REPORT NO. 18
NOVEMBER 5, 1963

COMMUNICABLE DISEASE CENTER

# SALMONELLA

## SURVEILLANCE

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For Month of September 1963



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

# PREFACE

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

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

| | |
|---|---|
| Communicable Disease Center | Dr. James L. Goddard, Chief |
| Epidemiology Branch | Dr. Alexander D. Langmuir, Chief |
| Investigations Section | Dr. Philip S. Brachman, Chief |
| Salmonella Surveillance Unit | Dr. W. Eugene Sanders, Chief<br>Mr. James B. Goldsby, Statistician<br>Charles E. McCall, M.D. |
| Veterinary Public Health Section | Dr. James H. Steele, Chief |
| Veterinary Public Health Laboratory | Mrs. Mildred M. Galton, Chief<br>Dr. Kenneth D. Quist<br>Dr. John R. Boring |

*Collaborators*

| | |
|---|---|
| Laboratory Branch | Dr. U. Pentti Kokko, Chief |
| Bacteriology Section | Dr. Philip R. Edwards, Chief |
| Enteric Bacteriology Unit | Dr. William H. Ewing, Chief |

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## I. SUMMARY

The total number of salmonella isolations reported during September reached 1786, the highest number reported for a comparable four week period since salmonella surveillance began. The average weekly number of isolations was 446, slightly higher than August which was 442. During September, 485 nonhuman isolations of salmonella were reported.

Included in this month's report is the investigation of an outbreak of salmonellosis in a Kansas nursing home. Raw eggs have been implicated as the common source.

Among others, Reports from the States review three outbreaks of typhoid fever, an outbreak of gastroenteritis among tourists traveling in Hawaii, and the investigations of three rare serotypes. A stool culture survey in an institution for the mentally retarded is also included.

## II. REPORTS OF ISOLATIONS FROM THE STATES

### A. Human

During September, 1786 isolations of salmonella were reported, which represents a slight increase over the 1770 isolations reported during August. In addition, the average weekly total number of salmonella isolations for September (446) is the largest figure for 1963. Generally, this figure has been on the incline since January 1963 (See Figure 1). However, it is still too early to determine whether the curve in Figure 1 represents a seasonal pattern of salmonellosis or increased awareness and interest in Salmonellosis, or both.

The seven serotypes reported most frequently during September were:

| No. | Serotype | Number | Per Cent | Standing Last Month |
|---|---|---|---|---|
| 1 | S. typhimurium | 494 | 27.7 | 1 |
| 2 | S. derby | 164 | 9.2 | 2 |
| 3 | S. heidelberg | 132 | 7.4 | 3 |
| 4 | S. oranienburg | 106 | 5.9 | 10 |
| 5 | S. newport | 91 | 5.1 | 4 |
| 6 | S. typhi | 78 | 4.4 | 7 |
| 7 | S. infantis | 75 | 4.2 | 5 |
| | Total | 1140 | 63.8 | |
| | Total salmonellae Isolated (Sept.) | 1786 | | |

The seven most common serotypes this month accounted for 1140 (63.8 per cent) of the 1786 salmonella isolations reported while they represented only 11.7 per cent of the 60 different types. The appearance of S. oranienburg on the above list may be explained by an outbreak due to this serotype in Florida. S. derby, etiologic agent for a hospital associated outbreak of salmonellosis in the Northeast, maintained second position on the most common serotype

list for the fourth straight month. The remaining four serotypes hold positions which would be expected based on past salmonella surveillance experience.

Of the 1786 individuals reported as harboring salmonellae during September, 251 (14.1 per cent) had other members of their family also positive for salmonellae. The family attack rate for this month is within the range (10.7 to 22.1 per cent) computed for the past eleven months.

Once again, this month 1-4 years is the modal age group for individuals reported as harboring salmonellae. The sex distribution was approximately equal with 857 males and 853 females.

B. Nonhuman

A total of 485 salmonella isolations from nonhuman sources, representing 46 serotypes were reported in September. Only one type, S. singapore, had not been reported previously in 1963.

The seven most common serotypes during September were:

| No. | Serotype | No. | % | Standing Last Month |
|---|---|---|---|---|
| 1. | S. typhimurium<br>S. typhimurium var copenhagen | 134 | 27.6 | 1 |
| 2. | S. schwarzengrund | 50 | 10.3 | (not listed) |
| 3. | S. newport | 31 | 6.4 | 2 |
| 4. | S. heidelberg | 29 | 6.0 | (7) |
| 5. | S. montevideo | 29 | 6.0 | (7) |
| 6. | S. pullorum | 29 | 6.0 | (not listed) |
| 7. | S. anatum | 26 | 5.4 | (4) |

The four most common sources were chickens 167 (34.4 per cent), turkeys 108 (22.3 per cent), cattle 106 (21.9 per cent) and swine 22 (4.5 per cent). These comprise 83 per cent of the total nonhuman isolations.

