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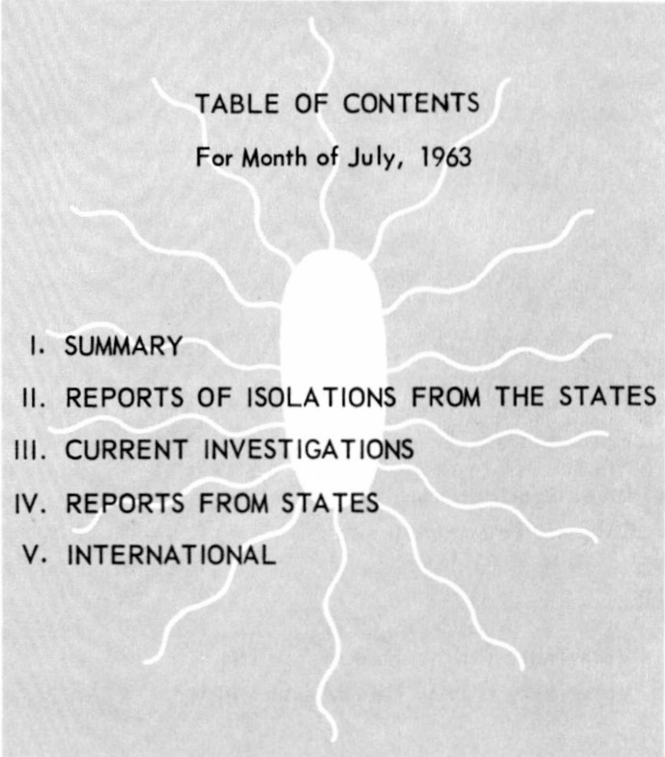
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# SALMONELLA

## SURVEILLANCE

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For Month of July, 1963

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# PREFACE

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

Contributions to the Surveillance Report are most welcome. Please address to: Chief, Salmonella Surveillance Unit, Communicable Disease Center, Atlanta, Georgia, 30333.

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## I. SUMMARY

During August, reports of 2,054 human salmonellae isolations, representing 65 serotypes, were submitted from fifty States and fifty-four reporting centers (Table I). A total of 477 salmonellae isolations of 49 different serotypes were recovered from nonhuman sources during the same period (Table II). The average weekly totals for humans for June and July are analogous.

Included in this month's report is a compendium of the Salmonella derby problem. Among others, the Reports from the States contain an intricate epidemiological investigation of Salmonella mikawasima in a Richard's vine snake, two reports of salmonellosis traced to house pets, a case of Salmonella new brunswick meningitis, and a large epidemic of Salmonella enteritidis gastroenteritis traced to a large metropolitan restaurant.

An epidemic of Salmonella heidelberg, traced to a cow, is reported. The finding of salmonella in the milk of a well cow represents one of the first known incidents of a carrier state in the milk of a cow not overtly ill.

Dr. Charles McCall joined the Salmonella Surveillance Section this month, and will assume duties with Dr. Eugene Sanders, Chief of the Unit.

## II. REPORTS OF ISOLATIONS FROM THE STATES

### A. Human

The 2054 salmonella isolations reported during July represent the largest total number for any month since the first Salmonella Surveillance Report in April, 1962. However, the average weekly total for July (411) is roughly the same as last month (410), which was the highest for 1963 prior to this report (See Figure 1).

The seven serotypes reported most frequently during July were:

| <u>No.</u> | <u>Serotype</u>       | <u>Number</u> | <u>Per Cent</u> | <u>Standing Last Month</u> |
|------------|-----------------------|---------------|-----------------|----------------------------|
| 1          | <u>S. typhimurium</u> | 543           | 26.4            | 1                          |
| 2          | <u>S. derby</u>       | 288           | 14.0            | 2                          |
| 3          | <u>S. enteritidis</u> | 170           | 8.3             | 8                          |
| 4          | <u>S. heidelberg</u>  | 152           | 7.4             | 3                          |
| 5          | <u>S. newport</u>     | 99            | 4.8             | 5                          |
| 6          | <u>S. infantis</u>    | 87            | 4.2             | 4                          |
| 7          | <u>S. typhi</u>       | 83            | 4.0             | 6                          |
|            |                       | 1,422         | 69.2            |                            |

Due to the outbreak in the Northeast, S. derby remained the second most frequently recovered serotype. The per cent S. derby isolations of total isolations increased from 12.4 during June to 14.0 during July. The appearance of S. enteritidis in third position on the above list may be attributed to an outbreak in

Massachusetts (See Reports from States - Massachusetts). With the noted exceptions, the serotypes in the above list appear in an order which is similar to such lists in previous reports.

This month, the seven most frequently recovered strains represent 69.2 per cent (1422 of 2054) of all isolations reported. These serotypes account for only 10.8 per cent of the 65 different types reported.

Of the 2054 individuals reported as harboring salmonellae, 219 (10.7 per cent) had one or more members of their immediate family simultaneously positive for the same serotype. The family attack rate this month is the lowest recorded since Salmonella surveillance began in April, 1962.

Once again, the data compiled for July indicated no sex predilection among individuals harboring Salmonellae. Of the 1963 persons for whom sex was indicated, 981 (50 per cent) were male and 982 (50 per cent) were female.

Another consistency demonstrated by the data compiled this month was the fact that 1-4 years was the modal age group for individuals reported as harboring salmonellae. Of the 1214 individuals for whom age was indicated, 269 (22.2 per cent) fell in the age group 1-4 years. The highest frequency age group since the first Salmonella Surveillance Report for which age was available (June, 1962) has been 1-4 years.

B. Nonhuman

During July, 477 salmonella isolations were reported from non-human sources, representing a substantial increase over the 275 cultures reported for June. A total of 49 serotypes were identified from 37 States. The 7 serotypes recovered most frequently during July were:

| <u>No.</u> | <u>Serotype</u>                                    | <u>No.</u> | <u>Per Cent</u> | <u>Standing Last Month</u> |
|------------|--|------------|-----------------|----------------------------|
| 1          | typhimurium, and<br>typhimurium var.<br>Copenhagen | 139        | 29.1            | 1                          |
| 2          | montevideo   | 27         | 5.6             | 5                          |
|            | anatum   | 27         | 5.6             | 4                          |
| 3          | infantis   | 23         | 4.8             | 3                          |
| 4          | heidelberg   | 21         | 4.4             | 2                          |
| 5          | cholerae suis                                      | 20         | 4.2             | 5                          |
| 6          | blockley   | 15         | 3.1             | 15                         |
|            | saint paul   | 15         | 3.1             | 6                          |



S. typhimurium and S. typhimurium var copenhagen, again represent the most frequent isolates, 139 (29 per cent). The next most prevalent types, in order of frequency, were S. montevideo and S. anatum, each with 27 (5.6 per cent); S. infantis, 23 (4.8 per cent); S. heidelberg, 21 (4.4 per cent); S. cholerae suis, 20 (4.2 per cent), and S. blockley and S. saint paul, each with 15 (3.1 per cent).

The nonhuman sources of salmonella isolations reported with the greatest frequency this month, were chickens, 155 (45.7 per cent); turkeys, 112 (28.1 per cent); cattle, 41 (10.3 per cent), and swine, 31 (7.8 per cent). These cultures represent 73 per cent of those isolated from all nonhuman sources. Fifty (10.2 per cent) of the isolations this month, were from human or animal foods.

### III. CURRENT INVESTIGATIONS

None

### IV. REPORTS FROM STATES

#### A. California

Outbreak of Salmonella schwarzengrund gastroenteritis traced to turkey. F. A. Listick, Assistant Supervising Sanitarian, Los Angeles City Health Department, and Dr. Philip K. Condit, Chief, Bureau of Communicable Diseases, California State Department of Health.

On April 19, 1963, a California County Health Department received a report that two teenagers, a 16-year-old boy and his girl friend, had become ill on April 15, one day after eating Easter Sunday dinner with another teenage couple at a local cafeteria. Three of the individuals, including the two with illness, had eaten turkey and dressing, while the other ate fish. The one person who ate turkey and dressing but did not become ill stated that the turkey and dressing served to her was from a new tray.

Investigations at the cafeteria disclosed that the management had received a report from another customer stating that three members of his party became ill on Monday after eating the turkey and dressing on Easter Sunday. No name or phone number had been obtained. Subsequently, three other individuals, in two separate groups, were reported as having developed illness on April 15, all with a history of having eaten the turkey and dressing at the cafeteria the day previously.

The five ill individuals who could be contacted had incubation periods ranging between 19 and 24 hours following consumption of the turkey and dressing dinner at the cafeteria on April 14, 1963. All patients were hospitalized and had stool cultures positive for Salmonella schwarzengrund. Clinical symptoms in these cases included nausea, vomiting, stomach cramps, diarrhea, chills and fever to 104°F.

