REPORT NO. 27
JULY 27, 1964

COMMUNICABLE DISEASE CENTER

SALMONELLA

SURVEILLANCE

TABLE OF CONTENTS

For the Month of June 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

This month marks the regrettable termination of Dr. W. Eugene Sanders' association with the Salmonella Surveillance Unit. Dr. Sanders joins the University of Florida School of Medicine as Chief Resident in Medicine. Dr. Charles E. McCall will now assume duties as Chief of the Salmonella Surveillance Unit.

During June, 1,758 isolations of salmonellae from humans were submitted for an average weekly total of 439. This represents an increase of 71 over the average weekly total for the month of May. A total of 441 nonhuman isolations were reported in June.

Included in this month's Reports from the States are summaries of salmonellosis in Chicago and Los Angeles, experience with S. java in Minnesota, human salmonellosis traced to necropsy, and a large outbreak of S. typhi-murium gastroenteritis in Massachusetts.

A new section to be included each month in the Salmonella Surveillance Report is described. This section will be devoted to surveillance of salmonellae in foods and animal feeds. Included under Special Reports are descriptions of a process developed for effectively pasteurizing liquid egg white, a report on economic losses incurred during an outbreak of gastroenteritis, and a review of salmonellosis in Alaskan dogs.

The section on International Reports summarizes food poisoning in England and Wales in 1962, and reviews salmonellosis in Germany during 1959.

II. REPORTS OF ISOLATIONS FROM THE STATES

A. Human

The month of June demonstrated an increase of 21.4 per cent in salmonella recoveries over May. There were 1,758 isolations reported for an average weekly total of 439 (see Figure 1).

The seven serotypes most frequently reported during June were:

Rank	Serotype	Number	Per Cent	Rank Last Month
1	S. typhi-murium	601	36.2	1
2	S. derby	195	11.1	2
3	S. heidelberg	167	9.5	3
4	S. newport	79	4.5	4
5	S. infantis	73	4.2	5
6	S. typhi	53	3.0	6
7	S. enteritidis	47	2.7	7
Total		1,215	71.2	

Total salmonellae isolated (June) 1,758.

Of the 65 different serotypes reported during June, the seven most common (10.8 per cent) accounted for 71.2 per cent of the 1,758 isolations reported.

The family attack rate during June was 20.1 per cent; consistent with past experience (Table II).

The age and sex distribution was consistent with past experience with one exception. The 10-19 year age group represented 179 (10.6 per cent) of the 1,694 cases reported by age. This age group normally accounts for 5 to 6 per cent of all cases reported by age. It is believed that the increase in the 10-19 age group reflects a large outbreak due to S. typhi-murium among teen-agers in Massachusetts (See Reports from States - Massachusetts).

B. Nonhuman

There were 441 nonhuman salmonella isolations in June. This represents an increase of 108 over the previous month when 333 isolations were reported. Fifty serotypes were identified among these 441 isolates.

The seven most common serotypes reported for June are as follows:

Serotypes	Number	Per Cent	Standing Last Month
S. typhi-murium var. copenhagen	69	15.6	1
S. heidelberg	40	9.1	2
S. muenchen	33	7.5	Not Listed
S. infantis	31	7.0	4
S. anatum	23	5.2	5
S. pullorum	19	4.3	3
S. chester	18	4.1	Not Listed
	233	52.8	

These seven serotypes account for 52.8 per cent of the total.

The 4 species from which most of the isolations were obtained in order of frequency are: turkey 144 (32.7 per cent); chicken 104 (23.6 per cent); bovine 28 (6.3 per cent); and porcine 24 (5.4 per cent). The isolations from these species comprised 68.0 per cent of the total reported.

Salmonella dublin isolations reported from Utah were from calves that were shipped to the Cache County area from California. Additionally, S. dublin was reported as isolated from a bovine source in California.

Salmonella stanley was reported as an isolate from a monkey in Pennsylvania. The 3 previously reported isolations were from monkeys but these came from Michigan and California. In 1963 this type was isolated 5 times from monkeys in Illinois. Investigation as to the source of S. stanley infections in man have indicated a probable connection with monkeys in Michigan. Further investigation is in progress.

CURRENT INVESTIGATIONS

Epidemic Gastroenteritis at Los Angeles VA Hospital.

Current investigation is under way of an outbreak of gastroenteritis at the James Wadsworth VA Hospital in Los Angeles. Between July 6 and July 17, 121 of 517 patients in the intermediary care unit of the hospital became ill with symptoms of gastroenteritis. Salmonella heidelberg was isolated from

stool cultures taken from 34 patients. Preliminary results suggest a common source food borne outbreak. A complete report will follow in a subsequent issue of the Salmonella Surveillance Report.

7. REPORTS FROM STATES

A. California

Salmonellosis, Los Angeles County, 1963. Reported by Dr. H. Cowper, Director, and Dr. C. F. Pait, Assistant Director, Los Angeles County Health Department.

Between January 1 and December 31, 1963, 179 cases of salmonellosis were reported to the Los Angeles County Health Department. In 73 of these, food was implicated as the vehicle of infection. The six most frequently isolated serotypes are listed below. These accounted for 74.3 per cent of the total isolations.

Serotype	Per Cent of Total Isolations
S. typhi-murium	38.0
S. heidelberg	13.8
S. infantis	7.3
S. muenchen	5.1
S. saint-paul	5.1
S. schwarzengrund	5.0
	74.3

As of May 23, 1964, 174 cases of salmonellosis had been reported for 1964, suggesting a marked increase in the incidence this year, or better reporting.

B. Illinois

Salmonellosis in Chicago, Illinois, 1963. Reported by Dr. Samuel L. Andelman, M.P.H., Commissioner of Health, Dr. Olga Brolnitsky, and Dr. Herbert L. Slutsky, Epidemiologists, Chicago Board of Health.

In 1963, there was a significant and continued rise in salmonellosis in the city of Chicago. Isolations reported by the Chicago Board of Health over the past five years are listed below.

Isolations of Salmonellae listed by year

Year	No. of Isolations
1959	43
1960	63
1961	168
1962	195
1963	397

The ten most common serotypes isolated in Chicago during 1963 are as follows:

No.	Serotype	No. of Cases
1	S. typhi-murium	108
2	S. derby	40
3	S. infantis	36
4	S. heidelberg	25
5	S. enteritidis	24
6	S. chester	19
7	S. newport	19
8	S. muenchen	16
9	S. blockley	13
10	S. saint-paul	11

With the exception of S. chester, the above frequency occurrence is similar to the national salmonella occurrence as noted in the monthly Salmonella Surveillance publications.

Isolates listed by month indicated a general increase in cases between April to June. Between July to September, a hospital associated outbreak of S. derby maintained the increase. The following table notes a peaking during the months of October to December.

Salmonella Isolations in Chicago, Illinois
(1963) Listed by Month of Onset

Month of Onset	No. of Isolations
Jan.	21
Feb.	11
Mar.	18
Apr.	24
May.	45
June	33
July	24
Aug.	34
Sept.	32
Oct.	46
Nov.	49
Dec.	60
TOTAL	397

In an effort to further define the problem, attack rates for sex and race were calculated.

