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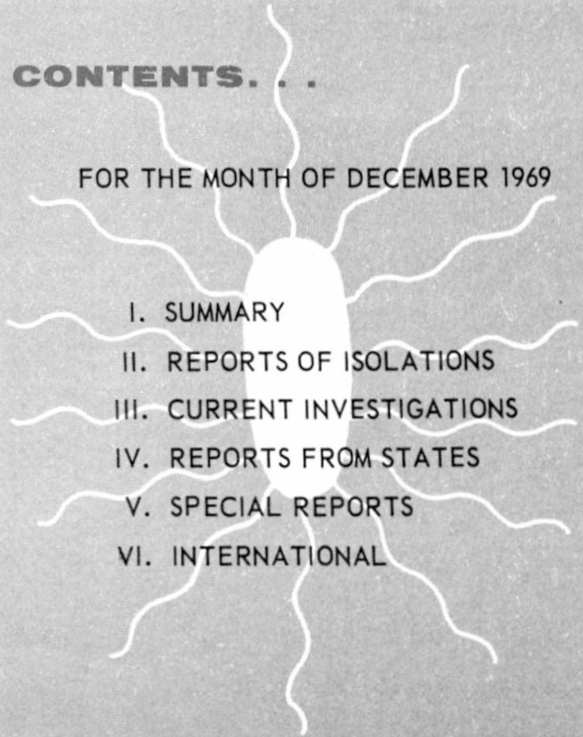
NATIONAL
COMMUNICABLE DISEASE CENTER

SALMONELLA

SURVEILLANCE

CONTENTS . . .

FOR THE MONTH OF DECEMBER 1969

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- I. SUMMARY
 - II. REPORTS OF ISOLATIONS
 - III. CURRENT INVESTIGATIONS
 - IV. REPORTS FROM STATES
 - V. SPECIAL REPORTS
 - VI. INTERNATIONAL

PREFACE

Summarized in this report is information received from State and City Health Departments, university and hospital laboratories, the National Animal Disease Laboratory (USDA, ARS), Ames, Iowa, and other pertinent sources, domestic and foreign. Much of the information is preliminary. It is intended primarily for the use of those with responsibility for disease control activities. Anyone desiring to quote this report should contact the original investigator for confirmation and interpretation.

Contributions to the Surveillance Report are most welcome. Please address

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TABLE OF CONTENTS

	<u>PAGE</u>
I. SUMMARY	1
II. REPORTS OF ISOLATIONS	1
III. CURRENT INVESTIGATIONS	
NONE	1
IV. REPORTS FROM THE STATES	
A. A Salmonellosis Outbreak at an Eskimo Village - Alaska	2
B. An Outbreak of Salmonellosis - Los Angeles County, California	3
V. SPECIAL REPORTS	
A. Recent Articles on Salmonellosis	4
B. Announcement of a Course on the Epidemiology and Control of Salmonellosis	5
C. Salmonella Surveillance Program of Dry Milk Plants	6
D. Recalls of Products Contaminated with Salmonellae for Period November 10, 1969, to January 19, 1970	7
VI. INTERNATIONAL	
NONE	9

I. SUMMARY

In December 1969, 2,020 isolations of salmonellae were reported from humans, an average of 404 isolations per week (Tables I, II, and V-A). This number represents a decrease of 66 (14.0 percent) from the weekly average of November 1969 and an increase of 52 (14.8 percent) over the weekly average of December 1968.

Reports of 1,213 nonhuman isolations of salmonellae were received during December 1969 (Tables II, IV, and V-B).

II. REPORTS OF ISOLATIONS

The ten most frequently reported serotypes during December:

HUMAN				NONHUMAN		
Serotype	Number	Percent	Rank Last Month	Serotype	Number	Percent
1 <u>typhi-murium*</u>	569	28.2	1	<u>heidelberg</u>	129	10.6
2 <u>newport</u>	150	7.4	4	<u>typhi-murium*</u>	110	9.1
3 <u>enteritidis</u>	147	7.3	2	<u>anatum</u>	104	8.6
4 <u>thompson</u>	123	6.1	7	<u>cholerae-suis var.</u>	85	7.0
				<u>kunzendorf</u>		
5 <u>heidelberg</u>	109	5.4	3	<u>saint-paul</u>	85	7.0
6 <u>infantis</u>	86	4.3	6	<u>thompson</u>	53	4.4
7 <u>saint-paul</u>	78	3.9	5	<u>senftenberg</u>	46	3.8
8 <u>san-diego</u>	67	3.3	>10	<u>tennessee</u>	40	3.3
9 <u>typhi</u>	54	2.7	8	<u>montevideo</u>	39	3.2
10 <u>blockley</u>	52	2.6	>10	<u>infantis</u>	37	3.1
Total	1,435	71.0		Total	728	60.0
TOTAL (all serotypes)	2,020			TOTAL (all serotypes)	1,213	
*Includes <u>var.</u> <u>copenhagen</u>	20	1.0		*Includes <u>var.</u> <u>copenhagen</u>	16	1.3

III. CURRENT INVESTIGATIONS

None

IV. REPORTS FROM THE STATES

A. A Salmonellosis Outbreak at an Eskimo Village - Alaska

Reported by Thomas R. Bender, M.D., Medical Epidemiologist, Ecological Investigations Program; T. Stephen Jones, Jr., M.D., EIS Officer located at the Alaska Department of Health and Welfare; Gary J. Kaplan, M.D., Medical Epidemiologist, Epidemiology Section, Arctic Health Research Center; Mr. Arnold R. Saslow, Senior Assistant Health Services Officer, Alaska Activities, Ecological Investigations Program; and Paul S. Clark, M.D., Chief of Alaska Activities, Ecological Investigations Program.

