

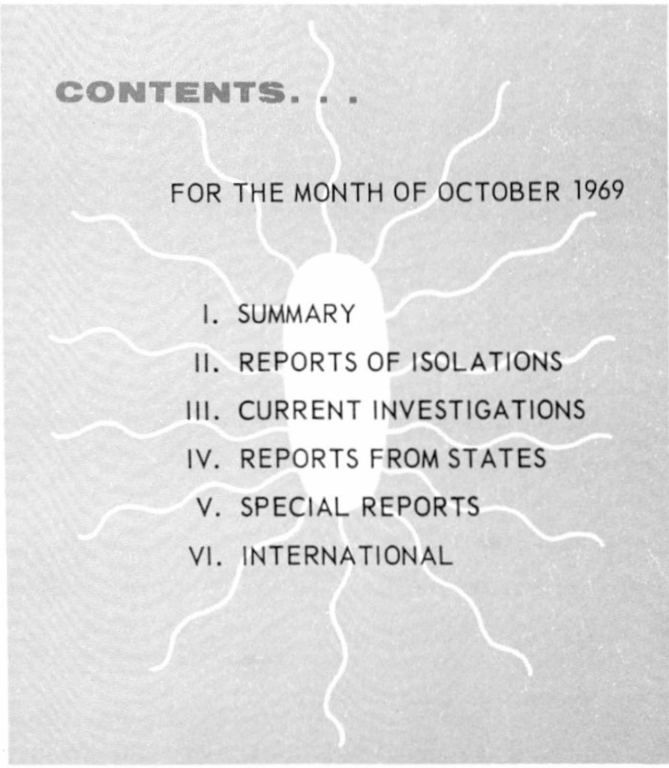
NATIONAL
COMMUNICABLE DISEASE CENTER

SALMONELLA

SURVEILLANCE

CONTENTS...

FOR THE MONTH OF OCTOBER 1969

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

PREFACE

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

Contributions to the Surveillance Report are most welcome. Please address

National Communicable Disease Center
Attn: Chief, Salmonellosis Unit
Epidemiology Program
Atlanta, Georgia 30333

National Communicable Disease Center David J. Sencer, M.D., Director
Epidemiology Program Alexander D. Langmuir, M.D., Director
Bacterial Diseases Branch Philip S. Brachman, M.D., Chief
John V. Bennett, M.D., Deputy Chief
Enteric Diseases Section Eugene J. Gangarosa, M.D., Chief
Salmonellosis Unit Andrew Mallory, M.D., Chief
Matthew S. Loewenstein, M.D.
Marshall D. Fox, D.V.M.
Statistician Stanley M. Martin, M.S.
Epidemiologic Services Laboratory Section Philip S. Brachman, M.D., Acting Chief
Salmonella Laboratory Unit George K. Morris, Ph.D., Chief
Office of Veterinary Public Health Services James H. Steele, D.V.M., Chief

Collaborators

Laboratory Division

Bacteriology Section

Enteric Bacteriology Unit William H. Ewing, Ph.D., Chief
William J. Martin, Ph.D., Asst. Chief

December 15, 1969

TABLE OF CONTENTS

	<u>Page</u>
I. SUMMARY	1
II. REPORTS OF ISOLATIONS	1
III. CURRENT INVESTIGATIONS	
A. An Outbreak of Salmonellosis Following a National Convention - Iowa	2
B. Carbon Monoxide Poisoning Following Possible Salmonellosis in a Migrating Family - New Mexico	4
IV. REPORTS FROM THE STATES	
A. Typhoid Fever Outbreak - Connecticut and Massachusetts	6
B. Puppy Propagated Salmonellosis - Seattle, Washington	7
V. SPECIAL REPORTS	
A. Recent Articles on Salmonellosis	8
B. Recalls of Products Contaminated with Salmonellae	9
VI. INTERNATIONAL	
Salmonella Isolations from England, Scotland, and Wales - 1968	10

I. SUMMARY

In October 1969, 2,424 isolations of salmonellae were reported from humans, an average of 485 isolations per week (Tables I, II, and V-A). This number represents a decrease of 65 (11.8 percent) from the weekly average of September 1969 and an increase of 27 (5.9 percent) over the weekly average of October 1968.

Reports of 822 nonhuman isolations of salmonellae were received during October 1969 (Tables III, IV, and V-B).

II. REPORTS OF ISOLATIONS

The ten most frequently reported serotypes during October:

HUMAN				NONHUMAN		
Serotype	Number	Percent	Rank Last Month	Serotype	Number	Percent
1 <u>typhi-murium</u> *	531	21.9	1	<u>typhi-murium</u> *	132	16.1
2 <u>newport</u>	233	9.6	2	<u>heidelberg</u>	69	8.4
3 <u>enteritidis</u>	194	8.0	3	<u>saint-paul</u>	55	6.7
4 <u>heidelberg</u>	193	8.0	4	<u>cholerae-suis</u> var. <u>kunzensdorf</u>	44	5.4
5 <u>saint-paul</u>	118	4.9	5	<u>livingstone</u>	33	4.0
6 <u>thompson</u>	111	4.6	7	<u>derby</u>	29	3.5
7 <u>javiana</u>	88	3.6	8	<u>anatum</u>	28	3.4
8 <u>infantis</u>	81	3.3	6	<u>infantis</u>	27	3.3
9 <u>blockley</u>	58	2.4	10	<u>senftenberg</u>	25	3.0
10 <u>typhi</u>	54	2.2	9	<u>thompson</u>	25	3.0
Total	1,661	68.5		Total	467	56.8
TOTAL (all serotypes)	2,424			TOTAL (all serotypes)	822	
*Includes var. <u>copenhagen</u>	32	1.3		*Includes var. <u>copenhagen</u>	13	1.6

III. CURRENT INVESTIGATIONS

A. An Outbreak of Salmonellosis Following a National Convention - Iowa

Reported by Stanley L. Hendricks, D.V.M., M.P.H., Acting Chief of Preventive Medical Service, Mr. Norman Pawlewski, Deputy Chief of Preventive Medical Service, Mr. James R. Faust and Mr. John Menefee, Public Health Representatives, Iowa State Department of Health; W. J. Hausler, Jr., Ph.D., Director, Iowa State Hygienic Laboratory; Mr. Robert M. Williamson, Chief of Environmental Sanitation, Des Moines-Polk County Health Department; and Marshall D. Fox, D.V.M., EIS Officer, Bacterial Diseases Branch, Epidemiology Program, NCDC.

