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HOW DOES HOUSING AFFECT HEALTH? [1]

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It has been impossible up to the present to prove many specific relationships between housing and health. Creditable studies conducted in recent years have shown that people who live in good housing are, in the main, healthier than those who live in substandard dwellings. For certain diseases, notably the enteric infections and tuberculosis, morbidity and mortality rates for those who live in sound, sanitary structures are significantly lower than for families and individuals living in substandard housing. Sharp differences in respiratory disease rates have been demonstrated as being related to the degree of room crowding. Recent reports of the relationship of physical environment to draftee rejection rates for specific physical defects also have focused attention on the cumulative effects of bad housing.

Britten (*1*) has shown that the common communicable diseases of childhood occur more frequently and at an earlier age in crowded households than in uncrowded ones. He points out that the "secondary" attack rate for tuberculosis is about 200 percent greater for relief families living in overcrowded households than for all income groups living with less than one person per room.

On the basis of National Health Survey findings, Britten and Altman (*2*) state that the percentage of persons disabled for a week or longer was higher in households with more than one and a half persons per room than in homes with one or less persons per room. The pneumonia case rate for crowded households (more than one and one-half persons per room) was approximately 68 percent higher than for homes with one person or less per room. Incidentally, it was found during the National Health Survey that 4.0 percent of the

[1] Read at the Colorado Conference of Social Welfare, Denver, Nov. 13, 1945.
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households visited had two or more persons per room, 6.3 percent had more than one and one-half persons per room, and there was more than one per room in 17.6 percent of the households (*3*).

M'Gonigle (*4*) has noted a significant decrease in the mortality rate for infants born into families who have been moved from slums to satisfactory housing. However, on the basis of his carefully controlled study he states: "It appears reasonable to assume that the increase in the [general] death-rate of the population * * * subsequent to its transfer * * * is a real increase, and is beyond the probable extent of fortuitous variation." He then goes on to show that the rehoused families tended to spend more of their limited income for shelter after moving into the housing project, that less money was available for food, and as a result the diets of the rehoused families suffered.

According to Hadley (*5*), slum areas in the District of Columbia show Army rejection rates for personality disorders one and one-half times as great as areas with good housing. His study was based on a sample of 5,800 induction physical examinations made at Fort Meyer, Va., during the 2-year period ending in May 1944. He correlated physical examination findings with data collected in the 1940 Housing Census.

Hyde and Kingsley (*6*), (*7*) had previously studied the relation of mental disorders to the community socioeconomic level and to population density in eastern Massachusetts. Their sample was 60,000 selectees examined at the Boston Armed Forces Induction Station during the winter, spring, and summer months of 1941–42. The total incidence of mental disorders, the rate of mental deficiency, and the rate of psychopathic personality increased significantly from the best to the poorest communities. They concluded that there is a need for intensive study in places of different population density regarding the influence of the community environment on mental health.

A major qualification is necessary in regard to these community studies of mental disease incidence: The excess rejection (incidence) rates in slum and substandard areas are not necessarily to be ascribed to housing per se. However, such studies as these establish an interesting correlation between bad housing and mental disease.

Other statistical studies of the relationship of housing to health might be cited, but an assiduous search of the literature reveals nothing that demonstrates the precise effects of bad or good housing on the occupants. There are several reasons why it has not been possible to relate health specifically to housing. Substandard housing probably never is the only factor working to the detriment of health. Attention has repeatedly been drawn to the fact that the slum is but a symptom of low economic status. Wherever poor housing exists, there also is to be found poverty and its attendant ills—crowding, illiteracy, poor nutrition, and delinquency. Anderson (*8*) summarized this point of view as follows:

> Of the many newer aspects of environmental sanitation, the standards of housing seem to rest on especially insecure epidemiological foundation. I would not question the potential health significance of housing, and yet epidemiological data on which to base this belief are virtually nonexistent for poor housing cannot be separated from other attributes of poverty.
>
> This inability to secure epidemiological support for housing standards should not discourage us from attempts to improve housing conditions or even to do so by regulation. Almost every community has houses that by no stretch of the imagination can be defended as desirable for human habitation. An appreciable fraction of our population lives under conditions that are undesirable socially, morally, and hygienically. Housing needs no defense nor need it await epidemiological support.

Although there is little evidence that substandard housing per se causes sickness and death, there is some indication that improved housing tends to better the health of population groups. Incomplete studies of the health of slum dwellers who have been rehoused in public-housing projects in several cities indicate that their morbidity experience improves after they have left slum dwellings. It must be pointed out, however, that community interests developed among the tenants of public-housing projects may well result in the improvement of their nutrition and in making them more conscious of, and hence more alert to use, local public health and preventive medical services. Furthermore, it is easier to provide these people with health services.

What is the meaning of these several comments? A cautious and critical analysis of available data relating to the effects of housing on health leads to but one conclusion: One cannot state that substandard housing alone begets ill health. However, no reasonable student of the subject has yet stated that bad housing is compatible with good health. In the absence of irrefutable proof that housing has no ill effect on health, it may reasonably be hypothesized that good housing promotes the attainment of good health. Simply because we have not yet proved the case does not mean that the case cannot be proved.

A joint committee has recently been organized by the American Public Health Association and the National Association of Housing Officials to suggest standards for "housing and health" studies. Within the foreseeable future, housing and health officials should have a competent guide to use in studying the health effect of rehousing slum dwellers in decent homes. There is of course no assurance that the type of information so avidly wanted by many people will come out of studies that may be made.

Almost a decade ago the American Public Health Association organized a permanent Committee on the Hygiene of Housing. One of the earliest publications of the committee has become a landmark. The Basic Principles of Healthful Housing (*9*) which appeared originally in 1939 and was revised and reissued in 1941, contains 30 basic principles with specific requirements and suggested methods of attainment for each. These principles are grouped under 4 broad headings:

Fundamental physiological needs.
Fundamental psychological needs.
Protection against contagion.
Protection against accidents.

Fundamental Physiological Needs

The fundamental physiological needs of healthful housing involve:

1. Maintenance of a thermal environment which will avoid undue heat loss from the human body.
2. Maintenance of a thermal environment which will permit adequate heat loss from the human body.
3. Provision of an atmosphere of reasonable chemical purity.
4. Provision of adequate daylight illumination and avoidance of undue daylight glare.
5. Provision for admission of direct sunlight.
6. Provision of adequate artificial illumination and avoidance of glare.
7. Protection against excessive noise.
8. Provision of adequate space for exercise and for the play of children.

Techniques have not been developed for relating each of these factors to the public health. However, numerous data have been collected concerning the effects of heating and ventilation on human subjects. Present knowledge emphasizes the probable relationship of housing provided with unsatisfactory heating and ventilation systems to morbidity from upper respiratory disease.

There are several methods to control air-borne infections in enclosed spaces (*10*). Dilution of air, reduction in crowding, disinfectant radiation, and disinfectant vapors are environmental controls that should be of interest to the builders and operators of housing. Do we have to wait for further and more specific information concerning the relation of substandard housing to the spread of air-borne infection before attempting to work out practical ways of applying control measures? Can't we use the facts now at our disposal concerning the distribution of air-borne bacteria to promote interest in the elimination of overcrowded, ill-ventilated, and poorly heated dwelling units? Are such facts less useful than those showing a general relationship between housing and health?

There have been numerous studies of the relationship of illumination intensities to working efficiency. In 1924, Thompson (*11*) and his associates demonstrated the need for controlling glare and providing at least 10 foot-candles on the working plane. Later work confirmed these conclusions. However, there still is need for objective inquiries into the effects of different qualities and intensities of artificial light on eye health. In the meantime, the principles concerning illumination and the methods of attainment suggested by the Committee on the Hygiene of Housing are reasonable in terms of present knowledge.

The scientific measurement of recreational needs of urban dwellers is difficult if not impossible. No basic information on this subject has come to our attention. Relating recreational facilities or their absence to health would seem at the moment to be impossible.

Fundamental Psychological Needs

The fundamental psychological needs of humans, as defined by the Committee on the Hygiene of Housing involve the following principles:

1. Provision of adequate privacy for the individual.
2. Provision of opportun ties for normal family life.
3. Provision of opportunities for normal community life.
4. Provision of facilities which make possible the performance of tasks of the household without undue physical and mental fatigue.
5. Provision of facilities for maintenance of cleanliness of the dwelling and of the person.
6. Concordance with prevailing social standards of the local community.

As mentioned above, there is some evidence that slum homes contribute to personality difficulties. However, the presently available techniques for measuring cause and effect in relation to psychiatric problems are fragmentary, and it is impossible to draw specific conclusions from data presented in the literature. In the aggregate it is evident that the psychological principles set forth here are sound and should be considered seriously in any housing program.

Protection Against Contagion

Protection against contagion involves:

1. Provision of a water supply of safe sanitary quality, available to the dwelling.
2. Protection of the water supply system against pollution within the dwelling.
3. Provision of toilet facilities of such a character as to minimize the danger of transmitting disease.
4. Protection against sewage contamination of the interior surfaces of the dwelling.
5. Avoidance of insanitary conditions in the vicinity of the dwelling.
6. Exclusion from the dwelling of vermin which may play a part in the transmission of disease.
7. Provision of facilities for keeping milk and food undecomposed.
8. Provision of sufficient space in sleeping rooms, to minimize the danger of contact infection.

The relationship of water supply, food, insects, and rodents to the spread of contagion has been known since the development of the germ theory of disease based on the research of Pasteur, Koch, Reed, and others working during the last quarter of the nineteenth century. This knowledge has provided means for mass attack on epidemic diseases such as septic sore throat, typhoid fever, malaria, yellow fever, rat-borne typhus, and plague. The result of engineering control of the environment has been the dramatic reduction in incidence of many communicable diseases and the virtual elimination of others as causes of death. As Underwood (*12*) has said: "One of the outstanding contributions of all times to mankind's security and comfort has been the environmental control of disease which the application of scientific sanitary principles has made possible."