In August 1969, an outbreak of salmonellosis occurred among 265 residents of Tununak, Alaska, who had consumed raw whale skin and blubber (muktuk). Symptoms including nausea, fever, vomiting, diarrhea, myalgia, headache, and prostration were reported by 103 of the villagers (39 percent). Of 97 persons whose health status was known after eating muktuk, 93 (96 percent) became ill (Table 1). In 58 percent of the cases, illness developed within 7 to 12 hours after ingestion; the mean incubation period was 11.6 hours (Figure 1). The age and sex distribution of the ill persons was similar to that of the entire village. Of those persons who denied eating muktuk, 10 became ill; the mean onset was 35 hours after distribution of the food. Stool cultures taken within 2 weeks after the start of the epidemic from 64 of 134 villagers (48 percent) yielded Salmonella enteritidis, including cultures obtained from all of 16 patients hospitalized. There were no deaths.

Tununak is a small Eskimo community located in western Alaska on the Bering Sea. The 265 Eskimos live in 1- or 2-room frame houses with an average of 6 persons to a dwelling. Water is distributed by gravity from a tundra stream through a surface pipeline to several central watering points in the village. Toilet facilities consist of pails or "honey buckets" kept in the entrance hall of each home. When full, the buckets are emptied into barrels which are discarded outside the village.

On August 8, following evening church services, many villagers took home muktuk from the tail and flippers of the whale. The food had just been brought to the village although the dead whale had been discovered on a beach some distance away at least a week earlier. The muktuk was eaten uncooked shortly after its distribution.

S. enteritidis was recovered from remaining whale samples.

It is not known how the meat became infected or how long the whale had been dead. It is possible that the organism was endogenous to the whale. However, the carcass was described as having been partially eaten by birds and may have been contaminated in this manner.

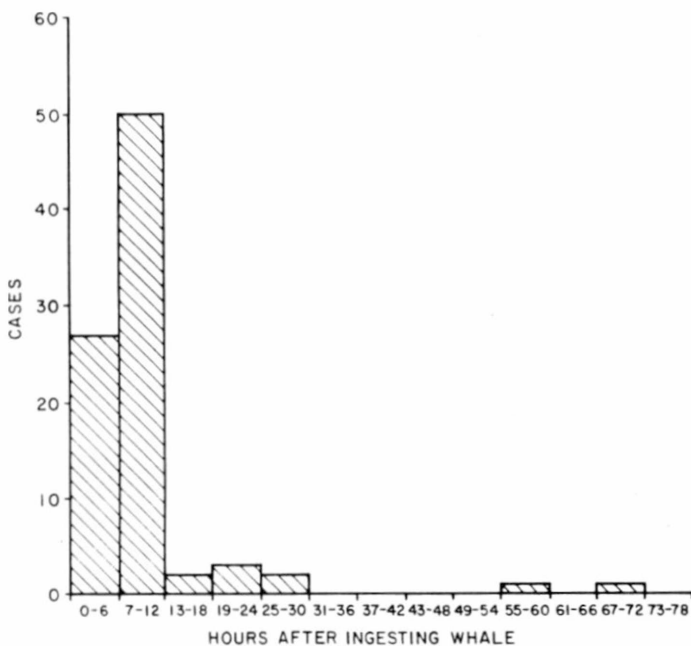
One month after the start of the epidemic, 17 (9 percent) of 184 persons interviewed complained of symptoms compatible with gastroenteritis. Six persons who had been well during the August outbreak reported having symptoms on September 9.

Crowded housing, the absence of running water, and the location of excreta pails within the homes (often near food stores) probably contributed to secondary spread.

Table 1
Specific Attack Rates

	<u>Ate Whale Meat</u>	<u>Did Not Eat Whale Meat</u>
Ill	93	10
Not Ill	4	151
Attack Rate	96%	6%

Figure 1 DISTRIBUTION OF 86 CASES OF SALMONELLOSIS BY ONSET, TUNUNAK, ALASKA, AUGUST 1969*



* TIME OF ONSET OF SEVEN CASES UNKNOWN

B. An Outbreak of Salmonellosis - Los Angeles County, California

Reported by Ichiro Kamei, M.D., Chief, G. A. Heidbreder, M.D., M.P.H., Health Officer, Mr. Robert Murray, Epidemiologist, and Betsy MacCracken, M.D., Epidemiologist, Acute Communicable Disease Control Division, Mr. Ralph Tetreault, Chief Sanitarian, Food and Drug Section, and Harvey Matlof, M.D., EIS Officer, Acute Communicable Disease Control Division, County of Los Angeles Health Department.

Related outbreaks of salmonellosis occurred among approximately 400 persons in Los Angeles County who attended four separate parties catered by a single catering firm on December 13-14, 1969. Of 207 persons contacted, 128 (62 percent) had experienced gastrointestinal illness. Attack rates for the individual parties ranged from 34 percent to 82 percent (Table 1). Reported symptoms were similar in persons attending each of the four parties, and included diarrhea (89 percent), abdominal cramps (88 percent), nausea (77 percent), fever (70 percent), and vomiting (41 percent). Onset of illness occurred from 3 to 59 hours following the gatherings, with a mean of 18 hours. No deaths were reported. *Salmonella san-diego* was recovered in stool cultures from 109 persons, with victims positive from each of the parties.

At the time of the investigation, six left-over food items remained from two of the parties. All yielded *S. san-diego*, including sliced ham, pimento loaf, minced ham, and sliced turkey from party #1, and cole slaw and cold cuts from party #2. Similar food items were served at the other two parties, although no foods were recovered. Food-specific attack rates were not determined.

Inspection of the catering establishment revealed several significant findings. Frozen 14-pound turkey breasts were allegedly thawed overnight and then roasted at 350°F. for 3½ hours. After cooling for one-half hour at room temperature, the turkey was refrigerated until the time of distribution to the parties on the following day. This roasting procedure would adequately destroy all salmonellae; however, undercooked inner parts were noted by inspectors and victims. Although items such as cold cuts and ham were prepared outside the catering establishment and only sliced there, these meats were placed on platters in direct contact with the undercooked turkey slices. Refrigeration temperatures of 50°F. were inadequate to protect stored foods from bacterial multiplication after preparation.

