

CDC INFLUENZA SURVEILLANCE REPORT
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SPECIAL NOTE

Information contained in this report is a summary of data reported to CDC by State Health Departments, Epidemic Intelligence Service Officers, the influenza diagnostic laboratories collaborating with the International Influenza Center for the Americas, the National Office of Vital Statistics, and other pertinent sources. Much of it is preliminary in nature and is intended primarily for those involved in influenza control activities. Anyone desiring to quote this information is urged to contact the person or persons primarily responsible for the items reported in order that the exact interpretation of the report and the current status of the investigation be obtained. State Health Officers, of course, will judge the advisability of releasing any information from their own States.

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I. Summary of Information

Since the publication of the last CDC Influenza Surveillance Report No. 56, February 26, 1960, the number of outbreaks of influenza and influenza-like diseases reported has diminished markedly. During the past 4 weeks, no reports of epidemic influenza have come to the attention of the Surveillance Section, CDC.

The current analysis of influenza and pneumonia mortality, as reported from 108 United States cities, reveals that mortality due to these causes is again below the epidemic threshold, thus ending an unexpectedly high epidemic wave that extended over the preceding 13 weeks. As will be shown in Section III, the amount of excess mortality during the Winter 1959-60, epidemic was greater than in either of the waves of excess mortality associated with the 1957-58 Asian pandemic although the combined total of excess mortality of the two waves exceeded the excess mortality during the past Winter.

A summary of data relating to the laboratory characterization of strains of influenza virus received at the WHO International Influenza Center for the Americas has been prepared by Dr. Roslyn Q. Robinson, Virus and Rickettsia Section, CDC, Montgomery, Alabama, and is included in this issue.

During the first three months of 1960, epidemic influenza was reported from widespread areas of Europe and Scandinavia, as well as the Far East. Type A₂ influenza virus has been identified in association with many of these outbreaks.

This will be the last Influenza Surveillance Report of the current series. Although the surveillance of acute respiratory diseases will continue as a routine function of CDC, no further such reports will be issued, barring unusual developments, until the Fall of 1960.

The Surveillance Section wishes to take this opportunity to thank all those who contributed so effectively to the surveillance of influenza during the recent outbreak, and in making the influenza surveillance program operative in assessing the trends of epidemic influenza within the United States.

II. Review of Influenza in the United States, Winter 1960

No further reports of epidemic influenza have come to the attention of the Surveillance Section, CDC, since approximately mid-March. It is likely that the peak of national morbidity due to the disease was reached in late January or early February, with a gradual decline since that time.

A summary of States in which clinical influenza and/or isolations of influenza virus have been reported this season follows:

<u>Area</u>	<u>State</u>	<u>Reported Outbreak</u>	<u>Virus Isolation</u>
<u>New England</u>			
	Connecticut	x	A ₂
	Maine	-	A ₂ (serologic confirmation)
	Massachusetts	x	A ₂
	New Hampshire	-	A ₂ (serologic confirmation)
	Rhode Island	x	A ₂
	Vermont	x	A ₂
<u>Middle Atlantic</u>			
	New Jersey	x	A ₂
	New York	x	A ₂
	Pennsylvania	x	A ₂
<u>South Atlantic</u>			
	D. C.	x	A ₂
	Florida	x	A ₂
	Georgia	x	A ₂
	Maryland	x	A ₂
	North Carolina	x	A ₂
	South Carolina	x	A (serologic confirmation)
	Virginia	x	A ₂
	West Virginia	x	-
<u>East North Central</u>			
	Illinois	x	A ₂ & B
	Michigan	x	A ₂
	Ohio	x	A ₂
	Wisconsin	x	A (serologic confirmation)
<u>East South Central</u>			
	Alabama	x	A ₂
	Kentucky	x	A ₂
	Mississippi	x	A ₂
	Tennessee	x	A ₂