The sanitarian until recently has been primarily concerned with the use of engineering methods to control disease. For example, he has used filtration and chlorination to prevent the spread of water-borne infection, and has developed pasteurization to destroy pathogenic organisms in milk. These control measures, applied at a few points in the community, have affected the whole population.

In the future—and particularly with respect to housing—sanitary principles will have to be applied at numerous points within a community to produce the desired results. Whereas one chlorinator may control contamination in the entire water supply, the improvement of heating or ventilation or illumination involves work in each occupied structure. Hence, new engineering and administrative procedures will have to be developed and applied to make further advances in the environmental control of morbidity. Incidentally, this does not mean that building and plumbing codes need to be made more restrictive. On the contrary, codes in most communities should be liberalized so that advantage may be taken of new materials and modern construction methods.

Protection Against Accidents

Protection against accidents involves:

1. Erection of the dwelling with such materials and methods of construction as to minimize danger of accidents due to collapse of any part of the structure.
2. Control of conditions likely to cause fires or to promote their spread.
3. Provision of adequate facilities for escape in case of fire.
4. Protection against danger of electrical shocks and burns.
5. Protection against falls and other mechanical injuries in the home.
6. Protection of the neighborhood against the hazards of automobile traffic.

Britten (*1*) has shown that as the rental or value of the house goes down, the rate of home accidents goes up. Data on accidents and injuries collected by the National Safety Council and the National Board of Fire Underwriters indicate that there is much that can be done in the design and construction of dwellings so that hazards can be reduced to a minimum. Relationship of faulty construction to accidental injury and death can be more precisely drawn than can the general connection between substandard housing and ill health. Hence, anyone looking for specific reasons for improving substandard housing and eliminating basically deficient housing can find many examples in the literature on fire and accident hazards.

It may appear that undue emphasis has been placed on the design and construction of housing to the exclusion of less tangible but equally important operational factors. Housing is not simply bricks and mortar. It is a complex of shelter and people, interrelated and mutually important. Even the best-built structure is subject to deterioration. Without careful management, including the provision of adequate services, ideally designed houses in time become substandard. One needs but to see the decay of once first-class residential areas in any of our American cities to realize the importance of maintaining good housing once it is built.

Health authorities can assist in promoting healthful living by making services readily available to all of the population. They can take advantage of the community groups that spring up in and around housing projects to stimulate immunization, to promote good nutrition, to sow the seed of personal hygiene. The health official should never assume, because several hundred people have moved out of hovels into a shiny new housing project, that the job of selling public health to these people is done. Indeed, it has barely begun.

Now, what can public housing do for the health of the community? (1) It can provide decent dwelling units for many who in all likelihood would never otherwise have them. (2) It can facilitate the work of the health department by making it possible for the promotion of good public health practices under conditions where these practices may be effectively applied. (3) It can set the stage for group action to improve personal health through fostering civic organization that is tragically lacking in most slum areas. Most adults are interested in health. If given the opportunity, they will do much for themselves to improve their own health habits, in turn strengthening formal community health services.

The problem of relating housing specifically to health is academically interesting. If we wait until this problem is solved before doing anything about providing decent housing for the millions of Americans who need it, the lives of many will doubtless be unnecessarily sacrificed. In spite of the general lack of measurable effects of bad housing on health, there is enough knowledge now to indicate that good housing is compatible with good health. There is an urgent need to devote our individual and collective energies to the improvement of the Nation's housing.

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Objective contemplation of the problem of relating housing to health brings the critical observer to the following conclusions:

Techniques are not now available for proving that the quality of housing alone has any effect on health.

It is possible to relate specific environmental factors involved in housing to the health of persons exposed to these factors.

Analysis of available gross data reveals that housing has not been eliminated as a contributory factor in the perpetuation of preventable disease.

The provision of structurally satisfactory housing, either public or private, is not an end in itself, but, rather, furnishes a means for the promotion of more healthful living.

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COMPARATIVE ASSAYS OF RODENTICIDES ON WILD NORWAY RATS

I. TOXICITY[1]

By Sally H. Dieke and Curt P. Richter

INTRODUCTION

There are two main qualifications which any rodenticide must have in order to produce effective results: (1) The poison must be sufficiently toxic to kill in reasonably small amounts, and (2) it must also be sufficiently acceptable so that the rodents will voluntarily

[1] From the Psychobiological Laboratory, Phipps Psychiatric Clinic, Johns Hopkins Hospital, Baltimore, Md. The work described in this paper was done under a contract, recommended by the Committee on Medical Research, between the Office of Scientific Research and Development and the Johns Hopkins University.

consume lethal quantities. In this paper the relative toxicities of various poisons are reported, as expressed in terms of median lethal doses for wild Norway rats. A second paper will deal with the methods devised in this laboratory for quantitative study of the acceptance factor in wild rats and will give the information obtained through their use.

As the acceptance factor can be modified to a considerable extent by a proper choice of the bait in which the poison is offered, so also the toxicity factor can undoubtedly be influenced by a number of circumstances, depending on the properties of the individual rodenticides. Cumulative poisons, for instance, can be effective if consumed in small amounts over an extended period of time. The same is true of sensitizing poisons. On the other hand, for poisons to which tolerance is developed, the toxicity is unfavorably influenced by a slow rate of consumption. This will also be the case for poisons which are rapidly detoxified or otherwise quickly eliminated by the animal organism. The particle size of poisons with low solubilities is also known to influence their toxicity, presumably due to its effect on the rate of absorption.

Since toxicity can be influenced by so many factors, it was decided to test the poisons under uniform, and what might be called optimum, conditions. We chose to administer the various substances by stomach tube to starved rats so that the full impact from the dose would be received at one time and yet absorption would still take place from the alimentary tract as would be the case for voluntary ingestion. The vehicle chosen was 10-percent acacia, in which the water-soluble poisons dissolved readily, and which gave good suspensions of the others.

Toxicity values for most of the poisons here studied have already been published *(1)*, *(2)*, *(3)*, *(4)*, but we have not found bio-assays made on all of them under strictly comparable conditions. Furthermore, previous work has usually been done with laboratory animals, which do not necessarily have the same susceptibility as their wild counterparts. From the practical standpoint it was felt that assays performed with wild Norway rats would be of significant interest. We were fortunate in having a large and continuous supply of wild rats at our disposal, and also in having available the simplified technique for handling such animals, which will be described below.

METHODS

The 406 wild Norway rats used in this work were trapped in the back yards and alleys of Baltimore, Md., by the Municipal Rodent Control Office. They were caught in modified rabbit box traps described elsewhere *(5)* and held in the laboratory for a minimum of

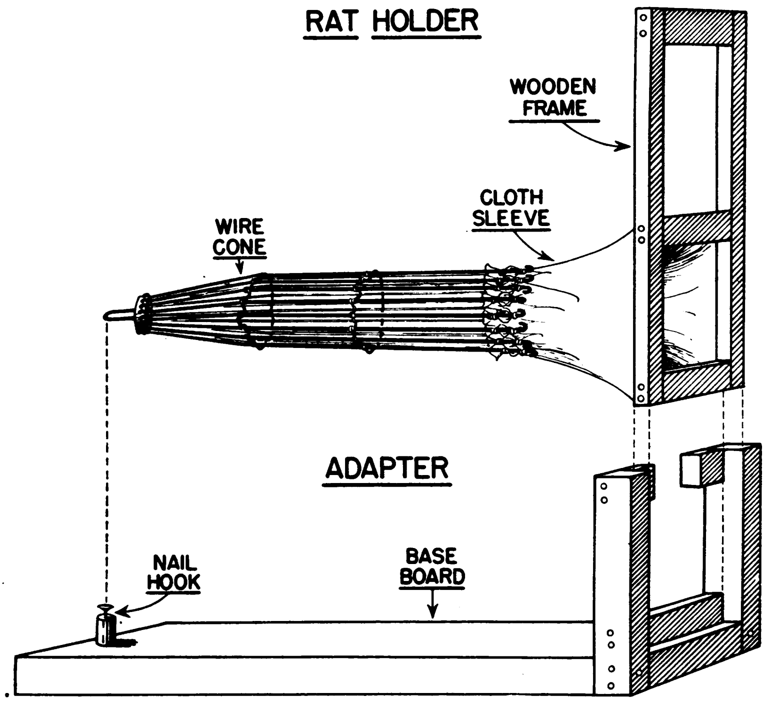
4 days, to allow for recuperation and also to make certain they were reasonably healthy and not under the influence of any poison encountered in the field. Care was taken to use only rats from areas which had not been subjected to systematic poisoning. It was obviously impossible, however, to be certain that the rats had not encountered some kind of poison as set out by individual householders. In any case the rats probably formed a representative sample of an urban rat population as met with in eradication campaigns.

Due to the possibility of variation in susceptibility on account of age, all the rats used were adult. The smallest weighed 111 and the largest 579 gm., with an average of about 300 gm. Of the total number 204 were males and 202 females, with equal numbers of males and females being generally used at each assay level in order to detect any possible sex variation in response.

The rats were kept in stock cages for 4 or more days, with water and purina fox chow available in excess. They were then transferred to individual cages and starved overnight. After receiving poison the rats were given food immediately and observed until either death occurred or recuperation could be assumed (5 to 10 days, depending on the poison.) Most of the rats were autopsied, and data for those animals found to be definitely diseased were discarded. No surviving rat was used again.

The poisons were all prepared and administered in the same way. A sample (between 15 and 6,000 mg., depending on the substance being assayed) was weighed out on an analytical balance to the nearest tenth of a milligram and suspended (or dissolved) in 10-percent acacia solution by mortaring just before use. The particles of the relatively insoluble poisons so prepared were measured and found to have average dimensions between 5 and 10 microns, with some few of larger size observed in every case. For soluble poisons requiring assay below 5.0 mg. per kg. body weight a stock solution containing 5 mg. per 100 ml. was freshly prepared, in 10-percent acacia, and suitably diluted at the time of administration. At each assay level the rats received their doses in volumes of fluid proportional to their body weights, at the rate of 1 ml. per 100 gm. Thus a 342-gm. rat received 3.4 ml.