Party #1, which experienced the highest attack rate, left the catered food at room temperature for 3 to 4 hours prior to serving.

Table 1

	Number Interviewed	Attack Rate (%)	Incubation Period (Hours)	Nausea (%)	Vomiting (%)	Diarrhea (%)	Cramps (%)	Fever (%)
Party #1	63	82	15.6	72	38	94	94	88
Party #2	32	72	16.5	65	39	96	92	74
Party #3	74	34	18.7	84	36	84	80	60
Party #4	38	<u>74</u>	<u>22.3</u>	<u>93</u>	<u>57</u>	<u>86</u>	<u>89</u>	<u>50</u>
Average		62	18	77	41	89	88	70

EDITOR'S COMMENT: This outbreak illustrates the ease with which multiple food items may become contaminated with salmonellae as a result of inadequate kitchen sanitation and food preparation procedures. Although the original source of S. san-diego could not be determined, evidence suggested the undercooked turkey meat. Salmonella san-diego is frequently isolated from turkey carcasses, and accounted for 40 of the 48 non-human isolations reported in 1968.

V. SPECIAL REPORTS

A. Recent Articles on Salmonellosis

The following articles on salmonellosis of interest to public health workers have been published in recent months.

1. Banwart, G. J., et al.: Rapid determination of salmonella in samples of egg noodles, cake mixes and candies. *Appl. Microb.* 18:838, 1969.
2. Cherry, W. B., et al.: Fluorescent antibody techniques for salmonella and other enteric pathogens. A status report. *Public Health Rep.* 84:887, 1969.
3. Cherubin, C. E., et al.: Symptoms, septicemia and death in salmonellosis. *Amer. J. Epidem.* 90:825, 1969.

4. Cotterill, O. J., et al.: Thermal resistance of salmonellae in egg yolk products containing sugar or salt. *Poultry Science* 48:1156, 1969.
5. Easterling, S. B., et al.: Nature of lactose-fermenting salmonella strains obtained from clinical sources. *J. Bact.* 100:35, 1969.
6. Fantasia, L. D.: Accelerated immunofluorescence procedure for the detection of salmonella in foods and animal by-products. *Appl. Microb.* 18:708, 1969.
7. Harvey, R. W. S., et al.: Salmonellas in sewage. A study in latent human infection. *J. Hyg.* 67:517, 1969.
8. Heard, T. W.: Housing and salmonella infections. *Veterinary Record* 85:482, 1969.
9. Isenberg, H. D., et al.: Isolation of salmonellae and shigellae from an artificial mixture of fecal bacteria. *Appl. Microb.* 18:656, 1969.
10. Jephcott, A. E., et al.: Salmonella excretion by pet terrapins. *J. Hyg.* 67:505, 1969.
11. Kraft, D. J., et al.: Salmonella in wastes produced at commercial poultry farms. *Appl. Microb.* 18:703, 1969.
12. Marx, M. B.: Two surveys of salmonella infection among certain species of wild-life in Northern Virginia (1963 and 1965-1966). *Amer. J. Vet. Res.* 30:2003, 1969.
13. Mittermeyer, F. C., et al.: Salmonella survey of plant foods used in and around the home. *Appl. Microb.* 18:682, 1969.
14. Morgan, P. M., et al.: Salmonella in cattle abattoirs in Costa Rica. *Amer. J. Trop. Med.* 18:688, 1969.
15. Reamer, R. H., et al.: Increased sensitivity of immunofluorescent assay for salmonella in nonfat dry milk. *Appl. Microb.* 18:328, 1969.
16. Reynolds, I. M., et al.: Salmonella typhisuis from Massachusetts swine. *J. Amer. Vet. Med. Ass.* 155:1600, 1969.
17. Sharma, R. M., et al.: Evaluation of culture media for the isolation of salmonellae from feces. *Appl. Microb.* 18:589, 1969.
18. Torin, D. E., et al.: A typhoid fever outbreak on a university campus. *Arch. Intern. Med.* 124:606, 1969.
19. Williams, E.: Salmonella dublin skin lesions in a veterinary surgeon. *Lancet* 7623:737, 1969.

B. Announcement of a Course on the Epidemiology and Control of Salmonellosis

The National Communicable Disease Center will present a course, "Epidemiology and Control of Salmonellosis," at the University of Minnesota, St. Paul, Minnesota, March 23-27, 1970. This 5-day course has been designed for supervisors of food hygiene programs, veterinarians, sanitarians, and other members of public health, agricultural agencies, and industry who deal with the epidemiology and control of salmonellosis. Control of salmonellosis will be emphasized. Current information and immediately useful techniques related to control will be delineated. Laboratory isolation procedures are only briefly covered in the course. Trainees will be selected from the North Central States.

Following an overview of the morbidity and mortality attributed to salmonellosis, the bacteriology of the salmonella organism and environmental factors that govern its survival or destruction are presented. Selected phenomena of the epidemiology of salmonellosis including the reservoirs of salmonellae are discussed. Close attention is given to the contributory sources of salmonella contamination of food, water, animal feed, and fertilizer, and of animals themselves. The course emphasizes techniques of control, particularly as applied in the farm environment, in the processing of foods and of animal feed, and in food-service operations. Administrative application of the information, techniques, and concepts are considered, and program activities of various interested agencies are reviewed. Lectures, demonstrations, problem workshops, discussions, field work, and laboratory exercises are used to teach the course. For further information, contact: Frank L. Bryan, Ph.D., Chief, Foodborne Disease Activity, Health Agencies Branch, Training Program, NCDC, Atlanta, Georgia 30333.

C. Salmonella Surveillance Program of Dry Milk Plants

Reported by Mr. Edwin F. Garbe, Chief, Inspection and Grading Branch, U. S. Department of Agriculture.

The U. S. Department of Agriculture tested product and environmental samples from 207 dry milk plants in 29 states during 1969 for the presence of salmonellae. The results of these tests are listed below. "Follow-up tests" were conducted at plants if an isolation was obtained. These results are not included.

