.—Restaurant table, mirrors, and record player covered before spraying side walls and booths of a restaurant.

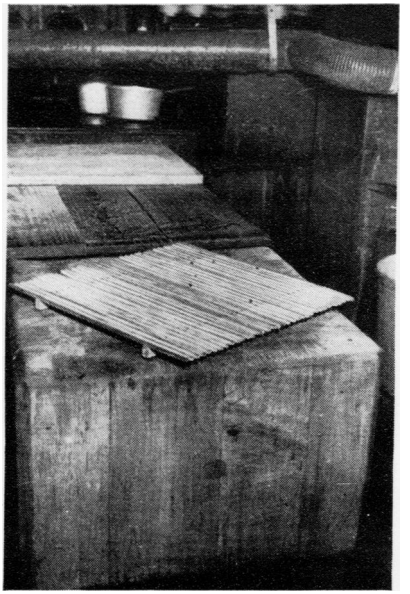

FIGURE 7.—Use of the small fly-sampling grill to estimate fly density in a restaurant kitchen, in this instance on the meat block.

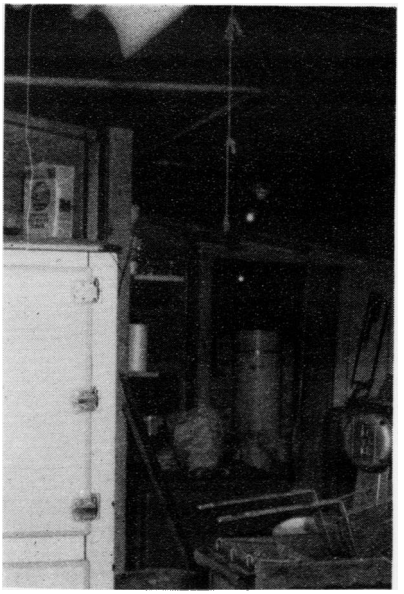

FIGURE 8.—DDT-treated strings hanging in a small kitchen to control the flies.

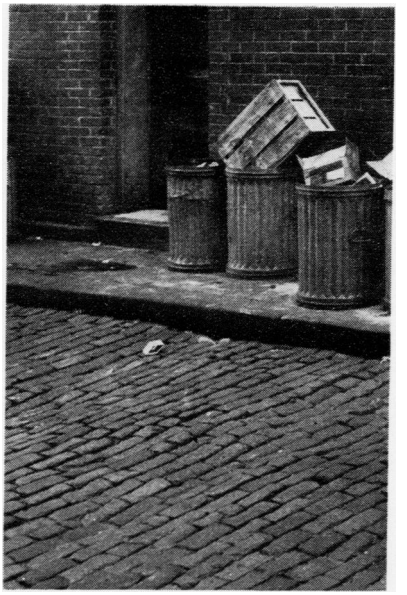

FIGURE 9.—Loosely bricked alley behind a restaurant. Flies were found breeding heavily in garbage washings collected between these bricks.

poor control was caused by the acquisition of a flock of chickens, which were housed close to an open door leading to the kitchen. Under such conditions, a considerable number of flies entered the kitchen throughout the day.

In a widely divergent group of institutions in which the kitchen, food-preparation rooms, and rear entryway were treated, the occurrence of certain special conditions prevented satisfactory control until corrections were made. In a large shipyard cafeteria, open rear and front doors, and a scattering of food on the premises necessitated the additional treatments of the main dining room and a canteen. At a hotel (No. 12), the presence of garbage near a frequently opened rear door and a trash pile nearby prevented satisfactory control in spite of a high kill. In a hospital (No. 13), portions of the kitchen were painted 1 month after treatment, thus covering the DDT, so that satisfactory control was not again obtained until a second treatment was made. At an orphanage (No. 14), the fly population in the kitchen was observed to fluctuate consistently with that of a nearby dairy. Both kitchen and dairy were treated in July, and good control was obtained for the remainder of the year.

In drive-in restaurants and in night clubs, which are usually located on the outskirts of a city, a treatment of the kitchen, food-preparation rooms, the entryways, and the sheltered areas open to the outside have given satisfactory control.

At a crossroads on the edge of the city, a newly opened drive-in restaurant (table 5, No. 18) was immediately subjected to a great influx of flies, and a night club (No. 19) on an opposite corner harbored a considerable number of flies in spite of their fly-control practices. On a third corner, a fruit-and-vegetable stand was treated as an adjunct to the control procedure used for the drive-in restaurant and night club. Here, considerable fly breeding was found in decaying fruits and vegetables thrown into a depression to the rear of the stand. Further to the rear of the stand, there was a 100-head hog farm. A treatment of the walls and ceiling of both the outer shelter and the enclosed part of the fruit-and-vegetable stand reduced the population from an average of 7.7 flies for the pretreatment weekly indices to an average of 1.1 flies for the posttreatment weekly indices.

THE CONTROL OF HOUSEFLIES IN SMALL FOOD SHOPS WITH DDT-TREATED STRINGS

Many small food shops that now depend on a small hand sprayer, fly-paper rolls, or manual elimination for the control of flies, will not obtain proper equipment to make a complete or partial premise treatment with DDT. Since the housefly prefers to rest on the edges of various structures, on strings, and on wire, it was thought that

TABLE 5.—*Weekly indices of fly populations as determined by the grill-sampling device in food establishments treated with a 7½-percent-DDT emulsion at the rate of 200 mg. of DDT per square foot*

[Lines separating figures within the columns indicate time of treatment]

Date (1945)	Establishment No.													
	1	2	6	8	9	4	11	12	13	14	16	20	18	19
Mar. 19-24	6.0													
26-31	27.0													
Apr. 2- 7	0	40.0												
9-14	0	12.0				11.7								
16-21	1.0	17.0				16.3			5.6					
23-28	0	31.0				10.3			3.0					
May 1- 5	0	0			7.5	18.7			2.3	7.5				
7-12	0	2.0	12.3		3.0	11.3	13.3	13.0	9.6	3.0				
14-19	2.7	2.0	10.0		3.5	9.0	13.0	16.3	3.0	3.5				
21-26	0	.7	4.3		5.0	9.0	17.7	27.0	7.0	5.0				
28-June 2	.7	.7	9.3		0	7.0		20.0	2.0	0				
June 4- 9					3.5		16.7	26.0	2.3	3.5				
11-16	.3	.3	3.0		1.0	12.3	11.0	16.0	0	0				
18-23	.3	0	4.0		4.3	9.0		9.0	1.0	3.5				
25-30	.3	.3	6.0	10.0	4.3	4.0	.7	5.7	.7	0	0			
July 2- 7	0	.7	5.7	10.3	3.0	6.3	5.3	2.0	5.0	5.5	0			
9-14	0	2.0	7.7	6.3	3.3	0	.7	6.3	2.7	8.5	0			
16-21	0	1.3	0	7.3	.3	0	1.0	2.6	1.6	.5	0			
23-28	0	2.0	2.0	2.3	1.3	0	.7	13.3	4.3	1.5			12.3	
30-Aug. 4	2.0	5.0				0		7.0	7.3				32.7	10.0
Aug. 6-11	.7	5.0	3.3	0	.7	0	0	5.0	5.3	0	3.0		19.7	7.7
13-18	0	4.0	4.0	.6	2.3	0		8.3	6.0	2.0	2.7	0	10.0	9.3
20-25	0	.7	5.3	0	1.6	0	.7	6.3	0	0	4.0	0	8.0	7.0
27-Sept. 1	0	1.3	4.0	1.0	1.6	0	0	5.3	2.0	0	3.3	0	0	0
Sept. 3- 8	0	1.3	4.0	1.6	1.0	0	2.0	5.3	.7	0	1.0	0	1.0	0
10-15	0	.7	4.0	1.0	2.3	0	2.0	4.3	.7	0	1.7	0	.7	.3
17-22	0	.7		1.0	2.3	0	0	4.6	.3	1.5	1.3	0	0	.3
24-25	.7	.7		.7	2.3	0	.7	4.6	.7	.5	1.7	0	1.0	
Oct. 1- 6	0	.3		.7	2.3	0		7.6	.7		1.0	0	.3	.7
8-13	0	.3		0	1.3	0	2.0	5.3	.7	3.0	.3	0	0	.7
15-20	0	0	2.3	0	1.6	0		2.6			1.3	0		
22-27	0	0	2.7	0	1.6	0		7.3		5.5		0		3.0
29-Nov. 3							.7	5.6	1.0		1.0	0	.7	.7

advantage might be taken of this characteristic by placing DDT-soaked strings in such stores where the flies might rest on them. In several of these smaller food shops, DDT-treated cords were used to determine the effectiveness of their use in reducing the population of the housefly to a satisfactory level.