To handle the wild rats without anesthesia, an ingenious device due to Emlen (*6*) was used. This "sock" or wild rat holder is shown in figure 1. When the open end was placed against a vertical sliding cage door and the door lifted, the rat could be driven in with relative ease; in fact many rats rushed in without any urging at all. Once in the "sock" a rat was held immobile for weighing and tube feeding, and finally when the sock was replaced opposite the open door the rat could and did back out.



(Reproduced with permission from the Journal of Wildlife Management.)

FIGURE 1.

For stomach tube a 4-inch 15-gage needle was employed, which had a smooth collar of solder replacing the sharp point. This is illustrated in figure 2. The rat's head was held close to the terminal ring of the "sock", by means of a loop of wire passed around the

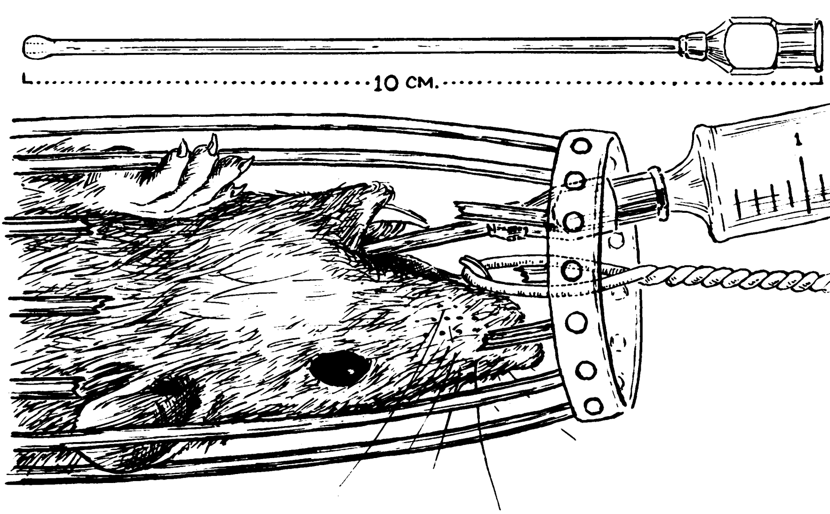


FIGURE 2.

upper incisors, and the tube was then slipped down the throat without forcing.

A minimum of practice in this technique made it possible to carry through the whole process of weighing and dosing with 20 to 25 rats per hour.

About half the rats were used in the initial assays, made during the winter months of November and December 1944 and January 1945. The assays were then repeated, using the remaining rats, in the summer months, June, July, and August 1945. In the interval the poisons were stored in stoppered containers under ordinary laboratory conditions. No significant differences in toxicity, such as might be ascribed to seasonal variation, were observed, and accordingly the two sets of observations were combined in calculating the LD_{50} values. It was found that the final toxicity values for arsenic trioxide and barium carbonate were higher than was indicated by the winter results alone, but since the slope of the dosage-mortality curve is not steep for these poisons, this difference was almost certainly due to an insufficient number of animals in the winter group. All the other values checked very satisfactorily.

The poisons used were as follows:

1. *Sodium fluoroacetate (1080).*—A white, flaky preparation, supplied by Dr. Ray Treichler, of the Fish and Wildlife Service, on December 26, 1944. Administered in solution.
2. *Strychnine sulfate—(Merck U. S. P.).*—A white crystalline powder. Administered in solution.
3. *Alphanaphthyl thiourea (ANTU).*—200-mesh, a fine greyish powder. Part of du Pont's factory lot 2, received April 29, 1944. Administered in suspension.
4. *Thallium sulfate—(Tl_2SO_4).*—Globe Brand, 200-mesh, a white powder (Tl_2SO_4 stated not less than 99.0 percent). Supplied by American Smelting and Refining Co., Denver, Colo., and received October 28, 1944. Administered in solution.
5. *Zinc phosphide—(Zn_3P_2).*—Presumably commercial grade, a fine black powder. Supplied by Mr. J. C. Ward, of the Fish and Wildlife Service, Denver, Colo., and received November 9, 1944. Administered in suspension.
6. *Arsenic trioxide—(As_2O_3)*—(Merck U. S. P.).—A fine white powder. Administered in suspension.
7. *Fortified red squill.*—A reddish powder, supplied by R. J. Prentiss & Co. as part of lot 11910, and received November 6, 1944. Administered in suspension.
8. *Barium carbonate—($BaCO_3$).*—A fine white powder, administered in suspension. C. P. Baker's, lot 52941.

RESULTS AND DISCUSSION

Table 1 shows the range of doses assayed for the various poisons, all entered against a single (roughly logarithmic) dosage scale in order to facilitate comparison of the results. The next highest dose following the boldface (partial kill) levels may in general be taken as the LD_{100}. In this table the results for males and females are separated, making it clear that no significant sex variation was found except in the case of squill.

TABLE 1.—*Comparative killing ranges* [1]

Dose mg./kg.	1,080		Strychnine SO_4		ANTU		Tl_2SO_4		Zn_3P_2		As_2O_3		Squill		$BaCO_3$	
	25♂	30♀	34♂	28♀	22♂	28♀	19♂	18♀	18♂	17♀	20♂	21♀	33♂	34♀	31♂	28♀
0.1	0/1	0/3														
.2	**1/8**	**3/8**														
.3	**8/10**	**9/10**														
.5	1/1	7/7	0/3	0/1												
1.0	4/4		0/2	0/2												
2.0			0/3													
3.0			0/2	**1/6**												
5.0	1/1	2/2	**3/11**	**7/10**	**1/4**	0/4										
7.5			5/5	5/5	**10/11**	**6/16**										
10.0			3/3	1/1	**5/6**	5/5	0/2	0/3								
15			2/2	2/2			**2/7**	**4/8**								
20			3/3	1/1	1/1	3/3	**8/9**	**3/4**	0/2							
25							1/1	3/3								
40									**3/8**	**4/8**						
50									**5/6**	**6/8**				0/4		
75											**1/4**	0/4		0/4		
80									2/2	1/1						
100											**1/7**	**1/6**	0/4	**4/12**	0/3	0/1
150											**3/8**	**4/8**	0/4	**1/4**		
200													**1/8**	4/4		
250											1/1	3/3	**3/8**		**1/8**	**2/7**
300													**2/4**			
400													1/1	2/2		
500													3/3	1/1	**1/8**	**2/8**
750															**1/2**	0/2
1,000															**1/4**	**2/4**
1,500													1/1	3/3	0/2	**1/2**
2,000															**2/4**	**3/4**

[1] Mortality ratios (rats killed/rats used) are listed opposite the appropriate doses for each poison. Levels at which partial kills were obtained are printed in boldface.

Table 2 gives the various median lethal doses (LD_{50}) and their standard errors, as estimated from the observed data according to the method of Litchfield and Fertig (7). The number of rats used, their average weights, and the range of survival time for each poison are also given.

TABLE 2.—*Comparative toxicity data* [1]

Poison	Number of rats used	Weight of rats (avg. and range, gm.)	$LD_{50}\pm$ standard error (mg./kg.)	Survival time	Fish and Wildlife Service [2] approximate LD_{50} (mg./kg.)
1080	55	342.2 (168–494)	0.22±0.01	45–240 min	3
Strychnine SO_4	62	306.1 (142–493)	4.8±0.4	12–90 min	6
ANTU	50	299.6 (142–482)	6.9±0.5	16–30 hr	8
Tl_2SO_4	37	297.6 (134–579)	15.8±0.9	1.5–6 days	31
Zn_3P_2	35	249.9 (119–385)	40.5±2.9	.25–4 days	40
As_2O_3	41	253.0 (148–493)	138 ±13	.25–3 days	100
Squill (♀)	34	244.2 (111–452)	133 ±10	.25–4 days	
Squill (♂)	33	296.2 (159–465)	276 ±29	.25–3 days	400–600
$BaCO_3$	59	295.6 (143–468)	1,480 ±340	1–8.5 days	500–700

[1] Poisons in 10-percent acacia administered by stomach tube to wild Norway rats, starved overnight.
[2] Toxicity figures furnished for comparison by the Fish and Wildlife Service, U. S. Department of the Interior.

In the last column of table 2 are given, for comparison, LD_{50} values most kindly supplied to us by the Fish and Wildlife Service, United States Department of the Interior (*8*). These figures are estimates based on a number of assays in which adult laboratory rats of several strains were used, and were derived from observations on several different samples of the various substances. Confirming tests were made in most cases on captive wild rats. Figures were based on feeding tests of poison mixed with a "bio-assay bait" composed of dried bread crumbs and 5 percent mineral oil, except for strychnine which is not readily accepted and hence was assayed by stomach tube.

On the basis of toxicity alone, it is seen that, as listed in table 2, the eight poisons are arranged in descending order of effectiveness. A fraction of a milligram of 1080, for instance, might be sufficient to kill an ordinary-sized wild Norway rat, while half a gram or so of barium carbonate would probably be required for the same purpose. Of the intervening poisons a couple of milligrams up to somewhat more than a hundred milligrams appear necessary per rat.

A consideration of the data presented in tables 1 and 2 reveals that all but the last three substances are capable of killing in doses of less than 25 mg. per rat. Excepting thallium sulfate, lethal amounts of these first five poisons produced a majority of fatalities within the 24-hour period following administration. This comparison is, of course, valid only for the optimum conditions under which these assays were performed, and takes no account of acceptability, safety in use, convenience, or other considerations which can outweigh pure toxicity when it comes to field use. The influence of acceptability in changing this order of effectiveness will, for instance, be shown in the second paper of this series.

