

POLIOMYELITIS SURVEILLANCE REPORT
NO. 125 SEPTEMBER 6, 1957

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SPECIAL NOTE

Information presented in this report represents a factual summary of preliminary data regarding poliomyelitis and polio-like diseases reported to CDC from State Health Departments, participating diagnostic and reference laboratories, Epidemic Intelligence Service Officers, National Office of Vital Statistics, and other pertinent sources. It is to be emphasized that these reports contain provisional data intended for the information and administrative use of physicians involved in investigation and control of poliomyelitis and polio-like diseases. Anyone desiring to quote this information is urged to contact the person or persons responsible for the items reported in order that the exact interpretation of the report and the current status of the investigation be obtained.

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SUMMARY

1. A decrease of 30 percent in national poliomyelitis incidence was recorded during the past week, possibly related to delayed reporting over Labor Day weekend. The total of 276 cases for the week ending August 31 followed 396 cases reported for the week ending August 24. A total of 445 paralytic cases was reported during the past six weeks; during the comparable period of 1956, the total was 2035.

2. In a review of additional data concerning the 1950-1956 incidence of paralytic poliomyelitis and the vaccination program in Canada, a shift in the age distribution to the 0-4 age group was noted.

3. Great Britain is experiencing a continuing high poliomyelitis incidence.

I. POLIOMYELITIS

A. Current Poliomyelitis Morbidity Trends

There was a decided decrease in the recorded national incidence of poliomyelitis during the past week. The National Office of Vital Statistics received reports of 276 cases for the week ending August 31, following 396 for the previous week. It is of interest, however, that a transient decrease in incidence occurred at approximately the 34th to 36th week during 7 of the 12 years from 1945 through 1956, including '56, '54, '53 and '52, shown in Figure 1. This dip in part may be artifactual, due to delayed reporting over Labor Day weekends.

The total of 276 cases for the 35th week of the year is the lowest incidence for the comparable week of any year since 1942, when 195 cases were reported. This year's cumulative total of 3910 cases may be compared with 8940 for 1956 and 3785 for 1947. Figure 1 shows the U.S. incidence by weeks for 1947 and 1952 through 1957.

Paralytic polio incidence decreased from 95 cases for the week ending August 24 to 77 cases for the week ending August 31. Although the paralytic incidence represented a decrease over the previous week, there was a slight increase in the proportion of total cases reported as paralytic. Table 1 presents the reported incidence for the past six weeks by state and region, and of paralytic cases by region, with six-week totals for the comparable periods of the previous four years.

Incidence decreased in each region during the 35th week. The highest regional incidence was in the North Central section, concentrated in Ohio, Illinois, Michigan and Wisconsin. However, of 143 cases in the North Central region, only 22 were reported as paralytic, with 77 non-paralytic and 44 unspecified.

B. Poliomyelitis Incidence in Canada

Dr. E. H. Lossing, Chief, Epidemiology Division, Department of National Health and Welfare, Canada, has prepared two reports* on paralytic poliomyelitis and the vaccination program in Canada. In PSU Report No. 122 preliminary data** from only six provinces were presented. Dr. Lossing reviewed data from eight provinces, including a more detailed age distribution analysis.

The Canadian poliomyelitis immunization program began in April, 1955. In pre-vaccine years the highest paralytic attack rates were experienced by the 5-9 year age group; therefore this group was given vaccine priority. By the beginning of the 1956 polio season, 1,800,000 children had been vaccinated, 90% of whom had received two or more doses.

There has been a wide range of paralytic polio attack rates in Canada during the past eight years, from a low of 2.1 per 100,000 in 1950 to a peak of 26.7 per 100,000 in 1953. By 1955 the rate had dropped to 3.5, and in 1956 it was 2.3. The low paralytic incidence in 1955 and 1956 cannot be attributed to vaccine. However, if it can be assumed that a reduction in incidence in the past two years would have been expected at all ages, it is interesting to note the possible effect of vaccine upon the age distribution of the disease.