Salmonella Surveillance of Dry Milk Plants

Month	Product Samples			Environmental Samples		
	Number Tested	Number Positive	Percent Positive	Number Tested	Number Positive	Percent Positive
January	1,697	5	0.29	196	4	2.0
February	1,477	2	0.14	180	9	5.0
March	1,274	2	0.15	240	9	3.8
April	1,759	3	0.17	238	5	2.1
May	1,530	1	0.07	178	3	1.7
June	837	2	0.24	109	5	4.6
July	619	2	0.32	111	7	6.3
August	462	0	0.00	98	7	7.1
September	585	4	0.68	96	6	6.3
October	753	12	1.6	180	13	7.2
November	573	6	1.1	104	11	10.6
December	<u>1,256</u>	<u>5</u>	<u>0.40</u>	<u>119</u>	<u>10</u>	<u>8.4</u>
	12,822	44	0.34	1,849	89	4.8

D. Recalls of Products Contaminated with Salmonellae for Period November 10, 1969, to January 19, 1970 (reported by the U.S. Food and Drug Administration).

From November 10, 1969 to January 19, 1970, seventeen products were recalled by manufacturers and distributors because of salmonella contamination. These products as reported by the U.S. Food and Drug Administration are summarized in the table below.

Week Ending	Name, Label, Form	Manufacturer, Distributor	Lot Number	Use	Depth of Recall	Product Distribution	Serotype
11/10	Dried egg yolk solids in 200 lb. drums labeled in part: Egg Yolk 2006 (Mfr. by Mid Central Egg Products Inc., Hiawatha, Kansas.)	(Mfr.) Mid Central Egg Products, Inc., Hiawatha, Kansas.	220-9	Food	Wholesale	Indiana	Not serotyped
	Dried egg yolks in 120 lb. drums labeled (Bud Egg Products Pasteurized Yolk Solids. (Dist. by Anheuser-Busch, Inc., Bakery Products Div., St. Louis, Mo.)	(Mfr.) Continent Foods, Inc., Marionville, Mo.	15-1789	Food	Wholesale, user	Washington	<u>S. thompson</u>
	Debittered dried brewer's yeast in 100 lb. drums (Philadelphia Dry Yeast Co., Philadelphia, Pa.)	(Mfr.) Philadelphia Dry Yeast Co., Philadelphia, Pa.	864 (Batch No. 092369 H)	Food	Direct consignee	New York, New Jersey, Canada	<u>S. schwarzengrund</u>
11/24	Extra grade spray food process non-fat dry milk in 50-lb. multilayer paper bags (Mfr. & Dist. by Milk Producers, Inc., Arlington, Texas)	(Mfr.) North Texas & New Mexico Div., Associated Milk Producers, Inc., Muenster, Texas (Dist.) Norris Food Products, Carrolton, Texas	62859 B 62859 C	Food	Dairies, Ice Cream Processors	Texas	<u>S. tennessee</u>
	Grade A extra grade spray process low heat nonfat dry milk in 100-lb. bags (N. Star Dairy, St. Paul, Minn.)	(Mfr.) Cass Clay Creamery, Fargo, N. D.	291297-1 thru 8	Food	Wholesale	Minnesota, Nebraska	Serotyping not completed

Recalls of Products Contaminated with Salmonellae (Continued)

Week Ending	Name, Label, Form	Manufacturer, Distributor	Lot No.	Use	Depth of Recall	Product Distribution	Serotype
11/24	Extra grade spray process buttermilk powder in 100-lb. bags (N. Star Dairy, St. Paul, Minn.)	(Mfr.) Cass Clay Creamery, Fargo, N. D.	BM 297	Food	Wholesale	Minnesota, Nebraska	Serotyping not completed
12/8	Rich Tex Cake Doughnut mix	(Mfr.) Richardson & Holland Corp., Seattle, Washington	8511, 8929	Food	Bakery	Washington, Oregon, Idaho, Alaska, and Hawaii	<u>S. thompson</u> (present in powdered egg ingredient)
	Chocolate flavored cake doughnut mix	"	8512	Food	Bakery	"	"
∞	50-50 cake donut mix	"	8791, 8928	Food	Bakery	"	"
	Home style buttermilk cake doughnut mix	"	8792	Food	Bakery	"	"
	Rich-Mix Cake doughnut mix	"	8793, 8930	Food	Bakery	"	"
	Allwheat cake doughnut mix	"	8794	Food	Bakery	"	"
	Speedy French Donut Mix	"	8798	Food	Bakery	"	"
12/8	Nonfat dry milk in 100-lb. bags. (United Farmers of N.E., Inc., Enosburg Falls, Vt.)	(Mfr.) United Farmers of New England, Inc., Enosburg Falls, Vt.	530, 531	Food	User	Rhode Island, Massachusetts	<u>S. senftenberg</u>

Recalls of Products Contaminated with Salmonellae (Continued)

Week Ending	Name, Label, Form	Manufacturer, Distributor	Lot No.	Use	Depth of Recall	Product Distribution	Serotype
12/15	Pasteurized egg yolk solids in 175-lb. drums (Processed and packed by Continent Foods Corp., Marionville, Mo.)	(Mfr.) Continent Foods, Marionville, Mo.	15-252-9	Food	Wholesale	Washington	<u>S. thompson</u>
12/15	Bud Pasteurized whole egg solids in 175-lb. drums (Dist. by Anheuser-Busch, Inc., Bakery Products Div., St. Louis, Mo.)	(Mfr.) Continent Foods, Inc., Marionville, Mo.	15-227-9	Food	Wholesale	New York, New Jersey	<u>S. thompson</u> and <u>S. siegburg</u>
12/22	Powdered Pepsin 1:10,000 in bulk 75-lb drums. (Cudahy Labs., Chicago, Ill.)	(Mfr.) Cudahy Labs., Omaha, Nebraska	2568	OTC	Wholesale	Ohio	Not serotyped