The large number of isolations of S. newport and S. typhimurium from bovine sources in California and Minnesota have markedly increased the frequency of this source over previous months.

The S. schwarzengrund isolations from turkeys in California this month has increased the observed frequency of this type. This is interesting in that there were 10 human isolations of S. schwarzengrund in August and 11 this month, representing a slight increase in the January to July average of 4 per month.

## III. CURRENT INVESTIGATIONS

### A. Kansas

An Outbreak of Hospital-Acquired Salmonellosis Due to S. braenderup and S. infantis, Presumably Due to Raw Eggs. Dr. Rosemary Harvey and Dr. M. Leon Bauman, Wichita-Sedgwick County Department of Public Health; Dr. Donald Wilcox, Kansas State Department of Public Health; and Dr. Palmer Beasley, EIS Officer.

Eight of 32 geriatric patients in a hospital nursing home unit developed fever and diarrhea of varying degrees of severity over a ten-day period, beginning August 22. Salmonella $C_1$ was recovered from eight patients including one obtained from an asymptomatic patient during an ensuing stool culture survey.

All food was prepared by an adjacent hospital kitchen which two days earlier had begun using raw eggs instead of "sustagen" as a dietary protein supplement. All of the patients from whom salmonellae had been recovered had received raw eggs. Salmonellae $C_1$ in the group were recovered from two of the three patients whose diet was solely eggnog. Both were symptomatic. The attack rate, based on positive culture results for nursing home patients receiving raw eggs was 57 per cent. There were no cases among patients not receiving eggnog. Only 25 per cent of the patients with negative cultures had received raw eggs. None of the kitchen or nursing home personnel were ill and all had negative stool cultures.

Eight patients in the hospital proper also received raw eggs. Four had mild diarrhea, but no salmonellae were recovered from their stools.

Only whole fresh eggs were reportedly used to make the eggnogs. No salmonellae were isolated from the few eggs remaining when the epidemic was recognized.

Two $C_1$ salmonella serotypes, Salmonella infantis and Salmonella braenderup, were recovered from the patients with equal frequency. Three harbored both serotypes. Salmonella infantis is one of the most common isolates from human and nonhuman sources, normally accounting for 5.5 per cent of all human isolations. Salmonella braenderup normally accounts for 0.3 per cent of human isolations and has been reported from nonhuman sources only twice since April 1962.

Eggs from 236 farms are supplied to the hospital through three wholesalers. Samples of eggs from each of these farms were collected and pooled in slurries for culture in the Veterinary Public Health Laboratory. Salmonella braenderup has been recovered from four slurries; Salmonella infantis from ten. Both types were obtained from two slurries.

The recovery of a rare salmonella serotype from both patients and eggs is highly suggestive of an epidemiological association.

Investigations are currently underway to determine the sources of poultry feed supplied to the farms and to collect samples for culture.

## IV. REPORTS FROM STATES

### A. Hawaii

Salmonella weltevreden Traced to Canned Salmon.
Dr. Ira D. Hirschey, Communicable Disease Division,
Department of Health, State of Hawaii.

Forty tourists among several tour groups visiting Hawaii became ill in the course of a trip to four islands in the area. The symptoms were abdominal cramps, diarrhea, and occasional vomiting, lasting from one to three days. Although the onsets of the illness occurred on different islands, all who became ill had eaten cold canned salmon served at buffet lunches for three successive days. Cultures from samples of salmon from the third day's luncheon were positive for Salmonella weltevreden.

Four of the forty-one employees working at the hotel involved had illnesses similar to those of the guests. Stool cultures were taken from every employee. Their meals were provided separate from the kitchen and dining areas used for the guests. Salmonella typhimurium was isolated from one of the four with symptoms; the other three, at least one of whom had received antibiotic therapy, did not harbor a salmonella organism. Of the remaining thirty-seven employees who were not ill, two siblings were found to be harboring Salmonella weltevreden - one a waitress, the other a bus boy. Both of these employees served at the buffet luncheons.

