REPORT NO. 33
JANUARY 29, 1965

SALMONELLA

SURVEILLANCE

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For the Month of December 1964

U. S. Department of Health, Education, and Welfare / Public Health Service

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 to: Chief, Salmonella Surveillance Unit, Communicable Disease Center, Atlanta, Georgia, 30333.

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I. SUMMARY

During December, 1,719 human isolations of salmonellae were reported. The average number of isolations per week was 344, a decrease of 55 from the figure for November (Figure 1).

For the past four months the percentage of S. derby recoveries has remained relatively constant at slightly more than 4 per cent. Prior to a large interstate hospital-associated outbreak in 1963 attributed to this serotype, the reported recoveries of S. derby accounted for approximately 2 per cent of all salmonellae reported from human specimens. The course of the epidemic due to S. derby is roughly portrayed in Table VII by the number and per cent of isolations reported to the Salmonella Surveillance Unit between November 1962 and December 1964.

A total of 344 nonhuman isolations were reported in December for a decrease of 126 from last month. Each month since September has demonstrated a decrease in nonhuman salmonella recoveries which parallels the drop in reported human isolations during the same period.

Erratum: SSR 32 - Page 18, paragraph 1, line 14 read, "The proportion of all specimens accounted for by each type of specimen was not indicated." It should read, "The proportion of all specimens accounted for by each type of specimen may be seen in Table XI."

II. REPORTS OF ISOLATIONS FROM THE STATES

A. Human

A total of 1,719 isolations of salmonellae from humans was reported during December. The average number of isolations per week (344) represented a decrease of 55 from November and 16 from December 1964 (Figure 1).

The seven most frequently reported serotypes during December were:

Rank	Serotype	Number	Per Cent	Rank Last Month
1	S. typhi-murium & S. typhi-murium var. copenhagen	489	28.4	1
2	S. heidelberg	148	8.6	3
3	S. infantis	137	8.0	2
4	S. enteritidis	115	6.7	5
5	S. newport	80	4.7	4
6	S. derby	76	4.4	6
7	S. typhi	67	3.9	9
Total		1,112	64.7	

Total salmonellae isolated (December) 1,719

These seven serotypes accounted for almost two-thirds of all isolations this month while representing only 10 per cent of the 70 different types reported. The fact that only a few serotypes accounted for the majority of isolations is consistent with past observations.

The family case to total case ratio during December (.195) is consistent with past experience (Table II). The age and sex distribution is also consistent with past experience (Table IV).

B. Nonhuman

There were 344 isolations of salmonellae from nonhuman sources reported in December. This is a decrease of 126 from the previous month when 470 were reported, and the lowest incidence since May of this year when 333 cases were reported. There were 48 serotypes identified among those submitted from 31 States. This continued decrease may be attributed in part to the fact that due to lack of sufficient space and personnel, it has been necessary for the National Animal Disease Laboratory to temporarily limit cultures accepted for typing to those from sick animals and feeds.

The seven most common types reported for December were as follows:

No.	Serotype	Number	Per Cent	Standing Last Month
1	S. typhi-murium var. copenhagen	76	22.1	1
2	S. heidelberg	43	12.5	2
3	S. infantis	38	11.0	4
4	S. anatum	14	4.1	Not Listed
5	S. dublin	12	3.5	Not Listed
	S. thompson	12	3.5	Not Listed
6	S. pullorum	11	3.2	Not Listed
7	S. saint-paul	10	2.9	Not Listed
		216	62.8	

These seven types accounted for 62.8 per cent of the total.

Salmonella typhi-murium, S. heidelberg and S. infantis, the three most common types, were reported also as the three most common types from man this month.

The four species from which most of the isolations were obtained in order of frequency are: turkeys, 97 (28.2 per cent); chickens, 75 (21.8 per cent); cattle, 56 (16.3 per cent); swine, 16 (4.7 per cent).

III. CURRENT INVESTIGATIONS

None.

IV. REPORTS FROM STATES

A. California

Fatal Case of *Salmonella dublin* Infection Associated with Raw Certified Milk. Reported by Dr. Philip K. Condit, Chief, Communicable Diseases, California State Department of Public Health, Dr. Herbert H. Cowper, Chief, Acute Communicable Diseases Division, Los Angeles County Health Department, Dr. Edward Aaron, Senior Veterinarian, Los Angeles County Health Department, and Dr. George Perlstein, EIS Officer assigned to California State Department of Public Health.

A 25-year old female was admitted to the UCLA Medical Center in Los Angeles on September 14, 1964. A blood sample taken on that date for culture subsequently grew *Salmonella dublin*. Diagnosis on September 15, the date of death of the patient, included septicemia and acquired auto-immune hemolytic anemia. The hematologic disorder was a pre-existing one.

Epidemiologic investigation of the case revealed the patient to be a consumer of certified raw milk. The dairy implicated was surveyed to determine the status of the workers in regard to *S. dublin*. One male employee was found to be a shedder of the organism. A survey of the 1500 cow herd on an individual basis was not carried out, but it is of epidemiologic importance that in 1958 this same herd was implicated in a *S. dublin* outbreak. During this outbreak of 47 cases, 11 of which were laboratory confirmed, certified raw milk was implicated and a survey of the 387 cows at that time revealed 3 who were shedding *S. dublin*.[1]

Editor's Comment: *Salmonella dublin* infections in cattle is a well recognized problem and one which has caused a great deal of worry and expense in recent years. It's presence in raw milk has been commented on frequently in the past and points out another danger of the consumption of raw milk.

In this particular case the patient had an auto-immune hemolytic anemia, a disorder which has been shown clinically and experimentally to predispose to salmonella infections.[2] The hypothesis has been advanced that phagocytosis of the cellular breakdown products by the reticuloendothelial cells saturates or impares the capacity of these cells to effectively combat pathogenic bacteria.

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1. Schroeder, Robert J., and Dale, Mary B. Epidemiology and Control of a *Salmonella dublin* Food Infection Outbreak in Man. Proceedings of the Third Annual Meeting of the United States Livestock Sanitary Association, p. 248-254, 1959.

2. Kaye, Donald, and Hook, Edward W. Influence of Auto-immune Hemolytic Anemia on Susceptible Salmonella Infections. Proceedings of the Society for Experimental Biology in Medicine. *117*:20-23, 1964.

B. Illinois

Rare Salmonella Serotypes: S. paratyphi A and S. weltevreden. Reported by Dr. Samuel L. Andelman, Commissioner of Health, Dr. Olga Brolnitsky, and Dr. Herbert L. Slutsky, Epidemiologists, Chicago Board of Health.

On September 29, 1964, a 23-year old male Indian was reported by a Chicago Hospital to have Salmonella paratyphi A. He had been admitted on September 15, 1964, with high fever, diarrhea and dehydration. Epidemiological history disclosed that he had left India on September 6, 1964, and had traveled through Paris, London and New York, arriving in Chicago on September 12. At the time of arrival in Chicago, he developed a high fever and was hospitalized. On the basis of negative cultures obtained on September 25, 1964, he was allowed to leave the hospital and attend a local university, although being followed carefully for persistence of an infection.

On September 10, 1964, a case of Salmonella weltevreden was reported to the Chicago Board of Health. The patient was a 35-year old while female who had developed severe diarrhea and fever while in Mexico City on a vacation. She had eaten at a popular restaurant approximately 5 hours prior to her illness and returned to Chicago by air on the day of her illness. After treatment with antibiotics, three cultures were negative.