VI. INTERNATIONAL

NONE

TABLE I. COMMON SALMONELLAE REPORTED FROM HUMAN SOURCES, DECEMBER, 1969

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																															
	NEW ENGLAND						MIDDLE ATLANTIC					EAST NORTH CENTRAL						WEST NORTH CENTRAL						SOUTH ATLANTIC								
	ME	NH	VT	MAS	RI	CON	NYA	NYB	NYC	NJ	PA	OH	IND	ILL	MIC	WIS	MIN	IOW	MO	ND	SD	NEB	KAN	DEL	MD	DC	VA	WVA	NC	SC	GA	FLA
<i>anatum</i>						1		1	1	2		1		1	1															1	1	
<i>bareilly</i>								1							1																3	
<i>blockley</i>				2		1		1	3	2	2		5		1	1							1	1	1	2			6	4		
<i>braenderup</i>										1		1		1	1																	
<i>bredeney</i>								1	1		1														1		1				4	
<i>chester</i>																														1	1	
<i>cholerae-suis v kun</i>														1																		
<i>cubana</i>			1	1										1	2	1															5	
<i>derby</i>								2	4	4	6			6															1			
<i>enteritidis</i>			1	40	6	2		11	12	2	5	6		10	1	8	4	2			1		4	1	2	2	4	1	2	7		
<i>give</i>											1			1																	1	
<i>heidelberg</i>	2			6	1	2	1	10	2	1	9		13	10		2		1	1			1		3	2	2			6	8		
<i>indiana</i>									1				2	1		1								1	1							
<i>infantis</i>				14	1	2		2	2	1	2	10	3	7	1	2	1					1		1	1	2				7		
<i>java</i>	1					2		1	2					1																10		
<i>javiana</i>												1											2				1		2	26		
<i>litchfield</i>								1						2										1		1		1		1		
<i>livingstone</i>																																
<i>manhattan</i>									1		3	2		1	1	5	2							3		3		1	1	1		
<i>miami</i>																													1	10		
<i>mississippi</i>																																
<i>montevideo</i>						1		2			1			2		1										1				8		
<i>muenchen</i>				1	1			4		1	2	2		4			1										1		1	7		
<i>newington</i>										1																				1		
<i>newport</i>				4	2	3			3	1	2	3	1	4	3	4							4		3	4		2	4	26		
<i>oranienburg</i>				2		1		1	1	1	1	1		1	1	1			1				1						6	1		
<i>panama</i>				3				1	1	1	1							2														
<i>paratyphi B</i>								2				1			1										1	2						
<i>reading</i>				2																										1		
<i>saint-paul</i>				3	1			5	5	2	4	6		5		3	2							8		2		2		17		
<i>san-diego</i>				2										3		1														1		
<i>schwarzengrund</i>														2	1												1		11			
<i>senftenberg</i>																2														2		
<i>tennessee</i>											1																					
<i>thompson</i>	1			8				1	7	2		9	5	3	3	4	2		1						1	1		3	2	8		
<i>typhi</i>					2	1	1	2		1	1	1		1	1	1			2										1	2		
<i>typhimurium</i>	4		1	73	6	9	2	22	40	8	22	21	5	27	5	22	14	8	3	1	3		10		5	3	11	3	8	11	31	
<i>typhimurium v cop</i>	1			7		4					1			1	4																	
<i>weltevreden</i>																																
<i>worthington</i>																															1	
TOTAL	9	-	3	168	21	28	4	72	86	26	67	66	15	104	37	58	30	12	8	2	4	-	23	2	31	8	36	8	32	-	44	195
ALL OTHER*	-	5	-	3	4	1	22	6	5	1	2	3	1	3	2	-	1	-	1	-	-	-	1	-	2	2	-	-	6	-	1	20
TOTAL	9	5	3	171	25	29	26	78	91	27	69	69	16	107	39	58	31	12	9	2	4	-	24	2	33	10	36	8	38	-	45	215

Note: NYA - New York, Albany; NYB - Beth Israel Hospital; NYC - New York City.
Beth Israel Hospital laboratory is a reference laboratory and this month serotyped a total of 183 cultures.

* See Table II.

TABLE I - Continued

GEOGRAPHIC DIVISION AND REPORTING CENTER																				TOTAL	% OF TOTAL	CUMU-LATIVE TOTAL	% OF CUMU-LATIVE TOTAL	SEROTYPE	
EAST S. CENTRAL				WEST S. CENTRAL				MOUNTAIN						PACIFIC											
KY	TEN	ALA	MIS	ARK	LA	OKL	TEX	MON	IDA	WYO	COL	NM	ARI	UTA	NEV	WAS	ORE	CAL	ALK						HAW
				1	2											1	1	3			17	0.8	181	0.8	<i>anatum</i>
1					2																9	0.4	74	0.3	<i>bareilly</i>
2	2	2			4		4				1							4			52	2.6	501	2.3	<i>blockley</i>
																			1		5	0.2	78	0.4	<i>braenderup</i>
					1															1	12	0.6	131	0.6	<i>bredenev</i>
					2						1							2			7	0.3	52	0.2	<i>chester</i>
																					1	0.0	15	0.1	<i>cholerae-suis v kun</i>
							1				3		1								16	0.8	145	0.7	<i>cubana</i>
																		6			29	1.4	334	1.6	<i>derby</i>
1						1	1	1								1		8			147	7.3	1919	9.0	<i>enteritidis</i>
	2	2			1						1		1	2				1			5	0.2	74	0.3	<i>give</i>
					7																109	5.4	1423	6.6	<i>heidelberg</i>
																					7	0.3	94	0.4	<i>indiana</i>
	1	4			2		4	1			3		2			3	1	5			86	4.3	1089	5.1	<i>infantis</i>
		1																1	3		22	1.1	173	0.8	<i>java</i>
			2		1		6														41	2.0	465	2.2	<i>javana</i>
					2																10	0.5	123	0.6	<i>litchfield</i>
		1			2																1	0.0	35	0.2	<i>livingstone</i>
																					28	1.4	251	1.2	<i>manhattan</i>
																					11	0.5	106	0.5	<i>miami</i>
	3				2		1														3	0.1	44	0.2	<i>mississippi</i>
					1		2														28	1.4	311	1.5	<i>montevideo</i>
		2			3																32	1.6	240	1.1	<i>muenchen</i>
																					1	0.1	33	0.2	<i>newington</i>
	5	2			9	3	20	1			1		1			1		31		3	150	7.4	1601	7.5	<i>newport</i>
		1			3		2														29	1.4	265	1.2	<i>oranienburg</i>
							2		1												20	1.0	327	1.5	<i>panama</i>
							1									2					11	0.5	165	0.8	<i>paratyphi B</i>
																2					6	0.3	69	0.3	<i>reading</i>
	1															3		8			78	3.9	981	4.6	<i>saint-paul</i>
1					1													59			67	3.3	118	0.6	<i>san-diego</i>
																					18	0.9	89	0.4	<i>schwarzengrund</i>
	1						1														4	0.2	77	0.4	<i>sentenberg</i>
2	1	6			38	5	5				1										3	0.1	43	0.2	<i>tennessee</i>
																		3		1	123	6.1	1053	4.9	<i>thompson</i>
3	4			2	3	2	2									2		10		4	54	2.7	549	2.6	<i>typhi</i>
2	7	5			23		10	3	4	1	6		3			9	5	83		10	549	27.2	5503	25.7	<i>typhimurium</i>
					1																20	1.0	255	1.2	<i>typhimurium v cop</i>
																					5	0.2	54	0.3	<i>weltevreden</i>
																		1			2	0.1	35	0.2	<i>worthington</i>
11	27	27	2	3	110	11	62	6	6	1	17	5	10	2	-	24	10	257	-	30	1820	90.1	19075	89.1	TOTAL
-	1	2	7	4	8	-	19	-	1	-	2	31	4	-	-	1	5	19	3	1	200		2343		ALL OTHER*
11	28	29	9	7	118	11	81	6	7	1	19	36	14	2	-	25	15	276	3	31	2020		21418		TOTAL