Unopened cans from five lots of salmon in pantry stocks were opened and cultured under aseptic technique. All cultures were sterile. Cultures of swabs taken from the exterior of the cans were also negative for salmonella or any other pathogen.

Editor's Comment

Salmonella weltevreden is a very rare serotype in the United States. Among 28,000 cultures identified in the Enteric Laboratory, Communicable Disease Center, between 1947 and 1957, there were only ten isolations of Salmonella weltevreden. Only one of these was from a resident of continental United States. Between January and August 1963, there has been one isolation of Salmonella weltevreden in the United States. This came from California in August 1963. Investigation revealed that this patient became ill while touring Hawaii in August; therefore, being part of the Hawaiian outbreak.

Salmonella weltevreden is fairly common in Hawaii, making up from 3 to 7.2 per cent of the total number of salmonellae isolations over the past five years.

This outbreak illustrates how easily major geographical barriers are transversed by modern methods of transportation.

B. Louisiana

An Isolation of Salmonella abaetetuba. Dr. Charles T. Caraway, Louisiana State Board of Health.

Salmonella abaetetuba, an organism never recovered from a permanent resident in the United States, was reported by the Louisiana State Board of Health. This gave impetus to an investigation which revealed that the patient was a known Salmonella carrier who entered the Ochsner Foundation Clinic directly from Honduras. S. abaetetuba was isolated from a fecal specimen collected on admission, thus, verifying the carrier state. The patient has since returned to Honduras.

Postoperative Salmonellosis Caused by a Rare Serotype. Dr. Charles T. Caraway, Louisiana State Board of Health.

A 51-year-old female developed fever and diarrhea shortly after cysts were removed from her right kidney. Salmonella banana was isolated from a stool culture. Although it appeared that an infection was hospital-acquired, no source was found.

Editor's Comment

This is a very unusual case. It is the first isolation of Salmonella banana reported to the Communicable Disease Center since surveillance began in April 1962. Salmonella banana was first isolated in 1951 from a serpent in the Belgian Congo (Kauffman, F., et al - A New Salmonella Type (Salmonella banana) from the Belgian Congo. Acta. Path. Scand. 28:43, 1951). Only one S. banana out of 28,000 salmonella isolations was reported to Enteric Laboratory, Communicable Disease Center between 1957 and 1958. This isolate came from a turkey in Oregon.

Louisiana reports that they have had 2 Salmonella banana isolations since 1956.

Salmonella saphra Investigation. Dr. M. P. Martin, Director of Lafayette Parish Health Unit and Dr. John N. Bruce, Chief, Section of Epidemiology, Louisiana State Board of Health.

The first isolation of Salmonella saphra in Louisiana was reported in August 1963 (See SSR No. 16). A second isolate in November prompted the following investigation. Both cases were traced to a family whose permanent residence is Houston, Texas. The family members frequently visited relatives in Lafayette Parish and Louisiana. One member of the family, a girl age 5, became ill on June 28, 1963, one day after arriving in Lafayette. She was hospitalized with symptoms of nausea, vomiting and diarrhea. Stool cultures were positive for Salmonella saphra and the isolation was reported to the State Health Department.

Stool cultures were also obtained from family contacts. The father was positive for Salmonella saphra. At no time had he been symptomatic. The report of the father's stool culture was not received at the State Health Department until September 10, 1963, and therefore a connection between the cases was not suspected.

Editor's Comment

The first human isolation of Salmonella saphra was reported to the Communicable Disease Center from Texas in March 1963 (SSR Report No. 12). At this time Texas reported 4 other S. saphra isolations dating from 1956. Data collected on these cases revealed that 4 out of the 5 originated in Harris County (the Houston area), and the fifth originated from a nearby county. Four of the five cases were sufficiently ill to require hospitalization. All cases were white infants.

Only three other isolations have been reported to the Communicable Disease Center, two of those being the ones mentioned in the preceding report. The other isolation obtained from a white infant hospitalized in Florida in August is being further investigated.

The two Salmonella saphra isolations from Louisiana were traced to the Houston area. The data suggest that the young girl acquired the infection before leaving Texas. This is an excellent example of the use of a rare salmonella serotype as an epidemiologic tracer. One might speculate that the case in Florida will be traced back to Texas. There is no data at present to suggest a common source.

Typhoid Fever Outbreak Attributed to River Water.
Dr. Charles T. Caraway, Louisiana State Department of Health.

In August 1963, three cases of typhoid fever were reported to the Louisiana State Health Department. Bacteria-phage typing revealed that all three were phage type $D_9$. This phage type had not previously been identified in Louisiana. A common source epidemic was therefore suspected.