Editor's Comment: These two cases which involve rare serotypes within the continental United States emphasize the dangers and problems experienced by international travelers. In the first case of S. paratyphoid A, the patient had come from a highly endemic area, i.e. the Far East, and experienced in Chicago an infection which is foreign to that area. In 1963 only 8 isolations of S. paratyphoid A were made in the U.S. All were in humans and 7 of the 8 were from the large populous states, New York and California, which receive large volumes of foreign travelers. In the second case, it is of some interest that S. weltevreden is almost unknown in the continental United States; however, it is found commonly in Hawaii comprising approximately 10 per cent of the total human isolations of salmonella in that state.

C. Michigan

An Outbreak of Gastroenteritis Due to Salmonella typhi-murium Phage Type 2a. Reported by Dr. Donald B. Coohon, Epidemiologist, Morris L. V. French, Division of Laboratories, George Rouman, Chief, Environmental Health Division, C.A.E. Luval, M.D., Health Officer, and Madeline Heffron, Division of Nursing, Michigan State Department of Health.

During September, 1964, 9 of 11 persons became ill some 15 to 24 hours after a picnic dinner with symptoms of fever, chills, abdominal cramps, vomiting, and diarrhea. Salmonella typhi-murium phage type 2a was recovered from stool cultures of 7 of the 9 persons ill.

An epidemiologic investigation suggested that either hamburger-mix or homemade ice cream was the vehicle of infection. Salmonella typhi-murium phage type 2a was recovered from samples of the ice cream mix. Raw eggs and home-pasteurized cream were used in preparing the ice cream mix, which was uncooked prior to freezing. Samples of the raw cream, four raw eggs, and chicken feed were submitted to the laboratory for culture. All of these were negative for salmonella. However, because the sanitarian at the farm producing the eggs used in making the ice cream had noted a sudden drop in egg production just prior to the outbreak, the investigation was continued. Because of the low production, the layers were slaughtered, and at the time of the slaughtering, samples of the intestine and liver were collected for culture. Salmonella typhi-murium phage type 2a was isolated from the composite sample of the livers and from 3 culture swabs taken from stool contents. The authors concluded that the raw eggs used in preparing the uncooked ice cream mix had been contaminated with salmonella.

Editor's Comment: This outbreak demonstrates the usefulness of phage-typing as an epidemiologic tool. The bacteriological studies in this investigation clearly implicate the reservoir and vehicle of infection responsible for this outbreak. The authors should be credited for persisting in the bacteriologic investigation. The initial raw materials sampled were negative for salmonella, but further investigations and cultures revealed the link in the chain of infection. This emphasizes the need to obtain multiple cultures from potentially contaminated materials suspected as being involved in the cycle.

V. SPECIAL REPORTS

A. Salmonellae in Abattoirs, Butcher Shops and Home Produced Meat and Their Relation to Human Infection. Abstracted from an article by a working party of the Public Health Laboratory Service that appeared in The Journal of Hygiene, Cambridge, September 1964.

The information for this report was gathered in England during 1961 and 1962. Thirty-two slaughter houses were examined for salmonellae by culture of swabs that had been placed in drains. A total of 4,496 swabs were examined during the investigation, and of these, 930 (20.7 per cent) were positive. From two slaughter houses which dealt with pigs only, salmonellae were isolated from 57 per cent and 91 per cent; and from abattoirs, in which pigs, cattle and sheep were killed, the isolations ranged from 73 per cent to 0. There appeared to be an inverse relationship between the percentage of sheep killed and the isolation of salmonella from drain swabs. This observation was in keeping with the observation that salmonellae are infrequently found in sheep in the British Isles. However, in examining the effect of the proportions of pigs and cattle on the isolation rate, the problem was more difficult. The conclusion was that in general a high rate of isolations from abattoirs was associated with large numbers of cattle and a low isolation rate associated with low numbers of cattle. Other than the two abattoirs which dealt only with pigs, which had high isolation rates, little effect on the rates could be seen by comparing these rates and the number of pigs killed.

The most common serotype found in the abattoirs slaughtering cattle was Salmonella typhi-murium followed by S. dublin and S. heidelberg. In those slaughtering only pigs, S. typhi-murium was again the dominant type, but S. dublin and S. heidelberg were not found. It is of some interest that S. cholerae-suis was not isolated; however, Selenite F broth was the enrichment medium used and this is thought by some not to be the medium of choice for isolation of S. cholerae-suis.

Tissue specimens of spleen, liver, or lymph nodes collected from each type of animal were also examined and out of 9,351 specimens, there were 180 isolations of salmonella. The most frequently isolated serotype from tissue was S. menston followed by S. typhi-murium and S. heidelberg. In addition, retail butcher shops were studied and out of 1,117 drain swabs, 73 or 6.5 per cent were positive, and of 4,127 specimens of meat or meat products examined from the butcher shop, 33 (.8 per cent) were positive.

From the above findings, it was quite obvious that people buying meat from abattoirs or from butcher shops had ample exposure to salmonella organisms; therefore, the working committee tried to establish some relationship between serotypes isolated from the abattoirs and human infections in the area where the meat was sold. Salmonella typhi-murium was the serotype most commonly isolated from both animal sources and human infections. Further work with specific phage types of S. typhi-murium indicated that similar phage types from the abattoirs and from human infections occurred with significant frequency, although the time lag between the organism identification and other factors prevented specific epidemiologic investigation. Salmonella dublin was frequently isolated from cattle, and the second most common serotype recovered from the abattoirs; this organism rarely was a cause of human infection. Salmonella heidelberg was the third most common serotype isolated from the abattoirs and was the fourth most common isolated from human sources.

From the foregoing and from the experiences of the Communicable Disease Center, it has become quite obvious that the problem of salmonellosis presents itself as an "iceberg" effect, that is, prevalence is far beyond recognition. It further points out the fact that our systems of control, and indeed observation, are not as good as they should be; we all are exposed to salmonellae and sporadic cases frequently occur with unrecognized epidemiologic patterns, and until more information like the above is available, effective recommendations for control are not possible.

B. The World Problem of Salmonellosis. Edited by Dr. E. van Oye, Dr. W. Junk Publishers, The Hague, 1964.

The first few pages of this book are devoted to historical facts about salmonellosis including typhoid fever. The remainder of the book is divided into two parts. In the first part, there are eight chapters dealing with systematics and phage typing, with genetics, the chemistry of the antigens and the epidemiology and pathogenesis of salmonellosis in man and in animals.

The second part, containing 13 chapters, is devoted to the epidemiology of salmonellosis in different countries of the world. Since the mid-1964's, the increase in international and intercontinental travel of the human population and in trade of both human and animal foods, has carried various salmonella serotypes to countries in which they had not previously been found. These chapters discuss the problems in specific countries as well as those problems related to the exchange of serotypes between countries. The areas of the world covered are Western and Eastern Europe; Israel; North, Central and South Africa; Canada; United States; Mexico; South America; Japan; China; and Australia. A tremendous amount of valuable information is contained in these 596 pages by 21 authors. Unfortunately, for some, 7 chapters are in French, 3 in German, 1 in Spanish and 10 in English.

C. ANNOUNCEMENT: Salmonella Conference in Toronto.

Dr. J. M. Glenroy, Director, Sanitation, Food Control & Laboratory, Department of Public Health, Toronto, informed us that the Ontario Veterinary Association held a salmonella conference at their annual meeting, Friday, January 29, at the Public Health, Regulatory and Research Session.

The theme of the Conference was "Salmonella: A Chameleon Genus, Pathogen - Commensal - Contaminant." The subjects to be covered included human and veterinary clinical aspects; methodology, isolation of salmonella, epidemiology and regulatory aspects. Also, Dr. I. A. G. MacQueen, Medical Officer of Health, discussed the typhoid outbreak in Aberdeen.