TABLE II. OTHER SALMONELLAE REPORTED FROM HUMAN SOURCES, DECEMBER, 1969

SEROTYPE	REPORTING CENTER																						
	ALA	ALK	ARI	ARK	CAL	COL	CON	DC	FLA	GA	HAW	IDA	ILL	IND	KAN	LA	MD	MAS	MIC	MIN	MIS	MO	NH
<i>alachua</i>					1						1												
<i>albany</i>																							
<i>amager</i>					1																		
<i>berta</i>			1										1	1		1							
<i>binza</i>			1		2														1				
<i>bovis-morbificans</i>					2																		
<i>brancaster</i>								1															
<i>california</i>																		1					
<i>coeln</i>																							
<i>daytona</i>																1							
<i>dublin</i>					1							1											
<i>duesseldorf</i>									3														
<i>eastbourne</i>																		1					
<i>eimsbuettel</i>																							
<i>florida</i>									2														
<i>gallinarum</i>																							
<i>gatow</i>						1																	
<i>habana</i>									7														
<i>hartford</i>				1					3								3						
<i>hato</i>																1							
<i>inverness</i>										1													
<i>irumu</i>																						1	
<i>johannesburg</i>																							
<i>kentucky</i>																1				1			
<i>lomita</i>																							
<i>london</i>																							
<i>meleagridis</i>													1										
<i>michigan</i>					1																		
<i>minnesota</i>																	1						
<i>mission</i>	2																						
<i>muenster</i>					1				1														
<i>new-brunswick</i>																							
<i>ohio</i>				1																			
<i>oslo</i>									1														
<i>paratyphi A</i>																1							
<i>pensacola</i>																							
<i>pomona</i>																							
<i>poona</i>			2			1																	
<i>pullorum</i>																							
<i>richmond</i>																							
<i>rubislaw</i>									2								1						
<i>saphra</i>																							
<i>siegburg</i>					2																		
<i>stanley</i>					1																		
<i>tallahassee</i>									1														
<i>uganda</i>																							
TOTAL	2	—	4	2	12	2	—	1	20	1	1	1	2	1	1	8	2	1	1	1	—	1	—
NOT TYPED*	—	3	—	2	7	—	1	1	—	—	—	—	1	—	—	—	—	2	1	—	7	—	5
TOTAL	2	3	4	4	19	2	1	2	20	1	1	1	3	1	1	8	2	3	2	1	7	1	5

* See Table V-A

TABLE II - Continued

REPORTING CENTER														TOTAL	CUMULATIVE TOTAL	SEROTYPE
NJ	NM	NY	NY	NY	NY	NC	OHI	ORE	PA	RI	TEN	TEX	WAS			
						2			1				1	2	15	<i>alachua</i>
														1	14	<i>albany</i>
														1	29	<i>amager</i>
														6	40	<i>berta</i>
														5	9	<i>binza</i>
														2	10	<i>bovis-morbificans</i>
														1	2	<i>brancaster</i>
				1										1	13	<i>california</i>
														1	1	<i>coeln</i>
														1	2	<i>daytona</i>
														2	7	<i>dublin</i>
														3	6	<i>duesseldorf</i>
									1					1	5	<i>eastbourne</i>
														1	33	<i>eimsbuettel</i>
														2	2	<i>florida</i>
				1										1	3	<i>gallinarum</i>
														1	2	<i>gatow</i>
														7	15	<i>habana</i>
						1								8	41	<i>hartford</i>
														1	2	<i>hato</i>
														1	6	<i>inverness</i>
1														1	5	<i>irumu</i>
				1										1	9	<i>johannesburg</i>
														2	30	<i>kentucky</i>
														1	15	<i>lomita</i>
						1	1							2	16	<i>london</i>
														1	13	<i>meleagridis</i>
														1	2	<i>michigan</i>
														1	27	<i>minnesota</i>
														2	3	<i>mission</i>
								1						3	40	<i>muenster</i>
									1					1	10	<i>new-brunswick</i>
														1	14	<i>ohio</i>
					1	2								4	19	<i>oslo</i>
														1	14	<i>paratyphi A</i>
									1					1	3	<i>pensacola</i>
				1	2									1	6	<i>pomona</i>
					1									6	80	<i>poona</i>
														1	1	<i>pullorum</i>
								1						1	2	<i>richmond</i>
									1					5	30	<i>rubislaw</i>
														1	14	<i>saphra</i>
														1	25	<i>siegburg</i>
														1	13	<i>stanley</i>
														1	13	<i>tallahassee</i>
														1	1	<i>uganda</i>
1	-	1	6	1	6	3	3	2	-	1	7	1		96	975	TOTAL
-	31	21	-	4	-	-	2	-	4	-	12	-		104	1368	NOT TYPED*
1	31	22	6	5	6	3	5	2	4	1	19	1		200	2343	TOTAL

Cumulative Totals include isolations of all serotypes (except those listed in Table I) reported this year.