The onsets of three cases were July 26, August 8, and August 10. Two of the cases were from the same family and all three cases had been swimming in the Bogue Falaya River at Covington State Park, Louisiana. The first case swam in the river each day from July 13 to July 17, 1963. The other two swam in the river on July 17. Other members of each of the two families developed gastroentestinal illness one to two days after swimming.

On September 10 another suspected case of typhoid was reported from Hahnville, Louisiana. This patient also gave a history of having swum in the Bogue Falaya on August 12 and again on August 19, 1963. He was accompanied by approximately 20 other persons from Hahnville. Eighteen of these 24 persons developed gastroenteritis one to two days later. The blood cultures submitted on the suspect case proved to be a salmonella other than Salmonella typhi.

Review of the records in the section of Epidemiology showed a case of typhoid reported in a resident of Jefferson Parish in July 1963. This case was investigated in retrospect and found to have been swimming in the same "swimming hole" sometime between June 10 and June 16, 1963. On July 5, the patient became symptomatic. Salmonella typhi was cultured from the blood and the organism was reported by the Communicable Disease Center to be phage type $D_4$. Subsequent to the

investigation, a supplemental report was received from the Communicable Disease Center correcting the phage type of this patient's blood culture from $D_4$ to $D_9$. Thus, all four cases were phage type $D_9$ and each had been swimming at the same swimming hole with onsets occurring within the known incubation period for typhoid fever.

Investigation of the swimming area was made by the Division of Engineering. This investigation revealed that a broken sewer line had been detected by the city of Covington and the St. Tammany Parish Health Unit about the 1st of September 1963. "No Swimming" signs were posted at the swimming area because of possible water polution. The sewer line was leaking beneath a small stream which empties into the river immediately below the swimming area. During high tides the river has backflow. This would explain the contaminated swimming area which is located above the stream.

Editor's Comment

It is very likely that a chronic typhoid carrier of phage type $D_9$ resides in Covington. The fact that the patients swam on different dates suggests that there was prolonged contamination of the river with Salmonella typhi. This could easily be explained by a salmonella carrier constantly replenishing the sewage with Salmonella typhi organisms. The fact that a number of persons developed gastroenteritis shortly after swimming in the water, in itself, suggests water polution.

C. Maryland

Outbreak of Salmonella thompson gastroenteritis. Dr. G. G. Dimijian and Dr. John Janney, Maryland State Department of Health.

A family outbreak of S. thompson gastroenteritis on a farm in Carroll County, Maryland, resulted in the hospitalization of two members of the family. Several members of the family had ingested well water within twenty-four hours prior to onset of illness and had noted a strange taste to the water. The well, which had almost ceased to flow because of the draught in July, was heavily contaminated with coliform organisms. Removal of the bolted lid over the well released an odor with "the strength of a solid wall" and revealed "the decayed flesh of a large rat floating on the surface". It was surmised that the animal gained access to the well shaft through the large auxiliary overflow pipe, empty and passable for the first time in years because of the dry spell.

It was recalled that the cows, which normally drank water from the same well, had moved to another well to drink the day before the patients' illnesses. Their preference persisted. This sign was ignored at the time.

Editor's Comment

Smart Cows!

D. New York

Report of an Outbreak of S. manhattan Gastroenteritis at a College in New York State. Dr. Julia L. Freitag, Assistant Director, Office of Epidemiology, New York State Department of Public Health; Dr. D. B. Thomas, Deputy Commissioner; and Dr. W. E. Mosher, Commissioner of Health, Erie County Department of Health, Buffalo, New York.

On the morning of Thursday, April 11, 1963, an unusually large number of students began reporting to the Health Office of a New York State College. These students exhibited gastrointestinal symptoms, chiefly abdominal cramps and diarrhea with some nausea, emesis and generalized aches and weakness. There was almost invariably fever over 100 degrees, ranging up to 104 degrees. The students exhibiting the greatest fever and weakness were admitted to the infirmary.

By late afternoon, Friday, April 12, a large but unknown number of students had been seen in the Health Office with gastrointestinal symptoms of which more than thirty had been admitted to the infirmary on the campus. A review of charts reveal that almost all cases had onsets in the 24 hours between 7 a.m., April 11 and 7 a.m., April 12, and all ill students were residents of dormitories on the campus who ate in their dining halls. At this point, in view of the symptomatology and the epidemic curve, it was felt that this represented an outbreak of salmonella food infection, and that since both freshman and upper classmen were involved, there was a common source in both dormitory dining halls. At this point it was decided to recover as much food as possible that had been served during the two days prior to the outbreak and to prepare a questionnaire to determine what foods had been eaten during these two days.

