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# AGE AND SEX INCIDENCE OF INPLUENZA AND PNEU-MONIA MORBIDITY AND MORFALITY IN THE EPIDEMIC OF 1928–29 WITH COMPARATIVE DATA FOR THE EPI-DEMIC OF 1918–19<sup>1</sup>

BASED ON SURVEYS OF FAMILIES IN CERTAIN LOCALITIES IN THE UNITED STATES FOLLOWING THE EPIDEMICS

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#### CONTENTS

	Page	
Source and character of data	1909	Case
Total morbidity	1918	Pneu
Pneumonia incidence	1921	Revie
Mortality from influenza and pneumonia	1922	Sum
Cases complicated by pneumonia	1927	Ackn

	Page
Case fatality of all cases	1927
Pneumonia fatality	1931
Review of the various age curves	1933
Summary	1936
Acknowledgments	1936

The unusual age incidence of influenza<sup>2</sup> during the epidemic of 1918-19, with its particularly high rates for young adults, has resulted in much attention being paid to age incidence during each of the several respiratory epidemics that have occurred since that time. The unusual age distribution of the 1918 influenza outbreak applies particularly to the cases that were complicated by pneumonia and to the deaths from influenza and pneumonia. It is of interest, however, to compare also the age incidence of cases designated as influenza or grippe and the milder types of illness that were reported as doubtfully influenza or merely as severe colds.

#### SOURCE AND CHARACTER OF DATA

Immediately following the fall peak of the 1918–19 epidemic, the United States Public Health Service made surveys in some 12 localities in various parts of the United States. When it was found that some of the localities had a second wave of influenza later in the winter of 1918–19, several of the places were resurveyed to com-

<sup>&</sup>lt;sup>1</sup> From the Office of Statistical Investigations, U. S. Public Health Service.

<sup>&</sup>lt;sup>1</sup> In the sickness data included in this paper the terms "influenza" and "pneumonia" designate the diagnoses as stated by the families, except that in fatal cases the cause of death as reported to the local registrar of vital statistics was substituted for the cause reported by the family wherever the data were available for comparing the reports. It is not intended to suggest that the two respiratory epidemics were necessarily etiologically the same.

plete the record for both waves. Immediately after the 1928-29 epidemic the United States Public Health Service made similar surveys in some 14 localities in various parts of the United States. Only three of the cities that were surveyed in 1918-19 were resurveyed in 1928-29.

The surveys in the two epidemics were made along generally comparable lines. The method was to make house-to-house canvasses, a record being made of the age, sex, color, etc., of each member of the household, and for each person who had had a respiratory attack during the brief period of the epidemic, a record of the date of onset, diagnosis and termination of the case was made. Ten to twenty districts were selected in each city that was to be surveyed, the districts being located in such a way that they would be representative of the city as a whole as regards geographical distribution and economic status of the persons surveyed, and in such other respects as the officer in charge of the survey could secure representative conditions. In the 1928-29 survey, 10 large cities were included. In each city of less than 400,000 inhabitants, a population of approximately 10,000 was canvassed, and in cities of over 400,000 a population of 15,000 was canvassed. Information for certain smaller towns and rural communities was added to the data, the canvasses in these latter places being made by State health authorities, but following the same plan as that used in the surveys made by the Public Health Service. In the 1928-29 survey, each of the 10 large cities is represented by approximately the same number of surveyed population. In the 1918-19 surveys there was more variation in the size of the samples, the surveyed population in the cities ranging from 4,000 to 33,000. The 1918-19 surveys covered a total of 146,203 persons in the 12 localities, of whom 84 per cent were white and the remainder colored. The 1928-29 surveys covered a total of 151,193 persons, of whom nearly 92 per cent were white and 8 per cent, except for 520 Japanese, were colored.

Although the two surveys were made along generally comparable lines, we can not be sure that the diagnoses recorded are comparable for the two periods. In certain respects known differences can be pointed out; but further than that it would seem impossible to say whether or not such terms as "influenza," "grippe," and "cold" designated in 1928-29 an attack of the same type as was so designated in 1918-19. The most comparable rate for the two epidemics would seem to be the total morbidity from respiratory causes exclusive of such minor colds as did not cause the patient to go to bed, since the 1918-19 data do not appear to include such minor attacks.

Because the epidemic of 1918-19 came largely in the early fall and that of 1928-29 came in midwinter, more pneumonia that occurs normally would be reported in the latter survey than in the 1918-19 survey. Such cases as were designated by the housewife as "grippe" or "la grippe," in 1918-19 were put down as influenza. In 1928-29 the enumerators were instructed to inquire, when a case was reported as grippe, whether or not the informant meant by that diagnosis anything different from influenza, and if not, to record it as influenza, but otherwise to record the case as grippe. As will be seen later, the cases in 1928-29 recorded as grippe are identical with those recorded as influenza as regards both their chronological and their age distribution.

In the 1918-19 survey the enumerators were instructed to class as influenza such reported "colds" as lasted three days and kept the patient in bed one whole day, unless the case had been otherwise diagnosed by a physician. Other colds were to be recorded as "doubtful," but the number of such doubtful cases reported was so small that it appears that only the more severe colds were remembered by the informants. In 1918 attention must have been fixed on such cases as were reported as influenza, because of the unusual importance of the disease during the great pandemic. In the 1928-29 survey the enumerators were instructed to inquire about and to record "colds" as such, in addition to influenza, grippe, and pneumonia. While the record of "colds" must be incomplete, because minor cases were forgotten, it seems reasonable to believe that it contains a larger proportion of the colds that actually occurred than was true of the "doubtful" category of the 1918-19 surveys. The colds reported in the 1928-29 survey have been classified into those confining the patient to bed for one or more days and those in which the patient was not confined to bed. For purposes of comparison with the 1918 surveys, the colds confining the patient to bed have been included with influenza, pneumonia, and grippe as more nearly approximating the influenza, pneumonia, and "doubtful" category of the 1918-19 data. The cases designated as colds in 1928-29 and those designated as "doubtful" in 1918-19 seem to be similar to influenza as regards their chronological distribution, but are somewhat different as regards their age incidence.

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	monda <sup>a</sup> re fatal tality)	Fe- male	21.1	11.8	14.0	6.1	13.6		IL.	4	57.1
	of pneu that we monia fa	Male	21.0	24.1 8.5	13.0	10.0	10.0	21.7	32.4	84	51.9
	Per cent cases (pneu	Both sexes	21.0	25.0	13.4	7.8	12.5	30.8	8	46.0	56.3
	e total e com- pneu-	Fe- male	2.5	11.1 6.7	6.3	4	474	1944 494	3.1	3.7	9.3
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-ALL SUR'	at of the that wer fatality)	Male	0.60	3.91 .45	98.	. 18	.12	.49	T. 19	2.20	4.81
1928-29-	Per cel cases (case	Both sexes	0.56	3.50	-87	.11.34	 8¥8		.1	1.91	<b>6,</b> 13
DEMIC OF	om in- pneu- 00 per-	Fe- male	1. 08	3.72 1.55	1.93	.15	.45	.72	8.	3.36	10, 81
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	Death flueni monis sons o	Both seres	1.05	4.84 1.36	1.09	នន	ຮຸສຸຮຸ	& 7.8	1.28	3.27	8.28
	er 1,000 rvassed luenza, monia, ed)	Fe- male	205	126 241	221	252 213 175	226 226	215 208 192	881 128	<u>88</u>	88 88
	sserate p ns car iding inf e, pneu olds in b	Male	172	150 258	237	28 18 19 19	<u>8</u> 888	828	84 <b>4</b>	34	146
	Total ca perso (inclu gripp and c	Both sexes	189	138 249	229	38 <u>8</u>	157 183 199	1288	8 <b>3</b>	891 122	181
	Age (years)		All ages	Under 1	Under 5.	6 to <b>9</b> 10 to 14 15 to 19	20 to 24 25 to 29 30 to 34	<b>35</b> to 39. 40 to 44. 45 to 49.	50 to 54 55 to 59	60 to 64 65 to 69	70 to 74. 75 and over

<sup>1</sup> The period covered varied from 9 to 14 weeks in the different localities. The dates of beginning of the periods also varied, the weeks included being those during which respire. tory linesees appeared to have occurred with undues frequency in the particular locality. <sup>3</sup> See footnote to Table 3 for a list of the localities. <sup>3</sup> Fatal cases of influenza or grippe that were not designated as pneumonis in the family statement were included as pneumonia cases in all computations.

August 14, 1981

TABLB 2.—Age and sex incidence of specific respiratory diagnoses as reported by the canvassed families as occurring during a period of approxi-mately three months <sup>1</sup> in 14 localities <sup>2</sup> in the United States

EPIDEMIC OF 1928-29-ALL SURVEYED LOCALITIES

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					Case rat	e per 1,000	persons ca	nvassed		I		
Age (years)		Influenza			Grippe		Colds wit	h 1 or mor bed	e days in	Colds w	ith no day	ta bed
	Both sexes	Male	Female	Both seres	Male	Female	Both sexes	Male	Female	Both seres	Male	Female
All ages	99.3	80.9	107.8	45.3	40.2	49.9	39.6	37.3	41.8	76.6	74.7	78.8
Under 1 1 to 4.	51.5 120.7	50.8 124.8	45.6 116.6	27.7 57.8	28.28 28.28 4	27.0 57.4	39.6 56.8	40.1 60.9	39.1 52.8	60°.0	66.8 94.2	71.6
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	Grippe cases	3, 946	88	325 413 413 336 336 337 337 337 337 337 337 337 33
Female	Influ- enza cases	8, 521	48 49	850 850 850 850 850 850 850 850 850 850
	Pneu- monia cases 4	403	51 71	78 <b>F</b> 8226868888221138
	Total cases, includ- ing infu- enza, grippe, pneu- monia, and colds in bed	16, 174	136 1, 240	1, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,
	Per- sons can- vassed	79, 040	1,075 5,154	୧୯୧୯୧୯୯୯୯୯୯୯୯୯୯୯୮୮୮୮୮ ୧୯୧୯୯୯୯୯୯୯୯୯୯୯୯୯୮୮୮୮୮ ୧୯୧୯୯୯୯୯୯୯୯
	Influ- enza and pneu- monia deaths	2	- 4	
	Cases of colds in bed	2, 689	48 313	88 87 87 88 88 88 88 88 88 88 88 88 88 8
	Grippe cases	2, 902	28% 28%	<b>\$\$</b> \$
Male	Influ- enza cases	6, 485	88 87 88	708 8000 800 801 801 801 801 801 801 801
	Pneu- monia cases 4	868	38	88588555667
	Total rotal includ- ing infu- enza, grippe, pneu- monia, and colds in bed	12, 429	1, 324	1,503 1,685 1,217 1,217 1,217 1,217 1,217 1,217 1,218 211 1,48 211 1,48 211 1,48 211 1,48 211 1,48 211 1,48 211 1,48 211 1,120 211 1,120 211 1,217 211 1,217 211 1,217 211 1,217 211 1,217 211 1,217 211 1,217 211 211 211 211 211 211 211 211 211
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	Influ- enza and pneu- monia deaths	159	11 14	8
	Cases of colds in bed	6, 993	96 883	678 884 788 788 788 788 788 733 737 788 737 788 737 788 788
	Grippe cases	6, 848	63 595	668 823 828 828 828 828 828 828 828 828 82
h sexes	Influ- enza cases	15,006	117 1, 242	1000 100 1000 1
Bot	Pneu- monia cases <sup>4</sup>	756	142 142	802883284448485588888888888888888888888888
	Total Cases, includ- includ- inc influ- enza, grippe, pneu- monia, and colds in bed	28, 603	314 2, 564	ૡૡૡૡૡૡૡૡૺૢ૽ <u>ૻ</u> 888933848888888888888888888888888888888
	Persons can- vassed	151, 193	2, 274 10, 291	202 202 202 202 202 202 202 202
	Age (years)	All ages	Under 1 1 to 4	Under 6. Under 6. 10 to 9 it 21 to 19 21 to 19 21 to 28 22 to 28 23 to 28 24 to 44 45 to 44 45 to 44 26 to 54 26 to 54 27 th over 77 and over 77 and over

August 14, 1981

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**TABLE 4.**—Age and sex incidence of certain respiratory diseases during a period of approximately four months<sup>1</sup> in canvassed families in about 12 localities<sup>2</sup> in the United States

EPIDEMIC OF 1918-19-ALL BURVEYED LOCALITIES

	that that ty)	Fe-	24.5	27 C 28 29 C 28 29 C 28 29 C 28 20 C 28 20 20 C 28 20 C 28 20 C 28 20 20 C 28 20 20 C 28 20 20 20 C 28 20 20 20 20 20 20 20 20 20 20 20 20 20	81891888888888888888888888888888888888
	nt of pi a cases stal (pr b fatalij	Male ,	28.5	44.1	8 8 8 8 8 1 1 8 8 8 8 8 8 8 9 9 9 9 9 9
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ocalitic	Per total were of py pu	Both	6.3	12 2 8 1 2	<b>&amp; 3 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 </b>
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11 sur	monia 9 per 1, 18 canv	Male	18.4	28.8 27.5	2421-26222222222222222222222222222222222
	Pneu rate persoi	Both sexes	17.6	26.0 26.0	6 8 8 800/1111/688
	grippe 1,000 Mised	Fe- Bale	245.9	148. 0 259. 5	237.8 237.6 232.2 225.2 225.2 225.5 25.5 25.
	ta and ate per is cany	Male	231.5	165.0 281.4	259.4 340.2 340.2 259.9 259.9 254.7 194.5 194.5 124.9 94.4 94.4 76.4
	Luftuen case ri persor	Both sexes	239.3	157.4 270.4	74.6 74.6 74.6 74.6 74.6 74.6 74.6 74.6
	D000 Bassed	Fe- male	33.1	25 4 24 4	
	ibtful" per 1, is canv	Male	20.8	14.9 25.1	20 20 20 20 20 20 20 20 20 20 20 20 20 2
	"Dou rate persou	Both seres	22.0	18.7 24.7	12 7 6 8 19 19 19 19 19 19 19 19 19 19 19 19 19
	the the case	Fe- male	1.6	6.7 2.2	80,00,00,00,00 0 0 0 0 0 0 0 0 0 0 0 0 0
lties 1	cent of cases fatal tality	Male	1.8	8.0 1.5	な、、ここようなしし、し、ろ、ろ、ち、ちょうちょうきてきの ア る の
d local	Per total Were	Both seres	1.7	7.4 1.8	8
urveye	from and ons od	Fe- male	4.7	13.3 7.1	್ವವನ್ಗಳಗಳುವುದೆ ಸ್ತರ ನ್ನಡನ್ಗಳಗಳು
12 s	h rate uenza unonis 00 pers anvasse	Male	5.3	17.1 5.4	7.1.1.4.0.6.9.4.4.9.6.4.4.9.6.4.4.9.6.4.4.9.6.4.4.9.6.4.4.6.6.4.4.6.6.4.6.6.4.6.6.4.6.6.6.4.6.6.6.6.6.6.6.6.6.6
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	rate arsons (in- uenza, sumo- ubtful)	Fe- male	200	199 325	92 92 92 92 92 92 92 92 92 92
	al case 1,000 pr vassed ng infi pe, pre pe, pre	Male	8	214 348	832328232828282828282828282828282828282
	Tot per 1 can can can gripi gripi nia, a	Both seres	294	207	88 1134 1602 2366 2368 2323 2323 2323 2323 2323 232
	Age (years)		All ages	Under 1. 1 to 4.	Under 5 10 0 14 10 10 14 115 10 14 125 10 28 25 10 28 25 10 28 38 10 24 46 10 44 56 10 54 55 10 54 55 10 74 55 and over

<sup>1</sup> The period covered begin Sept. 1, 1918, and continued for 5 to 5 months in the otherwise to share a consistent of the latent of the 12 localities. In the otherwise the otherwise was not consistently distinguished from influenza, and in all rates is the foother of the distinguished from influenza, and in all rates is the non-otherwise the distance of the 11 localities arciusive of Charles County.
<sup>1</sup> Fatal cases of influenza or grippe that were not designated as pneumonia is the included as pneumonia cases in all computations.

