REPORT NO. 112
FEBRUARY 1972

CENTER FOR DISEASE CONTROL

SALMONELLA

SURVEILLANCE

CONTENTS. . .

THIRD QUARTER 1971

I. SUMMARY

II. REPORTS OF ISOLATIONS

III. REPORTS FROM STATES

IV. SPECIAL REPORTS

V. INTERNATIONAL

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE/PUBLIC HEALTH SERVICE
Health Services and Mental Health Administration

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

		Page
I.	SUMMARY	1
II.	REPORTS OF ISOLATIONS	1
III.	CURRENT INVESTIGATION	
	A. Nationwide Increase in *Salmonella agona*	1
IV.	REPORTS FROM THE STATES	
	A. Reports of Salmonella Outbreak Received During the Third Quarter, 1971	2
	B. *Salmonella thompson*--Kittery, Maine	2
	C. Typhoid Fever in a Student Tour Group	3
	D. Typhoid Fever in American Tourists to Europe	4
	E. *Salmonella schwarzengrund* Outbreak in a New York City Restaurant	5
V.	SPECIAL REPORTS	
	A. Recent Articles on Salmonellosis	6

DHEW Publication No. (HSM) 72-8103

I. SUMMARY

In the third quarter of 1971, 8,380 isolations of salmonellae were reported from humans, an average of 645 isolations per week (Tables I, II, and V-A). This number represents an increase of 247 (62.1 percent) over the weekly average during the second quarter 1971 and an increase of 64 (11.0 percent) over the weekly average of the third quarter 1970 (Tables II, IV, and V-B). Total reported human isolations for each month during the quarter are provided below for the last three years.

	1969	1970	1971
July	2,155	2,516	2,664
August	2,096	2,529	2,526
September	2,198	3,087	3,190
Quarter Total	6,449	8,132	8,380

II. REPORTS OF ISOLATIONS

The ten most frequently reported serotypes during the third quarter:

	HUMAN		Rank Last		NONHUMAN	
Serotype	Number	Percent	Quarter	Serotype	Number	Percent
typhi-murium*	2177	26.0	1	typhi-murium*	188	15.7
enteritidis	810	9.7	2	anatum	59	4.9
heidelberg	611	7.3	3	heidelberg	51	4.3
newport	567	6.8	5	infantis	50	4.2
infantis	460	5.5	4	montevideo	49	4.1
thompson	293	3.5	7	senftenberg	48	4.0
saint-paul	271	3.2	6	derby	46	3.8
javiana	237	2.8	>10	saint-paul	46	3.8
blockley	180	2.1	8	newport	43	3.6
java	174	2.1	9	oranienburg	32	2.7
Total	5780	69.0		Total	612	51.2
TOTAL (all serotypes)	8380			TOTAL (all serotypes)	1195	
*Includes var. copenhagen		1.2		*Includes var. copenhagen	43	3.6

III. CURRENT INVESTIGATION

A. Nationwide Increase in Salmonella agona

The following is the text of a letter sent to 10 state epidemiologists who reported S. agona in 1971:

The Salmonella Surveillance Reports have shown a marked increase in the number of Salmonella agona isolates in 1971. There were 30 isolates between May and November 1971. In 1970 there were four for the entire United States; in 1969 there were none, and there was one each in 1967 and 1968. The 1971 isolates were clustered in the following 10 states:

State	Isolates
Pennsylvania	7
Illinois	6
California	4
Michigan	3
Wisconsin	3
Louisiana	2
Tennessee	2
Rhode Island	1
Montana	1
Massachusetts	1
Total	30

S. agona is a common serotype in Great Britain frequently causing outbreaks. The increase in this country without any detectable pattern, except possibly a few cases in the very young, is unexplained. We would appreciate any epidemiologic informati on on the cases of S. agona in your state reported since May 1971, and in particular, if there exists a relationship to a British traveler, a British product, or an infant's food product, a note to this effect would be helpful.

IV. REPORTS FROM THE STATES

A. Reports of Salmonella Outbreaks Received During the Third Quarter, 1971

State	Month of Outbreak	Location	Serotype	Number of Persons: Ill	At Risk	With positive cultures	Hospitalized	Deaths	Vehicle	Comment
Missouri	May	Hospital Ped. Ward	*S. enteritidis*	4	?	4	–	0		
Kansas	Jul	State Hosp.	*S. typhi-murium*	220	900	180		0	Food Implicated	
New Jersey	Jul	Nursing Home Passaic Co.	*S. enteritidis*	35	?	40	Several	2	Roast Pork & Gravy Implicated	
California	Jul	Northern California	*S. berta*	200	?	36	15	2	Turkey Eggs Proven	Reported in detail: SSR # III.
Massachusetts	Jul	Children's Hosp.	*S. enteritidis*	28	?	28	0	0		
Maine	Aug	Kittery	*S. thompson*	17	33	14	0	0	Chicken Salad Implicated	Full report follows in this issue of SSR
Kansas	Jul	Wichita	*S. javiana*	18	?	28	3	0	Human Carrier Contaminating Food Implicated	Mexican Restaurant
European tour group, Va., Ala.	Jul-Aug	Virginia, Alabama	*S. typhi*	8	81	5	4	0	Contaminated Water Implicated	Full rept. follows in this issue of SSR
Students tour in Spain; N.Y., N.J. & Col.	Aug	New York, New Jersey, Colorado	*S. typhi*	5	30	4	5	0	Unknown	Full report follows in this issue of SSR
New Jersey	Aug	Bergen County	*S. typhi-murium*	22	36	14	6	0	Roast Beef Implicated; *S. typhi-murium* isolated from cooked ham	Party catered by a delicatessen
Illinois	Jun	Cooke Co.	*S. enteritidis*							Increase in *S. enteritidis* found in children – reported by Cooke Co. health officials
Minnesota	Aug	St. Paul	*S. typhi-murium*	8	35	1	6	0	Rice Stuffing Implicated	
Oregon	Jun	Josephine Co.	*S. infantis*			17			? Contaminated Chicken	Restaurant associated outbreak
Puerto Rico	Aug	Río Piedras	*S. montevideo*	14	76	10	All in nursing home	1	Not Identified	Nursing home outbreak
Missouri	Jun	Fulton	*S. thompson*	5		5	1	1		Nursing home outbreak