The questionnaire was prepared from a menu sheet provided by the management of the dining halls. It was administered to 113 students of whom 44 were ill and 70 were not ill. When it became apparent that many of the ill students did not eat the meals other than the dinner on Wednesday, April 10, attention was concentrated on this dinner and the 14 questionnaires of students who did not eat this dinner and who were not ill were discarded, leaving information from 99 students who ate dinner on Wednesday, April 10 of whom 44 became ill and 55 were not ill. Unfortunately, after the questionnaire was completed, it was learned that roast beef had been added to the menu at the dining hall serving freshman students but that this item was not included in our questionnaire; therefore, a small sample of 18 students was reinterviewed with specific regard to whether they had eaten turkey or roast beef. The results of this small reinterview were most impressive since the attack rate of illness among those eating turkey roll was 85 per cent, whereas among those eating beef or fish it was zero. The table of attack rates from the total questionnaire was corrected partially as a result of this reinterview.

In an effort to learn the total extent of the outbreak, a random sample of residents using each dining hall was interviewed for presence or absence of illness by dining hall and by sex. The attack rate was 18

per cent with an unusually large rate among freshman females (40 per cent). The reason for this is not clear. An attack rate of 18 per cent would indicate that approximately 250 of 1,400 students served were ill.

According to the food service management, each dining hall is operated as a separate activity and shares no personnel or foods. In view of this fact, it was felt that the foods must have been contaminated or infected with salmonellae prior to preparation in the dining halls since it would be extremely unlikely that two independent salmonella outbreaks would occur in the two dining halls at exactly the same time if they were caused by infection introduced into the food during preparation at the dining hall. There were no illnesses traced to the University cafeteria, also served by a local commissary.

Laboratory Findings: It was learned from a local hospital that the ten stool specimens submitted to its laboratory by the infirmary all showed salmonella infection. Stools were collected from the 31 dining hall personnel who actually had contact with the food at the Wednesday evening dinner. Of these, 15 were found to be infected with salmonellae and were withdrawn from food service. A subsequent report from the Erie County Laboratory stated that the Salmonella isolations were all Salmonella manhattan. This was also confirmed by the Division of Laboratories and Research.

Environmental Health Survey. An intensive survey was instituted by the Division of Environmental Health of the Food Service Activities and also of the plumbing in the dormitory buildings for any possible cross-connections or inter-connections. No cross-connections, interconnections or submerged outlets were found in this survey. The kitchens were under the direction of a local commissary, a large food management firm serving Western New York.

An investigation of the method of defrosting and heating the turkey roll indicated that there was a period of three hours during which the turkey could have been at incubation temperature. The procedures in both kitchens were much the same. The description of the handling procedure in the kitchen serving freshmen by the Director of the Bureau of Milk, Food, and Meat Sanitation follows:

"The method of handling the turkey roll in question was to defrost in the walk-in refrigerator from its original frozen state, as received. During the morning of day in which the turkey is intended for the evening meal, it is brought to a work table, skinned and cut on an electric slicer into 3 oz. portions. These are approximately 1/4 inch thick and about 40 servings are obtained from a 9 pound roll. The slices are placed separately on the bottom service of a shallow, stainless steel pan in a single layer. The full pans are covered with an aluminum foil and put on an open mobile food cart. When the entire amount was cut and in pans, the cart was wheeled into a walk-in cooler. This entire process would require about 1 hour and of course the work could be interrupted.

"A period of time prior to the serving hour, which was from 4 to 6:30 p.m., the food cart contzining the sliced turkey roll in pans was wheeled from the walk-in cooler to the steamer area. The steamer ovens

are in 2 banks, with 3 ovens in each bank. A steam gauge is on one side of the oven and an interval timer with one hour maximum setting is on the other side of each oven. The trays are placed in the steamer intermittantly to supply the demand of the cafeteria line. Meal service is light at 4, with a peak reached about 5, tapering off to a few stragglers as 6:30 approaches.

"In order to cook this quantity thus, it would be necessary to criss-cross the trays in the ovens, stacking one on top of another since these are single rack ovens. However, the food is not all cooked at once. After cooking, the pans are transferred to the dry heat table to supply two serving lines. A slice of turkey roll, dressing, potatoes and gravy is prepared for each student as they pass along the cafeteria line.