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RPIDEMIC OF 1918-19 IN 13 SUBVEYED LOCALITIES

	Influenza and pneu- monia deaths	867	24	
ales	" Doubt- ful" cases	1, 787	• 32 145	18825225558888 <b>48</b> 213
Feir	Total cases fincluding finduenza, grippe, pneu- monia, and doubtful	23, 169	1, 933	4444444444 2022 2022 2022 2022 2022 202
	Persons	77, 495	1, 427 5, 945	<i>ĿĿĿ௳ĿĿ௳</i> ₹4%%411 4 £8878888888888888888888888888888888888
	Influenza and pneu- monia deaths	363	**	8458884951445120
les	"Doubt- ful" cases	1, 420	21 150	528585858586679555555555555555555555555555
Ma	Total cases including influenza, grippe, pneu- monia, and doubtful	19, 742	301 2,081	4444444444 888888888888888888888888888
	Persons canvassed	68, 684	1, 407 5, 984	다
	Influenza and pneu- monia deaths	730	97	18834852888888389°33
eres 1	"Doubt- ful" cases	3,216	26.53	888 888 888 888 888 888 888 888 888 88
Both	Total Total cases including influenza, grippe, pneu- monia, and doubtru	42, 920	586 4, 016	4.રુરુવ
	Persons canvassed	146, 203	2, 838 11, 933	4444444444 5525 5525 5525 5525 5525 552
	Age (years)	All ages	Under 1 1 to 4	Under 5. 10 to 9 10 to 19 20 to 13 20 to 23 20 to 24 20 to 44 40 to 44 40 to 44 40 to 49 50 to 69 50 to 60 50 to 6

<sup>1</sup> The period covered began Sopt. 1, 1918, and continued for 3 to 5 months in the different localities. <sup>1</sup> New London Coun., Baltimore, Md., five minor Maryland towna, Charles County, Md., Spartanburg, S. C., Augusta, Ga., Macon, Ga., Louisville, Ky., Des Moines, 10ws, Little Rock, Ark., Ban Antonnor, Tex., and San Francisco, Calif. <sup>1</sup> Both seres includes a few of unknown sex.

TABLE 6.—Number of persons canvassed and the number of cases of certain respiratory diseases reported by the families as occurring during a period of approximately four monthe <sup>1</sup> in various localities <sup>2</sup> in the United States

EPDERIC OF 1019-101 IN 11 SUBSTED TOCALITIES

			Both seres					Males					Females		
Age (years)	Persons Canvassed	Total cases, in- cluding finfluenza, grippe, pneumo- nia, and doubtful	"Doubt- ful" cases	Pneumo- nia cases 4	Influenza and pneu- monia deaths	Persons canvassed	Total chalme chalme influensa, pronumo- nia, and doubtful	"Doubt- ful" cases	Pneumo- nia cases 4	Infinenza and pneu- monia deaths	Persons Can vassed	Total cuase, in- chuding influenza, preumo- preumo- nia, and doubtful	" Doubt- ful" cases	Pneumo-	Influence and preci- monia deaths
All ages	130, 056	36, 374	2, 966	3, 200	683	60, 109	16, 305	1, 286	1, 104	28	69, 924	20, 060	1, 680	1, 186	8
Juder 1 to 4	2, 408 10, 164	490 3, 276	264 264	84	<b>49</b>	1, 182 5, 093	250 1,705	21 132	<b>38</b> 140	<b>3</b> 381	1, 223 5, 067	237 1, 571	88	128	31
7nder 5. to 9. to 9. to 14. to 14.		844.998.899.999.999.999.999.999.999.999.	8212273888888888888888888888888888888888	826 1173 2270 2270 2270 2270 2270 2270 2270 22	<sup>2388</sup> 12°12835388	୧୯୯୯୯୫୫୯୯୯୮୮ । ୧୯୯୯୯୫୫୯୫୯୯୮୮ । ୧୯୯୯୮୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦	2,55 2,55	88.00000000000000000000000000000000000	17 882 887 882 882 882 883 883 883 883 883 883 883	838985385 <u>3</u> 85 <u>3</u> 9884-40	&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&&	-1444444-1-1 8611569 11269 1100 11000 11000 11000000000000000000	\$1173 81188 8118 818 8118 8	8.8158832255558558855	4444888888888888900000
<ul> <li>1 The period cover</li> <li>3 Same localities a</li> <li>3 Same and in all rate</li> <li>Both serves inclut</li> <li>4 Pneumonia cases</li> </ul>	ed began s enumera s involvin ies a few o include a	Sept. 1, 191 sted in foot ig pneumoi if unknowr few fatal c	18, and control to Ta thote to Ta nia cases th a sex.	tinued for ble 5 ercel ie data are uenza or gr	3 to 5 mon pt that Ch used for al ippe that	ths in the arles Count arles Count l localities were not d	different lo ity, Md., i except Chi esignated s	calities. s omitted. arles Count s pneumor	In that l ty. nia in the f	ocality pne amily state	aimonia w ment.	ras not con	sistently d	listinguishe	व किया कि

1917

The survey of 1918-19 includes respiratory illness during an average period of something like four months, as compared with an average period of about three months for the 1928-29 epidemic. Although this fact would at first seem to make the results incomparable without an adjustment to an equal time interval, it will be remembered that during the winter of 1918-19 the influenzapneumonia death rate was definitely above normal for a period of about seven months, as compared with a period of about three months during the winter of 1928-29 (1). Since it is impossible to compute excess sickness rates, because no comparable data are available for "normal" years, the morbidity data represent all respiratory illnesses of certain types that were reported by the families as occurring during the period when those diseases were unusually prevalent. The period of four or five months for the 1918-19 epidemic appears to include less time than the total epidemic, even though it is a longer period than was covered in the 1928-29 surveys.

The cities surveyed in 1918–19 were not identical with those surveyed in 1928–29. Three cities were surveyed after both epidemics, but a comparison of the incidence of respiratory conditions in the two epidemics did not seem as worth while for these three cities as for the group of cities as a whole. In a later publication the results for individual cities will be considered. Tables 1 to 6 give rates and cases for both epidemics. In later sections the data will be presented in graphic form.

## TOTAL MORBIDITY FROM INFLUENZA, GRIPPE, PNEUMONIA, AND SEVERE COLDS

The most comparable figure as regards the 1918-19 and 1928-29 epidemics is probably the case rate from all respiratory conditions except the minor colds that did not cause the patient to go to bed. Considering all localities, the rate for influenza, grippe, pneumonia, and colds in bed was 189 per 1,000 in the 1928-29 epidemic, as compared with a rate for influenza, grippe, pneumonia, and "doubtful" of 294 per 1,000 in the 1918-19 epidemic.

For cases definitely classified as influenza or grippe, the 1928-29 rate of 145 per 1,000 persons is somewhat more than half the rate of 239 in the 1918-19 epidemic. In the 1918-19 epidemic the incidence of pneumonia was 17.6 per 1,000, or more than three times the rate of 5.0 in 1928-29. The incidence of cases classified as "doubtful," 21.5 per 1,000, in the 1918-19 surveys was only about half the rate of 39.6 for colds with one or more days in bed in the 1928-29 epidemic. In addition, there was reported in 1928-29 a large number of colds (76.6 per 1,000) that involved no days in bed.

The morbidity rate (influenza, grippe, pneumonia, and severe colds) varied considerably in the different localities in both epidemics. In 1928-29 the rates ranged from 138 in Baltimore to 348 per 1,000 in Cattaraugus County, N. Y., the next lower figure being 304 per 1,000 in Des Moines, Iowa. For the 1918-19 epidemic the rates varied from 150 in Louisville to 535 per 1,000 in San Antonio. Lonaconing, Md., which is included in the locality group designated as "minor Maryland towns," had a rate of 612 per 1,000.

Figure 1 shows the age incidence of the total group of respiratory causes in the two epidemics. The very high incidence under 30 years



FIGURE 1.—Age incidence of respiratory illnesses in surveyed groups during the epidemics of 1928-29 and 1918-19. (Cases include influenza, grippe, pneumonia, and colds with one or more days in bed)

of age and the rather rapid decline as age increases, conditions which were characteristic of the 1918-19 epidemic, are not found in the 1928-29 epidemic. There are, however, certain similarities—a rather high incidence under 10 years of age followed by a considerable drop to a minimum from 15 to 24, with a rise and a second peak between 25 and 40 years of age. This type of curve seems to run rather consistently through the various localities in 1928-29. That,

#### 1919

in general, is the description of the age curve of influenza that has occurred in the several minor epidemics between 1918 and 1929.

The data on influenza have been tabulated by sex as well as by age. It should be remembered when considering case rates of women as compared with those of men that in surveys of this kind the housewife or other adult woman of the household is usually the one who gives the information to the enumerator. While she would no doubt remember the serious illnesses of the other members of the household, it is quite probable that her own minor colds or even attacks that might have been designated as grippe or influenza would be more



FIGURE 2.—Sex incidence of respiratory illnesses in surveyed groups during the epidemics of 1928-29 and 1918-19. (Cases include influenza, grippe, pneumonia, and colds with one or more days in bed)

likely to be recalled than attacks of other adult members of the household. In the Hagerstown study (2) it was found that adult women reporting upon themselves had a considerably higher illness rate than other adult women upon whom they were reporting.

Figure 2 shows the morbidity case rate (influenza, grippe, pneumonia, and severe colds) among males and females of different ages. The 1918–19 epidemic shows little difference between the sexes with respect to the total incidence. From about 10 to 35 years of age the rate for females is slightly greater than the rate for males, but at other ages there are only small differences that are probably not significant. In the 1928–29 epidemic the rate for women is consistently higher than the rate for men. The fact that the differences are small for the ages below 20 years suggests that at least part of the excess of the rate for women over that for men is due to the fact that the women were the informants.

### PNEUMONIA INCIDENCE

In 1928-29 the pneumonia rate was 5.0 cases per 1,000 population, or less than one-third of the rate, 17.6, for the 1918-19 epidemic. Because the 1918-19 epidemic had its peak so much earlier in the fall when the normal pneumonia rate would be low, the difference in the excess rate would probably be considerably greater.

In the 1928–29 epidemic the pneumonia case rates per 1,000 ranged from 2.3 in San Francisco to 10.4 in Cattaraugus County, Pittsburgh being the highest city with a rate of 8.1. The range in the 1918–19 pneumonia case rates is from 6.7 in Spartanburg to 25.8 per 1,000 in the group of minor Maryland towns, the rate in one of these towns, Cumberland, being 33.1. The highest city rate, that for San Antonio, was 24.2, or just below the rate for the group of minor Maryland towns.

The young adult peak so frequently referred to in connection with the 1918-19 epidemic is more prominent in the severe cases such as pneumonia and in the fatal cases than it is in the less severe types. The most striking fact brought out in Figure 3, which shows the age incidence of pneumonia in 1918-19 and 1928-29, is this very prominent young adult peak in 1918-19. The incidence of pneumonia in these surveyed localities was higher among persons 25 to 29 years of age than in any other age group. This is in contrast to the curve of pneumonia during the 1928-29 epidemic, when the highest rates were for young children and persons of the oldest age group. This latter curve is of the same character as the death rate from pneumonia in normal years. The 1918-19 curve has, like the usual pneumonia curve, a high rate for children under 5 years of age, in addition to its abnormal young adult peak at 25 to 29 years of age. The high rate among older people, however, appears to be missing, the rate during the 1928-29 epidemic for persons over 70 years of age actually being higher than the corresponding rate as reported during the 1918-19 epidemic.

Figure 4 shows pneumonia case rates for males and females of the different ages during the two epidemics. The incidence of pneumonia in 1928-29 is very similar for males and females. In neither sex is there any tendency toward a young adult peak in the curve. In the epidemic of 1918-19 the rate for males is higher than that for females from 10 to 50 years of age. Young adult females show the same peak as young adult males, the highest rate coming in the age group 25 to 29 in each sex. Among females over 50 years of age, the rate

seems to be higher than among males, but the difference may not be significant, inasmuch as the number of cases is not large in these ages.

MORTALITY FROM INFLUENZA AND PNEUMONIA

The mortality from influenza and pneumonia in the surveyed population during the 1928-29 epidemic was 1.05 per 1,000 persons canvassed as compared with 4.99 during the 1918-19 epidemic. As



FIGURE 3.—Age incidence of pneumonia morbidity in surveyed groups during the epidemics of 1928-29 and 1918-19

noted in connection with pneumonia incidence, the difference between the *excess* mortality during the two epidemics would be considerably greater than this, because the 1918–19 epidemic had its peak earlier in the fall when the normal death rate from influenza and pneumonia is appreciably less than in midwinter when the 1928–29 outbreak occurred. There are several possibilities of error in mortality rates based on the canvassed population. (a) Although the surveyed groups include a comparatively large number of individuals, the number of deaths that would be expected and that do occur is so small that it may be the source of considerable error in the rates. (b) As in the case of the incidence, but with probably greater chances of error, these canvassed groups may not be representative of the country as a whole and may not even be representative of the cities in which they are located. (c) Although the enumerators were instructed to inquire specifically about deaths that occurred in the family, it is possible that not all the deaths were reported. As the enumerators would



FIGURE 4.—Sex incidence of pneumonia morbidity in surveyed groups during the epidemics of 1928-29 and 1918-19

go about recording the name, age, sex, etc., of each member of the family who was living in the household at the time of the visit, the housewife might easily fail to include an individual who had died one or two months before. Deaths of nonresidents would never be included in the data from the canvasses. Boarding and lodging houses were not canvassed. (d) Families known to have recently had deaths may have been avoided to some extent by the enumerators.

Because of these possibilities of error, it might be well to compare the influenza and pneumonia mortality in the canvassed groups with that in the whole city in which the group is located and with mortality in a larger group of cities for which weekly data are available. Considering first the 1928-29 epidemic, the death rate in the canvassed population of 1.05 per 1,000 from influenza or pneumonia as a primary or secondary cause <sup>3</sup> and of 0.96 per 1,000 as primarily due to influenza or pneumonia during an average period of approximately three months may be compared with a rate of 0.86 per 1,000 during a period of 12 weeks covering the epidemic in a group of 35 large cities in the United States. This total rate of 0.86 represents an excess rate of 0.41 per 1,000 over the normal or median rate (1). In a group of 95 cities distributed throughout the United States, the total death rate from influenza and pneumonia during the same period was 0.89 and the excess rate 0.44 per 1,000, or only slightly greater than the corresponding rates in the 35 cities (3). It would seem from these data that influenza and pneumonia mortality in the canvassed population of the surveyed localities of 1928-29 is probably a little higher than the average for a more widely distributed group of cities.

Turning to the more specific problem of whether the death rate in the canvassed population in each of these cities is representative of the city as a whole, death rates from the city as a whole have been computed for each of the 10 large cities included in the 1928-29 survey. With the exception of two cities, the death rate from influenza and pneumonia as computed from registered deaths throughout the city is greater than the rate as reported to the enumerators in the surveyed population. In some instances the discrepancy is quite large. Considering the 10 cities as a unit, the rate (including deaths due primarily or secondarily to influenza or pneumonia) in the cities as a whole is 31 per cent greater than the corresponding rate in the canvassed groups. If only the deaths due primarily to influenza or pneumonia be considered, the rate in the 10 cities is 14 per cent greater than the corresponding rate in the canvassed groups in these cities. The rate for deaths due primarily to influenza or pneumonia in the whole of the 10 cities is 2 per cent greater than the rate for deaths due primarily or secondarily to influenza or pneumonia in the canvassed groups. The latter rate as used in this study therefore closely approximates the usual statement of the influenza-pneumonia death rate in this group of cities as a whole.

Considering the 1918-19 epidemic, the death rate of 4.99 per 1,000 over an average period of approximately four months in the canvassed population may be compared to a rate of 5.04 during the four months from September to December in 35 large cities in the United States (1). Some of the canvassed groups were recanvassed to include January, and if the January deaths be included for the 35 cities also, the rate becomes 5.79 per 1,000 population. The addition of January makes the period considered in the 35-city group a five months'

<sup>&</sup>lt;sup>3</sup> Deaths with pneumonia as a secondary cause as tabulated in this study are exclusive of pneumonia that was secondary to the acute communicable diseases of childhood, such as measles, whooping cough, etc.

period, whereas the average period in the canvassed population was a little over four months. It appears that the death rate as found in these canvassed groups is not greatly below that in the larger group of 35 cities in the United States.

Turning to the more specific problem of the 1918-19 death rate in each canvassed group and the death rate for a similar period in the city as a whole, comparisons made for six of the cities indicate that



FIGURE 5.—Mortality from influenza and pneumonia at specific ages in surveyed groups during the epidemics of 1928-29 and 1918-19

the death rate in the canvassed population, based on the deaths reported in the survey, is in every case less than the corresponding rate based on deaths registered in the city as a whole. Considering the group of six cities as a unit, the death rate based on the registered deaths is 37 per cent higher than the death rate in the canvassed groups.