SUMMARY

Eight rodenticides were bio-assayed, using 406 recently trapped adult wild Norway rats. Unanesthetized rats were given the various poisons suspended (or dissolved) in 10-percent acacia solution, through a metal stomach tube. No significant seasonal variation was observed nor was there any sex variation (except in the case of red squill). The median lethal doses and their standard errors were found to be as follows, in milligrams per kilogram body weight:

1,080	0. 22 ± 0. 01
Strychnine sulfate	4. 8 ± 0. 4
ANTU	6. 9 ± 0. 5
Thallium sulfate	15. 8 ± 0. 9

Zinc phosphide	40.5	±2.9
Arsenic trioxide	138	±13
Fortified red squill:		
Females	133	±10
Males	276	±29
Barium carbonate	1,480	±340

ACKNOWLEDGMENTS

It gives us great pleasure to acknowledge at this time the interested assistance and wholehearted cooperation afforded us by the Fish and Wildlife Service of the United States Department of the Interior. In particular we wish to thank Mr. E. R. Kalmbach, Mr. J. C. Ward, and Dr. Ray Treichler for their efforts on our behalf.

We wish also to express our gratitude to the Rodent Control Office of the City of Baltimore for supplying us with wild rats.

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MALARIA

Numbers of Cases Reported by the State Health Officers in 1945 as Compared With Similar Data for the Years 1939–44 [1]

By Brock C. Hampton, *United States Public Health Service*

The accompanying table shows the number of cases of malaria reported to the United States Public Health Service by the State health officers during 1945 and certain prior years. In 1944 and 1945 the State health officers were requested to report separately cases contracted within and cases contracted outside the United States, or, if such information should not be available, to report separately cases in the military and civilian population. These data were

[1] From the Division of Public Health Methods. (For similar reports for the first 4 months and first half year of 1945 see Public Health Reports for Aug. 31, 1945, pp. 1019–1020, and Dec. 7, 1945, pp. 1467–1470.)

furnished in the annual State Summaries for 1944 and in the monthly reports for 1945. The figures for the years 1939–44 are from the final annual summaries, while those for 1945 are from the monthly reports and are provisional. However, in recent years the monthly figures have agreed fairly closely with those of the annual summaries.

Numbers of cases of malaria reported to the U. S. Public Health Service by the State health officers in 1945 and certain prior years [1]

Division and State	1939	1940	1941	1942	1943	1944				1945			
							Place contracted				Place contracted		
						Total	Within continental United States	Outside continental United States [2]	Information not supplied	Total	Within continental United States	Outside continental United States [2]	Information not supplied
New England:													
Maine	1	2	1	3	4	4	3	1	-----	28	3	25	-----
New Hampshire	-----	-----	7	-----	2	2	-----	2	-----	4	-----	4	-----
Vermont	-----	-----	-----	-----	1	-----	-----	-----	-----	4	-----	4	-----
Massachusetts	14	7	10	18	116	572	6	566	-----	1,031	4	1,027	-----
Rhode Island	-----	1	2	1	6	266	-----	-----	266	168	3	165	-----
Connecticut	6	5	10	3	20	63	4	59	-----	300	10	290	-----
Middle Atlantic:													
New York	123	132	80	104	124	553	184	309	60	1,234	14	1,219	1
New Jersey	12	15	13	20	20	826	9	817	-----	1,413	13	1,400	-----
Pennsylvania	10	15	8	7	4	123	2	121	-----	-----	-----	-----	-----
East North Central:													
Ohio	25	52	19	8	40	154	36	118	-----	110	36	74	-----
Indiana	54	28	18	-----	282	430	80	350	-----	643	6	637	-----
Illinois	423	199	127	89	125	23	21	-----	2	516	6	510	-----
Michigan	70	60	31	23	269	242	37	205	-----	473	6	467	-----
Wisconsin	3	7	1	1	31	90	7	83	-----	188	-----	188	-----
West North Central:													
Minnesota	23	8	9	1	27	60	-----	20	40	296	-----	295	1
Iowa	62	60	21	2	21	241	6	235	-----	465	7	458	-----
Missouri	137	100	59	77	115	223	46	177	-----	426	65	361	-----
North Dakota	2	-----	-----	-----	4	5	-----	5	-----	1	1	-----	-----
South Dakota	-----	-----	-----	-----	4	17	-----	17	-----	7	-----	7	-----
Nebraska	-----	-----	1	1	1	2	-----	2	-----	13	1	12	-----
Kansas	32	25	18	10	45	91	13	78	-----	781	9	772	-----
South Atlantic:													
Delaware	-----	-----	1	-----	4	15	-----	15	-----	47	-----	47	-----
Maryland	5	14	22	13	14	23	3	18	2	586	3	583	-----
District of Columbia	1	1	1	5	47	171	-----	171	-----	89	-----	89	-----
Virginia	150	108	73	69	177	713	37	676	-----	832	31	801	-----
West Virginia	5	9	7	8	1	22	3	19	-----	175	7	168	-----
North Carolina	629	629	237	248	185	154	154	-----	-----	554	402	152	-----
South Carolina	12,033	9,435	9,830	10,017	9,866	9,899	9,766	133	-----	9,860	8,804	1,049	7
Georgia	2,998	2,500	1,122	981	525	519	416	103	-----	915	461	454	-----
Florida	435	147	145	146	119	522	23	499	-----	655	27	628	-----
East South Central:													
Kentucky	103	47	25	36	152	664	27	371	266	1,071	75	996	-----
Tennessee	1,495	931	496	315	208	192	185	7	-----	191	117	74	-----
Alabama	6,986	9,442	4,838	4,369	3,233	2,882	2,271	611	-----	2,913	2,472	441	-----
Mississippi	44,422	41,237	36,845	31,639	25,062	23,133	22,677	456	-----	18,764	18,397	367	-----
West South Central:													
Arkansas	4,863	3,514	3,426	1,978	1,159	1,427	-----	-----	1,427	2,262	1,721	541	-----
Louisiana	645	565	460	420	329	1,469	902	567	-----	1,327	589	707	31
Oklahoma	1,972	1,874	1,751	1,517	1,421	1,408	1,359	49	-----	1,141	1,085	52	4
Texas	4,540	6,606	8,068	7,678	8,266	8,073	7,498	575	-----	8,969	7,194	1,775	-----

See footnotes at end of table.

Numbers of cases of malaria reported to the U. S. Public Health Service by the State health officers in 1945 and certain prior years—Continued

Division and State	1939	1940	1941	1942	1943	1944				1945			
						Total	Place contracted			Total	Place contracted		
							Within continental United States	Outside continental United States [2]	Information not supplied		Within continental United States	Outside continental United States [2]	Information not supplied
Mountain:													
Montana	3	1	------	1	7	28	------	28	------	32	5	27	------
Idaho	4	7	------	4	1	3	------	------	3	39	15	24	------
Wyoming	------	7	2	3	2	13	4	9	------	7	------	7	------
Colorado	9	3	2	3	30	36	2	34	------	[3] 830	2	828	------
New Mexico	23	90	36	14	11	13	11	2	------	70	6	64	------
Arizona	27	35	42	35	88	60	10	50	------	189	3	174	12
Utah	1	5	------	5	313	157	1	156	------	112	1	111	------
Nevada	------	------	------	------	4	4	------	------	4	5	3	2	------
Pacific:													
Washington	1	2	8	3	3	9	1	8	------	6	------	6	------
Oregon	14	33	41	50	19	450	22	428	------	54	7	47	------
California	294	172	162	146	2,048	1,583	52	940	591	1,911	60	1,718	133
Total	82,655	78,130	68,075	60,071	54,555	57,629	45,878	9,090	2,661	61,707	41,671	19,847	189

[1] Figures for the years 1939-44, inclusive, are from the Annual Summaries (final figures); those for 1945 are from the Monthly State Morbidity Reports and are provisional.
[2] Stated either to have been contracted outside continental United States or to be in the military population.
[3] Exclusive of 16 cases in prisoners of war.

The malaria cases reported by the State health officers for the years 1939 through 1942 may be considered as cases among civilians, contracted within the continental United States; those for 1943 probably included some cases in the military population in which the infection was acquired outside the United States. This is probably the reason for the sharp increase in cases in 1943 in some States, such as California, Massachusetts, Indiana, Michigan, Wisconsin, and Utah. Also during that year cases were reported in some States which had reported no cases in recent prior years, such as the Dakotas and Nevada. For both 1944 and 1945, cases reported among members of the military are recorded as having contracted the infection outside the United States.

A comparison of the numbers of cases of malaria reported by the State health officers as contracted outside the United States or among members of the Armed Services with the confidential figures furnished by the Office of the Surgeon General of the Army indicates that the State health officers have not been receiving complete reports of such cases or at least have not been reporting them to the Public Health Service. Within the limitations of malaria reporting, the data for indigenous infections as reported in 1944 and 1945 are probably comparable to the figures for prior years. However, consideration should be given to the possible effect on reporting of the withdrawal of large numbers of physicians for duty in the Armed Services, which may have resulted in proportionately fewer cases of malaria being seen, and therefore reported, by physicians during the war years. Also the reduction and shifts in the civilian population in certain areas during the war should be borne in mind.

If reliance may be placed on the figures furnished by the State health officers, and if we can assume that the degree of completeness of reporting cases of malaria has remained fairly constant, the data indicate that there has been no general increase in indigenous cases in the country as a whole during the war. There has even been an apparent decrease in such cases both in the country as a whole and in the majority of the States. The decline in malaria incidence, beginning in the prewar years, apparently continued through 1944 and 1945. This favorable situation probably reflects the gratifying result of special malaria control activities conducted by the civilian and military authorities in malarious areas.

According to cases reported by the State health officers, the incidence of malaria in the United States has been steadily declining since 1935. The latest cyclic peak of reported malaria cases and deaths occurred during the period 1933–36. In 1932 a total of 68,613 cases was reported in the United States, with 2,540 deaths,[2] but a sharp increase in both malaria morbidity and mortality was recorded in 1933, when 125,549 cases and 4,678 deaths were reported. In 1935 these figures were 137,502 and 4,435, respectively. By 1938 the number of reported cases had dropped to 84,206 and the number of deaths to 2,378. The malaria death rate in the United States declined from 3.7 per 100,000 population in 1933 to 0.5 in 1943. The average of the monthly rates for 1945, based on a 10-percent sampling of death certificates,[3] is approximately 0.4.

