REPORT NO. 95
April 21, 1970

NATIONAL
COMMUNICABLE DISEASE CENTER

SALMONELLA

SURVEILLANCE

CONTENTS. . .

FOR THE MONTH OF FEBRUARY 1970

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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I. SUMMARY

In February 1970, 1,308 isolations of salmonellae were reported from humans, an average of 327 isolations per week (Tables I, II, and V-A). This number represents a decrease of 59 (15.3 percent) from the weekly average of January 1970 and an increase of 70 (27.2 percent) over the weekly average of February 1969.

Reports of 739 nonhuman isolations of salmonellae were received during February 1970 (Tables II, IV, and V-B).

II. REPORTS OF ISOLATIONS

The ten most frequently reported serotypes during February:

	HUMAN				NONHUMAN	
	Serotype	Number	Percent	Rank Last Month	Serotype	Number	Percent
1	typhi-murium*	347	26.5	1	typhi-murium*	100	13.5
2	enteritidis	108	8.3	3	saint-paul	68	9.2
3	heidelberg	99	7.6	2	anatum	67	9.1
4	newport	91	7.0	4	heidelberg	66	8.9
5	thompson	68	5.2	8	cholerae-suis var. kunzendorf	32	4.3
6	saint-paul	65	5.0	7	senftenberg	30	4.1
7	infantis	58	4.4	6	thompson	27	3.7
8	manhattan	37	2.8	>10	infantis	26	3.5
9	typhi	34	2.6	10	worthington	25	3.4
10	blockley	30	2.3	>10	kentucky	18	2.4
					montevideo	18	2.4
	Total	937	71.6		Total	477	64.5
	TOTAL (all serotypes)	1,308			TOTAL (all serotypes)	739	
	*Includes var. copenhagen	22	1.7		*Includes var. copenhagen	12	1.6

III. CURRENT INVESTIGATIONS

None

IV. REPORTS FROM THE STATES

A. Salmonellosis Following a Church Supper - Louisiana

Reported by Kenneth C. Schneider, M.D., M.P.H., Resident, Clinical Preventive Medicine, Tulane University School of Public Health and Tropical Medicine, and Charles T. Caraway, D.V.M., M.P.H., Chief, Section of Epidemiology, Louisiana State Department of Health.

Two hundred of 201 persons developed symptoms of gastroenteritis following a church supper in New Orleans on the evening of November 20, 1969. Interviews with 71 ill persons revealed the following symptoms: diarrhea (100 percent); fever (82 percent); vomiting (82 percent); nausea (69 percent); headache (66 percent); chills (54 percent); and abdominal pain (47 percent). Onsets of illness ranged from 1 to 53 hours (mean 12.7 hours) following the supper. Of the 71 patients interviewed, 18 required hospitalization; there were 2 deaths. Stool specimens from 17 patients were positive for Salmonella thompson.

The supper included fried chicken, potato salad, bread dressing, green peas, bread, cookies, and punch. Since the overall attack rates among persons attending the dinner approached 100 percent, food specific attack rates were not meaningful. Among ill persons, 93 percent had consumed fried chicken; 83 percent, potato salad; 70 percent, bread dressing; 63 percent, green peas; 48 percent, bread; 42 percent, cookies; and 14 percent, punch. The single well person ate fried chicken, dressing, and cookies.

Preparation of the supper had begun the day before. Approximately 55 chickens were delivered to the church by a local grocery store at about 4:00 pm. The chickens were washed, salted, and placed into plastic refrigerator buckets. By 8:00 pm, all the buckets were placed in a rather small home-type refrigerator (approximately 5.0 cubic feet), which became so crowded that some buckets had to be kept in the top freezer compartment.

During this time, other food preparation was proceeding in a separate area of the kitchen, apparently with separate utensils and containers. Potato salad seasonings (fresh celery, parsley and green onions) and hard boiled eggs in their shells were then placed in the refrigerator overnight in containers separate from the chickens. Potatoes were boiled, peeled, and left in aluminum pots overnight without refrigeration.

On the day of the supper, final food preparations were begun at approximately 4:30 pm. The potato salad was prepared from the boiled potatoes, hard boiled eggs, seasonings, and mayonnaise; it was not refrigerated. The chickens were rolled in flour and deep fried beginning at 5:00 pm. Bread dressing was prepared separately from the other foods at the home of one of the parishioners. Broth rendered by boiling chicken necks and gizzards on the morning of the dinner was used as stock. The dressing was baked in an oven and brought to the dinner, still hot, at approximately 4:30 pm.

Serving of meals began between 5:30 and 6:00 pm. Several persons who ate meals complained that the chicken meat was undercooked and "bloody". Many said that the potato salad tasted "bad".