An outbreak of salmonellosis occurred following a national convention of a women's philanthropic organization held in Des Moines, Iowa, September 29 through October 2, 1969. Of 4,500 women attending, 1,300 were official delegates and officers, most of whom stayed for the entire convention. A majority of the remaining 3,200 attendants were members who attended the convention for only a brief period of time.

Questionnaires were distributed in 18 states to 490 individuals believed present during the entire convention. One-hundred-twenty-two of 440 respondents (27.7 percent) reported symptoms of acute gastroenteritis. Onsets of illness are shown in Figure 1 by 6-hour periods. Three patients were hospitalized. No deaths were reported. Duration of illness ranged from 1 day to more than 3 weeks with mean duration of 4.7 days. Stool specimens from 23 of the 28 patients cultured were positive for Salmonella panama.

Convention attendants were served three meals in common; a number of persons ate in smaller groups elsewhere before, during and after the convention. Food histories (Table 1) implicated the buffet luncheon served to 1,900 persons October 1 (giving a mean incubation period of 43 hours, with a mode of 31 hours). Five persons who had eaten only this meal while visiting Des Moines became ill during the following 2 days. Subsequent isolations of S. panama were obtained from two of these individuals. The buffet meal, served at the convention hall by a catering service, included turkey salad, cranberry sauce, deviled eggs, olives, carrots, crackers, gelatin dessert, and a butter cookie. Food specific attack rates are given in Table 2. Of the items mentioned, only turkey salad had been consumed by all of the bacteriologically confirmed cases.

The turkey salad was prepared in a local hotel kitchen from frozen whole turkey carcasses weighing 20-25 pounds. At 3:00 a.m. on October 1, the deep frozen carcasses, still sealed in plastic bags packed by the Cryovac process, were placed in hot water baths for 1-2 hours to hasten thawing. After removing the bags, turkeys were roasted at 375°F for 3-4 hours then deboned, ground, and mechanically mixed with celery, mayonnaise, Worcestershire sauce, salt and pepper. Twenty-one large stainless steel pans were filled to a depth of 4 inches and then stored at 40°F until 11:00 a.m. An unrefrigerated panel truck transported the turkey salad one-half mile to the convention hall where serving began at 11:30 a.m.

Kitchen facilities at the hotel and at the convention hall were inspected. Although utensils, slicing equipment, and cutting boards were insufficiently cleaned after use, no salmonellae were isolated from environmental swabs. The hotel's small 40° walk-in cooler was judged inadequate to cool quickly the large quantity of turkey salad which had been prepared. A food handler responsible for preparing the turkey was not cultured. No foods or food ingredients served at the convention were available at the time of inspection.

Turkeys were supplied by two wholesalers who had stored the carcasses at -10°F until time of delivery. Inspection of both facilities failed to suggest contamination or improper storage conditions. Any combination of five turkey lots may have been used; all originated from the same processing plant. The Toxicology Group, Consumer and Marketing Service, United States Department of Agriculture, conducted an investigation and found the turkey processing plant operating within acceptable standards of sanitation. Environmental swabs obtained at the plant were negative for S. panama.

EDITOR'S COMMENT: Epidemiological evidence incriminated turkey as the vehicle responsible for this outbreak, although bacteriological confirmation could not be obtained. The serotype involved, S. panama, is frequently isolated from swine and turkeys; it is less commonly found in other domestic animals or human dietary items.

Inadequate thawing and roasting procedures, coupled with mass grinding of the pooled turkey carcasses, and inadequate storage permitted the survival, dissemination, and replication of contaminating salmonellae.

Table 1

Attack Rates for Common Meals Served at Convention

	A T E M E A L			D I D N O T E A T M E A L		
	Ill	Not Ill	Attack Rate	Ill	Not Ill	Attack Rate
September 30 Luncheon	113	303	27 %	9	15	38 %
October 1 Luncheon	121	273	31 %	1	43	2 %
October 1 Evening Banquet	116	307	27 %	6	10	38 %

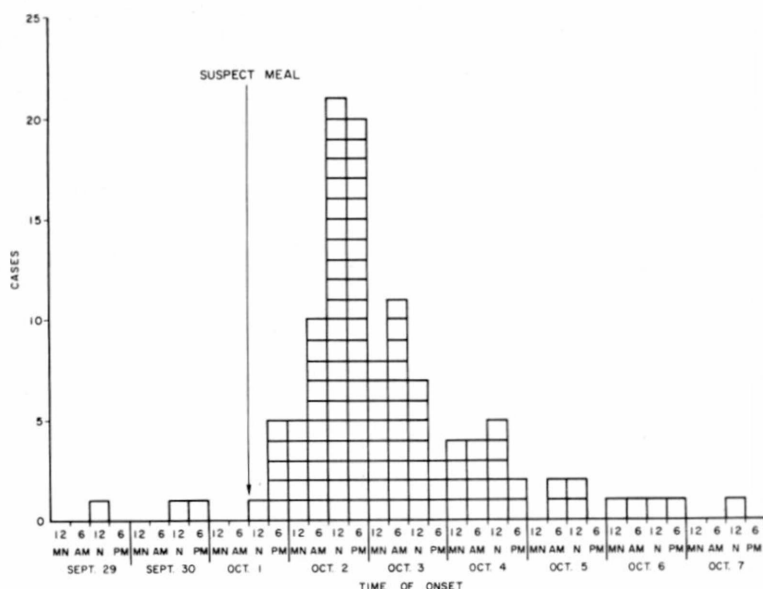
Table 2

Food Specific Attack Rates for October 1 Luncheon

	A T E			D I D N O T E A T		
	Ill	Not Ill	Attack Rate	Ill	Not Ill	Attack Rate
Turkey salad	119	248	33 %	2	20	9 %*
Cranberry sauce	78	195	29 %	21	44	32 %
Deviled egg (s)	85	215	28 %	28	34	45 %
Olives	84	176	32 %	21	64	25 %
Carrots	83	186	31 %	27	58	32 %
Crackers	68	172	28 %	39	62	39 %
Gelatin dessert	111	247	31 %	10	16	38 %
Butter cookie	84	217	28 %	24	36	40 %

*Significant using $\alpha = .05$ by the Fisher Exact Test

Figure 1 GASTROINTESTINAL ILLNESS IN CONVENTION ATTENDANTS BY TIME OF ONSET



B. Carbon Monoxide Poisoning Following Possible Salmonellosis in a Migrating Family - New Mexico

Reported by Bruce Storrs, M.D., Director of Medical Services, Daniel Johnson, Ph.D., Director of Division of Laboratories, John F. Thompson, Environmental Services Section, and Paul E. Pierce, M.D., EIS Officer, New Mexico Health and Social Services Department; Carl Reynolds, Resident Inspector, Food and Drug Administration, Albuquerque; George W. May, Sanitarian, Quay County Health Department, Tucumcari; James Chin, M.D., Head, Bureau of Communicable Diseases, and Paul C. Schnitker, M.D., EIS Officer, California State Department of Health; Mildred Scott, M.D., Assistant Director of Public Health, and Michael Rosa, B.S., Senior Public Health Sanitarian, San Bernardino County Health Department; John R. Philp, M.D., Health Officer, and R. A. Brandt, M.D., Coroner, Orange County, California; George K. Morris, Ph.D., Salmonella-Shigella Unit, Epidemiologic Services Laboratory Section, Epidemiology Program, and Matthew S. Loewenstein, M.D., EIS Officer, Bacterial Diseases Branch, Epidemiology Program, NCDC.