Isolations Listed by Total Number of Occurrences
Sex and Race, Chicago, Illinois, 1963

	Population	Frequency	Attack Rate*	Race, Sex %
TOTAL	3,550,404	397	11.2	100.0
Male	1,726,986	178	10.3	44.8
Female	1,823,418	219	12.0	55.2

	Population	Frequency	Attack Rate*
WHITE	2,712,748	257	9.5
Male	1,325,389	120	9.1
Female	1,387,359	137	9.9
NONWHITE	837,656	140	16.7
Male	401,597	58	14.4
Female	436,059	82	18.8

* Per 100,000 population

In the following table, differences noted in the preceding table a analyzed with respect to age groups.

Isolations Listed by Age, Sex, and Race
Chicago, Illinois, 1963

	Population	Frequency	Attack Rate*
TOTAL	3,550,404	397	11.2
under 1 yr.	82,345	74	89.9
1-4	298,327	72	24.1
5-9	312,929	28	8.9
10-19	493,623	29	5.9
20-39	937,530	73	7.8
40 and over	1,425,650	121	8.5
WHITE	2,712,748	257	9.5
under 1 yr.	54,558	22	40.3
1-4	195,805	44	22.5
5-9	210,246	16	7.6
10-19	370,342	23	6.2
20-39	685,944	48	7.0
40 and over	1,195,853	104	8.7
NONWHITE	837,656	140	16.7
under 1 yr.	27,787	52	187.1
1-4	102,522	28	27.3
5-9	102,683	12	11.7
10-19	123,281	6	4.9
20-39	251,586	25	9.9
40 and over	229,797	17	7.4

*Per 100,000 population

The following table shows isolations by occupations, wit for the total population.

Isolations Listed by Occupations
Chicago, Illinois, 1963

	Population	Frequency
TOTAL	3,550,404	397
Pre-School	449,648	149
School	654,450	54

	Population	Frequency	Attack Rate*
Food Handler	124,563	26	20.9
Housewife	1,081,719	57	5.3
Other	1,240,024	111	9.0
WHITE	2,712,748	257	9.5
Pre-School	295,755	67	22.7
School	471,170	41	8.7
Food Handler	**	12	**
Housewife	847,505	43	5.1
Other	**	94	**
NONWHITE	837,656	140	16.7
Pre-School	153,893	82	53.3
School	183,280	13	7.1
Food Handler	**	14	**
Housewife	234,214	14	6.0
Other	**	17	**

*Per 100,000 population
**Not available

The authors emphasize the following interesting and highly significant facts:

1. The incidence of isolations in the city has increased substantially during the past five years.

2. Investigations have revealed that over 50 per cent of all isolations occur in the lowest socio-economic areas of the city (data not included in this report).

3. A high incidence has occurred among the Negro population. In 1962, the attack rate per 100,000 population was 10.4 for the Negro as compared to 4.0 for the white. In 1963, the rate was 16.7 for the Negro and 9.5 for the white.

4. A very high per cent of these infections were in children of preschool age. In 1963, 36.7 per cent of the total cases (397) were in preschool children. Children under one year of age were responsible for 18.1 per cent of the total with an attack rate of 89.9 per 100,000 population as compared to a rate of 11.2 for the total cases (397).

5. In a racial comparison of preschool groups, the attack rate for Negroes was substantially higher. For Negroes under one year of age, the rate per 100,000 population was 187.1; for whites of the same age category, the rate was 40.3.

6. An epidemic of S. derby infections began in July, 1963, in a large city hospital and has continued to the present. It has involved both patients and employees. Fortunately, the number of isolates has been small and no death attributed to S. derby has occurred. Individual cases of S. derby have been reported to the Chicago Board of Health by several Chicago hospitals, but the total number, excluding the hospital epidemic, was small.

7. The authors urged that closer cooperation between all public health agencies is essential if we are to accomplish more than the actual reporting of the disease.

Editor's Comment: The authors have submitted a most valuable document. The rising incidence, seasonal prevalence, and age specific attack rates parallel results based on nationwide experience. Statement by the authors that over 50 per cent of isolations occurred in lower socio-econimic areas of the city with higher attack rates in nonwhites deserves attention. One might assume the two are related, but this may not in fact be the case. Both observations should be confirmed from other areas in the country.

Although diseases such as typhoid fever, tuberculosis, and shigellosis have been well documented as occurring more frequently in lower socio-economic classes, the editor knows of no work establishing this in salmonellosis, although such an observation might be postulated. It behooves other investigators interested in salmonellosis to corroborate the excellent work in Chicago.

C. Massachusetts

An Outbreak of Salmonella typhi-murium Gastroenteritis Among High School Students. Reported by Dr. Nicholas Fiumara, Director, Division of Communicable Diseases, Dr. Geoffrey Edsall, Superintendent, Institute of Laboratories, and Dr. Arthur Wilder, EIS Veterinary Officer, Massachusetts Department of Public Health.

On Monday, May 25, the absentee rate in a high school of approximately 600 students, in a town of ten thousand, rose from a normal level of 20 per day to 70. On Tuesday the absentee rate was 85, Wednesday, 111; Thursday, 116; Friday, 111; and the following Monday, 89. The absentee rate of the junior high school was proportionately comparable for the same time period. Investigation revealed that many students who were absent were ill with symptoms of nausea and vomiting, headache, fever, abdominal cramps and diarrhea. Seventeen students were hospitalized.

Stool cultures submitted from ill students and from 8 of 15 food handlers were positive for Salmonella typhi-murium. Four of the eight culture-positive food handlers experienced illness during the period between May 24 and May 29. One food handler gave a history of diarrheal disease one week prior to the time of the outbreak.

Upon examination of the kitchen no outstanding faults in sanitation could be found. Menus were examined and left over food cultured, some of which yielded high numbers of coliform organisms but no salmonella. No specific food item was incriminated when food histories were obtained from ill students. The cafeteria was closed by the local Board of Health on Friday, May 29. It was recommended that the cafeteria be reopened the following week staffed by food handlers shown to be negative on culture. Additionally, all opened food was to be discarded and a thorough sanitizing of equipment and utensils was to be accomplished.

It was felt by the investigators that a number of foods were probably contaminated by the food handler, giving a history of disease compatible with salmonellosis prior to this outbreak and having a stool culture positive for S. typhi-murium.

D. Minnesota

An Investigation of Salmonella java Infection. Reported by Dr. Robert N. Barr, Executive Officer, Minnesota Department of Health, and Dr. Leslie P. Williams, EIS Officer assigned to Minnesota.

Six cases of Salmonella java infection occurring in the early part of 1964 in Minnesota prompted an investigation. Only three isolations of S. java had been reported in Minnesota in 1962 and 1963. Inquiry revealed that in three of these six cases the source of the disease could be traced to pet turtles. Subsequent investigation of the pet turtle wholesaler's store revealed S. java both in turtle water and pet turtles. The wholesaler distributes about 1500 small green turtles a month, the bulk of these being sold to retailers. The turtles are raised in Louisiana.

Editor's Comment: This report not only emphasizes the importance of pet turtles as both reservoir and vehicle of infection due to salmonellosis, it also demonstrates the value of a rare serotype of salmonella used as an epidemiologic tracer.

The fact that the pet turtles are raised in Louisiana is noteworthy in that although S. java is quite rare in Minnesota, it is frequently isolated in the State of Louisiana. Investigations of cases of S. java within the State of Louisiana should prove quite interesting.

E. Wisconsin

Salmonellosis Traced to Necropsy. Reported by Dr. V. P. Rastas, Wisconsin Animal Health Laboratories, Wisconsin Department of Agriculture.