VI. INTERNATIONAL

Typhoid and Paratyphoid Fever in Italy, 1950-1959. Abstracted from Andamento Delle Infezioni Tifoidee e Paratifoidee in Italia nel Decennio 1950 - 1959, Vol. XXIII, No. 4, July - August 1962.

The epidemiological trend of typhoid and paratyphoid fevers in Italy has been studied for the ten-year period 1950-1959. From analysis of the statistical data, it appears that typhoid and paratyphoid incidence has been slightly decreasing. However, it is still considerably higher than in most European countries (See Table VIII).

The endemic situation is not evident in the whole country, but mainly affects some areas of the south and the islands of Italy.

Typhoid and paratyphoid fevers occur the whole year round, but show a considerable increase during the summer and autumn months.

The highest incidence was recorded in the 5-9 and 10-14 year age groups, which accounted for about a third of the reported cases.

Bacteriophage typing demonstrated that the phage types of S. typhi occurring most frequently in Italy were S. typhi A, C_1, D_1, and E_1.

It was concluded that endemic typhoid and paratyphoid fevers are still a major public health problem in Italy, strictly concerned with environmental situations. It can be met by applying appropriate public health and social measures, mainly in under-developed areas.

VII. FOOD AND FEED SURVEILLANCE

During the past month, fresh poultry meat obtained from local retail stores was examined in the Veterinary Public Health Laboratory for salmonellae. Three, 30 gram samples were cultured from each of 2 raw frozen turkey roasts and no salmonellae were isolated. Forty-nine, 30 gram samples were cultured from 15 packages of cut chicken parts and salmonellae were recovered from 14 samples from 7 packages. Serotypes recovered included Salmonella montevideo, 2 packages; S. infantis, 4 packages; and both S. saint-paul and S. heidelberg, 1 package. These results are given in Table IX.

Each of the 30 gram samples were minced into small pieces with sterile scissors and placed in 100 ml of tetrathionate enrichment broth. After 24 and 48 hours incubation, a loopful of broth from each enrichment was streaked on brilliant green sulfadiazine agar plates. From each of 2 packages of breasts and 2 packages of thighs, 4 samples were weighed. Two of these samples were minced and 2 were homogenized. Of the 8 samples treated by these 2 methods, salmonellae were recovered from 5 that were minced and from 2 that were homogenized.

