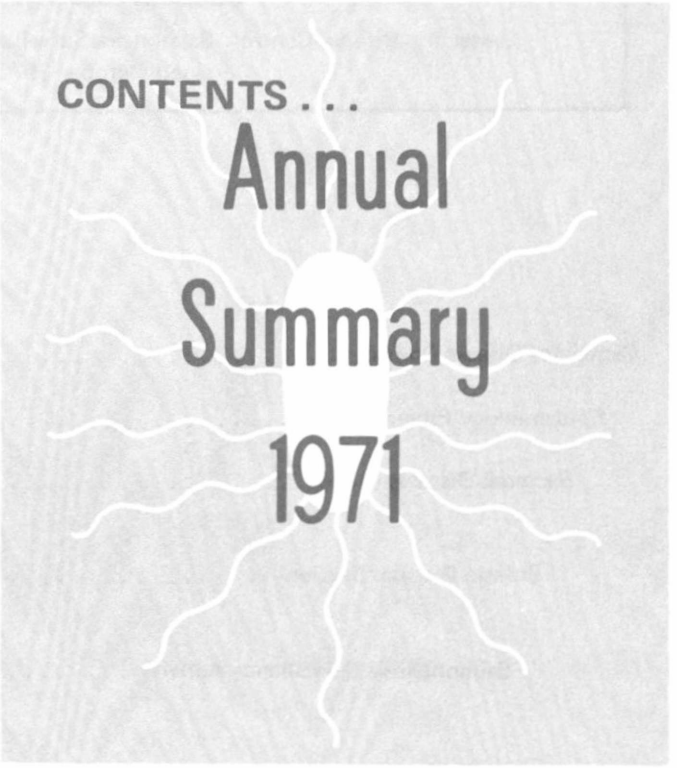
OCTOBER 1972

CENTER FOR DISEASE CONTROL

SALMONELLA

SURVEILLANCE



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:

Center for Disease Control
Attn.: Salmonellosis Surveillance Activity, Epidemiology Program
Atlanta, Georgia 30333

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Center for Disease Control . . . . . David J. Sencer, M.D., Director

Epidemiology Program . . . . . Philip S. Brachman, M.D., Director

Bacterial Diseases Branch . . . . . John V. Bennett, M.D., Chief
Eugene J. Gangarosa, M.D., Deputy Chief

Enteric Diseases Section . . . . . William H. Barker, M.D., Chief
Matthew S. Loewenstein, M.D.*

Salmonellosis Surveillance Activity . . . . . William B. Baine, M.D.
Peter A. Rice, M.D.*

Statistician . . . . . Stanley M. Martin, M.S.

Office of Veterinary Public Health Services . . . . . Richard L. Parker, D.V.M., Chief

Bacterial Zoonoses Section . . . . . Grace W. McConnell, V.M.D.

Epidemic Services Laboratory Section . . . . . George Morris, Chief

*Through June 1972

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I. INTRODUCTION

This report summarizes the results of the ninth year (January 12, 1971-January 10, 1972) of the Salmonella Surveillance Program established jointly by the Center for Disease Control (formerly National Communicable Center) and the Association of State , and Territorial Epidemiologists and Laboratory Directors. The bulwark of the program is the weekly reporting of isolations of salmonella submitted by the 50 states, New York City, the District of Columbia, the Salmonella Reference Center-Beth Israel Hospital (New York City), the U.S. Department of Agriculture, National Animal Disease Laboratory (USDA), and the U.S. Food and Drug Administration.

II. MATERIALS AND METHODS

The data analyzed are collected by the Salmonellosis Surveillance Activity and represent laboratory identifications of salmonellae, without distinction as to whether the isolate came from a clinical case or a carrier. Clinical cases of salmonellosis not confirmed by culture are excluded.

Interpretations are limited by the bias inherent in the data analyzed. For example, geographical prevalence and age of patients may reflect "interest factors". In addition, such factors as the seriousness of the disease and a lack of adequate laboratory facilities in some areas are an influence on the results presented.

Despite these limitations, certain observations are justified, and the data herein provide the basis for comparison with past and future results.

III. SUMMARY

In 1971, 25,694 isolations of salmonella from humans were reported, representing a 6.1 percent increase from the 24,216 reported for 1970 and a 16.6 percent increase from the 21,413 reported in 1969. Salmonella typhi-murium and S. typhi-murium var. copenhagen, as in previous years, were the most common serotypes, accounting for 26.8 percent of all isolations.

A total of 5,832 recoveries of salmonella from nonhuman sources were reported in 1971, a decrease of 50 percent from 1970 and 38.3 percent from 1969.

IV. REPORTS FROM THE STATES

A. HUMAN

Incidence

Since the first full year of operation of the present salmonella surveillance system (1963), the incidence of reported isolations of salmonella has remained relatively constant. A slight downward trend which began in late 1971 and is evident in 1972 due to the decrease in nonhuman isolates (Figure 1).

The seasonal distribution of salmonella isolations from humans for the period 1965-1971 shows a consistent seasonal pattern, with the greatest number of isolations being reported from July through October for each year and the lowest number from January through April (Figure 2).

Figure 1 REPORTED HUMAN AND NONHUMAN ISOLATIONS OF SALMONELLAE UNITED STATES, 1963 – 1971

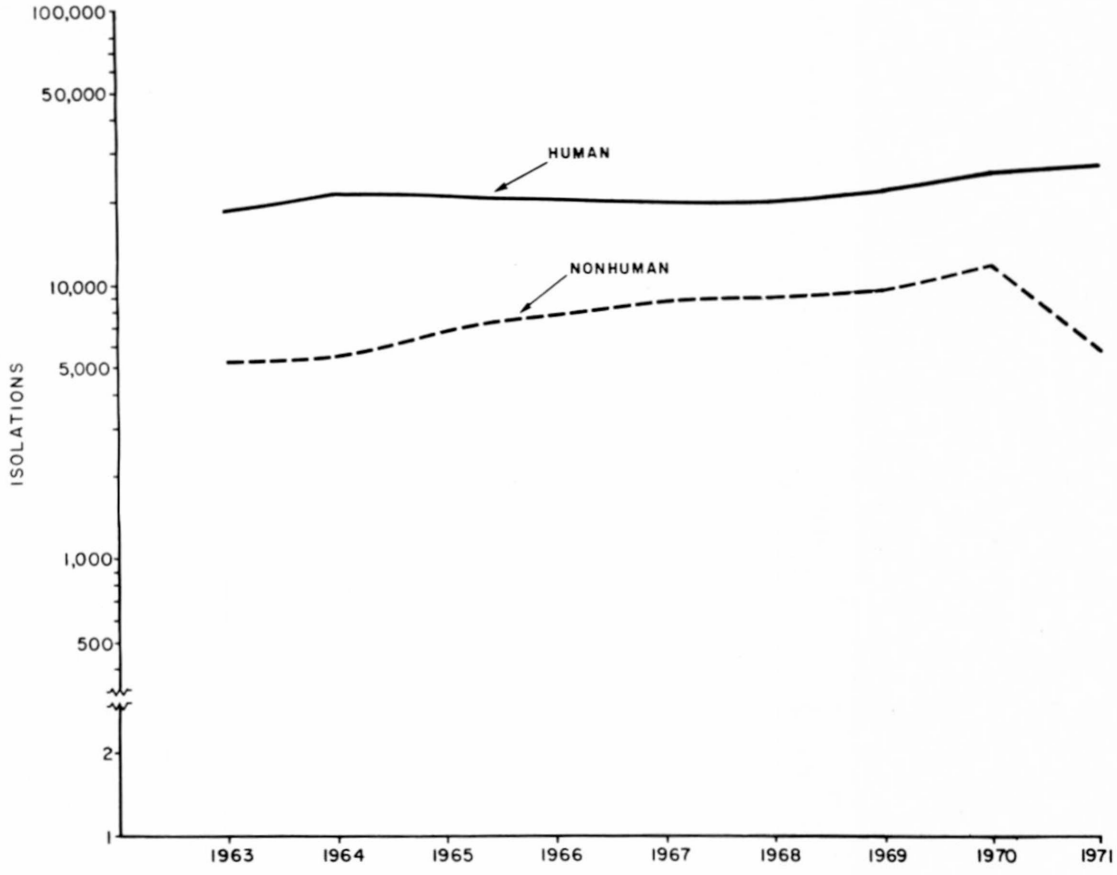
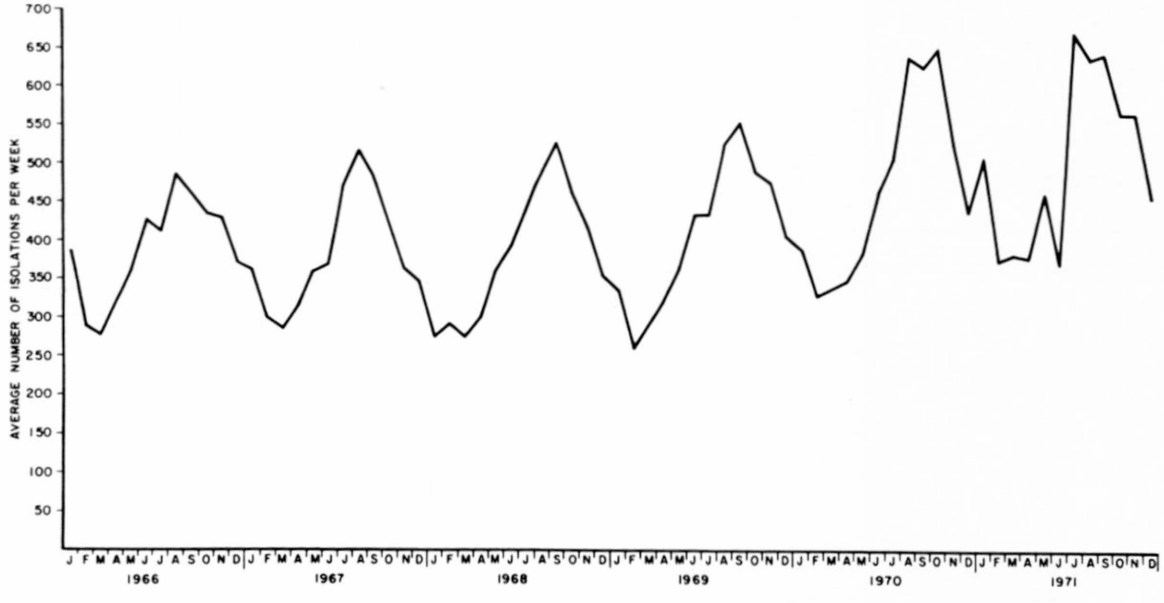


Figure 2 REPORTED HUMAN ISOLATIONS OF SALMONELLAE, UNITED STATES, 1965-1971



Serotype Frequency

A total of 176 different salmonella serotypes were reported in 1971, compared with 171 in 1970 (Tables I and II). This number (176) represents approximately 12 percent of the more than 1,400 known salmonella serotypes.