On May 28, 1964, several four-day old chicks were submitted to the laboratory of Dr. Rastas for a routine diagnostic examination because of heavy mortality in the flock from which the chicks came. Necropsy revealed extensive septicemic lesions in all birds. On bacteriological examination, Salmonella enteritidis was identified.

Two days following the necropsy, Dr. Rastas himself became ill with symptoms of severe diarrhea, mild abdominal pain, and temperatures ranging between 101 and 102 degrees F. Stool cultures were positive for S. enteritidis. The reporter concluded that his case of salmonellosis resulted from performing the necropsy on the chicks with extensive septicemia due to S. enteritidis.

Editor's Comment: Accolade and sympathy to Dr. Rastas!

SPECIAL REPORTS

A. Economic Losses Following A Large Food Borne Outbreak of Salmonella typhi-murium Gastroenteritis. Reported by Dr. Eugene Sanders and Dr. Don D'Alessio, former EIS Officers.

The authors submitted the following information which was derived from the study of an outbreak of Salmonella typhi-murium gastroenteritis which occurred in Wichita, Kansas in September, 1962 (SSR No. 6) (1). A total of 221 persons, both symptomatic and asymptomatic, supplied information as to days lost from work and medical expenses resulting from the outbreak mentioned above. All but 62 individuals incurred some medical expense, and the amounts range from $5 to $500 with seven people reporting expenses of greater than $150. The average medical bill for the entire group was $32 which increased to $45 if those just seeking medical attention were considered.

One hundred and four of the 221 individuals lost some time from their jobs because of the epidemic. The average loss for all 221 individuals was 2.9 days, and if only the 104 individuals were considered, an average of 5.4 days was lost.

(1) Sanders, E., D'Alessio, D., Bauman, M.L., Harvey, R.B., Aiken, J.S., Cross, W.D., Cook, L., and Lloyd, B.H. Food Poisoning. J. Kansas Med. Soc. 54:293-298, 1963.

Editor's Comment: Little attention has been given to economic losses incurred during an outbreak of salmonellosis. The above information is most informative. One can speculate that the losses incurred by a hospital during an outbreak of hospital-associated salmonellosis must be highly significant. More such information is needed to impress the importance of the control of salmonellosis in this country.

B. Process Developed for Effectively Pasteurizing Liquid Egg White. Presented at the 24th Annual Meeting of the Institute of Food Technologists in Washington, D.C., by Dr. Hans Lineweaver and F. E. Cunningham of USDA's Western Regional Research Laboratory, Albany, California.

Research in the U. S. Department of Agriculture has developed a process for stabilizing liquid egg white so that it can withstand pasteurization. Previously, adequate pasteurization was not possible because the necessary high temperatures caused serious damage to the egg white proteins.

Basically, the stabilization is achieved by adding to the egg white an edible acid, such as lactic acid normally present in various food products, and a harmless salt, both in minute quantities. The egg white is then exposed to heat (pasteurized) to destroy any harmful bacteria that may be present in it.

Because of the addition of the stabilizing agents, the bacterial destruction is achieved without damage to the egg proteins. The product can be used in all usual applications of egg white, such as meringues, cakes, etc.

The researchers reported that the acid is used to adjust the pH to 7, where all egg white proteins except conalbumin are stable to temperatures of 140° to 145° F. for several minutes, and that the salt is used to convert conalbumin into a metal-conalbumin complex, which is adequately heat stable. Only certain salts are effective.

Egg white stabilized in this way can be pasteurized by the procedure now used in the United States to pasteurize whole eggs, namely, heating to 140° to 143° F. for 3-1/2 to 4 minutes. Laboratory studies in which excessive numbers of salmonella of ordinary heat resistance were intentionally introduced into egg white demonstrated that not one salmonella in a million will withstand this pasteurization treatment.

Many salts were tested for their stabilizing effect on conalbumin. Iron salts are known to increase the stability of conalbumin to heat and can be used in the process. The fact that they cause the white to become rose colored is not necessarily a deterrent, since the color disappears during cooking. Soluble aluminum salts, several of which are on the Food and Drug Administration list of safe food additives, were found to stabilize egg white without causing a color change and were studied extensively.

In most laboratory and plant-scale runs the researchers have used 2 to 3 lbs. of food-grade lactic acid per 1,000 lbs. of white to adjust the pH and have used sufficient aluminum salt to bring the aluminum concentration in egg white to 0.003 per cent. When aluminum sodium sulfate hydrate (sodium alum) is the source of the aluminum, 0.5 lb. of the salt is added per 1,000 of white. It is generally added as a 20 or 25 per cent solution. All additions are made slowly with stirring to avoid local high concentrations. By use of undiluted lactic acid and a strong solution of the salt, dilution of the egg white (which would reduce performance) is held to less than 1 per cent.

Essentially the same angel cake volumes are obtained with pasteurized and unpasteurized whites. However, the properties of pasteurized whites are not identical with those of untreated white. That is, the whipping time is somewhat longer but can be reduced with whipping aids; the amount of cream of tarter needed in cake formulas is decreased about 20 per cent since some acid is added to the white in the stabilization step; and the white has a slightly increased opalescence, which is due to the acidification step rather than to the heat treatment.

Sodium citrate, sometimes used as an additive in egg white, interfers with the metal stabilization of conalbumin. However, egg white containing sodium citrate or similar substances can generally be stabilized by increasing the amount of stabilizer salt used.

C. A Survey of Salmonella in Dogs in Central Alaska. Reported by Capt. C.E. Butler, USAF, MSC, Arctic Aeromedical Laboratory, Arctic Medicine Branch, Ft. Wainwright, Alaska.

The transmission of enteric disease organisms is a continuous and perplexing problem to military and public health personnel in Alaska. The fact that an increased incidence occurs annually during and following the spring thaw, leaves some doubt that dissemination is principally by direct person to person contact. At present, an investigation of some of the organisms capable of causing enteric diseases is being undertaken by the USAF Arctic Aeromedical Laboratory, Ft. Wainwright, Alaska. This investigation has included a year's survey of these organisms in dogs, fresh water fish, water and other potential reservoirs or vectors.

Preliminary results of the study show that 17 per cent of the family pet dogs harbored salmonella and an additional 10 per cent harbored shigella and related enteric organisms (Alkalescens Dispar, Arizona, Bethesda-Ballerup and Providence Groups). These included 16 salmonella serotypes, one shigella serotype, and at least one type of each of the other groups of enteric organisms.

One of the most noticeable results was the absence of Salmonella typhi-murium. Other interesting results of this phase of the study included (1) the recovery of two or three serotypes of salmonella from one rectal swab on four different occasions, and (2) the transiency of the organisms in the animals. For example, on one animal a S. infantis was recovered on the first sampling, two weeks later from the second sample, a S. meleagridis, then five weeks later from the third sample, a Shigella flexneri. On another dog, the first sample yielded no pathogens while a second sample yielded S. alachua, and the third sample a S. cerro. The dogs harboring these organisms did not show signs of intestinal disturbance.

To date no human infections have been traced to the positive dogs but further investigation is needed before a conclusion can be made. The above results are preliminary since the study is only partially completed. The current and future phases of the investigation are planned to give more detail on the epidemiology of these organisms as pertains to the central Alaskan environment.