Prior to the vaccination program, paralytic attack rates were highest in the 5-9 year age group (Table 2). In the vaccine years 1955 and 1956 the highest rates were experienced by the 0-4 year age group. Dr. Lossing indicates ". . . it would seem reasonable to infer that the relative deficiency in paralytic cases which has been demonstrated in the vaccinated ages is the reflection of the protective effect of the vaccine program. In doing this, however, the possible 'natural' immunizing effect of the epidemic year 1953 should not be overlooked. It will be of very considerable interest to follow the incidence of paralytic poliomyelitis over the next few years with the expectation that further changes in the age distribution pattern will parallel the progressive development of vaccination programs."

An estimated four million Canadian children will have been vaccinated by the beginning of the 1958 polio season. However, after analyzing paralytic incidence and case fatality rates, Dr. Lossing emphasized the need for vaccination of all persons age three months through 40 years.

Poliomyelitis incidence during 1957 in Canada totaled 123 notifications through August 17, 1957, in comparison with 192 notifications for the same time period in 1956. Of the 123 cases, 72 were reported as paralytic and 44 as nonparalytic.

- * 1) Paralytic Poliomyelitis Patterns as a Guide to Vaccination.
- 2) Vaccination and the Decline in Paralytic Poliomyelitis.

** Poliomyelitis Trends, 1956, prepared by the Health and Welfare Division, Dominion Bureau of Statistics.

C. Current Poliomyelitis Incidence in Great Britain

The incidence of poliomyelitis in Great Britain increased by 68 cases during the 32nd week of the year. The British Ministry of Health received 183 paralytic and 145 nonparalytic notifications for the week ending August 10. The total of 328 cases may be compared with 260 for the 31st week. Uncorrected polio notifications through the 32nd week totaled 2694 compared with 1620 at this time last year.

D. Routine Poliomyelitis Surveillance

1. Polio cases occurring within 30 days of a polio vaccine inoculation - During the week ending September 4, PSU received reports of ten poliomyelitis cases occurring within 30 days of a polio vaccine inoculation; all of these cases were nonparalytic.

2. Triply-Vaccinated cases - During the week ending August 28, a total of 22 nonparalytic triply-vaccinated poliomyelitis cases was reported to PSU. Included is a California case previously reported as paralytic (see PSU Report No. 120). Further data concerning this two year old white male indicates that paresis demonstrated in the right leg during hospitalization was transient, with "no residual on hospital discharge" two weeks after onset. Third inoculation of polio vaccine had been given (site unknown) during the month preceding onset.

PSU has now received reports of 41 paralytic and 219 nonparalytic poliomyelitis cases occurring in triply-vaccinated individuals during 1957.

3. Vaccine Distribution - A summary of current and cumulative data on vaccine releases, shipments and inventory appears in Table 3. Excluding export, four million cc's were shipped the first three weeks of August. Over nine million cc's were released during the week ending August 23 and almost two million during the week ending August 30.

II. ASEPTIC MENINGITIS

PROGRESS REPORTS

1. North Carolina

No additional cases of aseptic meningitis have been hospitalized in Durham. A large number of specimens from hospitalized cases and family contacts are being processed by Dr. Edward Curnen, Professor of Pediatrics, University of North Carolina Medical School. From some of these, Cocksackie B-5 has been isolated (see PSU Report No. 123).

A community-wide household survey is being directed by Dr. J. Koomen, North Carolina State Health Department, Dr. P. Glezen, EIS Officer, and Dr. B. Wells, Biostatistician, University of North Carolina, in order to determine (a) the extent to which unreported illnesses possibly related to

the present outbreak occurred in the community, and (b) possible factors affecting the racial distribution of the 80 hospitalized cases, since only six of these occurred in the 40 percent of the city's population which is Negro. For the community survey, a random sample of 27 of the city's 1100 blocks has been chosen. The sample includes 13 of the 14 census tracts and comprises over 400 dwelling units.

2. Minnesota (Reported by Dr. D.S. Fleming, Director, Division of Disease Prevention & Control, Minnesota State Health Department; see PCU Report No. 122)

During the past two months sporadic cases of an aseptic meningitis have been reported throughout the state of Minnesota. The following is a verbatim report submitted by Dr. Fleming summarizing the epidemiological and laboratory features of these cases.