Figure 5 shows the age curve of the death rate from influenza and pneumonia in the canvassed localities of 1918–19 and in the canvassed

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localities of 1928–29. The similarity of these curves to the corresponding curves already shown in Figure 3 for pneumonia incidence is immediately apparent. Inasmuch as about 20 or 25 per cent of the pneumonia cases are fatal, it might be expected that the curves would be similar. It is in the more severe cases that were complicated by pneumonia and in the deaths from influenza and pneumonia that the young adult peak of the 1918–19 age curve is particularly prominent. As in pneumonia incidence, there is no such peak in the 1928–29 mortality data. In some of the young adult age groups for 1928–29 the number of deaths was very small and the tendency toward two waves



FIGURE 6.—Mortality from influenza and pneumonia among males and females in surveyed groups during the epidemics of 1928-29 and 1918-19

in the curve for these ages has no significance. Similar rates for the whole of the 10 cities show no such tendency.

Figure 6 shows by sex the age curves of influenza and pneumonia mortality in the two epidemics. Although the young adult peak of mortality in 1918–19 was considerably higher among males than among females, there is a very definite and significant peak in the mortality among females also. Whatever influence caused this high mortality among young adults was therefore important among women as well as among men. This is of particular interest in view of the fact that at this time many of the young adult males of the country were in the Army, and those who were living at home, and included in the surveys, might have constituted a more or less selected group who were not in as good physical condition as those who had gone into the Army.

#### CASES COMPLICATED BY PNEUMONIA

The items that have already been discussed—total incidence, pneumonia incidence, and mortality—give the complete picture so far as the extent of the epidemic is concerned. However, the matter may be approached in another way, with particular reference to the severity of the cases that occurred.

Of the total cases in the 1918-19 epidemic, including the few doubtful cases, 6.3 per cent were complicated by pneumonia. Of the total cases in the 1928-29 epidemic, including colds that caused one or more days in bed, 2.6 per cent were complicated by pneumonia. Of the cases definitely reported as influenza or grippe, 3.3 per cent were complicated by pneumonia. In either case the pneumonia complications in 1928-29 would be only about half as frequent as in 1918-19.

Figure 7 shows the age curves of the percentage of cases complicated by pneumonia in the two epidemics. As in the case of pneumonia incidence, there is in the 1918–19 data a very definite peak for the age group 25 to 29 years, which appears to be absent from the 1928–29 curve. Although pneumonia incidence in the older ages was relatively low in 1918–19, it may be seen that the percentage of cases in the older age groups that were complicated by pneumonia is relatively high, but not so high as in young adults or children under 5 years of age. The 1928–29 curve is about what would be expected, a high per cent of the cases being complicated by pneumonia in the youngest and the oldest ages.

Figure 8 shows by sex the age curves of the percentage of cases complicated by pneumonia. The percentage of cases complicated by pneumonia in the 1918-19 epidemic was higher for males than for females between the ages of 10 and 40 years, the young adult peak being considerably more prominent among the males than among the females. After 50 years of age the percentage complicated by pneumonia was somewhat higher among women than among men. No significant difference between the sexes appears in the 1928-29 percentages.

### CASE FATALITY OF ALL CASES

Another measure of the severity of the cases reported in the surveys is the case fatality, or the percentage of cases that were fatal. The numbers of deaths in the surveyed groups were not large, and these small numbers may be the source of considerable error in the figures. Case fatality rates seem particularly worth while, however, because they can be obtained only from such surveys as these; we have no 1928

other way even to approximate the number of cases of influenzalike conditions that occurred during these epidemics. The routine reporting to health departments of nearly all the reportable diseases is recognized to be incomplete, and the incompleteness is no doubt much greater for influenza than for many of the other infectious diseases.

Considering all localities combined, 1.7 per cent of the total number of cases, including influenza, pneumonia, and doubtful, in the 1918-19



FIGURE 7.—Per cent of respiratory cases complicated by pneumonia among persons of different ages in surveyed groups during the epidemics of 1928-29 and 1918-19. (Respiratory cases include influenza, grippe, pneumonia, and colds with one or more days in bed)

epidemic were fatal. In the 1928-29 epidemic, 0.56 per cent of the cases of influenza, pneumonia, and severe colds causing one or more days in bed were fatal. If the severe colds be eliminated, and the deaths be related to the cases definitely reported as influenza, grippe, or pneumonia, the fatality would be 0.70 per cent. On the other hand, if the mild colds that did not cause the patient to go to bed be included in the cases, the deaths constitute 0.40 per cent of the total

respiratory cases. It may be seen that the fatality in the 1928-29 epidemic must have been less than one-half and probably nearer one-third or one-fourth of the 1918-19 fatality. The fact that the 1918-19 total incidence included severe colds has already been discussed; and in computing fatality, as in computing case incidence, colds involving one or more days in bed have been included in the total cases of the 1928-29 epidemic as more nearly approximating the 1918-19 category of influenza, grippe, pneumonia, and doubtful. In the section on mortality, the completeness of the deaths reported in these surveys was considered, and it will be remembered that the indications were that the deaths were not completely reported in



FIGURE 8.—Per cent of respiratory cases complicated by pneumonia among males and females in surveyed groups during the epidemics of 1928-29 and 1918-19. (Respiratory cases include influenza, grippe, pneumonia, and colds with one or more days in bed)

either of the surveys. The fatality figures quoted above would, therefore, be slightly smaller than would be expected with a more complete record of deaths in the canvassed population.

The case fatality varied considerably in the different localities. In 1918-19 the fatality rates in the surveyed localities ranged from 0.78 per cent in San Antonio to 3.14 per cent in New London. In the 1928-29 epidemic the range in fatality was from 0.12 per cent in San Francisco to 1.61 per cent in Pittsburgh. Even in Pittsburgh, with the highest fatality, the rate was less than the average fatality of 1.7 per cent in 1918-19.

#### 1930

Figure 9 shows by age the case fatality in the two epidemics. Although there are high fatalities in the 1918-19 epidemic for the ages under 5 and for young adults, it will be noted that the fatality is much higher in the older ages than in either of these younger groups. In 1928-29 the fatality was moderately high for children under 5 years,



FIGURE 9.—Case fatality of respiratory illnesses among persons of different ages in surveyed groups during the epidemics of 1928-29 and 1918-19. (Respiratory cases include influenza, grippe, pneumonia, and colds with one or more days in bed)

but there is no young adult peak, the fatality tending to increase rather gradually after 5 years of age until at the oldest age group it is equal to the fatality in the 1918-19 epidemic.

Figure 10 shows fatality by sex. In 1918–19 the disease was more fatal among young adult males than among young adult females, although both sexes show a peak at 25 to 29 years. As in the instance of the proportion of cases complicated by pneumonia, the fatality rate is higher for females over 60 years of age than for males of those ages. In the 1928–29 epidemic there are no differences between the sexes that could be said to be significant when the small number of deaths in the different age groups are taken into account.

#### PNEUMONIA FATALITY

Both the percentage of cases complicated by pneumonia and the case fatality are measures of the severity of respiratory cases that occur in a given epidemic. It is of interest, however, to find what



FIGURE 10.—Case fatality of respiratory illnesses among males and females in surveyed groups during the epidemics of 1928-29 and 1918-19. (Respiratory cases include influenza, grippe, pneumonia, and colds with one or more days in bed)

proportion of the cases that actually get to the pneumonia stage are fatal. It would seem that this figure would be somewhat more accurate than either the total case fatality or the percentage of cases complicated by pneumonia, inasmuch as the pneumonia cases would probably be fairly well recognized and reported with a fair degree of completeness.

During the 1918-19 epidemic, 25.5 per cent of the cases of pneumonia ended fatally. Not much more than one-third as many cases were complicated by pneumonia in the 1928-29 epidemic as in the 1918-19 epidemic, but of those cases that did reach the pneumonia

## 1931

stage, 21 per cent were fatal—a figure not greatly different from the 25 per cent in the 1918-19 epidemic.

Figure 11 shows the age curve of pneumonia fatality in the two epidemics. Although there is in this curve for 1918–19 a young adult peak, it is much less marked than in pneumonia incidence, pneumonia complications, mortality or the total case fatality.



FIGURE 11.—Case fatality of pneumonia among persons of different ages in surveyed groups during the epidemics of 1923-29 and 1913-19

Figure 12 shows pneumonia fatality rates for each sex. In view of the rather small number of deaths, there do not appear to be any differences between the sexes in the 1928-29 data that are significant. The 1918-19 data include considerably more deaths; and although the differences are not much larger, they are probably more significant. From about 15 to 60 years of age the fatality of pneumonia seems to be slightly higher for males than for females. The young adult peak at 25 to 29 years of age occurs to some extent in the males but appears to be absent from the curve for females.

#### **REVIEW OF THE VARIOUS AGE CURVES**

In the preceding graphs the various age curves have been compared on cross-section scales. This type of graph is useful, because it enables us not only to see the type of age curve but affords a comparison of the actual height of the rates at different ages in each epidemic. However, the considerable difference in the level of the curves leads to a possibility of some misinterpretation. To put the



FIGURE 12.—Case fatality of pneumonia among males and females in surveyed groups during the epidemics of 1928-29 and 1918-19

various curves on the same basis so far as relative variation with age is concerned, they have been plotted on semilogarithmic charts in Figures 13 and 14. On a semilogarithmic graph an equal distance on the vertical or logarithmic scale indicates an equal percentage change in the rate, whether the rate be small or large. In Figure 13 the incidence rates of the various types of respiratory conditions including influenza, grippe, and colds as separate categories, are plotted for the two epidemics. In Figure 14 the ratios that measure the severity of the cases are plotted in a similar way.

Only a few things need be pointed out in connection with these graphs, as the data have been discussed in the preceding pages.

1933



FIGURE 13.—Relative change with age in the incidence of the various types of respiratory illness in surveyed groups during the epidemics of 1928-29 and 1918-19

Mention has been made of the fact that the relative age incidence of cases designated in 1928-29 as grippe is identical with that of the cases designated as influenza. The age incidence of colds, however,



FIGURE 14.—Relative change with age in the severity of the various types of respiratory illness in surveyed groups during the epidemics of 1928-29 and 1918-19

is somewhat different. Similarly in 1918–19 the age incidence of cases designated as "doubtful" is rather different from that of cases designated as influenza or grippe, being somewhat like the cases reported

1935

in 1928-29 in that the incidence did not decrease markedly as age increased.

#### SUMMARY

This study summarizes the age and sex variation in influenza and pneumonia morbidity and mortality during the 1928-29 and the 1918-19 epidemics. It is based on canvasses following each epidemic of families including nearly 150,000 persons in about 12 localities in the United States.

While there are some similarities in the 1928-29 and 1918-19 age curves, the differences are more striking than the similarities. The young adult peak in pneumonia incidence and in mortality in 1918-19 was absent in 1928-29.

Pneumonia incidence and the death rate were both much higher in 1918-19 than in 1928-29 but the percentages of pneumonia cases that were fatal were not greatly different in the two epidemics. There was a very large difference in the percentage of cases complicated by pneumonia in the two epidemics; but once pneumonia existed, the chance of fatal outcome was nearly the same in both years.

Statistical data of this kind give no clue as to the reason for the striking difference in age incidence in the two epidemics, and any attempt at explanation would be only conjecture.

#### ACKNOWLEDGMENTS

This study was made as one of a series of studies of influenza under the general direction of the United States Public Health Service Board for the Study of Respiratory Diseases, consisting of Consultant W. H. Frost, Principal Statistician Edgar Sydenstricker, and Senior Statistician Selwyn D. Collins. In the preparation of the study, the author has had the advice and assistance of the other members of this board and of the statistical staff of the Office of Statistical Investigations and associated offices of the Public Health Service.

The collection of the data for 1928–29 was done under the general direction of Surg. M. V. Veldee. In each city surveyed a medical officer of the United States Public Health Service who was already stationed in or near that city was designated to take charge of the collection of the data in his locality. All forms and instructions for enumerators and others engaged in the work were prepared in Washington and forwarded to the officers in charge, and so the procedure followed was reasonably uniform.

The 1918–19 data were collected in a similar way with Dr. W. H. Frost and Principal Statistician Edgar Sydenstricker in general charge of the surveys.

#### 1937

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#### Preceding Papers on the Epidemiology of Influenza

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### 1938

## DERMATITIS VENENATA DUE TO CONTACT WITH BRAZILIAN WALNUT WOOD

## By LOUIS SCHWARTZ, Senior Surgeon, Office of Industrial Hygiene and Sanitation, United States Public Health Service

In a cabinetmaking plant employing about 100 men there developed suddenly, early in February, a number of cases of dermatitis of the exposed parts. These cases occurred while the men were working on an order calling for the use of Brazilian walnut, the wood for which was purchased January 28, 1931. Cases continued to develop until a total of 11 had occurred. The symptoms varied in severity from a slight erythema and a few scattered papules and vesicles on the exposed parts to a very severe inflammation of the hands, forearms, entire face, and neck, accompanied by erythema, vesiculation, and edema severe enough to close the eves. The disease affected mostly those who came in contact with the sawdust and those who sandpapered the wood. Inquiry among the workers also showed that there were many who, while they did not develop a dermatitis, did develop a coryza and sneezing while working in the room where the wood was being used. The length of time elapsing between the exposure to the wood and the development of the symptoms varied from two days to two weeks. The symptoms first noticed were a burning and itching of the face and eyelids, and in some cases the dermatitis was limited to these parts. In others it spread to the hands, forearms, neck, and other exposed parts. Most of the men who were affected continued working with the wood, and some of them had completely recovered from their symptoms within a few weeks. It seems, therefore, that a tolerance to the wood can be developed by some susceptible individuals if the exposure is continued. Two of the men had to give up their work for a while and one was still unable to work (in the latter part of March.)

The importer from whom the wood was purchased furnished a list of firms to whom he had sold the wood. Letters were written to these firms inquiring as to whether any cases of dermatitis had occurred in their plants while they were using the Brazilian walnut. Answers were received from 10 firms and nine of them replied that they had had cases of dermatitis among their workers which seem attributable to the Brazilian walnut. The number of cases reported by them varied. One firm stated that the majority of the workers were affected, while others stated that only one or two of those working with the wood were affected. One of these firms reported that it had discontinued using the wood because of the dermatitis that it caused among persone working with it.

The importer stated that while he was contemplating the importation of the wood, he had a laboratory investigate the possibility of danger in using it. Leaves from the tree, preserved in alcohol, were shipped to him from Brazil, and an extract was obtained from these leaves for inoculation of susceptible workmen in order to make them immune to the poison from the wood. However, when it was found that only a very small percentage of the men were susceptible, it seemed simpler to arrange shop manipulations so that susceptible men would not come in contact with the wood. The importer said that no report of any severe cases of dermatitis among workers with Brazilian walnut had come to his attention, and that the cases which were reported occurred only when the firm was using the wood for the first time, after which the workers apparently became immune.

Samples of the wood, of the sawdust, and of the veneer were obtained and were taken to Clayton D. Mell, an authority on tropical woods, who identified the wood as "embuia," a species of Nectandra.

According to "Timbers of Tropical America," by Samuel J. Record and Clayton D. Mell, there are imported into this country under the trade name of "Brazilian walnut" two species of trees, *Cordia goeldiana* (commonly called "frei jorge"), and "*embuia*," a species of *Nectandra*. The former, according to Huber,<sup>1</sup> is a big tree of the forest of the Bragança Railway and it probably also grows in other parts of the country. Its wood is uniformly yellow-brown in color, with a golden luster in a proper light, but dull and mealy otherwise. It has a specific gravity of 0.60 and weighs 37 pounds to the cubic foot. It is strong, straight grained, coarse textured, easy to work, and takes a good finish. During the war, samples of logs were shipped to the United States for trial for gunstocks and airplane propellers under the name "Brazilian walnut." So far as known no cases of dermatitis were reported among workers with that wood.

The "embuia" is also called "Embuia amarella," "Embuia vermelha," and "Canella imbuia." Its color varies from a yellowish to an olive or chocolate brown. It has a spicy and resinous odor and taste. It is moderately hard, has a specific gravity, air dry, of 0.70 to 0.76, and weighs 43 to 47 pounds per cubic foot. The grain is ordinarily straight, but sometimes it is curly. The wood is strong, easy to work, finishes smooth, and appears durable. The growth rings are distinct. The parenchyma is sparingly developed about the pores and is scarcely visible with the lens. The pores are small but visible, and fairly numerous but not crowded, occurring simply or more often in radial groups of two or three. The vessel lines are visible as fine dark lines, and the vessel contents are a dark gummy substance. The tree grows abundantly in southern Brazil. According to H. N. Whitford<sup>2</sup> these forests contain four well-defined stories. The first or upper cap consists of pines, 80 to 120 feet high; the second consists of 8 to 10 species of Lauraceae, 60 to 80 feet high, and one of these, the

<sup>1</sup> J. Huber: Mattas e Madeiras Amazonicas. Bol. Mus. Goeldi, 6, 201. 1909.