D. Summary of Salmonella Isolates Reported by the Antigen Committee of the Northeastern Conference on Avian Diseases, Raleigh, N.C., June 22, 1963. Provided by the Committee Chairman, Dr. Henry Van Roekel, Department of Veterinary Science, University of Massachusetts, Amherst.

The Antigen Committee requested each conference laboratory to submit the following information: 1) the behavior of the conference antigen strains; 2) the antigenic types of Salmonella pullorum isolates; 3) the number of S. gallinarum and other salmonella isolations from tested flocks; and 4) salmonella isolates from routine diagnostic avaian cases.

Sixteen northeastern states and Canadian provinces participate in this Conference and contribute data for the committee report.

A total of 97 salmonellae were isolated from flocks tested for pullorum diseases in 6 states and 2 provinces (table 1). S. typhi-murium was the most common type followed by S. pullorum, S. heidelberg, and S. gallinarum. More than 17.5 per cent of the isolates were from chickens.

Salmonellae isolations from routine diagnostic avian cases and egg products were reported from 13 states and 1 province (table 2). There were 40 cultures of S. pullorum and 48 strains of S. gallinarum from chickens, and 3 isolates of S. gallinarum from turkeys. In addition, there were 442 other salmonellae isolated of which 153 were from chickens, 101 from turkeys, 111 from ducks, and the remaining 77 from miscellaneous sources. Of the miscellaneous cultures, 37 were from egg products in Ontario. The 106 isolations of S. typhi-murium from ducks were reported by 1 laboratory in New York State.

Table 1

Summary of Salmonella Strains Isolated from Tested Flocks
1963

Serotype	Chickens	Turkeys	Pheasants	Total
S. berta		1		1
S. blockley	2			2
S. chester		1		1
S. enteritidis	2			2
S. gallinarum	9			9
S. give		1		1
S. heidelberg	16	1		17
S. indiana		1		1
S. infantis	2			2
S. meleagridis		1		1
S. montevideo	1			1
S. pullorum	21			21
S. saint-paul	2	2		4
S. typhi-murium	21	3	5	29
S. typhi-murium var. copenhagen	3			3
Not Typed	1	1		2
Total	80	12	5	97

Table 2

Salmonella Isolates from Diagnostic Avian Cases by Host

Salmonella	Chicken	Turkey	Duck	Pigeon	Goose	Pheasant	Quail	Misc.	Egg products	Total
S. anatum	6	16	2							24
S. berta		2								2
S. binza	1									1
S. blockley	8	5		1						14
S. bredeney	2									2
S. california		1								1
S. chester		3								3
S. cubana	1									1
S. derby		1	1							2
S. enteritidis	1									1
S. gallinarum	45	3								48
S. gege	1									1
S. give	1	1	1							3
S. heidelberg	9	8								17
S. infantis	12	5			1				6	24
S. livingston		1								1
S. london	2	1								3
S. manhattan		3								3
S. montevideo	15	3							11	29
S. muenchen	1									1
S. newington	2	6					1			9

Table 2 (cont'd)

Salmonella	Chicken	Turkey	Duck	Pigeon	Goose	Pheasant	Quail	Misc.	Egg products	Total
S. newport	1	3	1							5
S. oranienburg									2	2
S. oregon					1					1
S. pullorum	40									40
S. saint-paul	4	9								13
S. san-diego		3								3
S. schwarzengrund		1								1
S. tennessee	4	2						1	4	11
S. thompson	14	1							3	18
S. typhi-murium	45	20	106	6	2	2		4	9	194
S. typhi-murium var. copenhagen	20	2		21						43
S. worthington		2							2	4
S. Group B		1								1
S. arizona	2	1								3
Not typed	1									1
Totals	238	104	111	28	4	2	1	5	37	530

VI. INTERNATIONAL

A. Food Poisoning in England and Wales, 1962. Abstracted from the Monthly Bulletin of the Ministry of Health and the Public Health Laboratory Service, 22:200, 1963.

In 1962 the number of incidents, that is, general outbreaks, family outbreaks and sporadic cases recorded was 4,521. This was a continuation of the downward trend noted since 1959, but the decrease of 16 per cent compared with 1961 may have been in part due to changes in the method of recording incidents. A general outbreak or a family outbreak is recorded as one incident, without listing the total number of cases involved in the outbreak. Table I lists the causes of the general outbreaks, family outbreaks, and sporadic cases of all types of food poisoning in England and Wales during 1962.

TABLE I

Presumed causal agents	General outbreaks	Family outbreaks	Sporadic cases	All incidents	All cases*
Salmonellae	55	371	2421	2846	3282
Staphylococci	16	16	111	143	629
Cl. welchii	41	8	35	84	1819
Other organisms	--	1	--	1	2
Chemical	--	--	--	--	--
Not discovered	48	155	1244	1447	2964
All agents	159	551	3811	4521	9696

*Total includes 554 symptomless excreters of salmonella.

The seasonal variations in the occurrence of outbreaks are represented in Table II. Forty per cent of salmonella outbreaks and 41 per cent of outbreaks due to all causes occurred in the third quarter of the year.

TABLE II

Month	Salmonella	Staphylococci	Cl. welchii	Other organisms	Cause not discovered	All outbreaks
January	32	3	2	--	1	38
February	35	--	2	--	--	37
March	24	3	3	--	2	32
April	16	--	--	--	--	16
May	27	2	3	--	--	32
June	31	2	3	--	3	39
July	47	7	4	1	4	63
August	58	2	4	--	5	69
September	67	1	4	--	4	76
October	47	1	6	--	1	55
November	31	--	6	--	3	40
December	10	1	2	--	--	13
	425	22	39	1	23	510

B. Human and Nonhuman Salmonellosis in Germany, 1959. Abstracted from a report from Dr. Siegfried Hofmann, Dr. Rolf Rohde, and Prof. P.R. Seeliger, Federal Health Office, Berlin.

During 1959 a total of 6,990 human isolations of salmonellae were reported to the German Federal Health Office. Of the 97 serotypes isolated, 2 per cent represented 90 per cent of the total indicents. During a comparable period 5,280 salmonellae were isolated from animals and 518 from human and animal foods. The seven most commonly isolated serotypes from each of the three above categories are listed below. In addition, human isolations for 1959 are compared with 1956, 1957, and 1958.

Table 1
Human Isolations

Serotype	1956		1957		1958		1959	
	#	%	#	%	#	%	#	%
S. typhi-murium	2,603	26.2	1,919	23.5	1,988	29.4	1,941	27.8
S. paratyphi - B	3,099	31.2	2,649	32.4	1,904	28.2	1,349	19.3
S. manchester	--	0.0	24	0.3	137	2.0	920	13.2
S. infantis	381	3.8	597	7.3	294	4.4	334	4.8
S. blockley	14	0.1	83	1.0	305	4.5	306	4.4
S. bareilly	187	1.9	277	3.4	150	2.2	305	4.4
S. anatum	269	2.7	124	1.5	89	1.3	252	3.6

Table 2

Animal Isolations

Serotype	1959 #	1959 %
S. dublin	2,658	50.3
S. typhi-murium	1,249	23.7
S. gallinarum-pullorum	756	14.3
S. blockley	134	2.5
S. enteritidis	113	2.1
S. montevideo	53	1.0
S. infantis	46	0.9

Table 3

Isolations from Animal & Human Food

Serotype	1959 #	1959 %
S. typhi-murium	52	10.0
S. senftenberg	51	9.8
S. bareilly	50	9.7
S. newington	38	7.3
S. bredeney	27	5.2
S. anatum	21	4.1
S. san-diego	13	2.5

VII. SURVEILLANCE OF SALMONELLA IN FOODS AND FEEDS

The extent of the problem of salmonellae in foods and in animal feeds was discussed at the National Conference on Salmonellosis held at the Communicable Disease Center, March 11 to 13, 1964, with the conclusion that more definitive information is needed. Recognizing that salmonellosis is a continuing and expanding problem, the Joint Liaison Committee of State and Territorial Epidemiologists and Laboratory Directors have recently recommended the continuation of the salmonella surveillance program with emphasis on the contamination of foods and feeds. Systematic sampling of selected food items was strongly urged.