Procedure.—Net cord was soaked in a 35-percent-DDT-xylene solution and hung to dry, so that DDT crystals remained attached to the surface. These cords were then cut to convenient lengths and substituted for the electric-light pull cords. Other strings were run along the chains holding suspended display shelves or placed in other suitable inconspicuous locations. In the kitchens and food-preparation rooms, the treated cord was hung from the ceiling where it would

be accessible to the flies, but out of the way of the employees (fig. 8). Forty-five to sixty feet of treated cord was used in each establishment.

The method of sampling the fly population at points of high concentration was similar to that used in large restaurants.

Results.—In small shops serving food, the use of DDT-coated strings has given good control of houseflies under ordinary conditions. In three shops (table 6, S1, S3, and S4), pretreatment weekly-index averages of 5.2, 4.5, and 6.3 flies were reduced to 0.8, 0.4, and 0.6 flies, respectively.

In an unscreened shop with a high exterior fly population (table 6, S5), the coated strings did not afford a resting area for the large influx of flies sufficient to reduce the population to any great extent.

In an employees' dressing room (table 6, S2), adjacent to the wholesale-meat sales room of a large fly-infested abattoir, 60 feet of treated cord was strung horizontally, close to the ceiling. A fly average of 90.7 for 4 pretreatment weekly indices was reduced to a fly average of 10.1 for 10 posttreatment weekly indices.

TABLE 6.—*Pretreatment and posttreatment weekly indices of housefly population levels in small food shops in which DDT-coated strings were hung for the control of houseflies*

[Lines separating figures within columns indicate time of treatment]

Month	Shop No.				
	S1	S2	S3	S4	S5
June	4.6				
	8.3				
	5.0				
	5.0				
July	6.3				
	4.0	80.0			
	4.3	100.0			
	7.3	70.0	4.0		
August	3.0	113.0	8.0	7.0	
	4.3	3.5	2.3	6.0	
	5.0	2.5	3.7	6.3	
	1.6	6.0	5.0	7.0	
September	1.6	5.0	0.3	1.0	
	1.0	6.0	0.3	0.6	
	0.6	15.0	0.6	1.0	
	0.6	28.0	0.3	0.6	7.3
October	1.3	23.0	1.0	0	5.3
	0.6	7.0	0	1.3	6.3
	0.6		0.6	0.6	5.6
	0.3		0.3	0	5.6
	0.6		0	0.6	8.0

THE USE OF DDT AS A COVER SPRAY FOR EMERGING ADULTS

Since special breeding conditions often exist in the environs of canneries, grain and feed mills, dumps, garbage stations, etc., preliminary work was done at a grain and feed mill and at a restaurant

garbage station to determine the value of DDT as a cover spray and its ability to exercise some degree of control over fly emergence from breeding areas.

Procedure and Results.—A study of a large restaurant showed that most of its flies entered through a rear service door, near which the restaurant garbage containers were kept on a low cement platform adjoining a brick-paved alley (fig. 9). Over a period of time, the garbage-can washing operations flushed a large quantity of food particles into the street, where the material packed between the bricks and supported a considerable population of fly larvae. The cement platform and a surrounding 60- by 22-foot section of the alley were given a cover-spray treatment with a 0.5-percent-DDT emulsion at 200 mg. DDT per square foot. The high dilution was used to promote penetration of the spray into the soil between the bricks, thus making sufficient DDT available for control of the emerging adults. Since it had been shown (*1*, *3*) that DDT in the presence of wet soil loses its toxicity within a relatively short time, four applications were made at 3-week intervals. A 5-week pretreatment housefly index of 48.4 was reduced in four 3-week posttreatment periods to indices of 12.7, 10.5, 8.7, and 10.3 flies, respectively (table 7). After the fourth treatment, 7 weeks were allowed to elapse before another treatment was made, and in this period there was no appreciable increase in the fly index.

In the final application, the alley side of the restaurant building was treated for its full length to a height of 9 feet, in addition to the treatment of the paved-alley surface. In the subsequent 5 weeks, there was a reduction in the index from 12.3 to 6.0 flies.

Further use of a DDT cover spray for housefly control was made on a railroad loading area and on a dumping area for floor sweepings at a wholesale grain-and-feed-distribution plant. In both locations, considerable quantities of spilled grain and meal accumulated and furnished a media that produced vast numbers of flies. In addition to the breeding areas, the drippings from a large elevated molasses-storage tank attracted flies and supplied an ample source of food.

TABLE 7.—*Housefly indices at a restaurant garbage station in an alley treated with a ½-percent-DDT emulsion cover spray at the rate of 200 mg. of DDT per square foot. Treatments were made at 3-week intervals*

Item	Date											
	Apr. 4–May 4	Treated May 4	May 8–24	Treated May 25	June 2–14	Treated June 18	June 21–July 7	Treated July 9	July 12–25	July 31–Aug. 23	Treated Aug. 20	Aug. 30–Sept. 26
Number of weeks per period	5		3		3		3		3	4		5
Period fly index	48.4		12.7		10.5		8.7		10.3	12.3		6.0

In the first three applications, a 50–0.4 nozzle was used to treat the entire breeding area with a 0.5-percent-DDT emulsion at the rate of 300 mg. of DDT per square foot. Although the use of a nozzle with such a low delivery rate would not be economically sound on a commercial basis, it did permit a more accurate application of the spray for experimental purposes. In the fourth application, an orchard-type spray gun was used at 200 pounds' pressure, and in addition to the cover spray, the walls and ceiling for the entire length of the loading platform were given a residual treatment. For the latter, a 2½-percent-DDT emulsion was used and was applied with a 50–0.4 nozzle at 70 pounds' pressure.

The treatment intervals were varied to permit observations on the effective duration of a given treatment and on the variability of fly populations between treatments. In determining fly populations by the grill method, the inspection areas were divided into two categories: (1) within the limits of the building, including the interior, the entrances, and the sheltered portion of the loading platform, and (2) outside the building at points of maximum fly concentrations, along the railroad track, the loading platform, near the molasses tank, and on the dumping ground for the floor sweepings.

Four cover-spray treatments were made on April 21, May 12, June 16, and August 31, respectively. After each cover-spray treatment, a satisfactory reduction in the fly population was secured (table 8). When a cover spray alone was used, the population rose rapidly after 5 weeks. When a residual treatment was applied in conjunction with the cover spray, the period of control was lengthened considerably.

TABLE 8.—*Period fly indices inside and outside the building limits at a wholesale grain- and feed-distribution plant where fly-breeding wastes were treated with a cover spray of ½-percent-DDT emulsion applied at the rate of 300 mg. DDT per square foot*

Item	Date										
	Apr. 10–20	Treated Apr. 21	Apr. 27–May 9	Treated May 12	May 16–June 13	Treated June 16	June 20–July 24	Aug. 1–29	Treated Aug. 31	Sept. 7–Oct. 4	Oct. 10–Nov. 8
Number of weekly inspections	2		3		5		5	5		5	5
Fly index inside the limits of building	56.5		11.0		14.2		12.0	42.1		8.3	12.9
Fly index outside the limits of building	259.5		120.7		47.8		30.5	246.2		23.9	16.3

SUMMARY

DDT has proved to be very effective in the control of houseflies when employed not only for a residual-spray treatment in dairies and restaurants, but also on DDT-impregnated strings hung in small

food shops, and in a dilute cover spray, used to kill emerging adult flies at an alley garbage station and an industrial plant.

In dairies, a 2½-percent-DDT-xylene-Triton emulsion was used at the rate of 200 mg. of DDT per square foot. Under poor sanitary conditions, treatment of the milking barn alone or of the outbuildings alone gave 50 to 70 percent control, which was not sufficient to reduce the population to a satisfactory level. A complete treatment of both barn and outbuildings usually gave satisfactory control for 3 months or more. A DDT emulsion and a water-wettable DDT-powder suspension gave comparable results when used under similar conditions and concentrations.

In restaurants, a 7½-percent emulsion was applied to the ceiling and walls of dining rooms and kitchens at the rate of 200 mg. of DDT per square foot. On high-gloss finishes, particular caution was exercised to obtain a uniformity of spray pattern and to prevent coalescing of the droplets. Excellent control was obtained for three or more months in the restaurants treated.

In small food and ice-cream shops, 40 to 60 feet of DDT-impregnated cord hung as a replacement for electric-light pull cords, along the chains of suspended display shelves, and from ceilings at locations where the cord would be accessible to the flies, gave good control when fly populations were not excessive. In shops with a great influx of flies, the treated strings did not bring the flies under satisfactory control.