"By close questioning of the cook who prepared all the turkey roll for this meal, it was possible to determine that incubation temperatures could have existed for the turkey roll for a period of 3 hours or longer (One hour for the slicing operation, perhaps 2+ hours prior to and during the meal service, this all being precooking time.) Also, manual contact with each turkey roll sliced and each slice would have occurred. Therefore, there was adequate opportunity for contamination, and incubation and as outlined in other portions of this report, opportunity for less complete cooking then is recommended by the local food management services. Similarly, if any products were contaminated prior to receipt, ample opportunity for incubation and further growth of organisms was present."

At the Tower dining hall the steamers had leaking gaskets on their doors. One steam valve was loose and would not remain open. There were no timers on the steamers and timing had to be done by use of a wall clock. In one dining hall, one steamer timer was broken and handwashing sinks were inadequate. In the basement, sewer pipes were leaking in the storeroom.

No parts of the turkey rolls served at the meal in question were available for laboratory examination. However, ten rolls were obtained and examined at the Erie County Laboratory. The laboratory reported organisms with characteristics of salmonellae from one specimen which did not display any consistent serological identity. A turkey roll submitted to the Division of Laboratories and Research of the New York State Department of Health was negative.

The turkey rolls were produced in Pennsylvania. Communications from the New York State Department of Health and the Communicable Disease Center, Atlanta, Georgia, reported that two other salmonella outbreaks of food poisoning were traced to turkey roll prepared in this plant.

Control Measures. The Department took the following steps to prevent further outbreaks of this nature.

1. Violations found in both kitchens were submitted to the commissary and immediate corrections were made where possible, or steps were taken to make the necessary corrections.

2. Stools were secured from all food handlers. No carriers were permitted to work in the kitchen.

3. The commissary voluntarily decided not to serve any of the remaining turkey rolls stored in their freezer unit.

It was also recommended to the commissary that consideration be given to employing a full time sanitarian to supervise the sanitation aspects of their extensive operations in New York which include hospitals, industrial restaurants and the colleges.

Isolation of cases and carriers in the dormitories of the school was found to be impractical. There is some evidence that secondary cases occurred, but in relatively small numbers. Handwashing after toilet use was urged and signs posted in the dormitory washrooms.

Summary. An extensive outbreak of food poisoning involving two kitchens at a college in New York State was investigated by the Erie County Department of Health on April 13. Epidemiologic evidence indicated that turkey roll served at a dinner on April 10, 1963 was the source of the outbreak. It is estimated that 250 students were ill, or 18 per cent of those eating in the two dining rooms. The illness was characteristic of salmonella food poisoning. Salmonella manhattan was isolated from ten students and 15 of the 31 food handlers. As the two dining halls were in separate buildings and completely independent in regard to equipment, personnel and facilities, this suggested that it must have been a common food served in both dining halls and contaminated prior to its handling in the independent kitchens. All epidemiologic evidence implicated the turkey roll. The laboratory failed to isolate Salmonella manhattan in the turkey rolls submitted for examination by a local commissary.

Editor's Comment.

The above investigation is thorough and the evidence incriminating turkey rolls appears sound. Therefore, the authors report has been reproduced in its entirety with only minor deletions of names and specific locations.

E. Ohio

Salmonellae in Dried Egg Albumin. Dr. Harold A. Decker, Chief, Division of Communicable Diseases, Ohio Department of Health.

A commercial firm in Ohio has been culturing dried egg products. This firm specifies before purchasing dried egg products that they be free of all salmonellae. Nevertheless, the firm runs quality control cultures before using it and rejects lots containing salmonellae. All salmonella isolates are serotyped by the Ohio Department of Health Laboratory. Since July 1963 the firm has isolated 5 serotypes on 8 occasions from seven lots of dried egg albumin, provided by three suppliers.

The following table indicates the dates of cultures, the serotypes

of the salmonellae and the lots by code number.

| Date Received in Ohio Dept. Health Laboratory | Serotype | Lot Code No. |
|---|---|---|
| 7/2 | S. thompson | 1 |
| 8/29 | S. newington | 2 |
| 9/12 | S. tennessee | 3 |
| | S. infantis | 4 |
| | S. oranienburg | 5 |
| 9/18 | S. oranienburg | 5 |
| | S. tennessee | 6 |
| | S. newington | 7 |

It is notable that this commercial firm did not recognize such contamination when its bacteriology was being done by a medical laboratory. The first positive culture appeared in July when the firm established its own laboratory and started culturing relatively large samples of material. At present several one-gram samples are taken from each shipment and are pooled. From this mixed pool 10 grams is added to a salmonella enrichment (selenite, cystine, lactose) broth and incubated for 24 hours prior to plating for isolation on S.S. Agar and Brilliant Green Agar.