B. Salmonella thompson--Kittery, Maine. Reported by James R. Hughes, M.D., private physician, Norwich, Vermont; Dean Fisher, M.D., Commissioner of Health and Welfare, Department of Health and Welfare, State House, Augusta, Maine; and Timothy R. Townsend, M.D., EIS Officer, Maine.

On August 7, 1971, 33 persons attended a christening in Kittery Point, Maine. Lunch was served between 12 and 1 PM, and within 2 days, 17 of those who ate the meal became ill with gastroenteritis. The mean incubation period was 29 hours. Symptoms included diarrhea, abdominal pain, fever, headache, and myalgia. The symptoms lasted 1 to 7 days, with a mean duration of 4 days. Cultures of stool specimens from 14 persons were positive for Salmonella thompson.

Questionnaires, including food histories, were completed by all 33 persons (Table 1). Sixteen of 21 (76.0 percent) persons who ate chicken salad became ill, whereas only one of 12 (8.0 percent) who did not eat this food were similarly affected (p=<.001).

Table 1

Food Specific Attack Rates of 33 Persons
Kittery Point, Maine -- August 7, 1971

Food Items	Ate				Did Not Eat			
	Ill	Not Ill	Total	Attack Rate (Percent)	Ill	Not Ill	Total	Attack Rate (Percent)
Chicken salad	16	5	21	76	1	11	12	8
Seafood	12	9	21	57	5	7	12	41
Jello salad	8	8	16	50	9	8	17	53
Rum salad	12	9	21	60	4	6	10	40
Fruit juice punch	7	6	13	53	10	10	20	50
Water	6	8	14	43	11	8	19	58
Ice cubes	13	15	28	46	4	1	5	80
Milk	1	2	3	33	16	14	30	53
Cake	10	14	24	42	7	2	9	78
Corn	13	13	26	50	4	3	7	57
Bread	11	6	17	65	6	10	16	37
Butter	11	11	22	50	6	5	11	55

Ingredients of the chicken salad included homegrown lettuce and celery, mayonnaise, and three chickens, all purchased at a local supermarket. On August 5, the chickens were gutted on a marble slab in the kitchen and boiled for 1 hour. They were then placed in a refrigerator. The next day, they were deboned and cut into small pieces which were returned to the refrigerator. Approximately 30 minutes before the meal was served on August 7, all ingredients were mixed and served on lettuce leaves. There were no ingredients or food samples left for laboratory analysis. Environmental cultures of the cutting board, marble slab, refrigerator shelf, and knife used to cut the chicken were all negative for salmonellae. There were no apparent errors in food handling; medical histories failed to suggest recent salmonellosis in the single food handler.

Editorial comment: The food specific attack rates in this outbreak clearly implicate the chicken salad as the vehicle of infection. Fifty percent of all non-human isolates of S. thompson reported to CDC in 1970 were obtained from chickens. Boiling the chicken for 1 hour should have been sufficient to kill all salmonellae. Recontamination presumably occurred after it was boiled, though no specific food handling error was documented.

C. Typhoid Fever in a Student Tour Group. Reported by Howard B. Shookhoff, M.D., Acting Director, Bureau of Infectious Disease Control, City of New York, Department of Health; and Robert P. Harvey, M.D., EIS Officer, New York City.

Between August 21 and 28, 1971, five teenagers who had recently returned to the U.S. after a school-sponsored tour of Spain became ill with headaches, fever, malaise, and diarrhea. Four of the five had bacteriologically-confirmed (positive stool and blood cultures) typhoid; the fifth was started on antibiotics before cultures were obtained, but was assumed to have had typhoid fever based on the clinical course. A total of 30 persons made the tour; the overall attack rate was 16.6 percent. All persons recovered. Three of the five ill persons reside in New York City, one in New Jersey, and one in Colorado.

The group departed New York City, July 1, 1971, for Madrid. After arrival they separated into small groups to live in private homes in cities throughout Spain. They reassembled July 28, and traveled together to several Spanish cities (see Table 2).

During this period they usually ate at hotels though most of the travelers reported eating occasional meals or snacks at several unidentified restaurants and stands. Food histories were inconsistent and incomplete because of the time lapse, but several students remembered drinking allegedly contaminated water on July 29 while in Merida. Three of these students developed typhoid. The other two patients denied drinking this water. Only four of the tour group had been previously immunized; none of them became ill.

The 26-29 day incubation period needed to incriminate the Merida water is long for typhoid. The source of contamination was not identified, but based on 10-14 day incubation period, it seems likely that the infection was contracted while the group was in Madrid.