The kitchen was inspected by city sanitarians on November 24, 1969. Numerous food samples and environmental swabs were taken. Salmonella thompson was isolated from a counter top swab, bread dressing, potato salad, and chicken both raw and cooked. Samples of chicken of the same type but probably from different batches were also obtained at the local grocery store; the samples grew no salmonellae.

EDITOR'S COMMENT: Bacteriologic evidence of contamination of multiple foods was obtained. Food histories did not clearly implicate any one vehicle, although fried chicken was consumed by the highest percentage of ill persons. Chicken would also be the most likely vehicle on the basis of 1969 surveillance data. Of 315 isolations of S. thompson from non-human sources during 1969, 159 (50.5 percent) were from chickens. During the preparation of the chicken, a number of opportunities were present for multiplication of salmonellae. The chickens were initially cleaned and maintained at room temperature for at least several hours prior to being refrigerated. Since the refrigerator was overcrowded, it is likely that the cooling rate for the chickens was slowed permitting even further multiplication while the chickens were refrigerated. Possibly frozen pieces of chicken may not have been adequately cooked. It is likely that contamination of other foods occurred from working surfaces during preparation.

B. An Inapparent Outbreak of Salmonellosis in an Infants' Home - Maryland

Reported by Howard J. Garber, M.D., Chief, Division of Communicable Diseases, Maryland State Health Department; Henry B. LaPommeray, M.D., Dr.P.H., Director, Division of Communicable and Chronic Disease Control, and Mary Clithero, B.S., Sanitarian, Prince George's County Health Department; Edwin Swecker, B.S., Enteric Microbiologist, Bureau of Laboratories, Maryland State Health Department; and Harold Mellin, M.D., EIS Officer located at the Maryland State Health Department.

In March 1970, an inapparent outbreak of salmonellosis occurred at an infants' home in Prince George's County, Maryland. The home is a modern brick structure operated by a religious order to house expectant unwed mothers and fondling infants. Quarters are available for 12 staff members, up to 32 expectant mothers and about 100 children from 3 days to 5 years of age. There is a central kitchen, central laundry, and four separate wards for children according to their age. There are 50 full-time lay employees. In 1964 outbreaks of Salmonella typhi-murium and S. derby had occurred in the home among the infants and were thought to be spread by person-to-person contact.

The current outbreak was first noted in late February 1970, when one of the children on the ward which houses children ages 4 months to one year developed diarrhea. According to the staff physician, this child was cultured and thought to have a shigella isolate; however, there was no record of such an isolate. Because of this child's diarrhea, routine stool cultures were obtained on the other children in his room and several of these cultures yielded S. blockley. Routine cultures were then taken on all of the children in the home. In all, S. blockley was recovered from the stools of 24 children, all of whom were asymptomatic. The ages ranged from 3 months to 20 months, and all infected children lived in this single ward. No children from any of the other wards were found to have a positive culture.

Inspection of the kitchen, formula preparation room, wards, and laundry room showed everything to be immaculate and in good working order. Appropriate cultures were taken from personnel, food from the grinders, and from the formula room. All of the aides who worked on this ward were cultured. All cultures were negative for enteric pathogens except the culture from one aide who worked on this ward which yielded S. derby.

All of the children living in the affected ward had been there for a couple of months and were not recent admissions. They were on occasion visited by their mothers. Their ward consisted of approximately 35 children, each of whom had his own crib. The ward was separated into separate rooms with closed doors and each room held about 6 to 8 cribs. Each room contained a stainless steel sink with an attached stainless steel dressing table. Soap dispensers were located above the sinks. Rooms also contained

buckets for garbage and for diapers which were placed into cloth bags. The children shared feeding tables, toys, and cribs. The aides who cared for the children were supposed to wash their hands after handling each child and were expected to wash the dressing table after a child had been changed. Prior to the outbreak, the nurses on each ward freely intermingled amongst the children within a given ward but they did not communicate with personnel on other wards.

The children in the affected ward received both formula and solid foods. The formula that was prepared for them was similar to that made for the younger infants. It was prepared from powdered Similac, and terminally sterilized. Since the younger infants housed on a separate ward also received the formula but did not have any positive cultures, it seemed unlikely that the formula was the source of the salmonellae. On the other hand since the older children received solid foods prepared in the same kitchen as food for the infected children and since the older children did not have positive cultures, it seemed unlikely that the kitchen was the source of infection. Furthermore, all cultures obtained from food samples in the kitchen were negative for salmonellae.

Another possibility was that S. blockley had been spread by person-to-person contact among the children on this one ward. The bacteria could have been spread via shared dressing tables, feeding tables, toys, or nurses aides, especially since the children were asymptomatic and infection was not suspected. However, none of the aides who handled the children were found to be infected with S. blockley nor did any have a history of diarrheal illness.