Structure and Use of the Parana Pine Forests of Brazil. Journal of Forestry, 17, 154-158, Feb. 1919.

"embuia," comprises 50 per cent or more of the stand and is considered the timber *de luxe* of southern Brazil being used for many purposes, such as furniture, cabinet work, interior trimming, and construction.

Preparations were made for patch tests, using the sawdust of this wood in the following manner:

A piece of gauze about one-half inch square was moistened with water and its surface was completely covered with the sawdust. This gauze was placed on a larger piece of rubber dam, which, in turn, was placed on a larger piece of flannel. This was put on the skin of the back and kept in place by being completely covered with adhesive plaster. Three volunteers were patched, and after 24 hours there was a positive reaction under the patch in each case. This reaction varied from a mild erythema with a few vesicles which disappeared after 24 hours to a marked erythema in Case No. 2 which persisted for 72 hours and in Case No. 3 which persisted for over a week.

#### HISTORIES OF TYPICAL CASES

Case No. 1.—I. S., male, age 65, white, married. Cabinetmaker. Has been working for 10 years in the same plant. No history of skin eruptions until the present, which began on February 27, 1931. While working with a South American wood called Brazilian walnut, he developed a rash with severe itching on the back of the neck and face and also attacks of sneezing. Examination showed that the face, the eyelids, the ears, the chin, the neck, the bend of the elbows, and the scalp were the sites of an erythematous, papular, scaly eruption. The symptoms were so severe that he had to stop work.

Case No. 2.—L. N., male, age 52, white, married. Cabinetmaker. Has been working at the same plant for 12 years. No previous skin eruptions. On February 4, 1931, while working with Brazilian walnut, he developed a rash on the face and back of the neck accompanied by itching. Examination showed a butterfly shaped area of redness on the checks and nose with slight edema and a papular eruption on the back of the neck. He continued work and by March 9 was completely recovered.

Case No. 3.—J. J. S., male, age 48, white, married. Machinist. Worked 15 years for the same firm. Has never had any skin disease. On March 8, while working with Brazilian walnut, he developed a rash on both forearms and the face, with itching and burning. Examination showed an erythematous, edematous eruption of the face, nose, and eyelids, an erythematous papular eruption of the flexor surfaces of both forearms and back of neck. He continued to work although the symptoms were severe.

Case No. 4.—V. F., male, age 49, white, married. Carpenter. Had been working at the place three weeks. About two weeks after working with Brazilian walnut, he developed an itching and burning of the face, nose, and forehead. Examination showed a mild erythematous, edematous condition on the nose, forehead, and certain other parts of the face. He continued to work and is now well.

Case No. 5.—F. B., male, age 44, white, married. Cabinetmaker. Began working with Brazilian walnut March 21, 1931. The symptoms began March 24, 1931, with an itching and burning of the face and forearms. The condition spread over all the exposed areas of skin. On examination there was a disappearing erythema on the cheeks and flexor surfaces of arms and forearms. The face and eyelids were erythematous and swollen. He stopped work on April 3, 1931, and his condition improved but has not entirely disappeared.

#### 1941

#### EXTRACTS FROM LETTERS OF FIRMS USING BRAZILIAN WALNUT

"\* \* The only case of any inflammation of the skin which has come up in our experience while using Imbuya wood has been in a man who was employed in our shop for a period of one week only, at the end of which time he reported sick and did not come back to work.

"Recently, he applied for work and told us that his physician, on examination, diagnosed his case as a skin disease, but we have no manner of knowing whether this was caused by the wood he worked with or was just a natural case that might come up. \* \* "

"\* \* We have at one time used Brazilian walnut, but do not use it now. "In checking our records we find, at the time walnut wood was used, that about 15 per cent of the men who worked with same had slight skin infections. \* \* \*"

"\* \* Last Saturday morning two of the men in the joining department complained of their skin itching and burning, and one man's eyes were partly closed, due to inflammation of the skin. This extended all over his face and down onto his neck and chest.

"I did not at that time know anything about the effect of this wood and received your letter in the Saturday afternoon mail and knew immediately that it was probably the result of our use of this wood.

"The one man most badly affected came in this morning [Tuesday] apparently all right, but had to leave by 11 o'clock as his eyes again started to bother him and the skin of his face became badly inflamed.

"The men who sawed and sanded this wood, however, have not been affected in this way, except that they all say that the dust from the wood makes them sneeze, but seems to have no inflammatory effect upon their skin. \* \* \*"

"\* \* The use of this wood has affected only about two [out] of [every] ten persons throughout our factory.

"In two instances, the men, through their eyelids swelling, would become partially blind. In both cases the skin of the face, arms, and hands would become blotchy, with white scales, and a very itchy condition would follow. Among other cases there was just a minor irritation of the skin.

"We sent several test samples to chemists in New York and they wrote back that there was no substance in the sawdust of the Brazilian walnut to cause any skin irritation; but, as above outlined, our personal experience proved to the contrary. \* \* \*"

"\* \* We have made use of Brazilian walnut from 1925 to 1929, and discontinued using same in 1929, due to the fact that the majority of our workers became afflicted with inflammation of the skin. \* \* \*"

"\* \* This wood should not be called Brazilian walnut but Imbuya wood. This wood was first introduced into this country about 10 or 12 years ago from Brazil and was then termed 'Brazilian walnut,' whereas its actual name is Imbuya \* \* \*.

"During this time that we have been using this wood (which is about 12 years), we have had probably 25 cases of this skin eruption or itching, and it seems

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peculiar that some men are affected and others are not. Some are affected on their forearms from the dust when sandpapering the wood; especially when they perspire and the dust settles on their arms. Others have had this eruption and itching on their face and neck or exposed parts when working.

"About eight years ago we went so far as to communicate with Brazil and obtained some leaves of this tree, trying to get some doctor or institution to make a culture from it, but found very little resulted from it.

"It almost seems that our men have become inoculated with this germ, as very rarely do we hear any complaints now, and as a matter of fact we have been using more of this wood during the last four months than we have ever used. Mr. B.'s case was probably the only one, with possibly an exception of a minor case. \* \*

"This wood is very desirable and probably the most useful one which has been introduced into this country from Brazil, and is used for work of a large variety.

"We again repeat that the men who become affected are the ones who perspire freely, the dust and chips from this wood coming in contact with the exposed parts of their body.

"B. works on a molding machine and in this way comes in contact with flying chips from the machine striking his skin, rather than from sandpapering dust, which is more severe \* \* \*."

"\* \* Two or three years ago, we did use a considerable quantity of this wood, and we did have some complaints from workers of a skin inflammation. This seemed to be limited to a very small proportion of the men who seemed susceptible to this irritation, the majority not being affected in any way.

"The irritation seemed most noticeable in warm weather, when the workers were perspiring freely and chiefly among those that were sandpapering, where a fine dust was spread in the air.

"We have discontinued the use of this wood. \* \* \*."

"\* \* \* We did one job in this lumber two years ago for a period of about five months.

"During this time we found no serious skin trouble among our employees. There was however, one case of blood poisoning of the arm where a man ran a splinter of this wood into his hand. \* \* \*"

"\* \* With reference to any cases of inflammation of the skin occurring among our cabinetmakers working on furniture made of Brazilian walnut, we beg to advise that we have used this wood for the past 12 years and during that time two or three of our men have been affected in this manner, but these are rare instances.

"Men who usually work in this wood are not affected by it. \* \* \*"

#### SUMMARY

Eleven cases of dermatitis venenata occurred among 100 workmen in a cabinetmaking plant due to contact with Brazilian walnut ("embuia," species of Nectandra), especially in persons exposed to the sawdust. Cases also occurred in 9 out of 10 other plants using the wood. Tolerance is developed as a rule.

Patch tests with sawdust from this wood on three volunteers showed positive reaction in each case.

# AN IMPORTANT SOURCE OF ORIGINAL RAT INFESTATION ON NEWLY CONSTRUCTED VESSELS

By B. E. HOLSENDORF, Chief Pharmacist, United States Public Health Service

On account of the importance of obtaining accurate information as to the source and manner of the original rat infestation of vessels, and realizing what an important rôle this information can be made to play in the work of prevention and control of rat life on ships, a careful check has been kept on 48 new vessels during a period of four years. The quarantine inspectors inspected each vessel upon its arrival in New York on its maiden voyage, and follow-up inspections have been made practically each trip thereafter for the full period that the vessel has been in commission. On 43 of these a record of each inspection was kept so that the history of rat activity or nonactivity is practically complete. These inspections revealed the fact that 29 of these 48 vessels had become rat-infested in the shipyards during con-These yards were located in the United States, Great struction. Britain, Germany, France, Holland, Italy, Sweden, Norway, and Spain.

Six of the infested ships were constructed in Italian yards, 3 in those of Great Britain, 3 in German plants, 10 in those of the United States, 2 in French shipyards, 3 in those of Spain, and 2 in Holland.

The 19 vessels that remained rat free during construction were built in the different countries as follows: Six in Great Britain, 4 in the United States, 6 in Germany, 1 in Spain, and 2 in Sweden.

Of the 19 new ships that came out of the shipyards in a rat-free condition, 18 have continued to be free from rodents for the entire time that they have been in commission, periods ranging from 4 months to 3 years, the average time being about 14 months. Thirteen of these rat-free ships included rat-proofing work in their building program and had a large percentage of this work done during construction. On seven vessels the rat proofing was completed before they left the shipyards.

There is no record of two vessels. These ships have not touched at New York since being placed in commission. One is in service on the west coast and the other is a United States cruiser.

Of the 29 ships that were infested in the shipyards, on only 4 had anything like a complete rat-proofing program been carried out, on 8 a limited amount of rat proofing had been done while under construction, and on the remaining 17 little or no rat proofing had been done while they were being built. Included in this number was a large passenger ship of the French Line, 5 large Italian passenger ships, 6 Spanish steamers, a large steamer of the Holland-America Line, and 2 were aeroplane carriers of the U. S. Navy.

The infestation found varied from a few stray rats, localized in material or supplies, to an extensive infestation, where the rodents were securely intrenched in the harborage existing in cargo spaces, living quarters, galleys, storerooms, and similar places. In some instances it required more than a year to break up and control the rat colony life on board. This was especially true on two French vessels, a large Swedish passenger ship, the Italian passenger vessels, one American passenger ship, and two of the Spanish ships.

Eighteen of the 29 infested ships that have been under observation have become rat-free and have so remained for long periods. On 6 of them the rat population has been reduced to a negligible number. These 24 vessels started their rat proofing operations very shortly after being commissioned, and completed the work that had been initiated and partly done in the shipyards or embarked on a new program of rat proofing which embraced the progressive elimination of harborage in every compartment. As a result, the rats were literally "built out" on many of these ships. On the remaining five of the 29 yard-infested ships there is no record, no inspection having been made of them since they left the shipyards; 4 of these are naval vessels.

The data thus collected would seem to show rather conclusively that a very large percentage of vessels become infested with rats in the shipyards while being constructed, and that many of them continue to harbor rats for long periods or indefinitely thereafter, and that this condition obtains very generally throughout the world.

It further shows that vessels on which very little or no rat-proofing work had been done during construction, the incidence of rat infestation was more frequent, more extensive, and persisted for longer periods. (Outstanding examples are the large French steamer, 4 Italian steamers, 2 Spanish ships, 1 American passenger vessel, 1 Swedish passenger ship, and 1 Dutch steamer.)

The histories of the 19 new ships that left the shipyards without being infested and have remained rat-free (several for periods of three years), notwithstanding the fact that they had touched at eastern and oriental ports and had carried rat food and rat-attractive cargoes, would seen to indicate that, if initial shipyard infestation can be prevented by reduction of harborage to a minimum during construction, most ships can be kept free of rat colony life.

Of the several American shipyards inspected, all were found to be more or less rat-infested and had been so for years. From information
obtainable it appeared that nearly all of the ships that had been constructed in these yards in years past had become infested with rats before being completed. No attention was paid to the matter at that time and no efforts were made to prevent infestation.

The necessity for better control of rat life in the shipyards and for taking effective measures to prevent infestation of ships under construction is now fully recognized by the leading American shipbuilding plants.

While it is known that there are other ways in which ships become rat-infested, there being a record of 2 new ships and 3 reconditioned ones that have come under my personal observation, in which it was definitely known that some rats had come on board by means of gangplanks on the lower level, and in two instances in cargo, the fact that 133 ships known to be free from rats have been kept entirely rat-free for long periods, notwithstanding the fact that following rat proofing they were carrying the same kind of cargo as they had carried formerly and touched at the same ports, would seem to indicate very clearly that the major source of original infestation is not from wharves or cargoes but from shipbuilding plants and repair yards.

### NEW YORK STATE REGULATION AGAINST POISONOUS SUBSTANCES FOR POLISHING KITCHENWARE OR SIL-VERWARE

On November 6, 1929, the Public Health Council of New York State added regulation 18 to chapter 7 of the Sanitary Code. This regulation, as originally adopted, provided that—

Any polish or article or substance containing any cyanide preparation or other poison shall not be used in any hotel, club, restaurant, or public eating place for the cleaning of nickel, copper, silverware, or silver-plated ware or other articles or utensils used for the service or preparation of food or foodstuffs.

On June 30, 1931, the council amended the above regulation by adding a paragraph restricting the sale of the substances mentioned; also the regulation was made applicable to public institutions. Said regulation, as amended, now reads as follows:

No polish or article or substance containing any cyanide preparation or other poison shall be sold or offered for sale when such sale is obviously or presumably for the cleaning of nickel, copper, silverware, or silver-plated ware or other articles or utensils used for the service or preparation of food or foodstuffs in any hotel, club, restaurant, public institution, or public eating place.

No polish or article or substance containing any cyanide preparation or other poison shall be used for the cleaning of nickel, copper, silverware, or silver-plated ware or other articles or utensils used for the service or preparation of food or foodstuffs in any hotel, club, restaurant, public institution, or public eating place. Regulations pertaining to poisonous polishes have also been adopted in New York City and Chicago.

### COURT DECISION RELATING TO PUBLIC HEALTH

Sexual sterilization law held valid.—(Idaho Supreme Court; State v. Troutman, 299 P. 668; decided May 20, 1931.) The State board of eugenics, acting under the sterilization law (ch. 194, Laws 1925, as amended by chs. 68 and 285, Laws 1929), found, after hearing, that the defendant was afflicted with congenital feeblemindedness and recommended sterilization by vasectomy. The findings, conclusions, and order of the board were reviewed by the district court and the board's recommendations were sustained. On appeal to the supreme court, the constitutionality of the statute was challenged.

One of the claims was that the law was in conflict with section 1 of article 1 of the State constitution which guaranteed life, liberty, and the pursuit of happiness and safety, and also in conflict with the similar guaranty to citizens of the United States under the fourteenth amendment to the Federal Constitution. Concerning this, the court said:

\* \* \* The Supreme Court of the United States, considering a very similar sterilization law of Virginia, held the law was a reasonable act protective of the general welfare within the police power of the State and not in contravention of such constitutional guaranties. Buck v. Bell, 274 U. S. 200, 47 S. Ct. 584, 71 L. Ed. 1000. We are in accord with that view.

With reference to a claim that the law violated section 6 of article 1 of the State constitution, prohibiting cruel and unusual punishment, the court declared that "The operation known as vasectomy is not usually considered cruel or inhuman, nor is it, under the Idaho law, inflicted as a punishment."

Another contention of the defendant was that due process of law was not afforded, but the court rejected this, saying:

\* \* \* The proceeding is pursuant to summons duly issued and served, and every safeguard known to a regular and orderly hearing in a court with right of appeal is afforded. The act not only affords due process but unless written assent is procured requires a complete open judicial proceeding.

Answering the contention that the constitutional safeguards in a criminal prosecution were violated, the court found that the instant proceeding was in no sense a criminal prosecution.

It was further claimed that section 1 of article 2 of the State constitution, segregating the departments of government, was violated, in that the sterilization law attempted to delegate judicial powers to an executive board. Regarding this the court stated that the eugenics board's findings and conclusions were only recommendatory, that the person concerned could give or withhold written consent thereto, and that, if written consent were not given, the board was required to proceed in court where a purely judicial proceeding was had with complete final determination of all rights in the courts. This, the court held, was not an infringement upon the province of the judicial department.