Beginning with this issue of the Salmonella Surveillance Report, a new section each month will be devoted to surveillance of salmonellae in foods and animal feeds. The purpose of this section will be to disseminate information contained in published reports, to distribute consolidated reports of findings from surveillance programs of state and local health departments pertaining to the contamination of foods and feeds with salmonella, and to review any new developments in laboratory methods for isolation of salmonellae from food products.

Systematic testing of commercial foods and feeds selected on the basis of epidemiological implication as a source of human salmonellosis is encouraged. Contributions to the Food and Feed Salmonella Surveillance Section from all laboratories involved in such work will be welcomed. Both negative and positive findings may be submitted for inclusion in the SSR.

During the past 2 years, we have in connection with investigations of various epidemics examined numerous foods, such as shell eggs, processed turkey meat, meat scraps, meat meal and fish meal (S. derby outbreak in northeastern states, SSR 13, 14 and 15); cake mixes, poultry feed and fish meal (S. thompson outbreak in Michigan, SSR 1); and frozen whole egg albumin (S. heidelberg outbreak, Washington, SSR 17, 18 and 20).

Because of the recent outbreak of typhoid fever in Aberdeen, Scotland, we are embarking on a limited sampling of canned corned beef imported from South America. Findings will be summarized next month.

Announcement of Course on Methods for the Isolation of Salmonellae from Food Products and Animal Feeds.

The Veterinary Public Health Laboratory, Epidemiology Branch, and the Bacteriology Section, Laboratory Branch, at the Communicable Disease Center will conduct a course on methods for isolating salmonellae from food products and animal feeds. The course will be conducted January 11 - 22, 1965* and May 3 - 14, 1965**. Prerequisite is either six months experience in bacteriology or in quality control laboratory. State, federal, and industry personnel may apply. Application forms can be obtained through:

Training Office
Laboratory Consultation and Development Section
Laboratory Branch
The Communicable Disease Center
Atlanta, Georgia 30333

* Registration ends December 1, 1964
** Registration ends March 22, 1965

Figure 1.