In order to prevent further spread of infection, all children with positive cultures were placed in rooms apart from those with negative cultures. Culture-positive children were not taken out of their rooms into the general play area. The aides who worked with culture-positive children were not allowed to work with the culture-negative children and were not allowed to intermingle with the other personnel. Only after infected children were proved to be negative for salmonellae could they be taken out of isolation and placed with the other children. New admissions to the affected ward were deferred until the outbreak had ended. Handwashing of the aides was stressed after handling each child, as was washing of the dressing table with soap and water after each child had been dressed or diaper changed. The isolation rooms and their equipment were scrubbed each day with Lysol solution. Other suggestions included the use of disposable paper diapers and sheets of paper on the dressing table which could be discarded after each child had been changed.

It could not be determined how S. blockley was introduced into the ward. Since the outbreak in 1964, each new admission to the home has undergone a period of isolation at which time he has stool cultures taken to be certain that he is free of enteric pathogens. The aide whose stool culture grew out S. derby was temporarily relieved of duty.

C. An Outbreak of Salmonellosis - Albuquerque, New Mexico

Reported by Lawrence Trujeque, Sanitarian, Division of Environmental Health, Albuquerque; Ruth Licht, R.N., Public Health Nurse Epidemiologist, Bernalillo County Health Department; Diane Micah, M.D., and John Ulrich, Ph.D., University of New Mexico School of Medicine; Bruce D. Storrs, M.D., Director, Medical Services Division, New Mexico Department of Health; Eva Wallen, M.D., District Health Officer, Albuquerque; and Daniel E. Johnson, Ph.D., Director, Public Health Laboratory Division, New Mexico Department of Health.

An outbreak of salmonellosis occurred among 35 patients and personnel of a mental hospital in Albuquerque, New Mexico, following two identical Thanksgiving dinners

served on November 26-27, 1969. Twelve persons (34.3 percent), including 3 of 10 who ate the November 26 meal and 9 of 25 who ate the November 27 meal, reported symptoms including diarrhea (100 percent), nausea (80 percent), vomiting (80 percent), abdominal cramps (70 percent), chills (70 percent), muscular aches (70 percent), headache (60 percent), and bloody stools (25 percent). Onsets of illness ranged from 16 to 108 hours following the meals with a mean incubation period of 42 hours and a median of 36 hours. None of the victims required hospitalization and there were no deaths. Stool specimens from 10 of the 12 patients yielded Salmonella newport; a stool survey of others present at the dinner revealed one asymptomatic infection.

The meals included sliced turkey, dressing, gravy, mashed potatoes, peas and carrots, salad with french dressing, and a cream puff. Since several of the food items were consumed by nearly everyone present, food histories alone were not sufficient to incriminate a specific food vehicle. However, sliced turkey found wrapped in plastic bags in the freezer one week after the outbreak yielded S. newport. A canister of gravy obtained at the same time was negative for salmonellae.

Large turkeys had been cooked at 350°F for 5-6 hours on the morning of November 25. After cooling, the carcasses were boned and sliced by hand on stainless steel work tables. Sliced turkey was placed on trays and refrigerated until 10:00 am November 26, at which time the meat was transferred to roasting pans, heated at 350°F for 15 minutes, and served to approximately 225 persons at 11:15 am. None of these individuals reported subsequent gastrointestinal illness.

A portion of the remaining turkey was returned to the oven and "warmed" until 1:30 pm, at which time it was served to 8 food employees and 2 staff members. Three of these ten people later became ill. The remaining turkey was placed in plastic bags and frozen until 7:00 am the following day. After thawing at room temperature for 4 hours, it was "warmed" in the oven for 1¼ hours and then served to 25 people, 9 of whom subsequently became ill.

Inspection of the premises revealed an adequate level of sanitation; however, soap and sanitary towels were absent at the hand sinks. Environmental swabs taken from kitchen work areas were negative for salmonellae.

None of the kitchen personnel gave a history of previous gastrointestinal illness, although two had became acutely ill after eating the Thanksgiving dinner. Stool cultures obtained from other food handlers involved in the meal's preparation revealed four additional asymptomatic S. newport infections. The turkey may have been contaminated by environmental surfaces at the time of boning and slicing although good routine sanitizing procedures were used in the kitchen area. Alternatively, it is possible that the turkey was contaminated by an infected food handler, either the day it was prepared or during subsequent manipulations prior to serving.

EDITOR'S COMMENT: The investigation of this outbreak indicated that adequate roasting times and temperatures had been used to prepare the raw turkey. The meat was therefore apparently contaminated after the initial roasting period. Turkey consumed by 35 persons on November 26-27 had been warmed prior to serving, but at the temperature setting used, the oven may have accelerated replication rather than destroying contaminating salmonellae.