"Incidence and distribution. From July 1 to August 28 the Minnesota Department of Health has accumulated a total of 380 cases which fall into the general category of aseptic meningitis, some with rash and some without. These cases have come to attention as a report of suspect non-paralytic poliomyelitis, suspect encephalitis, or aseptic meningitis. Some cases have been gleaned from requests by physicians for "virus disease" laboratory studies on specimens submitted. Telephone query in this latter group established the fact that the cases in question were of the same general character as all the others. In general, physicians have been certain that the disease they were describing was not an example of Asian influenza.

". . . The incidence week by week since July 1, 1957 by dates of onset" is shown below. "It appears that the peak incidence occurred during the week ending August 10. The figures for the last two weeks are, of course, necessarily incomplete because of lag in reporting.

Incidence of Aseptic Meningitis, Minnesota 1957 (by date of onset)

Week ending	Cases
July 6	3
" 13	8
" 20	28
" 27	56
Aug 3	98
" 10	117
" 17	60
" 24	10
" 31	incomplete
<hr/> Total	380

"Contacts with physicians throughout the state indicate that not only are many cases not being reported but that secondary attack rates in families are in some instances quite high. The figures presented above, therefore, may be considered to be substantially below the actual incidence. .

"...The distribution of cases by age and sex both by absolute number and by rates per 100,000 is listed below.

Incidence of Aseptic Meningitis, Minnesota 1957
(by age and sex)

<u>Age</u>	<u>Male</u>	<u>Female</u>	<u>Total</u>	<u>Rate per 100,000</u>
under 5	18	11	29	7.8
5 - 9	39	21	60	20.9
10 - 14	45	19	64	25.1
15 - 19	31	20	51	22.8
20 - 29	40	47	87	19.3
30 - 39	36	28	64	14.6
40 and Over	10	10	20	1.7
Unknown	3	2	5	
Total	222	158	380	11.9

"The table above shows that males are more commonly attacked than females except in the age group 20 to 29. This is reminiscent of the sex shift in poliomyelitis at about the same age level. Males account for 58.4 per cent of the cases. The highest attack rate occurs in the 10-14 year age group and in general, it can be said that the incidence is lowest in the very young and in older adults and highest in older children and young adults.

"Virus isolations. Up to now, the laboratories of the Minnesota Department of Health have isolated virus from specimens submitted as indicated below:

- Polio virus Type I from one case reported as paralytic poliomyelitis.
- Polio virus Type III from one case reported as nonparalytic poliomyelitis.
- Polio virus, mixed types, from one case reported as aseptic meningitis.
- Polio virus, mixed types, from one case reported as suspect nonparalytic poliomyelitis.
- Polio virus probably and Coxsackie B5 from one case reported as nonparalytic poliomyelitis.
- Coxsackie B5 virus from 4 cases reported as suspect nonparalytic poliomyelitis.
- Cytopathogenic agents, unidentified, from one case reported as pleurodynia, one case reported as nonparalytic poliomyelitis, and one case reported as suspect nonparalytic poliomyelitis.
- ECHO 9 virus from 3 cases reported as suspect nonparalytic poliomyelitis. Of these, one had an abdominal rash, one a questionable rash, and one had no rash.