Preliminary tests with DDT as a cover spray for the control of adult flies emerging from garbage cand grain wastes gave effective control. A treatment of an alley near a restaurant garbage station with a one-half-percent-DDT emulsion at the rate of 200 mg. per square foot gave effective control for 3 weeks. A treatment of grain wastes with a one-half-percent emulsion at the rate of 300 mg. per square foot gave effective control for 5-week intervals. When a 2½-percent-DDT emulsion was applied as a residual treatment to surfaces at the rate of 200 mg. per square foot to supplement the cover spray, a more rapid decrease in population and a longer period of effectiveness was obtained.

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(2) Scudder, H. I.: A new technique for sampling the density of housefly population. (To be published in Public Health Reports.)

(3) Upholt, W. M.: The inactivation of DDT used in anopheline mosquito laryicides. Pub. Health Rep., 62:302–309 (Feb. 28, 1947).

A MOBILE, COLLAPSIBLE LABORATORY AND FIELD TABLE[1]

By GEORGE D. CLAYTON, *Senior Assistant Engineer (R), United States Public Health Service*

In making a comprehensive survey of industrial plants, it is sometimes necessary to spend several days taking atmospheric samples. In plants which have a large floor area, the transporting of equipment from one sampling location to another is very tiring when done manually. To conserve the time of field personnel and to minimize fatigue, a mobile, collapsible table (figs. 1, 2, and 3) was designed to transport sampling equipment from one location to another. This table has been used under field conditions and has proved a very definite aid.

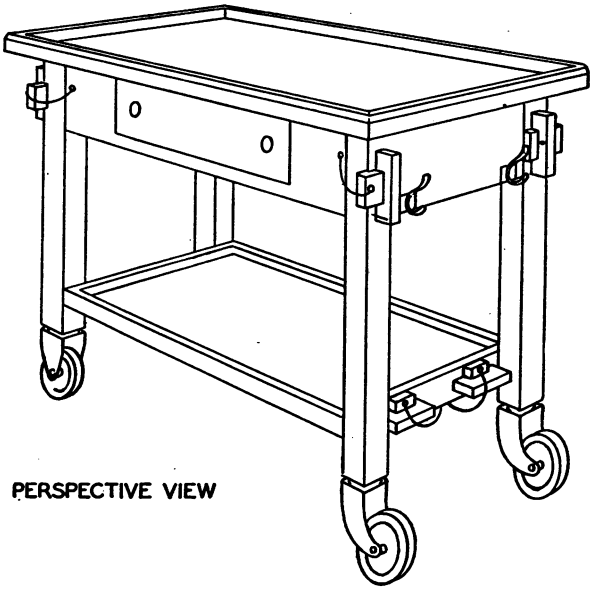

FIGURE 1.—A mobile, collapsible laboratory and field table, perspective view.

The table is designed so that it can be assembled and disassembled rapidly and easily. The size of the table is such that it will fit in the trunk compartment of most automobiles along with the other field equipment. It is constructed of seasoned oak, stained, and then waxed. No paint nor varnish is used, as it is thought this would hinder the assembling and disassembling process. One-inch ledges are placed around the top and shelf of the table to prevent the dropping of small objects on the floor. Electrical cords and rubber hoses may be hung on hooks which are provided on either end of the table. A drawer is provided in the top section to carry stop watches, notebooks,

[1] From the Industrial Hygiene Division, Bureau of State Services.

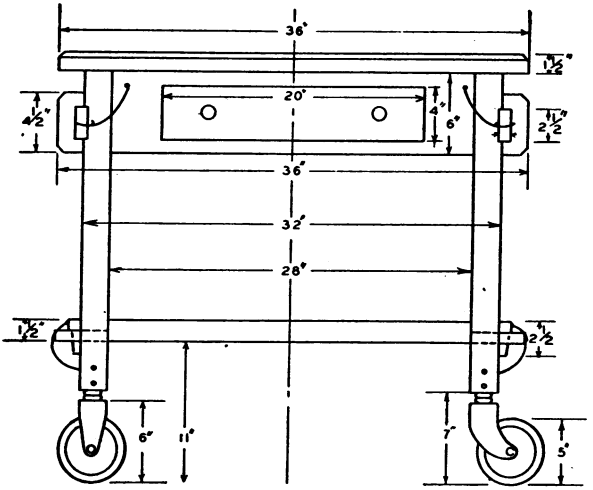

FIGURE 2.—A mobile, collapsible laboratory and field table, front view.

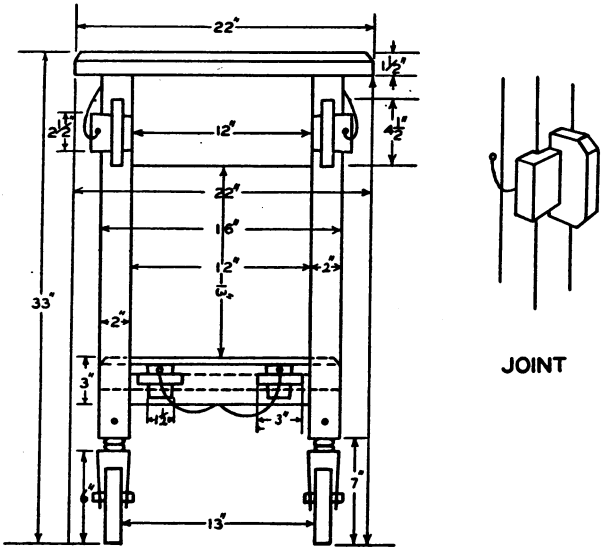

FIGURE 3.—A mobile, collapsible laboratory and field table, side view, and expanded drawing of wedge joint.

and small tools. The principle of wedges is used in the construction of the table, since this principle is found most satisfactory in providing strength for the table while in use and for ease in disassembling it. The two casters on the front of the table are stationary and the back two are swivel. However, it is felt that all four casters should be of the swivel type to allow the table to be maneuvered in a smaller area.

INCIDENCE 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

REPORTS FROM STATES FOR WEEK ENDED APRIL 5, 1947

Summary

A net decline in the incidence of influenza was reported for the country as a whole. Increases were recorded, however, in the South Atlantic and East South Central areas. A total of 35,939 cases was reported, as compared with 48,968 last week (in both instances exclusive of Kentucky, where a sharp decline in "upper respiratory infections" was indicated). The 5-year (1942–46) median is 2,148, and the largest number recorded for a corresponding week of the past 12 years was 9,740, reported in 1939. Of the 15 States reporting currently more than 196 cases, the 8 showing increases reported 16,732 (last week 12,234). The 13 States reporting more than 282 cases each are as follows (last week's figures in parentheses): *Increases*—Michigan 332 (78), Kansas 1,634 (926), Virginia 4,153 (3,986), West Virginia 3,832 (2,474), South Carolina 3,009 (2,305), Tennessee 1,276 (1,125), Alabama 2,061 (1,085), Mississippi 435 (255); *decreases*—Iowa 3,842 (6,036), Georgia 502 (805) Arkansas 3,167 (4,576), Oklahoma 2,282 (6,891), Texas 7,144 (12,332). The total for the year to date is 242,601 (as compared with 177,855 for the same period last year), of which 202,010 cases, or 83 percent, occurred in the past 5 weeks. The respective corresponding percentages in 1946, 1945, and 1944 are 10, 26, and 5. The total for the 36-week period since the average week of seasonal low incidence (last week of July) is 275,576, as compared with 540,103 for the same period last year and a 5-year median of 100,346.

Only 3 cases of smallpox were reported during the week; 2 in Ohio and 1 in Kentucky. The 9 cases reported in Texas last week occurred in Dimmit County. A delayed report has been received of 4 cases of smallpox from imported infection, with 1 death, occurring in New York City during the period March 5–24.

Deaths recorded during the week in 93 large cities of the United States totaled 10,193, as compared with 10,820 last week, 9,037 and 9,121, respectively, for the corresponding weeks of 1946 and 1945, and a 3-year (1944–46) median of 9,121. The total for the year to date is 141,652, as compared with 141,613 for the corresponding period last year.

*Telegraphic morbidity reports from State health officers for the week ended Apr. 5, 1947, and comparison with corresponding week of 1946 and 5-year median**

In these tables a zero indicates a definite report, while leaders imply that, although none was reported, cases may have occurred.