D. An Outbreak of Salmonellosis in a Newborn Nursery - Virginia

Reported by Robert E. Harris, Major, USAF, MC, Chief, OB/Gyn Services, Gerald N. Black, Major, USAF, BSC, Clinical Laboratory Officer, and Wanda J. Higdon, Lt. Colonel, USAF, NC, Chief, Nursing Services, USAF Regional Hospital (TAC), Langley AFB, Virginia 23365.

A Salmonella thompson outbreak occurred in the newborn nursery at the USAF Regional Hospital, Langley AFB, Virginia from December 1968 to March 1969. On December 16, 1968, an eight day old infant was seen in the emergency room for mild diarrhea. The child had been discharged five days previously from the hospital nursery. Stool cultures revealed S. thompson and the patient was treated at home. All family cultures were negative.

On January 8, 1969, S. thompson was isolated from a four day old newborn infant still in the nursery. Stool cultures of both the infant's mother and father were found to be positive for S. thompson. An intensive cultural survey of personnel and equipment in the obstetrical and nursery area revealed no S. thompson isolates.

A third S. thompson isolate was obtained on February 14, 1969, from a premature infant, 25 days after delivery. Extensive environmental culturing and culturing of all medications used by patients, food carts, showers, formulas, Sitz baths, water pitchers, and personnel were performed; all were negative for salmonellae.

During the period March 3 - 13, eight S. thompson isolates from infants and 3 from mothers in the hospital were obtained. All adults were asymptomatic; infants generally showed only mild diarrhea.

Extensive culturing of nursery personnel revealed one asymptomatic nurse excreting S. thompson.

The following measures were then instituted: 1) the nurse was removed from the obstetrical-nursery areas; 2) infants were kept in the mothers' rooms and the nursery itself closed; 3) the unit was extensively washed, painted, and rewashed; 4) the nursery was not reopened until all mothers and infants who had been in the hospital prior to its being painted were discharged; 5) extensive recultures of the entire unit and personnel were performed; 6) all equipment, such as cushioned chairs, which could not be adequately washed, were removed from the unit and new washable equipment was substituted.

Epidemiological family surveys in each case showed no relationship among the families involved; the families were unknown to each other and a potential common source of infection could not be established.

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.: Rapid detection of salmonella in turkey rolls and on fresh chicken parts. Poultry Science 48:1528, 1969.

2. Brownell, J. R., Sadler, W. W., and Fanelli, M. J.: Factors influencing the intestinal infection of chickens with Salmonella typhi-murium. Avian Diseases 13:804, 1969.

. DuPont, H. L., Hornick, R. B., Weiss, C. F., Snyder, M. J., and Woodward, T. E.: Chloramphenicol acid succinate for typhoid and Rocky Mountain spotted fever. New England J. Med. 282:53, 1970.

. Goepfert, J. M., and Chung, K. C.: Behavior of Salmonella in Sliced Luncheon Meats. Appl. Microb. 19:190, 1970.

. Goepfert, J. M., and Insalata, N. F.: Salmonellae and the fluorescent-antibody technique-A current evaluation. J. of Milk and Food Tech. 32:465, 1969.

. Greenfield, J. and Bankier, J. C.: Isolation of Salmonella and Arizona using enrichment media incubated at 35° and 43° C. Avian Diseases 13:864, 1969.

. Heard, T. W., Jennett, Nada E., and Linton, A. H.: The incidence of Salmonella excretion in various pig populations from 1966 to 1968. The British Vet. J. 125:635, 1969.

. Iveson, J. B. and Mackay-Scollay, E. M.: Strontium chloride and strontium selenite enrichment broth media in the isolation of Salmonella. J. of Hygiene 67:457, 1969.

. Iveson, J. B., Mackay-Scollay, E. M., and Bamford, V.: Salmonella and Arizona in reptiles and man in Western Australia. J. of Hygiene 67:135, 1969.

. Steele, J. H.: Salmonellosis. Archives of Environmental Health 19:871, 1969.

. Werner, S. B., Allard, Jack, and Ager, E. A.: Salmonellosis from chickens prepared in commercial rotisseries. Report of an Outbreak. Amer. J. of Epid. 90:429, 1969.

. Westerlund, Neil C. and Bierman, Arnold H.: Salmonellosis. Report of an Unusual Case. Amer. J. of Clin. Path. 53:92, 1970.

B. Recalls of Products Contaminated with Salmonellae for Period January 26, 1970, to March 18, 1970 (reported by the U. S. Food and Drug Administration).