Stool specimens were obtained from the 16 food handlers who had assisted in the preparation and serving of the turkey and dressing, and from the remaining 118 employees. Six of the 16 food handlers had stool cultures positive for Salmonella schwarzengrund. Among those positive was the head chef, who did most of the preparation and who stated that he had been ill with "intestinal flu" about the second week of March 1963. Positive cultures were also obtained from another cook who helped in preparing the turkey, and from two counter girls and two supply boys who assisted in serving. Ten additional positive cultures were obtained from the remaining 118 employees. Only one of the employees had complained of being ill, having had symptoms of stomach cramps, vomiting, and fever on Monday, April 15, after having eaten the turkey dinner on Easter Sunday. In addition to the 16 employees from whom Salmonella schwarzengrund was obtained, one employee was positive for Salmonella typhi.

Investigation of food handling facilities disclosed that the procedures used in preparing the dinners for Easter Sunday differed from the normal operating procedure in that preparation of the 20 frozen turkeys used for the meal had begun on April 10, four days before serving, in contrast to a 48-hour period ordinarily required. The turkeys had been cooked for adequate periods on April 11. Subsequent procedures including boning, preparation of dressing and slicing, at intervals over the subsequent 2½ days prior to serving, indicate the likelihood that contamination took place after cooking and that adequate incubation times were present for growth of the organism.

Following identification of positive carriers in the kitchen staff, all employees with positive stool specimens were removed from work until their infections had cleared.

#### B. Massachusetts

Preliminary Report of an Outbreak of Gastroenteritis Due to S. enteritidis traced to a large metropolitan restaurant. Dr. George E. Waterman, Assistant Director, Division of Communicable Disease, Massachusetts Department of Public Health.

Between June 24 and July 9, more than 100 persons in metropolitan Boston and environs developed severe gastroenteritis. The health department determined that most of those affected were either business or professional people. Symptoms reported by patients were nausea, vomiting, diarrhea, chills, fever, headache, dizziness and abdominal cramps. Many cases were severe and protracted, eventually requiring hospitalization. To date, S. enteritidis has been isolated from the stools of 52 of the patients involved in the outbreak. Inquiries made of approximately 100 patients between the onset of the outbreak and August 5 revealed that all had developed illness within 6 to 72 hours of ingestion of food prepared by a single restaurant. Analysis of food histories indicated that no single menu item stood out as a common source vehicle of infection.

Stool cultures were obtained from foodhandlers employed by the restaurant in question. Two of these have been positive for S. enteritidis, however, no information is available as to whether or not these employees had experienced illness prior to or during the outbreak. A third foodhandler reported experiencing febrile gastroenteritis a few weeks preceding the outbreak, however, his stools were shown to be free of salmonellae.

Editor's Comment:

The implication of a single restaurant as a focus of the outbreak with no single menu item suspect as a common source, suggests diffuse contamination of a variety of foods during the epidemic. Such diffuse contamination appears likely to have arisen from one or more infected foodhandlers.

C. Michigan

Review of Isolations of Salmonella mikawasima in Michigan. Dr. D. B. Coohon, Michigan Department of Health.

The recovery of Salmonella mikawasima from a Richard's Vine Snake which expired June 1963 at the Detroit Zoo, prompted a review of the Michigan Health Department laboratory records to determine previous experience with this organism in the State.

Salmonella mikawasima is an extremely rare isolate in the United States. It was recovered only twice in the United States from among 28,000 salmonella cultures typed at the Communicable Disease Center from 1947 - 1958. Both of these isolates were of human origin, one from New York State and one from Pennsylvania. S. mikawasima was first isolated in Japan by Hatta in 1938.

In Michigan, S. mikawasima has been isolated only from an experimental composting sewerage disposal plant located outside a small town (population approximately 2000). Twelve such isolations were made during March and April, 1959. It is interesting that a Japanese-American family moved to this small town just prior to the recoveries from the disposal plant (the health department, though interested, did not believe sufficient justification existed to warrant culture of the family).

During a 10-month period, which included the months of March and April 1959, no cases of salmonellosis were reported from the community served by the disposal plant. Interesting, during the same period, there were 131 recoveries of salmonellae from sewerage collected at this plant. The recoveries are itemized as follows:

| <u>Serotype</u>       | <u>Number of Isolates</u> |
|-----------------------|---------------------------|
| <u>S. typhimurium</u> | 38                        |
| <u>S. cubana</u>      | 22                        |
| <u>S. san diego</u>   | 18                        |
| <u>S. anatum</u>      | 17                        |
| <u>S. infantis</u>    | 13                        |
| <u>S. mikawasima</u>  | 12                        |
| <u>S. reading</u>     | 4                         |
| <u>S. montevideo</u>  | 4                         |
| <u>S. blockley</u>    | 3                         |
| Total                 | 131                       |

#### Editor's Comment

This report exemplifies the many fascinating ramifications of the epidemiology of salmonellosis that can be uncovered from inquiry concerning a rare organism isolated under unusual circumstances.

#### D. New Jersey

Salmonellosis in Siblings Possibly Acquired from Easter Chicks or Pet Mice. Dr. William J. Dougherty, Director, Division of Preventable Diseases, New Jersey Department of Public Health and an EIS Officer.

The source of diarrheal illness in two siblings, age three and eleven years, has been tentatively linked to one or more household pets.

The youngest sibling developed gastroenteritis May 10, 1963, Stool cultures taken May 22, June 7, and June 20, grew S. typhimurium. The older sibling was cultured June 7 as part of a routine epidemiological study of the family. His culture grew S. schwarzengrund. Five days following this culture, he developed mild diarrheal illness. Cultures of both parents have been negative for salmonellae.

It was learned that prior to onset of illness, both children had played in a small stream in Bucks County, Pennsylvania. Water specimens obtained from this stream by the Bucks County Health Department were free of salmonellae on culture. An alternate possible source of infection was uncovered when the family reported that they had obtained two baby chicks as family pets April 13. The children played frequently with these chicks. Both pets were anorexic, lost weight, and died two weeks following their purchase. In addition, the family had obtained pet mice, which were well and were kept until the time that the chicks died. None of the animals were cultured. However, the authors commented, "One may speculate that both children were infected through contact with the animals, which may have harbored several salmonella types. In the absence of these pets to culture, this all remains conjecture. It is

interesting, however, in light of other experiences we have recently had with salmonellosis occurring in families with pets."

Editor's Comment:

See Reports From States: New Jersey, Salmonella Surveillance Report Number 15, July 31, 1963.

Outbreak of Salmonella schwarzengrund gastroenteritis Traced to Turkey dressing. Dr. E. O. Gilbert and Dr. W. J. Dougherty, Division Preventable Diseases, New Jersey State Department of Health and an EIS Officer.

Fifteen of 24 members of a social club developed gastroenteritis and fever within 20 hours of a dinner meeting held May 14, 1963 in Northern New Jersey. Fecal samples from five of the patients have yielded S. schwarzengrund on culture. Several menu items were cultured. S. schwarzengrund was recovered only from turkey dressing served at the dinner.

Ingredients of the dressing were bread, butter, celery, onions, flour, canned apples, poultry seasoning (sliced almonds, salt, and pepper) and turkey gravy. All employees of the restaurant serving the meal were cultured. None were found to be harboring salmonellae.

The Health Department has concluded that the food poisoning outbreak was due to S. schwarzengrund introduced from the turkey to the dressing during its preparation. Certainly, on the basis of past experience, turkey has been more frequently implicated as a source of such outbreaks than any of the remaining ingredients of the dressing.

E. Ohio

Typhoid Fever Within a Family. Dr. T. A. Cochran, Assistant Commissioner of Health and Dr. H. Decker, Ohio Department of Health.

Salmonella typhi was isolated from the father of a girl with typhoid fever. He gave a history of typhoid fever many years before. The girl's brother also gave a history of the disease six years before, but cultures obtained from him were negative. The father is being treated as a carrier.

Editor's Comment

An interesting case of typhoid carrier exhibiting transmission to family members six years apart.



Salmonellosis Probably Acquired from Infected Parakeet.  
Dr. T. A. Cockran, Assistant Commissioner of Health  
and Dr. H. Decker, Ohio Department of Health.

Investigation of a child suffering from Salmonella typhimurium gastroenteritis revealed the probable source as an infected parakeet. The parakeet had died four days prior to the onset of symptoms. Stool cultures from two siblings were positive for Salmonella typhimurium. Although no material from the dead parakeet was available for culture, parakeet droppings taken from the store where the bird was purchased contained Salmonella typhimurium. To follow this up, the State Health Department of the original parakeet distributing corporation was contacted so that they might investigate the distributing center for salmonella infection among the birds. In addition, phage typing is being conducted at the Communicable Disease Center, Atlanta, Georgia, in an effort to produce more definitive epidemiological data incriminating the parakeet as the source of the infection.