At approximately 9:00 a.m. on Sunday, September 28, a gasoline station operator investigated a parked car across the street from his filling station in Tucumcari, New Mexico. He found six of the seven occupants unresponsive and immediately summoned the police and an ambulance. The seven family members were brought to the local hospital in Tucumcari where initial evaluation revealed that the 13-month-old baby, a 3-year-old child, and the 57-year-old grandmother were dead on arrival. A 4-year-old boy and 7-year-old girl were flushed, diaphoretic, and febrile with temperatures of 103°. The boy dashed about, occasionally stared straight ahead and had a coarse intention tremor, whereas the girl was comatose, rigid, and hyper-reflexic. The father also was initially comatose though flaccid. The mother alone was essentially normal except for marked mental confusion.

The four survivors were treated with intravenous fluids, oxygen, and chloramphenicol. They all demonstrated a gradual improvement and were discharged 2 days later.

The only family member able to relate any of the events preceding their demise was the mother who nonetheless was confused regarding specific details. She indicated that at approximately 2:00 p.m. on Friday, September 26, the family ate their final meal in Springdale, Arkansas, and prepared to travel by automobile to California. They purchased provisions for their projected journey at several food stores; these purchases included salami, cooked ham, bologna, three loaves of bread, tomatoes, a carton of milk, a bottle of mayonnaise, canned meat, and onion flavored corn chips. Part of these provisions were carried in a portable ice chest. They left Springdale about 4:30 p.m. that afternoon.

After driving throughout the night they presumably breakfasted at a cafe immediately west of Oklahoma City where they consumed no foods in common. About noon they purchased further food provisions in Elk City, Oklahoma, but were forced to stop approximately 2 hours later in Weathersford, Oklahoma, because of automobile malfunction. The mechanic who replaced the car's generator in Weathersford recalled that they didn't appear to be ill at that time.

Later that afternoon, they ate another meal in their automobile while driving through western Oklahoma. This allegedly consisted of bread, mayonnaise, cheese, potted meat, and potato chips. The baby apparently only consumed the potted meat and cheese.

According to the mother, approximately 15 minutes after eating the above meal, she began vomiting and suffering intermittent blackouts. This was followed by the grandmother "going out of her mind." The baby and the grandmother also began vomiting. The husband was nauseated, dizzy, and dazed, but did not vomit.

Despite these severe symptoms the family continued driving through the night until about 4:00 a.m. on Sunday, September 28, when they stopped near the Texas-New Mexico border in order to rest. A state trooper who helped them restart their stalled car at about 5:30 a.m. recalled that all the members of the family were alive with apparently normal mental function.

At 7:00 a.m. they again were forced to halt because of illness; this time across the street from the gasoline station in Tucumcari, New Mexico. Approximately 2 hours later the service station operator investigated the automobile and discovered six of the occupants unresponsive.

Examination of the automobile revealed that the exhaust pipe was rusted and broken through as it passed beneath the rear axle. The rear radio speaker was missing, permitting free air passage between the trunk and back seat. The interior and trunk of the automobile contained diarrhea-stained diapers as well as numerous partially eaten or unopened containers of food. Laboratory examination of the food present in the automobile failed to yield salmonella, botulinus toxins, significant numbers of staphylococci, or toxic concentrations of heavy metals. Rectal swabs obtained from the four survivors after administration of chloramphenicol failed to demonstrate salmonella. However, cultures of the diarrhea stained baby's diapers were positive for Salmonella newport.

An autopsy performed 4 days postmortem on the remains of the grandmother revealed toxic levels of carboxyhemoglobin in the hepatic blood. Tests on the automobile demonstrated elevated concentrations of carbon monoxide in both the front and rear seats with the car in motion at 50 miles an hour and potentially lethal levels with the auto stopped and the engine idling.

It is tentatively concluded that the family may have initially suffered from salmonella gastroenteritis. Because of this illness, and/or carbon monoxide poisoning, they were forced to stop their car. This may then have exposed them to still higher levels of carbon monoxide and led to the three deaths and neurological symptoms in the survivors.

IV. REPORTS FROM THE STATES

A. Typhoid Fever Outbreak - Connecticut and Massachusetts

Reported by Norton Chaucer, M.D., M.P.H., Health Director, and Miss Dorothy Clarkin, R.N., Public Health Nurse, Hartford Health Department; John C. Ayres, M.D., Commissioner of Public Health, Springfield, Massachusetts; John A. Monacella, M.D., Director of Health, Windsor, Connecticut; James C. Hart, M.D., Chief, Section of Epidemiology, Connecticut State Department of Health; and Joel A. Krackow, M.D., EIS Officer located at the Connecticut State Department of Health.

On August 8, 1969, the Connecticut State Health Department laboratory reported an isolation of Salmonella typhi from a stool specimen of a 22-year-old Hartford woman who had become ill with fever and headache on July 11 and who subsequently developed diarrhea. Epidemiologic investigation was carried out by the Hartford Health Department, but no source of infection could be determined.

On August 26, Dr. John Ayres, Commissioner of Public Health in Springfield, Massachusetts, notified the Connecticut State Department of Health of two cases of typhoid fever in Springfield among sibs age 10 and 9 years old who became ill on July 11 and 18, respectively. The children had visited their aunt in Wilson, Connecticut, a Hartford suburb, on June 27-29. Investigation in Springfield had failed to reveal a source of infection for the children. Since both the Hartford patient and the two Springfield sibs were infected by the same phage type, F-1 (an uncommon type in New England), further investigation was initiated.

Although the Hartford patient and the two children were not known to each other and they had no known contacts in common, a number of possible associations were determined. All three patients had eaten at the same hamburger restaurant near Hartford. Stool cultures of all employees at the restaurant were negative for S. typhi. It was also determined that the two Springfield children had occasionally eaten grinders (Italian submarines or hero sandwiches) brought into their aunt's home near Hartford. After the name of the grinder shop was obtained from the aunt, the Hartford patient was contacted; she recalled having eaten grinders there on two or three occasions prior to her illness.