From January 26, 1970 to March 18, 1970, seven 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 No.	Use	Depth of Recall	Product Distribution	Serotype
1/26	Dried whole milk, in 100 lb. bags (Mfr. for H. C. Christians Co., Chicago, Ill.)	(Mfr.) St. Charles Condensing Co., St. Charles, Minnesota	95CH47 106CH60 95CH79 107CH82	Food	Consignee	Pennsylvania, Minnesota, Wisconsin	S. senftenberg
	Budd Pasteurized Dried Egg Products, solids in 120 lb. drums. (Dist. by Anheuser-Busch, Inc., Bakery Products Div., St. Louis, Mo.)	(Mfr.) Continent Foods Corp., Marionville, Mo.	152379 152489	Food	Wholesale	California, Virginia	S. siegburg and S. thompson
	Frozen egg whites in 30 lb. cans (Dist. by Ballas Egg Products, Zanesville, Ohio)	(Mfr.) Ballas-Adams Egg Products, Inc., Jackson, Mississippi	P1058-95-AK	Food	Single Consignee	New York	S. thompson
2/16	Dried sweet cream buttermilk in 50 lb. bags (Mfr. Land-O-Lakes Creameries, Whitehall, Wisconsin)	(Mfr.) Land-O-Lakes Creameries, Whitehall, Wisconsin	ON 2-2	Food	Wholesale	Michigan	S. tennessee
	Nonfat dried milk in 160/50 lb. bags. (Mfr. Land-O-Lakes Creameries, Whitehall, Wisconsin)	(Mfr.) Land-O-Lakes Creameries, Whitehall, Wisconsin	ON 2-2	Food	Wholesale	Ohio	S. tennessee
	120 lbs. Bud Dried Egg Food Product Pasteurized, dried whole egg in drums, (Mfr. Continent Foods, Marionville, Mo.)	(Mfr.) Continent Foods, Marionville, Mo.	15-2879	Food	Wholesale	California	S. siegburg

Recalls of Products Contaminated with Salmonellae (Continued)

Week Ending	Name, Label, Form	Manufacturer, Distributor	Lot No.	Use	Depth of Recall	Product Distribution	Serotype
3/18	Wayne Nonfat Dry Milk in 100 lb. paper bags with plastic liners, labeled in part "Net Weight 100 lbs. Wayne Brand Low Heat Spray Process Grade 'A'" (Mfr. Wayne Coop Milk Producers, Inc., Fort Wayne, Indiana)	Wayne Coop Milk Producers, Inc., Fort Wayne, Ind.	349-69	Food	Wholesale	Ohio	S. montevideo

VI. INTERNATIONAL

NONE

TABLE I. COMMON SALMONELLAE REPORTED FROM HUMAN SOURCES, FEBRUARY, 1970

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				1				1		1	2						2														1
bareilly									1																						
blockley				3				3	2		3	1		4	1	2	2							1							1
braenderup									1					1																	
bredeney														2		1	1								2						2
chester				1										3														1			
cholerae-suis v kun														1																	
cubana				4		1								3													2		2		1	2
derby				2				2	2		3	4		1	1	1									2	1			1		3	
enteritidis	2			6	3	2		10	9		8	2	5	14	6	5	2		1						1	1	3		2			2
give																															
heidelberg								3	9		8	3	3	9	8	2	9		2						4	2			3		3	11
indiana									1						1										1				1			
infantis						3			4	1	2	1	1	4	2	1	1		1				5			1	1		4			4
java						1		1			7			2									1								1	
javiana				2							1					1															1
litchfield									3		2			1					1						1				1		1	2
livingstone																															
manhattan						2		4	4	1	3	6		2	1		2												1			4
miami																															2
mississippi																															
montevideo				2					4	1	5					3									2							
muenchen				2					3		1			1	1								1									4
newington			1																												
newport				2		7		1	4	2	2	1	1	1	1	5	1		1				2							3	7
oranienburg				1				2		8		1				2									1							4
panama						1		2						1			1															
paratyphi B												3		1											1				2			
reading																															4
saint-paul			1	2		1		3	5	3	2	2	1	2	4	8	1							1	2				1		1	1
san-diego									1					1																		
schwarzengrund									1						1		3														1	
senftenberg								1																								2
tennessee								1																						1		
thompson								3	5	5	2	3		6	10	3	1								1			1	1		5	1
typhi	1			1		2	1	3	2		1	1					1												1			6
typhimurium				24		4		13	33	9	10	20	2	19	7	15	6	2	2		5		2		7		4		10		5	15
typhimurium v cop				8		2				1				3	6																	
weltevreden																																
worthington											2																					
TOTAL	3	–	2	61	3	26	1	53	94	32	64	48	13	82	50	49	33	2	8	–	5	–	11	2	25	5	10	1	31	1	24	76
ALL OTHER*	–	2	–	1	1	–	15	3	9	–	7	–	–	1	2	–	–	1	–	1	–	–	2	1	1	2	1	–	–	1	2	5
TOTAL	3	2	2	62	4	26	16	56	103	32	71	48	13	83	52	49	33	3	8	1	5	–	13	3	26	7	11	1	31	2	26	81