Table 2

Itinerary of Tour Group to Spain
July 28 to August 11, 1971

Place	
Merida	7/28 - 7/29
Salamanca	7/29 - 7/30
Sevilla	7/30 - 8/2
Cordoba	8/2 - 8/4
Granada	8/4 - 8/6
Madrid	8/6 - 8/11
Return to U.S.	8/11

D. Typhoid Fever in American Tourists in Europe. Reported by H. E. Gillespie, M.D., Chief of Division of Special Health Services, Virginia State Department of Health; Frederick S. Wolf, M.D., Director, Bureau of Preventable Diseases, Alabama Department of Public Health, the Laboratory Division, CDC; Calvin A. Klein, Jr., M.D., EIS Officer, Virginia; and John N. Lewis, M.D., EIS Officer, Bacterial Diseases Branch, CDC, Atlanta, Georgia.

Between July 9 and August 9, 1971, a group of 81 American students and their counselors from 15 states traveled in Germany, France, and Italy. Between August 9-22, after their return to the United States, eight persons had onset of symptoms suggestive of typhoid fever (Figure 1). Four persons were hospitalized; three had fever with headache, and one had fever with diarrhea. Six of the patients were from Virginia, and two were from Alabama.

Blood and stool specimens were obtained from all eight patients. Four had blood cultures positive for Salmonella typhi; one of these and one other had positive stool cultures (Table 3). All isolates were of the same phage type, degraded Vi. Although cases 5 and 6 did not have positive cultures, both had symptoms and O antibody titers compatible with typhoid. All patients recovered uneventfully.

Table 3

Cases of Typhoid in a Tour Group to Europe -- August 1971

Case Number	State of Residence	Culture for Salmonella typhi		Serology (Salmonella Group D O Antigen)	Hospitalized
		Blood	Stool		
1	Virginia	+	-	1:1280	+
2	Virginia	-	-	1:320	+
3	Virginia	+	+	1:80	-
4	Virginia	-	+	1:20	-
5	Virginia	-	-	1:640	-
6	Virginia	-	-	1:640	+
7	Alabama	+	-	-	+
8	Alabama	+	-	-	-

An epidemiologic investigation was conducted in which 61 other members of the tour were interviewed. None had symptoms suggestive of typhoid fever. Members of the group recalled an event that had occurred sometime between July 24 and August 7 while they were in northern Italy. They had been traveling by train on a very hot day when the train stopped to take on water from a nearby pond. Some members of the group drank some of this water in spite of warnings from the counselors. Of the 19 persons in the group from Virginia, 10 drank the water, and six of them later became ill with typhoid fever. The other nine Virginians said they had not drunk the water; none of them had typhoid. ($p = .007$; Fisher's exact test comparing Virginia water drinkers ill and well with non-drinkers ill and well.) The two patients from Alabama denied drinking this water. The Virginians were generally together in the same small group during the various art tours. The patients from Alabama did not recall being part of that group.

Editorial Comment: Typhoid fever is becoming increasingly rare in the United States. However, physicians should consider typhoid fever in the differential diagnosis of febrile patients who have a history of foreign travel from 1 to 4 weeks prior to the onset of fever. An epidemiologic investigation should be conducted of all travelers who accompany such patients.

E. Salmonella schwarzengrund Outbreak in a New York City Restaurant. Reported by Howard B. Shookhoff, M.D., Acting Director, Bureau of Infectious Disease Control, City of New York, Department of Health; and Robert P. Harvey, M.D., EIS Officer, New York City.

During the last 2 weeks in August and the first week in September, 28 persons developed gastroenteritis after eating at a New York City restaurant. All reported nausea, diarrhea, and fever; 64 percent reported vomiting. The mean incubation time was 15 hours, with a range of 5-24 hours; mean duration of illness was 8 days, with a range of 4-16 days. Stool cultures were submitted by 16 of the patients and 12 were positive for S. schwarzengrund; two were positive for salmonella group B, not serotyped and two were negative. Food histories taken from the 28 ill persons and an additional nine persons who had eaten at the restaurant but who did not become ill, implicated two foods, cole slaw and roast turkey (Table 4). A total of 23 foods were listed on the menu.

Table 4

Food Specific Attack Rates -- Two Foods on New York City Restaurant Menu

	ATE			DID NOT EAT			
	Ill	Well	Attack Rate	Ill	Well	Attack Rate	P
Cole slaw	17	1	95%	11	8	58%	.011
Roast turkey	15	0	100%	13	9	59%	.003

(Probability computed by Fisher Exact Test)

Cultures of roast turkey taken from the restaurant on September 3, 1971, yielded S. schwarzengrund. Cultures of the cole slaw were negative for salmonellae. Stool cultures from all employees were negative except that submitted by the restaurant manager which grew S. schwarzengrund. The manager, who denied previous illness, helped in food preparation, including the cooking of 2-3 turkeys each morning. These were obtained locally, already dressed and were roasted for 3 hours and then kept at 100°F on a nearby shelf for use throughout the day. Cole slaw was prepared fresh daily and refrigerated at a temperature lower than the recommended 45°F in a large stainless steel pan.

The restaurant manager was suspended from duty until his stool cultures were twice negative, and the temperature of stored turkey was increased to greater than 140°F.

Editorial Comment: Although the source of salmonella contamination might have been the restaurant manager or improperly cooked turkey, the inadequate holding temperature of the turkey (100°F) precluded the destroying of salmonellae. Food must be heated to 140°F for 5 minutes to kill salmonellae. A meat thermometer should be used in cooking and holding warm turkey.