The grinder shop is a family enterprise. The family came from Lebanon 12 years previously and opened the shop in March 1969. According to the manager, no one in the family had ever had typhoid. Stool specimens were obtained on all family members working in the shop. S. typhi, phage type F-1, was isolated from the mother, a 50-year-old woman who cooked the meatballs and sausage for the grinders. With the aid of one of her sons as an interpreter, a history of a febrile illness of 1-month duration, requiring hospitalization 19 years ago in Lebanon was obtained. All other stool specimens from family members were negative.

An inspection of the grinder shop failed to reveal any obvious errors in food handling techniques. Repeat stool specimens were obtained; one of the sons, age 21, who made the grinders was found to have S. typhi on his second specimen. This isolate was also phage type F-1. He gave no history of recent illness or of a past history of typhoid fever. A third specimen obtained from the son shortly thereafter was again negative for S. typhi.

The mother and son are both to receive long term ampicillin therapy and to discontinue working at the shop until follow-up stool cultures are negative.

It was not possible to ascertain which of the two food handlers was responsible for the cases of typhoid fever. Meatball grinders had been eaten by all three patients so that both the mother and son would have handled the grinders in preparation.

EDITOR'S COMMENT: The investigation of this outbreak illustrates well the value of typhoid phage-typing as an epidemiologic marker in investigating common source outbreaks of typhoid fever.

Addendum: The Salmonellosis Unit has been recently informed of a fourth case of typhoid fever traced to the grinder shop. The patient is a 24-year-old male who ate regularly at the shop and became ill on October 31. The organism was, again, phage type F-1.

B. Puppy Propagated Salmonellosis - Seattle, Washington

Reported by Herb W. Anderson, B.S., R.S., Environmental Epidemiologist, Donald R. Peterson, M.D., M.P.H., Director of Epidemiology, Paul Bonin, M.A., Director of Laboratories, and Evelyn L. Tronca, M.S., Assistant Director of Laboratories, Seattle-King County Department of Public Health.

On July 30, 1969, a young couple agreed to care for a 3-month-old, sick puppy for friends on vacation. On August 6, the couple's 10-month-old infant experienced fever and bloody diarrhea. Their physician ordered a stool culture which yielded Salmonella heidelberg. The parents took the puppy to an animal hospital on August 6. It died on August 12, 1969. Investigation disclosed that the puppy had experienced diarrhea while in the infant's home. The child had played on the floor, sharing toys with the sick puppy. Accordingly, dust from a vacuum cleaner bag and a soiled puppy blanket were submitted to the Health Department Laboratory. S. heidelberg was isolated from both specimens. A stool specimen from the mother, who had no symptoms, also yielded S. heidelberg. The Washington State Health Department Laboratory performed all serotyping.

Since the puppy had been taken directly to the animal hospital and not returned to the owner's home, a visit was made to the dog owner's apartment. While the owner was on vacation, a neighbor had brought a vacuum cleaner into the apartment to clean the floors. Dust from this vacuum cleaner bag yielded S. heidelberg, which clearly indicated infection of the puppy prior to coming into the infant's home. Stool cultures from the couple who owned the dog failed to yield salmonellae.

Stool cultures from the animal hospital veterinarian and from a canine contact of the puppy were negative.

The owner had purchased the puppy at a pet shop on June 29, 1969. The following day, the puppy developed fever and diarrhea. It was taken immediately to the animal hospital, where it remained for a week. Subsequently, during the month of July, the puppy was readmitted to the same animal hospital several times.

A visit to the pet shop on August 20, revealed lack of cleanliness and rodent and vermin infestation. Floor sweepings from the puppy "romping area" and from the back room where the dogs were groomed yielded S. reading.

The pet shop manager suspected that small, green turtles had contaminated the environment. Water from the turtle tank yielded S. newport, and a plastic artificial weed found in the same tank yielded S. panama, S. newport and S. rubislaw.

Since January 1, 1969, five confirmed salmonella family outbreaks investigated by the Seattle-King County Health Department have been associated with exposure to infected cats and dogs. However, this is the first instance in which dog to human transmission was unequivocally established.

V. SPECIAL REPORTS

A. Recent Articles on Salmonellosis

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

1. Archampong, E. Q.: Operative treatment of typhoid perforation of the bowel. Brit. Med. J. 5665:273, 1969.
2. Aserkoff, B., et al.: Effect of antibiotic therapy in acute salmonellosis on salmonellae in feces. New Engl. J. Med. 281:636, 1969.
3. Cherubin, C. E., et al.: The epidemiology of salmonellosis in New York City. Amer. J. Epidem. 90:112, 1969.
4. Chung, G. T., et al.: The Occurrence of Salmonellae in slaughtered pigs. Australian Veterinary Journal 45:350, 1969.
5. Dinbar, A., et al.: The treatment of chronic biliary salmonella carriers. Amer. J. Med. 47:236, 1969.
6. Garibaldi, J. A., et al.: Number of salmonellae in commercially broken eggs before pasteurization. Poultry Science 48:1096, 1969.
7. Marx, M. B.: The effect of interspecies contact upon diarrhea morbidity and salmonellosis in children. J. Infect. Dis. 120:202, 1969.
8. Meade, R. H., III, et al.: Salmonella arteritis - Preoperative diagnosis and cure. New Engl. J. Med. 281:310, 1969.
9. Morris, G. K., et al.: A study of the dissemination of salmonellosis in a commercial broiler chicken operation. Amer. J. Vet. Res. 30:1413, 1969.
10. Patterson, J. T.: Salmonellae in meat and poultry, poultry plant cooling waters and effluents and animal feeding stuffs. J. Appl. Bact. 32:329, 1969.
11. Reller, L. B., et al.: Shigellosis in the United States. J. Infect. Dis. 120:393, 1969.
12. Rowe, B., et al.: Outbreak of gastroenteritis due to Salmonella virchow in a maternity hospital. Brit. Med. J. 5670:561, 1969.
13. Sarkiewicz, B. F., et al.: A bacteriological survey of chicken eviscerating plants. Food Technology Research 23:80, 1969.
14. Sinkovics, J. G., et al.: Salmonellosis complicating neoplastic diseases. Cancer 24:631, 1969.
15. Vadehra, D. V., et al.: Salmonella infection of cracked eggs. Poultry Science 48:954, 1969.
16. Wilkoff, L. J., et al.: Persistence of Salmonella typhi-murium in fabrics. Appl. Microbiol. 18:256, 1969.

B. Recalls of Products Contaminated with Salmonellae for Period September 29 to November 3 (reported by the U.S. Food and Drug Administration).