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 93 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											1		2			12	0.9	27	0.9	*anatum*
	1																				2	0.2	8	0.3	*bareilly*
2		1					1				1					1		1			30	2.3	59	2.1	*blockley*
					1																3	0.2	5	0.2	*braenderup*
							1											1		1	11	0.8	20	0.7	*bredeney*
																					5	0.4	11	0.4	*chester*
																					1	0.1	2	0.1	*cholerae-suis v kun*
		1									1							1		1	19	1.5	34	1.2	*cubana*
		1					1											2		2	29	2.2	74	2.6	*derby*
	5						1		6		1				1	1		8		1	108	8.3	228	8.0	*enteritidis*
					1																1	0.1	5	0.2	*give*
		3			3		4				2						1	5	1	1	99	7.6	224	7.9	*heidelberg*
																					4	0.3	8	0.3	*indiana*
3		1			3		4				1		1					9			58	4.4	121	4.2	*infantis*
					1									1				11		2	28	2.1	48	1.7	*java*
					1													2			8	0.6	23	0.8	*javiana*
																		3			15	1.1	28	1.0	*litchfield*
							1													1	2	0.2	4	0.1	*livingstone*
																		7			37	2.8	64	2.2	*manhattan*
																					2	0.2	5	0.2	*miami*
																					–	–	2	0.1	*mississippi*
					1								1					3			22	1.7	40	1.4	*montevideo*
							2											1			16	1.2	25	0.9	*muenchen*
																					1	0.1	3	0.1	*newington*
	2	1			4		18				4		5			1	2	12		1	91	7.0	206	7.2	*newport*
					1												3				23	1.8	42	1.5	*oranienburg*
											2					1					8	0.6	20	0.7	*panama*
							1														8	0.6	19	0.7	*paratyphi B*
																1		1			6	0.5	17	0.6	*reading*
	1						5									10		7		1	65	5.0	126	4.4	*saint-paul*
																1	3	4			10	0.8	115	4.0	*san-diego*
																					6	0.5	15	0.5	*schwarzengrund*
							1											2			6	0.5	10	0.4	*senftenberg*
																					2	0.2	4	0.1	*tennessee*
		3			1		4											13			68	5.2	125	4.4	*thompson*
				1								2	2			1	1	6	1		34	2.6	68	2.4	*typhi*
1	3	1		3	1	3	18		1		13			1		3	1	58		4	325	24.8	690	24.2	*typhimurium*
					1				1												22	1.7	39	1.4	*typhimurium v cop*
																				6	6	0.5	15	0.5	*weltevreden*
							1														3	0.2	9	0.3	*worthington*
6	12	12	–	4	20	3	63	–	8	–	25	2	9	2	1	21	11	159	2	21	1196	91.4	2588	90.8	TOTAL
–	1	1	1	2	–	–	16	1	–	–	1	12	3	–	–	2	2	7	3	2	112		263		ALL OTHER*
6	13	13	1	6	20	3	79	1	8	–	26	14	12	2	1	23	13	166	5	23	1308		2851		TOTAL

TABLE II. OTHER SALMONELLAE REPORTED FROM HUMAN SOURCES, FEBRUARY, 1970

SEROTYPE	REPORTING CENTER																						
	ALA	ALK	ARI	ARK	CAL	COL	DEL	DC	FLA	GA	HAW	ILL	IOW	KAN	MD	MAS	MIC	MIS	MON	NH	NM	NYA	NYB
alachua							1																
albany					2																		
amager					1																		
berta						1											1						
binza										1													
bovis-morbificans																							
bradford																							
california																							
carrau																							1
cerro											1												1
chailey					1																		
cholerae-suis																							
gaminara	1																						
hartford									1														
kentucky												1											
manchester																							
meleagridis					1																		
minnesota															1								
muenster										1													
new-brunswick					1																		
oritamerin																							
oslo											1												
poona			2						3					1									
shubra														1									
siegburg			1													1							
simsbury																							1
tallahassee									1														
urbana																	1						
TOTAL	1	–	3	–	6	1	1	–	5	2	2	1	–	2	1	1	2	–	–	–	–	–	3
NOT TYPED*	–	3	–	2	1	–	–	2	–	–	–	–	1	–	–	–	–	1	1	2	12	15	–
TOTAL	**1**	**3**	**3**	**2**	**7**	**1**	**1**	**2**	**5**	**2**	**2**	**1**	**1**	**2**	**1**	**1**	**2**	**1**	**1**	**2**	**12**	**15**	**3**