TABLE III. COMMON SALMONELLAE REPORTED FROM NONHUMAN SOURCES, DECEMBER, 1969

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
<i>anatum</i>	9	13	11				33	61		2	63
<i>bareilly</i>			1				1	2			2
<i>blockley</i>	15	1				1	17				—
<i>braenderup</i>							—				—
<i>bredeney</i>	4	16	2				19	5		1	6
<i>chester</i>							—				—
<i>cholerae-suis v kun</i>			85				85				—
<i>cubana</i>			1				1	5		5	10
<i>derby</i>			6	1			7	3		1	4
<i>enteritidis</i>	4		2	1		1	8				—
<i>give</i>			1	1			2				—
<i>heidelberg</i>	29	85	2				116	4		1	5
<i>indiana</i>							—				—
<i>infantis</i>	8	1	3	2	1	1	16	3		4	7
<i>java</i>			1			1	2				—
<i>javiana</i>							—				—
<i>litchfield</i>				1			1				—
<i>livingstone</i>	2	11	1				14	10		1	11
<i>manhattan</i>	5	1		1			7				—
<i>miami</i>							—				—
<i>mississippi</i>							—				—
<i>montevideo</i>	4	2	1			1	8	12		4	16
<i>muenchen</i>			1			1	2				—
<i>newington</i>		3	2				5	2			2
<i>newport</i>	1		2	1	1	1	6				—
<i>oranienburg</i>			2			1	3	6		2	8
<i>panama</i>		1				1	2				—
<i>paratyphi B</i>							—	1			1
<i>reading</i>	1	6					7	1			1
<i>saint-paul</i>	22	54		4			80				—
<i>san-diego</i>		12					12	8			8
<i>schwarzengrund</i>		6					6	2		1	3
<i>senftenberg</i>	3	19					22	13		9	22
<i>tennessee</i>	3	2					5	6		2	8
<i>thompson</i>	23	1	3				27				—
<i>typhi</i>							—				—
<i>typhimurium</i>	5	13	18	28	1	15	80			1	1
<i>typhimurium v cop</i>	7		2	4	1	2	16				—
<i>weltevreden</i>							—				—
<i>worthington</i>	3	5					8	5		2	7
TOTAL	145	252	147	44	4	26	618	149	—	36	185
ALL OTHER*	42	24	12	17	—	2	97	71	—	47	118
TOTAL	187	276	159	61	4	28	715	220	—	83	303

* See Table IV

TABLE III - Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRONMENT	HUMAN DIETARY ITEMS						MISCELLANEOUS	TOTAL	CUMULATIVE TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
1	2	1					1	4	104	534	<i>anatum</i>
							-	3	3	31	<i>bareilly</i>
			3				3	20	20	166	<i>blockley</i>
							-	-	-	7	<i>breenderup</i>
		2					2	1	28	171	<i>bredeney</i>
							-	1	1	45	<i>chester</i>
					2		-	85	85	680	<i>cholerae-suis v kun</i>
					1		2	13	13	114	<i>cubana</i>
	1						1	15	15	245	<i>derby</i>
							-	10	10	146	<i>enteritidis</i>
							-	3	3	44	<i>give</i>
		3					3	5	129	966	<i>hetdelberg</i>
1		2					-	7	-	17	<i>indiana</i>
							6	37	37	279	<i>infantis</i>
							-	9	9	20	<i>java</i>
		6					-	1	-	19	<i>javana</i>
							-	2	2	9	<i>titchfield</i>
	1						-	25	25	166	<i>livingstone</i>
							-	7	7	61	<i>manhattan</i>
							-	-	-	7	<i>miami</i>
							-	1	-	-	<i>mississippi</i>
1							-	39	-	304	<i>montevideo</i>
		10					-	4	4	51	<i>muenchen</i>
1	1						-	2	9	62	<i>newington</i>
	4						-	11	11	160	<i>newport</i>
							-	1	13	102	<i>orantenburg</i>
1							-	3	3	30	<i>panama</i>
							-	1	1	11	<i>paratyphi B</i>
							-	9	9	68	<i>reading</i>
1	1						1	2	85	463	<i>saint-paul</i>
							-	6	26	187	<i>san-diego</i>
		1					1	10	10	64	<i>schwarzengrund</i>
							1	46	46	257	<i>senftenberg</i>
1							1	40	40	158	<i>tennessee</i>
		14					23	53	53	314	<i>thompson</i>
							21	2	2	3	<i>typhi</i>
4	2						-	1	1	1	<i>typhi</i>
		1					3	4	94	1199	<i>typhimurium</i>
							-	16	16	272	<i>typhimurium v cop</i>
							-	-	-	3	<i>weltevreden</i>
							-	15	15	157	<i>worthington</i>
10	22						88	43	966	7590	TOTAL
		35					3	5	247	1837	ALL OTHER*
4	20						3	5	247	1837	ALL OTHER*
		1					3	5	247	1837	ALL OTHER*
14	42						91	48	1213	9427	TOTAL
		36					91	48	1213	9427	TOTAL