From September 29 to November 3, 1969, four products were recalled by manufacturers and distributors because of salmonella contamination. These products as reported by the U.S. Food and Drug Administration are summarized in the table below.

Week Ending	Name, Label, Form	Manufacturer, Distributor	Lot Number	Use	Depth of Recall	Product Distribution	Serotype
10/6	Wayne tail curler rockets Medicated M-65 feed in 50 lb. bags (for early weaned pigs) (General Offices Allied Mills, Inc., Chicago, Ill.)	(Mfr.) Allied Mills, Inc., Buffalo, N.Y. (Firm made product from dried brewers yeast which was found positive for salmonella)	Color code of unknown significance used by firm	Medicated hog feed	Retail	N. Y., Penn.	<u>S. tennessee</u>
9 10/20	Mogold-Tex No. 10 pasteurized dried egg solids in 25 lb. boxes (Monark Egg Corp. Kansas City, Mo.)	(Mfr.) Monark Egg Corp., Kansas City, Mo.	2339	Food	User	Virginia	<u>S. alachua</u>
10-27	Bud 26 dried egg product in 5 lb. containers (Dist. by Anheuser-Busch Inc., St. Louis, Mo.)	(Mfr.) Wenk Produce and Hatchery, Madison, South Dakota	2609	Food	Wholesale	Nebraska	<u>S. monteideo</u> and <u>S. alachua</u>
11/3	Dried whey in 100 lb. bulk paper bags, labeled Swiss Whey (Star Valley Swiss Cheese Co., Thayne, Wyoming)	(Mfr.) Star Valley Swiss Cheese Co., Thayne, Wyoming	266	Food	Dairy product manufacturers	California	<u>S. derby</u>

VI. INTERNATIONAL

Salmonella Isolations from England, Scotland, and Wales - 1968

Reported by Dr. Joan Taylor, Salmonella Reference Laboratory, Central Public Health Laboratory, Colindale, London.

In 1968, a total of 4,503 salmonella isolations were reported from humans and 3,023 from nonhumans. The ten most common serotypes from human and nonhuman sources are listed below.

Human Sources

Rank	Serotype	Number	Percent
1	<u>S. typhi-murium</u> and <u>S. typhi-murium</u> <u>var. copenhagen</u>	1,280	28.4
2	<u>S. panama</u>	478	10.6
3	<u>S. enteritidis</u>	355	7.9
4	<u>S. virchow</u>	231	5.1
5	<u>S. montevideo</u>	211	4.7
6	<u>S. stanley</u>	172	3.8
7	<u>S. dublin</u>	150	3.3
8	<u>S. oranienburg</u>	123	2.7
9	<u>S. indiana</u>	107	2.4
10	<u>S. bredeney</u>	107	2.4
Total Human Isolations		4,503	

Nonhuman Sources

Rank	Serotype	Number	Percent
1	<u>S. dublin</u>	511	16.9
2	<u>S. senftenberg</u>	330	10.9
3	<u>S. typhi-murium</u> and <u>S. typhi-murium</u> <u>var. copenhagen</u>	311	10.3
4	<u>S. panama</u>	175	5.8
5	<u>S. livingstone</u>	140	4.6
6	<u>S. anatum</u>	123	4.1
7	<u>S. oranienburg</u>	106	3.5
8	<u>S. montevideo</u>	72	2.4
9	<u>S. brandenburg</u>	65	2.2
10	<u>S. indiana</u>	54	1.8
Total Nonhuman Isolations		3,023	

TABLE 1. COMMON SALMONELLAE REPORTED FROM HUMAN SOURCES, OCTOBER, 1969

SEROTYPE	GEOGRAPHIC DIVISION AND REPORTING CENTER																															
	NEW ENGLAND						MIDDLE ATLANTIC					EAST NORTH CENTRAL					WEST NORTH CENTRAL						SOUTH ATLANTIC									
	ME	NH	VT	MA	RI	CON	NYA	NYB	NYC	NJ	PA	OH	IND	ILL	MIC	WIS	MIN	IOW	MO	ND	SD	NEB	KAN	DEL	MD	DC	VA	WV	NC	SC	GA	FLA
<i>anatum</i>				1		1	1		3	1				1											1	1					5	7
<i>bareilly</i>									2	1									1					2		1						2
<i>blockley</i>				7				5	3	2	1	1		6		1	2		3							1		1		2	5	1
<i>braenderup</i>				3	1											1			1													1
<i>bredeney</i>						1		1							1															1		5
<i>chester</i>				5												1																
<i>cholerae-suis v kun</i>													1																			
<i>cubana</i>					2						1	2		1		2																4
<i>derby</i>						1			3		1		1	4	1				1							2	1			1	5	3
<i>enteritidis</i>				33	2	1		15	14	5	10	3		19	5	2	11		4				2			5		4	4	4	6	2
<i>give</i>											1																					1
<i>heidelberg</i>				5	4	6		3	5	4	12	6	6	14	15	2	2		3						1	7	6	6		4	11	10
<i>indiana</i>															1															1		2
<i>infantis</i>				10		1		1	1	2	1	4	4	3		1			1			1				3	2	1			10	11
<i>java</i>									1		1						3	1										1		1	5	
<i>javiana</i>													2		1	1			1				2								12	28
<i>litchfield</i>				3		2					1	1		2			1									1				4	2	2
<i>livingstone</i>											1																					
<i>manhattan</i>						2		1	3			2		3		1										3		1		1		3
<i>miami</i>																											1		1	1	1	9
<i>mississippi</i>																																5
<i>montevideo</i>				4					2			1		1														2			1	3
<i>muenchen</i>				2				2	6	1	1				1												2	1			2	6
<i>newington</i>																			1												2	
<i>newport</i>				8		1		7	2	1	2	1		18	3	5	2	2	2	1			2		2					2	17	56
<i>oranienburg</i>				1		2		3		2		2		2	2		1		1							2		1		1	4	1
<i>panama</i>								1		2	5				1			1								1						
<i>paratyphi B</i>				3				1	1						1													1	2			
<i>reading</i>				3						2																				4		
<i>saint-paul</i>				2		1		6	8	4	8	1	1	6	7	1	2	3	2			1		2		2		7		4	5	19
<i>san-diego</i>														1																2		1
<i>schwarzengrund</i>														2														1			1	
<i>senftenberg</i>				1												1															1	
<i>tennessee</i>						1													1													
<i>thompson</i>				10		7		2	7	3	4	5		8	1	5	2	1	1				1		1	1	1	1	3	13		3
<i>typhi</i>	1			3		3		1	2			3	1	4	1														1	1	3	2
<i>typhimurium</i>	7		2	39		13		15	28	13	23	16	3	28	16	14	11		1	8	1		3	6	9	5	17	2	6	22	35	
<i>typhimurium v cop</i>	1			16		1				5					2	1		2												1		
<i>weltevreden</i>										1																						
<i>worthington</i>												1																				
TOTAL	9	—	2	159	9	44	1	64	91	47	75	49	19	125	58	38	37	11	31	2	—	1	11	10	40	20	46	10	54	—	128	214
ALL OTHER *	—	20	—	4	2	2	21	2	9	3	5	7	—	3	3	1	2	2	2	1	—	1	1	—	3	7	4	—	28	—	11	18
TOTAL	9	20	2	163	11	46	22	66	100	50	80	56	19	128	61	39	39	13	33	3	—	2	12	10	43	27	50	10	82	—	139	232