REPORTED HUMAN ISOLATIONS OF SALMONELLAE
In The United States
1963 - 1964

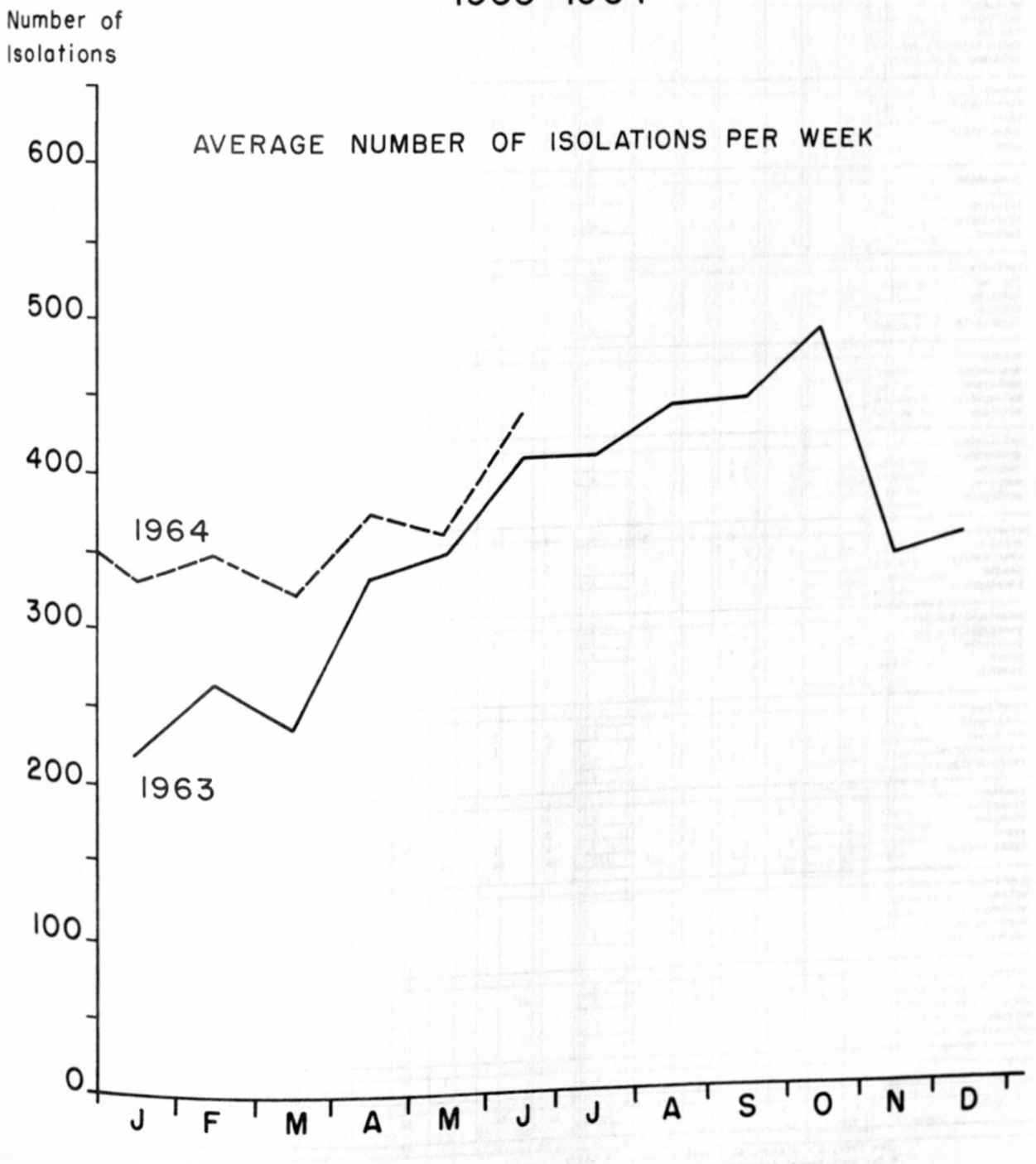

TABLE I

SALMONELLA SEROTYPES ISOLATED FROM HUMANS DURING JUNE, 1964

SEROTYPE	REGION AND REPORTING CENTER																	
	NEW ENGLAND							MIDDLE ATLANTIC						EAST NORTH CENTRAL					
	MAINE	NH	VT	MASS	RI	CONN	TOTAL	NY-A	NY-BI*	NY-C	NJ	PA	TOTAL	OHIO	IND	ILL	MICH	WIS	TOTAL
albany																			
anatum										1		1	2		1		4		5
arechavaleta																			
atlanta																			
bareilly																			
berta				1			1												
binza																	1		1
blockley				3			3	2	2		1	1	6		3	4			7
branderup				1			1		1				1		1	3			4
brandenburg																			
bredeney										1	1		2						
california								1					1						
chester												1	1			1			1
cholerae-suis v kun																			
colorado																			
cubana										1			1				4	1	5
duesseldorf												1	1						
derby	2			34		16	52	15	23	6	6	31	81	16		16	6	4	42
enteritidis			1	6		1	8	1	5	4	2	7	19	3	3	1	1	1	9
give											1		1						
grumpensis																			
halle				1			1												
hartford																1			1
heidelberg				5	1		6	2	3	2	3	6	16	7	1	6	7	7	28
indiana												2	2						
infantis				4		2	6		2			6	8	9		5	1	2	17
javiana				4			4							1		1			2
kentucky																		1	1
kottbus								1					1						
litchfield			1				1		1				1						
london																			
manchester																			
manhattan																1			1
meleagridis																			
michigan																			
mississippi																	5	1	7
montevideo				1			1		1		1	1	3	1			2		6
muenchen				4			4			1			1	3		1	1		1
muenster																			
newington																			
newport				4	1	3	8	2	6	1	2	4	15	5		3		1	9
norwich																	3		8
oranienburg				2			2	3					3	3		2			
panama						1	1			1	1		2						
paratyphi A									1				1						
paratyphi B v java						3	3											1	2
paratyphi B				2			2		1			2	3	4		1	1		5
pensacola				2			2									1		1	2
poona								1					1						
reading																			
rubislaw						1	1										2		3
saint-paul				2			2	3	2	1	4	3	13	1				1	1
san-diego								1	1				2				1		1
schwarzengrund				1			1									9			9
senftenberg			1				1												
stanley								1					1	2		1	6		9
tennessee			1	1	1		3	3			4		7	1		2	1		4
thompson					1		1	3				1	4	3	1		2		6
typhi					3		3	4	1		1		6	3	1	2	2	14	100
typhi-murium	1		1	163		7	172	24	14	22	9	30	99	26	10	27	23		
typhi-murium v cop																			
urbana				6			6				2	2	4			1	4		4
weltevreden																			1
worthington				1			1										2		2
untypable group A																			
untypable group B		2			1		3							1		1		4	5
untypable group C-1		1			2		3												1
untypable group C-2																			
untypable group D		1					1												
untypable group E																			
unknown					1		1			1			1						
TOTAL	3	4	5	248	11	34	305	67	64	42	38	99	310	86	20	88	77	39	310

(New York, A - Albany, BI - Beth Israel, 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
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	albany
				1			1	2	1						1	3	7	anatum
																		arechavaleta
															1		1	atlanta
											1						1	bareilly
																		berta
																		binza
											1				1		2	blockley
1		1					2											braenderup
																		brandenburg
1							1											bredeney
		1					1									1	1	california
									3								3	chester
											1						1	cholerae-suis v kun
																		colorado
																		cubana
																		duesseldorf
		1					1	4					2				6	derby
								2	1	1	1				3		8	enteritidis
		1					1				2						2	give
																		grumpensis
																		halle
																		hartford
1	1	1	1				4	1	2				2		5	3	13	heidelberg
													1				1	indiana
3	1	10					14		1						4	1	6	infantis
																11	11	javiana
																		kentucky
																		kottbus
1							1									2	2	litchfield
											1						1	london
																		manchester
									1								1	manhattan
																		meleagridis
																		michigan
															1		1	mississippi
		2					2		1		2				2	3	8	montevideo
				1			1				1					2	3	muenchen
																		muenster
																		newington
1	1						2		2				4		3	5	14	newport
											1						1	norwich
2											1				1	4	6	oranienburg
2						1	3				1						1	panama
							2	1										paratyphi A
1							1								3	1	4	paratyphi B v. java
																		paratyphi B
																		pensacola
																1	1	poona
																		reading
1							1	1					1			5	7	rubislaw
								2									2	saint-paul
																		san-diego
																		schwarzengrund
																4	4	seftenberg
1																		stanley
	2	1	2	1			1						1		1	2	1	tennessee
		2					6					1					4	thompson
8	2	10	2			7	2				3		10		1	4	17	typhi
							29		10		5		6		10	12	43	typhi-murium
																		typhi-murium v cop
																		urbana
																		weltevreden
																		worthington
																		untypable group A
	1						1			14				2		1	17	untypable group B
																		untypable group C-1
																		untypable group C-2
										2							2	untypable group D
																		untypable group E
										1				1		1	3	unknown
23	8	30	5	3	-0-	8	77	13	22	18	20	1	27	3	36	67	207	TOTAL

TABLE I

SEROTYPE	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
albany																			
anatum			1		1		3			3									
arechavaleta								1		1									
atlanta																			
bareilly							1			1									
berta		1			1														
binza																			
blockley									2	2									
braenderup																			
brandenburg														1					1
bredeney							1			1									
california																			
chester																			
cholerae suis v kun									1	1									
colorado																			
cubana																			
duesseldorf																			
derby							1			1									
enteritidis	2				2														
give							1		1	2									
grumpensis																			
halle																			
hartford																			
heidelberg		1	1		2		1		2	3		1		5		1	36		43
indiana																			
infantis							3	1	2	6						2	1		3
javiana			2		2		1		1	2									
kentucky																			
kottbus																			
litchfield																			
london																			
manchester									1	1									
manhattan																			
meleagridis																			
michigan																			
mississippi							2		1	3									
montevideo							1		7	8		1		1					2
muenchen		1			1														
muenster																			
newington																			
newport		2		2	4	5	2	1	16	24									
norwich																			1
oranienburg						1			2	3				1					
panama																			
paratyphi A																			
paratyphi B v Java		1			1		2			2	2			1			1		3
paratyphi B																			1
pensacola																			
poona																			
reading																			
rubislaw																			
saint-paul	2	2	1		5		1			1									
san-diego																			
schwarzengrund																			
senftenberg																			
stanley		1			1		2			2									3
tennessee						1			1	2					2	1			20
thompson			1		1	4		1	3	8						2			
typhi	2	6	2	1	11	1	11	3	26	41	2	4		9			2	1	
typhi-murium																			
typhi-murium v cop							2			2									
urbana																			
weltevreden																			
worthington																			
untypable Group A				1	1														11
untypable group B															11				3
untypable group C-1						1				1					3				2
untypable group C-2						2				2		1			1				
untypable group D																			1
untypable group E															1				
unknown																			
TOTAL	6	15	8	4	33	15	35	7	66	123	4	7	-0-	18	18	6	40	1	94