The 10 most frequently reported serotypes appear in the table below. These 10 serotypes accounted for 17,436 (67.9 percent) of the 25,694 isolations reported in 1971. Of the top 10 serotypes, S. java showed the greatest increase with a rise of 27.3 percent over 1970. S. java was the only new serotype to appear on the list. This table also demonstrates the close correlation between human and nonhuman sources of salmonella, with five serotypes appearing on both lists. The similarities demonstrate the importance of the nonhuman reservoirs of salmonella in the epidemiology of human salmonellosis.

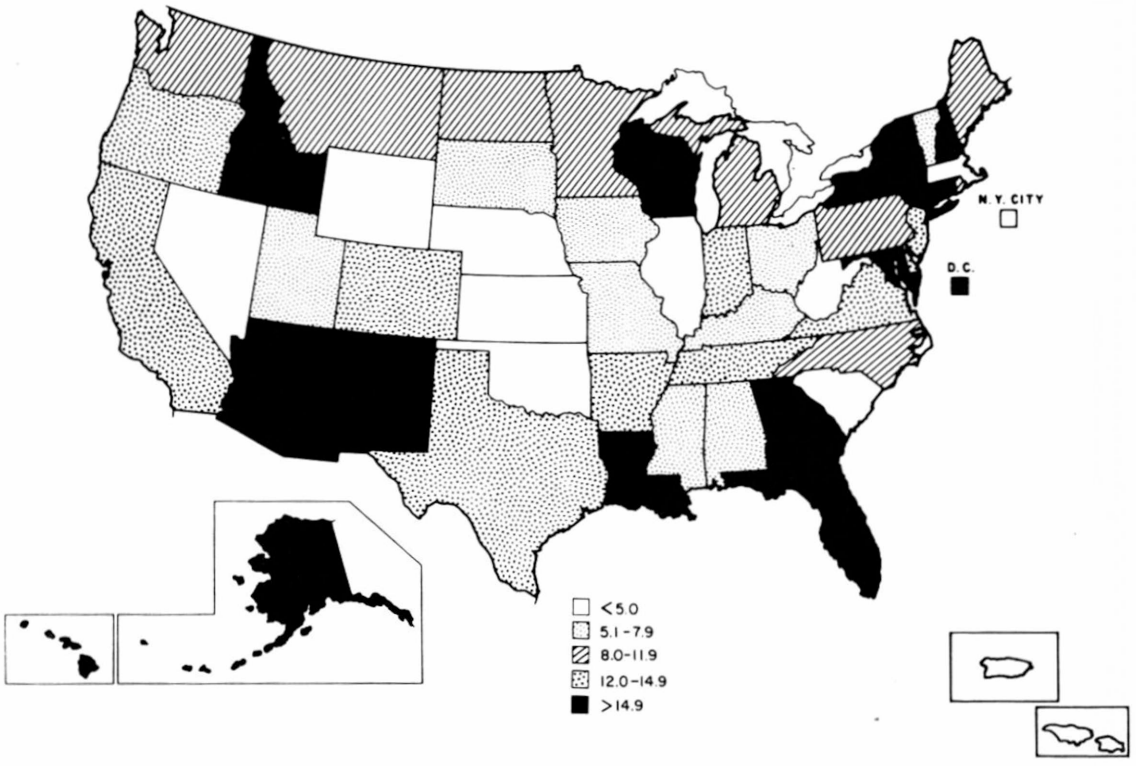
The Ten Most Frequently Isolated Serotypes From Human and Nonhuman Sources - 1971

	HUMAN				NONHUMAN		
	Serotype	Number	Percent	Rank Last Year	Serotype	Number	Percent
1	typhi-murium*	6,878	26.8	1	typhi-murium*	1,032	17.7
2	enteritidis	2,249	8.8	2	heidelberg	351	6.0
3	newport	1,722	6.7	3	saint-paul	275	4.7
4	heidelberg	1,660	6.5	4	anatum	267	4.6
5	infantis	1,421	5.5	5	infantis	211	3.6
6	saint-paul	919	3.6	6	montevideo	199	3.4
7	thompson	834	3.2	7	reading	199	3.4
8	blockley	586	2.3	8	senftenberg	193	3.3
9	java	584	2.3	>10	newport	172	2.9
10	typhi	583	2.3	9	cholerae-suis	151	2.6
	Total	17,436	67.9		Total	3,050	52.3
	Total (all serotypes)	25,694			Total (all serotypes)	5,832	
	*Includes var. copenhagen	353	1.4		*Includes var. copenhagen	169	

Geographic Patterns

The geographic distribution of salmonella isolations in 1971 showed California reporting the largest number with 2,859. Other states reporting over 1,000 isolations were New York, Pennsylvania, Illinois, Texas, Florida, and Massachusetts (Figure 3).

Figure 3 NUMBER OF HUMAN ISOLATIONS OF SALMONELLA PER 100,000 POPULATION IN THE UNITED STATES, 1971



The incidence of salmonella infection for the entire country was 12.58 per 100,000 population. Hawaii reported the highest incidence, with 77.1 isolations per 100,000 population. Other areas reporting incidence rates higher than 20 per 100,000 were New Mexico, Maryland, Georgia, Massachusetts, Alaska, Florida, Arizona, and Washington, D.C.

Geographic variations in specific serotypes are seen in Tables I and II. Several serotypes continued to exhibit definite regional patterns which have been remarkably consistent in recent years. For example, Hawaii, which accounted for only 2.2 percent of the national salmonella isolations reported 99.5 percent (150 of 151) of all Salmonella weltevreden isolations. Four southern states, Florida, Texas, Louisiana, and Georgia accounted for 73.5 percent of the total (516) S. javiana isolations. California reported 23 of the 24 S. dublin isolations, and Texas reported three of the 14 S. saphra isolations. Appropriately, 65 (69 percent) of 94 S. miami isolations and all 5 S. tallahassee isolations were reported from Florida, and 19 of 19 S. atlanta isolations were made in Georgia. Forty-six of 65 (70.5 percent) S. mississippi isolates, however, were reported from Georgia and Louisiana.

Outbreaks

In 1971, 42 outbreaks involving at least 1,391 individuals were reported in the Salmonella Surveillance Reports (see table on pages 6-7). Of 19 foodborne outbreaks, nine were traced to specific contaminated foods, including six caused by turkey, one by turkey eggs, one each by chicken and smoked fish. Multiple foods were found contaminated in one outbreak. In the other nine outbreaks, the specific food vehicle could not be identified, however, chicken was thought to have been the vehicle in two of these outbreaks, beef in one, and pork in another.

Contaminated water was incriminated as the vehicle of infection in two outbreaks of S. typhi which involved 12 persons. Eight S. typhi outbreaks were reported; three of these were related to travel outside the U.S.

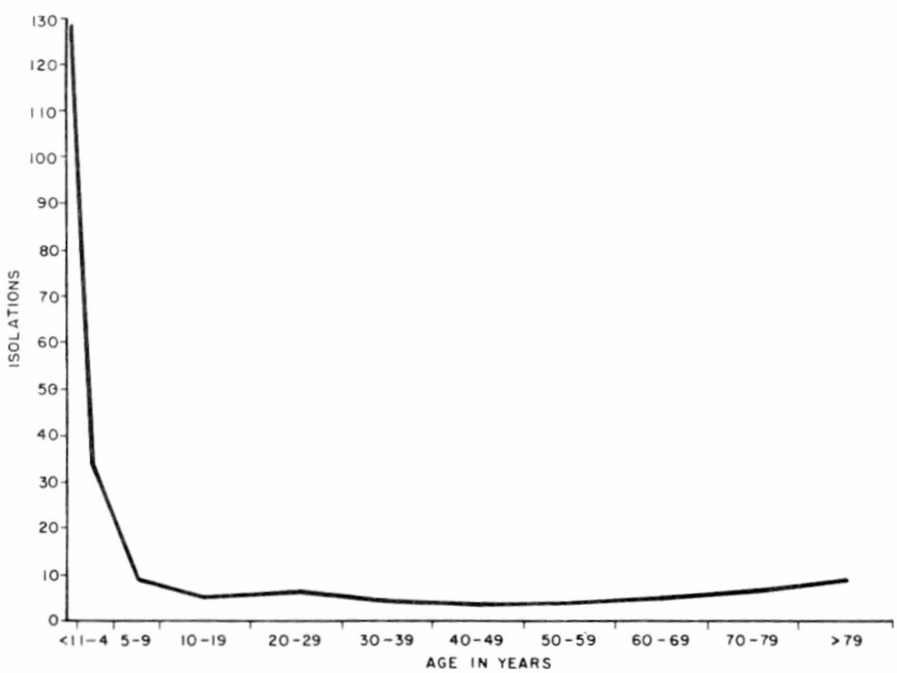
Person-to-person contact was the primary mode of spread in six reported outbreaks involving 35 individuals. The mode of transmission in nine outbreaks was not determined.

Although the etiology of all outbreaks was confirmed bacteriologically, many of the 1,391 ill persons were never cultured and are not included in the national surveillance data. Thus only a very small fraction of the total 25,694 isolations of salmonella in 1971 were from reported outbreaks, indicating that many outbreaks are never investigated.

Age and Sex Distribution

Of the 19,137 individuals reported by age in 1971, 13,176 (69 percent) were less than 20 years of age. This is an increase of nine percent for this age group compared with 1970. In 1971, the number of isolations per 100,000 population in various age groups closely approximated those for the years 1963 through 1970, however, the rates in the age group less than 10 appear to be increasing over the past 8 years. This is particularly true in the less-than 1-year age group (Figure 4 and Table IV).

Figure 4 RATE OF HUMAN ISOLATIONS OF SALMONELLAE, BY AGE GROUP, 1971



SOURCE: 1970 CENSUS OF POPULATION AND GENERAL POPULATION CHARACTERISTICS, UNITED STATES SUMMARY TABLE 52

Of the 25,472 individuals for whom sex was reported in 1970, 12,867 (50.5 percent) were males, and 15,605 (49.5 percent) were females (Table IV). Although there was no significant overall sex predilection, it is interesting to note that for the age groups under 20 years there was a preponderance of males and the opposite was true for age groups over 20 years. The same distribution has been seen for the past 8

years and has been noted with certain other bacterial enteric diseases. It is thought to be related to an inherent increased susceptibility of males, especially in infancy, and a higher degree of exposure of adult females because of their more intimate contact with sick children. The following table presents this age-sex distribution of the 19,113 persons for whom age and sex was reported in 1971.