<u>Area</u>	<u>State</u>	<u>Reported Outbreak</u>	<u>Virus Isolation</u>
<u>West North Central</u>			
	Iowa	x	A ₂
	Kansas	x	A ₂
	Minnesota	x	A ₂
	Missouri	x	A ₂ & A ₁
	Nebraska	x	A ₂
	North Dakota	x	A ² (serologic confirmation)
<u>West South Central</u>			
	Arkansas	x	A ₂
	Louisiana	x	A ₂ & B
	Oklahoma	x	A ₂
	Texas	x	A ₂ (A ₁ Lab. Inf.)
<u>Mountain</u>			
	Arizona	x	-
	Colorado	x	A ₂
	Idaho	x	A ₂ & A ₁ (? Lab. Infection)
	Montana	x	A ₂
	Nevada	x	-
	New Mexico	x	A (serologic confirmation)
	Utah	x	A ₂
	Wyoming	x	A ₂
<u>Pacific</u>			
	California	x	A ₂
	Washington	x	A ₂
	Alaska	x	-
	Hawaii	x	A ₂
		<hr/>	
		45 States	A ₁ - 3 States (1 lab. inf.)
			A ₂ - 37 States
			A (Serologic Conf.) - 6 States
			B - 2 States

An increased amount of febrile respiratory disease, or discrete outbreaks of clinical influenza were reported from a total of 45 States. Type A₂ influenza virus was isolated in a total of 37 States including the District of Columbia, serologic confirmation of influenza A infection was reported from 6 additional States. Influenza virus, type B, was isolated from sporadic cases in 2 States, Louisiana and Illinois.

Other type A influenza viruses were isolated from sporadic cases in a total of three States, Texas, Montana, and Missouri. In the laboratory of the Texas State Department of Health, Austin, a virus similar or identical to A₁/Denver/1/57 was isolated from a laboratory worker with clinical influenza. That A₁ strain was in use in the laboratory at that time in the preparation of antigen; and it was felt that this represented a laboratory-acquired infection. At the Rocky Mountain Laboratory of the United States Public Health Service, Hamilton, Montana, a virus similar or identical to A/PR8/34 was isolated from 3 throat washings of patients with clinical influenza. The A/PR8/34 strain was similarly being used in the laboratory for the preparation of antigen, and it was felt that these 3 isolations represented laboratory contamination. A report from the laboratory of the Missouri Department of Public Health and Welfare, Jefferson City, indicated the isolation of virus of type A₁/Denver/1/57 from 2 patients. Samples of these strains, together with throat washings and paired sera from the patients have been forwarded to Dr. R. Q. Robinson, WHO International Influenza Center for the Americas, for further study.

It is apparent that, as had been expected, type A₂ influenza virus was the etiologic agent in the vast majority of epidemic influenza that occurred in the United States during the winter months of 1960.

III. Current Analysis of Influenza and Pneumonia Mortality

The number of reported influenza and pneumonia deaths for 108 cities in the United States for the week ending April 2 has returned to seasonal expectancy after a thirteen week elevation. Mortality reported for the week ending April 9 is well below the epidemic threshold for the United States as a whole. The increase noted during the first 3 months of 1960 exceeded the number of deaths reported for the 108 cities during either of the waves of mortality recorded during the Asian influenza pandemic of 1957-58.

The normal number of deaths during the autumn months of 1959 gave no warning of the sudden upward surge in the intensity of this respiratory disease outbreak. The first indication of excess influenza and pneumonia mortality was noted during the week ending January 9, when reported deaths exceeded the epidemic threshold for the United States as a whole, and particularly in the East North Central, West South Central, and South Atlantic regions. One week later the beginning of what became a sharp peak in reported mortality was noted in the Pacific region. Within a period of three weeks, every region except the Middle Atlantic had exceeded its epidemic threshold. The national peak of influenza and pneumonia mortality occurred during the weeks ending February 13 and 20, with a steady decline thereafter.

The rapidity with which influenza appeared and spread over the nation made any attempt to define epidemiologic pathways on a community scale impossible. It seems likely that the virus was well seeded throughout the nation, and that the origins of the epidemic were multiple.

Tables 1 and 2 have been extended in this summary report to provide figures on expected and observed number of deaths for the entire epidemic wave, as well as to allow comparisons with previous epidemic and interepidemic years.

Table 3 facilitates a crude comparison of total influenza and pneumonia deaths in 108 United States cities for the past 3 years. The total number of influenza and pneumonia deaths for the United States (108 cities) as well as for each geographic division for 3-month periods, October through December, and January through March, are listed horizontally, comparable time periods for the past three years being listed vertically.

In the examination of this table, it should be recalled that the two waves of mortality due to the Asian influenza pandemic occurred in the fall and winter months, respectively, of 1957-58. The period 1958-59 may be thought of as essentially an interepidemic period; for although some influenza B occurred during that time, most of the excess mortality that was recorded was in April and early May, 1959. The recent mortality due to the A₂ (Asian) epidemic is found in the winter, 1959-60 period.