F. Pennsylvania

An Outbreak of Gastroenteritis Due to Salmonella chester in a tuberculosis hospital. Dr. Sylvan M. Fish, Epidemiologist, Philadelphia Department of Public Health.

On September 10, 1963 a nurse employed by a tuberculosis hospital became ill with gastroenteritis. On about September 17 two patients in the hospital became ill with symptoms consistent with salmonellosis. Rectal cultures on all three grew out Salmonella chester. This prompted an investigation which revealed that the two patients had had no known contact with the nurse and in fact the nurse, in her routine duties, had little or no patient contact. On September 10, a culture survey of dietary personnel revealed that 10 asymptomatic food handlers were positive for Salmonella chester. On October 1, a culture survey of the patients and staff of the entire hospital, uncovered an additional 13 patients, 3 nurses and 1 secretary positive for S. chester without known histories of gastrointestinal illness. In summary, investigations revealed the following:

| | Total Cultured | Total Positive for S. chester | Total Ill |
|---|---|---|---|
| Patients | 360 | 16 | 3 |
| Employees | 105 | 15* | 1** |
| Total | 465 | 31 | 4 |

* 10 Food Handlers, 4 Nurses, and 1 Secretary
** Nurse

Epidemiological study failed to reveal the source of this outbreak.

G. Tennessee

Prevalence of Salmonellae Among Patients in an Institution for the Mentally Retarded. Dr. Cecil B. Tucker, Director, Division of Preventable Diseases and Dr. D. B. Jones, EIS Officer, Tennessee Department of Public Health.

Because of a recent interstate outbreak of hospital-acquired infections due to Salmonella derby, the Tennessee Department of Public Health was quick to investigate the report of isolation of S. derby from two male patients, ages 5 and 13, in an institution for the mentally retarded. The institution cares for both children and adults. It houses 1400 patients and is staffed by 453 employees.

Both patients from whom S. derby was isolated had advanced "encephalopathy" and lacked faculties for communication or self-care. They were asymptomatic at time of culture, however both had experienced episodes of diarrhea in the recent and remote past. Because of the frequent occurrence of diarrhea among these patients, precise dates of onset of diarrhea were not available.

The cultures obtained from these patients were part of a routine bacteriologic survey of the patient population. Stool culture surveys have been a common practice in the institution due to both the high annual incidence of gastroenteritis and a recent outbreak of shigellosis in one hospital unit. Review of results of 6,000 rectal swab cultures obtained from the patient population during 1962 revealed 16 salmonella isolations (S. typhimurium, 14 and S. heidelberg, 2). To date in 1963, excluding the S. derby recoveries, 6 salmonellae have been isolated from patients (S. typhimurium, 4 and S. javiana, 2). Study of these past isolations and the two recent recoveries of S. derby failed to link the cases or define a source of infection.

Editor's Comment

Though the source of these infections could not be discovered, this is the first data reported to Communicable Disease Center that allows an estimate of the prevalence of salmonellae in this type institution. One is impressed with the few salmonellae recovered and the infrequency of large scale outbreaks in such a patient population.

H. Texas

A Small Common Source Outbreak of Typhoid Fever. Dr. M. S. Dickerson, Epidemiologist, Communicable Disease Division and Dr. J. E. Peavy, Commissioner of Health, Texas State Department of Health.

On August 10, 1963, the Communicable Disease Division was alerted to a total of six suspected cases of typhoid fever distributed as follows: two cases reported from Louisiana, two from Houston, Texas, and two from Raywood, Texas. On August 12, the two Houston cases were confirmed by blood and stool cultures. The Raywood cases were not confirmed but did have clinical signs and symptoms of typhoid. The Louisiana cases were diagnosed on the basis of clinical signs and an agglutination titer of 1:320 for "O" agglutinins.

Epidemiological investigation pursued. It was determined that all cases were either women or children and were part of a family gathering of twenty people at the home of parents residing near Raywood, Texas for a few hours in the afternoon of July 4, 1963. It was confirmed that no food was eaten, but the "men drank beer and the women and children drank water."

The onset of illness of all cases was in the period between July 19 and 21.

Samples of water taken from the shallow water well were bacteriologically examined. On August 15, Salmonella typhi was cultured from the drinking water.