	Male		Female		
Age (Years)	Number	Percent	Number	Percent	Total
Less than 20	7,124	54.0	6,029	46.0	13,153
20 and Over	2,514	42.0	3,446	58.0	5,960
Total	9,638	50.3	9,475	49.7	19,113

Mortality

An accurate assessment of the number of deaths related to salmonella infections is not possible. Reporting officials are not always provided information concerning the clinical status of the individual from whom an isolation has been made. Also, since fatal cases of salmonellosis often occur in patients with severe underlying illness, it is difficult to assess the role of salmonella infection in the final outcome. Finally, cases in which isolates are reported prior to death would not be reported as fatalities. The best available measure of the case fatality ratio of clinical salmonellosis can be obtained by studying investigated outbreaks. In the 44 outbreaks reported in 1971, 11 deaths occurred in 1,391 patients, representing a death to case ratio of .79 percent. In the years 1962-1970, 98 deaths were reported in 24,013 persons involved in 287 outbreaks, giving a case fatality ratio of 0.41 percent.

Salmonella Outbreaks Reported to the CDC, 1971

Vehicle of Infection	Persons Ill	Location	State	Serotype
Turkey	144	Factory	Tennessee	S. typhi-murium
	7	Restaurant	Montana	S. san-diego
	14	Home	Pennsylvania	S. braenderup
	30	Restaurant	Virginia	S. schwarzengrund
	28	Restaurant	New York City	S. schwarzengrund
	9	Home	Massachusetts	S. reading
Turkey Eggs	200		California	S. berta
? Chicken	17	Restaurant	Oregon	S. infantis
Chicken salad implicated	17		Maine	S. thompson
" " "	33	Church Supper	Pennsylvania	S. typhi
Roast beef implicated; S. typhi-murium isolated from cooked ham	22	Party catered by delicatessen	New Jersey	S. typhi-murium
Roast pork and gravy implicated	35	Nursing home	New Jersey	S. enteritidis
Smoked fish	28	Home	Michigan	S. typhi-murium
Rice stuffing implicated	8		Minnesota	S. typhi-murium
Raw milk incriminated	5		California	S. dublin
Multiple foods	95	Two separate outbreaks 1 day apart catered by same restaurant	Iowa	S. thompson
Unknown food	120	Restaurant	New York	S. enteritidis
Unknown food	18	Restaurant	Kansas	S. javiana
Unknown food	220	State Hospital	Kansas	S. typhi-murium

Well water	4	Wells	Maryland	S. typhi
Water implicated	8		European tour group -- Virginia and Alabama	S. typhi
Platelet infusions contaminated	7	NIH	Maryland	S. cholerae-suis
Person-to-person	10	Hospital	New Jersey	S. infantis
	5	Hospital nursery	Oklahoma	S. chester
	6	Hospital	California	S. paratyphi C
	1	Hospital nursery	Illinois	S. kottbus
	4	Hospital nursery	Virginia	S. montevideo
? Elderly carrier	11	Playground contaminated with sewage	Virginia	S. typhi
Probably person-to-person	9	Hospital ward	Missouri	S. oranienburg
Not identified	6	Community	Wisconsin	S. typhi
	Unkn.	Cook County	Illinois	S. enteritidis
	14	Nursing home	Puerto Rico	S. montevideo
	5	Nursing home	Missouri	S. thompson
	3		Pennsylvania	S. typhi
	3	Nursing home	Michigan	S. typhi
	150	Restaurant	Massachusetts	S. newport
	15	Nursing home	South Carolina	S. group B
	19	Ship	Michigan	S. typhi, S. infantis
	10	Restaurant	Ohio	S. enteritidis
	28	Children's hospital	Massachusetts	S. enteritidis
	4	Hospital	Missouri	S. enteritidis
Unknown	9	Community	Louisiana	S. typhi-murium
	<5	Hospital nursery	Louisiana	S. cubana
	5	Student tour in Spain	New York, New Jersey, Colorado	S. typhi

Uncommon and Rare Serotypes

One hundred thirty-eight serotypes are classified as uncommon or rare (Table II). Of ninety serotypes, representing 51 percent of the 178 reported serotypes there were five or less isolations each, accounting for only 167 (0.65 percent) of the 25,694 isolations reported in 1971.

Typhoid Fever - Cases and Carriers

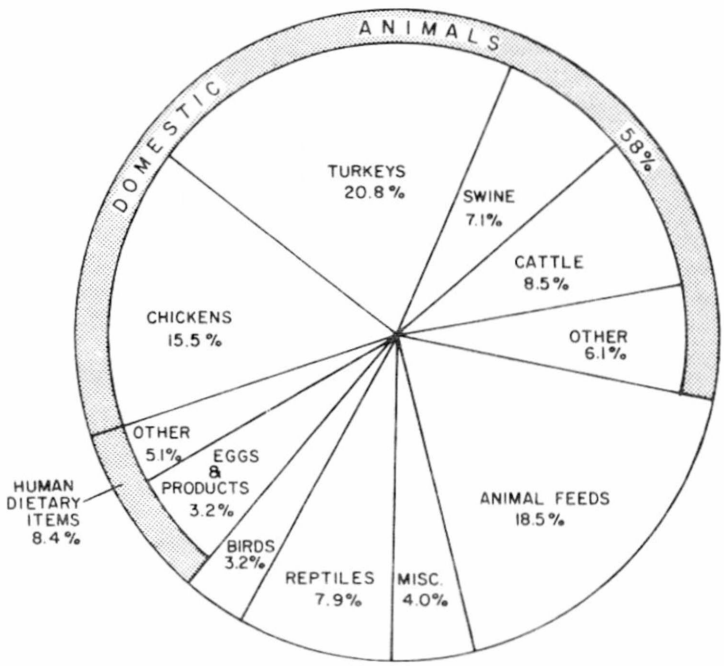
Of 583 isolations of S. typhi reported in 1971, 138 were from patients with typhoid fever and 131 from asymptomatic carriers; for the remaining 314, the clinical classification was not reported. The sex distribution of patients with typhoid showed no significant predilection (F:M - 1.3:1); however, for carriers, females predominated (F:M = 2.8:1). Most cases occurred in the younger age groups, with 75 percent of cases occurringin persons less than 30 years of age. In contrast, most carriers were in the older age groups, with 88 percent 50 years of age or older.

B. NONHUMAN

In 1971, 5,832 salmonella isolations from nonhuman sources were reported (Tables V, VI, VII, and VIII). This represents a 50 percent decrease from the 11,653 isolations reported in 1970. The number of nonhuman isolates had increased each year since 1963. The decrease in 1971 represents reduced reporting by the USDA. The sources of these isolations are given in Figure 5 and Tables VI, VII and VIII. The number and percent

of isolations by source demonstrate the importance of poultry and poultry products as vehicles of salmonellosis. Turkey, chicken, and eggs and egg products, which together were responsible for 42 percent of the foodborne outbreaks reported in 1971, accounted for 39.5 percent of all nonhuman isolates. Swine and cattle accounted for 15.6 percent of all nonhuman recoveries, and dried milk and other human food for 5.1 percent.

Figure 5 NONHUMAN SALMONELLA ISOLATIONS FROM THE INDICATED SOURCES IN THE UNITED STATES, 1971



Isolations from animal feedstuffs accounted for 18.5 percent of nonhuman isolations in 1971. This reflects continued interest in the surveillance of animal feeds.

The 10 most common salmonella serotypes isolated from nonhuman sources in 1971 are listed in the table on page 2. These 10 serotypes accounted for 52.3 percent of all nonhuman isolates.

Sources (Table VI)

Domestic Fowl and Their Products

In 1971, there were 2,116 isolations (37 percent of nonhuman isolations) from domestic fowl and 187 isolations (3.3 percent) from eggs and egg products. Salmonella typhi-murium including var. copenhagen was the most common serotype isolated from chickens, with 158 isolations (17.5 percent of the isolations from that source) and was followed by S. infantis with 104 (11.5 percent), S. blockley with 102 (11.3 percent), and S. thompson with 66 (7.3 percent).

The five most common serotypes isolated from turkeys were S. heidelberg with 199 isolations (16.3 percent), S. reading with 178 (14.6 percent), S. saint-paul with 154 (12.6 percent), S. typhi-murium including var. copenhagen with 131 (10.8 percent) and S. san diego with 112 (9.2 percent).

The five most common serotypes isolated from eggs and egg products were S. thompson with 26 isolations (13.9 percent), S. siegburg with 20 (10.7 percent), S. typhi-murium including var. copenhagen with 17 (9.1 percent), S. infantis with 15 (8 percent), and S. braenderup with 131 (6.9 percent).

Domestic Animals

In 1971, the most common serotypes isolated from swine were S. cholerae-suis var. kunzendorf with 145 isolations (35 percent), S. typhi-murium including var. copenhagen with 55 (13.3 percent), S. derby with 40 (9.7 percent), S. anatum with 24 (5.8 percent), and S. bredeney with 19 isolations (4.6 percent).

In 1971, the five most common serotypes isolated from cattle were S. typhi-murium var. copenhagen with 315 isolations (63.5 percent), S. newport with 58 (11.6 percent), S. dublin with 52 (10.4 percent), S. heidelberg with 19 (3.8 percent), and S. anatum with 11 (2.2 percent). S. dublin, a host adapted serotype in cattle, accounted for 10.1 percent of bovine isolations in 1970 and for 21.4 percent of the isolations in 1969.

Reptiles and Their Environment

In 1971, there were 460 salmonella isolations (7.9 percent of nonhuman isolations) from reptiles and their environment. Turtles and turtle water, which accounted for 438 (95 percent) of the reptile recoveries, constituted a significant source of infection to children keeping these animals as pets. The most common serotypes isolated from turtles were S. java with 50 isolations (10.9 percent), S. newport with 29 (6.3 percent), S. urgana with 19 (4.1 percent), and S. muenchen with 18 (3.9 percent).

Animal Feed and Feed Ingredients

In 1971, there were 1,081 salmonella isolations (18.6 percent of nonhuman isolations) reported from animal feed and feed ingredients as compared with 2,026 isolations (17.4 percent) in 1970. Of the 1,081 salmonella isolations, only 20 were obtained from vegetable protein supplements. The most common serotypes isolated from animal feeds were S. montevideo with 84 isolations (7.9 percent), S. senftenberg with 76 (7.0 percent), S. oranienburg with 64 (5.9 percent), and S. anatum with 63 (5.8 percent).

V. SPECIAL REPORTS

Summary of Salmonella Isolations from Humans, 1964-1971

In the 7-year period 1965-1971, 305 different salmonella serotypes have been recovered from humans. A list of the reported serotypes with the numbers of isolations per year is presented in Table IX.

Several interesting patterns are apparent. S. enteritidis isolations which had steadily increased in frequency from 801 in 1964 to 2,504 in 1970, decreased to 2,249 in 1971. The frequency of S. derby isolations, despite the increase to 534 in 1971, has remained at relatively low levels since reaching a peak of 2,360 in 1964 (not shown in Table IX). S. agona, previously a rare serotype (one isolation in 1967 and 1968, four in 1970), was reported 44 times in 1971.