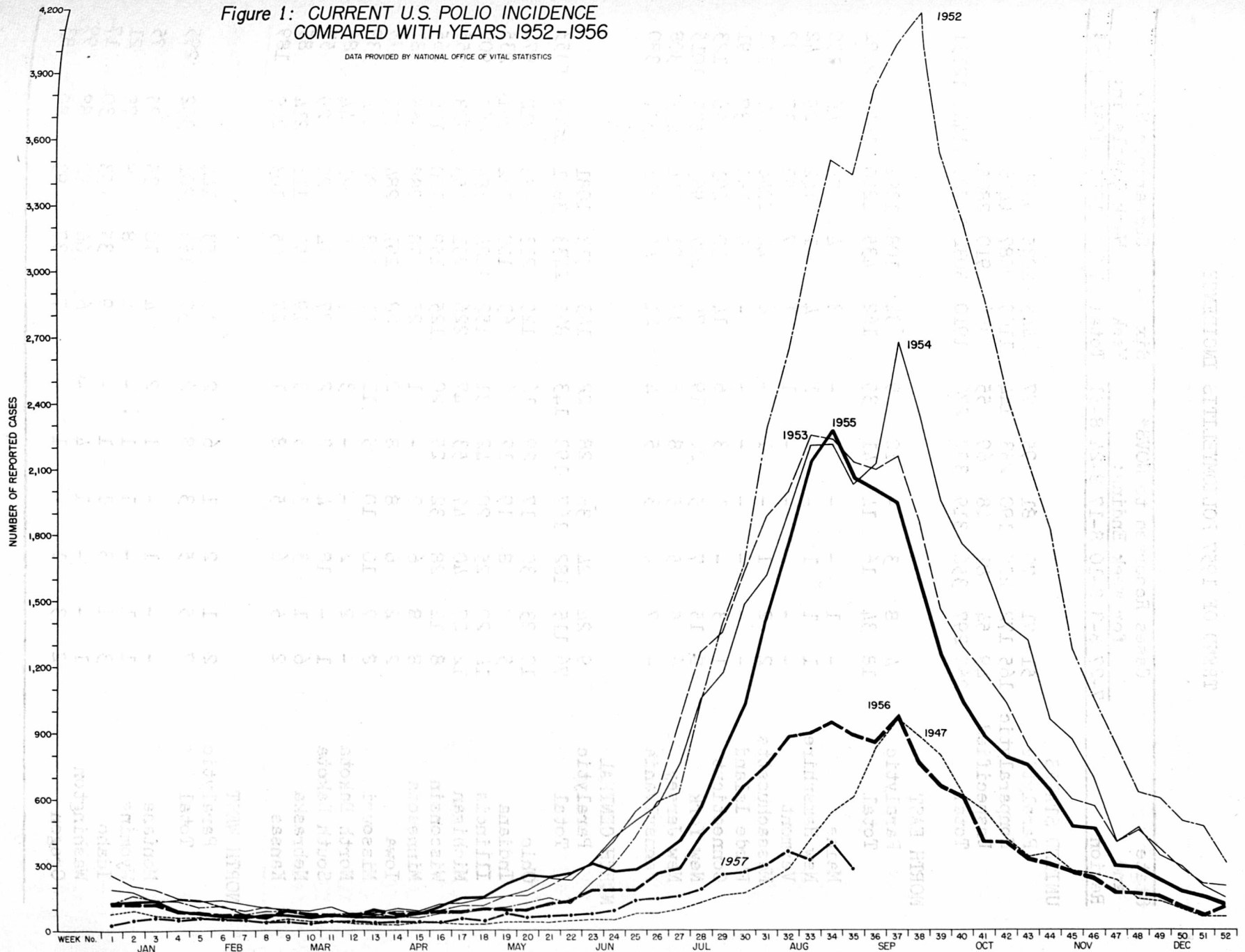
The cytopathogenic agents alluded to above are most likely not ECHO viruses inasmuch as the isolations were effected on HeLa Cells.

"In addition, the laboratories of the Department of Bacteriology and Immunology of the University of Minnesota report the isolation of ECHO 9 virus from a separate group of patients with the same aseptic meningitis-rash syndrome.

"It would appear then that more than one virus is implicated in the Minnesota outbreak. Which particular virus will turn out to be the predominant one will only be settled by further laboratory work. However, the similarity of this disease to ECHO 9 outbreaks elsewhere in this country, in Canada, and in Europe make it likely that the ECHO 9 virus will ultimately be found responsible for most of the cases."