The final contention was that the act was unconstitutional because discriminatory, in that it did not afford equal protection of the law to all. In rejecting this claim the court declared that the sterilization law did not create a class or discriminate against any within the class affected. It stated that sterilization acts of certain other States had been held unconstitutional where applicable only to inmates of State institutions, but cited decisions of the Virginia Supreme Court of Appeals and of the United States Supreme Court holding that even that restriction did not render the law unconstitutional. The court pointed out, however, that the act involved in the instant case applied to all coming within the class defined, whether in State institutions or not.

The judgment of the district court was affirmed.

### DEATHS DURING WEEK ENDED JULY 25, 1931

Summary of information received by telegraph from industrial insurance companies for the week ended July 25, 1931; and corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

	Week ended July 25, 1931	Corresponding week, 1930
Policies in force	75, 023, 856	76, 003, 866
Number of death claims	13, 054	14, 064
Death claims per 1,000 policies in force, annual rate	9. 1	9. <b>6</b>
Death claims per 1,000 policies, first 30 weeks	10. 3	10. <b>0</b>

### Deaths <sup>1</sup> from all causes in certain large cities of the United States during the week ended July 25, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)

[The rates published in this summary are based upon midyear population estimates derived from the 1930 census]

	We	ek ended	July 25,	, 1931	Corres week	ponding , 1930	Death the i	rato <sup>1</sup> for irst 30 seks
City	Total deaths	Death rate <sup>3</sup>	Deaths under 1 year	Infant mor- tality rate <sup>1</sup>	Death rate <sup>3</sup>	Deaths under 1 year	1931	1930
Total (82 cities)	7, 029	10. 8	579	• 44	11.9	805	12.7	12.6
Akron	81	6.8	8	30	12.0	10	8.1	8.2
Albany 4	23	9.8		119	13.1	2	14.4	15.4
White	37	10.0	6	95	17.1	01 0	10.9	10.9
Colored	48	(9)	6	172	(1)	ő	(0)	(9)
Baltimore	187	12.0	12	41	18.5	26	15.2	14.6
Colored	150	(6)	10	45 81	(6)	10	(6)	
Birmingham	49	<b>9.5</b>	Ī	91	ìź.8	12	14.4	14.4
White	22		2	34		4		
Colored	27 175	11 6	10	170	125	8 22	. ( <u>)</u>	( () 1 K A
Bridgeport	26	9.2	2	. 33	9.9	1	11.8	12.1
Buffalo	121	10.9	10	41	11. 8	12	13. 9	13.6
Cambridge	19	8.7	1	20	5.5	.2	12.9	12.5
Canton	18	8.8	3	69	8.0	10	10.0 10.6	19.8
Chicago 3	623	9.4	65	57	9.8	42	11.4	10.9
Cincinnati	125	14.8	6	36	18.6	18	16.7	16.1
Columbus	176	10.1	20	- 58 20	11.8	19	11.8	11.8
Dallas	63	12 1	13	20	10.9	10	12.0	10.8
White	• 49		12			5		
Colored	14	_ (?) 。	1		_ (? _	5	<b>2</b>	(1)
Denver	30	16.1	7	68	12.6	7	14.7	10.5
Des Moines	32	11.5	i	18	10. 2	2	11.8	12.3
Detroit	208	6.6	19	30	8.2	37	8.9	10.0
El Paso	20	14.4	11		17.2	7	18.0	11.7
Erie	14	6.2	ī	19	18.0	2	10.8	11.6
Fall River	12	5.4	. 1	23	12.2	8	12.2	12.9
Fint.	18	5.7	4	51	5.3	1	7.6	9.5
White	23	10.0	4		10. 2	i.	11. 7	11. 2
Colored	9	()	2		(9)	0	(6)	(•)
Grand Kapids	26	7.9	1	15	8.3	2	9.5	11.0
White	34	10. 1	4		0. 6	4	11.0	14.1
Colored	26	(9)	2		()	4	(6)	(")
Unglanapolis	104	14.7	9	74 58	13.0	9	14.5	14.9
Colored	17	(0)	3	201	(0)	2	(0)	(0)
Jersey City	67	ìí.0	9	80	ÌÓ. 7	<u>9</u>	ìź. 8	`í2.0
Kansas City, Kans	15	6.4	0	0	12.4	1	13. 5	11.5
Colored	6	(0)	ŏ	ŏ	(0)	ő i -	(0)	(0)
Kansas City, Mo	90	ìí. 5	7	53	16.1	13	14.1	<b>`í3.6</b>
Knoxville	15	7.2	3	64	12.2	7	13. 2	14.4
Colored	6	(0)	i	204	(0)	2	(0)	(8)
Long Beach	28	8.9	3	72	ìó. 1	ī	ìó. 1	`ío. o
Los Angeles	238	9.4	17	49	8.7	24	11.2	11.4
White	53	11.7	- 1	34	12.9	7	15. 1	13. 8
Colored.	16	(0)	ō	ŏ	(0)	i l	(0)	(6)
Lowell 7	21	10.9	8	76	11.9	0	13.2	14.4
Memphis	80	10.7	5	53	12 9	10	10.0	11.3
White	43 _		4	67		7		
Colored	37	()	1	29	0	8	(0)	(0)
White	16	10.7		25	13. 2	1	12.5	11.9
Colored	7	(0)	ōl	õ	(0)	ĭ٢	(•)	(•)

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended July 25, 1931, infant mortality, annual death rate, and comparison with corresponding week of 1930. (From the Weekly Health Index, issued by the Bureau of the Census, Department of Commerce)-Continued

	We	ek ended	July 25,	1931	Corresponding week, 1930		Death rate for the first 30 weeks	
City	Total deaths	Death rate	Deaths under 1 year	Infant mor- tality rate	Death rate	Deaths under 1 year	1931	1930
Milwaukee Minneapolis Nashville White	95 107 46 28	8.4 11.8 15.4	10 5 7 3	43 32 104 60	8.3 7.9 17.9	7 5 8 5	10. 0 12. 0 17. 3	10. 1 10. 9 16. 9
Colored New Bedford ' New Haven New Orleans White	18 25 43 138 73	(°) 11. 6 13. 8 15. 4	4 5 13 6	236 106 95 71 50	( <sup>6</sup> ) 11. 6 10. 3 1 <b>3</b> . 7	8 1 5 21 11	( <sup>6</sup> ) 13. 1 12. 6 17. 7	( <sup>6</sup> ) 11. 9 13. 8 18. 3
Colored New York. Bronz Borough Brooklyn Borough	65 1, 265 170 431	( <sup>6</sup> ) 9.3 6.7 8.6	7 79 9 33	114 33 20 35	(°) 11.5 9.1 10.4	10 143 17 56	(°) 11.9 8.7 11.0	( <sup>6</sup> ) 11. 6 8.4 10. 6
Manhatan Borough Queens Borough Richmond Borough Newark, N. J	473 146 45 82 55	13.6 6.6 14.4 9.6 9.8	32 4 1 5 2	55 11 18 26 26	16.8 7.5 16.0 9.3 9.9	56 12 2. 7 5	18.2 7.7 14.2 12.4 10.9	17.2 7.5 14.9 12.9 11.3
Oklahoma City Omaha Paterson Peoria Philadalphia	36 49 36 23	9.5 11.8 13.5 11.1	3 5 5 0 28	41 56 86 0	13.6 17.5 8.7 11.4 14 9	9 6 1 0 62	11.6 14.4 14.1 13.5	10.7 14.3 12.9 12.9 13.2
Pittsburgh Portland, Oreg Providence Richmond	144 84 54 60	10.0 11.1 14.3 11.0 17.0	18 3 6 5	62 36 55 73	12.5 10.2 11.9 20.5	17 3 4 9	15.6 12.1 13.5 16.4	14. 6 12. 9 14. 0 15. 7
W nite Colored Rochester St. Louis	43 17 48 202 41	( <sup>6</sup> ) 7.5 12.7 7.7	4 1 2 8 0	88 43 18 27 0	( <sup>6</sup> ) 10.9 16.6 8.4	2 7 4 23 3	(°) 12.6 16.5 11.4	(*) 12.1 15.1 10.7
Salt Lake City <sup>4</sup> San Antonio San Diego	18 46 40 135	6.6 10.0 13.3 10.8	0 4 1 7 2	0 20 46 50	7.4 15.9 15.3 15.6 12.0	1 16 3 5	12.5 15.5 14.2 13.3	13. 1 18. 1 14. 9 13. 5
Seattle Somerville South Bend Spokane	77 10 21 24	10.8 5.0 10.1 10.8	1 0 1 2	9 0 25 52	9.2 3.5 7.0 10.4	1 0 1 1	10.0 11.9 9.8 8.7 12.6	11.8 10.4 9.4 12.9
Springfield, Mass Syracuse Tacoma Toledo Trenton	32 43 21 56 32	11.0 10.5 10.2 9.9 13.5	1 3 1 6 2	15 36 26 55 35	7.6 9.2 13.2 14.5 17.7	3 6 0 5 4	12.6 12.2 12.8 12.6 17.5	12.9 12.2 12.8 13.3 17.1
Utica Washington, D. C White Colored	16 118 71 47	8 2 12 5 ( <sup>0</sup> )	1 12 4 8	26 66 33 138	13.8 19.4	2 23 10 13	14. 6 16. 5 ( <sup>6</sup> )	15. 8 15. 8 ( <sup>6</sup> )
w ateroury Wilmington, Del. <sup>*</sup> Worcester Yonkers Youngstown	13 25 40 14 30	0.7 12.2 10.6 5.3 9.0	2 4 4 0 1	86 55 0 14	10.4 14.7 11.7 6.5 10.4	1 2 4 2 1	14.7 13.0 9.0 11.0	14. 9 13. 7 8. 4 10. 5

<sup>1</sup> Deaths of nonresidents are included. Stillbirths are excluded.

<sup>3</sup> These rates represent annual rates per 1,000 population, as estimated for 1931 and 1930 by the arithmetical method.

Deaths under 1 year of age per 1,000 live births. Cities left blank are not in the registration area for births.

Data for 77 cities.

Data for 77 cities.
Deaths for week ended Friday.
Poeths for week ended Friday.
For the cities for which deaths are shown by color, the percentage of colored population in 1920 was as follows: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Houston, 25; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Miami, 31; Nashville, 30, New Orleans, 26; Richmond, 32; and Washington, D. C., 25.
Population Apr. 1, 1930; decreased 1920 to 1930, no estimate made.

### **PREVALENCE OF DISEASE**

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

### UNITED STATES

### **CURRENT WEEKLY STATE REPORTS**

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

### Reports for Weeks Ended August 1, 1931, and August 2, 1930

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended August 1, 1931, and August 2, 1930

	Diphtheria		Influenza		Measles		Meningococcu s meningitis	
Division and State	Week ended Aug. 1, 1931	Week ended Aug. 2, 1930	Week ended Aug. 1, 1931	Week ended Aug. 2, 1930	Weok ended Aug. 1, 1931	Week ended Aug. 2, 1930	Week ended Aug. 1, 1931	Week ended Aug. 2, 1930
New England States: Maine	3 25 5 8	5 4 1 27 2 4	1 2 1 2	 2 1	11 4 1 93 35 28	14 7 6 94 2 10	0 0 3 0 0	0 0 0 0 2
Middle Atlantic States: New York	69 12 42	66 26 55	1 <u>4</u>	1 <u>2</u> 2	389 65 214	291 113 254	9 0 5	11 7 5
Ohio. Indiana Illinois. Michigan Wisconsin	27 13 54 22 12	38 7 66 15 10	3 7 133 8	3 1 17 2	263 14 · 200 62 83	55 8 18 60 88	1 2 8 3 1	5 5 11 8 4
West North Central States: Minnesota Iowa Missouri North Dakota South Dakota	3 4 8 4 1	11 13	2	1	17 5 4 10 1	38 16 1	2 0 5 0	2 0 5 0
Nebraska Kansas South Atlantic States:	2 5	7 6		4	2 6	6 22	Ŏ O	0 1
Delaware Maryland <sup>2</sup> District of Columbia Virginia	2 12 9	9 4	1	2 1	3 19 9	3 11 20	0 1 1	0 1 0
West Virginia. North Carolina. South Carolina. Georgia <sup>3</sup> . Florida <sup>3</sup> .	3 17 6 4 6	5 34 24 6	6 47 6	8 47 7	59 18 29 7 5	28 15 19 4	3 2 2 0 1	1 0 2 2 1 2
Kentucky Tennessee Alabama <sup>1</sup> Mississippi	1 7 14	3 5 6	2 2	1 1	42 2 9	4 5 13	2 1 1 1	1 3 2 0

Footnotes at end of table.

Cases of	of certain communicable diseases reported by telegraph by State health offic	cera
•	for weeks ended August 1, 1931, and August 2, 1930-Continued	

	Diphtheria		Influenza		Measles		Meningococcus meningitis	
Division and State-	Week ended Aug. 1, 1931	Week ended Aug. 2, 1930	Week ended Aug. 1, 1931	Week ended Aug. 2, 1930	Week ended Aug. 1, 1931	Week ended Aug. 2, 1930	Week ended Aug: 1, 1931	Week ended Aug. 2, 1930
West South Central States: Arkansas. Louistana	1 15 4 4 1 	1 6 33 1 1 5 6 	   7 4		5 1 6 22 2 3 23 4 6 14 13	1 3 6 2 1 1 8 8 13 3 40 260	00000 0200001 210	0 3 2 1 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

<sup>1</sup> New York City only.
<sup>3</sup> Week ended Friday.
<sup>4</sup> Typhus fever: 1931, 12 cases; 3 cases in Georgia; 5 cases in Florida; 1 case in Alabama; and 3 cases in Teras.
<sup>4</sup> Figures for 1931 are exclusive of Oklahoma City and Tulsa.

	Polion	nyelitis	Scariet fever		Smallpox		Typhoid fever	
Division and State	Week ended Aug. 1, 1931	Week ended Aug. 2, 1930						
New England States:								
Maine	4	0		4	0	0	0	6
New Hampshire	1	0	0	1	0	0	6	0
Vermont	0	0	1	1	8	0	0	0
Massachusetts	25	13	81	41	0	0	8	6
Rhode Island	8	2	5	4	Ó	Ó	2	0
Connecticut	37	Ī	7	Ī	Ŏ	Ŏ	· 4	2
Middle Atlantic States:	•••	-		i -		-	-	] –
New York	433	13	108	1 70	2	0	24	18
New Jersey	16	2	49	17	ō	ŏ	6	3
Pennsylvania		ī	75	78	ŏ	ĭ	16	40
East North Central States:	-	-			-	-		
Ohio	1	12	92	97	17	21	32	46
Indiana	ō	2	18	20	19	40	12	15
Illinois	15	Ā	68	52	15	19	25	46
Michigan	13	2	6Ã	47	6	25	5	7
Wisconsin	Ĩĭ	ī	16	21	i	2	3	2
West North Central States		-				-	-	-
Minnesote	10	10	20	18	1	4	3	2
Towa	ĩ	4	Ĩ	-8	11	22	ĭ	4
Missouri	2	3	13	16	<b>i</b>	15	38	25
North Dekote	ñ	ŏ	Â	6	13	11	ă	õ
South Dekote	ŏ	š	ĭ	ž	ĩ	-i	Ă	3 a
Nobrosko	ŏ	ភ័	13	ĩ	i	10	5	7
Kansas	ň	Å	10	17	21	12	12	17
South Atlantia States:	•	v						
Delement	0	1	2	1	0	0	0	6
Meruland 1	ň	ŝ	17	5	ň	ň	28	34
District of Columbia	ĭ	ឹ	- <b>1</b>		ň	ň	~ ~	ĥ
Virginio	•	ž	- 1	-	v	°	-	-
West Virginio		័	8	13	1	4	36	35
North Carolina	- † I	2	20	35	1	ň	47	70
South Caroline	5	6	1		5	2	- <b>č</b> i	63
	0	ő	å	14	7	ň		71
Crourgia •		8	0 A		6		00 A	12
F 10F108 *	11	01	01		01	01	01	

Footnotes at end of table.