Division and State	Diphtheria			Influenza			Measles			Meningitis, meningococcus		
	Week ended—		Median 1942–46	Week ended—		Median 1942–46	Week ended—		Median 1942–46	Week ended—		Median 1942–46
	Apr. 5, 1947	Apr. 6, 1946		Apr. 5, 1947	Apr. 6, 1946		Apr. 5, 1947	Apr. 6, 1946		Apr. 5, 1947	Apr. 6, 1946	
NEW ENGLAND												
Maine	0	4	0	1	2	1	172	26	26	0	0	1
New Hampshire	0	0	0	1	1	------	37	17	17	0	0	0
Vermont	0	0	0	38	------	------	253	10	56	0	0	0
Massachusetts	13	6	6	------	------	------	390	1,463	1,158	3	5	5
Rhode Island	1	0	0	1	2	1	162	------	14	1	0	1
Connecticut	0	2	1	5	3	3	462	263	341	0	3	6
MIDDLE ATLANTIC												
New York	23	29	19	[1] 14	(1)	[1] 5	448	4,595	2,756	8	27	27
New Jersey	11	3	4	17	------	6	326	3,477	1,411	3	7	9
Pennsylvania	------	19	12	------	2	2	------	3,511	1,068	------	6	15
EAST NORTH CENTRAL												
Ohio	8	19	5	61	4	8	744	734	734	6	9	9
Indiana	11	9	6	21	49	19	57	987	226	1	4	4
Illinois	5	18	17	100	28	12	72	1,229	932	3	8	17
Michigan [2]	4	3	3	332	------	3	49	2,800	848	2	6	6
Wisconsin	9	0	3	282	36	40	382	2,840	1,627	2	4	4
WEST NORTH CENTRAL												
Minnesota	3	5	2	2	2	2	95	39	141	1	0	1
Iowa	0	6	4	3,842	------	------	251	81	221	1	2	2
Missouri	6	7	3	33	1	1	28	384	314	2	4	4
North Dakota	0	1	1	82	------	3	16	6	30	1	0	1
South Dakota	0	5	1	------	------	------	7	31	26	0	1	1
Nebraska	3	1	2	152	2	7	12	708	305	0	)	0
Kansas	5	5	3	1,634	------	4	10	1,035	566	3	6	5
SOUTH ATLANTIC												
Delaware	1	0	0	3	------	------	------	52	8	0	0	1
Maryland [2]	3	19	6	52	8	8	33	614	614	4	1	9
District of Columbia	0	0	0	------	------	------	18	284	134	0	1	1
Virginia	8	4	7	4,153	215	246	383	686	559	4	5	5
West Virginia	1	3	3	3,832	4	5	26	100	100	3	0	1
North Carolina	12	8	5	------	------	10	145	577	577	3	7	7
South Carolina	14	5	6	3,009	239	376	195	381	207	1	0	5
Georgia	2	5	3	502	8	15	212	159	161	0	1	2
Florida	7	5	2	142	2	2	89	149	149	2	4	4
EAST SOUTH CENTRAL												
Kentucky	11	8	6	**	5	4	17	255	112	3	4	4
Tennessee	7	3	5	1,276	22	48	106	252	252	1	4	5
Alabama	4	7	6	2,061	37	105	293	190	190	1	3	7
Mississippi [2]	4	5	4	435	------	------	25	------	------	1	5	5
WEST SOUTH CENTRAL												
Arkansas	5	4	4	3,167	45	50	103	153	153	0	2	2
Louisiana	8	3	3	19	51	16	47	288	247	3	3	3
Oklahoma	4	3	3	2,282	34	89	2	402	175	0	2	2
Texas	24	36	36	7,144	906	906	227	2,666	2,457	10	7	16
MOUNTAIN												
Montana	1	2	2	183	4	6	105	45	76	0	0	0
Idaho	0	1	1	184	18	------	6	78	52	0	0	0
Wyoming	0	1	0	16	------	1	12	58	72	0	0	1
Colorado	5	4	6	171	13	21	88	1,091	293	2	0	1
New Mexico	0	0	0	4	3	2	64	11	23	0	0	0
Arizona	4	15	1	196	73	83	47	228	189	0	2	0
Utah [2]	0	0	0	220	8	13	19	522	239	1	1	0
Nevada	0	0	0	------	------	------	------	3	1	0	0	0
PACIFIC												
Washington	4	4	3	52	------	2	53	732	354	1	3	3
Oregon	0	10	2	173	3	16	29	387	156	0	0	1
California	10	17	17	45	41	48	185	3,634	2,920	6	11	11
Total	241	314	219	35,939	1,871	2,148	6,502	38,233	25,377	83	158	191
14 weeks	4,001	5,252	4,234	242,601	177,855	64,484	75,568	260,450	235,785	1,200	2,706	3,423
Seasonal low week [3]	(27th) July 5–11			(30th) July 26–Aug. 1			(35th) Aug. 30–Sept. 5			(37th) Sept. 13–19		
Total since low	11,567	16,896	12,970	275,576	540,103	100,346	98,455	286,574	273,798	2,172	4,210	5,875

[1] New York City only.
[2] Period ended earlier than Saturday.
[3] Dates between which the approximate low week ends. The specific date will vary from year to year.
*Current reports are exclusive of Pennsylvania; report not received.
**Kentucky reported 1,036 cases of influenza for the current week and delayed report of 12,910 cases for week ended March 29. These figures are excluded from totals for comparative purposes. (See previous reports of upper respiratory infections in Kentucky revealed by special surveys).

Telegraphic morbidity reports from State health officers for the week ended Apr. 5, 1947, and comparison with corresponding week of 1946 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever		
	Week ended—		Median 1942–46	Week ended—		Median 1942–46	Week ended—		Median 1942–46	Week ended—		Median 1942–46
	Apr. 5, 1947	Apr. 6, 1946		Apr. 5, 1947	Apr. 6, 1946		Apr. 5, 1947	Apr. 6, 1946		Apr. 5, 1947 [4]	Apr. 6, 1946	
NEW ENGLAND												
Maine	0	0	0	19	24	24	0	0	0	0	0	0
New Hampshire	0	1	0	15	27	8	0	0	0	0	0	0
Vermont	0	0	0	7	6	13	0	0	0	0	0	0
Massachusetts	0	0	0	103	184	383	0	0	0	2	1	1
Rhode Island	0	0	0	15	5	21	0	0	0	0	0	0
Connecticut	0	0	0	53	62	82	0	0	0	1	0	1
MIDDLE ATLANTIC												
New York	3	3	2	402	789	667	[5] 0	0	0	2	2	6
New Jersey	0	0	0	130	176	200	0	0	0	1	3	2
Pennsylvania	------	1	1	------	482	482	------	0	0	------	3	3
EAST NORTH CENTRAL												
Ohio	0	0	0	381	435	409	2	0	0	2	0	3
Indiana	0	0	0	90	85	108	0	0	0	1	1	1
Illinois	3	2	2	111	177	233	0	0	0	2	0	1
Michigan [3]	1	2	0	140	159	174	0	1	0	1	2	2
Wisconsin	0	0	0	64	130	245	0	0	0	1	0	0
WEST NORTH CENTRAL												
Minnesota	0	0	0	30	42	80	0	0	0	0	0	0
Iowa	0	0	0	41	59	59	0	0	1	0	0	0
Missouri	1	0	0	51	77	80	0	0	1	1	2	1
North Dakota	0	0	0	10	8	23	0	0	0	0	0	0
South Dakota	0	0	0	13	21	21	0	0	0	0	0	0
Nebraska	0	0	0	30	39	53	0	0	0	0	3	0
Kansas	0	1	0	55	80	93	0	0	0	1	1	0
SOUTH ATLANTIC												
Delaware	0	0	0	9	9	9	0	0	0	0	0	0
Maryland [3]	0	0	0	33	174	174	0	0	0	0	0	1
District of Columbia	0	0	0	18	24	26	0	0	0	0	0	0
Virginia	0	0	0	34	97	97	0	0	0	2	2	2
West Virginia	0	0	0	13	27	32	0	0	0	2	0	1
North Carolina	0	1	0	30	47	41	0	0	0	0	0	1
South Carolina	0	0	1	7	5	4	0	0	0	0	0	0
Georgia	1	0	0	10	10	10	0	0	0	1	4	4
Florida	1	2	1	5	5	7	0	0	0	3	1	3
EAST SOUTH CENTRAL												
Kentucky	0	1	1	26	33	48	1	0	0	1	1	1
Tennessee	0	0	0	47	27	35	0	0	0	0	1	1
Alabama	0	1	1	28	3	17	0	0	0	1	2	0
Mississippi [3]	0	0	1	7	4	6	0	0	1	1	1	1
WEST SOUTH CENTRAL												
Arkansas	1	1	0	4	13	7	0	0	0	0	4	0
Louisiana	2	0	0	7	12	9	0	0	0	3	4	3
Oklahoma	0	1	0	2	14	14	0	0	0	0	0	0
Texas	3	2	2	27	43	76	0	0	0	3	8	6
MOUNTAIN												
Montana	0	3	0	7	12	12	0	0	0	0	0	0
Idaho	0	0	0	12	8	38	0	0	0	0	4	0
Wyoming	0	0	0	2	6	15	0	0	0	0	0	0
Colorado	0	2	0	46	27	50	0	1	0	0	2	0
New Mexico	0	0	0	6	6	6	0	0	0	0	0	1
Arizona	1	0	0	6	7	14	0	0	0	0	1	1
Utah [3]	0	0	0	21	20	35	0	0	0	0	0	0
Nevada	0	0	0	1	0	1	0	0	0	0	0	0
PACIFIC												
Washington	0	2	0	26	45	65	0	7	0	0	2	0
Oregon	0	0	0	21	26	30	0	0	0	1	2	2
California	4	2	2	139	180	180	0	4	0	6	4	3
Total	21	28	19	2,354	3,951	4,246	3	13	14	39	61	61
14 weeks	701	546	359	38,223	48,492	55,893	[5] 68	137	174	609	634	781
Seasonal low week [3]	(11th) Mar. 15–21			(32d) Aug. 9–15			(35th) Aug. 30–Sept. 5			(11th) Mar. 15–21		
Total since low	76	80	57	64,909	87,063	94,989	118	213	291	124	159	159