#### F. Virginia

Salmonella new brunswick meningitis in an 8-week-old Infant. Dr. Martin B. Marx, D.V.M., Virginia State Department of Health, Richmond, Virginia.

An 8-week-old negro infant from Lynchburg, Virginia, was hospitalized in March, 1963 for pneumonitis and cough. During hospitalization a spinal fluid examination revealed a Proteus species. The child was treated with antibiotics for Proteus meningitis and was discharged 12 days later.

Two weeks after discharge, the child was again hospitalized and spinal fluid culture grew out Salmonella new brunswick. This prompted an epidemiological investigation which was conducted by Dr. Martin B. Marx, Virginia State Public Health Veterinarian; Mr. Gillian Cobbs, Sanitarian; Mrs. Eleanor Robinson, PHN; and Mrs. June Williams, PHN, City of Lynchburg Health Department. The laboratory work was conducted by Mrs. Linda Howell, Bacteriologist, Central Laboratory, State Department of Health.

Interviews conducted at the infant's home revealed that in the 8 weeks following the child's birth, there had been direct contact with 26 persons and several animal food products and indirect contact with several species of animals. The father of the child gave a history of unexplained diarrhea the week prior to the baby's first illness.

Stool samples were obtained from each of the 26 persons, from three dogs, seven chickens, two cows, two hogs, one parakeet and wild mice droppings. Samples of water in the baby's home and contact residencies, egg shells and raw eggs in the baby's home and contact residencies, raw milk, poultry and hog feed were cultured.

Salmonella new brunswick was isolated from the stools from the baby's mother, father, sister and step-sister. All other samples were negative. Investigations at the hospital revealed that no other Salmonella new brunswick organisms were isolated from January through March 1963.

The investigators concluded that the baby probably acquired the infection from a member of the immediate family.

## V. INTERNATIONAL REPORTS

Milk-borne Epidemic Due to Salmonella heidelberg.  
Abstracted from Know, W. A., et al. Journal of Hygiene, Cambridge 61: 175,1963.

In November, 1961, an explosive epidemic of gastroenteritis occurred in Cirencester, England, involving 56 households with a total of 77 cases and 46 symptomless excretors. The clinical syndrome was typical of salmonella enteric infection. There were no deaths. Stool cultures of the overt cases all revealed Salmonella heidelberg.

Epidemiological investigation revealed that 53 of the 56 families obtained their milk from the same dairy. The milk was unpasteurized, tuberculin tested, and cultures were positive for Salmonella heidelberg. Four different farms supplied the dairy and it was estimated that 600 families received milk from this source. Thus, about 10 per cent of the families at risk were affected.

Centering the investigation on these farms, the organism was traced in one farm to three specific sites: the family, one cow, and an English meat and bone meal used for cattle food, all of which were positive for S. heidelberg. Cultures of all other farm animals and foodstuffs were negative for Salmonella heidelberg; however, other types of salmonella were obtained from the animal feed. The family members gave no history of being ill prior to the epidemic and all were negative for Salmonella heidelberg three weeks after their original positive stool culture. It was reasonable to assume therefore, that they were not the source of contamination. The cow was autopsied and Salmonella heidelberg was isolated from the udder. Thus, the authors concluded that the epidemiological sequence was animal-to-feed-to-bovine-source to raw milk, which initiated the epidemic.

Milk-borne epidemics of salmonellosis are not common in England and the most common types when they occur are Salmonella dublin and Salmonella typhimurium. It is possible that the change in serotypes causing milk-borne epidemics may be related to the use of imported feeds in recent years.

### Editor's Comment

Little recognition has been given to bovine salmonellosis in this country. Galton, et al, stressed its importance when

12 per cent of 147 rectal swabs taken from cattle were positive for salmonella (1). Recent reports from Michigan (5), Florida (6) and Wisconsin (7), indicate that salmonellosis among dairy and beef cattle is becoming a major problem. In Great Britain, however, it has been well studied (2) (3). A variety of serotypes may be found in cattle, but Salmonella dublin and Salmonella typhimurium are by far the most common. The infections are usually septicemic and enteric with excretion of the organism in the feces and milk only during and shortly after the clinical illness. Calves are more often involved.

The above case is interesting because according to Davis and Byrne, this is the first case of excretion from the udder of a clinically normal animal (4). In their experience of 12,017 samples of milk from cases of mastitis, only once was salmonella isolated.

As a result of widespread pasteurization of milk in the United States, human epidemics from bovine sources are less likely; however, we should remain aware of this potential source of salmonellosis.

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- (3) Shield, H. I. A Survey of Bovine Salmonellosis in Mid and West Wales. *Veterinary Journal*, 104, 251, 1948.
- (4) Davies, E. T. and Venn, J. A. The Detection of a Bovine Carrier of Salmonella heidelberg. *Journal of Hygiene, Cambridge*, Vol. 60, 495, 1962.
- (5) Newell, K. W., McClarin, R., Murdock, C. R., MacDonald, W. N., and Hutchinson, H. L. Salmonellosis in Northern Ireland, with Special Reference to Pigs and Salmonella-Contaminated Pig Meal. *Vet. Bull.* 29: 417, 1959.
- (6) Ellis, E. M. Salmonellosis in Cattle, Horses and Feeds. Presented at the Midwest Interprofessional Seminar on Diseases Common to Man and Animals, Iowa State University, Ames, Iowa, September 17, 1962.
- (7) Wisconsin Department of Agriculture Newsletter, September, 1962.



VI. SPECIAL REPORTS

The Salmonella derby Problem

The interstate hospital-associated epidemic of Salmonella derby infections appears to be waning. Approximately ten new isolations are being reported to the Salmonella Surveillance Unit each week. Most of these represent cases resultant from secondary spread of infection in hospitals previously experiencing a problem with S. derby gastroenteritis, and a small number represent asymptomatic infections, uncovered as a result of intensive case surveillance.

From March 1 to August 12, 1963, 1150 isolations of S. derby were reported from 27 States and the District of Columbia (Table VII). Of total isolations, 822 represent infection acquired in 53 hospitals in 13 States. One hundred-twenty-one isolations are currently under investigation. Prompt reporting of new cases is encouraged.