The proportion of malaria cases that relapse is not known. It is understood that, in the absence of information to the contrary, it is the policy of the Medical Statistics Division of the Office of the Surgeon General of the Army to record as overseas infections cases occurring within 1 year of the return of the patient from overseas. Public Health Service and other investigators have demonstrated that *Plasmodium vivax* malaria cases contracted by soldiers in foreign countries (South Pacific, Mediterranean, and South American areas), which relapse after the men return to the United States, is infective to species of the native American anopheline mosquitoes, and that these mosquitoes infected by imported *vivax* malaria can transmit the disease by biting a susceptible person.[4] If reliable information can be secured

[2] Figures for deaths are from the Bureau of the Census (death registration States).
[3] Current Mortality Analysis. Bureau of the Census, vol. 3, Nos. 1–12.
[4] Young, Martin D., et al.: Studies on imported malarias. J. National Malaria Soc., **4**: 127 (June 1945). Watson, Robert B.: Observations on the transmissibility of strains of *Plasmodium vivax* from Pacific war areas by *Anopheles quadrimaculatus*. Am. J. Trop. Med., **25**: 315 (July 1945).

during the current year on the numbers of indigenous cases and relapses of overseas infections it will afford an index to the effect of the thousands of cases of malaria in men returned from overseas, and local distribution will show whether the disease has appeared in formerly malaria-free areas.

CHLORINE AS A POSSIBLE OVICIDE FOR *AEDES AEGYPTI* EGGS[1]

By STEPHEN P. HATCHETT, *Assistant Sanitarian (R), United States Public Health Service*

Roubaud (*1*) found that weak solutions of sodium hypochlorite (1 to 1,000) stimulated hatching of *Aedes aegypti* larvae and then killed them. Viable eggs after being immersed in water for 3 months, when placed in a 1 to 10,000 solution hatched within 1 to 6 days. Concentrated solutions (1 to 100) were found to kill larvae within eggs before the hatching process was initiated. Somewhat similar experiments were performed by the author during February 1945 on the effects of calcium hypochlorite instead of sodium compound on *Aedes aegypti* eggs obtained in Houston, Tex. The calcium hypochlorite used was the commercial preparation known as "HTH," which may be used in the chlorination of drinking water.

The eggs used in these experiments were laid by laboratory-reared females. All eggs were approximately 2 days old before treatment began or before they were dried. Two groups of eggs were used, but all eggs in each group were laid the same evening by females within one rearing cage. All experiments were performed in widemouthed pint jars containing 200 ml. of water, to which various portions of a freshly prepared stock solution of calcium hypochlorite were added in order to obtain definite amounts of available chlorine in each jar. In one series 75 eggs were placed in these solutions immediately after the 48-hour incubation period and were, therefore, continuously wet. In a second series of experiments the eggs were dried for 96 hours after the 48-hour incubation period and then 100 of them were placed in each of the jars containing various concentrations of available chlorine. Controls with tap water were run for both series.

Table 1 gives data obtained from these experiments. It can be seen that eggs kept continuously wet, when placed in solutions containing 500 p. p. m. or more of available chlorine, were all destroyed within 48 hours. All of these eggs were bleached and most were broken. On the other hand, 50 to 100 p. p. m. of free chlorine activated many larvae within their shells, causing them to emerge, whereupon they were killed by the solution. Larvae within eggs in the

[1] From the State Relations Division (Malaria Control in War Areas, Atlanta, Ga.).

solution of 10 p. p. m. of free chlorine were evidently not greatly stimulated, since they were considerably slower to emerge than those in the stronger concentrations, and over two-thirds of them were able to live and develop after hatching.

Somewhat similar results were obtained when dry eggs were immersed in these various solutions of calcium hypochlorite. However, there were some dissimilarities. It took solutions of 5,000 p. p. m. or more of free chlorine to destroy all eggs previously dried so that no hatching occurred. However, some larvae emerged in solutions of 1,000 p. p. m. or less, but all of these died even in solutions as weak as 50 p. p. m. Most of them expired before they had entirely freed themselves from the eggshells. In a solution of 10 p. p. m. of available chlorine only 1 egg failed to hatch, but 74 of the 99 larvae that hatched died. In other words, it took greater concentrations of free chlorine to kill larvae within previously dried eggs than it did for those in continuously wet eggs, but larvae emerging from eggs previously dried were more susceptible to free chlorine than were those from eggs continuously wet.

From these data it appears that newly prepared solutions of calcium hypochlorite containing 50 to 100 p. p. m. of available chlorine are effective ovicides for both continuously wet and previously dried *Aedes aegypti* eggs. Although water treated with such quantities of chlorine would not be suitable for drinking even after a considerable period of time, this treatment might have useful application for fire-protection barrels or buckets, water stored in barrels to keep them, from shrinking, and similar instances where water is stored for pur-

TABLE 1.—*Effects of calcium hypochlorite solutions on* Aedes aegypti *eggs*

	Solutions	Results
Wet eggs, 48 hours old (75 per jar).	0.07 percent calcium hypochlorite 500 p. p. m. available Cl_2.	After 48 hours all eggs bleached, most broken. None ever hatched.
	0.014 percent calcium hypochlorite 100 p. p. m. available Cl_2.	After 48 hours 70 larvae had emerged but all died. 5 eggs bleached and never hatched.
	0.007 percent calcium hypochlorite 50 p. p. m. available Cl_2.	After 96 hours 9 larvae hatched but all died. 66 eggs with dead larvae protruding.
	0.0014 percent calcium hypochlorite 10 p. p. m. available Cl_2.	After 144 hours 67 larvae hatched of which only 15 died. 8 eggs never hatched.
	Control (tap water)	74 larvae hatched, last one after 7 days.
Dry eggs, dried 96 hours after 48 hours old (100 per jar).	0.7 percent calcium hypochlorite 5,000 p. p. m. available Cl_2.	After 48 hours all eggs bleached, most broken. None ever hatched.
	0.14 percent calcium hypochlorite 1,000 p. p. m. available Cl_2.	After 48 hours 4 free dead larvae, 12 dead larvae protruding from eggs, 84 bleached, broken eggs.
	0.07 percent calcium hypochlorite 500 p. p. m. available Cl_2.	After 48 hours 7 free dead larvae, 93 dead larvae protruding from eggs.
	0.014 percent calcium hypochlorite 100 p. p. m. available Cl_2.	After 48 hours 13 free dead larvae, 87 dead larvae protruding from eggs.
	0.007 percent calcium hypochlorite 50 p. p. m. available Cl_2.	After 86 hours 8 free dead larvae, 64 dead larvae protruding from eggs, 18 bleached eggs.
	0.0014 percent calcium hypochlorite 10 p. p. m. available Cl_2.	After 168 hours 25 live larvae, 74 dead larvae, and 1 unhatched egg.
	Control (tap water)	After 168 hours 91 live larvae, 9 unhatched eggs.

poses other than drinking. It might also be applied before dumping and replacing drinking water in barrels breeding mosquitoes, to induce the eggs on the sides of the container to hatch and then be destroyed.

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AEDES TORTILIS (THEOBALD), A MOSQUITO NEW TO THE UNITED STATES [1]

By ARTHUR E. STAEBLER, *Passed Assistant Sanitarian (R)*, and WILLIAM F. BUREN, *Assistant Sanitarian (R), United States Public Health Service*

Aedes tortilis (Theobald) occurs in the Bahamas, Virgin Islands, and the Greater Antilles. So far as we are aware the species has never before been taken in the United States, even on the Florida Keys. On August 28, 1945, a female specimen was captured in a light trap operated by Mr. J. H. Hause, Malaria Control in War Areas, at Key West, Fla. As Key West is a port of entry for aircraft, this trap was set up by the writers with the cooperation of Mr. Hause for the purpose of checking on the possible implantation of exotic insects of public health interest.

Aedes tortilis has also been taken in the routine insect inspections of aircraft from quarantinable areas, a dead female having been found on a plane arriving at Miami, Fla., on August 20, 1945, from San Juan, Puerto Rico, via Ciudad Trujillo, Dominican Republic; Port au Prince, Haiti; and Camaguey, Cuba.

There is a possibility that *Aedes tortilis* may have been recently introduced at Key West by aircraft.

The identification of the specimens has been confirmed by Dr. Alan Stone of the United States National Museum.

[1] From the Foreign Quarantine Division.

DEATHS DURING WEEK ENDED APR. 13, 1946

[From the Weekly Mortality Index, issued by the Bureau of the Census, Department of Commerce]

	Week ended Apr. 13, 1946	Corresponding week, 1945
Data for 93 large cities of the United States:		
Total deaths	9,105	9,154
Average for 3 prior years	9,528	
Total deaths, first 15 weeks of year	150,718	144,518
Deaths under 1 year of age	594	599
Average for 3 prior years	644	
Deaths under 1 year of age, first 15 weeks of year	9,077	9,554
Data from industrial insurance companies:		
Policies in force	67,201,289	67,218,382
Number of death claims	13,322	14,293
Death claims per 1,000 policies in force, annual rate	10.3	11.1
Death claims per 1,000 policies, first 15 weeks of year, annual rate	11.2	11.0

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

REPORTS FROM STATES FOR WEEK ENDED APRIL 20, 1946

Summary

Of the 9 cases of smallpox reported for the current week, 4 occurred in the State of Washington. For the country as a whole, 158 cases have been reported for the year to date, as compared with 172 for the corresponding period last year and a 5-year median of 362. (See p. 692.)

The incidence of measles declined during the week in all of the 9 geographic areas except the West North Central and the Mountain. A total of 37,960 cases was reported, as compared with 40,746 last week and 25,362 for the median of the corresponding weeks of the past 5 years. Of the current total, 21,537 cases, or about 57 percent, occurred in the Middle Atlantic and East North Central areas, where approximately the same percentage occurred last week. The cumulative figure is 339,156, as compared with 398,809 for the corresponding period in 1944 and a 5-year median of 288,308.