[2] Period ended earlier than Saturday.
[3] Dates between which the approximate low week ends. The specific date will vary from year to year.
[4] Including paratyphoid fever reported separately as follows: Massachusetts 2 (salmonella infection); New York 1; New Jersey 1; Virginia 1; Georgia 1; Louisiana 1; California 3.
[5] Delayed report, smallpox, New York City: March 5–24, 4 cases, 1 death, imported infection. Cases are included in cumulative total.

Telegraphic morbidity reports from State health officers for the week ended Apr. 5, 1947, and comparison with corresponding week of 1946 and 5-year median—Con.

Division and State	Whooping cough			Week ended Apr. 5, 1947							
	Week ended—		Median 1942–46	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	Apr. 5, 1947	Apr. 6, 1946		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	34	17	17	-----	-----	-----	-----	-----	-----	-----	1
New Hampshire	3	7	5	-----	-----	-----	-----	-----	-----	-----	-----
Vermont	9	5	24	-----	-----	-----	-----	-----	-----	-----	5
Massachusetts	109	90	148	-----	-----	-----	-----	-----	-----	-----	1
Rhode Island	15	22	22	-----	-----	-----	-----	-----	-----	-----	-----
Connecticut	74	44	44	-----	-----	-----	-----	-----	-----	-----	-----
MIDDLE ATLANTIC											
New York	166	163	234	3	2	-----	-----	-----	-----	-----	4
New Jersey	102	155	155	3	-----	-----	-----	-----	-----	-----	1
Pennsylvania	-----	97	169	-----	-----	-----	-----	-----	-----	-----	-----
EAST NORTH CENTRAL											
Ohio	128	98	143	-----	-----	-----	-----	-----	1	-----	1
Indiana	15	10	10	-----	-----	-----	1	-----	-----	-----	4
Illinois	55	111	111	7	4	-----	-----	-----	2	-----	9
Michigan [2]	189	101	101	1	1	-----	-----	-----	-----	-----	2
Wisconsin	126	97	97	-----	-----	-----	-----	-----	-----	-----	12
WEST NORTH CENTRAL											
Minnesota	6	7	9	1	-----	-----	-----	-----	-----	-----	1
Iowa	6	10	10	-----	-----	-----	-----	-----	-----	-----	7
Missouri	13	17	17	-----	-----	-----	-----	-----	-----	-----	-----
North Dakota	-----	2	9	-----	-----	-----	-----	-----	-----	-----	-----
South Dakota	1	-----	1	-----	-----	-----	-----	-----	-----	-----	-----
Nebraska	12	3	7	1	-----	-----	-----	-----	-----	-----	1
Kansas	9	31	34	-----	-----	-----	-----	-----	-----	-----	11
SOUTH ATLANTIC											
Delaware	2	1	1	-----	-----	-----	-----	-----	-----	-----	-----
Maryland [2]	58	22	44	-----	-----	-----	-----	-----	-----	-----	2
District of Columbia	5	6	11	-----	-----	-----	-----	-----	-----	1	-----
Virginia	63	32	48	-----	-----	89	-----	-----	-----	-----	2
West Virginia	25	34	34	-----	-----	-----	-----	-----	-----	-----	-----
North Carolina	45	74	151	-----	-----	-----	-----	-----	-----	1	1
South Carolina	67	53	55	-----	6	-----	-----	-----	1	1	1
Georgia	13	5	19	-----	1	-----	-----	-----	7	4	2
Florida	51	19	18	1	1	-----	-----	-----	1	2	-----
EAST SOUTH CENTRAL											
Kentucky	18	16	50	-----	-----	-----	-----	-----	-----	-----	-----
Tennessee	28	28	36	1	-----	-----	-----	-----	-----	1	1
Alabama	103	15	36	1	-----	-----	-----	-----	-----	2	3
Mississippi [2]	15	-----	-----	-----	-----	-----	-----	-----	-----	1	-----
WEST SOUTH CENTRAL											
Arkansas	19	8	9	-----	-----	4	-----	-----	1	-----	1
Louisiana	8	-----	3	2	-----	-----	-----	-----	7	1	-----
Oklahoma	9	10	10	-----	-----	-----	-----	-----	-----	-----	-----
Texas	418	196	196	5	141	57	-----	-----	-----	3	7
MOUNTAIN											
Montana	2	7	11	-----	-----	-----	-----	-----	-----	-----	-----
Idaho	13	7	-----	-----	-----	-----	-----	-----	-----	-----	2
Wyoming	-----	1	2	-----	-----	-----	-----	-----	-----	-----	-----
Colorado	28	29	29	-----	1	-----	-----	-----	-----	-----	1
New Mexico	3	7	7	-----	-----	-----	-----	-----	-----	-----	-----
Arizona	23	7	29	-----	-----	26	-----	-----	-----	-----	-----
Utah [2]	9	23	32	-----	-----	-----	-----	-----	1	-----	-----
Nevada	1	-----	-----	-----	-----	-----	-----	-----	-----	-----	1
PACIFIC											
Washington	56	22	34	-----	-----	-----	-----	-----	-----	-----	4
Oregon	19	16	19	-----	-----	-----	-----	-----	-----	-----	1
California	176	54	286	2	1	-----	-----	-----	-----	-----	4
Total	2,349	1,779	2,435	28	158	176	1	0	21	17	93
Same week, 1946	1,779	-----	-----	34	324	69	6	0	10	45	89
Median, 1942–46	2,435	-----	-----	22	221	50	6	0	10	42	[3] 87
14 weeks: 1947	35,487	-----	-----	655	4,425	3,025	93	12	494	578	1,465
1946	25,398	-----	-----	517	3,991	1,455	112	6	277	654	1,061
Median, 1942–46	34,076	-----	-----	44	2,810	896	112	4	256	654	[3] 1,123

[2] Period ended earlier than Saturday.
[3] 2-year average, 1945–46

Anthrax: New York 1.
Leprosy: Texas 1, California 1.

WEEKLY REPORTS FROM CITIES [1]

City reports for week ended Mar. 29, 1947

This table lists the reports from 85 cities of more than 10,000 population distributed throughout the United States, and represents a cross section of the current urban incidence of the diseases included in the table.