V. SPECIAL REPORTS

A. Recent Articles on Salmonellosis

1. Wilson VR, Hermann GJ, Balows A: Preliminary report of a new system for typing Salmonella typhi-murium in the United States. Appl Microbiol 21:774, 1971

2. Chu Ming Cheng, Boyle WC, Goepfert JM: Rapid quantitative method for salmonella detection in polluted waters. Appl Microbiol 21:662, 1971

3. Scragg JN, Rubidge CJ: Trimethoprim and Sulphamethoxazole in typhoid fever in children. Brit Med J 3(5777):738, 1971

4. Sato M, Munata M, Lardley R, Diena BB, Greenberg L: A rapid quantitative microtitration of salmonella antibody. Am J of Clin Path 55(6):729, 1971

5. Dupont HL, Hornick RB, Snyder MJ, Libonati JP, Woodward TE: Immunity in typhoid fever: evaluation of live streptomycin-dependent vaccine. In Proceedings of the 10th Interscience Conference in Antimicrobial Agents and Chemotherapy, Chicago, October 1970. Antimicrob Agents Chemother, 1970, pp 18-21

6. Okubadego OA, Montefiore DG, Hamilton G: Multiple drug resistance in salmonella G serotypes associated with a high incidence of human infections. J Trop Med Hyg 74(8):167, 1971

7. Lehman JS, Bassely S: Endotoxin tolerance in patients with chronic bacteremia and bacteriuria due to salmonella. J Infect Dis 124(3):318, 1971

8. Rocha H, Kirk JW, Heavey CD: Prolonged salmonella bacteremia in patients with Schistosomia Mansoni infection. Arch Intern Med 128(2):254, 1971

9. Marr JJ, Hoff RC: Superinfection of an amoebic abscess by S. enteritidis. Arch Intern Med 128(2):291, 1971

10. Wolfe MS, Armstrong D, Louria DB, et al: Salmonellosis in patient with Neoplastic disease - A review of 100 episodes at Memorial Cancer Center over a 13-year period. Arch of Intern Med 128:546, 1971

TABLE I. COMMON SALMONELLAE REPORTED FROM HUMAN SOURCES, THIRD QUARTER, 1971

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	OHI	IND	ILL	MIC	WIS	MIN	IOW	MO	ND	SD	NEB	KAN	DEL	MD	DC	VA	WVA	NC	SC	GA	FLA
anatum				5		5		2		5	2		2	4	4		1								4		2		1		3	13
bareilly									1							1											2		2		1	
blockley	2		1	11		7		9	17	4	9	7	1	6	1	6	2		2				1		9		3	1	7		5	3
braenderup				1				2	3	2	1		1	1	2				1												4	3
bredeney				2				1		1	1		2	2	1								2		8				3		3	8
chester	1			2						3	1					1	1							1	1						1	
cholerae-suis v kun				1										1															1		4	1
cubana											2	1		1		1			2								5		1		1	5
derby				2		1		6	7	7	6	3		9	4	4	2	1						2	16	1	1		8		11	7
enteritidis			3	98	3	21		37	50	124	46	5	3	82	20	46	10	6	11	1	2		11	5	20	1	8	9	16	1	23	28
give								1	1	1		1		3		1													1			
heidelberg	4			24		12	1	13	20	19	37	10	5	31	22	5	3	7	4	3	2		9	2	24	1	5		19		23	37
indiana				1				4	3	3	2		1		4								1		3	2			2		1	3
infantis	4		1	38	1	6		12	14	15	34	9	4	25	17	7	5		1		1		13		14	2	10	1	25		37	23
java	3			6		1		2	3	7	15			12	3	19	13		3				2	1			1		7		3	12
javiana				2					1	2	1			1	2			1	1				34		1		1		3		16	86
litchfield						2			2	3	1			1	1	9			2						2		1		1		1	12
livingstone																															1	
manhattan	1			4				4	5	12	3	2		20	8	1	1	2							12		3		1		2	5
miami				1		1			1					1															1			31
mississippi																1															11	1
montevideo	1			1	1			3	3	3	5	4		5	4	3		1	2				2	2	4	1	4		1		8	18
muenchen	1			4		1		5	3	1	13	2		8	1	6		1	1				2		2		3		2		11	26
newington				1				1	1		1			1					1				4		1							
newport				24	1	14		3	6	13	15	11	6	11	24	13	10	3	2	2			17	1	14		5		32		33	65
oranienburg				4	1	3			4	4	5	10		4	2	3	1						2		4		3		2		6	17
panama				5					2		3	1	1	2	3		2								2		1		1		4	
paratyphi B				21		1			1			7	2		13	3	2	1							5		11					
reading				5							1						2	1													2	
saint-paul				14		7		10	6	11	11	4	3	14	13	8	8	2	1	1			1	1	18		5	1	5		11	24
san-diego				2					1		3			1	1	1													1			
schwarzengrund						1		3	3	5			1	2	2	2			1								7				1	
senftenberg				1		1		1			3		2	1	1								1		4		3				1	1
tennessee						1				2	1			7	1												1					
thompson	2	1		20		4		8	6	8	9			16	13	10	9	27	13				11	2	4		16	1	2		5	12
typhi	2			6		4	1	4	5	3	26	10	2	8	4				1						1	1	6	2	6		1	15
typhimurium	13	1	8	107	5	50	1	58	63	103	114	36	18	99	56	93	43	24	26	9	7		198	1	65	2	75	3	72		80	89
typhimurium v cop	4			20		4				9				1	9			3	1													
weltevreden																																
worthington						1			1			1	3	1			1								1							1
TOTAL	38	2	13	433	12	148	3	189	233	370	371	124	57	381	236	244	116	80	76	16	12	—	311	18	239	11	182	18	223	1	314	546
ALL OTHER*	2	38	1	16	11	6	135	11	13	5	20	3	—	24	15	11	9	3	2	—	—	5	7	5	13	23	21	—	19	3	22	56
TOTAL	40	40	14	449	23	154	138	200	246	375	391	127	57	405	251	255	125	83	78	16	12	5	318	23	252	34	203	18	242	4	336	602