TABLE I

REGION AND REPORTING CENTER						OTHER VI	TOTAL	PERCENT OF TOTAL	SIX MONTH TOTAL	% OF SIX MONTH TOTAL	1963 6 MOS. TOTAL	% OF 1963 SIX MONTHS TOTAL	SEROTYPE
PACIFIC													
WASH	ORE	CAL	ALASKA	HAWAII	TOTAL								
							1		4				albany
2		3			5		24	1.4	102	1.1	98	1.2	anatum
							1		1				arechavaleta
							1		4				atlanta
							2		46		27		bareilly
							2		25		23		berta
							1		7				binza
1		4			5		25	1.4	204	2.2	175	2.2	blockley
							8		40		18		braenderup
							1		1		3		brandenburg
2		1			3		7		112		48		bredeney
							3		16		3		california
	3				3		8	0.5	34	0.4	113	1.4	chester
							2		16		39		cholerae-suis v kun
				1	1		1		2				colorado
							6		30		14		cubana
							1		1				duesseldorf
2		8		2	12		195	11.1	1,661	17.5	483	6.2	derby
1					1		47	2.7	292	3.1	213	2.7	enteritidis
		1		2	3		9		33		27		give
				2	2		2		4				grumpensis
							1		1				halle
							1		8		10		hartford
1	5	43		3	52		167	9.5	752	8.0	732	9.4	heidelberg
							3		16		7		indiana
		8		5	13		73	4.2	417	4.4	422	5.4	infantis
		1			1		22	1.3	73	0.8	53	0.7	javiana
		1			1		2		11		16		kentucky
							1		1		4		kottbus
							5		25		28		litchfield
							1		3				london
							1		2				manchester
		6		9	15		16	0.9	87	0.9	99	1.2	manhattan
				24	24		25		36		40		meleagridis
		1			1		1		2				michigan
							1		9		8		mississippi
1		3		4	8		32	1.8	200	2.1	187	2.4	montevideo
		5			5		31	1.8	120	1.2	154	2.0	muenchen
							1		1				muenster
		2			2		2		16		20		newington
		3			3		79	4.5	366	3.9	505	6.5	newport
							1		3		4		norwich
	1	5			6		32	1.8	252	2.7	170	2.2	oranienburg
							6	0.3	82	0.9	42	0.5	panama
							1		4		6		paratyphi A
		4			4		20	1.1	114	1.2	47	0.6	paratyphi B v. java
1	1						13	0.7	86	0.9	53	0.7	paratyphi B
		2			2		2		2		2		pensacola
							4		17		13		poona
1		1			1		2		17		15		reading
					1								
							1		2		5		rubislaw
2	4	5			11		42	2.4	191	2.0	212	2.7	saint-paul
1		8			9		15	0.9	83	0.9	71	0.9	san-diego
		1			1		3	0.2	33	0.4	82	1.1	schwarzengrund
							14		58		14		seftenberg
							1		2		7		stanley
1	1	1			3		27		216		54		tennessee
		1			1		22	1.3	146	1.6	110	1.4	thompson
	1	6			7		53	3.0	299	3.2	347	4.4	typhi
25	10	49		2	86		601	34.2	2,559	27.2	2,471	31.6	typhi-murium
							16	0.9	85	0.9	67	0.9	typhi-murium v cop
							1		9		20		urbana
							1		10		14		weltevreden
				1	1		3		30				worthington
							1		4				untypable group A
	2						40		141		135		untypable group B
	1		1		3		9		34		26		untypable group C-1
					1		4		15		14		untypable group C-2
							3		11		28		untypable group D
							1		3		5		untypable group E
1	1				2		7		38		29		unknown
42	30	171	1	55	300	-0-	1,758		9,410		7,809		TOTAL

VI - (Virgin Islands)

TABLE II

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

Reporting Center	Total Number of Isolates Reported	Number of Isolates From Family Outbreaks
Alabama	8	2
Alaska	1	0
Arizona	6	0
Arkansas	15	2
California	171	52
Colorado	18	3
Connecticut	34	6
Delaware	13	4
District of Columbia	18	10
Florida	67	23
Georgia	36	9
Hawaii	55	0
Idaho	7	2
Illinois	88	14
Indiana	20	5
Iowa	8	2
Kansas	8	4
Kentucky	6	0
Louisiana	35	0
Maine	3	0
Maryland	22	0
Massachusetts	248	44
Michigan	77	16
Minnesota	23	4
Mississippi	4	0
Missouri	30	14
Montana	4	0
Nevada	1	0
New Hampshire	4	1
New Jersey	38	10
New Mexico	18	4
New York 1-A	67	6
New York 2-BI	64	6
New York 3-C	42	13
North Carolina	27	1
North Dakota	5	0
Ohio	86	22
Oklahoma	7	0
Oregon	30	7
Pennsylvania	99	22
Rhode Island	11	4
South Carolina	3	0
South Dakota	3	0
Tennessee	15	0
Texas	66	6
Utah	40	9
Vermont	5	0
Virginia	20	4
Washington	42	9
West Virginia	1	0
Wisconsin	39	13
Totals	1,758	353

TABLE III

Infrequent Serotypes

Serotype	Center	June	6 Month Total*	1963 Total**	Comment
S. albany	FLA	1	2	3	Reported from a 73-year-old female from Fla. during Aug. 1963. Other two 1963 isolations reported from La. & Va.
S. arechavaleta	OKLA	1	1	0	First human isolation of this serotype reported to this unit. Three isolations from swine in La. in Jan. 1963.
S. atlanta	GA	1	3	11	All 11, 1963 isolations reported from Ga.
S. binza	MICH	1	4	6	Twenty-two of 27 nonhuman isolations from poultry during 1963.
S. brandenburg	COLO	1	1	4	Of 4, 1963 recoveries, 2 from La. 1 Ind. and 1 Ohio.
S. colorado	HAI	1	2	3	Third isolation since March 1963 from Hai. Only 2 other recoveries of this type in U.S. since 1962.
S. duesseldorf	PA	1	1	3	Only ten recoveries made in CDC laboratory 1947-1958. All poultry or poultry products in Va.
S. grumpensis	HAI	1	2	3	Second isolation in as many months reported from Hai. All 3, 1963 recoveries made in Hai.
S. halle	MASS	1	1	0	Recovered from an infant in a hospital this month. First report to this unit.
S. kottbus	NY-A	1	1	4	All four 1963 isolates reported from Mass. in June.
S. london	VA	1	3	1	Previous recoveries this year from same county in Va. as this month's. Last year's isolation from NY-A.
S. manchester	TEX	1	1	2	Recovered from a child with severe gastroenteritis and an asymptomatic sibling during 1963.
S. michigan	CALIF	1	2	0	Previously isolated from same patient during April this year.

III (cont'd)

Serotype	Center	June	6 Month Total*	1963 Total**	Comment
muenster	MICH	1	1	5	Of 5, 1963 recoveries, 1 from Fla, 3 from La. & 1 from Tex.
norwich	VA	1	2	13	Thirteen isolates reported from various parts of the country during 1963.
paratyphi A	NY-BI	1	3	8	Common in Europe and the Far East.
pensacola	MASS	2	2	6	First recoveries this year. Reported during 1963 from Fla., Ga., La. & Va. (3).
stanley	NY-A	1	2	13	Frequently isolated from monkeys.

*Represents 9,410 human isolations of salmonellae during the first six months of 1964.