TABLE I  
SALMONELLA SEROTYPES ISOLATED FROM HUMANS DURING JULY, 1963

| SEROTYPE                        | REGION AND REPORTING CENTER |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
|---------------------------------|-----------------------------|----|----|------|----|------|-----------------|------|-------|------|-----|-----|--------------------|------|-----|-----|------|-----|-------|
|                                 | NEW ENGLAND                 |    |    |      |    |      | MIDDLE ATLANTIC |      |       |      |     |     | EAST NORTH CENTRAL |      |     |     |      |     |       |
|                                 | ME                          | NH | VT | MASS | RI | CONN | TOTAL           | NY-A | NY-BI | NY-C | N J | PA  | TOTAL              | OHIO | IND | ILL | MICH | WIS | TOTAL |
| alachua                         |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     | 1   |      |     | 1     |
| albany                          |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| amager                          |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| anatum                          |                             |    |    |      |    |      |                 |      |       | 1    |     |     | 1                  |      |     | 1   | 1    |     | 2     |
| atlanta                         |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| bareilly                        |                             |    |    | 1    |    | 1    | 2               |      |       |      |     |     |                    |      |     |     | 1    |     | 1     |
| berta                           |                             |    |    |      |    |      |                 |      | 1     |      | 1   |     | 2                  |      | 1   |     | 1    |     | 2     |
| binza                           |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| blackley                        |                             |    |    |      |    | 4    | 4               | 2    | 1     |      |     | 2   | 5                  | 2    |     | 2   | 2    | 4   | 10    |
| braenderup                      |                             |    |    |      |    |      |                 |      |       |      |     | 2   | 2                  |      |     |     |      |     |       |
| bredeney                        |                             |    |    |      |    |      |                 |      |       |      |     |     |                    | 1    |     |     | 2    |     | 3     |
| california                      |                             |    |    |      |    |      |                 |      |       | 1    |     |     | 3                  |      |     | 7   |      |     | 7     |
| chester                         |                             |    |    |      |    |      |                 |      |       |      | 1   |     | 3                  |      |     |     |      |     |       |
| cholerae-suis                   |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| var. kuzendorf                  |                             |    |    |      |    | 1    | 1               |      |       |      |     | 1   | 1                  |      |     |     |      |     | 1     |
| cubana                          |                             |    |    | 1    |    |      | 1               | 1    |       |      |     | 2   | 3                  |      | 1   |     |      |     | 1     |
| decatur                         |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| derby                           |                             |    |    | 12   | 2  | 10   | 24              | 28   | 34    | 18   | 14  | 135 | 229                | 2    |     | 2   |      |     | 4     |
| elizabethville                  |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| enteritidis                     | 1                           |    |    | 102  | 1  | 15   | 119             | 7    | 4     | 1    | 1   | 9   | 22                 | 3    |     | 3   | 5    |     | 11    |
| glive                           |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     | 1   |      |     | 1     |
| haifa                           |                             |    |    |      |    |      |                 | 1    |       |      |     |     | 1                  |      |     |     |      | 1   | 1     |
| hartford                        |                             |    |    |      |    |      |                 | 4    | 8     | 6    | 5   | 3   | 26                 | 1    | 2   | 3   | 3    | 3   | 12    |
| heidelberg                      | 2                           |    |    | 16   |    | 6    | 24              |      |       |      |     |     |                    |      |     |     |      |     |       |
| hvitittingfoss                  |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| illinois                        |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| indiana                         |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| infantis                        | 1                           |    |    | 5    |    | 1    | 7               | 4    | 2     | 1    |     | 2   | 9                  | 7    | 1   | 8   | 2    | 1   | 19    |
| irumu                           |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| javana                          |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| kentucky                        |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     | 1    |     | 1     |
| litchfield                      |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| livingstone                     |                             |    |    | 1    |    |      | 1               |      |       |      |     |     |                    |      |     |     |      |     |       |
| loma-linda                      |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| manhattan                       |                             |    |    |      |    |      |                 | 2    | 1     |      |     |     | 3                  |      |     |     |      |     |       |
| meleagridis                     |                             |    |    |      |    |      |                 |      |       |      |     |     | 3                  |      |     | 1   | 1    |     | 2     |
| miami                           |                             |    |    | 1    |    |      | 1               | 1    |       |      |     | 1   | 2                  |      |     |     |      |     |       |
| minnesota                       |                             |    |    |      |    |      |                 |      |       |      |     |     | 1                  |      |     |     |      |     |       |
| mississippi                     |                             |    |    |      |    |      |                 |      |       | 1    |     |     | 1                  |      |     |     |      |     |       |
| montevideo                      |                             |    |    | 1    | 1  |      | 2               |      |       | 3    | 1   | 1   | 5                  | 1    |     | 2   | 4    |     | 7     |
| muenchen                        |                             |    |    | 3    |    |      | 3               |      | 1     | 1    |     | 5   | 7                  |      |     |     |      |     |       |
| newington                       |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| newport                         |                             |    |    | 6    |    | 1    | 7               | 4    | 2     |      | 2   | 7   | 15                 | 4    |     | 4   | 5    | 1   | 14    |
| norwich                         |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| oranienburg                     |                             |    |    | 9    |    | 1    | 10              | 2    | 4     |      |     | 1   | 7                  | 3    |     | 1   |      | 1   | 5     |
| oslo                            |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| panama                          |                             |    |    | 4    |    |      | 4               |      | 1     |      | 1   | 1   | 3                  |      |     |     | 1    | 2   | 3     |
| paratyphi B                     |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| var. java                       |                             |    |    |      |    | 1    | 1               |      |       |      |     |     |                    |      |     |     |      | 1   | 1     |
| paratyphi B                     |                             |    |    | 5    |    |      | 5               |      | 2     |      | 8   |     | 10                 | 3    |     |     | 1    |     | 4     |
| poona                           |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| reading                         |                             |    |    | 1    |    |      | 1               |      |       |      |     |     |                    |      |     |     |      |     |       |
| saint-paul                      |                             |    |    | 5    |    |      | 5               | 2    | 4     |      | 1   | 5   | 12                 | 5    | 1   | 4   | 3    |     | 13    |
| san-diego                       |                             |    |    |      |    |      |                 |      | 1     |      |     | 1   | 2                  |      |     | 1   |      |     | 1     |
| saphra                          |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| schwarzengrund                  |                             |    |    | 1    |    |      | 1               |      |       |      | 3   |     | 3                  |      |     |     |      |     |       |
| senftenberg                     |                             |    |    |      |    |      |                 |      |       |      |     | 1   | 1                  |      | 1   |     |      |     | 1     |
| stanley                         |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| sundsvall                       |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     | 1     |
| tamale                          |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| tennessee                       |                             |    |    |      |    |      |                 |      |       |      |     | 3   | 3                  |      |     | 1   |      | 3   | 4     |
| thomasville                     |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| thompson                        |                             |    |    |      |    | 1    | 1               | 1    |       |      |     | 1   | 2                  |      |     | 1   | 2    |     | 3     |
| travis                          |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| typhi                           | 1                           |    |    |      |    | 3    | 4               |      | 2     |      |     | 1   | 3                  | 6    |     | 2   | 1    |     | 9     |
| typhimurium                     |                             |    |    | 38   | 10 | 13   | 61              | 24   | 30    | 22   | 4   | 27  | 107                | 29   | 3   | 24  | 16   | 3   | 75    |
| typhimurium                     |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| var. copenhagen                 |                             |    |    | 6    |    |      | 6               |      |       |      |     |     |                    |      |     |     | 2    |     | 2     |
| urbana                          |                             |    |    |      |    |      |                 | 1    |       |      |     |     | 1                  |      |     |     |      |     |       |
| weltvrede                       |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| westerstede                     |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| warthington                     |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| untypable, Group B              |                             | 10 |    | 3    | 1  |      | 14              |      |       |      |     |     |                    |      |     |     |      |     |       |
| untypable, Group C <sub>1</sub> |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| untypable, Group C <sub>2</sub> |                             | 1  |    |      |    |      | 1               |      |       |      |     |     |                    |      |     |     |      |     |       |
| untypable, Group D              |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| untypable, Group E              |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| untypable                       |                             |    |    |      |    |      |                 |      |       |      |     |     |                    |      |     |     |      |     |       |
| unknown                         |                             |    |    |      |    |      |                 |      |       | 1    |     |     | 1                  |      |     |     |      | 3   | 3     |
| TOTAL                           | 5                           | 11 |    | 221  | 15 | 58   | 310             | 85   | 98    | 56   | 43  | 213 | 495                | 67   | 10  | 71  | 55   | 22  | 225   |

TABLE I (Continued)