Division, State, and City	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
NEW ENGLAND												
Maine:												
Portland	0	0	------	0	33	0	0	0	0	0	0	6
New Hampshire:												
Concord	0	0	------	0	------	0	0	0	0	0	0	------
Vermont:												
Barre	0	0	------	0	16	0	0	0	0	0	0	------
Massachusetts:												
Boston	8	0	------	0	67	0	12	0	23	0	0	18
Fall River	0	0	------	0	2	0	0	0	1	0	0	3
Springfield	0	0	------	0	11	0	2	0	5	0	1	1
Worcester	0	0	------	0	6	0	8	0	8	0	0	15
Rhode Island:												
Providence	0	0	------	1	115	0	3	0	7	0	0	3
Connecticut:												
Bridgeport	0	0	------	0	24	0	0	0	5	0	0	4
Hartford	1	0	------	0	46	0	3	0	1	0	0	------
New Haven	0	0	------	0	43	0	0	0	12	0	0	2
MIDDLE ATLANTIC												
New York:												
Buffalo	0	0	------	1	2	0	11	0	13	0	0	2
New York	16	1	9	3	195	1	79	1	170	[2] 0	1	37
Rochester	0	0	------	1	3	0	8	0	10	0	0	------
Syracuse	0	0	------	1	------	0	4	0	13	0	0	14
New Jersey:												
Camden	1	0	------	0	1	0	0	0	6	0	0	4
Newark	0	0	------	0	14	0	5	0	22	0	0	24
Trenton	0	0	4	0	20	0	2	0	1	0	0	1
Pennsylvania:												
Philadelphia	4	0	4	1	24	2	23	0	49	0	0	54
Pittsburgh	3	0	4	0	16	0	15	0	33	0	0	8
Reading	0	0	------	1	1	0	2	0	3	0	0	2
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	0	0	2	6	------	3	6	0	11	0	0	5
Cleveland	0	0	74	1	266	1	24	0	38	0	0	37
Columbus	5	0	1	1	12	1	4	0	12	0	0	16
Indiana:												
Fort Wayne	0	0	------	0	37	0	4	0	4	0	0	------
Indianapolis	0	------	1	2	3	1	18	0	21	0	0	10
South Bend	0	0	------	0	2	0	0	0	2	0	0	------
Terre Haute	0	0	------	0	------	0	5	0	0	0	0	------
Illinois:												
Chicago	1	0	19	1	16	5	57	1	37	0	0	30
Michigan:												
Detroit	2	1	7	6	7	4	27	1	48	0	0	70
Flint	0	0	------	0	0	0	7	0	7	0	0	4
Grand Rapids	0	0	------	0	2	0	4	0	4	0	0	4
Wisconsin:												
Kenosha	0	0	------	0	------	0	0	0	0	0	0	------
Milwaukee	0	0	6	5	10	0	15	1	12	0	0	22
Racine	0	0	------	0	------	0	2	0	2	0	0	10
Superior	0	0	------	0	------	0	0	0	1	0	0	2
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	------	1	------	0	2	0	0	0	0	1
St. Paul	1	0	------	1	9	0	7	0	8	0	0	------
Missouri:												
Kansas City	0	0	10	1	------	1	14	0	21	0	2	2
St. Joseph	0	0	------	0	------	0	0	0	0	0	0	1
St. Louis	0	0	12	4	3	1	27	0	8	0	0	12

[1] In some instances the figures include nonresident cases.
[2] Delayed report, smallpox. New York City: March 5-24, 4 cases, 1 death, imported infection.

City reports for week ended Mar. 29, 1947—Continued

Division, State, and City	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
WEST NORTH CENTRAL—continued												
Nebraska:												
Omaha	0	0	------	0	-------	0	3	0	2	0	0	------
Kansas:												
Topeka	0	0	8	0	1	0	1	0	9	0	0	------
Wichita	0	0	------	0	2	0	8	0	1	0	0	2
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0	------	0	1	0	3	0	6	0	0	2
Maryland:												
Baltimore	5	0	11	4	8	0	13	0	9	0	0	39
Cumberland	0	0	------	0	-------	0	1	0	0	0	0	------
Frederick	0	0	------	0	-------	0	0	0	1	0	0	------
District of Columbia:												
Washington	0	0	4	0	31	1	13	0	14	0	2	6
Virginia:												
Lynchburg	0	0	------	1	-------	0	3	0	1	0	0	------
Richmond	0	0	1	1	76	0	4	0	4	0	0	1
Roanoke	0	0	------	0	3	0	0	0	3	0	0	------
West Virginia:												
Wheeling	0	0	26	0	3	0	5	0	1	0	0	------
North Carolina:												
Raleigh	0	0	------	0	1	0	1	0	0	0	0	10
Wilmington	0	0	------	0	32	0	0	0	0	0	0	------
Winston-Salem	0	0	------	0	14	0	0	0	0	0	0	------
South Carolina:												
Charleston	0	0	17	1	11	0	2	0	1	0	0	------
Georgia:												
Atlanta	0	0	15	0	9	0	5	0	4	0	0	1
Brunswick	0	0	------	0	-------	0	0	0	0	0	0	------
Florida:												
Tampa	1	0	12	0	3	0	0	0	2	0	0	3
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	0	0	------	0	1	0	9	0	1	0	0	5
Nashville	2	0	------	2	1	0	2	0	7	0	0	7
Alabama:												
Birmingham	1	0	39	1	44	0	5	0	2	0	0	2
Mobile	0	0	22	0	15	0	2	0	7	0	0	1
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	196	0	---- --	0	1	0	0	0	0	3
Louisiana:												
New Orleans	9	0	17	1	64	0	5	1	6	0	1	3
Shreveport	0	0	------	1	-------	0	8	0	2	0	0	------
Oklahoma:												
Oklahoma City	0		435	0	2	0	4	0	1	0	0	3
Texas:												
Dallas	4	0	7	7	25	0	4	0	4	0	0	11
Galveston	0	0	------	0	-------	0	0	0	0	0	0	------
Houston	0	0	6	1	1	0	7	0	4	0	0	4
San Antonio	2	0	10	2	5	0	4	0	0	0	0	3
MOUNTAIN												
Montana:												
Billings	0	0	------	0	1	0	2	0	0	0	0	------
Great Falls	0	0	------	0	74	0	0	0	0	0	0	------
Helena	0	0	------	0	-------	0	0	0	0	0	0	------
Missoula	0	0	352	0	3	0	0	0	0	0	0	------
Colorado:												
Denver	2	0	4	0	31	0	3	0	18	0	0	6
Pueblo	0	0	------	0	-------	0	1	0	3	0	0	------
Utah:												
Salt Lake City	2	0	1	0	4	0	1	0	3	0	0	3

City reports for week ended Mar. 29, 1947—Continued

Division, State, and City	Diphtheria cases	Encephalitis, infectious, cases	Influenza		Measles cases	Meningitis, meningococcus, cases	Pneumonia deaths	Poliomyelitis cases	Scarlet fever cases	Smallpox cases	Typhoid and paratyphoid fever cases	Whooping cough cases
			Cases	Deaths								
PACIFIC												
Washington:												
Seattle	1	0	------	0	4	0	8	0	6	0	3	1
Spokane	0	0	------	0	19	0	3	0	0	0	0	1
Tacoma	0	0	------	0	2	0	0	0	1	0	0	------
California:												
Los Angeles	1	0	3	0	7	1	2	1	40	0	0	6
Sacramento	0	0	------	0	1	0	2	0	0	0	0	6
San Francisco	0	0	------	0	13	0	10	0	9	0	2	3
Total	72	2	1,339	60	1,518	22	545	6	790	0	12	556
Corresponding week, 1946*	96	------	78	17	13,386	------	358	------	1,388	6	15	534
Average 1942–46*	69	------	104	[3] 27	[4] 6,973	------	[3] 401	------	1,709	1	12	723

[3] 3-year average, 1944–46.
[4] 5-year median, 1942–46.

*Exclusive of Oklahoma City.
Anthrax.—Cases: Philadelphia 1.
Dysentery, amebic.—Cases: New York 9; St. Paul 1; Oklahoma City 1; Los Angeles 2.
Dysentery, bacillary.—Cases: Worcester 1; Buffalo 1; Detroit 1; Los Angeles 1.
Dysentery, unspecified.—Cases: San Antonio 6.
Leprosy.—Cases: New Orleans 1.
Tularemia.—Cases: New Orleans 1.
Typhus fever, endemic.—Cases: New York 1; Mobile 2; New Orleans 1; Houston 1.

Rates (annual basis) per 100,000 population, by geographic groups, for the 85 cities in the preceding table (latest available estimated population, 33,829,600)

	Diphtheria case rates	Encephalitis, infectious, case rates	Influenza		Measles case rates	Meningitis, meningococcus, case rates	Pneumonia death rates	Poliomyelitis case rates	Scarlet fever case rates	Smallpox case rates	Typhoid and paratyphoid fever case rates	Whooping cough case rates
			Case rates	Death rates								
New England	23.5	0.0	0.0	2.6	949	0.0	73.2	0.0	162	0.0	2.6	136
Middle Atlantic	11.1	0.5	9.7	3.7	128	1.4	69.0	0.5	148	0.0	0.5	68
East North Central	4.9	0.6	67.5	13.5	218	9.2	106.0	1.8	122	0.0	0.0	129
West North Central	2.5	0.0	73.9	17.3	37	4.9	152.8	0.0	121	0.0	4.9	44
South Atlantic	10.5	0.0	149.8	12.2	334	1.7	87.1	0.0	80	0.0	3.5	108
East South Central	17.7	0.0	360.0	17.7	360	0.0	106.2	0.0	100	0.0	0.0	89
West South Central	38.1	0.0	1,704.4	30.5	246	0.0	83.8	2.5	43	0.0	2.5	69
Mountain	33.0	0.0	2,948.8	0.0	933	0.0	57.8	0.0	198	0.0	0.0	74
Pacific	3.2	0.0	4.7	0.0	73	1.6	39.5	1.6	89	0.0	7.9	27
Total	11.1	0.3	207.0	9.3	235	3.4	84.2	0.9	122	0.0	1.9	86