Note: NYA — New York, Albany; NYB — Beth Israel Hospital; NYC — New York City.
 Beth Israel Hospital laboratory is a reference laboratory and this month serotyped
 a total of 181 cultures.

* See Table II.

TABLE I - Continued

GEOGRAPHIC DIVISION AND REPORTING CENTER																					TOTAL	% OF TOTAL	CUMULATIVE TOTAL	% OF CUMULATIVE TOTAL	SERO TYPE
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	1		1		4				1		1				1	4		1	29	1.2	143	0.8	<i>anatum</i>
					4		4										1				16	0.7	63	0.4	<i>bareilly</i>
																	1	5			58	2.4	406	2.3	<i>blockley</i>
																		2			9	0.4	70	0.4	<i>braenderup</i>
							2											1		1	13	0.5	104	0.6	<i>bredeney</i>
													1								7	0.3	43	0.2	<i>chester</i>
					1																2	0.1	14	0.1	<i>cholerae-suis v kun</i>
							1				2										15	0.6	113	0.6	<i>cubana</i>
1	2	3		1	1	1	5				1		1		1			10			38	1.6	262	1.5	<i>derby</i>
											7			3	1	8	2	7		1	194	8.0	1579	9.0	<i>enteritidis</i>
	7				4													2		1	9	0.4	69	0.4	<i>give</i>
		1		3	12		4		1					2		7	1	18		6	193	8.0	1194	6.8	<i>heidelberg</i>
																					5	0.2	83	0.5	<i>indiana</i>
				1	2	1	6									1	1	11		1	81	3.3	924	5.3	<i>infantis</i>
		1												1			2	7			24	1.0	138	0.8	<i>java</i>
			2	6	9	1	23														88	3.6	377	2.2	<i>javana</i>
					1		3												1		24	1.0	105	0.6	<i>litchfield</i>
																					1	0.0	32	0.2	<i>livingstone</i>
1		2					2											6		5	33	1.4	198	1.1	<i>manhattan</i>
																					15	0.6	88	0.5	<i>miami</i>
	1				3		1														10	0.4	37	0.2	<i>mississippi</i>
	1				8		5						3								40	1.7	247	1.4	<i>montevideo</i>
					1		1							1							28	1.2	185	1.1	<i>muenchen</i>
																					3	0.1	23	0.1	<i>newington</i>
	4	2		5	18		48			1	9							10		2	233	9.6	1336	7.6	<i>newport</i>
					3		4							1				2			35	1.4	221	1.3	<i>oranienburg</i>
1					1		6									1		6		5	31	1.3	262	1.5	<i>panama</i>
	1				1		3									2					16	0.7	139	0.8	<i>paratyphi B</i>
													1			1		1			12	0.5	59	0.3	<i>reading</i>
				1	4		9						1	1			1	10		1	118	4.9	796	4.5	<i>saint-paul</i>
											1				1						5	0.2	48	0.3	<i>san-diego</i>
																					10	0.4	64	0.4	<i>schwarzengrund</i>
							4														7	0.3	65	0.4	<i>senftenberg</i>
1	3	7		1	3		3	1								1					2	0.1	34	0.2	<i>tennessee</i>
																		9		2	111	4.6	858	4.9	<i>thompson</i>
	1			3			2									1	1	19		1	54	2.2	438	2.5	<i>typhi</i>
5	9	2		2	14	3	16	6	2		5		1	4		14	2	60		11	499	20.6	4485	25.6	<i>typhimurium</i>
							1	1									1				32	1.3	214	1.2	<i>typhimurium v cop</i>
																					12	0.5	47	0.3	<i>weltevreden</i>
																					2	0.1	27	0.2	<i>worthington</i>
10	30	19	3	23	91	6	157	8	4	1	26	—	9	15	3	36	14	205	—	50	2115	87.3	15590	89.0	TOTAL
—	—	—	18	12	7	1	44	2	—	1	2	15	2	—	1	2	2	28	4	6	309	X	1928	X	ALL OTHER*
10	30	19	21	35	98	7	201	10	4	2	28	15	11	15	4	38	16	233	4	56	2424		17518		TOTAL

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

SEROTYPE	REPORTING CENTER																							
	ALK	ARI	ARK	CAL	COL	CON	DC	FLA	GA	HAW	ILL	IOW	KAN	LA	MD	MAS	MIC	MIN	MIS	MO	MON	NEB	NEV	NH
<i>alachua</i>				1																				
<i>albany</i>															1									
<i>allandale</i>								1																
<i>amager</i>					1				1															
<i>atlanta</i>									5															
<i>berlin</i>																								
<i>berta</i>								1																
<i>brandenburg</i>				1																				
<i>bukavu</i>																1								
<i>california</i>																1								
<i>cambridge</i>																								
<i>canastota</i>																								
<i>carno</i>																		1						
<i>cerro</i>										2														
<i>chameleon</i>				1																				
<i>cholerae-suis</i>																								
<i>drypool</i>						1		1	1															
<i>dublin</i>				2																				
<i>eastbourne</i>																								
<i>eimsbuettel</i>														3										
<i>gaminara</i>								1																
<i>hartford</i>				1																	1			
<i>heilbron</i>					1																			
<i>ibaden</i>			2																					
<i>inverness</i>																								
<i>johannesburg</i>									1															
<i>kentucky</i>				4					1															
<i>kottbus</i>				2						2	1					1								
<i>lexington</i>		1									1													
<i>lindenburg</i>													1											
<i>lomita</i>																								
<i>london</i>																								
<i>madelia</i>																		1						
<i>meleagridis</i>				2										1										
<i>minnesota</i>																	1							
<i>muenster</i>								7																
<i>mundonobo</i>				1																				
<i>new-brunswick</i>											1													
<i>norwich</i>															1									
<i>ohio</i>										2														
<i>oslo</i>				1								1												
<i>paratyphi A</i>				2																				
<i>poona</i>		1		4				5							1					1				
<i>richmond</i>																								
<i>rubislaw</i>																	1				1			
<i>saphra</i>																								
<i>siegburg</i>				1					1															
<i>simsbury</i>																	1							
<i>stanley</i>				1																				
<i>tallahassee</i>								1																
<i>thomasville</i>									1						1									
<i>urbana</i>				1		1		1										1				1		
<i>virchow</i>																								
TOTAL	—	2	2	25	2	2	—	18	11	6	3	1	1	7	3	4	2	2	—	1	2	—	1	—
NOT TYPED*	4	—	10	3	—	—	7	—	—	—	—	1	—	—	—	—	1	—	18	1	—	1	—	20
TOTAL	4	2	12	28	2	2	7	18	11	6	3	2	1	7	3	4	3	2	18	2	2	1	1	20