A total of 296 cases of diphtheria was reported, as compared with 337 last week and a 5-year median of 201. The total to date, 5,864, is more than reported for the corresponding period of any year since 1939.

Of the total of 29 cases of poliomyelitis, the same number as reported last week, Florida and California reported 6 each, New York 5, and Washington 3. For the corresponding week last year, 32 cases were reported. The 5-year median for the week is 23. Since March 16, the week of lowest incidence so far this year, 138 cases have been reported, as compared with 156 and 94, respectively, for the corresponding periods of 1945 and 1944.

A total of 112 cases of meningococcus meningitis was reported, as compared with 131 last week and a 5-year median of 190. The cumulative total is 2,949, as compared with a 5-year median for the period of 3,807 (a high figure due to the high incidence in 1943, 1944, and 1945).

For the current week, a total of 9,028 deaths was recorded in 93 large cities of the United States, as compared with 9,105 last week, 9,109 and 9,288, respectively, for the corresponding weeks of 1945 and 1944, and a 3-year (1943–45) average of 9,274. The cumulative figure for the year is 159,746, as compared with 153,627 for the corresponding period last year.

Telegraphic morbidity reports from State health officers for the week ended Apr. 20, 1946, and comparison with corresponding week of 1945 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 1941-45	Week ended—		Median 1941-45	Week ended—		Median 1941-45	Week ended—		Median 1941-45
	Apr. 20, 1946	Apr. 21, 1945		Apr. 20, 1946	Apr. 21, 1945		Apr. 20, 1946	Apr. 21, 1945		Apr. 20, 1946	Apr. 21, 1945	
NEW ENGLAND												
Maine	1	0	1	------	------	------	64	------	135	0	0	3
New Hampshire	0	0	0	------	------	------	78	------	23	1	0	0
Vermont	0	0	0	------	------	------	3	8	118	1	0	0
Massachusetts	3	2	2	------	------	------	1,607	118	817	3	2	7
Rhode Island	0	0	1	------	39	1	9	7	24	0	0	0
Connecticut	3	2	1	------	3	2	283	169	447	3	1	2
MIDDLE ATLANTIC												
New York	25	21	18	(1)	(1)	[1] 6	5,386	158	2,314	10	32	32
New Jersey	13	7	5	3	3	7	3,466	58	1,545	3	2	5
Pennsylvania	26	8	8	------	1	1	4,225	277	1,419	14	11	11
EAST NORTH CENTRAL												
Ohio	17	8	7	1	8	10	754	54	1,084	5	6	6
Indiana	4	6	6	4	2	7	563	34	256	1	2	2
Illinois	5	4	11	1	2	9	808	151	1,139	6	11	11
Michigan [2]	8	7	6	2	2	3	1,769	161	944	5	6	6
Wisconsin	1	1	1	57	32	37	4,566	48	1,620	4	1	2
WEST NORTH CENTRAL												
Minnesota	13	4	2	------	4	1	30	13	285	0	1	1
Iowa	3	8	3	------	------	5	205	39	290	1	2	1
Missouri	7	2	2	2	5	4	331	11	415	6	9	9
North Dakota	1	1	1	------	7	7	9	3	70	0	0	0
South Dakota	1	0	0	------	------	------	24	19	15	1	0	0
Nebraska	1	2	3	------	2	2	376	28	198	0	1	1
Kansas	0	5	3	------	4	4	700	35	576	1	0	1
SOUTH ATLANTIC												
Delaware	0	0	0	------	------	------	66	1	15	0	1	0
Maryland [2]	22	9	6	4	1	3	499	52	378	2	5	5
District of Columbia	3	1	1	------	------	3	269	12	112	1	3	2
Virginia	5	6	6	159	149	217	430	78	425	8	6	6
West Virginia	9	2	2	5	3	13	67	32	246	1	2	2
North Carolina	7	6	6	------	------	6	498	82	864	1	4	4
South Carolina	3	0	3	229	140	288	341	18	372	0	0	1
Georgia	0	4	5	1	7	47	160	34	201	0	7	2
Florida	9	8	2	2	------	9	179	28	171	0	5	5
EAST SOUTH CENTRAL												
Kentucky	4	1	3	9	3	16	227	6	198	5	2	2
Tennessee	7	2	3	17	46	46	238	175	219	3	12	12
Alabama	2	9	5	18	20	114	266	17	288	1	1	8
Mississippi [2]	3	5	5	------	------	------	------	------	------	1	3	3
WEST SOUTH CENTRAL												
Arkansas	8	5	4	33	30	70	178	49	183	1	1	1
Louisiana	9	6	2	4	2	2	51	37	116	3	4	4
Oklahoma	2	2	3	24	52	52	483	86	106	2	3	1
Texas	32	28	27	595	756	562	2,005	490	1,160	2	9	5
MOUNTAIN												
Montana	0	1	1	1	9	2	64	13	132	0	0	0
Idaho	1	0	0	22	1	1	121	2	62	1	0	0
Wyoming	0	0	0	------	------	------	102	6	74	0	0	0
Colorado	8	13	7	6	3	26	1,318	21	511	1	1	1
New Mexico	1	5	2	2	2	2	71	14	99	0	0	0
Arizona	5	1	2	40	56	68	236	17	104	0	0	0
Utah [2]	0	0	0	1	1	10	465	319	228	0	0	0
Nevada	0	0	0	------	------	------	10	1	1	0	0	0
PACIFIC												
Washington	2	12	1	------	3	2	615	468	377	1	5	5
Oregon	4	1	2	23	8	17	371	85	165	2	1	1
California	18	28	18	46	12	78	3,374	1,139	1,139	11	28	23
Total	296	243	201	1,311	1,418	2,143	37,960	4,673	25,362	112	190	190
16 weeks	5,864	4,721	4,589	180,632	56,076	69,295	339,156	45,052	288,308	2,949	3,807	3,807

[1] New York City only.

[2] Period ended earlier than Saturday.

Telegraphic morbidity reports from State health officers for the week ended Apr. 20, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Poliomyelitis			Scarlet fever			Smallpox			Typhoid and paratyphoid fever [3]		
	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45	Week ended—		Median 1941–45
	Apr. 20, 1946	Apr. 21, 1945		Apr. 20, 1946	Apr. 21, 1945		Apr. 20, 1946	Apr. 21, 1945		Apr. 20, 1946	Apr. 21, 1945	
NEW ENGLAND												
Maine	0	0	0	36	39	29	0	0	0	1	1	1
New Hampshire	0	0	0	19	3	10	0	0	0	0	0	0
Vermont	0	0	0	12	29	12	0	0	0	0	0	0
Massachusetts	0	0	0	157	299	386	0	0	0	1	2	2
Rhode Island	0	0	0	12	30	25	0	0	0	0	1	0
Connecticut	0	0	0	47	72	75	0	0	0	0	0	0
MIDDLE ATLANTIC												
New York	5	6	1	855	797	569	0	0	0	4	3	5
New Jersey	0	0	0	147	134	148	0	0	0	1	1	1
Pennsylvania	0	0	0	519	514	514	0	0	0	2	6	8
EAST NORTH CENTRAL												
Ohio	2	0	0	373	341	281	0	0	0	0	2	2
Indiana	0	0	0	91	130	130	0	0	0	3	0	0
Illinois	1	1	0	172	313	313	0	0	0	2	3	3
Michigan [2]	0	2	0	202	297	297	0	1	0	4	2	2
Wisconsin	0	1	0	128	176	176	1	2	0	0	0	0
WEST NORTH CENTRAL												
Minnesota	0	0	0	38	97	63	0	0	0	0	0	0
Iowa	1	0	0	56	64	53	0	3	1	2	0	1
Missouri	0	0	0	92	79	116	0	0	0	0	2	2
North Dakota	0	0	0	9	24	18	0	1	0	0	0	0
South Dakota	0	0	0	7	20	20	0	0	0	0	0	0
Nebraska	0	0	0	10	48	36	0	0	0	0	0	0
Kansas	0	0	0	64	65	65	0	0	0	1	1	1
SOUTH ATLANTIC												
Delaware	0	0	0	12	5	8	0	0	0	0	0	0
Maryland [2]	0	0	0	82	170	80	0	0	0	0	2	1
District of Columbia	0	0	0	38	36	20	0	0	0	4	1	0
Virginia	0	0	0	90	90	39	0	0	0	3	1	1
West Virginia	0	0	0	25	50	34	0	0	0	0	3	4
North Carolina	0	0	0	22	52	38	0	0	0	1	0	1
South Carolina	0	0	0	6	6	6	0	0	0	0	2	0
Georgia	0	1	0	12	29	11	0	0	0	3	8	5
Florida	6	2	1	10	8	8	0	0	0	3	2	3
EAST SOUTH CENTRAL												
Kentucky	0	0	1	26	49	71	1	0	0	2	1	1
Tennessee	0	2	0	17	63	63	0	0	0	2	4	4
Alabama	1	2	0	2	12	12	0	0	0	1	3	0
Mississippi [2]	0	2	1	3	15	9	0	0	0	2	1	1
WEST SOUTH CENTRAL												
Arkansas	0	0	0	9	8	4	0	0	0	2	4	1
Louisiana	1	0	0	7	9	8	0	0	0	8	1	4
Oklahoma	0	0	1	16	58	21	2	0	0	2	1	1
Texas	2	11	3	58	91	71	1	0	1	14	7	6
MOUNTAIN												
Montana	0	0	0	8	19	19	0	0	0	0	1	0
Idaho	0	0	0	3	28	28	0	0	0	0	0	0
Wyoming	0	0	0	5	11	11	0	0	0	0	1	0
Colorado	1	0	0	49	71	52	0	1	0	0	1	0
New Mexico	0	0	0	1	32	9	0	0	0	0	2	1
Arizona	0	0	0	10	52	10	0	0	0	0	0	0
Utah [2]	0	0	0	28	33	30	0	0	0	0	0	0
Nevada	0	0	0	0	1	0	0	0	0	0	0	0
PACIFIC												
Washington	3	0	0	28	137	35	4	0	0	2	0	0
Oregon	0	0	0	40	35	24	0	0	2	3	0	0
California	6	2	2	180	414	118	0	4	0	3	0	2
Total	29	32	23	3,833	5,155	4,031	9	12	19	76	70	73
16 weeks	604	553	384	56,296	89,046	63,798	158	172	362	759	904	1,146

[2] Period ended earlier than Saturday.
[3] Including paratyphoid fever reported separately, as follows: Massachusetts 1; Illinois 1; Florida 2; Texas 3; Oregon 1; California 1.