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended March 15, 1947.—During the week ended March 15, 1947, cases of certain communicable diseases were reported by the Dominion Bureau of Statistics of Canada as follows:

Disease	Prince Edward Island	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia	Total
Chickenpox		30		240	325	13	15	76	113	812
Diphtheria		4	1	9	2	1			1	18
Dysentery, amebic					4					4
Encephalitis, infectious						1				1
German measles		11		40	70	1	6	7	4	139
Influenza		122			23	3			34	182
Measles		112		62	83	468	79	153	473	1,430
Meningitis, meningococcus		1	1					1		3
Mumps		7		95	635	73	184	50	224	1,268
Poliomyelitis				1						1
Scarlet fever		7	3	58	92		1	5	10	176
Tuberculosis (all forms)		8	10	141	17	23	5	23	41	268
Typhoid and paratyphoid fever		1	2	6	1		1	1		12
Undulant fever				1	2			2		5
Venereal diseases:										
Gonorrhea	2	13	16	121	103	37	21	38	74	425
Syphilis		12	8	109	85	7	6	11	40	278
Other forms									2	2
Whooping cough		2	3	20	49	17		5	42	138

WORLD DISTRIBUTION OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From consular reports, international health organizations, medical officers of the Public Health Service, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

CHOLERA

[C indicates cases]

NOTE.—Since many of the figures in the following tables are from weekly reports, the accumulated totals are for approximate dates.

Place		January-December 1946	January-February 1947	March 1947—week ended— 1	8	15	22	29
ASIA								
Afghanistan	C	35						
Burma	C	1,543	80		2	2		
Bassein	C	29						
Moulmein	C	204	2		2	2		
Rangoon	C	23						
Ceylon	C	110						
China:								
Anhwei Province	C	2,749						
Chekiang Province	C	4,680						
Formosa, Island of	C	3,432						
Fukien Province	C	1,568						
Foochow	C	712						
Honan Province	C	2,102						
Hopeh Province	C	397						

CHOLERA—Continued

Place		January-December 1946	January-February 1947	March 1947—week ended— 1	8	15	22	29
China—Continued								
Hunan Province	C	2,046						
Hupeh Province	C	363						
Ichang Province	C	147						
Kiangsi Province	C	1,594						
Kiangsu Province	C	[1] 9,752						
Shanghai	C	[1] 4,583						
Kwangsi Province	C	1,011						
Kwangtung Province	C	5,005						
Canton	C	2,002						
Hong Kong	C	505						
Kweichow Province	C	8						
Macao, Island of	C	2						
Shantung Province	C	225						
Szechwan Province	C	162						
Yunnan Province	C	17						
India	C	72,740	5,988					
Bombay	C	[2] 2						
Calcutta	C	1,925	341	40	77	139	109	
Cawnpore	C	45			1	2	3	
Chittagong	C	8			[2] 1			
Madras	C	5	2					
India (French)	C	4	30					
Indochina (French):								
Cambodia	C	508	230					
Cochinchina	C	911	64					
Bien Hoa	C	24						
Chaudok	C	21						
Giadinh	C		11					
Longxuyen	C		6					
Mytho	C	144						
Rachgia	C	1	9					
Saigon-Cholon	C	88	34	9	7	11	17	
Vinh-long	C	16	4					
Laos	C	49						
Japan	C	1,229						
Korea (Chosen)	C	[3] 11,351						
Malay States	C	245						
Manchuria	C	18,554						
Mongolia	C	18						
Siam (Thailand)	C	4,379	991	89				
Bangkok	C	584	246	9		12	21	
Straits Settlements: Singapore	C	[2] 1						

[1] Includes imported cases.
[2] Imported.
[3] From the beginning of the outbreak in April or May to approximately Sept. 1, 1946.

PLAGUE

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

AFRICA								
Algeria	C	2						
Bechuanaland	C	21						
Belgian Congo	C	[1] 35			[2] 4	P		
British East Africa:								
Kenya	C	38	6	2				
Uganda	C	12		1				
Egypt	C	217						
Alexandria	C	126						
Ismailiya	C	27						
Matariya	C	12						
Port Said	C	19						
Suez	C	32						
Libya: Tripolitania—Plague infected rats		1						
Madagascar	C	282	101					
Union of South Africa	C	7	9		7	1		
ASIA								
Burma	C	1,703	812	115	59			
Bassein	C	23	[2] 1		[2] 1			
Mandalay	C	1	15	2				
Rangoon	C	154	2	1		1		

For footnotes, see page 624.

PLAGUE—Continued

Place		January-December 1946	January-February 1947	March 1947—week ended— 1	8	15	22	29
ASIA—continued								
China:								
Chekiang Province	C	738	1					
Formosa, Island of	C	11						
Fukien Province	C	4,458	21					
Amoy	C	307						
Foochow	C	1,403						
Kiangsi Province	C	338						
Kiangsu Province: Shanghai	C		28					
Kwangtung Province	C	415						
Yunnan Province	C	352	6					
India	C	21,705	19,161					
Indochina (French):								
Annam	C	4	3					
Cochinchina	C	48	2					1
Java	D	[4] 2,409	20	1	5		1	
Manchuria	C	[5] 316						
Palestine	C	17	1					
Siam (Thailand)	C	41	13	4				
Turkey: Akcakale	C					3		
EUROPE								
Great Britain: Malta, Island of	C	6						
Portugal: Azores	C	[6] 23	1					
Turkey (see Turkey in Asia).								
NORTH AMERICA								
Canada.[7]								
SOUTH AMERICA								
Argentina:								
Buenos Aires	C	8						
Cordoba Province	C	1						
Santa Fe Province	C		2					
Bolivia:								
Chuquisaca Department	C	1						
Santa Cruz Department	C	12						
Tarija Department—Plague-infected rats		P						
Brazil:								
Alagoas State	C	2						
Bahia State	C	36						
Ceara State	C	152						
Minas Geraes State	C	12						
Parahyba State	C	19						
Pernambuco State	C	47						
Sergipe State	C	1						
Ecuador:								
Chimborazo Province	C	7	1					
Loja Province	C	38						
Peru:								
Lambayeque Department	C	15						
Libertad Department	C	8	4					
Lima Department	C	29						
Piura Department	C	67	36					
Tumbes Department	C	1						
Plague-infected rats		P						
Venezuela	C	1						
OCEANIA								
Hawaii Territory: [8] Plague-infected rats		7						

[1] Includes 16 cases of pneumonic plague.
[2] Pneumonic plague.
[3] Imported.
[4] Unofficially reported.
[5] Includes 52 cases of pneumonic plague.
[6] Includes 2 cases of pneumonic plague.
[7] The imported suspected case previously reported has not been confirmed. Under date of Sept. 14, 1946, plague infection was reported in a pool of fleas from squirrels in Alsask and in a pool of fleas from squirrels in Superb, Saskatchewan, Canada.
[8] Plague infection was also proved in Hawaii Territory as follows: On Feb. 5, 1946, in a pool of 29 rats; on Apr. 13, 1946, in a pool of 54 fleas and 15 lice recovered from 7 rats and 22 mice; under date of July 3, 1946, in a pool of 50 fleas recovered from 7 rats and 46 mice, and in a pool of 51 fleas recovered from 10 rats; under date of July 17, 1946, in a pool of 48 fleas recovered from 22 rats, and in a pool of 56 fleas recovered from 33 rats; under date of Sept. 12, 1946, in a pool of 48 fleas recovered from 22 rodents; under date of Oct. 9, 1946, in a pool of 36 rats found on Sept. 10, 1946; on Jan. 9, 1947, in a pool of 31 rats.