TABLE IV. OTHER SALMONELLAE REPORTED FROM NONHUMAN SOURCES, DECEMBER, 1969

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
<i>agona</i>		3					3				1
<i>alachua</i>		3	1	1			5	4		4	8
<i>albany</i>							1	1		1	2
<i>bern</i>							1				1
<i>berta</i>		2					2				1
<i>binza</i>	1	2	2				5	5		5	10
<i>bornum</i>							1			7	7
<i>california</i>							1	2		4	6
<i>cerro</i>		1					1	11		7	18
<i>cholerae-suis</i>			5				5				1
<i>christiansborg</i>							—				—
<i>drypool</i>		1					1	14			14
<i>dublin</i>				12			12				1
<i>duesseldorf</i>		1					1				1
<i>eimsbuettel</i>	2	3	1				6	5		6	11
<i>flint</i>							—				—
<i>florida</i>				1			1				—
<i>gallinarum</i>	1						1				—
<i>illinois</i>							—		1		1
<i>johannesburg</i>							—	3	1		4
<i>kentucky</i>	3	4					7	7		3	10
<i>lindenburg</i>							—				—
<i>lomita</i>			1				1				—
<i>madelia</i>							1				—
<i>manila</i>							—	2			2
<i>marina</i>							—				—
<i>meleagridis</i>		1					1				—
<i>minnesota</i>		2		1			3	5			5
<i>molade</i>							—		1		1
<i>muenster</i>							—	1			1
<i>new-brunswick</i>							—				—
<i>orion</i>							—		4		4
<i>poona</i>							—				—
<i>pullorum</i>	6						6				—
<i>putten</i>						1	1				—
<i>rubislaw</i>							—				—
<i>simsbury</i>	21						21		1		1
<i>taksony</i>							—	1			1
<i>thomasville</i>							—	3	2		5
<i>treforest</i>	1						1				—
<i>typhi-suis</i>			2				2				—
<i>urbana</i>		1					1	2			2
<i>wassenaar</i>							—				—
<i>westerstede</i>	4						4				—
TOTAL	39	24	12	15	—	1	91	66	—	47	113
NOT TYPED*	3	—	—	2	—	1	6	5	—	—	5
TOTAL	42	24	12	17	—	2	97	71	—	47	118

* See Table V-B

TABLE IV - Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRONMENT	HUMAN DIETARY ITEMS						MISCELLANEOUS	TOTAL	CUMULATIVE TOTAL	SEROTYPE	
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL					
1									3	3	<i>egona</i>	
									13	59	<i>alachua</i>	
									2	38	<i>albany</i>	
									1	6	<i>bern</i>	
									2	13	<i>beria</i>	
									16	79	<i>binza</i>	
									7	18	<i>bornum</i>	
									6	47	<i>california</i>	
									20	108	<i>cerro</i>	
									5	25	<i>cholerae-sula</i>	
	1								1	1	<i>christiansborg</i>	
									15	59	<i>drypool</i>	
									12	122	<i>dublin</i>	
									1	1	<i>duesseldorf</i>	
									18	163	<i>elmbuettel</i>	
	1								1	2	<i>flint</i>	
									1	4	<i>florida</i>	
	1								1	11	<i>galinarum</i>	
									1	7	<i>illinois</i>	
	1								5	24	<i>johannesburg</i>	
									17	156	<i>kentucky</i>	
	2								2	3	<i>lindenburg</i>	
	1								2	3	<i>lonita</i>	
									1	6	<i>madella</i>	
									2	5	<i>manila</i>	
									7	8	<i>marina</i>	
									1	42	<i>meleagridis</i>	
									8	97	<i>minnesota</i>	
									1	5	<i>molade</i>	
									1	9	<i>munster</i>	
					1				1	29	<i>new-brunswick</i>	
		1							4	22	<i>orion</i>	
									1	8	<i>poona</i>	
									6	49	<i>pullorum</i>	
									1	1	<i>putten</i>	
2									2	10	<i>rubislaw</i>	
									23	77	<i>simsbury</i>	
									1	15	<i>tokony</i>	
									5	32	<i>thomasville</i>	
									1	1	<i>treforest</i>	
	3								2	14	<i>typhi-suis</i>	
	3								6	43	<i>urbana</i>	
									3	5	<i>wassenaar</i>	
									4	5	<i>westertede</i>	
3	19	1	-	-	1	-	-	2	5	233	TOTAL	
1	1	-	1	-	-	-	-	1	-	14	NOT TYPED*	
4	20	1	1	-	1	-	-	3	5	247	TOTAL	
											1837	TOTAL

TABLE V. SALMONELLAE REPORTED BY GROUP IDENTIFICATION ONLY, DECEMBER, 1969

A. HUMAN SOURCES

REPORTING CENTER	GROUP														TOTAL
	A	B	C1		C2	D	E		G	H	M		O	UNK	
ALASKA		2	1												3
ARKANSAS		1			1										2
CALIFORNIA		5											1	1	7
CONNECTICUT					1										1
DISTRICT OF COLUMBIA		1													1
ILLINOIS		1													1
MASSACHUSETTS		1												1	2
MICHIGAN		1													1
MISSISSIPPI		4	1			1								1	7
NEW HAMPSHIRE		1	2			2									5
NEW MEXICO	2	5	1		22					1					31
NEW YORK-A														21	21
NEW YORK-C		3				1									4
OREGON														2	2
RHODE ISLAND		4													4
TEXAS		1	3		3	1	1		1					2	12
TOTAL	2	30	8		27	5	1		1	1	-		1	28	104

B. NONHUMAN SOURCES

SOURCES	GROUP														TOTAL
	A	B	C1		C2	D	E		G	H	M		O	UNK	
DOMESTIC ANIMALS AND THEIR ENVIRONMENT		1												5	6
ANIMAL FEEDS		2									2			1	5
WILD ANIMALS AND BIRDS														1	1
REPTILES AND ENVIRONMENT							1								1
HUMAN DIETARY ITEMS			1												1
MISCELLANEOUS															-
TOTAL	-	3	1		-	-	1		-	-	2		-	7	14