Note: NYA — New York, Albany; NYB — Beth Israel Hospital; NYC — New York City.
Beth Israel Hospital laboratory is a reference laboratory and this quarter serotyped a total of 267 cultures.

* See Table II.

TABLE I – Continued

GEOGRAPHIC DIVISION AND REPORTING CENTER																				TOTAL	% OF TOTAL	CUMULATIVE TOTAL	% OF CUMULATIVE 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	4	2			4	1	16						4					9		2	96	1.1	215	1.1	*anatum*
	3			2	1	1	4											1			19	0.2	43	0.2	*bareilly*
6	2	4	1	1	5		16		1				2	1		1	3	22		1	180	2.1	453	2.4	*blockley*
	2				9		5											2			39	0.5	86	0.5	*braenderup*
1	1	1			1		5											11		2	56	0.7	138	0.7	*bredeney*
						1					1		3					2			19	0.2	53	0.3	*chester*
																					8	0.1	19	0.1	*cholerae-suis v kun*
	2				1		5		1		1		1			1		5			36	0.4	230	1.2	*cubana*
	6	2			2	1	6		1				4			2		20		9	151	1.8	352	1.9	*derby*
1	8	5	1		4	2	25	3	4		6		1	2	2	12	9	31	1	3	810	9.7	1,797	9.5	*enteritidis*
		1			9		5						1					3		1	29	0.3	60	0.3	*give*
1	11	5		5	27	3	34				4		16	2		7	4	142	2	6	611	7.3	1,276	6.7	*heidelberg*
					3		2														35	0.4	81	0.4	*indiana*
1	7	7		1	11		42						6			5	25	30	1	5	460	5.5	1,009	5.3	*infantis*
2	8				2				1								2	41		5	174	2.1	442	2.3	*java*
	1			5	13	1	59						1	2			1	2			237	2.8	351	1.9	*javiana*
	1				2		3				1					1		7			53	0.6	120	0.6	*litchfield*
					2		1											3		2	9	0.1	33	0.2	*livingstone*
3	3			2	10	1	2				3					1		34		3	148	1.8	342	1.8	*manhattan*
																					36	0.4	61	0.3	*miami*
	2	7			9		2											2			35	0.4	49	0.3	*mississippi*
	3	3		1	7		21											4		1	116	1.4	292	1.5	*montevideo*
	1	3			8	1	16						2	1			2	10	1		138	1.6	300	1.6	*muenchen*
	4				2											1		1		1	20	0.2	35	0.2	*newington*
5	22	6		15	30	6	81		5		4		11				3	51		3	567	6.8	1,109	5.9	*newport*
				1	4	2	15				1		9	1		1	3	11			123	1.5	290	1.5	*oranienburg*
	1			4	9		14				1							7		20	83	1.0	176	0.9	*panama*
						3	14		2							2		1			89	1.1	187	1.0	*paratyphi B*
						2										8	7	1			29	0.3	128	0.7	*reading*
	6	3			11	2	20		1				3			2	10	26		8	271	3.2	713	3.8	*saint-paul*
	4	1						2			3						1	8		3	32	0.4	115	0.6	*san-diego*
		1																5			34	0.4	70	0.4	*schwarzengrund*
	1	2		1	2		10				5							7			48	0.6	146	0.8	*senftenberg*
3					1	1	4											5			27	0.3	62	0.3	*tennessee*
2	2	1			11	1	13		1		6		1	1		4	1	47		3	293	3.5	607	3.2	*thompson*
4	7			4	5		8					2	2				1	28		4	173	2.1	413	2.2	*typhi*
14	24	23	3	7	25	12	52	6	18	1	19		28	18		28	9	255	3	16	2,080	24.8	4,754	25.1	*typhimurium*
5	3			3	10			4	1		10		1				9				97	1.2	273	1.4	*typhimurium v cop*
																				37	37	0.4	102	0.5	*weltevreden*
					1		1											1		1	14	0.2	40	0.2	*worthington*
49	139	77	5	52	241	41	501	15	36	1	65	2	96	28	2	76	90	835	8	136	7,512	89.6	17,022	89.8	TOTAL
–	9	2	30	31	18	1	49	2	1	1	1	82	19	2	–	1	8	88	7	18	868		1,933		ALL OTHER*
49	148	79	35	83	259	42	550	17	37	2	66	84	115	30	2	77	98	923	15	154	8,380		18,955		TOTAL