* See Table V-A

TABLE II – Continued

REPORTING CENTER													TOTAL	CUMULATIVE TOTAL	SEROTYPE
NYC	ND	ORE	PA	RI	SC	TEN	TEX	VA	WAS						
													1	2	*alachua*
													2	3	*albany*
													1	2	*amager*
													2	10	*berta*
			1										2	3	*binza*
									2				2	2	*bovis-morbificans*
			1										1	1	*bradford*
						1							1	1	*california*
													1	1	*carrau*
													2	3	*cerro*
													1	2	*chailey*
			1										1	1	*cholerae-suis*
													1	1	*gaminara*
													1	1	*hartford*
1							2						4	8	*kentucky*
			1				1						2	3	*manchester*
													1	2	*meleagridis*
	1		1										3	9	*minnesota*
													1	2	*muenster*
		1											2	4	*new-brunswick*
			1										1	1	*oritamerin*
													1	3	*oslo*
							2						8	15	*poona*
													1	1	*shubra*
													2	3	*siegburg*
													1	1	*simsbury*
													1	2	*tallahassee*
1			1										3	4	*urbana*
2	1	1	7	–	–	1	5	–	2				50	111	TOTAL
7	–	1	–	1	1	–	11	1	–				62	152	NOT TYPED*
9	1	2	7	1	1	1	16	1	2				112	263	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, FEBRUARY, 1970

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
anatum	4	5	1	2			12	54		1	55
bareilly	1						1				—
blockley	10						10				—
braenderup							—				—
bredeney	1	1	1				3	10			10
chester		1					1				—
cholerae-suis v kun			31				31				—
cubana							—	1		1	2
derby			1	1		1	3	3			3
enteritidis	1		1	7			9				—
give							—				—
heidelberg	16	27	1	1		2	47	7		1	8
indiana	1	1					2				—
infantis	7	2	6			1	16	1		1	2
java			1				1				—
javiana			1				1				—
litchfield							—				—
livingstone		1					1	2			2
manhattan	3	3					6				—
miami							—				—
mississippi							—				—
montevideo	2	1					3	11		3	14
muenchen							—	2			2
newington			2				2	2			2
newport		1	2	4	1	1	9	2		1	3
oranienburg		1					1	7		1	8
panama							—				—
paratyphi B							—				—
reading		4				2	6			1	1
saint-paul	25	37		1			63				—
san-diego		8					8				—
schwarzengrund		1				1	2	3		3	6
senftenberg	3	4	1				8	1		5	6
tennessee		1					1	11			11
thompson	4	1					5	2			2
typhi							—				—
typhimurium	14	29	7	20	2	3	75	2			2
typhimurium v cop	8		1	2		1	12				—
weltevreden							—				—
worthington	11	2				1	14	7		3	10
TOTAL	111	131	57	38	3	13	353	128	—	21	149
ALL OTHER*	17	4	8	9	2	7	47	47	—	13	60
TOTAL	**128**	**135**	**65**	**47**	**5**	**20**	**400**	**175**	**—**	**34**	**209**

* 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				
							–		67	127	*anatum*
	1				1	1	2		4	5	*bareilly*
							–		10	14	*blockley*
	1						–		1	4	*braenderup*
						2	2		15	37	*bredeney*
						1	1		2	10	*chester*
1							–		32	91	*cholerae-suis v kun*
						1	1		3	11	*cubana*
							–		6	13	*derby*
		1					1		10	27	*enteritidis*
							–		–	–	*give*
1							–	10	66	110	*heidelberg*
							–		2	3	*indiana*
		5			1	1	7	1	26	42	*infantis*
	8						–		9	13	*java*
						2	2		3	3	*javiana*
							–		–	2	*litchfield*
						1	1		4	10	*livingstone*
							–		6	8	*manhattan*
							–		–	–	*miami*
							–		–	–	*mississippi*
					1		1		18	36	*montevideo*
							–		2	3	*muenchen*
							–		4	6	*newington*
1	1					1	1	2	17	39	*newport*
1							–	1	11	30	*oranienburg*
							–		–	–	*panama*
	1						–		1	1	*paratyphi B*
							–		7	14	*reading*
			1			3	4	1	68	126	*saint-paul*
						1	1	1	10	45	*san-diego*
							–		8	10	*schwarzengrund*
					13		13	3	30	46	*senftenberg*
						1	1	2	15	29	*tennessee*
	1	12	1				13	6	27	43	*thompson*
							–		–	–	*typhi*
7	1	2					2	1	88	179	*typhimurium*
							–		12	21	*typhimurium v cop*
							–		–	–	*weltevreden*
		1					1		25	39	*worthington*
11	14	21	2	–	16	15	54	28	609	1197	TOTAL
2	8	8	–	–	1	3	12	1	130	319	ALL OTHER*
13	22	29	2	–	17	18	66	29	739	1516	TOTAL