| REGION AND REPORTING CENTER |     |     |      |     |       |  | OTHER VI | TOTAL | PERCENT OF TOTAL | SEVEN MONTH TOTAL | SEVEN MONTH TOTAL | CDC TOTAL | PERCENT OF TOTAL | SEROTYPE                    |
|-----------------------------|-----|-----|------|-----|-------|--|----------|-------|------------------|-------------------|-------------------|-----------|------------------|-----------------------------|
| PACIFIC                     |     |     |      | HAI | TOTAL |  |          |       |                  |                   |                   |           |                  |                             |
| WASH                        | ORE | CAL | ALAS |     |       |  |          |       |                  |                   |                   |           |                  |                             |
|                             |     |     |      |     |       |  | 2        |       | 7                | 1                 |                   |           |                  | alacha                      |
|                             |     | 2   |      | 3   | 5     |  | 21       |       | 2                | 1                 |                   |           |                  | albany                      |
|                             |     |     |      |     |       |  | 1        |       | 119              | 1                 |                   |           |                  | amager                      |
|                             |     |     |      |     |       |  | 8        |       | 2                | 1                 |                   |           |                  | anatum                      |
|                             |     | 2   |      |     | 2     |  | 35       |       | 35               | 1                 |                   |           |                  | atlanta                     |
|                             |     | 2   |      |     | 2     |  | 31       |       | 31               |                   |                   |           |                  | boreilly                    |
|                             |     | 4   |      |     | 4     |  | 8        |       | 4                |                   |                   |           |                  | berta                       |
|                             |     | 4   |      |     | 4     |  | 2        |       | 4                |                   |                   |           |                  | binza                       |
|                             |     | 4   |      |     | 4     |  | 42       | 2.0   | 217              | 7                 | 2.2               | 7         | 2.9              | blockley                    |
|                             |     | 6   |      |     | 6     |  | 6        |       | 24               | 1                 |                   |           |                  | brogdenup                   |
|                             | 1   | 5   |      | 1   | 7     |  | 13       |       | 61               | 1                 |                   |           |                  | bredney                     |
|                             |     |     |      |     |       |  | 1        |       | 4                |                   |                   |           |                  | collonia                    |
|                             |     |     |      |     |       |  | 14       |       | 127              | 4                 |                   |           |                  | chester                     |
|                             |     |     |      |     |       |  | 2        |       | 41               | 4                 |                   |           |                  | cholerae-suis               |
|                             |     |     |      |     |       |  | 2        |       | 20               | 6                 |                   |           |                  | var. kunzendorf             |
|                             |     |     |      |     |       |  | 6        |       | 2                |                   |                   |           |                  | cubana                      |
|                             |     | 10  |      | 4   | 14    |  | 288      | 14.0  | 771              | 3                 | 7.8               | 12        | 5.0              | deatur                      |
|                             | 1   | 6   |      |     | 7     |  | 170      | 8.3   | 383              | 7                 | 3.9               | 7         | 2.9              | derby                       |
|                             |     |     |      |     |       |  | 3        |       | 30               | 1                 |                   |           |                  | eliasberhville              |
|                             |     |     |      |     |       |  | 4        |       | 4                |                   |                   |           |                  | enteritidis                 |
|                             |     |     |      |     |       |  | 4        |       | 4                |                   |                   |           |                  | give                        |
| 7                           | 2   | 47  |      | 1   | 57    |  | 152      | 7.4   | 884              | 1                 | 9.0               | 18        | 7.4              | halfo                       |
|                             |     |     |      |     |       |  | 4        |       | 4                |                   |                   |           |                  | heidberg                    |
|                             |     |     |      |     |       |  | 2        |       | 9                | 1                 |                   |           |                  | hvittingfoss                |
|                             | 2   | 24  |      | 3   | 29    |  | 87       | 4.2   | 509              | 7                 | 5.2               | 7         | 2.9              | illinois                    |
|                             |     |     |      |     |       |  | 2        |       | 5                |                   |                   |           |                  | indiana                     |
|                             |     |     |      |     |       |  | 2        |       | 18               | 1                 |                   |           |                  | infantis                    |
|                             |     |     |      |     |       |  | 16       |       | 18               |                   |                   |           |                  | irumu                       |
|                             |     |     |      |     |       |  | 2        |       | 18               | 1                 |                   |           |                  | iaviana                     |
|                             |     |     |      |     |       |  | 2        |       | 30               |                   |                   |           |                  | kentucky                    |
|                             |     |     |      |     |       |  | 2        |       | 30               |                   |                   |           |                  | litchfield                  |
|                             |     |     |      |     |       |  | 2        |       | 4                | 1                 |                   |           |                  | livingstone                 |
|                             |     | 1   |      |     | 1     |  | 1        |       | 4                |                   |                   |           |                  | loma-linda                  |
|                             |     | 2   |      | 1   | 3     |  | 7        |       | 5                |                   |                   |           |                  | malaga                      |
|                             |     |     |      |     |       |  | 6        |       | 106              | 1                 |                   |           |                  | melanoidis                  |
|                             |     |     |      |     |       |  | 12       |       | 46               |                   |                   |           |                  | miami                       |
|                             |     |     |      |     |       |  | 2        |       | 32               |                   |                   |           |                  | minnesota                   |
|                             |     |     |      |     |       |  | 2        |       | 8                |                   |                   |           |                  | mississippi                 |
|                             |     |     |      |     |       |  | 3        |       | 11               | 2                 |                   |           |                  | monterideo                  |
| 1                           |     | 7   |      | 3   | 10    |  | 38       | 1.8   | 225              | 7                 | 2.3               | 2         | 2.9              | munichen                    |
|                             |     |     |      |     |       |  | 24       |       | 178              |                   |                   |           |                  | newington                   |
|                             |     | 10  |      |     | 10    |  | 11       |       | 31               | 2                 | 6.1               | 18        | 7.4              | newport                     |
| 1                           | 2   | 7   |      | 1   | 11    |  | 99       | 4.8   | 604              | 2                 | 2.3               | 2         | 0.8              | newrich                     |
|                             |     |     |      |     |       |  | 1        |       | 5                |                   |                   |           |                  | oranienburg                 |
|                             |     | 3   |      |     | 3     |  | 53       | 2.6   | 223              | 2                 |                   |           |                  | oslo                        |
|                             |     |     |      |     |       |  | 1        |       | 5                |                   |                   |           |                  | panama                      |
|                             |     |     |      |     |       |  | 27       |       | 69               | 2                 |                   |           |                  | paratyphi B                 |
|                             |     |     |      |     |       |  | 18       |       | 65               | 3                 |                   |           |                  | var. iava                   |
| 1                           |     | 7   |      | 3   | 11    |  | 18       |       | 65               | 3                 |                   |           |                  | paratyphi B                 |
|                             |     | 24  |      |     | 24    |  | 77       |       | 77               | 1                 |                   |           |                  | panoa                       |
|                             |     | 22  |      |     | 22    |  | 37       |       | 37               |                   |                   |           |                  | reading                     |
|                             |     |     |      |     |       |  | 1        |       | 16               |                   |                   |           |                  | se-in-paul                  |
| 1                           | 1   | 5   |      | 1   | 8     |  | 61       | 3.0   | 273              | 12                | 2.8               | 12        | 5.0              | sen-diego                   |
|                             |     | 5   |      |     | 5     |  | 13       |       | 84               | 1                 |                   |           |                  | sopina                      |
|                             |     | 2   |      |     | 2     |  | 6        |       | 3                | 1                 |                   |           |                  | schwarzengrund              |
|                             |     |     |      |     |       |  | 2        |       | 88               | 3                 |                   |           |                  | senftenberg                 |
|                             |     |     |      |     |       |  | 5        |       | 19               | 3                 |                   |           |                  | stanley                     |
|                             |     |     |      |     |       |  | 1        |       | 8                |                   |                   |           |                  | sundsvoll                   |
|                             |     |     |      |     |       |  | 1        |       | 1                | 1                 |                   |           |                  | tamale                      |
|                             |     |     |      |     |       |  | 1        |       | 1                | 1                 |                   |           |                  | tennessee                   |
| 1                           |     |     |      |     |       |  | 12       |       | 66               | 1                 |                   |           |                  | thomasville                 |
|                             |     |     |      |     |       |  | 1        |       | 10               |                   |                   |           |                  | thompson                    |
|                             |     | 2   |      |     | 2     |  | 14       |       | 124              | 2                 |                   |           |                  | travis                      |
| 1                           |     | 8   |      |     | 9     |  | 83       | 4.0   | 430              | 45                | 4.4               | 45        | 18.6             | typhi                       |
| 18                          | 4   | 99  |      | 3   | 124   |  | 543      | 26.4  | 3,014            | 55                | 30.6              | 55        | 22.7             | typhimurium                 |
|                             |     |     |      |     |       |  | 9        |       | 76               | 5                 |                   |           |                  | typhimurium var. copenhagen |
|                             |     |     |      |     |       |  | 2        |       | 22               |                   |                   |           |                  | urbana                      |
|                             |     |     |      |     |       |  | 3        |       | 17               | 1                 |                   |           |                  | weltveden                   |
|                             |     |     |      |     |       |  | 3        |       | 17               |                   |                   |           |                  | westerstede                 |
|                             |     | 2   |      |     | 2     |  | 3        |       | 17               |                   |                   |           |                  | werthington                 |
|                             |     | 1   |      |     | 1     |  | 45       |       | 180              |                   |                   |           |                  | untypable, Group B          |
|                             |     |     |      |     |       |  | 6        |       | 32               |                   |                   |           |                  | untypable, Group C1         |
|                             |     |     |      |     |       |  | 8        |       | 22               |                   |                   |           |                  | untypable, Group C2         |
|                             |     |     |      |     |       |  | 6        |       | 34               |                   |                   |           |                  | untypable, Group D          |
|                             | 1   | 1   |      |     | 2     |  | 3        |       | 8                |                   |                   |           |                  | untypable, Group E          |
|                             |     |     |      |     |       |  | 30       |       | 30               |                   |                   |           |                  | untypable                   |
| 31                          | 15  | 285 | 3    | 37  | 371   |  | 2,054    |       | 9,863            | 242               |                   |           |                  | unknown                     |
|                             |     |     |      |     |       |  | 11       |       | 40               |                   |                   |           |                  | TOTAL                       |

TABLE II

Number of Salmonella Isolates From Two or More Members of the Same Family  
July, 1963