TABLE I. COMMON SALMONELLAE REPORTED FROM HUMAN SOURCES DURING 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	KA	DEL	MD	DC	VA	WVA	NC	SC	GA	FLA
anatum				13	2	8		5	7	13	24	6	4	16	12	1	4		1						10		3		2		13	29
bareilly				1		1		2	3	1	6	1		1		1	2							1		1	5		2		2	
blockley	4		1	32		22	2	22	53	17	32	33	2	34	16	10	12	7	5					1	24		14	2	22		32	16
braenderup				9		4		4	5	8	21	1	1	5	3	4	1		1	1					1						7	4
bredeney				7	1	1		2	5	1	7	1	3	13	9	2	1		1	2				1	14		5		6		7	19
chester	1			5		2				6	1			2		5	5		1					1	1		4				1	
cholerae-suis v kun				1									1	4															3		6	4
cubana			2	24		5		3	3	4	15	18	1	14	8	4	3	2	4		1				8		17		10		13	24
derby				7		5		11	25	28	47	10		39	18	12	6	6	2					3	53	1	10		14		26	25
enteritidis	2	5	7	217	12	64		90	223	198	169	66	19	235	56	91	37	13	39	1	2	1	5	11	78	3	26	11	41	1	56	59
give				7		2		2	2	1	3	4		5	3	1			2						3				2		2	4
heidelberg	5			63		27	3	23	76	44	97	37	19	115	67	32	22	8	25	6	2		2	6	67	1	30		41		65	83
indiana				2				3	9	13	6		2	7	12										9	3	3		4		14	4
infantis	6		2	78	5	32		30	65	43	78	35	15	85	49	28	16	4	17	5	6	1	3	2	59	2	38	2	57		84	59
java	3			7	3	12		21	29	40	54			46	3	47	35	1	14	1	1			1	1		1		9		7	29
javiana				2					1	6	3	2	1	5	4	2		1	6				3		3		3		4		38	186
litchfield				3	1	11		2	8	6	4	1	1	16	13	12	3		4		1				8		4		2		5	23
livingstone										1					4																7	1
manhattan	1			11	1	5		12	23	24	26	15	2	43	35	5	1	4	4						29		6		3		11	12
miami				1		5		1	2		1			1	1										2				1		6	65
mississippi														1		1															20	2
montevideo	4			16	1	8		2	14	13	49	11		13	5	7		2	4	1	3			4	30	1	21		4		14	28
muenchen	4			10		4	1	4	11	7	20	10	1	26	8	16	1	4	6				1		8		9		13		23	49
newington				2				1	3	2	6			2	1				2					1	1		1					
newport	3		1	57	4	31	2	22	51	58	51	48	14	76	49	39	27	15	16	6	2		3	3	34		18	1	57		80	203
oranienburg				12	2	28		5	8	15	22	13	2	11	13	11	3	5	3		1			2	9	1	12		4		24	32
panama				9		3		1	7	3	12	1	2	10	5	2	3	1	3						11		3		4		6	
paratyphi B		1		50	1	1		1	2	1		32	10		33	3	2	4		1					21		17			1	1	
reading	2			28		8			2		27		1	1	2		2	1			2				2		3	3	1		3	1
saint-paul	1			46	6	18		16	39	28	57	36	12	50	42	33	26	3	10	1				8	51		13	1	34		32	64
san-diego	2			7		2			13	1	4			4	6	3	1								2		1		1		3	
schwarzengrund				1		2		5	4	9	4	3	3	3	7	4	2	1	1		2				1		14				2	
senftenberg				8	1	3		1	1	6	17	2	3	6	5	2	2	1	2		2			1	13	1	9				4	10
tennessee				4		1			1	3	4			16	3	1	1				1						3				2	
thompson	4	2	1	57	1	18		16	22	27	34	16	2	37	34	45	10	27	17	4			2	5	19		34	8	10		21	32
typhi	2	1		23	1	18	11	8	26	5	39	22	4	25	13	10			11						8	3	12	8	20		10	43
typhimurium	42	3	13	403	22	194	3	157	294	259	360	126	68	365	194	266	111	52	108	24	26		27	7	217	6	169	13	186		242	232
typhimurium v cop	11			69	1	47				30				1	47			6	1	1					2				4			1
weltevreden																																
worthington					1	1			1		5	5	5	3	1		1								1				1		2	2
TOTAL	97	12	27	1,292	66	593	22	472	1,038	921	1,305	555	198	1,336	781	700	340	168	310	54	52	2	55	58	800	23	508	49	562	2	891	1,345
ALL OTHER*	2	102	4	50	43	19	324	28	57	15	89	14	2	96	60	34	32	15	10	1	1	23	1	10	37	140	57	–	40	17	59	110
TOTAL	99	114	31	1,342	109	612	346	500	1,095	936	1,394	569	200	1,432	841	734	372	183	320	55	53	25	57	68	837	163	565	49	602	19	950	1,455

*SEE TABLE II

NOTE: NYA – NEW YORK ALBANY; NYB – BETH ISRAEL HOSPITAL; NYC – NEW YORK CITY

TABLE I–Continued

GEOGRAPHIC DIVISION AND REPORTING CENTER																				1971 TOTAL	PERCENT OF 1971 TOTAL	1970 TOTAL	PERCENT OF 1970 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				
4	5	5		1	13	2	48				3		10			2		33		10	309	1.2	262	1.1	*anatum*
	3			2	4	1	7							1				2			51	0.2	72	0.3	*bareilly*
10	7	8	1	3	15	1	36		3		2		3	2		5	5	61	1	4	586	2.3	660	2.7	*blockley*
	8				9	1	12						3					10	1	2	126	0.5	92	0.4	*braenderup*
2	4	5			6		12	1	1		2					2		31	1	12	191	0.7	196	0.8	*bredeney*
1						10					1		6				2	5	1		61	0.2	87	0.4	*chester*
1	2				1													1			24	0.1	24	0.1	*chloerae-suis v kun*
2	4	4		4	5	4	19	1	2		5		6			1		10			257	1.0	166	0.7	*cubana*
1	11	5		2	12	2	30		1		1		4			5		72		38	534	2.1	490	2.0	*derby*
7	26	18	3	2	21	7	68	8	8		29		5	3	3	30	21	91	4	12	2,249	8.8	2,504	10.3	*enteritidis*
		2			15		13						1					5	2	5	86	0.3	83	0.3	*give*
9	37	17		11	54	8	79	4	4		21		50	6		20	16	311	4	20	1,660	6.5	1,699	7.0	*heidelberg*
		3			6		2										1	3			107	0.4	109	0.5	*indiana*
12	34	21		15	57	5	89	3	13		7		28	1		19	39	122	1	20	1,421	5.5	1,214	5.0	*infantis*
6	25		3	1	20				1		3		3	1			6	126	1	18	584	2.3	459	1.9	*java*
	5	2		24	30	2	127				1		7	2			2	10			516	2.0	420	1.7	*javiana*
	2				3	1	5				3					1	1	17			161	0.6	182	0.8	*litchfield*
					4		13				1		8					14		6	59	0.2	30	0.1	*livingstone*
7	13			2	17	2	8				4					4		85		5	420	1.6	340	1.4	*manhattan*
		1																5		1	94	0.4	71	0.3	*miami*
	4	9	1		23		2											2			65	0.3	66	0.3	*mississippi*
	6	6		2	23		36		1		2		1	1		2		33		2	375	1.5	394	1.6	*montevideo*
	5	13		2	16	3	45	1					12	2		1	3	34	1		389	1.5	276	1.1	*muenchen*
	4				2								1			1		4		3	41	0.2	48	0.2	*newington*
19	40	21	3	62	93	9	186	1	11		16		54	1	1	11	17	153		18	1,722	6.7	1,700	7.0	*newport*
3	6	7		2	14	6	56		3		1		27	2		3	4	33		1	412	1.6	399	1.6	*oranienburg*
	4			4	17	2	48				4		5			2		44		70	286	1.1	236	1.0	*panama*
3	1					5	30		2		5					6		7			241	0.9	205	0.8	*paratyphi B*
				1		3	1									28	26	22	2		172	0.7	147	0.6	*reading*
4	20	6	1	1	22	2	58	1	5		11		4	1		27	17	89	1	16	919	3.6	1,157	4.8	*saint paul*
1	10	6		2	4			23	1		3		1			5	6	29	2	4	147	0.6	234	1.0	*san-diego*
	2	2			2		2											9			85	0.3	56	0.2	*schwerzengrund*
1	5	4		6	7	2	19				21					2	2	36		9	219	0.9	86	0.4	*senftenberg*
3	2	3			2	1	4				4		3	1			1	11			76	0.3	54	0.2	*tennessee*
4	12	19		3	34	2	46	1	1		13		2	5		10	8	128	1	13	834	3.2	958	4.0	*thompson*
22	21	1		18	22	10	40		1			10	4			1	1	102		5	583	2.3	533	2.2	*typhi*
40	203	76	7	32	95	32	222	15	52	1	96		77	30	1	87	53	884	10	76	6,525	25.4	5,640	23.3	*typhimurium*
19	11			7	38			6	9		11		10		1	1	18		1		353	1.4	277	1.1	*typhimurium v cop*
																1				150	151	0.6	104	0.4	*weltevreden*
					1	1	1						1					9	1	2	46	0.2	59	0.2	*worthington*
181	542	264	19	209	707	124	1,364	65	119	1	270	10	336	59	6	277	249	2,643	35	522	23,137	90.1	21,789	90.0	TOTAL
7	25	11	98	33	46	3	235	4	1	2	8	212	45	3	8	9	15	216	23	47	2,557		2,427		ALL OTHER*
188	567	275	117	242	753	127	1,599	69	120	3	278	222	381	62	14	286	264	2,859	58	569	25,649		24,216		TOTAL