### August 14, 1931

### 1952

	Polion	nyelitis	Scarle	t føver	Sma	llpox	Typho	id fever
Division and State	Week	Week ended	Week ended	Week ended	Week	Week	Week	Week
	1931	1930	1931	1930	1931	1930	1931	1930
East South Central States:								
Kentucky	0	0	21	22	0	0	13	84
Tennessee	1	2	6	6	3	2	89	47
Alabama <sup>3</sup>	0	2	12	4	1	0	58	42
Mississippi	1	3	4	4	7	1	55	38
West South Central States:								
Arkansas	0	8	13	2	4	2	46	85
Louisiana	1	28	1	10	0	0	76	38
Oklahoma 4	1	12	11	13	6	10	34	49
Texas 3	2	6	15	22	1	14	15	26
Mountain States:								
Montana	1	0	2	7	0	3	3	3
Idaho	0	1	3	0	. 3	1	1	4
Wyoming	0	0	2	3	2	0	1	0
Colorado	1	0	9	6	7	1	4	8
New Mexico	1	0	0	2	1	1	0	4
Arizona	0	0	0	1	0	0	5	7
Utah <sup>3</sup>	0	0	1	2	0	0	0	1
Pacific States:			_		_			-
Washington	0	1	5	13	5	16	4	5
Oregon	0	2	2	2	8	6	6	8
California	3	71	42	26	7	18	16	

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended August 1, 1931, and August 2, 1930—Continued

<sup>1</sup> Week ended Friday.

<sup>3</sup> Typhus fever: 1931, 12 cases; 3 cases in Georgia; 5 cases in Florida; 1 case in Alabama; and 3 cases in Texas.

• Figures for 1931 are exclusive of Oklahoma City and Tulsa.

### SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of cases reported monthly by States is published weekly and covers only those States from which reports are received during the current week.

State	Menin- gococ- cus menin- gitis	Diph- theria	Influ- enza	Ma- laria	Mea- sles	Pel- lagra	Polio- myelitis	Scarlet fever	Small- pox	Ty- phoid fever
May, 1931 Hawaii Territory June, 1931	1	27	19		135		2	7	0	3
California Idaho Mississippi Novtana South Carolina South Dakota Teras Virginia Washington July, 1931	10 8 5 1  4 7 	244 11 22 3 110 19 61 61 31	103 3 188 7 760 3 74 363 103	7 3, 485 	2, 671 15 134 58 33 550 36 1, 159 388	7 2, 184  966  10 105 	26 07 2 09 1 1 1 1	362 39 26 5 6 34 98 83 81	76 30 143 14 0 18 38 	59 9 101 19 0 119 7 59 82 21
Georgia	3	15	19	179	68	73	2	42		252

May, 1931		
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Hawaii Territory:	Cases
Chicken pox	. 32
Conjunctivitis, follicular	52
Dysentery (bacillary)	. 4
Erysipelas	. 2
Hookworm disease	33

Hawaii Territory—Continued.	Cases
Impetigo contagiosa	. 1
Leprosy	. 4
Lethargic encephalitis	2
Mumps	30
Tetanus	4

Hawaii Territory—Continued.	Cases
Trachoma	4
Whooping cough	1
June, 1931	
Actinomycosis:	
California	1
Chicken pox:	
California	936
Idaho	6
Mississippi	319
Montana	00 7
Nevaua	177
South Dakota	48
Virginia	336
Washington	366
Dengue:	
Mississippi	25
South Carolina	1
Diarrhea:	
South Carolina	3, 181
Virginia	1,056
Dysentery:	_
California (amebic)	5
California (bacillary)	14
Mississippi (amebic)	75
South Carolina	20
Washington	•
California	27
German measles	
California	30
Montana	7
South Carolina	83
Washington	22
Granuloma, coccidioidal:	
California	1
Hookworm disease:	
Mississippi	254
South Carolina	. 117
Impetigo contagiosa:	
Montana	8
Wasnington	0
Leprosy:	1
Letherric encenhalitis:	-
Celifornia	4
South Carolina	4
Texas	1
Washington	4
Mumps:	
California	612
Idaho	8
Mississippi	162
Montana	13
South Carolina	73
South Dakota	129
Washington	100
Celifornia	3
Mississioni	4
South Carolina	24

Paratyphoid fever:	Cases
California	5
Idaho	1
South Carolina	7
Texas	2
Washington	. 2
Puerperal septicemia:	
Mississippi	18
Washington	2
Rables in animals:	
California	75
Mississippi	9
South Carolina	22
Bocky Mountain spotted or tick fever:	
California	1
Idebo	2
Montana	2
Novada	2
South Debote	1
South Dakota	-
Colifornia	7
Idebo	
Totonije	-
California	8
Trachome.	
California	9
Missigginni	2
Montene	3
South Dakota	5
Tularaemia:	-
Ideho	2
Nevada	1
Virginia	1
Typhus fever:	
Virginia	. 3
Undnient fever	
California	8
Idaho	12
Virginia	1
Weshington	2
Vincent's angina:	
Washington	. 1
Whooning cough:	
California	817
Idaho	22
Mississippi	444
Montana	. 58
Nevada	. 2
South Carolina	250
South Dakota	38
Virginia	546
Washington	405

### **Ju**ly, 19**3**1

Georgia:	
Chicken pox	. 21
Dengue	. 1
Dysentery	. 76
Mumps	. 39
Septic sore throat	. 22
Typhus fever	. 15
Undulant fever	. 1
Whooping cough	. 49

### PLAGUE-INFECTED GROUND SQUIRRELS IN CALIFORNIA

The Director of Public Health of California reported, under date of July 31, 1931, that plague had been proved by animal inoculation in four ground squirrels from ranches in San Benito County, Calif., about 22 miles south of Hollister.

### **GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES**

The 98 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 33,480,000. The estimated population of the 91 cities reporting deaths is more than 31,935,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

	1931	1930	Estimated expectancy
Cases reported			
Diphtheria:			
46 States	487	587	
98 cities	215	234	513
Measles:			
45 States	2,411	1,966	
98 cities	854	661	
Meningococcus meningitis:			
46 States	59	64	İ
98 cities	29	31	
Poliomyelitis:			
46 States	307	222	
Scarlet fever:			
46 States	951	782	1
98 cities	338	306	332
Smallpox:			
46 States	204	386	
98 cities	10	42	98
Typhoid fever:	10	14	20
46 States	759	830	
08 cities	100	114	
00 VIVIO	101	114	99
Deaths reported			
innuenza and pneumonia:			
91 CILIES	279	352	
Smallpox:			
91 cities	0	0	
		-	

Weeks ended July 25, 1931, and July 26, 1930

### City reports for week ended July 25, 1931

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

If the reports have not been received for the full nine years, data are used for as many years as possible but no year earlier than 1922 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

						The second se		
		Diph	the <b>ria</b>	Influ	enza			
Division, State, and city	Chicken pox, cases reported	Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported	Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
NEW ENGLAND								
Maine: Portland	1	2	0		0	1	0	0
Concord	0	0	0		0	0	0	0
Vermont:	0	0	0		0	0	0	0
Barre Massachusetts:	0	0	0	•	0	0	0	0
Boston Fell River	20	19	18	1	0	17	3 0	1
Springfield	3	i	ŏ		ŏ	3	ž	1 ľ
Worcester Rhode Island:	3	1	0		0	3	5	1
Pawtucket	0	1	0		0	0	0	0
Providence	1	3	2		U	50	4	4
Bridgeport	6	2	1		0	7	4	1
Hartford	0	1	0		0	0	4	1
New Haven	U	U	v		U	v	v	1
MIDDLE ATLANTIC								
New York:								_
Buffalo	6	7	1		0	17	6	7
New I ork	32	131	03	3	0	32	5	1
Syracuse	6	ĭ	ŏ		ŏ	iī	2	1
New Jersey:								•
Newark	12	3	1		Ő	12	4	5
Trenton	Ō	ĭ	ō		ŏ	5	4	Ō
Pennsylvania:								19
Philadelphia	11	32 12	8 1	1	1	28 10	13	12
Reading	ŏ	ĩ	ō		ō	2	Õ	Õ
EAST NORTH CENTRAL								
Obio:								
Cincinnati	Q	3	1		0	4	2	<u>3</u>
Cleveland	8	16	2	1	0	57	68	7 3
Toledo	11	2	1		ŏ	9	5	ĩ
Indiana:		- 1	-		-			
Fort Wayne	1	1	4		0	2	0	0
South Rend	4		6		ő	ő	ől	1
Terre Haute	ŏ	ŏ	ŏ		ŏ	ŏ	ŏ	2
Illinois:		<b>F</b> 0			.	10=	14	10
Springfield	33 9	80 A	10	3	5	105	3	19
Michigan:	~	٦	Ĩ	-	Ĭ	-		
Detroit	16	26	15		1	7	8	8
Grand Rapids		5	ő		öl	5	ŏ	ĭ
	/	-	-					

		Diph	theria	Jnfl	uenza			
Division, State, and city	Chicken pox, cases reported	Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported	Measles, cases re- ported	Mumps, cases re- ported	Pneu- monia, deaths reported
EAST NOBTH CEN- TRAL-continued								
Wisconsin: Kenosha Madison Mailwaukee Racine Superior	0 1 42 2 2	0 0 8 0 0	0 0 2 0 0	1	0 1 0 0	3 0 79 1 1	25 11 96 11 2	0 
WEST NORTH CENTRAL								
Minnesota: Duluth Minneapolis St. Paul Iowa:	4 5 5	0 8 4	0 3 0	 	0 0 0	2 7 2	0 3 0	0 3 4
Davenport Des Moines Sioux City Waterloo Missouri:	0 0 1 0	1 1 0 0	0 0 2 2			0 1 1 0	0 2 2 0	
Kansas City St. Joseph St. Louis North Dakota:	0 0 1	1 0 15	2 0 6		0 0	3 2 0	2 0 3	4 0 1
Fargo Grand Forks South Dekote:	1 0	0	0 0		0	0	0 0	1
Aberdeen Sioux Falls	2 0	8	0 0			0	0	
Nebraska: Omaha	0	2	1		0	0	1	3
Kansas: Topeka Wichita	0 2	1	0 1		0	0	11 0	0
SOUTH ATLANTIC								•
Delaware:								
Maryland:	0	1	0		0	1	1	1
Baltimore Cumberland	.15	9	5		0	12 0	5	10 0
Frederick III	0	Ó	1		Ō	i	Õ	Õ
Washington	4	5	4		0	0	0	3
Lynchburg	0	0	1		0	0	0	0
Richmond	ŏ	1	1		0	0	3	
West Virginia:	0	0	0		0	0	0	0
Charleston Wheeling	0	0	0		0	0	0	0
North Carolina:	0							0
Wilmington Winston-Salem	00	0	0 0 1		000	0 9	0 0 4	0
Charleston	0	Q	o	6	o	0	o	1
Greenville	0	0	0		0	0	0	0
Georgia: Atlanta	0	2	1	1	1	3	0	5
Brunswick	ŏ	ō	ğ.		ò	ŏ	ŏ	ŏ
Florida:	U I	1			Ŭ	U	U	1
Miami Tampa	0		1		0	4	0	0
								-

### City reports for week ended July 25, 1931-Continued

		Diph	theri <b>a</b>	Influ	lenza			Press
Division, State, and city	Chicken pox, cases reported	Cases, estimated expect- ancy	Cases reported	Cases reported	Deaths reported	Measles, cases re- ported	Mumps, cases re- ported	monia, deaths reported
EAST SOUTH CENTRAL								
Kentucky: Covington	0	0	0		0	0	0	1
Tennessee: Memphis Nashville	0	1	0		0	14 1	0	4
Alabama: Birmingham	0	1	0		0	3	0	1
Montgomery	Ŭ	Ŭ	20			0	0	1
WEST SOUTH CENTRAL		·						
Arkansas: Fort Smith Little Rock	0	0 0	0 0		0	0 0	0 0	
*New Orleans	0 0	5 0	5 0	2	0 0	0 0	· 0 0	9 1
Muskogee Oklahoma City	0 0	0 0	0 1		0 0	0 0	0 0	0
Dallas Fort Worth	2 0	2 1	0 0		0 0	1	1 0	0
Galveston Houston San Antonio	0	0 2 1	0 1 1		0 0 1	0 2 1	0 0	0 4 1
MOUNTAIN								
Montana: Billings	0	0	0		0	10	0	0
Great Falls Helena Missoula	7 0 0	0 0 0	0		0 0 0	3 0 0	0 0 0	0
Idaho: Boise	1	0	0		0	1	0	0
Denver Pueblo	12 4	7 0	<b>4</b> 0		0	3 0	、 5 0	2 0
Albuquerque	1	0	0		0	0	0	0
PhoenixUtah:	2	0	0		0	0	0	3
Salt Lake City Nevada: Reno	8	0	0		0	3	1	U O
PACIFIC							-	•
Washington: Seattle Spokane	4	1	0			3	4	
Oregon: Portland	3	3	1		1	0	4	3
California: Los Angeles Sacramento	5	22 2 7	7	5	1	20 20	2 6	7
Dan Francisco	-	(	0	3	U	"	1	0

70109°—31——4

### 1958

						_					
	Scarle	t fever		Smallp	X	Tuber	T	7phoid i	lever	Whoop	
Division, State, and City	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported	culo- sis, deaths re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported	ing cough, cases re- ported	Death: all causes
NEW ENGLAND											
Maine:											
New Hampshire:			0	0	0	2	0	0	U A	3	
Nashua	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	Ŏ	
Barre Massachusetts:	0	0	0	0	0	1	0	0	0	8	2
Boston Fall River Springfield Worcester	21 1 1 2	21 6 2 7	0 0 0 0	0 0 0 0	0 0 0	10 0 2 2	. 2 0 0	4 0 0 0	1 0 0 0	28 3 7 9	175 12 27
Pawtucket	1 3	0 6	0 0	0 0	0 0	0 4	0	0	0 0	0	22 54
Bridgeport Hartford New Haven	2 1 1	0 1 2	0 0 0	0 0 0	0 0 0	2 0 2	0 0 0	0 0 0	1 0 0	8 18 3	26 40 44
MIDDLE ATLANTIC											
New York: Buffalo New York Rochester Syracuse New Jacsay.	8 41 2 2	8 44 13 1	0 0 0 0	0 0 0 0	0 0 0 0	8 90 0 1	0 16 0 0	0 12 0 8	0 8 0 0	<b>27</b> <b>22</b> 1 10 10	119 1, 265 46 43
Canden Newark Trenton	1 6 0	1 13 3	0 0 0	0 0 0	0 0 0	0 5 8	0 0 0	0 0 0	0 0 0	8 148 8	17 80 82
Pennsylvania; Philadelphia Pittsburgh Reading	24 10 0	80 11 1	0 0 0	0 0 0	0 0 0	21 8 0	8 1 0	2 1 0	1 1 0	96 41 1	401 144 21
RAST NORTH CEN- TRAL											
Ohio: Cincinnati Cleveland Columbus Toledo Indiana:	5 13 2 3	8 13 0 1	1 0 1 1	0 0 0 0	0 0 0 0	16 9 4 2	1 2 1 1	2 8 2 0	0 1 1 0	5 72 1 33	125 176 72 56
Fort Wayne Indianapolis South Bend Terre Haute	1 2 0 1	0 4 0	0 3 0	0000	0 0 0	2 5 1 0	0 0 0	00000	0 0 0	2 44 1 0	23 21 19
Illinois: Chicago Springfield	41 0	49 2	1	0	0	50 1	4 0	00	0	127 2	623 22
Detroit Flint Grand Rapids	80 5 4	24 2 1	1 1 1 1	8 0 0	0 0 0	21 1 2	8 0 0	1 0 0	0000	237 4 10	208 18 26
Kenosha Madison Milwaukee	0 1 7	1 1 5	0 0 1	00-	0	0	0 0 0	0 0 1	0	4 4 86	12 95
Racine Superior WEST NORTH CEN-	2	4 0	0	0	0	0 1	0	0	0	18 0	24 4
Minnesota: Duluth Minneapolis St. Paul	4 11 7	0 0 5	0	0	000	020	0	0	0	0 3 17	18 107 42

<del></del>	Scarle	t fever		Smallp	ox	Tuber	T	phoid i	lever	Whoop	
Division, State, and city	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported	culo- sis, deaths re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported	cough, cases re- ported	Deaths all causes
WEST NORTH CEN- TRAL—Continued											
Iowa:											
Des Moines	2	0		3							32
Sioux City Waterloo	0	0		0			0	0		2	
Missouri:											
St. Joseph		3 0	Ö	Ö	0	4	l o	ő	0	4	90 11
St. Louis	8	4	1	1	Ō	8	4	3	i	75	202
Fargo	0	1	0	0	0	0	0	0	0	3	12
South Dakota:	0	0	0	0			0	0		. 0	
Aberdeen	0	0	0	0			0	0		0	
Nebraska:				U				1		U	10
Kansas:	1	1		4	0	0	0	0	0	1	49
Topeka Wichita	1	0 1	1 0	0	0	0	0	1 1	0	4 3	6 25
SOUTH ATLANTIC											
Delaware:				•						_	
Maryland:	1	4	U	U	U	3	0	0	0	5	25
Baltimore Cumberland	7	6	0	0	0	11	5	6	1	105	187
Frederick	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	ŏ	2	۳ ۰۰۰۰۰۰۰۰
bia:											
Washington Virginia:	5	2	0	0	0	10	2	4	1	17	118
Lynchburg	0	0	0	0	0	0	1	2	0	0	7
Richmond	ĭ	3	ŏ	ŏ	0	3	i	3	ŏ	ō	54
Roanoke West Virginia:	1	1	0	0	0	3	1	0	1	2	15
Charleston	0	0	0	0	0	0	1	0	0	9	5
North Carolina:	U	Ů	Ů	U	v	U	U	U	0	Ů	y
Raleigh Wilmington	0	0	. 1	0	0	2	1	8	0	5	14
Winston-Sa-				,							
South Carolina:	0	U		U	U	- 1	1	- 1	0		17
Charleston	0	0	0	0	0	0	1 2	13 2	0	8	21 30
Greenville	ŏ	ŏ	ĭ	ŏ	ŏ	ō	2	2	ŏ	5	
Atlanta	2	3	0	0	o	1	2		1	3	85
Brunswick	0	0	0	0	8	0	0	0	0	0	4 84
Florida:											
Tampa	ō	ŏ	ŏ	ŏ	ŏ	ī	ŏ	1	ŏ	1	23 19
EAST SOUTH CENTRAL											
Kentucky:											
Covington	0	0	0	0		0	0	0	0	0	25
Memphis	1	Q	1	1	0	5	8	5	1	42	80
Alabama:	1	U	U	0	U	4	•	2	U	4	46
Birmingham Mobile	1	0	8	0	8	3	4	0	1	2	49
Montgomery.	ŏl	ĭ	ŏ	ŏ			2	ô .		ŏļ.	