| <u>Reporting Center</u> | <u>Total Number of Isolates Reported</u> | <u>Number of Isolates from Family Outbreaks</u> | <u>Per Cent of Total</u> |
|-------------------------|--|---|--------------------------|
| Alabama                 | 10                                       | 0   | 0.0                      |
| Alaska                  | 3  | 2   | 66.7                     |
| Arizona                 | 9  | 0   | 0.0                      |
| Arkansas                | 30                                       | 8   | 26.6                     |
| California              | 285                                      | 48  | 16.8                     |
| Colorado                | 31                                       | 3   | 9.7                      |
| Connecticut             | 58                                       | 6   | 10.3                     |
| Delaware                | 6  | 0   | 0.0                      |
| District of Columbia    | 15                                       | 0   | 0.0                      |
| Florida                 | 84                                       | 11  | 13.1                     |
| Georgia                 | 64                                       | 9   | 14.1                     |
| Hawaii                  | 37                                       | 12  | 32.4                     |
| Idaho                   | 20                                       | 7   | 35.0                     |
| Illinois                | 71                                       | 4   | 5.6                      |
| Indiana                 | 10                                       | 0   | 0.0                      |
| Iowa                    | 26                                       | 7   | 26.9                     |
| Kansas                  | 51                                       | 2   | 3.9                      |
| Kentucky                | 5  | 0   | 0.0                      |
| Louisiana               | 34                                       | 4   | 11.8                     |
| Maine                   | 5  | 0   | 0.0                      |
| Maryland                | 28                                       | 0   | 0.0                      |
| Massachusetts           | 221                                      | 21  | 9.5                      |
| Michigan                | 55                                       | 4   | 7.3                      |
| Minnesota               | 18                                       | 2   | 11.1                     |
| Mississippi             | 3  | 0   | 0.0                      |
| Missouri                | 12                                       | 0   | 0.0                      |
| Nebraska                | 4  | 4   | 100.0                    |
| New Hampshire           | 11                                       | 2   | 18.2                     |
| New Jersey              | 43                                       | 10  | 23.3                     |
| New Mexico              | 14                                       | 4   | 28.6                     |
| New York-Albany         | 85                                       | 0   | 0.0                      |
| New York-Beth Israel    | 98                                       | 2   | 2.0                      |
| New York City           | 56                                       | 0   | 0.0                      |
| North Carolina          | 41                                       | 7   | 17.1                     |
| North Dakota            | 2  | 0   | 0.0                      |
| Ohio                    | 67                                       | 4   | 6.0                      |
| Oklahoma                | 10                                       | 0   | 0.0                      |
| Oregon                  | 15                                       | 4   | 26.7                     |
| Pennsylvania            | 213                                      | 14  | 6.6                      |
| Rhode Island            | 15                                       | 3   | 20.0                     |
| South Dakota            | 3  | 0   | 0.0                      |
| Tennessee               | 15                                       | 4   | 26.7                     |
| Texas                   | 71                                       | 0   | 0.0                      |
| Utah                    | 9  | 0   | 0.0                      |
| Virginia                | 34                                       | 4   | 11.8                     |
| Washington              | 31                                       | 2   | 6.5                      |
| West Virginia           | 4  | 0   | 0.0                      |
| Wisconsin               | 22                                       | 5   | 22.7                     |
| Total                   | 2054                                     | 219   | 10.7                     |

TABLE III  
Infrequent Serotypes

| <u>Serotype</u>          | <u>Center</u> | <u>July</u> | <u>7-Month<br/>Total*</u> | <u>CDC**</u> | <u>Comment</u>   |
|--------------------------|---------------|-------------|---------------------------|--------------|--|
| <u>S. alachua</u>        | ILL & KAN     | 2           | 7                         | 14           | First recovered from soil taken from swine-holding pen in Alachua County, Fla., 1952. Rare cause human illness.                                      |
| <u>S. atlanta</u>        | GA            | 1           | 2                         | 21           | 17 of 21 previously isolated in Ga. and Fla. Closely antigenically related to <u>S. mississippi</u> which is also common in Southeastern U. S.       |
| <u>S. binza</u>          | CAL           | 2           | 3                         | 17           | Very common poultry feed contaminant, but rare cause human illness.  |
| <u>S. californica</u>    | GA            | 1           | 4                         | 143          | A frequent isolate from turkeys. Infrequent cause human illness.   |
| <u>S. decatur</u>        | OKLA          | 1           | 2                         | 1            | First isolated in Decatur, Georgia, 1955. Isolated from a patient and home-made ice cream consumed prior to onset of illness in Oklahoma this month. |
| <u>S. elizabethville</u> | LA            | 1           | 1                         | 0            | First isolation in CDC reference laboratory and Salmonella Surveillance experience.  |
| <u>S. illinois</u>       | GA            | 4           | 4                         | 30           | Only two of 30 isolations previously reported originated from instances of human illness.  |
| <u>S. indiana</u>        | FLA & MICH    | 2           | 9                         | 29           | Occasionally isolated from poultry. A sporadic cause of human illness.   |
| <u>S. irumu</u>          | COLO          | 2           | 5                         | 4            | All recoveries this year from humans in Colorado or Missouri.  |
| <u>S. livingstone</u>    | MASS & VA     | 2           | 4                         | 0            | Recently isolated from poultry processing plant and employee in Ga. and from Peruvian fish meal.   |
| <u>S. loma-linda</u>     | CAL           | 1           | 5                         | 8            | All previous isolations in Salmonella Surveillance experience either originated in or illness was traceable to California.                           |
| <u>S. minnesota</u>      | LA & NY-BI    | 2           | 8                         | 81           | Originally isolated from a turkey in 1936. Infrequent cause of human illness.  |
| <u>S. norwich</u>        | LA            | 1           | 5                         | 25           | All but one previous isolation confined to Southeastern U. S.  |

| <u>Serotype</u>     | <u>Center</u> | <u>July</u> | <u>7-Month<br/>Total*</u> | <u>CDC**</u> | <u>Comment</u>   |
|---------------------|---------------|-------------|---------------------------|--------------|--|
| <u>S. oslo</u>      | HAI           | 1           | 5                         | 16           | Predominantly reported from Hawaii and California. Recently isolated from rodents and carnivores in Hawaii   |
| <u>S. saphra</u>    | FLA & LA      | 2           | 3                         | 0            | Both of this month's isolations from females under 5 years of age, fitting the pattern of previous <u>S. saphra</u> isolations reported in SSR Report No. 14, page 30. |
| <u>S. stanley</u>   | ILL           | 1           | 8                         | 68           | Recently recovered during environmental investigation of a turkey farm among common types reported from England and Wales.   |
| <u>S. sundsvall</u> | CAL           | 1           | 1                         | 2            | Previously recovered from patients with gastroenteritis in Georgia and Mexico.   |
| <u>S. tamale</u>    | FLA           | 1           | 1                         | 0            | First reported isolation in world literature in 1958. Extremely uncommon serotype.   |

\* Represents 9863 isolations of salmonellae by Salmonella Surveillance Unit - January 1 to August 2, 1963.

\*\* Represents approximately 28,000 isolations



TABLE IV

Age and Sex Distribution of 1963 Individuals From Whom  
Salmonellae were Isolated - July, 1963

| <u>Age (Years)</u> | <u>Male</u> | <u>Female</u> | <u>Total</u> |
|--------------------|-------------|---------------|--------------|
| Under 1            | 76          | 64            | 140          |
| 1-4                | 142         | 127           | 269          |
| 5-9                | 69          | 73            | 142          |
| 10-19              | 62          | 56            | 118          |
| 20-29              | 50          | 57            | 107          |
| 30-39              | 35          | 42            | 77           |
| 40-49              | 44          | 48            | 92           |
| 50-59              | 45          | 60            | 105          |
| 60-69              | 35          | 42            | 77           |
| 70-79              | 28          | 39            | 67           |
| 80+                | 5           | 15            | 20           |
| Unknown            | <u>390</u>  | <u>359</u>    | <u>749</u>   |
| Total              | 981         | 982           | 1963         |
| % of Total         | 50.0        | 50.0          |              |



Figure 1.