TABLE II. OTHER SALMONELLAE REPORTED FROM HUMAN SOURCES DURING 1971

SEROTYPE	REPORTING CENTER																									
	ALA	ALK	ARI	ARK	CAL	COL	CON	DEL	DC	FLA	GA	HAW	IDA	ILL	IND	IOW	KAN	KY	LA	ME	MD	MAS	MIC	MIN	MIS	MO	MON
aba														1													
abony					1																						
abortus-bovis																							1				
adelaide																							5				
ajiobo					6									10					2			1					1
alachua					3		1					4									2		1				
albany			1							1	1								3		3	1	2	1			
amager											2																
amersfoort																											
amsterdam					1																						
arechavaleta										1																	
atlanta											19																
azteca																											
berlin																											
berm																											
berta	1		15	3	46		1	1		4								2	3		3	1	1	2			
binza				1	1					1		2											5				
birkenhead												1															
blegdam																											
bonaire					1																						
bonariensis					1				1					1													
bovis-morbificans					4		4							1							2	10		1			
bradford	1																										
brandenburg					3	1								2													
bristol										3																	
brunei					1			2			1			1									4				
california																						1					
cambridge																							1				
carrau										1									1								
cerro					3			1		2	1	8							2				7				
chingola																											
chittagong																											
cholerae-suis							1				2			1													
christianborg																											
clairornei														1													
clifton														1													
colerspark																											
colindale					2																						
colorado																						1					
concord																											
corvallis																										1	
decatur																					1						
denver																											
drypool	1				1									1			1		2				2	2			
dublin					23																						
duersteldorf			1	2						3									1								
durban														1													
eastbourne					2							1												1			
edinburg																											
eimbuettel		6		1						3				3					1		1						
florida			3							1																	
gallinarum																											
gaminara	2			1						3				1					5					1			
gatow																											
georgia				1													1										
glostrup											1																
grumpensis															1												
habana			1				1			1						1								2		1	
haifa					1											1											
hamburg																									1		
hartford					1					20	2			1					1			3	4				
heilbron										1																1	
homosassa																											
horsham					1																						
houten																											
huttingfoss																								1			
ibadan				6																							
inverness										6				3													
irumu					1																			1			
ituri					1																						
johannesburg					2						1													1			
kaapstad						1					4																
kentucky	1		1		5	1				4	4	1		3								1					
kottbus					6									12				3			3	2	1				1
krefeld																						1					
larochelle																			1								
lexington			1		4									2													
lille					1																						
lindenburg																											
loma-linda						1																					
lomita				1																							
london					5						2			12					1		3		4				
luciana	1																										
madelia					1																		3				
manchester																											
matadi												1						1									
meleagridis					9						2	2		1			1				1	1	1				
minneapolis			1																					1			
minnesota					2					2				1					1		2		5	1			1
mission	1																										
molade										5	1										1						
muenster					1		1			3	4								3			2	2				
nchanga													1														
new-brunswick						2																					
newlands				2																							
nienstedten					1																						
nigeria				1																							
norwich				8		1											4		3		1	1	1	1		2	
ohio					3					1				2			1				1					1	
onderstepoort								2																			
ordonez																											
orton												2															
orsamerin												21															
oslo					2					1				2		2					1	2		7			
papuana					1																						
paralyphi a					4					1	1	2		1							1		2			1	
pensacola											2											1					
pomona					1																						
poona	1		10		7	1				27	1	1		6			2	1	1			2	3	1			1
richmond																					1						
rubislaw			4		1					4	1								4		1	1					
rutgers																			1							1	
saphra																											
siegefild																						4					
siegburg			2		22					2	2			1					3			2					
simsbury							1	1	1																		
singapore																											
springs																											
stanley					1			3		1							2						4	4			
sundsvall			1																								
taksony			2		1																			1			
tallahassee										5					1												
texas																											
thomasville											1			1													
tsiamanga																				1							
tucson			1											2													
uganda														5							1	1					
urbana			1		8		4			2		1				1					3	4	2				
wife		1																									
virchow					1									1									2	1			
wandsworth											1			1													
wassenaar																											
weslaco																											
westhampton																	2					2					
willemstad																											
54:24:23					1																						
57:4:26																											
TOTAL	9	7	45	27	195	8	14	10	2	109	56	47	1	82	2	5	14	7	39	1	32	45	56	29	1	9	4
NOT TYPED*	2	16	–	6	21	–	5	–	138	1	3	–	–	14	–	10	1	–	7	1	5	5	4	3	97	1	–
TOTAL	11	23	45	33	216	8	19	10	140	110	59	47	1	96	2	15	15	7	46	2	37	50	60	32	98	10	4

*SEE TABLE III

TABLE II – Continued

REPORTING CENTER																								1971 TOTAL	1970 TOTAL	SEROTYPE
NEB	NEV	NH	NJ	NM	NYA	NYB	NYC	NC	ND	OHI	OKL	ORE	PA	RI	SC	SD	TEN	TEX	UTA	VT	VA	WAS	WIS	WYO			
																		1				1			1 2 1 1 44	– 1 2 5 4	*aba* *abony* *abortus-bovis* *adelaide* *agona*
			1				1						4 1 1				1 1		1		1		1		16 18 4 1 2	10 31 5 – 1	*alachua* *albany* *amager* *amersfoort* *amsterdam*
							2	1									1 1								1 19 2 1 1	1 17 – – –	*arechavaleta* *atlanta* *azteca* *berlin* *bern*
			1				1	1					6	1				3			6		1		101 11 1 1 1	70 9 – – –	*beria* *binza* *birkenhead* *blegdam* *bonaire*
										1			3	1									1		3 26 1 8 3	1 33 3 5 1	*bonariensis* *bovis-morbificans* *bradford* *brandenburg* *bristol*
								2		1							2	1 1					1		1 13 1 5 23	– 32 – 5 23	*brunei* *california* *cambridge* *carrau* *cerro*
						2	4						2 2								1	1	1		1 2 13 1 1	– – 11 1 1	*chingola* *chittagong* *cholerae suis* *christiansborg* *claibornei*
								2																	2 1 2 1 1	1 1 – 1 5	*clifton* *coleypark* *colindale* *colorado* *concord*
			2							1			1					5 1			1				1 1 1 19 24	– – – 10 8	*corvallis* *decatur* *denver* *drypool* *dublin*
						1						2						5				1			7 2 9 2 19	14 – 7 1 21	*duersteldorf* *durban* *eastbourne* *edinburg* *eimsbuettel*
						1		1					4 2					6 11			1				4 4 21 11 2	1 3 17 1 1	*florida* *gallinarum* *gaminara* *gatow* *georgia*
													1 5	1				5	1			1 1			1 5 17 3 1	1 – 6 1 1	*glostrup* *grumpensis* *habana* *haifa* *hamburg*
														1							4		1		38 1 1 1 1	24 – – – –	*hartford* *heilbron* *homosassa* *horsham* *houten*
												1					1	6							1 12 10 3 1	– 8 6 10 –	*hvittingfoss* *ibadan* *inverness* *irumu* *ituri*
			2			4	1 2	2 12			1		10 11	2		1					1 8 2		1 1		5 11 34 67 3	7 3 55 53 –	*johannesburg* *kaapstad* *kentucky* *kotthus* *krefeld*
			1									1									1	1			1 8 1 1 3	– 5 – 3 4	*larochelle* *lexington* *lille* *lindenburg* *loma-linda*
			1			6	8	3		1			1 7				1	8 8			2 1 2	1	1		13 64 1 4 2	20 26 2 1 6	*lomita* *london* *luciana* *madelia* *manchester*
			2			1 2	2	2		2			2 1 3				1	3			2 3				2 26 3 30 4	– 26 1 34 1	*matadi* *meleagridis* *minneapolis* *minnesota* *mission*
			3			1	1 1			1	1		1				2	2			1		1		7 26 1 6 3	7 25 – 5 –	*molade* *muenster* *nchanga* *new-brunswick* *newlands*
						1	1 1	2				1	2				3	2 2					1		1 1 31 15 2	– – 22 8 –	*nienstedten* *nigeria* *norwich* *ohio* *onderstepoort*
							1 1						1				1 2	1					2 1		2 2 3 43 1	12 6 1 27 1	*ordonez* *orion* *ortamerin* *oslo* *papuana*
						2	1 5	5 1		5	1	1	1					14			1 2	1	1		14 9 3 97 1	5 9 3 93 3	*paratyphi a* *pensacola* *pomona* *poona* *richmond*
						1	4						1				1	12 13 28							29 1 14 1 69	27 2 15 – 55	*rubislaw* *rutgers* *saphra* *senftenberg* *siegburg*
						1	1 1			1								1 1		1			1		8 1 1 17 2	9 – – 13 1	*simsbury* *singapore* *springs* *stanley* *sundwall*
																		1							4 5 1 3 1	4 8 1 7 –	*taksony* *tallahassee* *texas* *thomasville* *towmensge*
			2			2	5	2 2	1	1			4					5							1 4 53 2 21	– 4 59 – 4	*tucson* *uganda* *urbana* *vejle* *virchow*
								1										1				1			1 1 1 7	– – 1 2	*wendtworth* *wassenaar* *weslaco* *westhampton*
																		3 1							3 1	– –	*willemstad* *54.24.223* *57.A.26*
–	–	–	15	–	–	25	47	39	1	14	3	6	89	7	–	1	22	151	2	1	55	9	22	–	1,365	1,171	TOTAL
23	8	102	–	212	324	3	10	1	–	–	–	9	–	36	17		3	84	1	3	2	–	12	2	1,192	1,256	NOT TYPED*
23	8	102	15	212	324	28	57	40	1	14	3	15	89	43	17	1	25	235	3	4	57	9	34	2	2,557	2,427	TOTAL

TABLE III. SALMONELLAE REPORTED BY GROUP IDENTIFICATION ONLY FROM HUMAN SOURCES DURING 1971

REPORTING CENTER	GROUP																	TOTAL
	A	B	C	C1	C2	D	E	E1	E2	E4	F	G	I	L	O	P	R	UNK	
ALABAMA						1												1	2
ALASKA	2	8		3	1	1												1	16
ARKANSAS		2		1	2							1							6
CALIFORNIA		8		6		1	1			1		1					2	1	21
CONNECTICUT		4																1	5
DISTRICT OF COLUMBIA	2	57	10	5	10	19	2					1						32	138
FLORIDA																		1	1
GEORGIA		1				1												1	3
ILLINOIS		8		1		1			1							1		2	14
IOWA		6	3															1	10
KANSAS										1									1
LOUISIANA		4			1								1					1	7
MAINE		1																	1
MARYLAND					1	1												3	5
MASSACHUSETTS					2				1									2	5
MICHIGAN		1	1															2	4
MINNESOTA		3																	3
MISSISSIPPI		41	6	4	11	10	7					8						10	97
MISSOURI													1						1
NEBRASKA		8		2	8	4				1									23
NEVADA		4			3	1													8
NEW HAMPSHIRE		55	1	13	7	9									1			16	102
NEW MEXICO		96		31	31	16	20				5	9	1					3	212
NEW YORK – A																		324	324
NEW YORK – BI				1								1		1					3
NEW YORK – C		1	5			1												3	10
NORTH CAROLINA		1																	1
OREGON		3		1														5	9
RHODE ISLAND		12	4	4	10	1		1				1						3	36
SOUTH CAROLINA		4		3	3	1	1											5	17
TENNESSEE		2																1	3
TEXAS		24		11	15	5	6				2							21	84
UTAH		1																	1
VERMONT			1		1	1													3
VIRGINIA						1												1	2
WISCONSIN	1	3																8	12
WYOMING		1																1	2
TOTAL	**5**	**359**	**31**	**86**	**106**	**75**	**37**	**1**	**2**	**3**	**7**	**22**	**3**	**1**	**1**	**1**	**2**	**450**	**1,192**