In 1958-59, an interepidemic period, it can be seen that moderate increases in total mortality occurred in Winter as compared to the preceding Fall. This is a normal phenomenon, and may be seen in the trend lines in Figure 1. The average overall increase in mortality from Fall to Winter in 1958-59 was 36 percent, with a range from 14 percent in the Pacific region to 52 percent in New England. In 1957-58, although absolute levels are much higher, the increase noted from Fall to Winter was significantly less, being only 8 percent for all 108 cities. In 1959-60, this Fall to Winter increase was 100 percent. The two regions showing the sharpest increase were the West South Central, 165 percent, and New England, 162 percent. This reflects the precipitous climb in influenza-pneumonia deaths in January, February, and March following a normal October, November, and December.

It is of interest to note the relative severity of the epidemics in specific areas by comparing the reported mortality for a given time period in successive years, as seen in the vertical columns in Table 3. For example, mortality during the recent Winter 1959-60 exceeded the mortality recorded during the Winter 1957-58 in all but two divisions (ESC and MA); and in every area exceeded that recorded during the Fall, 1957-58. This is most striking in the Pacific region, which also may be seen to have had relatively little excess mortality in 1957-58.

Estimates of the total pneumonia and influenza excess deaths for the United States, computed from figures reported by the 108 urban areas, and using comparable figures for the fall-winter months since 1954 (excluding 1957-1958 epidemic months) as a basis for comparison, are as follows:

	Oct.-Nov.-Dec.		Jan.-Feb.-Mar.
1957	12,000	1958	10,000
1958	-	1959	1,400
1959	-	1960	13,000

On the basis of complete returns of death certificates for the entire United States, and using comparable 1956-57 as the basis for the computation of excess pneumonia-influenza deaths, the excess for Oct.-Dec. 1957 was 12,823, and for Jan.-Mar. 1958, the figure was 7,044. (Source: Table B-1, presentation by Dr. C. C. Dauer, International Conference on Asian Influenza, National Institutes of Health, Bethesda, Maryland, February 17-19, 1960.)

Table 1. Pneumonia and Influenza Deaths, 108 Cities
1959-60 Compared with Previous Years*

Week Ending 1959-60	1959-60		Deaths in Corresponding Week*** of Previous Years	
	"Expected" Deaths**	Observed Deaths	1958-59	1957-58
Jan. 2	487.6	499	516	532
9	496.1	625	591	633
16	503.5	667	564	651
23	509.6	756	546	675
30	514.5	886	494	750
Feb. 6	518.1	961	463	717
13	520.2	997	447	705
20	520.9	997	493	764
27	520.3	917	481	847
March 5	518.2	860	496	814
12	514.7	765	516	642
19	509.9	692	511	602
26	503.9	676	497	518
April 2	496.8	561	585	494
14 week total	7134.3	10,859	7200	9344

Excess observed over expected, 1959-60:

3,724.7 in 108 urban areas, population (1950 census) 45,000,000.

* Prepared by the Statistics Section, CDC

** Trend line values of Figure 1.

*** Nearest calendar date

Table 2. Influenza and Pneumonia Deaths, Winter, 1960, in 108 United States Cities by Geographic Divisions*

Division	Deaths (including estimates**) during Weeks Ending:													
	1/2	1/9	1/16	1/23	1/30	2/6	2/13	2/20	2/27	3/5	3/12	3/19	3/26	4/2
U. S.	499	625	662	756	886	961	997	997	917	860	765	692	676	561
NE	47	49	41	41	78	104	119	102	86	84	74	68	38	42
MA	128	164	153	188	184	169	182	191	209	186	192	187	204	186
ENC	126	140	154	166	193	200	176	202	169	162	134	116	132	118
WNC	23	34	35	41	44	59	67	111	90	70	65	65	37	36
SA	42	54	47	41	62	83	117	108	82	65	80	51	46	24
ESC	23	47	39	51	28	43	49	44	63	65	53	41	55	44
WSC	45	69	73	83	88	126	144	119	117	127	89	79	77	52
MT	13	19	27	22	24	44	41	40	42	29	35	23	23	19
PAC	52	49	93	123	185	133	102	80	59	72	43	62	64	40

* Prepared by the Statistics Section, CDC.

** The number of deaths includes estimates for cities not reporting in a given week. The table is corrected for preceding weeks after receipt of late reports.