SMALLPOX

[C indicates cases; P, present]

Place		January–December 1946	January–February 1947	March 1947—week ended— 1	8	15	22	29
AFRICA								
Algeria	C	393	44					
Angola	C	184						
Basutoland	C	46						
Bechuanaland	C	14	4					
Belgian Congo	C	[1] 3,433	[1] 148	[1] 11	[1] 16	[1] 46		
British East Africa:								
Kenya	C	893	80	17	17	1		
Nyasaland	C	745	232	50	34	28		
Tanganyika	C	7,332	397					
Uganda	C	574	65	6				
Cameroon (French)	C	96	7		1			
Dahomey	C	1,591	29					
Egypt	C	405	79	40				
Eritrea	C	[1] 23						
French Equatorial Africa	C	163	3					
French Guinea	C	940	70					
French West Africa: Dakar District	C	40						
Gambia	C	7						
Gold Coast	C	1,552	364	39				
Ivory Coast	C	1,651	437					
Liberia	C	237	23					
Libya	C	923	568	95				
Madagascar	C	1						
Mauritania	C	1	22					
Morocco (French)	C	1,890	38		2			
Morocco (Int. Zone)	C	181	1					
Morocco (Spanish)	C	8	1					
Mozambique	C	4						
Nigeria	C	7,345	403					
Niger Territory	C	563	449					
Rhodesia:								
Northern	C	436	4	1				
Southern	C	148	2	1				
Senegal	C	95	6					
Sierra Leone	C	500	21					
Somaliland (Italian)	C	1						
Sudan (Anglo-Egyptian)	C	56	[1] 16		2		8	
Sudan (French)	C	2,041	156					
Swaziland	C	4	10					
Togo (French)	C	361	59		3			
Tunisia	C	565	211					
Union of South Africa	C	733	P	P	P	P		
ASIA								
Arabia	C	4						
Burma	C	1,981	685	170	198			
Ceylon	C	546	1					
China	C	2,687	707	73	40	111	90	
India	C	60,453	7,394					
India (French)	C	3						
India (Portuguese)	C	19	1					
Indochina (French)	C	2,377	373	37				
Iran	C	40	3					
Iraq	C	22	1	2			3	
Japan	C	17,800	116	10	14			
Malay States	C	2,973	1,640	206	96			
Manchuria	C	96	1					
Palestine	C	[2] 2						
Rhodes, Island of	C	[2] 1						
Siam (Thailand)	C	17,775	398	52				
Straits Settlements	C	204	78	8	3	1	1	
Syria and Lebanon	C	9			1			
Turkey (see Turkey in Europe).								
EUROPE								
Czechoslovakia	C	24						
France	C	16	12		5	6	2	6
Germany	C	1	3					
Gibraltar	C	[2] 3						
Great Britain:								
England and Wales	C	[3] 53	10	9	5			
Malta, Island of	C	10						
Scotland	C	2						

[1] Includes alastrim. [2] Imported. [3] Includes imported cases.

SMALLPOX—Continued

Place		January-December 1946	January-February 1947	March 1947—week ended— 1	8	15	22	29
EUROPE—continued								
Greece	C	114						
Italy	C	654	29					
Portugal	C	61	6	1				
Spain	C	9	13					
Turkey	C	17	1					
Yugoslavia	C	1						
NORTH AMERICA								
Canada	C	2						
Guatemala	C	56						
Honduras	C	4						
Mexico	C	397	18	16				
Nicaragua	C	3						
SOUTH AMERICA								
Argentina	C	69	2					
Bolivia	C	918						
Brazil	C	[1] 678	[1] 16					
Colombia	C	1,071	340					
Ecuador	C	120	34					
Paraguay	C	397	82					
Peru	C	536	34					
Uruguay	C	52	[1] 149					
Venezuela	C	[1] 1,771	[1] 206					
OCEANIA								
Hawaii Territory	C	[4] 1						

[1] Includes alastrim.
[4] Off-shipping.

TYPHUS FEVER*

[C indicates cases; P, present]

AFRICA								
Algeria	C	843	15					
Basutoland	C	11	3					
Belgian Congo [1]	C	2,570	74	8	7	15		
British East Africa:								
Kenya	C	26	2					
Uganda	C	1	1					
Egypt	C	1,525	23	2	1			
Eritrea	C	1,407	168	65				
French West Africa: Dakar District	C	7						
Gold Coast	C	1						
Libya	C	88	7					
Madagascar [3]	C	1						
Morocco (French)	C	3,795	61		5			
Morocco (Int. Zone)	C	59						
Morocco (Spanish)	C	38						
Nigeria	C	53						
Rhodesia, Northern	C	2						
Sierra Leone [1]	C	6						
Tunisia [1]	C	340	40					
Union of South Africa [1]	C	568	P		P	P		
ASIA								
Arabia [1]	C	2						
Burma [1]	C	4	2	1				
China [1]	C	395	15					
India	C	303	5					
Indochina (French)	C	70						
Iran	C	151	3			1		
Iraq	C	219	24	7	3	9	7	
Japan	C	31,141	395	27	18			
Malay States	C	3	7					
Manchuria	C	713						
Palestine [1]	C	121	6					
Philippine Islands [1]	C	4						
Straits Settlements	C	3	1					
Syria and Lebanon	C	86	4					
Trans-Jordan	C	21	1		1	1	1	
Turkey. (See Turkey in Europe.)								

*Reports from some areas are probably murine type, while others probably include both murine and louse-borne types.

For footnotes, see page 627.

TYPHUS FEVER—Continued

Place		January-December 1946	January-February 1947	March 1947—week ended— 1	8	15	22	29
EUROPE								
Albania	C	140						
Austria	C	35	1					
Belgium [1]	C	14						
Bulgaria	C	1,120	258	25				
Czechoslovakia [1]	C	799	3	1				
France [1]	C	16	3					
Germany	C	1,873	4					
Gibraltar [2]	C	1						
Great Britain:								
England and Wales	C	1						
Malta and Gozo [1]	C	32	3					
Greece [1]	C	631	48	5	3	4	4	
Hungary	C	1,115	169	16	21	38		
Italy	C	92	2					
Netherlands [1]	C	29	1					
Poland	C	3,430	103					
Portugal	C	14	1					
Rumania	C	8,735	1,785					
Spain	C	28	10					
Canary Islands	C	2						
Sweden [2]	C	1						
Switzerland [1]	C	2	1					
Turkey	C	1,412	207	28	18	19	15	
Union of Soviet Socialist Republics:								
Ukraine	C	P						
Yugoslavia	C	3,079						
NORTH AMERICA								
Costa Rica [2]	C	123	15	3	2		5	
Cuba [2]	C	18	1					
Guatemala	C	779	49					
Jamaica [2]	C	41	2	4	1			
Mexico	C	1,928	235					
Nicaragua [2]	C	1						
Panama Canal Zone	C	1						
Panama (Republic)	C	4	12					
Puerto Rico [2]	C	105	7					
Salvador	C	1						
Virgin Islands [2]	C	3						
SOUTH AMERICA								
Argentina	C	7	4					
Bolivia	C	254						
Brazil [1]	C	17						
Chile	C	561	79	7	3	14	1	
Colombia	C	973	265					
Curacao [2]	C	1						
Ecuador [1]	C	1,096	112					
Paraguay	C	7						
Peru	C	1,123	82					
Venezuela [1]	C	112	10					
OCEANIA								
Australia [2]	C	153	19	2	1	2		
Hawaii Territory [2]	C	89	9					

[1] Includes cases of murine type.
[2] Murine type.

YELLOW FEVER

[C indicates cases; D, deaths]

Place		January-December 1947	January-February 1947	March 1947—week ended— 1	8	15	32	28
AFRICA								
French Equatorial Africa: Carnot	C	[1] 8						
Ivory Coast: Seguela	C	1						
Nigeria:								
Ibadan	C	1						
Ilorin	C	1						
Kafanchan	C	2						
Ogbomosho	C	42						
Sierra Leone: Pujehan	C	1						
SOUTH AMERICA								
Bolivia: Santa Cruz Department	D	[2] 40						
Brazil: Para State	D	1						
Colombia:								
Antioquia Department	C	1				[3] 3		
Caldas Department	D		1					
Caqueta Territory	D	2						
Cundinamarca Department	D		2					
Magdalena Department	D	1						
Santander Department	D	17	18					
Tolima Department	D		2					
Peru: San Martin Department	D	3						
Venezuela:								
Tachira State	C	4						
Trujillo State	C	4						
Zulia State	C	4						

[1] Includes 3 suspected cases.
[2] Diagnosis confirmed in 14 cases and 10 deaths.
[3] For the period Mar. 1–14, 1947.

* * *

DEATHS DURING WEEK ENDED MAR. 29, 1947

[From the Weekly Mortality Index, issued by the National Office of Vital Statistics]

	Week ended Mar. 29, 1947	Corresponding week 1946
Data for 93 large cities of the United States:		
Total deaths	10,820	9,461
Median for 3 prior years	9,461	
Total deaths, first 13 weeks of year	131,465	132,576
Deaths under 1 year of age	828	634
Median for 3 prior years	634	
Deaths under 1 year of age, first 13 weeks of year	10,559	7,878
Data from industrial insurance companies:		
Policies in force	67,328,480	67,191,152
Number of death claims	15,305	13,568
Death claims per 1,000 policies in force, annual rate	11.9	10.5
Death claims per 1,000 policies, first 13 weeks of year, annual rate	10.0	11.3