TABLE IV. AGE AND SEX DISTRIBUTION OF INDIVIDUALS FROM WHOM ISOLATIONS OF SALMONELLA WERE REPORTED DURING 1971

AGE (YEARS)	MALE	FEMALE	UNKNOWN	TOTAL	PERCENT	CUMULATIVE PERCENT
< 1	2,403	2,097	18	4,518	23.6	23.6
1-4	2,574	2,026	3	4,603	24.1	47.7
5-9	1,057	899	1	1,957	10.2	57.9
10-19	1,090	1,007	1	2,098	11.0	68.9
20-29	683	1,014	0	1,697	8.9	77.7
30-39	424	572	0	996	5.2	82.9
40-49	365	510	0	875	4.6	87.5
50-59	354	465	0	819	4.3	91.8
60-69	339	388	0	727	3.8	95.6
70-79	219	301	1	521	2.7	98.3
> 79	130	196	0	326	1.7	100.0
SUBTOTAL	9,638	9,475	24	19,137		
CHILD (UNSPECIFIED)	109	71	14	194		
ADULT (UNSPECIFIED)	51	100	2	153		
UNKNOWN	3,069	2,959	182	6,210		
TOTAL	**12,867**	**12,605**	**222**	**25,694**		
PERCENT	50.5	49.5				

TABLE V. COMMON SALMONELLAE REPORTED FROM NONHUMAN SOURCES (BY STATE) DURING 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	NY	NJ	PA	OHI	IND	ILL	MIC	WIS	MIN	IOW	MO	ND	SD	NEB	KAN	DEL	MD	DC	VA	WV	NC	SC	GA	FLA
anatum				17		5	1		2	2	4	36		7	53				7		6	1			1		2		14	3
bareilly	4					3		1	29			1			1													1		2
blockley	6			11		1			3	1	2		1	1	1		2					1	3				2		27	
braenderup				1		1			2					1	1		12												1	1
bredeney				2					1	3	8	18	1	3	6				3		11								10	2
chester										1	4				7		3		1				1					1	1	
cholerae-suis v. kun						1					45	40	2			1				8								3	1	
cubana	10					1		7	4	1	3	1	1	1	10															2
derby								7	8	7	2	1	1	6	15	1			3	4	1				1		2		8	2
enteritidis				4		3		1	1	8	5	6	1	2	2		1		2		5		1						11	2
give											2					1				1										
heidelberg				14		6			4	5	2	1		18	96	3	3		5				1				1		11	6
indiana										1	1	5		1	2												1	1	5	
infantis				17		4			4	5	13	13		15	6	1	6		4	1	2	2	5				2	1	18	3
java				1		5	2	2	7		1	2		11	7		2				5						3		1	6
javiana				1						4			2									1								
litchfield						4			2				1				1				7		1				1	1		3
livingstone						2		1		4		1															1			
manhattan				1					1	8				2		1											1		1	1
miami						4																								1
mississippi																											2			
montevideo	1			7				1	11	9	3	7		5	16	6	27		2	1	1	1	8		1			1	25	5
muenchen				2				1	6	1	1			7	1	1	1			1	11								3	3
newington				1							1	1			28						12						1			
newport	1			2		3		1	1	1	9	2	2	5	11		3		1		37				1		3		5	5
oranienburg						2		3	16	15	5		2	6	10		3		7	2	1				2		3		1	2
panama									1	1					1															
paratyphi b				4			1			2	1		4										1		1					
reading	1					1					1	3		1	38				10				1						1	
saint-paul				1		5		1	1	3	12	5		40	38	1	6	1	17		1	4	4						25	12
san-diego						1							1		46	2	11	1	7								1	1	1	
schwarzengrund									3	12	2			3	5	1	8		3										5	
senftenberg	24			4				1	13	2	5	7		5	43		2		2				1				4		4	4
tennesse						5	1				1	2		1	21		1		1				2					2		
thompson	2	1		7		7				3		2		3	12		20		1				4				4	1	16	3
typhi																														
typhimurium	2	1	2	37		12		10	6	9	36	22	32	29	101	8	9		12	19	13	4	8		3		7	2	20	28
typhimurium v. cop	5			21				1	3		3	2	5		8	6	2		1	3		1	5				6	3	32	
weltevreden																														
worthington									2		3	2		7	8				1				2				16		29	4
TOTAL	56	2	2	155	–	76	5	38	131	108	175	180	56	180	594	33	123	2	90	40	113	15	48	–	10	–	63	18	276	100
ALL OTHER	13	10	–	13	–	15	18	16	79	56	35	17	8	25	125	7	14	–	13	3	32	2	13	–	–	–	11	3	54	40
TOTAL	**69**	**12**	**2**	**168**	**–**	**91**	**23**	**54**	**210**	**164**	**210**	**197**	**64**	**205**	**719**	**40**	**137**	**2**	**103**	**43**	**145**	**17**	**61**	**–**	**10**	**–**	**74**	**21**	**330**	**140**

TABLE V – Continued

GEOGRAPHIC DIVISION AND REPORTING CENTER																				1971 TOTAL	1970 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		1		11		18				3		1	17		2	2	27		22	267	919	*anatum*
			2		8											1				6	59	43	*bareilly*
	1	5	3	53	1		1									2	1	8			137	208	*blockley*
		1			1											2					24	34	*braenderup*
			1			2	7									1		6	1	6	92	184	*bredeney*
				1													1	3			24	54	*chester*
21	28										1										151	298	*cholerae-suis v kun*
			3		3	2	1						1					7		6	64	150	*cubana*
2					1	3		1								1		22		23	122	884	*derby*
		1		1					1				2			1	1	3	1	4	70	144	*enteritidis*
							2						1					17		10	34	44	*give*
1	7	2	6	14	2		1	1	2		1		9	51		5	3	65		5	351	871	*heidelberg*
	1																	1			19	61	*indiana*
2	9	10	5	15	2		3						3	7		7	2	23		1	211	434	*infantis*
									2				3				1	9		1	71	41	*java*
		1		1			2														12	18	*javiana*
							1											2		1	25	22	*litchfield*
																		17		10	36	72	*livingstone*
	3	1															8	29		2	59	69	*manhattan*
																					5	10	*miami*
																					2	3	*mississippi*
	6	2	5		7		4					4	1	19		1		12			199	337	*montevideo*
	2	2				2	6						1					2		1	55	55	*muenchen*
											10							1			55	98	*newington*
1	4		1	2	3		9	1	2		5		4			8	7	31		1	172	273	*newport*
3	7		2			2	2					2	3			1		14			116	222	*oranienburg*
							1		5				2			2		2		20	35	109	*panama*
							2									1					17	2	*paratyphi b*
			1	1			5							2		3	5	125			199	106	*reading*
				4	1	1	23		2				3	25		4	5	30			275	532	*saint-paul*
1	1			4		1								2			4	58			143	211	*san-diego*
	3						1	1						39			1	2		2	91	185	*schwarzengrund*
	1	4	7		31	1	3				6			11				1		7	193	320	*senftenberg*
	1	1						1									2	25			67	267	*tennessee*
	3	11	1	9	1		6										3	18		1	139	319	*thompson*
					3													6			9	–	*typhi*
9	9	2	6	3	5	11	30	9	5		3	1	16	2		14	8	287		11	863	1,651	*typhimurium*
5	4		1	5	6		5		3		2		4	5		4	1	17			169	242	*typhimurium v. cop*
																				3	3	50	*weltevreden*
	4	6		1	1								1	7				3		1	98	323	*worthington*
46	95	49	45	114	87	25	133	14	22	–	31	7	55	187	–	60	55	873	2	144	4,733	9,865	TOTAL
14	24	10	26	8	30	1	34	2	6	–	14	75	9	19	11	13	12	154	1	14	1,099	1,788	ALL OTHER
60	**119**	**59**	**71**	**122**	**117**	**26**	**167**	**16**	**28**	**–**	**45**	**82**	**64**	**206**	**11**	**73**	**67**	**1,027**	**3**	**158**	**5,832**	**11,653**	**TOTAL**

TABLE VI. COMMON SALMONELLAE REPORTED FROM NONHUMAN SOURCES (BY CATEGORY) DURING 1971

	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
SEROTYPE	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
anatum	28	64	24	11	4	8	139	61		2	63
bareilly	1						1	48		2	50
blockley	102	3	1			4	110	1		1	2
braenderup	2						2			1	1
bredeney	8	17	19	1		2	47	28		2	30
chester	1	14	3		1	2	21				–
cholerae-suis v kun	1		145	1		4	151				–
cubana		1				3	4	42		4	46
derby	3	17	40				60	28		6	34
enteritidis	15	3	6	5		9	38	5		4	9
give		16	2	1		3	22	9		1	10
heidelberg	58	199	11	19	6	8	301	8			8
indiana	3	7		4			14	1		1	2
infantis	104	20	6		2	15	147	12		6	18
java			1			3	4	1			1
javiana	1	1				2	4				–
litchfield	2						2				–
livingstone	1				2	1	4	9		20	29
manhattan	13	20	2			1	36	1		8	9
miami							–				–
mississippi							–				–
montevideo	41	10	8	1		4	64	62		22	84
muenchen	4	3	1		1	7	16	1		1	2
newington		3				1	4	37		12	49
newport	8	5	5	58	5	9	90	1		2	3
oranienburg		7	1	1	9	5	23	37		27	64
panama		1	15	1			17			1	1
paratyphi b							–			2	2
reading	5	178					183	3		9	12
saint-paul	34	154	7	7	2	6	210	4		5	9
san-diego	3	112	4	5		5	129	1		2	3
schwarzengrund	8	32	2	1			43	17		17	34
senftenberg	32	56	1			3	92	54	17	5	76
tennessee	6	24	4		1		35	15		6	21
thompson	66	8	3	2		4	83	5		2	7
typhi							–				–
typhimurium	90	112	57	280	47	91	677	9		8	17
typhimurium v cop	68	19	8	35	8	19	157				–
weltevreden							–	1			1
worthington	59	10		2		1	72	13	1	3	17
TOTAL	767	1,116	376	435	88	220	3,002	514	18	182	714
ALL OTHER*	136	97	36	62	16	31	378	237	2	128	367
TOTAL	**903**	**1,213**	**412**	**497**	**104**	**251**	**3,380**	**751**	**20**	**310**	**1,081**