REPORTED HUMAN ISOLATIONS OF SALMONELLAE IN THE UNITED STATES

1963 - 1964

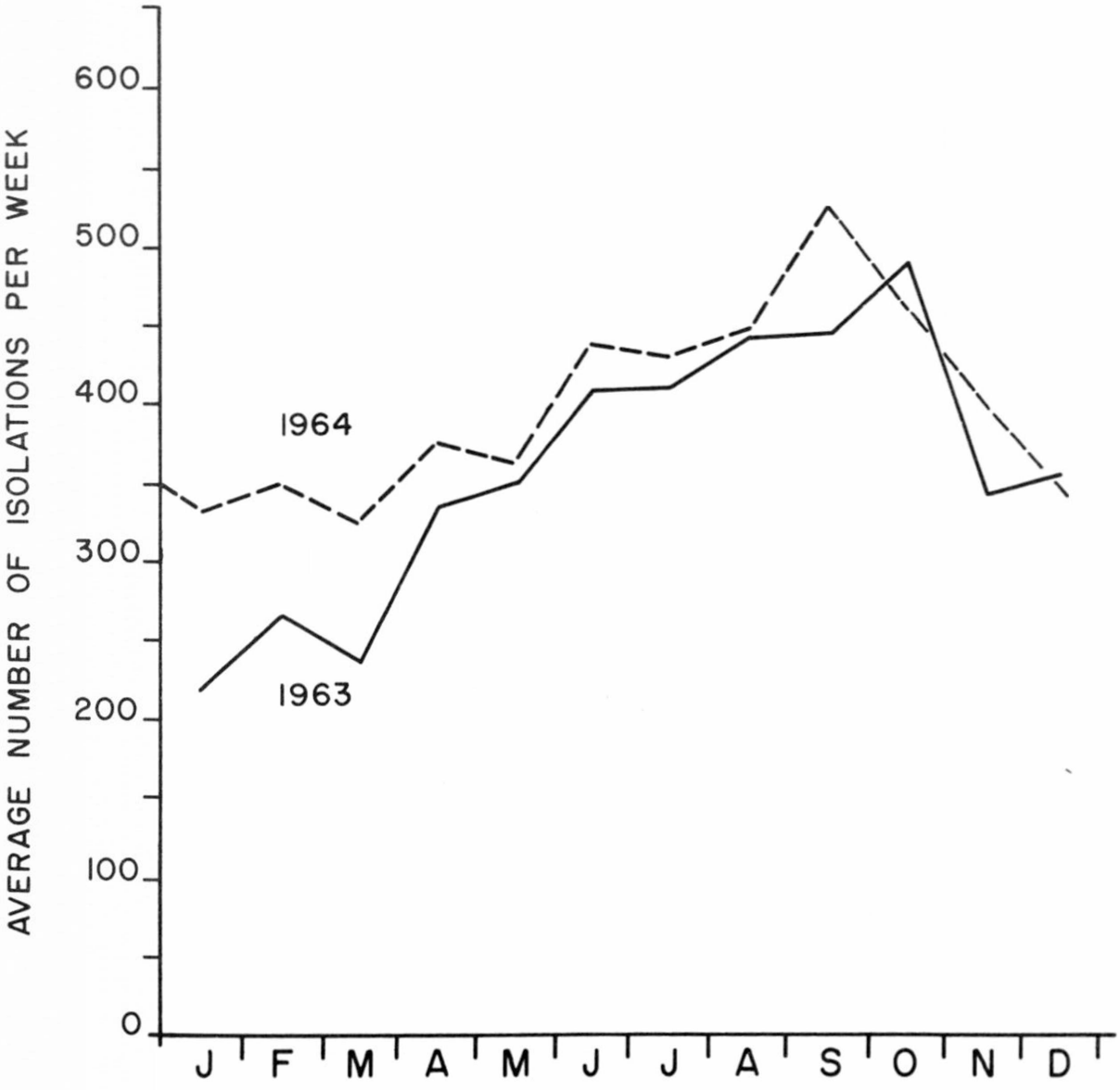

TABLE I

SALMONELLA SEROTYPES ISOLATED FROM HUMANS DURING DECEMBER, 1965

SEROTYPE	REGION AND REPORTING CENTER																	
	NEW ENGLAND							MIDDLE ATLANTIC						EAST NORTH CENTRAL				
	MAINE	NH	VT	MASS	RI	CONN	TOTAL	NY-A	NY-B1*	NY-C	NJ	PA	TOTAL	OHIO	IND	ILL	MICH	WIS	TOTAL
anatum								1				1	2		1				1
bareilly						1	1							1					1
berta																			
binza				2			2												
blockley	1			4		1	6	1		2	1		4		17	2			19
braenderup				1			1			1		1	2						
bredeney								2	1				3			2	1		3
california																			
carrau																			
cerro																			
chester						1	1										2	2	4
cholerae-suis v kun																	1		1
cubana												1	1				1		1
derby			2	4	1		7	5	3	3	3	13	27	2			7		9
eastborne										1			1						
enteritidis				3		2	5	10	4	3		15	32	14	17	3	4	2	40
essen																			
fayed																			
florida																			
gaminara						1	1												
give												1	1			1			1
grumpensis																	1		1
hartford									1	1			2						
heidelberg				8		6	14	6	4	8	6	10	34	2		8	8	2	20
illinois																			
indiana								1				4	5						
infantis				4		2	6	10	6	5	1	21	43	9		4	12	1	26
java						2	2	5				1	6						
javiana				1			1					3	3						
litchfield								5					5	1					1
livingstone									1				1						
loma-linda																			
manhattan								1					1	1		2			3
meleagridis																			
miami																	1		1
minnesota																		1	1
mishmar-haemek																			
mission																			
mississippi																			
montevideo								2		2	2	8	14	3	2	1	2	1	9
moscow																			
muenchen				1			1		1	1	1	1	4	1		1			2
muenster																			
newington										1			1						
newport				3		2	5	1	1	1		5	8	2	1	1	3	1	8
ohio																		1	1
oranienburg								1			4		5			4	1		5
oslo																			
panama				1			1	1		8			9			1		6	7
paratyphi B				1			1	1	1		2	1	5	2	1				3
poona						1	1			1			1						
reading														1					1
richmond																			
saint-paul				1		2	3	6	2	10	1	6	25			2	1	4	7
san-diego								2					2	1					1
schwarzengrund										2			2						
senftenberg																		1	1
simsbury																			
stanley								1					1						
taksony																			
tallahassee																			
tennessee								2	1	1		1	5			2			2
thompson				5		1	6	6	5	6	2	6	25	1		3	2		6
travis																			
typhi				1			1				1		1	2		1	6		9
typhi-murium				11	5	6	22	39	12	21	12	36	120	22	1	18	19	15	75
typhi-murium v cop				4			4				4		4				2		2
urbana								1				1	2						
weltevreden																			
worthington						1	1	1					1	1		1			2
untypable group A									1				1						
untypable group B								1					1						
untypable group C-1																			
untypable group C-2																			
untypable group D																			
untypable group E																			
untypable group O																			
unknown															1			3	4
TOTAL	1	-0-	2	55	6	29	93	112	44	78	40	136	410	66	41	57	74	40	278

New York (A-Albany, B-Beth Israel Hospital, C-City)

* The Beth-Israel Salmonella Typing Center in New York is a reference laboratory and processes many cultures from other states which are assigned to the respective states although reported by N.Y.-B.I.

TABLE I (CONTINUED)
BY SEROTYPE AND REPORTING CENTER

REGION AND REPORTING CENTER																		
WEST NORTH CENTRAL								SOUTH ATLANTIC										
MINN	IOWA	MO	ND	SD	NEBR	KAN	TOTAL	DEL	MD	DC	VA	WV	NC	SC	GA	FLA	TOTAL	SEROTYPE
1	1						2		1						1	3	5	anatum
															2		2	bareilly
																		berta
																		binza
			1				1						1		1	2	4	blockley
													1				1	braenderup
1							1									7	7	bredeney
																		california
																		carrau
								1									1	cerro
															1		1	chester
															1		1	cholerae-suis v kun
																		cubana
1							1	2	2				1		1	2	8	derby
																		eastborne
7		2				1	10	1			1				1	13	16	enteritidis
																		essen
											2						2	fayed
																1	1	florida
																		gaminara
																		give
																		grumpensis
																		hartford
3	1						4		4	1	2		3		1	13	24	heidelberg
													1				1	illinois
															1		1	indiana
5		2					7		2		3		14		1	5	25	infantis
	2	1					3	2							1	1	4	java
																7	7	javiana
4							4								1		1	litchfield
																4	4	livingstone
																		loma-linda
									1								1	manhattan
									1								1	meleagridis
															1	4	5	miami
																		minnesota
																		mishmar-haemek
		1					1											mission
																1	1	mississippi
									3						2	1	6	montevideo
				1			1											moscow
						1	1		2	1					1	8	12	muenchen
																1	1	muenster
																2	2	newington
									2				1		2	3	8	newport
		1				3	4				1					1	2	ohio
																		oranienburg
																		oslo
																		panama
																		paratyphi B
																1	1	poona
																		reading
																		richmond
									1		2		3			2	8	saint-paul
									2							1	3	san-diego
																2	2	schwarzengrund
									1							1	2	senftenberg
		1					1											simsbury
																1	1	stanley
																		taksony
																1	1	tallahassee
																2	2	tennessee
						1	1		6							2	8	thompson
																		travis
		2				1	3			2			3			3	8	typhi
8	1	7		2		11	29	1	11	4	22		11	1	19	18	87	typhi-murium
			2				2											typhi-murium v cop
															1		1	urbana
																		weltevreden
																		worthington
										1				1		1	3	untypable group A
																		untypable group B
																		untypable group C-1
														2			2	untypable group C-2
										1							1	untypable group D
										2							2	untypable group E
																		untypable group O
										4							4	unknown
30	5	17	3	3	-0-	18	76	7	39	16	33	-0-	39	4	39	114	291	TOTAL

TABLE I - (CONTINUED)

SEROTYPE	REGION AND REPORTING CENTER																	
	EAST SOUTH CENTRAL					WEST SOUTH CENTRAL					MOUNTAIN							
	KY	TENN	ALA	MISS	TOTAL	ARK	LA	OKLA	TEX	TOTAL	MONT	IDA	WYO	COLO	NM	ARI	UTAH	NEV	TOTAL
anatum							3		1	4									
bareilly							2			2									
berta							1			1									
binza																			
blockley			1		1														
braenderup																			
bredeney									1	1									
california																			
carrau							1			1									
cerro																			
chester														2					2
cholerae-suis v kun																			
cubana																2			2
derby		1			1		7		1	8				1					1
eastborne																			
enteritidis	3				3		1			1				3			4		7
essen														4					4
fayed																			
florida									1	1									
gaminara							1			1									
give									1	1									
grumpensis																			
hartford																			
heidelberg							2		1	3				2		3	10		15
illinois																			
indiana																			
infantis		1			1	1	1		3	5							1		1
java							1			1									
javiana			1		1	1	5		4	10									
litchfield									1	1									
livingstone							2			2									
loma-linda																			
manhattan																			
meleagridis							1			1									
miami																			
minnesota																			
mishmar-haemek																			
mission																			
mississippi							2			2									
montevideo		1			1		4	2	3	9						1			1
moscow																			
muenchen																			
muenster																			
newington		1			1														
newport	1		1		2		6	2	8	16				3		6			9
ohio																			
oranienburg		1			1		1	2	6	9				1		1			2
oslo																			
panama																			
paratyphi B									6	6				1					1
poona																			
reading									1	1									
richmond	1				1														
saint-paul							2			2	2						1		3
san-diego	1				1									4					4
schwarzengrund																			
senftenberg							1			1									
simsbury																			
stanley																1			1
taksony																			
tallahassee																			
tennessee									1	1				3					3
thompson	2				2														
travis									1	1									
typhi						2			7	9					13				13
typhi-murium		3	4		7	1	3	14	9	27		2		13			6		21
typhi-murium v cop							4			4									
urbana																			
weltevreden																			
worthington																			
untypable group A																			
untypable group B						2				2					7				7
untypable group C-1															2				2
untypable group C-2																			
untypable group D															1				1
untypable group E	1				1														
untypable group O															1				1
unknown							1			1					1				1
TOTAL	9	8	7	-0-	24	7	52	20	56	135	2	2	-0-	37	25	14	22	-0-	102

TABLE I (CONTINUED)