TABLE II. OTHER SALMONELLAE REPORTED FROM HUMAN SOURCES, THIRD QUARTER, 1971

SEROTYPE	REPORTING CENTER																											
	ALA	ALK	ARI	ARK	CAL	COL	CON	DEL	DC	FLA	GA	HAW	IDA	ILL	IOW	KAN	LA	ME	MD	MAS	MIC	MIN	MIS	MO	MON	NEB	NH	NJ	NM
abony														1															
agona					2									4			2				1								
alachua					1																1								
albany			1														1												
amersfoort																													
amsterdam										1																			
arechavaleta																													
atlanta											10																		
berta	1		7		32					1									2			1							
binza					1																4								
birkenhead												1																	
blegdam																													
bonariensis					1																								
bovis-morbificans					1		1													1									
brandenburg					2									1															
california								2			1																		
carrau										1											1								
cerro					1					1		7																	
cholerae-suis							1																						
clifton																													
colindale					2															1									
colorado																													
denver																			1										
drypool					1									1		1					2	1							
dublin					7																								
duesseldorf										2							1												
durban														1															
eastbourne																						1							
eimsbuettel										2				1															
florida			2							1																			
gaminara				1						2				1			2												
gatow																													
georgia				1																									
grumpensis																													
habana			1												1							2							
hamburg																							1						
hartford					1					8	1						1			3	1			1					
heilbron																													
horsham					1																								
houten																													
ibadan				2																									
inverness										3																			
irumu					1																								
johannesburg					1																	1							
kentucky					1					4	1			1															
kottbus											1			2					2	2								2	
lexington					2																								
lomita																													
london					3						1			2															
luciana	1																												
madelia																					1								
manchester																													
meleagridis																			1		1								
minnesota					1					1							1								1				
mission																													
molade										1	1																		
muenster					1					1	3						1				2							2	
nchanga													1																
new-brunswick																													
newlands				2																									
nigeria				1																									
norwich				5		1										3	2			1									
ohio														2		1			1										
onderstepoort								2																					
ordonez																													
orion												2																	
oritamerin												8			2														
oslo					1																								
paratyphi A																			1										
pensacola																													
pomona																													
poona			3		2					18				3		1					1	1			1				
richmond																			1										
rubislaw			2							3							2		1										
rutgers																								1					
saphra																	1												
siegburg			1		11					1	1						3			1									
simsbury																													
singapore																													
stanley								1		1						1													
sundsvall			1																										
taksony																						1							
tallahassee										4																			
thomasville																		1											
tosamanga																													
uganda														2															
urbana			1		1		2												1	4								1	
vejle																													
virchow					1									1															
wassenaar											1																		
westhampton																				1									
willemstad																													
TOTAL	2	–	19	12	79	1	4	5	–	56	21	18	1	23	3	7	17	1	11	14	15	8	1	2	2	–	–	5	–
NOT TYPED*	–	7	–	19	9	–	2	–	23	–	1	–	–	1	–	–	1	1	2	2	–	1	29	–	–	5	38	–	82
TOTAL	**2**	**7**	**19**	**31**	**88**	**1**	**6**	**5**	**23**	**56**	**22**	**18**	**1**	**24**	**3**	**7**	**18**	**2**	**13**	**16**	**15**	**9**	**30**	**2**	**2**	**5**	**38**	**5**	**82**

*See Table V-A

TABLE II – Continued

REPORTING CENTER																	TOTAL	CUMULATIVE TOTAL	SEROTYPE
NYA	NYB	NYC	NC	OHI	OKL	ORE	PA	RI	SC	TEN	TEX	UTA	VT	VA	WAS	WIS	WYO			
								1								1		1	2	*abony*
										1								11	16	*agona*
		1																3	9	*alachua*
												1						3	11	*albany*
																		1	1	*amersfoort*
			1															1	2	*amsterdam*
																		1	1	*arechavaleta*
			1								1			3				10	16	*atlanta*
																		49	90	*berta*
																		5	8	*binza*
																		1	1	*birkenhead*
																1		1	1	*blegdam*
																		1	2	*bonariensis*
							1											4	19	*bovis-morbificans*
				1												1		5	7	*brandenburg*
										2						1		6	13	*california*
		1																2	5	*carrau*
																		10	16	*cerro*
	1	1					1											4	9	*cholerae-suis*
			1															1	2	*clifton*
																		2	2	*colindale*
																		1	1	*colorado*
																		1	1	*denver*
											1							7	15	*drypool*
																		7	11	*dublin*
																		3	4	*duesseldorf*
	1																	2	2	*durban*
																		1	7	*eastbourne*
							2											5	7	*eimsbuettel*
																		3	3	*florida*
	1										2							9	16	*gaminara*
											2							2	10	*gatow*
																		1	1	*georgia*
							1											1	4	*grumpensis*
							3				1							8	15	*habana*
																		1	1	*hamburg*
								1						2				18	27	*hartford*
																		1	1	*heilbron*
																		1	1	*horsham*
							1											1	1	*houten*
											1							3	6	*ibadan*
										1								4	8	*inverness*
																		1	2	*irumu*
																		2	3	*johannesburg*
																		7	30	*kentucky*
			4				6							1				20	51	*kottbus*
																		2	4	*lexington*
											1							1	8	*lomita*
	3	2	2	1			1				3					1		19	33	*london*
																		1	1	*luciana*
														1				1	4	*madelia*
														1				1	1	*manchester*
														2				4	13	*meleagridis*
	1	2	1				1				1							10	24	*minnesota*
														3				3	4	*mission*
																		2	4	*molade*
																		10	23	*muenster*
																		1	1	*nchanga*
														1				1	4	*new-brunswick*
																		2	2	*newlands*
																		1	1	*nigeria*
		1	2							3	1					1		20	24	*norwich*
											1							5	12	*ohio*
																		2	2	*onderstepoort*
										1								1	2	*ordonez*
																1		1	2	*orion*
	1																	3	3	*oritamerin*
							1				1							13	33	*oslo*
																		1	6	*paratyphi A*
			3															3	5	*pensacola*
					1													1	2	*pomona*
			1			1					4			1	1			38	78	*poona*
																		1	1	*richmond*
							1				4							13	19	*rubislaw*
																		1	1	*rutgers*
											1							2	7	*saphra*
		2								1	5							26	55	*siegburg*
	1																	1	5	*simsbury*
													1					1	1	*singapore*
	1																	4	11	*stanley*
																		1	1	*sundsvall*
																		1	3	*taksony*
																		4	5	*tallahassee*
											1							1	2	*thomasville*
																		1	1	*tosamanga*
																		2	3	*uganda*
		2	2	1			1				2							18	45	*urbana*
			1															1	2	*vejle*
														6				8	10	*virchow*
																		1	1	*wassenaar*
																		1	4	*westhampton*
											1							1	3	*willemstad*
–	10	12	19	3	1	1	20	2	–	9	34	1	1	20	1	7	–	468	980	TOTAL
135	1	1	–	–	–	7	–	9	3	–	14	1	–	1	–	4	1	400	953	NOT TYPED*
135	11	13	19	3	1	8	20	11	3	9	48	2	1	21	1	11	1	868	1,933	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, THIRD QUARTER, 1971