*SEE TABLE VII

TABLE VI – Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRONMENT	HUMAN DIETARY ITEMS						MISCELLANEOUS	1971 TOTAL	1970 TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
9	5	8	1	2	2	35	48	3	267	919	*anatum*
	4	1			1	2	4		59	43	*bareilly*
1	3	12				4	16	5	137	208	*blockley*
	8	13					13		24	34	*braenderup*
	11	1		1	1		3	1	92	184	*bredeney*
2		1					1		24	54	*chester*
							–		151	298	*cholerae-suis v kun*
2		4			3	2	9	3	64	150	*cubana*
3		2		4		3	9	16	122	884	*derby*
3	13	4	1			1	6	1	70	144	*enteritidis*
	2						–		34	44	*give*
17	3	7	7	2		1	17	5	351	871	*heidelberg*
3							–		19	61	*indiana*
2	7	15	5	1		1	22	15	211	434	*infantis*
5	57					1	1	3	71	41	*java*
1	7						–		12	18	*javiana*
1	21						–	1	25	22	*litchfield*
	1	1					1	1	36	72	*livingstone*
	4	1					1	9	59	69	*manhattan*
	5						–		5	10	*miami*
	1						–	1	2	3	*mississippi*
	7	7	2	6	2	23	40	4	199	337	*montevideo*
6	26	1		1			2	3	55	55	*muenchen*
								2	55	98	*newington*
13	50		1		2	9	12	4	172	273	*newport*
1	9	2	1	2	2	3	10	9	116	222	*oranienburg*
1	10	1					1	5	35	109	*panama*
	14					1	1		17	2	*paratyphi b*
	1	1				1	2	1	199	106	*reading*
17	18	4	2	4		5	15	6	275	532	*saint-paul*
6	1	2				1	3	1	143	211	*san-diego*
2		1	2	4		3	10	2	91	185	*schwarzengrund*
	2			2	1	10	13	10	193	320	*senftenberg*
	5	3					3	3	67	267	*tennessee*
	12	26	4		2	2	34	3	139	319	*thompson*
							–	9	9	–	*typhi*
68	28	17	3	4	18	8	50	23	863	1,651	*typhimurium*
3	1		1				1	7	169	242	*typhimurium v cop*
			1			1	2		3	50	*weltevreden*
	1	4	1		1		6	2	98	323	*worthington*
166	337	139	32	33	35	117	356	158	4,733	9,865	TOTAL
22	123	48	2	1	5	75	131	78	1,099	1,788	ALL OTHER*
188	460	187	34	34	40	192	487	236	5,832	11,653	TOTAL

TABLE VII. OTHER SALMONELLAE REPORTED FROM NONHUMAN SOURCES DURING 1971

	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUB TOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUB TOTAL
adelaide							–				–
agona	20	9					29	1		1	2
ajiobo							–			1	1
akanji							–			1	1
alachua	2						2	26		7	33
albany	2	3	2				7	7			7
amager	6						6				–
amsterdam	1						1	1		5	6
bere							–	2			2
berlin	2						2	1			1
berta				2		1	3				–
binza	4	2	1		1		8	40		4	44
blegdam	1		1				2				–
bornum	1	7					8	9		1	10
bovis-morbificans							–				–
brandenburg							–	1			1
california	11			1			12	9		3	12
cerro	3	4	8				15	8		3	11
chailey							–				–
cholerae-suis			10				10				–
decatur			1				1				–
doncaster							–				–
drypool		6					6	6		14	20
dublin				52		1	53				–
duesseldorf						2	2				–
eimsbuettel	4	10	1			9	24	15	2	18	35
essen							–				–
florida							–				–
gallinarum	1						1				–
gaminara						1	1				–
georgia							–				–
gera							–				–
glostrup							–				–
godesberg							–			1	1
good						1	1				–
grumpensis							–	1			1
habana	1	5					6	7		7	14
hamburg				1			1				–
hartford		1				1	2				–
hidalgo		2					2				–
illinois							–	4			4
inverness							–				–
jerusalem		2					2				–
johannesburg	3					1	4	1		1	2
kentucky	8	3			1	1	13	14		4	18
kentucky v jerusalem		1					1			2	2
kotthus	2				11	2	15				–
lexington	1				1		2	1		8	9
lille		4				1	5			1	1
london		1				1	2			2	2
madelia							–	3			3
manila							–	8			8
matadi							–				–
matopeni							–				–
meleagridis	1	17	1				19	1		3	4
mgulani							–				–
minneapolis							–			1	1
minnesota		1	1			2	4	1		3	4
mission							–			1	1
muenster	3			1			4	5			5
nchanga						1	1				–
negev							–				–
new-brunswick							–	2			2
nienstedten							–	1			1
ohio	3						3			1	1
onderstepoort							–				–
orion	1	1	1				3	1		11	12
oslo							–				–
phoenix							–				–
pomona							–				–
poona	1		1		1	1	4				–
pullorum	20						20				–
roan							–				–
rubislaw			1			1	2				–
saphra						1	1				–
siegburg	11	3				1	15	14		5	19
simsbury	3	1					4	2			2
stanley							–				–
stockholm							–			1	1
taksony	1		1	1			3	7		1	8
thomasville	1	5					6	19		7	26
typhi-suis			2				2				–
uphill							–				–
urbana							–				–
wassenaar							–				–
welikada							–				–
westhampton							–			1	1
wil							–			2	2
44:Z36Z38							–	1			1
64:229							–				–
TOTAL	118	88	32	58	15	29	340	219	2	121	342
NOT TYPED*	18	9	4	4	1	2	38	18	–	7	25
TOTAL	**136**	**97**	**36**	**62**	**16**	**31**	**378**	**237**	**2**	**128**	**367**

SEE TABLE VIII

TABLE VII – Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRON-MENT	HUMAN DIETARY ITEMS						MISCELLA-NEOUS	1971 TOTAL	1970 TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUB TOTAL				
	3						–		3	–	*adelaide*
						3	3		34	5	*agona*
							–		1	–	*ajiobo*
							–		1	–	*akanji*
		2			1		3		38	22	*alachua*
		1					1	4	19	20	*albany*
							–		6	3	*amager*
							–	1	8	2	*amsterdam*
							–		2	–	*bere*
							–		3	–	*berlin*
1	7						–		11	20	*berta*
							–	4	56	66	*binza*
							–		2	–	*blegdam*
					1	1	2		20	16	*bornum*
						2	2		2	4	*bovis-morbificans*
							–		1	–	*brandenburg*
			1				1	1	26	41	*california*
		5				38	43		69	80	*cerro*
							–	1	1	–	*chailey*
							–		10	23	*cholerae-suis*
							–		1	–	*decatur*
							–	1	1	–	*doncaster*
4						1	1	1	32	69	*drypool*
							–		53	92	*dublin*
							–		2	2	*duesseldorf*
1		5				1	6	1	67	239	*eimsbuettel*
1							–		1	1	*essen*
						2	2		2	1	*florida*
							–		1	7	*gallinarum*
							–		1	1	*gaminara*
	1						–		1	1	*georgia*
					1		1		1	–	*gera*
	1						–		1	–	*glostrup*
							–		1	1	*godesberg*
							–		1	7	*good*
							–		1	2	*grumpensis*
1							–	1	22	9	*habana*
							–		1	–	*hamburg*
	1						–	1	4	14	*hartford*
							–		2	–	*hidalgo*
							–		4	10	*illinois*
	1						–		1	–	*inverness*
							–		2		*jerusalem*
	11						–	2	19	20	*johannesburg*
		6					6		37	99	*kentucky*
							–		3	–	*kentucky v jerusalem*
		1					1	2	18	8	*kottbus*
						4	4		15	23	*lexington*
							–		6	2	*lille*
							–		4	7	*london*
	1					1	1		5	12	*madelia*
					1		1		9	9	*manila*
	4						–		4	1	*matadi*
						1	1		1	–	*matopeni*
		1					1		24	36	*meleagridis*
						1	1		1	–	*mgulani*
							–		1	4	*minneapolis*
	2						–	1	11	104	*minnesota*
							–		1	–	*mission*
							–	1	10	31	*muenster*
							–		1	–	*nchanga*
						1	1		1	–	*negev*
	1						–	1	4	3	*new-brunswick*
							–		1	–	*nienstedten*
1							–		5	22	*ohio*
1							–		1	–	*onderstepoort*
					1		1	1	17	14	*orion*
1	1						–		2	2	*oslo*
	1						–		1	1	*phoenix*
	1						–		1	4	*pomona*
1	8						–		13	24	*poona*
3		1					1		24	59	*pullorum*
						2	2		2	–	*roan*
2	1						–		5	13	*rubislaw*
						2	2		3	2	*saphra*
1		20				14	34		69	78	*sieghurg*
							–	4	10	52	*simsbury*
	3						–		3	1	*stanley*
							–		1	–	*stockholm*
							–	1	12	30	*taksony*
							–	3	35	76	*thomasville*
							–		2	–	*typhi-suis*
						1	1		1	–	*uphill*
	33						–		33	33	*urbana*
	1						–		1	4	*wassenaar*
							–		1	1	*welikada*
	3						–	1	6	3	*westhampton*
							–		1	–	*wil*
1							–		1	–	*44:Z36Z38*
	1						–		1	–	*64:Z29*
19	86	42	1	–	5	75	123	33	943	1,621	TOTAL
3	37	6	1	1	–	–	8	45	156	167	NOT TYPED*
22	**123**	**48**	**2**	**1**	**5**	**75**	**131**	**78**	**1,099**	**1,788**	**TOTAL**

TABLE VIII. SALMONELLAE REPORTED BY GROUP IDENTIFICATION ONLY FROM NONHUMAN SOURCES DURING 1971

SOURCES	GROUP												TOTAL
	B	C	C1	C2	D	E	F	G	O	R	S	UNK	
DOMESTIC ANIMALS AND THEIR ENVIRONMENT	10		7	1		1		1		1		17	38
ANIMAL FEEDS	1		21						2			1	25
WILD ANIMALS AND BIRDS	1										1	1	3
REPTILES AND ENVIRONMENT	16		6	5	2	1	1					6	37
HUMAN DIETARY ITEMS				1		3						4	8
MISCELLANEOUS	9	1	9	3	4	14	1	1				3	45
UNKNOWN													–
TOTAL	37	1	43	10	6	19	2	2	2	1	1	32	156

TABLE IX. SALMONELLA ISOLATIONS FROM HUMAN SOURCES BY SEROTYPE AND YEAR, 1965–1971

SEROTYPE	1965	1966	1967	1968	1969	1970	1971
aba					3		1
abaetetuba					1		
aberdeen		1		1	1	2	
abony		1				1	2
abortus-bovis		2	2			2	1
accra				1			
adelaide	1		4	1		5	1
agama		3					
agona			1	1		4	44
ahuza				1			
akanji						1	
alabama			1	1			
alachua	5	6	13	23	15	10	16
albany	6	14	5	18	16	31	18
albuquerque					1		
allandale	1				1		
altona						1	
amager	1	3	2	1	29	5	4
amersfoort				1			1
amsterdam						1	2
anatum	300	333	297	209	182	262	309
arechavaleta		1		1	2	1	1
arkansas	1	1			1		
atlanta	8	19	11	10	15	17	19
austin		1					
azteca					1		2
babelsberg						1	
ball		2	1			1	
bareilly	104	78	81	95	74	72	51
belem	1		2		3		
benfica						1	
berlin		2	13	5	2		1
bern				1			1
berta	47	34	37	30	40	70	101
bilthoven	3						
binza	20	24	14	6	9	9	11
birkenhead							1
blegdam	1			1			1
blockley	401	603	519	487	505	660	586
bonaire		1			1		1
bonariensis		1			1	1	3
bonn						1	
bovis-morbificans	31	12	6	2	10	33	26
bradford		4	1	2	2	3	1
braenderup	85	111	83	139	78	92	126
brancaster			1		2		
brandenburg	1	2	2	5	4	5	8
bredeney	160	159	120	172	130	196	191
bristol						1	3
brunei					1		1
bukavu					2		
businga					1		
butantan	1						