* See Table V-A

TABLE II - Continued

REPORTING CENTER																	TOTAL	CUMULATIVE TOTAL	SERO TYPE
NJ	NM	NYA	NYE	NYC	NC	ND	OHI	OKL	ORE	PA	RI	TEX	VA	WAS	WIS	WYO			
					1												1	11	<i>alachua</i>
																	2	13	<i>albany</i>
																	1	1	<i>allendale</i>
																	2	24	<i>amager</i>
																	5	14	<i>atlanta</i>
								1									1	2	<i>berlin</i>
							3										4	31	<i>berta</i>
																	1	2	<i>brandenburg</i>
												1					1	2	<i>bukavu</i>
												1					2	12	<i>california</i>
										2							1	2	<i>cambridge</i>
																	2	3	<i>canastel</i>
										1				2			1	1	<i>carno</i>
																	5	19	<i>cerro</i>
					1												1	1	<i>chameleon</i>
																	1	12	<i>cholerae-suis</i>
																	3	11	<i>drypool</i>
																	2	5	<i>dublin</i>
						1				1							1	4	<i>eastbourne</i>
			1														4	29	<i>eimsbuettel</i>
																	2	11	<i>gaminara</i>
																	2	29	<i>hartford</i>
																	1	2	<i>heilbron</i>
																	2	4	<i>ibadan</i>
																	1	5	<i>inverness</i>
																	1	8	<i>johannesburg</i>
																	7	20	<i>kentucky</i>
																	4	11	<i>kottbus</i>
																	1	1	<i>lexington</i>
																	1	2	<i>lindenburg</i>
						3						4					4	13	<i>lomita</i>
										1							3	13	<i>london</i>
																	2	11	<i>madelia</i>
																	3	12	<i>meleagridis</i>
1					1												3	25	<i>minnesota</i>
							1										8	32	<i>muenster</i>
													1				1	1	<i>mundonobo</i>
													1				2	9	<i>new-brunswick</i>
							2						1				4	20	<i>norwich</i>
																	2	12	<i>ohio</i>
					1												2	14	<i>oslo</i>
																	3	13	<i>paratyphi A</i>
1			1									1					15	69	<i>poona</i>
							1										1	1	<i>richmond</i>
												4					6	20	<i>rubislaw</i>
												3					4	12	<i>saphra</i>
																	2	19	<i>siegburg</i>
																	1	19	<i>simsbury</i>
1																	2	10	<i>stanley</i>
																	1	10	<i>tallahassee</i>
																	2	4	<i>thomasville</i>
												2	1		1		9	43	<i>urbana</i>
													3				3	6	<i>virchow</i>
3	—	—	2	2	6	—	7	1	—	5	—	18	4	2	1	—	146	788	TOTAL
—	15	21	—	7	22	1	—	—	2	—	2	26	—	—	—	1	163	1140	NOT TYPED*
3	15	21	2	9	28	1	7	1	2	5	2	44	4	2	1	1	309	1928	TOTAL

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

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

SEROTYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
<i>anatum</i>	2	7	3				12	8			8
<i>bareilly</i>							—				—
<i>blockley</i>	8	2	3				13	2		1	3
<i>braenderup</i>							—				—
<i>bredeney</i>	1	4	2		6	1	14	2			2
<i>chester</i>		1					1	1			1
<i>cholerae-suis v kun</i>			44				44				—
<i>cubana</i>							—	2			2
<i>derby</i>		3	19				22	2			2
<i>enteritidis</i>	4				1		5				—
<i>give</i>							—				—
<i>heidelberg</i>	16	41	3	1			61	4			4
<i>indiana</i>							—	1			1
<i>infantis</i>	9	2	1				12	6			6
<i>java</i>							—				—
<i>javiana</i>			1			2	3				—
<i>litchfield</i>							—				—
<i>livingstone</i>	1		4				5	18		10	28
<i>manhattan</i>	2					1	3				—
<i>miami</i>							—				—
<i>mississippi</i>							—				—
<i>montevideo</i>	1	4					5	11			11
<i>muenchen</i>		1	1				2	5			5
<i>newington</i>	3		6				9				—
<i>newport</i>		4	1	3		4	12				—
<i>oranienburg</i>							—			1	1
<i>panama</i>		2					2				—
<i>paratyphi B</i>							—				—
<i>reading</i>		8	1		1	1	11				—
<i>saint-paul</i>	5	39	3	1			48				—
<i>san-diego</i>		4					4	19			19
<i>schwarzengrund</i>		3					3	2			2
<i>senftenberg</i>	2	4					6			6	6
<i>tennessee</i>		9					9	2			2
<i>thompson</i>	12	1	3			1	17	2			2
<i>typhi</i>							—				—
<i>typhimurium</i>	8	4	19	52	5	15	103	8			8
<i>typhimurium v cop</i>	6	1		1		3	11	1			1
<i>weltevreden</i>							—				—
<i>worthington</i>	1	5					6	5			5
TOTAL	81	149	114	58	13	28	443	101	—	18	119
ALL OTHER *	12	21	7	17	—	8	65	55	—	4	59
TOTAL	93	170	121	75	13	36	508	156	—	22	178