# REPORTED ISOLATIONS OF SALMONELLAE IN THE UNITED STATES, 1963

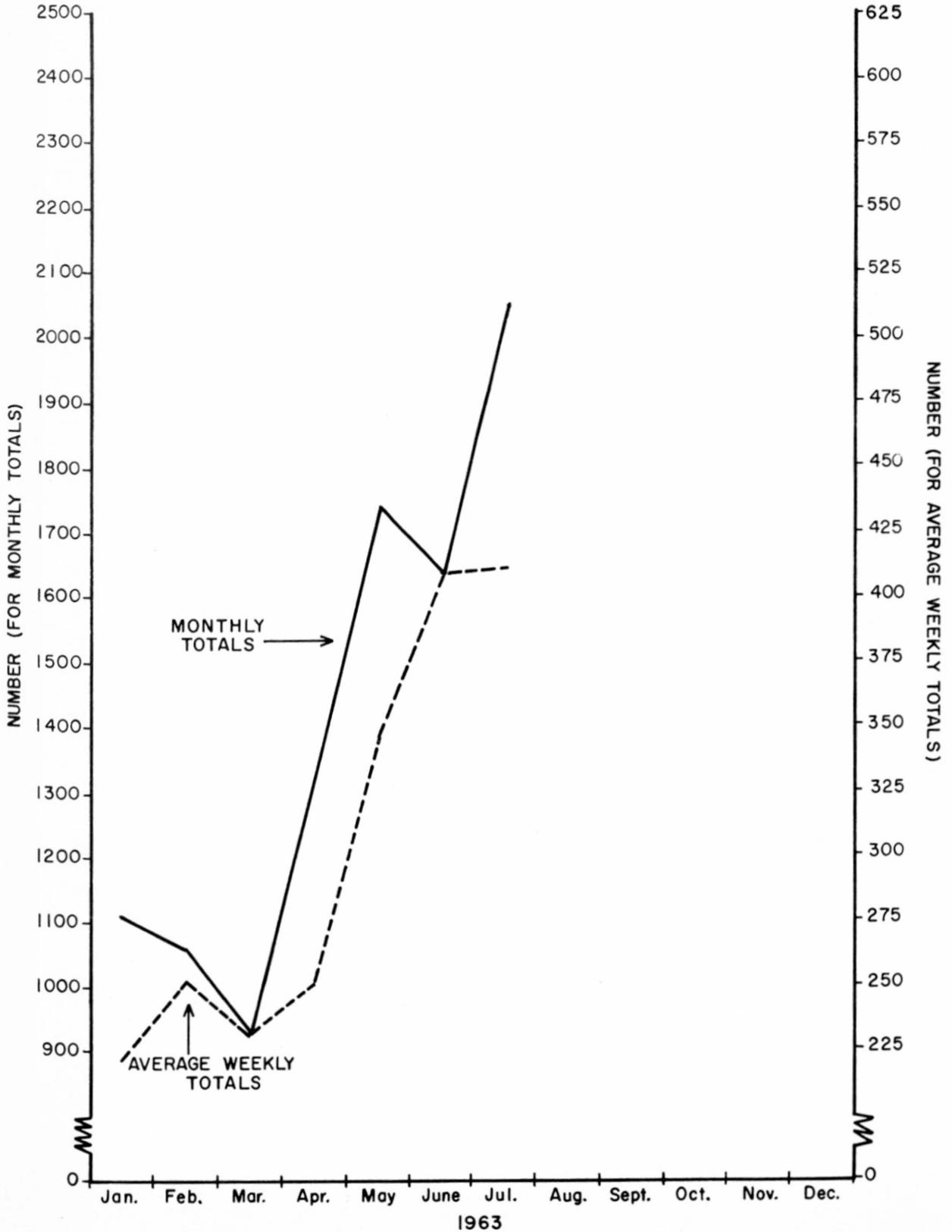


TABLE VI

NON-HUMAN ISOLATES BY THE NATIONAL ANIMAL DISEASE LABORATORY AND STATE REPORTING CENTERS - JULY,\* 1963

| S E R O T Y P E    | STATE |     |       |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
|--------------------|-------|-----|-------|------|-----|-----|----|-----|-----|------|------|----|----|------|------|------|------|----|------|-------|--|
|                    | ALA   | ARK | CALIF | CONN | DEL | FLA | GA | ILL | IND | IOWA | KANS | KY | MD | MASS | MICH | MINN | MISS | MO | MONT | N. J. |  |
| anatum             |       |     | 6     |      |     |     |    |     | 5   |      | 6    |    |    |      |      | 1    |      | 4  |      |       |  |
| boreilly           |       |     | 1     |      |     |     |    |     |     |      |      |    |    |      | 1    |      |      |    |      |       |  |
| binza              |       |     |       |      |     |     |    |     | 2   |      |      |    |    |      |      |      |      |    |      |       |  |
| blockley           |       | 1   | 1     | 2    |     |     | 5  |     | 1   | 1    |      |    | 1  |      |      | 1    |      | 2  |      |       |  |
| bredehey           |       |     | 3     |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| california         |       |     |       |      |     |     |    |     |     | 1    |      |    |    |      |      |      |      |    |      |       |  |
| cerro              |       |     |       |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| chester            |       |     |       |      |     |     |    | 1   | 1   |      |      | 1  |    |      |      |      |      | 3  |      |       |  |
| cholerae-suis      |       |     |       |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| var. kunzendorf    |       |     |       |      |     | 1   |    |     | 7   | 1    |      | 3  |    |      |      |      | 1    |    |      |       |  |
| cubana             |       |     | 2     |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| decatur            |       |     |       |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| derby              |       |     | 1     |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| enteritidis        |       |     |       |      |     |     |    |     | 3   |      |      |    |    |      |      |      |      | 3  |      |       |  |
| gallinarum         |       |     |       |      | 1   |     |    |     | 10  |      |      |    |    |      |      |      |      |    |      |       |  |
| gaminara           |       |     |       |      |     |     |    |     |     |      |      |    |    |      | 1    |      |      |    |      |       |  |
| give               |       |     |       |      |     |     |    |     |     | 12   |      |    |    |      | 1    |      |      |    |      |       |  |
| heidelberg         |       |     | 7     |      |     |     | 1  |     | 9   |      |      |    |    | 1    |      |      |      |    |      |       |  |
| indiana            |       |     |       |      |     |     |    |     | 8   |      |      |    |    |      |      |      |      |    |      |       |  |
| infantis           |       |     | 6     | 1    |     |     | 2  | 1   | 5   |      | 3    |    |    |      | 1    |      |      | 2  |      |       |  |
| johannesburg       |       |     | 1     |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| kentucky           |       |     | 1     |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| litchfield         |       |     |       |      |     |     |    |     | 1   |      |      |    |    |      |      |      |      |    |      |       |  |
| livingstone        | 1     |     |       |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| manhattan          |       |     | 2     |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| manila             |       |     |       |      |     |     |    |     |     |      |      |    |    |      | 1    |      |      |    |      |       |  |
| meleagridis        |       |     |       |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| mikawasima         |       |     |       |      |     |     |    |     |     |      |      |    |    |      | 1    |      |      |    |      |       |  |
| montevideo         | 1     | 1   | 1     |      | 5   |     | 11 |     | 1   |      |      |    | 1  |      | 1    |      |      |    |      |       |  |
| newington          |       |     |       |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| newport            |       |     | 7     |      |     | 1   |    |     |     |      | 3    |    |    |      | 2    |      |      |    |      |       |  |
| norwich            |       |     |       |      |     |     |    |     | 3   |      |      |    |    |      |      |      |      |    |      |       |  |
| oranienburg        |       |     | 3     |      |     |     |    | 1   |     |      |      |    |    |      |      |      |      |    |      |       |  |
| paratyphi B        |       |     |       |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| poona              |       |     | 2     |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| pullorum           |       | 4   |       |      |     |     |    |     |     | 1    | 1    |    | 2  |      |      |      |      |    |      | 1     |  |
| reading            |       | 2   |       |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| saint-paul         |       |     |       |      |     |     | 1  |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| salinatis          |       |     | 1     |      |     |     |    |     |     |      | 2    |    |    |      |      |      |      | 9  |      | 1     |  |
| sandiego           |       |     |       |      |     |     |    |     | 1   |      |      |    |    |      |      |      |      |    |      |       |  |
| schwarzengrund     |       |     | 4     |      |     |     |    |     | 1   |      |      |    |    |      |      |      |      |    |      |       |  |
| senftenberg        |       |     |       |      |     |     |    |     |     |      |      |    |    |      | 1    |      |      |    |      |       |  |
| sundsvall          |       |     |       |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| tennessee          |       |     |       |      | 1   |     |    |     |     |      | 6    |    |    |      |      | 1    |      |    | 2    |       |  |
| thompson           |       |     | 1     |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| typhimurium        |       | 3   | 28    |      |     |     | 2  | 1   | 22  | 1    | 1    | 4  |    | 1    | 2    | 15   |      |    |      | 1     |  |
| typhimurium        |       |     |       |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| var. copenhagen    | 3     | 3   |       |      | 1   |     | 1  |     | 6   |      |      |    | 2  | 1    |      | 5    |      | 1  |      | 1     |  |
| vietuen            |       |     |       |      |     |     |    |     |     |      |      |    |    | 1    |      |      |      |    |      |       |  |
| warthington        |       |     | 2     |      |     |     |    |     |     |      |      |    |    |      |      | 1    |      |    |      |       |  |
| untypable, Group B |       |     | 1     |      |     |     |    |     |     |      |      |    |    |      |      |      |      |    |      |       |  |
| TOTAL              | 5     | 14  | 81    | 3    | 8   | 2   | 23 | 4   | 98  | 17   | 21   | 8  | 6  | 3    | 13   | 35   | 4    | 10 | 3    | 3     |  |

\* Includes late June reports

Source: National Disease Laboratory, Ames, Iowa and weekly Salmonella Surveillance Reports Received from California, Colorado, Connecticut, Illinois, Kansas, Louisiana, Michigan, Mississippi, New Jersey, New York, Ohio, Oklahoma, Rhode Island, Texas, Virginia and Washington.