Figure 1: CURRENT U.S. POLIO INCIDENCE COMPARED WITH YEARS 1952-1956

DATA PROVIDED BY NATIONAL OFFICE OF VITAL STATISTICS



UNITED STATES DEPARTMENT OF HEALTH

FIGURE 1

Table 1

TREND OF 1957 POLIOMYELITIS INCIDENCE

State and Region	Cases Reported to NOVS* for Week Ending:						Six Week Total	Comparable Six Week Totals in:			
	7-27	8-3	8-10	8-17	8-24	8-31		1956	1955	1954	1953
UNITED STATES											
Paralytic	51	71	70	81	95	77	445	2035	3494		
Nonparalytic	165	172	205	190	233	144	1109	2087	4406		
Unspecified	49	54	81	48	69	55	356	910	2805		
Total	265	297	356	319	397	276	1910	5032	10705	11447	12131
NORTH EAST											
Paralytic	4	8	3	-	10	9	34	108	1392		
Total	18	34	16	14	41	39	162	435	4240	1648	2292
Maine	-	1	-	-	2	-	3	4	74	46	130
New Hampshire	1	1	1	-	-	1	4	1	142	29	42
Vermont	-	-	-	-	-	1	1	7	52	17	32
Massachusetts	2	2	1	-	1	-	6	44	2044	282	171
Rhode Island	-	-	-	-	-	-	-	6	159	37	91
Connecticut	1	3	-	1	3	6	14	30	291	96	123
New York	8	15	7	5	22	19	76	227	963	537	1015
New Jersey	6	5	5	5	8	8	37	71	244	233	308
Pennsylvania	-	7	2	3	5	4	21	45	271	371	380
NORTH CENTRAL											
Paralytic	9	24	24	36	28	22	143	913	1081		
Total	76	115	182	167	192	143	875	2433	3821	4008	5353
Ohio	10	23	30	17	29	16	125	213	476	712	974
Indiana	5	8	8	19	17	6	63	160	172	251	235
Illinois	14	20	25	20	42	31	152	1024	584	660	908
Michigan	12	27	40	47	53	47	226	231	553	723	955
Wisconsin	8	12	28	32	25	20	125	159	1120	176	265
Minnesota	8	8	6	2	-	1	25	78	288	265	981
Iowa	2	2	6	8	8	2	28	291	284	521	279
Missouri	8	7	10	10	5	11	51	143	80	204	339
North Dakota	-	2	2	-	-	3	7	5	21	44	86
South Dakota	1	-	18	4	2	2	27	14	29	29	57
Nebraska	6	1	3	3	3	3	19	50	111	214	85
Kansas	2	5	6	5	8	1	27	65	103	209	189
NORTH WEST											
Paralytic	2	1	2	1	6	2	13	53	144		
Total	7	5	5	3	8	2	30	156	281	302	295
Montana	-	-	1	-	1	2	4	10	35	25	75
Wyoming	1	1	-	1	1	-	4	8	8	79	21
Idaho	3	1	3	1	1	-	9	35	53	30	17
Washington	1	-	-	1	4	-	6	66	92	88	99
Oregon	2	3	1	-	1	-	7	37	93	80	83

* National Office of Vital Statistics.

(CONTINUED ON NEXT PAGE)

Table 1 (Continued)