Table 3. Influenza and Pneumonia Deaths in Three Years
108 Cities

U. S.

	<u>Fall*</u>	<u>Winter*</u>
1957-58	8135	8845
1958-59	4847	6615
1959-60	5175	10355

	<u>WNC</u>		<u>ENC</u>		<u>NE</u>	
	<u>Fall</u>	<u>Winter</u>	<u>Fall</u>	<u>Winter</u>	<u>Fall</u>	<u>Winter</u>
1957-58	644	661	1611	1717	588	637
1958-59	352	478	920	1241	367	557
1959-60	362	754	1152	2062	353	926

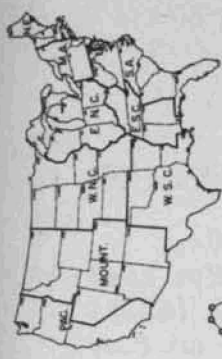
	<u>Mount.</u>		<u>ESC</u>		<u>MA</u>	
	<u>Fall</u>	<u>Winter</u>	<u>Fall</u>	<u>Winter</u>	<u>Fall</u>	<u>Winter</u>
1957-58	252	207	452	625	2392	2557
1958-59	166	204	312	402	1369	1934
1959-60	181	388	350	622	1429	2395

	<u>Pac.</u>		<u>WSC</u>		<u>SA</u>	
	<u>Fall</u>	<u>Winter</u>	<u>Fall</u>	<u>Winter</u>	<u>Fall</u>	<u>Winter</u>
1957-58	674	660	792	1045	730	736
1958-59	486	556	478	707	397	536
1959-60	491	1105	472	1243	385	860