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

TABLE IV

Age and Sex Distribution of 1,694 Isolations of Reported for June, 1964

Age	Male	Female	Total
Under 1	72	67	139
1-4 yrs.	148	97	245
5-9 yrs.	77	51	128
10-19 yrs.	104	75	179
20-29 yrs.	32	65	97
30-39 yrs.	35	45	80
40-49 yrs.	25	41	66
50-59 yrs.	23	34	57
60-69 yrs.	27	29	56
70-79 yrs.	19	22	41
80+	5	10	15
Unknown	298	293	591
Total	865	829	1,694
% of Total	51.1	48.9	

SEROTYPE																																						Total	Total	SEROTYPE
alachua																																						1	2	alachua
anatum														1							1				1						1								23	154	anatum
binza																		3																					7	16	binza
blockley																																	2						5	37	blockley
bredeney																																	1					1	4	26	bredeney
california																																						1	14	california
cerro		1																																				1	21	cerro
chester			17																1																			18	65	chester
cholerae-suis															10																							10	29	cholerae-suis
cholerae-suis v kun		1													6																							7	53	cholerae-suis v kun
cubana			1																													2							3	14	cubana
derby		2	3												1																	4							10	136	derby
dublin														6																									6	13	dublin
enteritidis		4																																				4	51	enteritidis
gallinarum	1	4	1																																			6	29	gallinarum
gaminara																	1																					1	1	gaminara
give			4														1																					5	25	give
heidelberg		17	20										1															1							1				40	218	heidelberg
indiana		1	1																																			2	9	indiana
infantis		9	3				1								1											4			3									10	31	157	infantis
kentucky			2																																			2	16	kentucky
litchfield		1													1																							2	4	litchfield
livingstone	1																																					1	14	livingstone
manhattan		1	12																								1											14	32	manhattan
meleagridis			1																											1								2	24	meleagridis
miami																					1																	1	1	miami
montevedio		7																								5						4							16	97	montevedio
muenchen		1																											32										33	53	muenchen
muenster			1																																			1	1	muenster
newington															1																1	3							5	17	newington
newport			6											3								1																	10	50	newport
oranienburg			1											1	1														1		1								5	46	oranienburg
orion			2																																			2	6	orion
panama			5																																			5	8	panama
pullorum		19																																				19	139	pullorum
reading			2																																			2	6	reading
saint-paul			14											2	1																							17	88	saint-paul
san-diego			1																																			1	53	san-diego
schwarzengrund		2	6														1																				2	11	52	schwarzengrund
senftenberg			2																												1		1			1			5	33	senftenberg
simsbury		1						1																														2	6	simsbury
stanley																				1																		1	4	stanley
taksony			1																																			1	1	taksony
tennessee		5	1									1														4												1	12	52	tennessee
thomasville		2																																				2	2	thomasville
thompson	2	6																								3													11	44	thompson
typhimurium	2	7	14		1	3	1		2		2		4	15	1	1				1			2	2															58	463	typhimurium
typhimurium v cop	1	5	5																																			11	22	typhimurium v cop
typhi-suis															1																							1	3	typhi-suis
worthington		1																													1								2	29	worthington
untypable group I																																		1					1	1	untypable group I
TOTAL	8	104	144	1	1	3	2	1	2	1	2	1	7	28	24	1	3	3	1	2	2	1	2	2	1	16	1	1	36	1	5	13	4	1	1	1		14	441	2498	TOTAL

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

TABLE VI

NON-HUMAN ISOLATES REPORTED BY THE NATIONAL ANIMAL DISEASE LABORATORY AND STATE REPORTING CENTER BY SEROTYPE AND STATE JUNE 1964

SEROTYPE	STATE																																6 Mos	SEROTYPE
	Ala	Alaska	Ark	Calif	Conn	Dela	Fla	Ga	Ill	Ind	Iowa	Kan	La	Me	Mass	Mich	Minn	Miss	Mo	Mont	NJ	NC	Ohio	Okla	Ore	Pa	SC	Tex	Utah	Vt	Va	Wash	Wisc	Wyo	Total	Total	
alachua																	1																		1	2	alachua
anatum				6						4						3	2		2						1	1	1				3			23	154	anatum
binza				2					3	2																								7	16	binza
blockley			2	1																				1									1	5	37	blockley
bredeney				2													1														1			4	26	bredeney
california										1																								1	14	california
cerro	1																																	1	21	cerro
chester									1	2							5		2										2				6	18	65	chester
cholerae-suis							5			2												1	2											10	29	cholerae-suis
cholerae-suis v kun							1	1														1					3				1			7	53	cholerae-suis v kun
cubana				1											2																			3	14	cubana
derby	1			3											4		1											1						10	136	derby
dublin				1																									5					6	13	dublin
enteritidis															1																	1	2	4	51	enteritidis
gallinarum	1					1					1		1									1					1							6	29	gallinarum
gaminara										1																								1	1	gaminara
give		1															1					1					1	1						5	25	give
heidelberg	1			8			3	9		1							6											4	1		4	1	2	40	218	heidelberg
indiana										1									1															2	9	indiana
infantis				14						6		3			1				1				5				1							31	157	infantis
kentucky																	1					1												2	16	kentucky
litchfield														1													1							2	4	litchfield
livingstone			1																															1	14	livingstone
manhattan				14																														14	32	manhattan
meleagridis																1												1						2	24	meleagridis
miami																1																		1	1	miami
montevedio	1						1	3							4			1				1	5											16	97	montevedio
muenchen												32							1															33	53	muenchen
muenster																	1																	1	1	muenster
newington							1								3		1																	5	17	newington
newport				2						1						1	1		1									3					1	10	50	newport
oranienburg												1				1	1														1		1	5	46	oranienburg
orion				1													1																	2	6	orion
panama																												5						5	8	panama
pullorum										1			1			1	1	5				2	2			1	2			1	1		1	15	139	pullorum
reading											1																				1			2	6	reading
saint-paul				2				1									1										1		3			9		17	88	saint-paul
san-diego																												1						1	53	san-diego
schwarzengrund	1			3						3						1	1		2															11	52	schwarzengrund
senftenberg				1					1	1							1																1	5	33	senftenberg
simsbury				1				1																										2	6	simsbury
stanley																										1								1	4	stanley
taksony				1																														1	1	taksony
tennessee								5	1														5									1		12	52	tennessee
thomasville								2																										2	2	thomasville
thompson			2															1	2				3			2		1						11	44	thompson
typhimurium	3		4	3	1		1	1		4			1		1	7	7		2	1	2		2			1	1	1	8		1	3	2	1	58	463	typhimurium
typhimurium v cop			1					2		5							1	1													1			11	22	typhimurium v cop
typhi-suis															1																			1	3	typhi-suis
worthington										1							1																	2	29	worthington
untypable group I																1																		1	1	untypable group I
TOTAL	9	1	10	66	1	1	13	24	6	36	2	36	3	1	17	17	36	8	14	1	2	8	24	1	1	6	12	18	19	1	11	8	26	2	441	2,498	TOTAL

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

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

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

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*Please report any change to the Salmonella Surveillance Unit.

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*Please report any change to the Salmonella Surveillance Unit.

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WIS Wisconsin State Board of Health, Madison 2, Wisconsin.	Dr. Josef Preizler,* State Epidemiologist, State Board of Health, 1 W. Wilson Street, Madison 2, Wisconsin.	Dr. Alfred S. Evans, Dir., Laboratories, 427 Henry Hall, University of Wisconsin, Madison 6, Wisconsin.

*Please report any change to the Salmonella Surveillance Unit.

REPORTING CENTER & CODE	EPIDEMIOLOGIST	LABORATORY
WYO Wyoming Dept. of Health, Cheyenne, Wyoming.	Dr. Helen A. Moore,* Dir., Div. of Prev. Med., Wyoming Dept. of Health, State Office Building, Cheyenne, Wyoming.	Mr. James T. Ritter, Dir., Div. of Pub. Hlth. Lab., State Dept. of Health, State Office Bldg., Cheyenne, Wyoming.

* Reporting Official

Please report any change to the Salmonella Surveillance Unit.