TABLE IV. OTHER SALMONELLAE REPORTED FROM NONHUMAN SOURCES, FEBRUARY, 1970

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
alachua						1	1	2			2
albany	3					1	4			1	1
berta			1	1			2				—
binza						1	1				—
bornum							—	1			1
california			2				2				—
cerro							—	6			6
cholerae-suis			2				2				—
drypool							—	9			9
dublin				5			5				—
eimsbuettel	1					1	2	3		2	5
florida				1			1				—
gallinarum	1						1				—
johannesburg							—	2			2
kentucky	3	2				2	7	5		4	9
lexington							—			1	1
madelia							—	1			1
manila							—			2	2
marina							—				—
meleagridis							—				—
minneapolis							—	1			1
minnesota						1	1	6		1	7
muenster							—			2	2
phoenix			1				1				—
poona					1		1				—
pullorum	4						4				—
rubislaw							—				—
siegburg							—	3			3
simi			1				1				—
simsbury	2						2	3			3
taksony		1		1			2	1			1
typhi-suis			1				1				—
urbana							—	2			2
TOTAL	14	3	8	8	1	7	41	45	—	13	58
NOT TYPED*	3	1	—	1	1	—	6	2	—	—	2
TOTAL	**17**	**4**	**8**	**9**	**2**	**7**	**47**	**47**	**—**	**13**	**60**

*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				
							–		3	4	*alachua*
							–		5	6	*albany*
							–		2	4	*berta*
							–		1	7	*binza*
							–		1	2	*bornum*
		4					4		6	8	*california*
							–		6	11	*cerro*
							–		2	3	*cholerae-suis*
							–		9	13	*drypool*
							–		5	15	*dublin*
		2					2		9	46	*eimsbuettel*
1							–		1	1	*florida*
							–		2	2	*gallinarum*
							–		2	2	*johannesburg*
						1	1	1	18	37	*kentucky*
						1	1		2	2	*lexington*
							–		1	1	*madelia*
							–		2	2	*manila*
	1						–		1	6	*marina*
					1		1		1	1	*meleagridis*
							–		1	1	*minneapolis*
							–		8	27	*minnesota*
							–		2	5	*muenster*
							–		1	1	*phoenix*
							–		1	1	*poona*
1							–		5	11	*pullorum*
	1						–		1	1	*rubislaw*
		2					2		5	19	*siegburg*
							–		1	1	*simi*
							–		5	5	*simsbury*
							–		3	8	*taksony*
	6						–		1	2	*typhi-suis*
							–		8	14	*urbana*
2	8	8	–	–	1	2	11	1	121	298	TOTAL
–	–	–	–	–	–	1	1	–	9	21	NOT TYPED*
2	8	8	–	–	1	3	12	1	130	319	TOTAL

TABLE V. SALMONELLAE REPORTED BY GROUP IDENTIFICATION ONLY, FEBRUARY, 1970

A. HUMAN SOURCES

REPORTING CENTER	GROUP														TOTAL
	A		B		C		C1		C2		D		L		UNK	
ALASKA			3													3
ARKANSAS							2									2
CALIFORNIA											1					1
DISTRICT OF COLUMBIA							1				1					2
IOWA			1													1
MISSISSIPPI			1													1
MONTANA			1													1
NEW HAMPSHIRE			2													2
NEW MEXICO			5				4		3							12
NEW YORK – A															15	15
NEW YORK – C			4		1										2	7
OREGON			1													1
RHODE ISLAND											1					1
SOUTH CAROLINA			1													1
TEXAS			2				3		1		1				4	11
VIRGINIA															1	1
TOTAL	–		21		1		10		4		4		–		22	62

B. NONHUMAN SOURCES

SOURCES	GROUP														TOTAL
	A		B		C		C1		C2		D		L		UNK	
DOMESTIC ANIMALS AND THEIR ENVIRONMENT	1														5	6
ANIMAL FEEDS	1												1			2
WILD ANIMALS AND BIRDS																–
REPTILES AND ENVIRONMENT																–
HUMAN DIETARY ITEMS			1													1
MISCELLANEOUS																–
TOTAL	2		1		–		–		–		–		1		5	9

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Key to all disease surveillance activities are the physicians who serve as State epidemiologists. They are responsible for collecting, interpreting, and transmitting data and epidemiological 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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