REGION AND REPORTING CENTER						OTHER VI	TOTAL	PERCENT OF TOTAL	TWELVE MONTH TOTAL	% TWELVE MONTH TOTAL	1963 TOTAL	PERCENT OF 1963 TOTAL	SEROTYPE
PACIFIC													
WASH	ORE	CAL	ALASKA	HAWAII	TOTAL								
				3	3		17	1.0	279	1.3	222	1.5	anatum
		2			2		8		99		60		bareilly
							1		48		64		berta
							2		22				binza
		12		1	13		48	2.8	431	2.0	358	1.9	blockley
		4			4		8		102		56		braenderup
		1		6	7		22		220		153		bredeney
				1	1		1		29		11		california
							1		3				carrau
							1		9		6		cerro
							8		76		190		chester
							2		31		54		cholerae-suis v kun
							4		62		39		cubana
1		1		12	14		76	4.4	2,368	11.2	1,620	8.6	derby
							1		2				eastborne
		1			1		115	6.7	802	3.8	803	4.3	enteritidis
							4		6				essen
							2		3				fayed
							2		8				florida
							2		3				gaminara
		1			1		4		79		65		give
							1		8				grumpensis
							2		12				hartford
4		29		1	34		148	8.6	1,716	8.1	1,531	8.2	heidelberg
							1		1				illinois
							6		54		14		indiana
3		10		10	23		137	8.0	1,524	7.2	967	5.2	infantis
		6			6		22		229		164		java
							22		252		166		javiana
							12		70		67		litchfield
		1			1		7		15		17		livingstone
							1		5				loma-linda
				6	6		11		181		192		manhattan
							2		48		82		meleagridis
							6		49		65		miami
							1		13				minnesota
		1			1		1		1				mishmar-haemek
							1		2				mission
							3		39		27		mississippi
		2		1	3		43	2.5	521	2.5	490	2.6	montevideo
							1		1				moscow
							20		263		266		muenchen
							1		7				muenster
							4		72		47		newington
		24			24		80	4.7	1,029	4.9	1,077	5.8	newport
							1		4				ohio
	2	7		4	13		41	2.4	550	2.6	538	2.9	oranienburg
				1	1		1		9				oslo
				5	5		22		191		141		panama
	1				1		17		177		160		paratyphi B
							3		45		48		poona
							2		36				reading
							1		3				richmond
		6		2	8		56	2.3	643	3.0	586	3.1	saint-paul
	1	3		1	5		16		154		120		san-diego
		5		2	7		11		152		147		schwarzengrund
		2		1	3		7		106		33		senftenberg
							1		6				simsbury
							3		9				stanley
		1			1		1		1				taksony
							1		3				tallahassee
1					1		14		334		164		tennessee
3		2			5		53	3.1	415	2.0	318	1.7	thompson
							1		2				travis
	1	22			23		67	3.9	704	3.3	712	3.8	typhi
14	2	64		5	85		473	27.5	5,647	26.7	5,439	29.1	typhi-murium
							16		205		172		typhi-murium v cop
							3		25		32		urbana
				2	2		2		23		46		weltevreden
				1	1		5		48		34		worthington
							1		6		4		untypable group A
							13		301		292		untypable group B
							2		79		72		untypable group C-1
							2		50		49		untypable group C-2
	1				1		3		43		75		untypable group D
			1		1		5		30				untypable group E
		3			3		3		3		3		untypable group O
							10		97		77		unknown
26	8	210	1	65	310	-0-	1,719		21,132		18,701		TOTAL

(VI - Virgin Islands)

TABLE I-A
SEROTYPES REPORTED FROM HUMANS PREVIOUSLY DURING 1964
BUT NOT IN DECEMBER

Serotype	Month(s)	Reporting Center(s)	Number of Isolations
aberdeen	Sept	NY-BI	1
abony	Jan	NY-C	1
adelaide	Jan	Pa(1)	
	Mar	Calif(2)	
	Apr	Ohio(1)	
	Oct	NY-BI(2)	6
alachua	Jan-Apr	Calif(2)	
	Sep	NY-BI(1)	
	Nov	NY-C(1)	
	Nov	Fla(1)	5
albany	Jan	La(2)	
	May-Jul	Mo(2)	
	Jun	Fla(1)	
	Nov	NY-C(1)	6
amager	Jan-Mar	La(8)	
	Sep	Okla(1)	
	Oct	Mo(1)	10
amsterdam	Apr	Colo	1
ardwick	Apr	Ill	1
arechavaleta	Jun	Okla	1
atlanta	Apr-May-Jun-Jul	Ga	5
banana	Jul	Ariz	1
birkenhead	Sep	Hia	1
bonariensis	Sep	Kan	1
bovis-morbificans	Jan	La(1)	
	Mar-Jul	Calif(3)	
	Aug-Nov	Hia(2)	
	Sep	Mass(1)	7
bradford	Jul	Mo(1)	
	Sep	NJ(1)	2
brancaster	Jul	Ind	1
brandenburg	Jun	Colo(1)	
	Nov	NC(3)	4
bristol	Aug	Tex	1
cambridge	Jan	Ill	1
caracas	Sep	Tex	1
cholerae-suis	Jan	DC(1)	
	Feb-Mar-Apr	NY-C(3)	
	Mar	Calif(1)	
	Mar	Ky(1)	
	Mar-Nov	Ga(3)	
	Mar	NY-BI(1)	
	Jul-Sep-Nov	Ohio(4)	
	Sep	Pa(1)	15
colorado	Jan-Jun	Hia	2
concord	Feb	Colo(1)	
	Oct	Tex(1)	2
coquilhatville	Nov	Hia	3
decatur	Aug	Okla	6
denver	Apr	Calif	1
dublin	Sep-Oct-Nov	Calif	3
duesseldorf	June	Pa(1)	
	Aug	Tex(2)	
	Nov	Fla(1)	4
emek	Jul	Calif	1
galiema	Apr	Colo	1
gallinarum	Jul-Sep	Miss	3
gatuni	Jan	Fla	1
georgia	Oct	Kan	1
goettingen	Jul	NC	1
halle	Jun	Mass	1
halmstad	Apr	Mich	1
hato	Mar	Colo	1
irumu	May-Nov	Mo(2)	
	Jul	Colo(2)	
	Jul	NC(1)	5
johannesburg	Apr	Calif(1)	
	Apr	NY-A(1)	2
Kentucky	Jan	Pa(1)	
	Feb	NY-C(1)	
	Feb-Jun-Aug	Calif(4)	
	Mar-Sep	Mo(2)	
	Mar	NY-A(1)	
	Apr-May-Jul-Sep	La(4)	
	Jun	Wisc(1)	
	Jul-Sep	Okla(2)	
	Oct	Tex(1)	
	Oct	Minn(1)	
	Oct	Ariz(1)	
	Nov	Hia(2)	21