<u></u>	Scarle	Scarlet fever Smallpox			Tuber-	Typhoid fever					
Division, State, and city	Cases, esti- mated expect- ancy	Cases re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported	culo- sis, deaths re- ported	Cases, esti- mated expect- ancy	Cases re- ported	Deaths re- ported	ing cough, cases re- ported	Deaths all causes
WEST SOUTH CEN- TRAL											
Arkansas: Fort Smith Little Rock Louisiana:	0	2 0	0	0	0	2	0 1	0	0	1	
New Orleans Shreveport Oklahoma:	30	5 0	00	0	0	17 2	43	80	2 1	07	138 84
Muskogee Oklahoma City Texas:		03	0	01	0	8	03	57	000	0	36
Fort Worth Galveston Houston San Antonio	1 0 1 1	4 0 1 1	0000	0000	0000	5 0 6 10	3 1 0 1 1	00000	0 0 0	0 0 1	03 32 12 60 46
MOUNTAIN											
Montana: Billings Great Falls Holena Missoula	0 1 0 0	0 0 0 0	0 1 0 1	0000	0000	0 0 0 0	0000	000000	0000	2 7 0 0	4 9 6 12
Idano: Boise Colorado: Denver	0	0	0	0	0	0	0	0	0	1	6
Pueblo New Mexico: Albuquerque	Õ	Ŏ	1 0	Ŏ	Ŏ	0 1	2	ŏ	Ŏ	3	11 10
Arizona: Phoenix Utah:	0	0	0	0	0	1	0	0	0	0	
Salt Lake City. Nevada: Reno	1 0	0	1	0	0	8	1	0	0	12 0	8 1
PACIFIC											
Washington: Seattle Spokano Tacoma Oregon:	2 0 1	4 1 0	1 1 2	0 6 3		 0	. 8	4 0 0	0	50 5 2	21
Portland Salem California:	2 0	4 0	5 1	1 0	0 0	1 0	0	0	0 0	3 0	84
Los Angeles Sacramento San Francisco.	12 1 6	1 0 0	2 0 0	1 0 0	0 0 0	28 1 5	2 1 1	2 7 1	1 0 0	43 7 1	238 137

### Meningococcus Lethargic en-Poliomyelitis (infantile Pellagra meningitis cephalitis paralysis) Division, State, and city Cases, esti-Deaths Cases Deaths Cases Deaths Cases mated Cases Deaths expect ancy NEW ENGLAND Massachusetts: Boston..... Fall River. Õ n Ó Springfield\_\_\_\_\_ Worcester\_\_\_\_\_ Q Q Ó Ó Õ **Connecticut:** Bridgeport\_\_\_\_\_ Hartford\_\_\_\_\_ New Haven A Ó Ó ī MIDDLE ATLANTIC New York: New York New Jersey: Newark Pennsylvania: Philadelphia..... õ Pittsburgh..... Ó Ó Ô EAST NORTH CENTRAL Ohio: Cincinnati..... Cleveland..... Ō Ó Ō Õ Ô Õ Ō Ō Columbus\_\_\_\_\_ Ô Ô Õ Õ Ō Õ ŏ ŏ Toledo..... ī Õ Õ ō Õ Õ Õ Indiana: Fort Wayne..... Indianapolis..... i Ô Ô Õ Ô Ó Ô Ô Illinois: Chicago ..... Michigan: Detroit Grand Rapids..... ō ŏ ī ĩ ŏ Ó Õ Õ Ó Wisconsin: Milwaukee..... ŏ Superior ..... Ó Ó WEST NORTH CENTRAL Minnesota: Duluth O O St. Paul..... Ó Ô Õ Õ Ô ñ Missouri: Kansas City..... O O St. Louis.. Ô Ô Ô North Dakota: Fargo ... Nebraska: Omaha..... SOUTH ATLANTIC Maryland: Baltimore..... Nirginia: Roanoke... West Virginia: Wheeling n A North Carolina: Raleigh Wilmington Winston-Salem ī Ó South Carolina: Charleston..... Columbia Õ ž Õ Õ Õ Õ Õ Georgia:1 Savannah 1 Florida:1

### City reports for week ended July 25, 1931-Continued

Οİ <sup>1</sup>Typhus fever: <u>3</u> cases, 2 deaths; 1 case at Atlanta, Ga.; 1 case and 1 death at Savannah, Ga.; 1 case and 1 death at Tampa, Fla.

0 i

Miami\_

<b>Children</b> (1992)	Menin meni	gococcus ngitis	Letha ceph	rgic en- alitis	Pel	lagra	Polion	Poliomyelitis (infantile paralysis)			
Division, State, and city	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, esti- mated expect- ancy	Cases	Deaths		
BAST SOUTH CENTRAL											
Tennessee: Memphis Alabama: Birmingham Mobile Mobile	1 1 0 0	0 1 0 0	0 0 0 0	0	0 0 1	0 1 1 0	0 1 0 0	0 0 0 0	0 0 0		
WEST SOUTH CENTRAL Louisiana: New Orleans	1 0 0 0 1	0 0 0 0 0	0 0 0 0 0	0 0 0 0 0	1 0 0 0 0	1 1 1 1 0	0 1 0 0 0	1 0 0 0 0	0 0 0 0 0		
Washington: Seattle	0	0	0	o	0	0	0	1	0		

### City reports for week ended July 25, 1931-Continued

The following tables give the rates per 100,000 population for 98 cities for the 5-week period ended July 25, 1931, compared with those for a like period ended July 26, 1930. The population figures used in computing the rates are estimated midyear populations for 1930 and 1931, respectively, derived from the 1930 census. The 98 cities reporting cases have an estimated aggregate population of more than 33,000,000. The 91 cities reporting deaths have more than 31,500,000 estimated population.

Summary of weekly reports from cities, June 21 to July 25, 1931.—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930<sup>1</sup>

					Week	ended-				
	June	June	July	July	July	July	July	July	July	July
	27,	28,	4,	5,	11,	12,	18,	19,	25,	26,
	1931	1930	1931	1930	1931	1930	1931	1930	1931	1930
98 cities	54	65	3 47	57	43	58	142	48	33	87
New England Middle Atlantic East North Central	67 47 72	68 62 97	96 53 \$51	56 56 91	60 50	41 49 86	65 4 37 6 50	36 46 66	50 34 20	24 33
West North Central	42	72	33	37	31	68	31	39	33	35
South Atlantic	45	26	7 12	26	18	32	24	46	28	38
East South Central	23	12	12	36	23	24	29	12	12	24
West South Central	68	35	27	49	61	59	47	35	24	31
Mountain	9	0	8 9	9	17	26	61	70	35	70
Pacific	51	54	51	32	41	53	51	32	16	28

DIPHTHERIA CASE RATES

Footnotes at end of table.

### Summary of weekly reports from cities, June 21 to July 25, 1951.—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930— Continued

MEASLES CASE RATES

					Week	ended-				
	June	June	July	July	July	July	July	July	July	July
	27,	28,	4,	5,	11,	12,	18,	19,	25,	26,
	1931	1930	1931	1930	1931	1930	1931	1930	1931	1930
98 cities	568	489	347	270	316	252	\$ 183	147	133	105
New England	438	832	402	544	351	460	317	256	209	191
Middle Atlantic	511	607	283	322	311	305	4 148	195	111	144
East North Central	921	331	4 643	168	527	154	6 319	70	214	59
West North Central	296	269	143	139	103	130	61	50	34	64
South Atlantic.	591	256	7 310	180	259	142	107	122	83	50
East South Central	588	227	349	126	116	179	116	42	105	54
West South Central	47	17	24	24	27	17	17	10	14	7
Mountain	479	1, 454	\$ 215	731	122	582	122	247	174	176
Pacific	362	798	149	451	182	482	123	310	125	164

### SCARLET FEVER CASE RATES

98 cities New England Middle Atlantic East North Central	168 238 194 240	107 135 85 182	* 104 188 135 * 121	75 73 54 115	79 142 89 90	71 73 49 114	3 69 149 4 65 6 105	53 65 35 86	53 111 56 69	49 73 34 76
West North Central	240	104	31	105	44	85	42	43	29	31
South Atlantic	93	68	7 54	62	49	68	34	48	38	40
East South Central	64	54	47	12	52	42	23	18	6	48
West South Central	30	38	41	45	34	35	34	21	44	45
Mountain	96	62	* 36	167	52	88	26	79	0	26
Pacific	57	49	47	38	49	43	12	49	12	38

### SMALLPOX CASE RATES

98 cities	8	13	36	6	2	7	13	6	3	7
New England Middle Atlantic East North Central West North Central South Atlantic East South Central West South Central Mountain Pacific	0 1 5 19 12 17 30 70 6	0 0 10 52 10 6 21 53 43	· 0 0 58 10 70 23 24 80 14	0 5 14 2 18 0 53 32	2 0 1 4 6 10 0 8	0 9 10 0 18 7 9 36	0 40 44 4 0 0 7 7 22	0 0 10 14 4 0 7 18 18	0 2 10 0 6 0 20	0 0 8 21 2 18 3 18 22

### TYHOID FEVER CASE RATES

98 cities Middle Atlantic East North Central South Atlantic East South Central East South Central West South Central Mountain	10 0 4 6 10 16 35 54 52	13 10 5 10 14 40 60 31 35	2 10 10 5 5 3 10 7 10 41 71 8 36	10 7 5 1 8 28 84 45 0	14 2 8 5 19 28 58 81 35	16 5 10 60 84 35 0	3 13 12 4 7 6 6 2 47 35 57 26	16 10 4 9 23 44 60 59 26 16	16 10 8 5 19 69 47 10 0 27	18 7 7 13 48 42 60 38 18
Mountain	52	35	* 36	0	35	0	26	26	0	18
Pacific	14	4	4	4	6	14	6	16	27	1 <b>0</b>

See footnotes at end of table.

•

### Summary of weekly reports from cities, June 21 to July 25, 1931.—Annual rates per 100,000 population, compared with rates for the corresponding period of 1930— Continued

### INFLUENZA DEATH RATES

		•			Week	nded-				
	June 27, 1931	June 28, 1930	July 4, 1931	July 4, 1930	July (1, 1931	July 12, 1930	July 18, 1931	July 19, 19 <b>3</b> 0	July 25, 1931	July 26, 1930
91 cities	4	8	13	4	3	8	12	2	1	2
New England Middle Atlantic East North Central West North Central South Atlantic East South Central West South Central Mountain Pacific	2 2 6 0 6 6 7 0 2	0 2 2 0 6 13 11 0 2	0 1 4 1 9 7 4 19 10 8 9 5	2 4 2 0 6 6 14 0 7	2 4 2 0 4 6 7 0 0	0 4 8 6 2 13 7 0 2	0 40 44 3 4 0 3 0 0	0 3 2 0 0 0 11 9 5	0 1 2 0 2 0 8 0 2	0 1 3 4 0 11 0 2

### PNEUMONIA DEATH RATES

91 cities	67	66	3 64	54	59	53	3 47	43	4	56
New England Middle Atlantic East North Central South Atlantic East South Central West South Central Mountain Pacific	60 76 51 103 139 90 85 41	53 71 56 87 72 91 85 79 45	36 67 561 77 767 82 90 572 46	<b>36</b> 55 40 63 60 142 78 62 52	79 59 47 88 71 50 86 61 31	44 54 87 75 60 71 78 106 50	50 4 63 6 29 71 39 44 45 85 24	89 54 32 39 54 52 46 53 15	31 55 53 43 44 52 17 43	44 68 88 91 71 79 7

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1931 and 1930, respectively.
<sup>3</sup> Milwaukee, Wis., Calumbia, S. C., and Billings, Mont., not included.
<sup>4</sup> Newark, N. J., and Racine, Wis., not included.
<sup>4</sup> Newark, N. J., not included.
<sup>6</sup> Milwaukee, Wis., not included.
<sup>6</sup> Bacine, Wis., not included.
<sup>6</sup> Bolings, Mont., not included.
<sup>6</sup> Billings, Mont., not included.

### FOREIGN AND INSULAR

### CANADA

**Provinces**—Communicable diseases—Week ended July 18, 1931.— The Department of Pensions and National Health of Canada reports cases of certain communicable diseases for the week ended July 18, 1931, as follows:

Province	Cerebro- spinal fever	Influ- enza	Polio- myelitis	Small- pox	Typhoid fever
Prince Edward Island					
Nova Scotia		2			
New Brunswick					1
Quebec		;-	1	19	10
Manitoba	-	-	· · · ·	1.6	1 1
Seskatchewan.				10	
Alberta					1
British Columbia		2	1	2	8
Total	1	6	3	24	83

<sup>1</sup> No case of any disease included in the table was reported during the week.

Quebec Province—Communicable diseases—Week ended July 25, 1931.—The Bureau of Health of the Province of Quebec, Canada, reports cases of certain communicable diseases for the week ended July 25, 1931, as follows:

Disease	Cases	Disease	Cases
Cerebrospinal meningitis Chicken pox Diphtheria Erysipelas German measles Measles Mumps	1 16 18 2 3 44 1	Ophthalmia neonatorum Poliomyelitis Scarlet fever Tuberculosis Typhoid fever Whooping cough	3 2 31 28 22 11

### FRENCH WEST AFRICA

Yellow Fever—Upper Volta—Ivory Coast.—On July 24, 1931, 2 cases of yellow fever were reported at Banfora, Upper Volta.

On July 29, 1931, 2 cases of yellow fever were reported at Grand Bassam, Ivory Coast.

### GOLD COAST

Yellow Fever-Wale Wale.—A fatal case of yellow fever was reported July 30, 1931, at Wale Wale, Gold Coast.

### HAWAII TERRITORY

Plague—Kula District—Maui Island.—A fatal case of plague was reported August 2, 1931, in the rural district of Kula, on the island of Maui. The last previous case of plague on the island was reported in 1900.

### IRAK

Cholera—Basra.—Three cases of cholera with two deaths were reported at Basra, Irak, July 27, 1931. The disease was said to have been brought by a vessel which came from Bushire, Persia.

### PANAMA CANAL ZONE

Communicable diseases—June, 1931.—During the month of June, 1931, certain communicable diseases, including imported cases, were reported in the Panama Canal Zone and terminal cities as follows:

Disease	Cases	Deaths	Disease	Cases	Deaths
Chicken pox	13 5 6 1 458 38	1 1 5	Meningococcus meningitis Mumps Pneumonia Tuberculosis Typhoid fever Whooping cough	2 1 	36 38

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

From medical officers of the Public Health Service, American consuls, International Office of Public Hyglene, Pan American Sanitary Bureau, health section of the League of Nations, and other sources. The reports contained in the following tables must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given.