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
anatum	4	11	20	2	1	4	42	7		1	8
bareilly							–	24		1	25
blockley	5	1	1				7			1	1
braenderup	1						1				–
bredeney	1	6				1	8	2		1	3
chester			3		1	1	5				–
cholerae-suis v kun			19			1	20				–
cubana							–	1		1	2
derby	1	3	6				10	16		4	20
enteritidis	1						1	5		1	6
give		14				3	17	4			4
heidelberg	5	31	1	5	1	3	46	1			1
indiana				1			1			1	1
infantis	24	5	1			5	35	5		2	7
java						2	2				–
javiana							–				–
litchfield							–				–
livingstone						1	1	5		7	12
manhattan	1		1			1	3				–
miami							–				–
mississippi							–				–
montevideo	5	6		1			12	19		9	28
muenchen	1	1				2	4				–
newington							–	9		10	19
newport	4		1	11	2	4	22				–
oranienburg		1			2	1	4	14		5	19
panama			9				9			1	1
paratyphi B							–				–
reading	1	7					8				–
saint-paul	7	22			1	1	31			1	1
san-diego		13		1		2	16				–
schwarzengrund	3						3	10		9	19
senftenberg	1	2				1	4	18	15		33
tennessee		7	2				9	2		1	3
thompson	15	2					17				–
typhi							–				–
typhimurium	8	10	6	58	14	16	112			1	1
typhimurium v cop	10	14		8	3	7	42				–
weltevreden							–				–
worthington	7						7	2			2
TOTAL	105	156	70	87	25	56	499	144	15	57	216
ALL OTHER*	28	4	5	28	12	11	88	67	1	39	107
TOTAL	133	160	75	115	37	67	587	211	16	96	323

* 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	3			1		3	4	1	59	250	*anatum*
						1	1		26	42	*bareilly*
	1						–		9	130	*blockley*
	2	1					1		4	17	*braenderup*
	2						–		13	68	*bredeney*
							–		5	20	*chester*
							–		20	144	*cholerae-suis v kun*
2							–	2	6	56	*cubana*
2				1		2	3	11	46	94	*derby*
1	2	3				1	4		14	57	*enteritidis*
							–		21	30	*give*
		2		1			3	1	51	313	*heidelberg*
							–		2	11	*indiana*
	4	2				1	3	1	50	190	*infantis*
1	10						–	2	15	54	*java*
	5						–		5	12	*javiana*
	2						–		2	13	*litchfield*
	1						–		14	29	*livingstone*
	2						–		5	40	*manhattan*
							–		–	4	*miami*
	1						–		1	2	*mississippi*
		5		2		1	8	1	49	160	*montevideo*
2	6						–		12	42	*muenchen*
							–	1	20	53	*newington*
7	10					3	3	1	43	130	*newport*
	1				2	1	3	5	32	96	*oranienburg*
	1						–	4	15	26	*panama*
	5						–		5	12	*paratyphi B*
							–		8	190	*reading*
4	2		2	4			6	2	46	249	*saint-paul*
2		2					2		20	141	*san-diego*
							–		22	84	*schwarzengrund*
	1					8	8	2	48	155	*senftenberg*
		1					1	1	14	65	*tennessee*
	2	7	1		2		10		29	125	*thompson*
							–		–	9	*typhi*
10	11		1			3	4	7	145	755	*typhimurium*
	1						–		43	157	*typhimurium v cop*
							–		–	–	*weltevreden*
	1						–		10	85	*worthington*
32	76	23	4	9	4	24	64	42	929	4110	TOTAL
2	24	10	–	–	1	20	31	14	266	843	ALL OTHER*
34	100	33	4	9	5	44	95	56	1195	4953	TOTAL