SEROTYPE	1965	1966	1967	1968	1969	1970	1971
california	22	15	16	22	13	32	13
cambridge	3		1		1		1
canastel					3	1	
canoga						1	
caracas						2	
carno					1		
carrau	7	6	3	2	3	5	5
cerro	13	12	9	12	25	23	23
chailey	1	6				3	
chameleon	1				1		
champaign	1						
charity						1	
chester	115	109	100	58	52	87	61
chingola	2						1
chittagong							2
cholerae-suis	10	10	6	15	12	11	13
cholerae-suis var kunzendorf	*36*	*26*	*20*	*29*	*15*	*24*	*24*
christiansborg						1	1
claibornei			1		1	1	1
clifton	1					1	2
coeln				3	1	5	
coleypark		2		2	1	1	1
colindale							2
colorado	3	1	3		1	1	1
concord		1	2	3		5	1
corvallis	1	1					1
cubana	145	131	66	59	145	166	257
daytona	2	3		1	2		
decatur				1			1
degania					1	2	
denver	1	2	3				1
derby	632	404	326	411	335	490	534
drypool		2	1	6	12	10	19
dublin	3	4	8	11	7	8	24
duesseldorf	5	6	1	3	6	14	7
duisberg	1	4	1				
durban			2	2			2
durham		3	8				
eastbourne	4		1	1	5	7	9
edinburg						1	2
eimsbuettel	4	17	26	5	33	21	19
elmorane					1		
emek	3		1				
enteritidis	1,065	1,237	1,277	1,740	1,988	2,504	2,249
eppendorf			1				
essen	3		4	2	1		
fayed		9	1	1	1	1	
flint						3	
florida	2		2	1	2	1	4
fresno	1			2			
frintrop			1				

TABLE IX.–Continued

SEROTYPE	1965	1966	1967	1968	1969	1970	1971
galiema		1					
gallinarum		1	1	1	3	3	4
gaminara	13	10	7	16	14	17	21
garoli		1	1		2		
gatow			1	3	2	1	11
gatuni	3		1	1	2	1	
georgia			3	1	3	1	2
give	116	78	61	65	74	83	86
glostrup	1	2	1	1		1	1
goettingen						2	
good				1			
grumpensis		2	1	2	3		5
guinea	1						
haarlem			1				
habana		3	15	7	15	6	17
hadar				1			
hagenbeck				1			
haifa	1	4				1	3
halmstad			1				
hamburg						1	1
hartford	22	33	22	16	41	24	38
hato	1				2		
heidelberg	1,621	1,622	1,648	1,326	1,428	1,699	1,660
heilbron	1		3	1	2		1
holcomb						1	
homosassa							1
horsham	1						1
houten							1
hvittingfoss				1			
ibadan		2	2	1	5	8	12
illinois			1				
indiana	66	65	49	84	93	109	107
infantis	1,145	1,315	980	945	1,096	1,214	1,421
inverness	7	2	4	2	6	6	10
irenea			1				
irumu	23	8	12	2	5	10	3
israel			1				
ituri							1
jamaica						1	
jangwani					1		
java	199	367	309	199	173	459	584
javiana	361	312	373	518	465	420	516
johannesburg	2	1	15	9	9	7	5
kaapstad	2	1	1	4		3	11
kentucky	19	38	40	17	30	55	34
kintambo				1			
kottbus	9	1	3	5	14	53	67
krefeld							3
kumasi						1	
kunduchi			2				
lanka		1		2	1		
lansing							1
larochelle	2						1
lawndale				1	1		
leeuwarden	3						
lexington	2		3		2	5	8
lillie							1
lindenburg	2		2	2	2	3	1
litchfield	96	97	81	93	124	182	161
livingstone	33	31	55	44	35	30	59
llandorff				1			
loma-linda	2	7	6	5	1	4	3
lomita	3	2	4	6	15	20	13
london	1	1	3	1	16	26	64
los angeles					1		
lovelace						1	
luciana	1	1	2	2		2	1
maastricht	1						
madelia	3	3	8	6	11	1	4
manchester		3	2	4	2	6	2
manhattan	125	134	384	200	253	340	420
manila				2			
maracaibo					2	1	
matadi							2
meleagridis	140	8	7	4	14	26	26
memphis			1				
menston	11	2					
miami	95	83	69	118	106	71	94
michigan	1				2		
minneapolis	1	1				1	3
minnesota	14	8	22	19	27	34	30
mishmar-haemek	2						
mission	16	6	19	1	3	1	4
mississippi	38	55	58	50	45	66	65
missouri			1	1			
mjimwema		1					
molade		1				7	7
montevideo	458	337	398	271	314	394	375
muenchen	219	229	217	211	242	276	389
muenster	12	27	25	32	40	25	26
mundonobo					1		
nachshonim				1			
nagoya	1	1	1				
napoli					1		
narashino				1			
nashua					1		
nchanga				7			1
neuminster					1	1	
new-brunswick	21	53	1	5	10	5	6
new-haw		9	2				
newington	57	53	43	44	32	48	41

TABLE IX.—Continued

SEROTYPE	1965	1966	1967	1968	1969	1970	1971
newlands		1					3
newport	1,257	1,319	1,263	1,248	1,611	1,700	1,722
nienstedten		1					1
nigeria			1				1
norwich	24	28	13	41	24	22	31
nottingham	1	1	1			3	
nyborg	1						
ohio	9	12	5	1	16	8	15
onderstepoort				1			2
oranienburg	591	399	406	295	266	399	412
ordonez						12	2
orion		3	6	6	4	6	2
oritamerin		1	1	1	1	1	3
os		3					
oslo	14	26	19	14	19	27	43
panama	229	274	182	230	331	236	286
papuana		1			1	1	1
paratyphi A	12	7	7	13	14	5	14
paratyphi B	177	153	173	114	166	205	241
paratyphi B var odense	1	2		4	3		
paratyphi C	1	1	1	2		2	
pensacola	4		5	13	3	9	9
pharr			1	1			
phoenix		1			1		
pomona	3	4	1	3	6	3	3
poona	48	40	58	75	81	93	97
portland	1	1					
portsmouth				1			
potsdam		3		1	1	4	
praha						2	
pullorum		10	3	1	1	5	
ramat-gan						1	
reading	21	105	54	74	68	147	172
remo	2	1					
richmond	2		1		2	3	1
rubislaw	11	30	24	33	30	27	29
rutgers						2	1
saint-paul	767	737	907	1,143	986	1,157	919
san-diego	229	122	149	106	118	234	147
san-juan					2	2	
saphra	13	13	11	20	14	15	14
sarajane	1	2					
schoeneberg				1			
schwarzengrund	114	71	72	55	89	56	85
seegefeld							1
senftenberg	74	72	58	65	78	86	219
sendai		6			2		
seremban		2					
shipley					1	1	
shubra						1	
siegburg	16	14	10	8	25	55	69
simsbury	2	5	4	6	19	9	8
singapore			1		1		1
soahanina		1					
solna		1					
springs							1
stanley	7	6	7	7	13	13	17
stanleyville					1		
stockholm		1			5		
suberu						1	
sundsvall	1	3	1			1	2
takoradi	3		2				
taksony	1		1	1		4	4
tallahassee	4	7	6	8	12	8	5
tamale	1						
tel-el-kebir					1		
tennessee	173	133	63	85	43	54	76
texas		1				1	1
thomasville	3	5	3	1	4	7	3
thompson	562	579	508	673	1,056	958	834
tosamanga							1
tucson							1
typhi	719	654	690	609	549	533	583
typhi-murium	6,526	5,744	5,530	5,147	5,515	5,640	6,525
typhi-murium var copenhagen	203	178	273	316	259	277	353
uganda	2		1	1	1	4	4
uppsala						1	
urbana	33	28	18	29	49	59	53
uzaramo						1	
vejle			2				2
victoria				2			
virchow	2	4	4	6	7	4	21
wagenia			1				
wandsworth				1			1
wassenaar		2		1	2		1
welikada					3		
weltevreden	35	45	61	78	54	104	151
weslaco		1			1	1	1
westerstede	2	6	1			3	
westhampton	7	1		3	2	2	7
willemstad				2	2		3
worcester			1				
worthington	46	44	24	22	35	59	46
yalding	1						
zanzibar				1			
58a					1		
54:Z4,=Z23							1
57:A-Z6							1
Group A	2	1	1		3	1	5
Group B	293	312	493	401	340	397	359
Group C			2	13	10	17	31
Group C_1	91	140	138	58	99	111	86
Group C_2	57	61	132	72	128	132	106

TABLE IX.–Continued

SEROTYPE	1965	1966	1967	1968	1969	1970	1971
Group D	47	54	77	70	98	111	75
Group E	50	13	36	9	16	20	37
Group E_1					1		1
Group E_2							2
Group E_4				4			3
Group F			1	2		4	7
Group G	4	6	7	8	17	20	22
Group H		2	9	3	4	2	
Group I	1		1		1	2	3
Group K			1				
Group L	1						1
Group M			1				
Group O	9	3	3	3	3	1	1
Group P							1
Group R							2
Group V					1		
Group 058					1		
Unknown	115	81	205	558	498	438	450
TOTAL	20,865	20,040	19,723	19,740	21,413	24,216	25,694

STATE EPIDEMIOLOGISTS AND STATE LABORATORY DIRECTORS

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.

STATE	*STATE EPIDEMIOLOGIST*	*STATE LABORATORY DIRECTOR*
Alabama	Frederick S. Wolf, M.D.	Thomas S. Hosty, Ph.D.
Alaska	Donald K. Freedman, M.D.	Frank P. Pauls, Dr.P.H.
Arizona	Philip M. Hotchkiss, D.V.M.	H. Gilbert Crecelius, Ph.D.
Arkansas	G. Doty Murphy, III, M.D.	Robert T. Howell, Dr.P.H.
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Kentucky	Calixto Hernandez, M.D.	B. F. Brown, M.D.
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Pennsylvania	W. D. Schrack, Jr., M.D.	James E. Prier, Ph.D.
Puerto Rico	Luis Mainardi, M.D.	Eduardo Angel, M.D.
Rhode Island	James R. Allen, M.D. (Acting)	Malcolm C. Hinchliffe, M.S.
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Texas	M. S. Dickerson, M.D.	J. V. Irons, Sc.D.
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Washington	John Beare, M.D. (Acting)	Jack Allard, Ph.D.
West Virginia	N. H. Dyer, M.D.	J. Roy Monroe, Ph.D.
Wisconsin	H. Grant Skinner, M.D.	S. L. Inhorn, M.D.
Wyoming	Herman S. Parish, M.D.	Donald T. Lee, Dr.P.H.

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