TABLE I-A (CONTINUED)
SEROTYPES REPORTED FROM HUMANS PREVIOUSLY DURING 1964
BUT NOT IN DECEMBER

kottbus	Jun	NY-A	1
lexington	Aug	Tex	1
lomita	Sep	La	4
london	Feb-Jun	Va	3
luciana	Jan	Ariz	1
madelia	Feb	Wisc	1
manchester	May-Jun	Tex(2)	
	Sep	Va(1)	3
manila	Nov	NC	1
michigan	Apr-Jun	Calif	2
new-brunswick	Mar	Ill(1)	
	Apr-Jul	Calif(2)	
	Jul	Ga(1)	4
new-haw	May	Ida	1
norwich	Apr-Jul	Fla(2)	
	May	Ark(1)	
	Jun	Va(1)	
	Jul	Mo(1)	
	Jul	Ga(1)	
	Sep-Nov	La(4)	
	Sep	Tex(1)	
	Nov	Okla(1)	12
orion	Feb	Mass(1)	
	Aug	Mo(1)	
	Sep	Fla(1)	3
othmarschen	Jan	Tex	1
paratyphi-A	Feb-May-Sep-Nov	Calif(4)	
	May	Nev(1)	
	Jun	NY-BI(1)	
	Oct	Ill(1)	7
pensacola	Jun-Jul	Mass(3)	
	Jul	Ind(1)	
	Aug	NY-A(1)	
	Sep	Va(1)	
	Sep	NC(1)	
	Oct	Ga(1)	
	Oct	Ala(1)	9
pullorum	Mar	Ga	1
redlands	Mar	Ga	1
rubislaw	May-Sep-Oct	Tex(3)	
	Jun	Conn(1)	
	Jul	Miss(1)	
	Sep	Fla(1)	
	Sep-Oct-Nov	La(11)	
	Oct	Ga(1)	18
salinatis	Sep	Calif	1
saphra	Sep	Tex	1
seftenberg v. newcastle	Sep	NY-BI	5
shipley	Jan	NY-C	1
siegburg	Aug	Mich(1)	
	Nov	NY-C(1)	2
sundsvall	Feb	Ariz	1
thomasville	Sep	Fla(1)	
	Nov	Ill(2)	3
uganda	Sep-Oct-Nov	La	5
virchow	Jan	Wash(1)	
	Sep	Ill(1)	
	Oct	Dela(2)	4
weslaco	Jul	Tex	1
westerstede	Sep	Tex	1
westhampton	Mar	Hia	1
TOTAL			232

TABLE II

Number of Salmonella Isolates from Two or More Members of the same Family - December 1964

Reporting Center	Total Number of Isolates Reported	Number of Isolates From Family Outbreaks	Per Cent of Total
Alabama	7	2	28.6
Alaska	1	0	0.0
Arizona	14	0	0.0
Arkansas	7	0	0.0
California	210	55	26.2
Colorado	37	17	45.9
Connecticut	29	8	27.6
Delaware	7	2	28.6
District of Columbia	16	4	25.0
Florida	114	24	21.1
Georgia	39	1	2.6
Hawaii	65	6	9.2
Idaho	2	0	0.0
Illinois	57	6	10.5
Indiana	41	9	22.0
Iowa	5	2	40.0
Kansas	18	4	22.2
Kentucky	9	0	0.0
Louisiana	52	13	25.0
Maine	1	0	0.0
Maryland	39	7	17.9
Massachusetts	55	8	14.5
Michigan	74	15	20.3
Minnesota	30	1	3.3
Missouri	17	5	29.4
Montana	2	0	0.0
New Jersey	40	9	22.5
New Mexico	25	9	36.0
New York 1-A	112	19	17.0
New York 2-BI	44	3	6.8
New York 3-C	78	10	12.8
North Carolina	39	7	17.9
North Dakota	3	2	66.7
Ohio	66	16	24.2
Oklahoma	20	11	55.0
Oregon	8	0	0.0
Pennsylvania	136	24	17.6
Rhode Island	6	2	33.3
South Carolina	4	0	0.0
South Dakota	3	1	33.3
Tennessee	8	0	0.0
Texas	56	8	14.3
Utah	22	2	9.1
Vermont	2	0	0.0
Virginia	33	5	15.2
Washington	26	9	34.6
Wisconsin	40	10	25.0
Totals	1,719	336	19.5

TABLE III

Infrequent Serotypes

Serotype	Center	December	1964 Total*	1963 Total**	Comment
S. carrau	LA	1	3	1	1963 isolate from GA.
S. cerro	DEL	1	9	6	16 of 25 nonhuman isolates in 1963 from animal feed & fertilizer.
S. eastbourne	NY-C	1	2	0	Isolated from an Ariz. chicken in 1963.
S. essen	COLO	4	6	0	Isolated from a VA turkey in 1952; no other nonhuman isolates listed for U.S.
S. fayed	VA	2	3	0	Isolated only from FLA and VA in this country.
S. florida	FLA & TEX	2	8	0	Most human isolates from the S.E.
S. gaminara	CONN & LA	2	3	3	Nonhuman sources include dogs, sheep, poultry & cold blooded vertebrates.
S. grumpensis	MICH	1	8	3	Common HAI isolate; rare elsewhere in U.S.
S. hartford	NY-BI & NY-C	2	11	16	Associated with interstate outbreak of unknown origin in 1962.
S. illinois	NC	1	1	7	All 7 isolates in 1963 from GA.
S. loma-linda	CALIF	1	5	6	Possible association with hypo-gamma globinemia.
S. minnesota	WISC	1	13	13	First isolated from a turkey, and poultry remain a common source.
S. mishmar-haemek	CALIF	1	1	0	First reported from Israel in 1954.
S. mission	MO	1	2	2	Isolated from a CALIF chicken in 1963.

TABLE III (continued)

Serotype	Center	December	1964 Total*	1963 Total**	Comment
S. moscow	SD	1	1	0	Possibly associated with an opossum; outbreak in ducklings in Ontario 1944.
S. muenster	FLA	1	7	5	Recent isolates concentrated in the S.E.
S. ohio	WISC	1	4	0	First isolated from a 59-year old female with a urinary tract infection.
S. oslo	HAI	1	9	5	Comprises 1 per cent of HAI isolates.
S. richmond	KY	1	3	5	No nonhuman isolates reported in source data.
S. simsbury	MO	1	6	6	One of the serotypes involved in the recent interstate outbreak associated with a dietary supplement.
S. stanley	ARIZ, FLA NY-A	3	9	5	Common in monkeys and the Netherlands.
S. taksony	CALIF	1	1	0	Seven of 9 U.S. nonhuman isolates of record from turkeys.
S. tallahassee	FLA	1	3	6	Another serotype predominantly recovered in the S.E.
S. travis	TEX	1	2	0	Only isolated in TEX thus far.

*Represents 21,132 human isolations of salmonellae during 1964.
**Represents 18,649 human isolations of salmonellae during 1963.

TABLE IV

Age and Sex Distribution of 1,671 Isolations of Salmonellae Reported for December 1964

Age	Male	Female	Total	Per Cent of Total
Under 1	109	81	190	11.4
1-4 yrs.	148	124	272	16.3
5-9 yrs.	85	48	133	8.0
10-19 yrs.	69	61	130	7.8
20-29 yrs.	39	51	90	5.4
30-39 yrs.	42	44	86	5.1
40-49 yrs.	33	43	76	4.5
50-59 yrs.	33	39	72	4.3
60-69 yrs.	27	24	51	3.1
70-79 yrs.	12	17	29	1.7
80+	12	20	32	1.9
Unknown	268	242	510	30.5
Total	877	794	1,671	
% of Total	52.5	47.5		