### CHOLERA

[O indicates cases; D. deaths; P. present]

							F										
									B	eek en	ded 						
Flace	Jan. 11- Feb. 7, 1931	Feb. 8- Mar. 7, 1931	Mar. 8 Apr. 4, 1931	Apr. 5- May 2, 1981		May,	1981		5	une, 19	81		5	uly, 19	81	<u> </u>	. 1
				L	0	19	ĸ	R	•		8	2		=	8	~~~	in the second se
Ceylon: Colombo C			-														
China: Canton				-		$\square$	8	-	-								
Shanebal C						Π	-							A			
Swatow C						$\overline{\parallel}$		1		8	-	0					
Dot	15, 334	11, 544	8,968	11,462	3, 242	3, 013	3, 565	3,781	$\frac{1}{1}$	$\frac{11}{11}$	+					+	
Bombay	9 9 8 8	0, 131	<b>1</b> 00 <b>1</b>	ē .										1	=	$\frac{1}{11}$	
Calcutta	121	120	436	310	22	81	97	128	2.2	22	28	74	23		•	$\frac{1}{11}$	
Karikal	8	90 a	891 8	61	, 2 4	F	5	3	3		8	8	8		$\frac{1}{11}$		
Madras.	85	220	182	182		g.«	120	•  -	8	04				6			
Negapatam	6	~						. 61		-   <del>-</del>		61					
Duticorin		F					T	-		<u>  </u> -		-			$\frac{1}{1}$		
Vizagapatam India (Frandarabi): Chandarabari	-	10	2	- e	~		-			+		-					
Dondicherry	181	°9	°9	~ 3		80		4	-		19-						
	1	25	181	   **	ſ							Η	$\parallel$	Π	Η	Н	

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

## CHOLERA-Continued

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

	Aug.	1931	Α.	
		R		
	1931	18		
	July,	n	800 DOD	
		+	10000 1000 1000 1000 1000 1000 1000 10	
		27		
pepu	1881	କ୍ଷ		юн 
Veek e	June,	13		
•		•		
		80		
	31	8	38 40	
	fay, 1(			8
	A			
	1	•		
	Apr. 5 May 2 1931		4-NN 84	A
	Mar. 8- Apr. 4, 1931		anoo (100 (100 (100 (100 (100 (100 (100 (1	0 4 4 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
	Feb. 8- Mar. 7, 1931		00044 811 860 860 87 80 80 80 80 84 80 80 84 80 80 80 80 80 80 80 80 80 80 80 80 80	1 81
	p. 11- b. 7, 1 931		4000 00 00 00 00 00 00 00 00 00 00 00 00	~ ~ ~
	Per -	-		ACACCACA
	Place		Indo-China (see also table below): Cochin-China-Rachgia Paompean	Slam. A yudhaya. District. Bangkok. Bismulok Province.

	June, 1931	-10 11-20	38
		21-31	<b>3</b> 12
	<b>fay</b> , 1931	11-20	42
		1-10	1
	и	21-30	
	1 pril, 196	11-20	83
		1-10	88
	81	21-81	88
	arch, 19	11-20	83
	M	1-10	38 38
	Febru-	1931 1931	28 28
	Jan Jan Jan Jan Jan Jan Jan Jan Jan Jan	1931	មុង
	Å	1930, 1930,	ర్లి <b>ల</b>
Dn vessel: S. Arankola, at Rangoon from Calcutta. O S. S. City of Bastborne, at Calcutta from Coos- nada. B. B. Tairea, at Penang from Calcutta		L 1908	Indo-China (French) (see also table abore): Cambodia <sup>1</sup>

1 From May 3 to 25, 1931, 152 cases of obolera with 75 desths were reported in Rafsanjan and vicinity, Karman district, Persia. 2 Figures for cholera in the Philippine Islands are subject to correction. 4 Reports incomplete.

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

PLAGUE

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

		ې بر ۴								Voek e	-popu						r 1
Place	Feb. 11-	Mar. Mar.	Apr.	May 2, 9		May,	1831		'n	IDe, 10	-		2	ly, 1931			г. 1
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Algeria: Algeria: O	6						İİ										
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Jujuy Province - Palpala		9-1 61															111
Belgian Congo			010			Ť	Ť		Τ			-				-	1
British East Africe (see also table below): TanganyikaD		ส*	I 00 ⊷	21 21 21	51	1000	<b>⊳</b> ∞0	12 6	40								1 11
UgandaO	<b>শ্ব</b> য়,	22:	880	88.	==.	387	33	32.									111
D Plague infected rats		13.0		- 69 -		•••	-     °			<u>   </u> 				ļļļ			111
Dutch East Indies:						İİ						<u>  </u>	<u>  </u>	<u>  </u> _	ĻĻ	ļļ_	11
Batavia and West Java	884	189 -	284	221	89 99 74 19 19 19 19 19 19 19 19 19 19 19 19 19 1	22	22	22	111								111
D Java and Madura D	<b>*</b> 23	1 376	*E	1 243	-4	7	\$	3	4	133	99	19					11
Alexandria D		7	н		$\parallel$	Ť	T				000			1	8		11
Plague-infected rats			a.	82	40	10-	- 00	-			20	1					11
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1 On July 23, 1831, an indirect report was received stating that an epidemic of plague had occurred in Chiobe and Changchow, Chins, not far from Amoy.

1971

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

PLAGUE-Continued

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

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	Aug.	1031								June, 1931			2:	8	8 <u>9</u>	60 69 69 1
		52								May, 1931		40	• 8 <del>(</del>	200		91
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-8	۹		89 <del>4</del> 4	100		- 12	~			May, 1931	245					
Feb.	Mar.									Apr., 1931	345	• 6	883		-	44
Jan. 11	Feb.	1931	4.040		94			<u> </u>		Mar., 1931		• 2	388	872	19-	-82
1			DAC	200	000				ACC	Feb., 1931	21	8	83	\$22	-18	145 139
										Jan., 1931	8	ş	388	828	181-	8522
	Place		liam Banekok	LaugavaRaisima	lyria: Beirut	ruponeauta Tunisia: Tunis	Union of Socialist Soviet Republics:	Transcaucasia-Karabakh	Cape Province. Cape Province. Orange Free State	Place	British East Africa (see also table above): Kenya. Indo-China (see also table above)	Madagascar (see also table above): Madagascar (see also table above):	Antisiraha Province	Miarinariyo Province	Moramanga Province	Tananarive ProvinceD

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ଅଞ୍ଚ ଅଞ୍ଚ 109-	Feb.	Mar.	<sup>A</sup> p <sup>A</sup>	Y	pril, 103	1		W	ay, 1931				June, 1	1961		luly, 1	158
31	1931	1931	1931	11	18	35	3	6	16	8	30	÷	13	କ୍ଷ	- <b>12</b>		п
Algeria: Cr Algiers	 ບ		5		5					-			7	-			
Bone Constantine	000		1					1						$\frac{1}{1}$	$\frac{1}{11}$	-	
Arabia: Aden	- <del>2</del>	-							7	10	8						
Bolivia. Brazil: Porto Alegre (alastrim)	2 0		49	ສ	19	80	9	3	4	-	6	3					
British East Africa: Tanganyika		- 6	00 1						13			-	$\frac{1}{1}$				
British South Africa: Southern Rhodesia		2	~														
Canada: Alberta	0																
British Columbia	00	8-						4					+				
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North Bay						*	•					Ť	$\frac{1}{1}$		$\frac{1}{1}$	$\ddagger$	
Ottawa. Sault Ste. Marie.	200	- 6		3	1				1			Ī			$\frac{1}{1}$	Tİ	
Toronto Duebec			•		4			-							İ	-	
Saskatchewan. Baskatchewan		63	28 C	2	18	33	ឌ	- 6	15	18	<b>a</b> 0	-	16	80	13	•	13
Canary Islands: Las Palmas	G	· · ·														$\prod$	
Antofagasta.	00			-								Ì	Í	Ī		-	
China: Amoy	D						8	6	-	1	1 11	-	69		-		
Canton	-0 -0	3			6	1	-	-			- 63	-	-	F	-	F	
1 An epidemic of smallpox was reported on M <sup>g</sup>	vy 13 with 7	16 CBS6S B	nd 314 de	aths sir	ice the n	aiddle o	( April,	1931, İı	I Mend	E Prov	nce, Bc	li⊽ia.			ĺ		

**1973** 

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

SMALLPOX-Continued

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

•	Jan.	Feb.	Mar.						Ŵ	ek ende	Ļ						
Place	Feb.	Mar.	Apr.,	A1	pril, 193	1		M	ay, 1931				June,	1831		July,	1881
	1931	1931	1931	п	18	55	8	6	16	ន	8	ø	ន	ิส	R	+	=
China—Continuéd. Foodhow	A-	6,0×	<u>р</u> 0400	р.	1	10	μ,	-			<u>_</u>		<u>р</u> ,				
Marchurla			ы оч оч <u>с</u> ы	Р	Р	- <b>-</b> A	Ч	A	P 1	Р		I					
Foreigners only	-486	16 14 13	8010 800 0	100	12	04	2.2	1	4	3	33	1	80	614	8	88	
Chosen (see table below). Colombia: Cali Dutch East Indies: Batsate and West		•	-						-	-							
East Java and Madura		•	•						•	•	-						
France (see table below). Great Britain: Erreland and Wales	* 88 88 100	745 1	795 2	171 1	163	212	192 4	186	166 3	H	107 3	8	35	282	<b>\$</b>	8	\$
London and Great Towns	893 879 800000	8885 885	147 554	51 142	1283	-22.21	53 128	13961	14 108	<b>1</b> 63	36 25	22	83	89 80	38	28	°%
ShefffeldStoke-on-Trent Stoke-on-Trent Greece (see table below).	<b>6</b> 7	-82-	10	- 4	3							-					

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1975

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

# SMALLPOX-Continued

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

	Jan.	Feb.	Mar.						We	ek ende	Ţ						
Place	Feb.	Mar.	Apr.	V	pril, 193	1		X	ay, 1931				June,	1931		July, I	931
	1931	1931	1931	Ħ	18	55	5	6	16	ន	8	8	13	ิส	5		=
Merico (see also table below): Jalisco (State)—Guadalajara. Mexico City and surrounding territory Monterrey		8 <sup>23</sup>	83 <sup>-1</sup>	17 4	990	11	6	-44	10 3	-01 20	<sup>21</sup>	1041-11		16 16 16			
Vera Cruz. Morocco (see table below). Nigeria: Lagos		3	8 8		81		-	1						-	-		
Panama Poinda Pointa Poitugal: Lisbon Rumania (see table below).	2 000 4	40 2	52	80	18	11	19	19	14	16	10 m	0110	17	13	14	12	
Spain . Straits Settlements	PDDDD	40-6	G 4 –∞		1	30	~		3		1						
Budan (Franch) (see table below). Byria (see table below). Turnisa: Tunis	~ «	9	21 41								1				$\frac{1}{1}$		
Union of South Africa: Cape Province	666	<u>е</u> ее	<u>е</u> де	<u></u> АА	ዋዋ	<b>А</b> А		ዋዋ	ዋዋ	P	P	P	<u>е</u>				
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at Naples from Venice at Naples from Venice Iavish at Manila from Ch Sydnoy from Shanghal Brayne at Cochin Brayne at Suskin from Jedi makin	dah.				E	Druary,	1		1 1 1 1 1	931		Pril, 19	31	~	[ay, 193		June,	1883
		-	ber, 1930	ary, 1931		11-20	21-28	1-10	11-20	21-31	1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20
		000	130 61	141	96	<b>4</b>	27	125		130 P	100	42			17	4	8	Ä
		A0	8	1														
	Dec., 1930	Jan., 1931	Feb., 1931	Mar., 1931	Apr., 1931	May, 1931			Ε.	lace			Dec., 1930	Jan., 1931	Feb., 1931	Mar., 1931	Apr., 1981	May, 1981
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CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER-Continued

### TYPHUS FETER

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

		ļ								Week	ended	T					•	
Place		Mar.		IV	pril, 193	1		Me	y, 1931				une, 19	31		July,	1931	
	7, 1931	7, 1931	4, 1931	11	18	ន	6	8	16	ន	8	÷	13	8				89
Algeria: Algeria:		5	~			2	-			-	~							
Constantine Department	3	•	000 1	6		100		00	8	10	60	60	60	-	19	5		
Australia, Western	13	20	00		ສ	*		-	10.	80		=	01	· •	$\frac{1}{1}$		$\frac{1}{1}$	
Chile: Valparaiso. China:		-	4		•						•	•		•				
Canton Manchuria—Harbin	000	20	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			80			$\overline{1}$								$\frac{1}{1}$	
Shanghai Tientsin	67			1	-													
Chosen (see table below). Czechoslovakia (see table below).																		
Egypt: Alexandria Alexandria Province				3									-	-		-		
Cairo.				6				ÌÌ		$\frac{1}{1}$					$\frac{1}{11}$			
Fort Said Britrea: Asmart. Graf Britrain: Scotland			-					ÌÌ		Ť								
File County Glasgow											-							
D Greece (see table below). Guatemala. <sup>1</sup>															•			
Iraq: Baghdad			67					~~~										
Irish Free State: Cork County- Refuil																		
Skibbereen Kerry County-													-		-	-		
DingleC								-										

-----May, 1931 I I ļ ļ ļ ------8 Apr., 1831 **5**3 500 **6** 0 21 **24**0 Mar., 1931 8.0 122-------...... ..... 8 -16 1 Feb., 1931 12 28 27 ° ត្រីខ 8 -----ပ္မံလယ 51 8 Jan., 1931 8~8587 8°°3 10 <u>8</u> 8 പ്പപ 24 34 2 Dec., 1930 98889---42 ρ. i n n n -----1012 °56 ł **AAA** DOODAO 2 Mexico (see also table above)..... Turkey Yugoslavia..... Lithuania -----œ 22-1881-1 80.0 4000 ዲ **6 6 6** 20-57 84 9 01 Δ, പപ **Place** -----101 82 916 i 89 112 д in. ie, ł 2 2 ρ. 31 2 - 01 <u>8</u>^ i 138 i į **6** 6 i 4 666 \*-0-101 176 i ρ. ሰብብ 9 -----; 2 2 May, 1931 18 13 ŝæ 200 2 i A A A ----------5**2**8 % ŝ 15 214 8201 -4-44 Apr., 1931 4026 Mar., 1931 -----189 85°5°5° 32 8 4 <u>–</u> 00 --ŝ Feb., 1931 2202 -----------83 **00 61 61** 19<mark>3-8</mark> ...... 16 പംപെപപ Jan., -854 1 000 A DOODO 00000 Limerick...... Mayo County-Belmullet Latvia (see table below). Palestine Panama Canal Zone—Balboa Cape Province Municipality of East London Natal Orange Free State. eral District San Luis Potosi Rumania.. Tunis es in Fed-Morocco. Yugoslavia (see table below). Poland Dec., 1930 ; - **%** 2 Mexico City, including municipalities in Portugal: Oporto..... ODODO Czechoslovakia ------Lithuania (see table below). Mexico (see also table below). Sbeitla, vicinity of Turkey (see table below). Union of South Africa: Place Limerick County-Michelstown. Greece..... Chosen: Seoul. Durango. Latvia..... Sfax. Tunisia ľ

1 On Feb. 27, 1931, the Director General of Public Health of Gustamals reports an unusual outbreak of typhus fever in a small village in Gustamala

1979

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

YELLOW FEVER

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

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Place	Jan. 11- Feb. 7,	Feb. 8- Mar. 7,	Mar. 8- Apr. 4,	Apr. 5 May 2, 1021		May, 1	831		5	LDe, 19	Ħ		La.	y, 1931		Aug.
	TOAT .	TOAT	1041	1041	6	16	<u>क्ष</u>	8			- N 	•		8	x 	1931
Bratil: Baha State Cears State Cears State Minas Geraes State Minas Geraes State Rio de Janeiro State Cambuoy Radua Padua Padua Priburgo (imported) Padua Bergipe State Padua Priburgo (imported) Padua Priburgo (imported) Padua Priburgo (imported) Padua Priburgo (imported) Padua Priburgo (imported) Padua Priburgo (imported) Padua Priburgo (imported) Priburgo (import			-0 0-001	8068												
Bobo Dioulasso																<b>a</b>

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