Telegraphic morbidity reports from State health officers for the week ended Apr. 20, 1946, and comparison with corresponding week of 1945 and 5-year median—Con.

Division and State	Whooping cough			Week ended Apr. 20, 1946							
	Week ended—		Median 1941–45	Dysentery			Encephalitis, infectious	Rocky Mt. spotted fever	Tularemia	Typhus fever, endemic	Undulant fever
	Apr. 20, 1946	Apr. 21, 1945		Amebic	Bacillary	Unspecified					
NEW ENGLAND											
Maine	32	32	25								2
New Hampshire	2	18	11								
Vermont	11	37	22								2
Massachusetts	78	85	114		3						2
Rhode Island	34	14	14								
Connecticut	71	38	38	2							1
MIDDLE ATLANTIC											
New York	161	242	242	6	9		2				6
New Jersey	91	128	117			2					2
Pennsylvania	104	190	231								4
EAST NORTH CENTRAL											
Ohio	67	171	148								1
Indiana	21	9	45	1							1
Illinois	68	41	84	8	1		2		1		12
Michigan [2]	89	71	215								6
Wisconsin	80	81	100				1				10
WEST NORTH CENTRAL											
Minnesota	8	7	40	1							5
Iowa	16	4	25								
Missouri	9	19	19			1					1
North Dakota	1	1	6								1
South Dakota		2	4								
Nebraska		1	6				1				
Kansas	25	30	33				1				10
SOUTH ATLANTIC											
Delaware		3	1								
Maryland [2]	7	81	81			1					2
District of Columbia		9	13								
Virginia	37	59	76			19		1	1		
West Virginia	41	22	26								
North Carolina	67	133	139							2	
South Carolina	61	41	63		11				1	2	
Georgia	6	17	17						1	4	4
Florida	7	13	14				1			3	
EAST SOUTH CENTRAL											
Kentucky	34	22	58			1		1			
Tennessee	18	26	29	1			1				2
Alabama	22	48	35				1			8	4
Mississippi [2]									1	2	
WEST SOUTH CENTRAL											
Arkansas	12	13	13	2					2	1	
Louisiana	1	3	4	1	1				2	5	
Oklahoma	13	30	20								1
Texas	268	240	231	19	240	13				16	17
MOUNTAIN											
Montana	2	6	6								
Idaho	9		3								
Wyoming	3	1	5					2			
Colorado	28	56	56								3
New Mexico	5	12	12			2					
Arizona	28	54	21			21					
Utah [2]	39	32	47						1		
Nevada											
PACIFIC											
Washington	68	19	50								3
Oregon	19	23	21				1				5
California	74	437	354	5	2		1			2	8
Total	1,837	2,621	3,749	46	267	60	12	4	10	45	115
Same week, 1945	2,621			25	319	104	4	2	8	33	83
Average, 1943–45	2,771			30	251	76	10	[4] 8	11	[4] 33	
16 weeks: 1946	28,938			608	4,519	1,607	131	14	304	737	1,249
1945	39,248			442	7,102	1,875	110	8	275	760	1,370
Average, 1943–45	44,115		[4] 61,495	447	4,522	1,209	151	[4] 15	236	[4] 606	

[2] Period ended earlier than Saturday. [4] 5-year median, 1941–45.

Anthrax: New York 1 case.
Dengue fever: Maryland 1 case, contracted outside the U. S. A.
Leprosy: Louisiana 1 case.

WEEKLY REPORTS FROM CITIES

City reports for week ended Apr. 13, 1946

This table lists the reports from 90 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.

	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	------	0	2	0	2	0	0	6
New Hampshire:												
Concord	0	0	------	0	------	0	1	0	0	0	0	------
Vermont:												
Barre	0	0	------	0	1	0	1	0	2	0	0	------
Massachusetts:												
Boston	0	0	------	0	475	2	14	0	52	0	0	22
Fall River	0	0	------	0	43	1	0	0	5	0	0	5
Springfield	0	0	------	0	31	0	0	0	4	0	1	------
Worcester	0	0	------	0	165	0	6	0	11	0	0	17
Rhode Island:												
Providence	0	0	1	0	12	0	3	0	3	0	0	17
Connecticut:												
Bridgeport	0	0	------	0	4	0	2	0	3	0	0	2
Hartford	0	0	------	0	3	0	1	0	1	0	1	7
New Haven	0	0	------	0	76	0	2	0	7	0	1	2
MIDDLE ATLANTIC												
New York:												
Buffalo	4	0	------	0	285	0	4	0	8	0	0	5
New York	24	2	1	2	1,532	8	62	1	573	0	0	29
Rochester	0	2	------	0	687	1	2	0	15	0	0	------
Syracuse	0	0	------	0	71	0	2	0	10	0	0	6
New Jersey:												
Camden	3	0	------	0	58	0	3	0	1	0	0	2
Newark	0	0	------	0	1,132	0	8	0	26	0	0	15
Trenton	0	0	1	0	------	0	0	0	8	0	0	------
Pennsylvania:												
Philadelphia	2	0	2	2	725	4	35	0	55	0	0	29
Pittsburgh	4	0	------	1	------	2	7	0	36	0	0	5
Reading	0	0	------	0	140	0	1	0	5	0	0	7
EAST NORTH CENTRAL												
Ohio:												
Cincinnati	2	0	------	0	136	1	7	0	15	0	0	4
Cleveland	0	0	1	0	58	0	9	0	54	0	0	19
Columbus	4	0	------	0	7	0	2	0	6	0	0	5
Indiana:												
Fort Wayne	1	0	------	0	1	0	2	0	2	0	0	1
Indianapolis	7	0	------	0	430	1	6	0	16	0	0	29
South Bend	0	0	------	0	2	0	0	0	6	0	0	------
Terre Haute	0	0	------	0	1	1	1	0	3	0	0	------
Illinois:												
Chicago	2	0	1	2	529	7	28	0	98	0	0	38
Springfield	0	0	------	0	6	0	2		0	0		1
Michigan:												
Detroit	5	0	------	0	913	0	8	0	66	0	0	36
Flint	0	0	------	0	1	0	3	0	2	0	0	1
Grand Rapids	0	0	------	0	167	0	1	0	4	0	0	4
Wisconsin:												
Kenosha	1	0	------	0	17	0	0	0	4	0	0	------
Milwaukee	0	0	------	0	2,850	1	9	0	31	0	0	53
Racine	0	0	------	0	38	0	0	0	3	0	0	------
Superior	0	0	------	0	1	0	0	0	0	0	0	1
WEST NORTH CENTRAL												
Minnesota:												
Duluth	0	0	------	0	5	0	1	0	5	0	0	2
Minneapolis	5	1	------	0	26	1	1	0	13	0	0	------
St. Paul	0	0	------	0	6	0	2	0	16	0	0	3
Missouri:												
Kansas City	4	0	3	0	30	0	7	0	5	0	0	------
St. Joseph	0	0	------	0	3	0	0	0	1	0	0	------
St. Louis	0	0	1	0	110	3	12	0	15	0	0	------

City reports for week ended Apr. 13, 1946—Continued

	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												
North Dakota:												
Fargo	0	0		0		0	1	0	0	0	0	
Nebraska:												
Omaha	0	0		0	57	0	2	0	6	0	0	
Kansas:												
Topeka	0	0		0	13	0	1	0	18	0	0	4
Wichita	0	0		0	70	0	3	0	1	0	0	2
SOUTH ATLANTIC												
Delaware:												
Wilmington	0	0		0	19	1	3	0	1	0	0	
Maryland:												
Baltimore	6	0		0	408	1	7	0	26	0	0	10
Cumberland	0	0		0	1	0	0	0	5	0	0	
Frederick	0	0		0		0	0	0	0	0	0	
District of Columbia:												
Washington	0	0	1	1	212	0	6	0	24	0	1	4
Virginia:												
Lynchburg	0	0		0	11	0	0	0	2	0	0	
Richmond	0	0	14	0	55	0	3	0	8	0	0	
Roanoke	0	0		0	9	0	0	0	4	0	0	
West Virginia:												
Charleston	0	0		0		0	0	0	0	0	0	
Wheeling	4	0		0	2	0	3	0	0	0	0	12
North Carolina:												
Raleigh	0	0		0	84	0	3	0	0	0	0	3
Wilmington	0	0		0	29	0	1	0	0	0	0	1
Winston-Salem	0	0		0	20	0	0	0	3	0	0	19
South Carolina:												
Charleston	0	0	2	0	20	0	0	0	2	0	0	3
Georgia:												
Atlanta	0	0		0	23	0	0	0	4	0	0	
Brunswick	0	0		0	4	0	0	0	0	0	0	
Savannah	0	0		0	1	0	2	0	3	0	0	
Florida:												
Tampa	1	1	1	1	30	0	2	1	3	0	1	
EAST SOUTH CENTRAL												
Tennessee:												
Memphis	1	0		0	33	1	10	0	4	0	0	12
Nashville	0	0		1	10	0	2	0	1	0	1	
Alabama:												
Birmingham	0	0	3	0	18	0	5	0	1	0	0	
Mobile	0	0	3	0	1	0	1	0	1	0	0	
WEST SOUTH CENTRAL												
Arkansas:												
Little Rock	0	0	4	0	30	0	2	0	0	0	0	
Louisiana:												
New Orleans	1	0	1	1	13	1	2	2	7	0	0	
Shreveport	2	0		0		0	3	0	0	0	2	
Texas:												
Dallas	3	0		0	54	0	2	0	4	0	0	
Galveston	0	0		0	6	0	1	0	0	0	0	
Houston	3	0		0	10	0	2	0	1	0	0	
San Antonio	0	0	2	2	27	1	6	0	0	0	0	5
MOUNTAIN												
Montana:												
Billings	0	0		0	1	0	1	0	0	0	0	
Great Falls	0	0		0	12	0	1	0	0	0	0	
Helena	0	0		0	3	0	0	0	1	0	0	
Missoula	0	0		0		0	1	1	0	0	0	
Idaho:												
Boise	0	0		0	11	0	0	0	1	0	0	
Colorado:												
Denver	1	0		0	587	0	3	0	14	0	1	27
Pueblo	0	0		0	18	0	1	0	1	0	0	1
Utah:												
Salt Lake City	0	0		0	131	0	2	0	3	0	0	3