TABLE IV. OTHER SALMONELLAE REPORTED FROM NONHUMAN SOURCES, THIRD QUARTER, 1971

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
agona	14						14				–
alachua							–	14		4	18
albany			1				1	1			1
amsterdam							–			4	4
binza		1					1	13		2	15
blegdam	1		1				2				–
bornum	1						1	7			7
california	1						1	2			2
cerro			1				1	2		1	3
cholerae-suis			1			1	2				–
drypool							–	2		1	3
dublin				25			25				–
duesseldorf						2	2				–
eimsbuettel		1					1	6	1	11	18
gallinarum	1						1				–
habana	1						1	2			2
hamburg				1			1				–
illinois							–	2			2
johannesburg						1	1				–
kentucky	1					1	2	7		2	9
kottbus					10	1	11				–
lexington					1		1			1	1
lille						1	1				–
london							–			2	2
madelia							–				–
manila							–	1			1
minnesota						1	1	1		2	3
nchanga						1	1				–
ohio							–				–
orion							–	1		7	8
poona					1		1				–
pullorum	5						5				–
rubislaw			1				1				–
saphra						1	1				–
siegburg	1	1				1	3	1			1
simsbury							–				–
stockholm							–			1	1
thomasville		1					1	3			3
urbana							–				–
wassenaar							–				–
westhampton							–				–
zz64:229							–				–
TOTAL	26	4	5	26	12	11	84	65	1	38	104
NOT TYPED*	2	–	–	2	–	–	4	2	–	1	3
TOTAL	**28**	**4**	**5**	**28**	**12**	**11**	**88**	**67**	**1**	**39**	**107**

*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				
		2					–		14	32	*agona*
							2		20	34	*alachua*
							–		2	13	*albany*
							–		4	8	*amsterdam*
							–	4	20	33	*binza*
							–		2	2	*blegdam*
					1	1	2		10	19	*bornum*
							–		3	22	*california*
		1				10	11		15	40	*cerro*
							–		2	10	*cholerae-suis*
							–		3	24	*drypool*
							–		25	50	*dublin*
							–		2	2	*duesseldorf*
							–		19	53	*eimsbuettel*
							–		1	1	*gallinarum*
							–		3	16	*habana*
							–		1	1	*hamburg*
							–		2	4	*illinois*
	1						–		2	17	*johannesburg*
		2					2		13	30	*kentucky*
							–	2	13	17	*kottbus*
							–		2	7	*lexington*
							–		1	5	*lille*
							–		2	4	*london*
	1					1	1		2	5	*madelia*
							–		1	5	*manila*
	2						–		6	10	*minnesota*
							–		1	1	*nchanga*
1							–		1	5	*ohio*
							–		8	14	*orion*
	4						–		5	10	*poona*
		1					1		6	24	*pullorum*
	1						–		2	4	*rubislaw*
							–		1	3	*saphra*
		4				8	12		16	60	*siegburg*
							–	2	2	10	*simsbury*
							–		1	1	*stockholm*
							–		4	26	*thomasville*
	9						–		9	21	*urbana*
	1						–		1	1	*wassenaar*
							–	1	1	3	*westhampton*
	1						–		1	1	*zz64:229*
1	20	10	–	–	1	20	31	9	249	739	TOTAL
1	4	–	–	–	–	–	–	5	17	104	NOT TYPED*
2	24	10	–	–	1	20	31	14	266	843	TOTAL

TABLE V. SALMONELLAE REPORTED BY GROUP IDENTIFICATION ONLY, THIRD QUARTER, 1971

A. HUMAN SOURCES

REPORTING CENTER	GROUP														TOTAL
	A	B	C		C1	C2	D		E	E1	E2		F	G	UNK	
ALASKA	2	5														7
ARKANSAS		10			1	5	1		1					1		19
CALIFORNIA		4			3		1							1		9
CONNECTICUT		2														2
D.C.		10	2		1	2	3								5	23
GEORGIA															1	1
ILLINOIS											1					1
LOUISIANA		1														1
MAINE		1														1
MARYLAND						1	1									2
MASSACHUSETTS						1					1					2
MINNESOTA		1														1
MISSISSIPPI		13	4		1		3		1					4	3	29
NEBRASKA		2				3										5
NEW HAMPSHIRE		24			6	3	2								3	38
NEW MEXICO		35			13	13	7		10				3	1		82
NEW YORK-A															135	135
NEW YORK-BI					1											1
NEW YORK-C															1	1
OREGON		1			1	2									3	7
RHODE ISLAND		2	2			3			1	1						9
SOUTH CAROLINA															3	3
TEXAS						9			1						4	14
UTAH		1														1
VIRGINIA															1	1
WISCONSIN															4	4
WYOMING															1	1
TOTAL	**2**	**112**	**8**		**27**	**42**	**18**		**14**	**1**	**2**		**3**	**7**	**164**	**400**

B. NONHUMAN SOURCES

SOURCES	GROUP														TOTAL
	A	B	C		C1	C2	D		E	E1	E2		F	G	UNK	
DOMESTIC ANIMALS AND THEIR ENVIRONMENT		1			2										1	4
ANIMAL FEEDS		1			2											3
WILD ANIMALS AND BIRDS															1	1
REPTILES AND ENVIRONMENT		2			1		1									4
HUMAN DIETARY ITEMS																—
MISCELLANEOUS					2	1	1		1							5
TOTAL	**—**	**4**	**—**		**7**	**1**	**2**		**1**	**—**	**—**		**—**	**—**	**2**	**17**

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The State Epidemiologists are the key to all disease surveillance activities. They are responsible for collecting, interpreting, and transmitting data and epidemiologic information from their individual States; their contributions to this report are gratefully acknowledged. In addition, valuable contributions are made by State Laboratory Directors; we are indebted to them for their valuable support.

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