State and Region	Cases Reported to NOVS* for Week Ending:						Six Week Total	Comparable Six Week Totals in:			
	7-27	8-3	8-10	8-17	8-24	8-31		1956	1955	1954	1953
SOUTH EAST											
Paralytic	18	21	19	20	32	19	129	261	370		
Total	62	59	66	59	61	36	343	613	1068	2027	1863
Delaware	-	-	2	-	-	-	2	6	22	19	12
Maryland	1	1	1	-	2	-	5	21	98	58	208
D. C.	1	6	1	7	7	6	28	3	14	32	26
Virginia	2	7	4	2	11	3	29	89	131	207	302
West Virginia	-	3	1	2	1	2	9	39	57	97	211
North Carolina	31	21	25	22	12	6	117	122	189	321	322
South Carolina	9	3	6	4	1	1	24	36	107	104	58
Georgia	-	3	4	6	7	2	22	78	63	259	119
Florida	7	3	8	-	5	1	24	76	80	335	130
Kentucky	6	7	6	7	7	7	40	57	184	277	123
Tennessee	3	3	6	7	6	8	33	51	73	212	247
Alabama	2	2	2	2	2	-	10	35	50	106	105
SOUTH CENTRAL											
Paralytic	11	10	12	12	11	15	71	396	289		
Total	68	44	43	40	51	32	278	712	764	1571	917
Mississippi	10	7	3	5	4	1	30	83	46	180	95
Arkansas	5	1	4	3	2	1	16	83	69	95	102
Louisiana	6	4	9	6	6	12	43	187	70	141	108
Oklahoma	9	9	7	5	9	2	41	80	94	190	176
Texas	38	23	20	21	30	16	148	279	485	965	436
SOUTH WEST											
Paralytic	7	7	10	12	8	10	54	304	218		
Total	34	40	44	36	44	24	222	681	547	1891	1411
Colorado	1	2	3	-	2	1	9	50	75	136	70
New Mexico	1	4	5	6	-	1	17	25	41	66	31
Arizona	2	1	3	2	1	1	10	29	31	59	201
Utah	2	-	-	-	-	1	3	90	11	59	67
Nevada	-	-	-	-	-	-	-	9	9	51	12
California	28	33	33	28	41	20	183	478	380	1520	1030
TERRITORIES											
	-	6	3	4	1	-	14	13	47		
Alaska	-	-	-	-	-	-	-	4	26	104	5
Hawaii	-	-	-	-	-	-	-	6	30	22	8
Puerto Rico	-	6	3	4	1	-	14	4	2	-	1

*National Office of Vital Statistics.

TABLE 2

PARALYTIC POLIOMYELITIS

RATES PER 100,000 POPULATION BY SELECTED AGE GROUPS, 1952-1956

CANADA*

AGE GROUP	1952	1953	1954	1955	1956
0 - 4	26.7	82.3	9.0	6.7	6.4
5 - 9	41.8	88.7	12.4	5.3	3.0
10 - 14	32.3	53.2	6.6	5.0	2.4
15 - 19	25.8	37.6	6.8	4.2	1.4
20 - 24	20.7	43.2	5.4	4.8	2.6
25 - 29	17.7	43.9	5.2	4.0	2.1
30 - 34	17.0	34.5	2.9	3.8	1.3
35 - 39	6.1	17.7	3.4	2.3	1.5
40 & Over	1.2	3.5	0.7	0.2	0.0
ALL AGES	16.5	37.0	4.8	3.2	1.9

* 8 Provinces Only.

Table 3

POLIOMYELITIS VACCINE REPORT through 8-30-57

(Data provided by the Polio Vaccine Activity, BSS, USPHS.
Listed in 1000's of cc's of Net Bottled Vaccine)

VACCINE RELEASED						
<u>Period</u>	<u>Lilly</u>	<u>Parke, Davis</u>	<u>Pitman- Moore</u>	<u>Wyeth</u>	<u>Sharpe & Dohme</u>	<u>Cutter</u>
June	-	3,375	2,812	402	-	-
July	5,047	1,843	1,239	378	1,015	-
August	5,840	3,704	1,339	394	864	-
Cumulative to date	119,583	30,133	29,527	9,366	9,377	401

VACCINE SHIPPED						
<u>Period</u>	<u>NFIP</u>	<u>Public Agencies</u>	<u>Commercial Channels</u>	<u>Export</u>	<u>Total</u>	
1955	13,541	7,893	6,233	-	27,667	
1956	194	45,588	24,784	6,477	77,043	
1957						
January-March	8	19,306	13,483	4,111	37,538	
April	-	8,639	5,161	1,360	15,161	
May	73	5,365	3,767	536	9,740	
June	70	2,734	1,349	378	4,531	
July	-	4,642	4,903	327	9,871	
August 1-23	-	1,733	2,526	553	4,811	
Cumulative Totals	13,886	96,530	62,205	13,743	186,363	

VACCINE INVENTORY				
<u>Week Ending</u>	<u>Unshipped by Manufacturers</u>	<u>In State and Local Health Departments</u>	<u>In Commercial Channel and Physicians Office</u>	<u>Total</u>
8-9-57	1,873	4,289	2,945	9,108
8-16-57	2,032	4,180	3,654	9,865
8-23-57	10,290	3,855	3,009	17,153