* See Table IV

TABLE III - Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRON- MENT	HUMAN DIETARY ITEMS						MISCEL- LA- NEOUS	TOTAL	CUMU- LATIVE TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
	1	2	1			2	4	3	28	374	<i>anatum</i>
							—	—	—	27	<i>bareilly</i>
							1	1	18	132	<i>blockley</i>
							—	—	—	7	<i>braenderup</i>
							—	—	16	121	<i>bredeney</i>
							—		2	38	<i>chester</i>
							—		44	552	<i>cholerae-suis v kun</i>
					5		5		7	96	<i>cubana</i>
		2		3			5		29	182	<i>derby</i>
		1					1		6	124	<i>enteritidis</i>
							—		—	39	<i>give</i>
2		4		1		1	2	2	69	735	<i>heidelberg</i>
							—		1	16	<i>indiana</i>
						1	5	2	27	221	<i>intanlis</i>
							—		—	8	<i>java</i>
	1					3	3		7	18	<i>javiana</i>
	3						—		3	5	<i>litcheifield</i>
							—		33	133	<i>livingstone</i>
							—		3	45	<i>manhattan</i>
							—		—	6	<i>miami</i>
							—		—	—	
	1					1	1	4	22	—	<i>mississippi</i>
	8					1	1		16	239	<i>montevideo</i>
	5						—	1	10	46	<i>muenchen</i>
							—	1	18	47	<i>newington</i>
							—	1		137	<i>newport</i>
1	1			1		1	3		6	86	<i>oranienburg</i>
	2						—		2	21	<i>panama</i>
							—		2	6	<i>paratyphi B</i>
		1					7		11	54	<i>reading</i>
									55	326	<i>saint-paul</i>
							—		23	141	<i>san-diego</i>
							—		5	54	<i>schwarzengrund</i>
		11					11	2	25	191	<i>senftenberg</i>
1	1	1				2	3	1	11	106	<i>tennessee</i>
							—		25	238	<i>thompson</i>
5							—		—	—	<i>typhi</i>
1							1	2	119	1010	<i>typhimurium</i>
							—		13	239	<i>typhimurium v cop</i>
							—		—	3	<i>weltevreden</i>
	3	1					1		15	116	<i>worthington</i>
10	26	23	8	5	6	12	54	19	671	5939	TOTAL
2	5	8	—	—	—	5	13	7	151	1442	ALL OTHER*
12	31	31	8	5	6	17	67	26	822	7381	TOTAL

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

SERO TYPE	DOMESTIC ANIMALS AND THEIR ENVIRONMENT							ANIMAL FEEDS			
	CHICKENS	TURKEYS	SWINE	CATTLE	HORSES	OTHER	SUBTOTAL	TANKAGE	VEGETABLE PROTEIN	OTHER	SUBTOTAL
<i>a lachua</i>	1	2					3	4			4
<i>amsterdam</i>							1			1	1
<i>binza</i>							1	5			5
<i>california</i>	1						1	2		1	3
<i>cerro</i>		4	1				5	9			9
<i>cholerae-suis</i>			2				2				—
<i>drypool</i>	2						2	2		1	3
<i>dublin</i>				15			15				—
<i>eimsbuettel</i>		8				1	9	11			11
<i>gallinarum</i>						1	1				—
<i>grumpensis</i>							—	1			1
<i>habana</i>						1	1				—
<i>kentucky</i>	1					5	6	1			1
<i>kottbus</i>							—				—
<i>lexington</i>							—				—
<i>matopenl</i>							—	1			1
<i>minnesota</i>		2	1				3	2		1	3
<i>muenster</i>	1						1				—
<i>new-brunswick</i>							—	5			5
<i>ohio</i>							—				—
<i>pullorum</i>	1	1					2				—
<i>siegburg</i>			1				1	2			2
<i>simsbury</i>							—	2			2
<i>surat</i>							—				—
<i>taksony</i>		1					1				—
<i>thomasville</i>			1				—	6			6
<i>typhi-suis</i>							1				—
<i>urbana</i>		2					2				—
<i>weathampton</i>							—	1			1
TOTAL	7	20	6	15	—	8	56	54	—	4	58
NOT TYPED *	5	1	1	2	—	—	9	1	—	—	1
TOTAL	12	21	7	17	—	8	65	55	—	4	59

* See Table V-B

TABLE IV - Continued

WILD ANIMALS AND BIRDS	REPTILES AND ENVIRON- MENT	HUMAN DIETARY ITEMS						MISCEL- LA- NEOUS	TOTAL	CUMU- LATIVE TOTAL	SEROTYPE
		EGGS AND PRODUCTS	POULTRY	RED MEAT	DAIRY PRODUCTS	OTHER	SUBTOTAL				
		1					1	1	8	40	alachua
		2					2	2	2	2	amsterdam
							5	5	5	56	bliza
							4	4	4	38	california
							16	16	79	79	carro
							1	1	3	19	cholerae-suis
									5	40	drypool
									15	99	dublin
		2					2	22	22	124	eimsbuetel
								1	1	9	gallinarum
									1	2	grumpensis
									1	11	habana
									8	122	kentucky
									1	11	kotibus
								1	1	7	lexington
1		2					2		1	1	matopeni
									9	88	minnesote
									1	8	muenster
									5	28	new-brunswick
							3	3	3	5	ohio
		1					1	1	2	42	pullorum
									4	63	siegburg
									3	50	stmsbury
									4	4	sural
									1	12	tekonny
	3								6	26	thomassville
									1	12	typhi-suis
									5	33	urbana
									1	8	weethampton
2	3	8	-	-	-	5	13	7	139	1333	TOTAL
-	2	-	-	-	-	-	-	-	12	109	NOT TYPED *
2	5	8	-	-	-	5	13	7	151	1442	TOTAL

A. HUMAN SOURCES

REPORTING CENTER	GROUP															TOTAL
	B	C		C1	C2		D	E		E1	G		I	UNK		
ALASKA	1						1							2		4
ARKANSAS	2			4	2		1				1					10
CALIFORNIA	2									1						3
D.C.	3				1									3		7
IOWA	1															1
MICHIGAN	1															1
MISSISSIPPI	9			3	4			1			1					18
MISSOURI	1															1
NEBRASKA														1		1
NEW HAMPSHIRE	6			1			12							1		20
NEW MEXICO	3			4	5		3									15
NEW YORK - A														21		21
NEW YORK - C	5	2														7
NORTH CAROLINA				9	11									2		22
NORTH DAKOTA														1		1
OREGON	1						1									2
RHODE ISLAND				1				1								2
TEXAS	3			4	3		3	2					1	10		26
WYOMING														1		1
TOTAL	38	2		26	26		21	4		1	2		1	42		163

B. NONHUMAN SOURCES

SOURCES	GROUP															TOTAL
	B	C		C1	C2		D	E		E1	G		I	UNK		
DOMESTIC ANIMALS AND THEIR ENVIRONMENT	1			1			1							6		9
ANIMAL FEEDS														1		1
WILD ANIMALS AND BIRDS																-
REPTILES AND ENVIRONMENT				2												2
HUMAN DIETARY ITEMS																-
MISCELLANEOUS																-
TOTAL	1	-		3	-		1	-		-	-		-	7		12