City reports for week ended Apr. 13, 1946—Continued

	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	0	0		1	97	0	7	0	11	3	0	5
Spokane	0	0	1	0	115	0	3	0	2	0	1	8
Tacoma	0	0		0	9	0	0	0	5	0	0	2
California:												
Los Angeles	1	0	8	0	502	2	7	0	52	0	0	10
Sacramento	3	0		0	212	0	0	0	0	0	0	1
San Francisco	1	0	7	1	184	1	6	0	25	0	0	1
Total	95	6	58	15	13,929	41	362	5	1,436	3	10	506
Corresponding week, 1945	62		42	29	1,061		370		1,604	1	5	643
Average, 1941-45	63		120	[1] 32	[2] 7,050		[1] 430		1,714	1	12	895

[1] 3-year average, 1943-45.
[2] 5-year median, 1941-45.

Anthrax.—Cases: Philadelphia 1.
Dysentery, amebic.—Cases: New York 2; Baltimore 1.
Dysentery, bacillary.—Cases: New York 34; Philadelphia 1; Charleston, S. C., 1; Los Angeles 4.
Dysentery, unspecified.—Cases: San Antonio 13.
Tularemia.—Cases: New York 1; Baltimore 1.
Typhus fever, endemic.—Cases: Savannah 1; Little Rock 2; New Orleans 1.

Rates (annual basis) per 100,000 population, by geographic groups, for the 90 cities in the preceding table (estimated population, 1943, 34,394,800)

	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	0.0	0.0	2.6	0.0	2,117	7.8	83.6	0.0	235	0.0	7.8	204
Middle Atlantic	17.1	1.9	1.9	2.3	2,143	6.9	57.4	0.5	341	0.0	0.0	45
East North Central	13.4	0.0	1.2	1.2	3,136	6.7	47.4	0.0	188	0.0	0.0	117
West North Central	17.9	2.0	8.0	0.0	637	8.0	59.7	0.0	159	0.0	0.0	22
South Atlantic	18.0	1.6	29.4	3.3	1,517	3.3	49.0	1.6	139	0.0	3.3	85
East South Central	5.9	0.0	35.4	5.9	366	5.9	106.2	0.0	41	0.0	5.9	71
West South Central	25.8	0.0	20.1	8.6	402	5.7	51.7	5.7	34	0.0	5.7	14
Mountain	7.9	0.0	0.0	0.0	6,060	0.0	71.5	7.9	159	0.0	7.9	246
Pacific	7.9	0.0	25.3	3.2	1,770	4.7	36.4	0.0	150	4.7	1.6	43
Total	14.4	0.9	8.8	2.3	2,117	6.2	55.0	0.8	218	0.5	1.5	77

SMALLPOX IN SAN FRANCISCO, CALIF., AND SEATTLE, WASH.

As of April 24, no case of smallpox had been reported in San Francisco since March 27, the date of onset of the last reported local case.

Up to April 20, a total of 42 cases, with 10 deaths, and 1 fatal suspect case had been reported in the Seattle-King County area; 4 cases had been reported outside that area, including 1 case of hemorrhagic type from Everett, with onset on April 14.

TERRITORIES AND POSSESSIONS

Hawaii Territory

Plague (rodent).—A rat trapped on January 9, 1946, in District 10A, Paauhau area, Honokaa, Hamakua District, Island of Hawaii, T. H., was proved positive for plague on February 25, 1946. Plague infection was also proved positive on February 5, 1946, in a pool of 29 rats trapped on Government Belt Road along the east bank of Keehia Gulch in Hamakua District, Island of Hawaii

Honolulu—Smallpox.—During the week ended March 30, 1946, 1 case of smallpox (off-shipping) was reported in Honolulu, T. H. This is the first case of smallpox reported in the Territory since 1940.

Panama Canal Zone

Notifiable diseases—February 1946.—During the month of February 1946, certain notifiable diseases were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Panama		Colon		Canal Zone		Outside the Zone and terminal cities		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Chickenpox	3	-------	-------	-------	4	-------	1	-------	8	-------
Diphtheria	12	1	2	-------	1	-------	2	-------	17	1
Dysentery:										
Amebic	1	-------	-------	-------	-------	-------	1	-------	2	-------
Bacillary	1	-------	1	-------	3	-------	1	-------	6	-------
Malaria [1]	12	-------	2	-------	78	-------	92	4	184	6
Measles	-------	-------	-------	-------	-------	-------	15	-------	15	-------
Meningitis, meningococcus	2	1	1	1	-------	-------	-------	-------	3	2
Mumps	-------	-------	-------	-------	7	-------	7	-------	14	-------
Paratyphoid fever	2	-------	-------	-------	-------	-------	-------	-------	2	-------
Pneumonia	-------	4	-------	-------	24	-------	-------	4	[2] 24	8
Relapsing fever	1	-------	-------	-------	-------	-------	-------	-------	1	-------
Scarlet fever	-------	-------	-------	-------	-------	-------	4	-------	4	-------
Tuberculosis	-------	16	-------	2	-------	1	-------	9	-------	28
Typhoid fever	-------	-------	-------	-------	-------	-------	3	-------	3	-------
Typhus fever	1	-------	-------	-------	-------	-------	-------	-------	1	-------
Whooping cough	-------	-------	-------	-------	3	-------	-------	-------	[2] 3	-------

[1] 14 Recurrent cases.
[2] In the Canal Zone only.

FOREIGN REPORTS

CANADA

Provinces—Communicable diseases—Week ended March 23, 1946.—During the week ended March 23, 1946, 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		3		77	270	20	23	17	67	477
Diphtheria		1	1	16	9	5	1			33
Dysentery, bacillary				2						2
Encephalitis, infectious				1						1
German measles				34	95		3	6	21	159
Influenza		43			27	4			8	82
Measles		228	23	690	1,382	3	3	36	18	2,383
Meningitis, meningococcus				4	2	1	1	1		9
Mumps		2	1	90	272	133	16	77	137	728
Poliomyelitis								1		1
Scarlet fever		6	6	91	53	10	4	11	13	194
Tuberculosis (all forms)		5	6	181	60	7	42	9	84	394
Typhoid and paratyphoid fever				9	2		1		3	15
Undulant fever				3	5					8
Venereal diseases:										
Gonorrhea		18	26	142	156	37	38	45	92	554
Syphilis		5	5	143	75	12	17	4	35	296
Whooping cough		1		63	63	6		5	8	146

FINLAND

Notifiable diseases—February 1946.—During the month of February 1946, cases of certain notifiable diseases were reported in Finland as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis	21	Paratyphoid fever	150
Diphtheria	1,099	Poliomyelitis	13
Dysentery	14	Scarlet fever	265
Gonorrhea	1,310	Syphilis	588
Malaria	2	Typhoid fever	63

JAMAICA

Notifiable diseases—4 weeks ended April 6, 1946.—During the 4 weeks ended April 6, 1946, cases of certain notifiable diseases were reported in Kingston, Jamaica, and in the island outside of Kingston, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Cerebrospinal meningitis	1		Poliomyelitis		1
Chickenpox	1	14	Puerperal sepsis		1
Diphtheria	4	6	Scarlet fever	1	
Dysentery, unspecified	1	6	Tuberculosis	45	66
Erysipelas		1	Typhoid fever	15	103
Leprosy		2	Typhus fever (murine)	1	1

REPORTS OF CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER RECEIVED DURING THE CURRENT WEEK

NOTE.—Except in cases of unusual incidence, only those places are included which had not previously reported any of the above-named diseases, except yellow fever, during recent months. All reports of yellow fever are published currently.

A table showing the accumulated figures for these diseases for the year to date is published in the PUBLIC HEALTH REPORTS for the last Friday of each month.

Plague

Egypt.—During the week ended April 13, 1946, 6 cases of plague were reported in Egypt, including 2 cases reported in Alexandria and 4 cases reported in Ismailiya.

Smallpox

British East Africa—Tanganyika.—For the week ended March 16, 1946, 144 cases of smallpox with 21 deaths were reported in Tanganyika, British East Africa.

Venezuela.—For the month of March 1946, 78 cases of smallpox (alastrim) were reported in Venezuela. States reporting the highest incidence are: Nueva Esparta, 19 cases; Guarico, 15; Sucre, 12.

Typhus Fever

Belgian Congo.—For the week ended March 30, 1946, 69 cases of typhus fever (murine) were reported in the Belgian Congo.

Ecuador.—For the month of March 1946, 87 cases of typhus fever with 4 deaths were reported in Ecuador. Provinces reporting the highest incidence are: Canar, 20 cases; Imbabura, 19; Chimborazo, 12.

Egypt.—For the week ended March 23, 1946, 64 cases of typhus fever were reported in Egypt.

Eritrea.—For the week ended April 6, 1946, 26 cases of typhus fever were reported in Eritrea.

Turkey.—For the week ended April 13, 1946, 66 cases of typhus fever were reported in Turkey, including 2 cases in Icel and 1 case in Istanbul.

Yellow Fever

Bolivia—Santa Cruz Department—San Jose.—During the month of March 1946, 1 fatal case of suspected yellow fever was reported in San Jose, an airport town about 20 miles from San Ignacio, Santa Cruz Department, Bolivia.

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