TABLE VI (Continued)

| N. C. | N. D. | STATE |      |     |    |       |       |       |      |     |      |    |    |      |       | TOTAL | 7 MO TOTAL | S E R O T Y P E |                 |
|-------|-------|-------|------|-----|----|-------|-------|-------|------|-----|------|----|----|------|-------|-------|------------|-----------------|-----------------|
|       |       | OHIO  | OKLA | ORE | PA | R. I. | S. C. | S. D. | TENN | TEX | UTAH | VT | VA | WASH | W. VA |       |            |                 | WIS             |
|       |       | 2     |      |     |    |       |       |       |      | 1   |      | 2  |    |      |       |       | 27         | 176             | anatum          |
|       |       |       |      |     |    |       |       |       |      |     |      | 1  |    |      |       |       | 2          | 23              | bareilly        |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 3          | 18              | binza           |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 15         | 52              | blockley        |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 6          | 81              | bredeney        |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 1          | 13              | california      |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 1          | 15              | cerro           |
|       |       |       |      |     |    |       |       |       |      |     |      | 1  |    |      |       |       | 9          | 68              | chester         |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 2          |                 | cholerae-suis   |
| 1     |       |       |      |     |    |       | 2     |       | 1    |     |      |    |    |      |       |       | 20         | 89              | var. kunzendorf |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 4          | 14              | cubana          |
|       |       |       | 1    |     |    |       |       |       |      |     |      |    |    |      |       |       | 1          | 1               | decatur         |
|       |       |       |      |     | 4  | 1     |       |       |      |     |      |    |    |      |       |       | 13         | 66              | derby           |
|       |       |       |      |     |    |       |       |       |      | 1   |      |    |    |      |       |       | 12         | 31              | enteritidis     |
|       |       |       |      |     |    |       | 1     |       |      |     |      |    |    |      |       |       | 2          | 32              | gallinarum      |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 1          | 2               | gaminara        |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 14         | 43              | glve            |
|       |       |       |      |     |    |       |       |       |      |     |      |    | 2  |      |       |       | 21         | 189             | heidelberg      |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 8          | 15              | indiana         |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 23         | 185             | infantis        |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 1          | 1               | johannesburg    |
|       |       |       | 1    |     |    |       |       |       |      |     |      |    |    |      |       |       | 2          | 21              | kentucky        |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 2          | 10              | litchfield      |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 2          | 24              | livingstone     |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 8          | 19              | manhattan       |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 1          | 1               | manila          |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 1          | 8               | meleagris       |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 1          | 1               | mikawasima      |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 27         | 142             | montevideo      |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 3          | 38              | montevideo      |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 15         | 84              | newport         |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 3          | 3               | norwich         |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 5          | 32              | oranienburg     |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 2          | 2               | paratyphi B     |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 2          | 4               | poona           |
| 1     |       | 1     |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 14         | 115             | pullorum        |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 14         | 27              | reading         |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 15         | 117             | saint-paul      |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 1          | 1               | salinatis       |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 5          | 39              | san-diego       |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 6          | 79              | schwarzengrund  |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 4          | 26              | senftenberg     |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 1          | 1               | sundsvall       |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 10         | 60              | tennessee       |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       | 5          | 42              | thompson        |
| 1     |       | 1     |      |     |    | 1     | 3     |       |      | 1   |      |    |    |      |       |       | 109        | 582             | typhimurium     |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
|       |       |       |      |     |    |       |       |       |      |     |      |    |    |      |       |       |            |                 |                 |
| 2     | 1     | 5     | 2    | 6   | 8  | 7     | 5     | 3     | 2    | 24  | 6    | 1  | 18 | 12   | 2     | 12    | 477        | 3,000           | TOTAL           |

TABLE VII

Reported S. derby Isolates March 1, 1963-August 12, 1963

| State                   | Number<br>Hospitals<br>Involved | Hospital<br>Associated | Community<br>Acquired | Unknown   | Under<br>Investigation | Total       |
|-------------------------|---------------------------------|------------------------|-----------------------|-----------|------------------------|-------------|
| Alabama                 |                                 |                        | 2                     |           |                        | 2           |
| California              | 3                               | 3                      | 20                    | 6         | 3                      | 35          |
| Connecticut             | 4                               | 4                      |                       | 2         | 7                      | 17          |
| Delaware                | 2                               | 3                      | 2                     |           | 5                      | 12          |
| District of<br>Columbia |                                 |                        | 1                     | 3         |                        | 4           |
| Florida                 |                                 |                        | 1                     |           | 1                      | 2           |
| Georgia                 |                                 |                        | 1                     | 1         | 2                      | 4           |
| Hawaii                  |                                 |                        |                       | 2         | 20                     | 22          |
| Illinois                | 2                               | 3                      | 2                     |           | 3                      | 10          |
| Indiana                 | 1                               | 1                      |                       |           | 1                      | 3           |
| Louisiana               |                                 |                        | 2                     |           | 3                      | 5           |
| Maryland                | 1                               | 1                      | 6                     | 3         | 3                      | 14          |
| Massachusetts           | 5                               | 10                     | 9                     | 4         | 12                     | 40          |
| Michigan                |                                 |                        | 2                     | 1         |                        | 3           |
| Minnesota               | 1                               | 1                      | 3                     |           |                        | 5           |
| Missouri                |                                 |                        | 2                     |           | 4                      | 6           |
| New Jersey              | 7                               | 17                     | 8                     | 3         | 6                      | 41          |
| New Mexico              |                                 |                        |                       |           | 1                      | 1           |
| New York                | 11                              | 81                     | 7                     | 12        | 41                     | 152         |
| North Carolina          |                                 |                        | 3                     |           |                        | 3           |
| Ohio                    | 3                               | 5                      | 7                     | 6         | 1                      | 22          |
| Pennsylvania            | 22                              | 687                    | 13                    | 1         | 11                     | 724         |
| Rhode Island            | 1                               | 6                      |                       | 1         |                        | 8           |
| South Dakota            |                                 |                        |                       |           | 1                      | 1           |
| Texas                   |                                 |                        | 3                     |           | 1                      | 4           |
| Virginia                |                                 |                        | 1                     | 1         |                        | 2           |
| Washington              |                                 |                        | 5                     | 1         |                        | 6           |
| Wisconsin               |                                 |                        |                       | 1         | 1                      | 2           |
|                         | <u>53</u>                       | <u>822</u>             | <u>100</u>            | <u>48</u> | <u>127</u>             | <u>1150</u> |

Key to all disease surveillance activities are those in each State who serve the function as State epidemiologists. Responsible for the collection, interpretation and transmission of data and epidemiological information from their individual States, the State epidemiologists perform a most vital role. Their major contributions to the evolution of this report are gratefully acknowledged.

| STATE          | NAME                    |
|----------------|-------------------------|
| Alabama        | Dr. W. H. Y. Smith      |
| Alaska         | Dr. Edwin O. Wicks      |
| Arizona        | Dr. Lloyd M. Farner     |
| Arkansas       | Dr. Wm. L. Bunch, Jr.   |
| California     | Dr. Philip K. Condit    |
| Colorado       | Dr. C. S. Mollohan      |
| Connecticut    | Dr. James C. Hart       |
| Delaware       | Dr. Floyd I. Hudson     |
| D. C.          | Dr. William E. Long     |
| Florida        | Dr. Clarence M. Sharp   |
| Georgia        | Dr. W. J. Murphy        |
| Hawaii         | Dr. James R. Enright    |
| Idaho          | Dr. John A. Mather      |
| Illinois       | Dr. Norman J. Rose      |
| Indiana        | Dr. A. L. Marshall, Jr. |
| Iowa           | Dr. Ralph H. Heeren     |
| Kansas         | Dr. Don E. Wilcox       |
| Kentucky       | Dr. William H. McBeath  |
| Louisiana      | Dr. John M. Bruce       |
| Maine          | Mrs. Margaret H. Oakes  |
| Maryland       | Dr. John H. Janney      |
| Massachusetts  | Dr. Nicholas J. Fiumara |
| Michigan       | Dr. George H. Agate     |
| Minnesota      | Dr. D. S. Fleming       |
| Mississippi    | Dr. Durward L. Blakey   |
| Missouri       | Dr. E. A. Belden        |
| Montana        | Dr. Mary E. Soules      |
| Nebraska       | Dr. E. A. Rogers        |
| Nevada         | Dr. B. A. Winne         |
| New Hampshire  | Dr. William Prince      |
| New Jersey     | Dr. W. J. Dougherty     |
| New York State | Dr. Robert M. Albrecht  |
| New York City  | Dr. Harold T. Fuerst    |
| New Mexico     | Dr. H. G. Doran, Jr.    |
| North Carolina | Dr. Jacob Koomen        |
| North Dakota   | Mr. Kenneth Mosser      |
| Ohio           | Dr. Harold A. Decker    |
| Oklahoma       | Dr. F. R. Hassler       |
| Oregon         | Dr. Grant Skinner       |
| Pennsylvania   | Dr. W. D. Schrack, Jr.  |
| Puerto Rico    | Dr. Rafael A. Timothee  |
| Rhode Island   | Dr. James E. Bowes      |
| South Carolina | Dr. G. E. McDaniel      |
| South Dakota   | Dr. G. J. Van Heuvelen  |
| Tennessee      | Dr. C. B. Tucker        |
| Texas          | Dr. Van C. Tipton       |
| Utah           | Dr. A. A. Jenkins       |
| Vermont        | Dr. Linus J. Leavens    |
| Virginia       | Dr. James B. Kenley     |
| Washington     | Dr. E. A. Ager          |
| West Virginia  | Dr. L. A. Dickerson     |
| Wisconsin      | Dr. Josef Preizler      |
| Wyoming        | Dr. Robert Alberts      |