TABLE V

REPORTED NON-HUMAN ISOLATES BY SEROTYPE AND SOURCE, DECEMBER, 1964

SEROTYPE	poultry	chicken	turkey	pigeon	swan	quail	avain	equine	bovine	ovine	porcine	animal environment	canine	feline	guinea pig	monkey	mink	egg	powdered egg	frozen egg	frozen egg albumen	egg product	egg shell	raw duck	human dietary supplement	ice cream	barbecue	poultry feed unknown	bone meal/ meat scraps	animal feed unknown	tankage	turtle	snake	alligator	lizard	turtle water	egg processing equipment	swab-hospital sink	Total	12 mos Total	SEROTYPE
albany		2																																					2	5	albany
anatum			12											1				1													1								14	255	anatum
bareilly																																						1	26	bareilly
binza		3																											1									4	41	binza
blockley		2	2															1																				5	114	blockley
braenderup		2																																		1			2	20	braenderup
brandenburg																																				1			1	1	brandenbrug
bredeney		2	2															1												1					1			7	110	bredeney
california																													1									1	27	california
caracus							1																															1	1	caracus
cerro																		2				2																4	44	cerro
chester			2																																			2	182	chester
cholerae-suis v kun											8																											8	107	cholerae-suis v kun
derby			1																																			1	213	derby
dublin									12																													12	44	dublin
enteritidis			1						4																							1						6	89	enteritidis
gallinarum		6																																				6	68	gallinarum
give																	1																					1	39	give
hagenbeck																																		1				1	1	hagenbeck
heidelberg		9	29																	2									2		1							43	484	heidelberg
infantis		13	9						2		1							7	1	2	1						1			1								38	368	infantis
java																																2							2	5	java
johannesburg																				1											1								2	5	johannesburg
kentucky		1				1																																	2	36	kentucky
litchfield			1							2																													3	16	litchfield
manhattan		1	1																																			2	48	manhattan
madelia											1																											1	2	madelia
meleagridis		1																																				1	48	meleagridis
montevideo		1																		2								1			2				1			7	218	montevideo
muenster		1																																				1	2	muenster
newington		1											1																										2	39	newington
newport			4						3																														7	161	newport
oranienburg			1								1							4				1						1	2							1			8	150	oranienburg
orion																																							3	18	orion
pullorum	1	9																												1									11	203	pullorum
saint-paul		1	7								2																												10	195	saint-paul
san-diego			6																																				6	89	san-diego
schwarzengrund		1	1																				1																4	107	schwarzengrund
senftenberg							1																																1	86	seftenberg
tennessee		1																4						1	1												1		8	120	tennessee
thomasville																				1																			1	2	thomasville
thompson		6			3				1													1															1		12	137	thompson
typhi-murium		6	15	1				3	32	1	2	3		1		2										1				2								69	953	typhi-murium
typhi-murium v cop		4		1							1				1																							7	156	typhi-murium v cop
urbana																						2															1		3	10	urbana
westhampton																														1									1	2	westhampton
worthington																				2																	1		3	61	worthington
untypable group B									2																														2	9	untypable group B
untypable group O		1	3																																			4	5	untypable group O
TOTAL	1	74	97	2	3	1	2	3	56	3	16	3	1	2	1	2	1	20	1	10	1	6	1	1	1	1	1	2	3	8	5	4	1	1	1	3	3	1	343	5,522	TOTAL

Source: National Disease Laboratory, Ames, Iowa and Weekly Salmonella Surveillance Reports from Individual States

TABLE VI
REPORTED NON-HUMAN ISOLATES BY SEROTYPE AND STATE DECEMBER 1964

SEROTYPE	Ala	Ark	Calif	Colo	Conn	Fla	Ga	Ill	Ind	Iowa	Kan	La	Me	Md	Mich	Minn	Miss	NJ	NY-BI	NC	Ohio	Okla	Ore	Pa	SC	Tenn	Tex	Utah	Va	Wash	Wisc	Total	12 Mos Total	SEROTYPE
albany														2																		2	5	albany
anatum			10						1																1		1				1	14	255	anatum
bareilly																					1											1	26	bareilly
binza																4																4	41	binza
blockley			2														2				1											5	114	blockley
braenderup			1																	1												2	20	braenderup
brandenburg																				1												1	1	brandenburg
bredeney			3						1			1				1												1				7	110	bredeney
california																				1												1	27	california
caracus													1																			1	1	caracus
cerro																					4											4	44	cerro
chester																2																2	182	chester
cholerae-suis v kun						1			4											2						1						8	107	cholerae-suis v kun
derby																											1					1	213	derby
dublin			5																									7				12	44	dublin
enteritidis			1													5																6	89	enteritidis
gallinarum							6																									6	68	gallinarum
give																															1	1	39	give
hagenbeck			1																													1	1	hagenbeck
heidelberg	1		29				2	1						2		2									1			2		2	1	43	484	heidelberg
infantis		2	18					1	1							1	1			1	3				1	1		6		2		38	368	infantis
java						1						1																				2	5	java
johannesburg									1																			1				2	5	johannesburg
kentucky						2																										2	36	kentucky
litchfield				2												1																3	16	litchfield
manhattan			2																													2	48	manhattan
madelia						1																										1	2	madelia
meleagridis			1																													1	48	meleagridis
montevideo			1						2						2													2				7	218	montevideo
muenster																	1															1	2	muenster
newington															1		1															2	39	newington
newport			5												1																1	7	161	newport
oranienburg									2												6											8	150	oranienburg
orion																	1											2				3	18	orion
pullorum							4		2	1					1					1		1								1		11	203	pullorum
saint-paul			4											1		1		2													2	10	195	saint-paul
san-diego			6																													6	89	san-diego
schwarzengrund		1	2									1																				4	107	schwarzengrund
senftenberg													1																			1	86	senftenberg
tennessee	1																		2		4					1						8	120	tennessee
thomasville																												1				1	2	thomasville
thompson			5																		2						1				4	12	137	thompson
typhi-murium	2		37	1	1				4		4	1		1	3					1	3		1						1	8	1	69	953	typhi-murium
typhi-murium v cop							1		1					1	1			1		2												7	156	typhi-murium v cop
urbana																				1	2											3	10	urbana
westhampton																														1		1	2	westhampton
worthington																					1							2				3	61	worthington
untypable group B			2																													2	9	untypable group B
untypable group O			4																													4	5	untypable group O
TOTAL	4	3	139	3	1	5	13	2	19	1	4	4	2	7	9	17	6	3	2	11	27	1	1	1	3	3	2	24	1	14	11	343	5,522	TOTAL

Source: National Animal Disease Laboratory, Ames, Iowa and Weekly Salmonella Surveillance Reports from Individual States.