* Fall - October through December

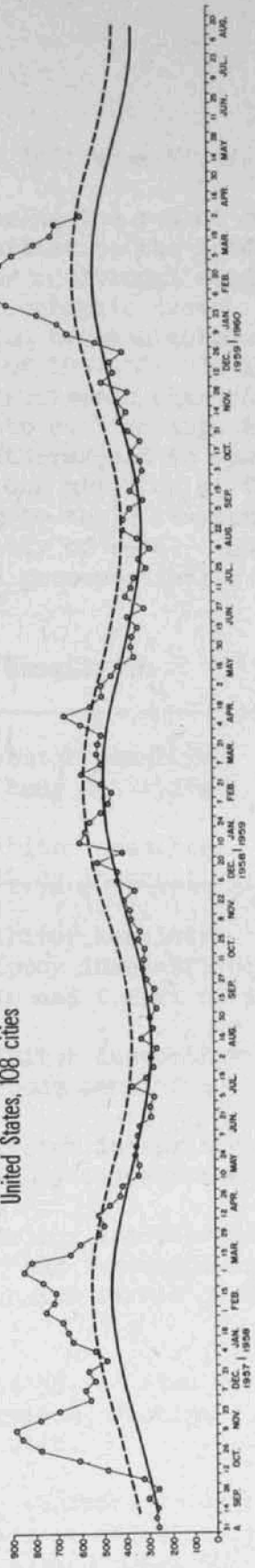
Winter - January through March

FIG. 1 WEEKLY PNEUMONIA AND INFLUENZA DEATHS

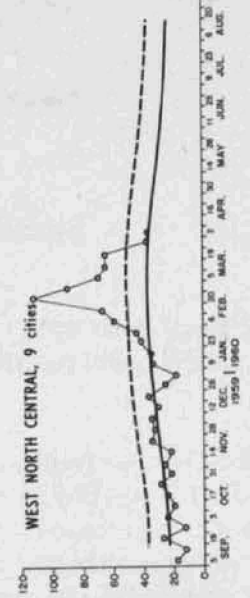


--- EPIDEMIC THRESHOLD
 — NORMAL INCIDENCE

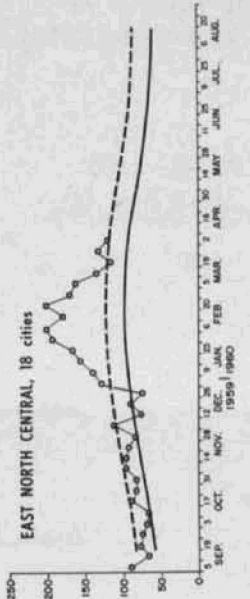
United States, 108 cities



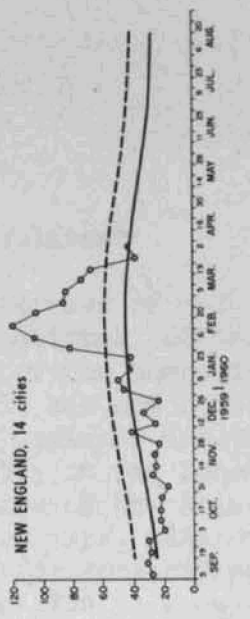
WEST NORTH CENTRAL, 9 cities



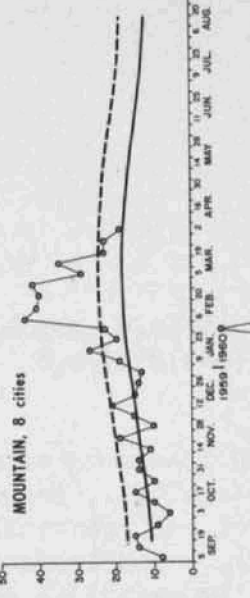
EAST NORTH CENTRAL, 18 cities



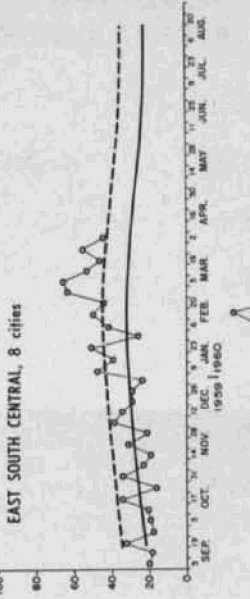
NEW ENGLAND, 14 cities



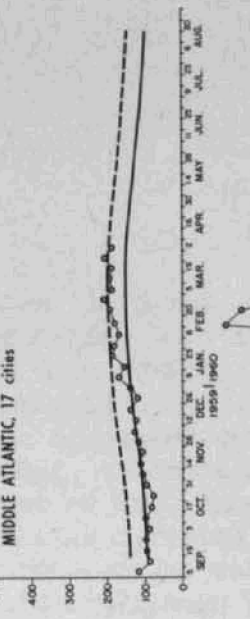
MOUNTAIN, 8 cities



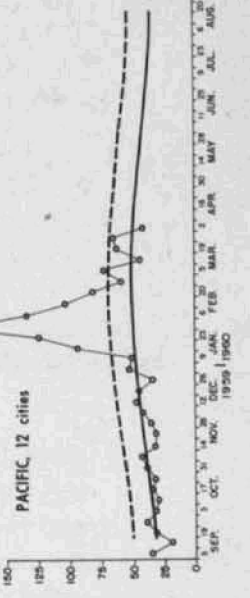
EAST SOUTH CENTRAL, 8 cities



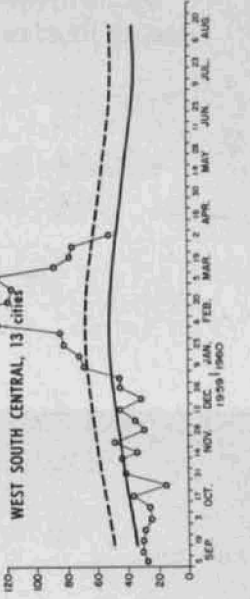
MIDDLE ATLANTIC, 17 cities



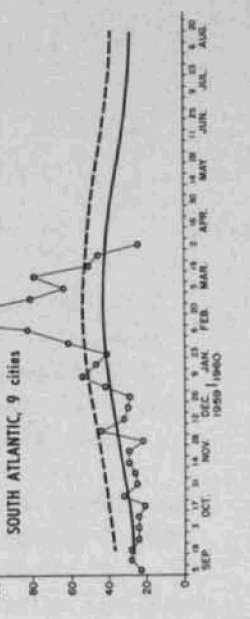
PACIFIC, 12 cities



WEST SOUTH CENTRAL, 13 cities



SOUTH ATLANTIC, 9 cities



NUMBER OF DEATHS

IV. 1960 Influenza Virus Isolates*

During the recent outbreaks of influenza, 35 Asian strains have been submitted to the International Influenza Center for the Americas (IICA) for additional study or for comparison with strains isolated in various geographic areas. It has not been possible to make an antigenic distinction between current isolates and those recovered during the pandemic of 1957-58. In 1957, it was found that, in addition to the distinct antigenic composition of the Asian set of influenza viruses as compared to earlier type A strains, Asian isolates differed among themselves with respect to specific antibody and nonspecific inhibitors. It has been the practice at the IICA to group Asian influenza virus isolates according to their sensitivity to antibody and nonspecific inhibitors in a variety of sera. The distribution of current isolates within these groups is presented below.