TABLE VI-A
SEROTYPES REPORTED FROM NONHUMAN SOURCES
PREVIOUSLY DURING 1964 BUT NOT IN DECEMBER

Serotype(s)	Month(s)	Reporting Center(s)	Number of Isolations
adelaide	Jan	Mich	2
alachua	Feb	Alas (1)	
	Jun	Minn (1)	
	Jul-Sep	Calif (2)	
	Sep	Ill (1)	
	Sep-Oct	Mass (2)	7
amager	May	Ga(1)	
	Aug	Fla(1)	
	Nov	Ark(1)	3
belem	Mar	Mich	1
berta	Mar-Jul	NC(2)	
	May	Mo(1)	
	Jul	Ga(2)	
	Aug	Calif(1)	6
blukwa	Mar-Apr	Mich	2
cambridge	Jul	Ind	1
cholerae-suis	Jan-Apr-May-Jun	Ind(10)	
	Jan-May-Jun-Aug-Oct-Nov	Ohio(9)	
	Mar	Calif(1)	
	Apr	Tenn(1)	
	May	Colo(1)	
	May	SC(2)	
	May	Tex(2)	
	Jun	Fla(5)	
	Jun	NC(1)	32
cubana	Jan-Aug	Mo(2)	
	Jan	Tex(1)	
	Mar	Me(1)	
	Mar	Ohio(2)	
	Apr	Alas(1)	
	Apr-Jun	Mass(3)	
	Apr-Sep	Minn(2)	
	May-Jun-Jul-Sep-Nov	Calif(6)	
	May	SC(1)	
	Jul-Aug	Ill(8)	
	Jul-Aug-Sep	Ind(3)	
	Jul	Mich(1)	
	Aug	Va(1)	
	Oct	Utah(1)	33
duesseldorf	Sept	Ind	1
gaminara	Jun	Ind	1
grumpensis	Aug	Mich	1
illinois	Mar-Apr-Aug-Oct-Nov	Minn(6)	
	Jul-Oct	Ind(2)	
	Sep-Nov	Iowa(3)	11
indiana	Feb-Sep	Minn(2)	
	Feb	NC(1)	
	Apr-Aug-Sep	Ill(7)	
	Apr-May-Jun-July-Aug-Sep	Ind(8)	
	Jun	Mo(1)	19
javiana	Feb	La	1
lille	Sep	Ind(1)	
	Sep	NJ(1)	2
livingstone	Jan-Aug-Sep	Va(3)	
	Feb-Sep	Miss(5)	
	Mar-Apr-May-Jul-Sep-Oct-Nov	Calif(11)	
	Mar	Iowa(3)	
	Mar	Ore(1)	
	Apr	Mich(1)	
	May-Aug	Ill(2)	
	May-Nov	Ohio(2)	
	Jun	Ark(1)	
	Jul	Fla(1)	
	July-Aug-Oct	Minn(3)	
	Aug-Sep-Oct	Ind(4)	
	Aug	Md(6)	
	Sep	SC(1)	
	Oct	Ky(3)	
	Oct	Utah(1)	
	Nov	Ga(3)	51
manila	Jan	Mo	2
miami	Jun	Mich(1)	
	Sep	Fla(1)	2
minneapolis	Jan-Aug	Ill	2

TABLE VI-A (CONTINUED)
SEROTYPES REPORTED FROM NONHUMAN SOURCES
PREVIOUSLY DURING 1964 BUT NOT IN DECEMBER

minnesota	Jan-Aug	Ala(4)	
	Jan	Tex(1)	
	Feb	Ohio(1)	
	Mar-Oct-Nov	Calif(4)	
	Apr	Miss(1)	11
mission	Jan	Mo	2
muenchen	Jan-May	SC(2)	
	Jan-Apr-Sep	Tex(11)	
	Feb-Apr-Jul	Ind(4)	
	Feb	NY-BI(1)	
	Mar-Apr-Sep-Oct	Minn(7)	
	Apr-Jun	Kan(33)	
	Apr-Sep	Miss(2)	
	Jun	Mo(1)	
	Aug	Colo(1)	
	Aug	Ill(1)	
	Sep	Ala(1)	
	Sep-Oct	Ohio(18)	
	Oct	Ga(1)	
	Nov	Ark(1)	
	Nov	NH(1)	
	Nov	Fla(1)	86
new-brunswick	Sep	Va	1
new-haw	Jul	Miss	1
ohio	Feb-Mar-Aug-Oct	Ohio	12
oslo	Sep	Kan	9
panama	Jan-Jun-Oct-Nov	Tex(16)	
	Feb	Mo(1)	
	Jul-Oct	Ohio(4)	
	Sep	Ill(3)	
	Oct-Nov	Calif(2)	
	Oct	NJ(1)	27
paratyphi-B	Aug	Pa	1
pensacola	Nov	SC	1
pomona	Jul-Aug	Mich	3
poona	Feb-Oct	Mich(2)	
	Mar-Oct	Calif(2)	
	Oct	Kan(1)	5
reading	Jan	Ind(1)	
	May-Jun-Jul	Iowa(4)	
	May	Va(1)	
	Jun-Aug-Sep	Wash(4)	
	Aug	Ill(2)	12
rubislaw	Jul	Iowa	1
siegburg	Feb	Alas(1)	
	Feb-Mar-Jul	Ill(3)	
	Nov	NJ(1)	5
simsbury	Jan-Apr-Jun-Jul-Aug	Calif(5)	
	Jan	Va(1)	
	May	SC(1)	
	Jun	Fla(1)	
	Nov	Tenn(1)	9
stanley	Feb	Calif(2)	
	May-Aug	Mich(3)	
	Jun	Pa(1)	
	Jul	Ga(1)	
	Aug	Iowa(1)	
	Sep	La(1)	9
taksony	Jun	Calif	1
tallahassee	Apr	Fla	1
typhi-suis	Feb-Jun-Nov	Mass(4)	
	Mar	Wisc(1)	
	Jul	Calif(1)	6
uganda	Oct	Kan	1
wandsbek	Jan	Mich	1
wassenaar	Sep	Kan	1
zehlendorf	Apr	Mich	1
TOTAL			387

TABLE VII

Salmonella derby Isolations and Total Salmonella Isolations Reported by Month*

		Total Salmonella Isolations	S. derby Isolations	Per Cent of Total
1962	November	922	18	2.0
	December	794	16	2.0
1963	January	1,111	30	2.7
	February	1,059	22	2.1
	March	931	28	3.0
	April	1,330	61	4.6
	May	1,738	139	8.0
	June	1,640	203	12.4
	July	2,133	303	14.2
	August	1,770	155	8.8
	September	1,786	164	9.2
	October	2,462	228	9.3
	November	1,381	127	9.2
	December	1,439	175	12.2
1964	January	1,601	213	13.3
	February	1,442	301	20.9
	March	1,279	290	22.7
	April	1,882	399	21.2
	May	1,545	277	18.0
	June	1,758	195	11.1
	July	2,159	217	10.1
	August	1,777	151	8.5
	September	2,624	109	4.2
	October	1,848	85	4.6
	November	1,595	69	4.3
	December	1,719	76	4.4

*As reported to the Salmonella Surveillance Unit from 50 States and the District of Columbia.

TABLE VIII

Typhoid Fever and Paratyphoid Infections in Italy:
Number of Cases

Year	Typhoid Fever		Paratyphoid Fever	
	Number of Cases	Morbidity Per/100,000 Population	Number of Cases	Morbidity Per/100,000 Population
1950	22,219	47.84	6,356	13.68
1951	26,125	55.32	6,352	13.45
1952	22,072	46.57	6,152	12.98
1953	21,259	44.48	5,874	12.29
1954	20,499	42.22	5,272	10.85
1955	19,551	39.91	4,491	9.12
1956	18,015	36.35	4,444	8.96
1957	18,141	36.35	3,596	7.23
1958	19,344	38.47	3,488	6.93
1959	19,855	39.15	2,800	5.52

TABLE IX

Results of Examination of Fresh Turkey and Chicken Meat for the Isolation of Salmonellae

No. and Type of Product	Samples	Positive	Result and Serotype
1-turkey roast	3	0	No salmonellae isolated
2-turkey roast	3	0	No salmonellae isolated
3-breast pkg.	3	3	S. montevideo
2-breast pkg.	3	2	S. montevideo
3-breast pkg.	4	3	S. infantis
4-breast pkg.	4	3	S. infantis
5-legs pkg.	3	1	S. saint-paul
		0	S. heidelberg
6-legs pkg.	3	0	No salmonellae isolated
7-thighs pkg.	4	1	S. infantis
8-thighs pkg.	4	0	No salmonellae isolated
9-livers pkg.	3	0	No salmonellae isolated
10-breast pkg.	2	1	S. infantis
11-breast pkg.	2	0	No salmonellae isolated
12-legs pkg.	2	0	No salmonellae isolated
13-legs pkg.	2	0	No salmonellae isolated
14-thighs pkg.	2	0	No salmonellae isolated
15-thighs pkg.	2	0	No salmonellae isolated
Total	49	14	