Category	Reactivity	No. of Strains (1960)	No. of Strains (1958)
I.	Inhibitor sensitive Antibody sensitive	32	114
II.	Inhibitor sensitive Antibody insensitive; human	0	5
III.	Inhibitor sensitive Antibody insensitive; human and ferret or chicken	0	0
IV.	Inhibitor insensitive Antibody sensitive	0	17
V.	Inhibitor insensitive Antibody insensitive; human	1	45
VI.	Inhibitor insensitive Antibody insensitive; human and ferret or chicken	1	7

The 35 isolates were obtained from Alabama, Florida, Illinois, Iowa, Maryland, Michigan, Minnesota, Montana, New York, North Carolina, Ohio and Utah.

In addition to Asian strains, 5 isolates have been studied which are similar or identical to A/PR8/34 (3 isolates), A₁/Denver/1/57 (1 isolate) and B/Lee/40 (1 isolate). In all cases, the investigator concerned has indicated the possibility of contamination since the strains were in use in the laboratory at the time the isolation was made.

It would appear that virus strains responsible for cases of influenza during 1960 clearly belong to the Asian set of strains.

* Prepared by Roslyn Q. Robinson, Ph. D., Acting Chief, Respiratory Disease Unit, Virus and Rickettsia Section, Communicable Disease Center.

V. International Notes

According to the WHO Weekly Epidemiologic Record, Nos. 5-13, 1960, epidemic influenza has been reported and confirmed in many areas of the Northern Hemisphere, but particularly in Europe.

The Federal Republic of Germany experienced widespread outbreaks of respiratory disease during February and early March. In certain cities attack rates for influenza-like diseases were reported to be 50 percent. Serologic evidence, as well as virus isolation, has indicated that type A₂ influenza virus was the etiologic agent.

Scattered outbreaks have been reported from the Netherlands, with isolation of A₂ influenza virus from patients as well as several fatalities. Morbidity was said to be far below that recorded in 1957.

Epidemic influenza was also reported from Switzerland, with a peak in mid-February. No virus isolation was reported.

An outbreak was reported from Hungary, which in Budapest reached its peak in mid-February, associated with moderate absenteeism in both schools and factories. Two A₂ influenza viruses were isolated.

Widespread outbreaks were similarly reported from both Italy and France, subsiding during late February and early March. Type A₂ virus has been reported from both countries.

Denmark, Sweden, and Finland have each reported epidemics of acute respiratory disease during the first 3 months of 1960. In Denmark and Sweden, A₂ influenza virus was the agent associated with most of the outbreaks. In Finland, however, serologic evidence indicated that an influenza B virus was responsible for much of the morbidity. During the month of March, however, a number of limited outbreaks were identified by virus isolation as being due to A₂ influenza virus. In addition, scattered cases of type B influenza were reported in Sweden, near the Finnish border.

The Ministry of Health, London, reported in the Weekly Influenza Statement - 1960, No. 10, for the week ending March 26th, that sporadic cases with serologic evidence of recent infection with influenza viruses were reported by laboratories. The virus type was not specified. It should be pointed out that widespread outbreaks of influenza, both A and B, occurred in Great Britain last winter and spring.

In Canada, outbreaks of influenza-like diseases were reported in January and February from Manitoba, Newfoundland, British Columbia, the Northwest Territories, and the Province of Quebec, generally in schools or camps. The etiology of most of these outbreaks has not been reported, although as noted in CDC Influenza Surveillance Report No. 56, February 26, 1960, adenoviruses were felt to be responsible for much of the respiratory disease that occurred in Manitoba during December and January.

A communication from Dr. Shinichi Matsuda, Institute of Public Health, Tokyo, Japan, indicated that during February and early March, a number of outbreaks of influenza occurred in the metropolitan Tokyo and Osaka areas, associated with moderate school absenteeism and a few school closures. Influenza virus, type A₂, was isolated from a number of these cases.

(This report was prepared by Theodore C. Eickhoff, M.D., Epidemic Intelligence Service Officer, Surveillance Section, Communicable Disease Center.)