Epidemiological investigation of the suspected premises revealed ideal physical factors which would lead to well water contamination. The owners and occupants of the premises were elderly but active. The environmental hygiene was deplorable. Human feces were strewn in the yard from jars used during the night. Feces were deposited behind trees and outbuildings. An outside toilet was available but never used.

Fecal specimens were obtained from the residents for bacteriological examination. On August 22, Salmonella typhi was isolated from the male member of this family who had had no recent symptoms. By September 11 phage typing was completed on cultures obtained from the cases, the water and the resident where the shallow well was located. All phage types were $E_1$. With the matching of the phage types, it was reasonably secure that the typhoid carrier source of this outbreak had been established and confirmed.

On September 13, the carrier was placed under surveillance by the county health officer and under medical care and supervision by his private physician.

I. Washington

Follow-up of Report of an Outbreak of Salmonellosis Occurring in a College in Washington. Dr. Ernest A. Ager, Chief, Division of Epidemiology, Washington State Department of Health.

A preliminary report of an outbreak of unusually severe gastroenteritis at a college in Washington State was included in SSR No. 17, September 30, 1963. It was noted that the causative organism was a group B salmonella and that commercially baked pies were the suspect common source vehicle of infection. The distribution of the pies extended throughout Washington, and into Idaho and Northern California and Oregon.

Since the preliminary report, it has been learned that the outbreak was far more extensive than originally reported. Patients with severe gastroenteritis and toxic systemic symptoms have been uncovered throughout the State of Washington and some cases have been reported from Idaho. The causative agent has been identified as S. heidelberg. Illness in many instances has been typhoidal, with prolonged fever and

chills, lasting occasionally 1-2 weeks. All patients interviewed thus far have reported consuming portions of pies from one lot prepared by a single large commercial bakery. To date, an estimated 200 individuals have been infected.

Field investigation has uncovered strong presumptive evidence that the pies were contaminated by a frozen egg albumin preparation. Studies to further document this suspicion are in progress and will be reported subsequently.

Editor's Comment

This is the second report in recent months that emphasizes the unusually severe, typhoid-like illness caused by S. heidelberg. Certainly, future observations are necessary to define the nature of the apparent increased virulence of this serotype. One wonders whether the severe illness encountered is due to a "dosage" phenomenon or enhanced virulence inherent in the organism itself.

J. Wisconsin

Recent Experience with Typhoid Fever in Wisconsin, including report of an unusual family outbreak, and a case due to chloramphenicol Resistant Organisms. Dr. Josef Preizler, Director, Bureau Communicable Diseases, State of Wisconsin Board of Health.

Five members of a rural Racine County family developed typhoid fever, with onsets from August 18 to August 22, 1963. The 16-year-old daughter was the first case diagnosed. The 56-year-old father developed abdominal distress and diarrhea on August 10, 1963, and was admitted to a hospital on August 14, 1963. During this hospital stay he had no fever and had a normal blood count. He was discharged after four days' observation and two days thereafter he developed fever and was diagnosed as having "typhoid fever." His wife became ill the next day with symptoms of typhoid fever.

A 23-year-old son of the family and his 22-year-old wife returned from a vacation the first part of August. The young man developed influenza-like symptoms for five days, just after his return, and three weeks after this episode he developed clinical symptoms of typhoid fever. During the return trip from his vacation, he visited a friend of the family on July 28. Follow-up investigation of this family disclosed that an 88-year-old grandmother of the household, who participated in preparing food for the guests, had typhoid fever when she was young. No other members of the grandmother's household ever had typhoid fever. Stool specimens obtained from this suspected source were negative, but observation of this family will continue and other possible sources will be sought.

A patient in the hospital, who occupied a room next to the first case, developed severe diarrhea three days after the contact. A week thereafter, typhoid organisms were isolated from this patient. It is noteworthy that this individual was receiving chloramphenicol for a genitourinary tract condition while he was exposed to the other patient.

Laboratory tests disclosed that all the typhoid organisms recovered from this case were resistant to chloramphenicol.

During the same month, three other typhoid cases were diagnosed in Wisconsin, presumably unrelated to those described above. One was a husband of a known carrier, and another case developed in a patient at a large mental hospital. This last patient gave a history compatible with having had typhoid fever also in 1917. A third case in a 72-year-old man is under investigation at the present time.

FIGURE I.

REPORTED HUMAN ISOLATIONS OF SALMONELLAE IN THE UNITED STATES
1963

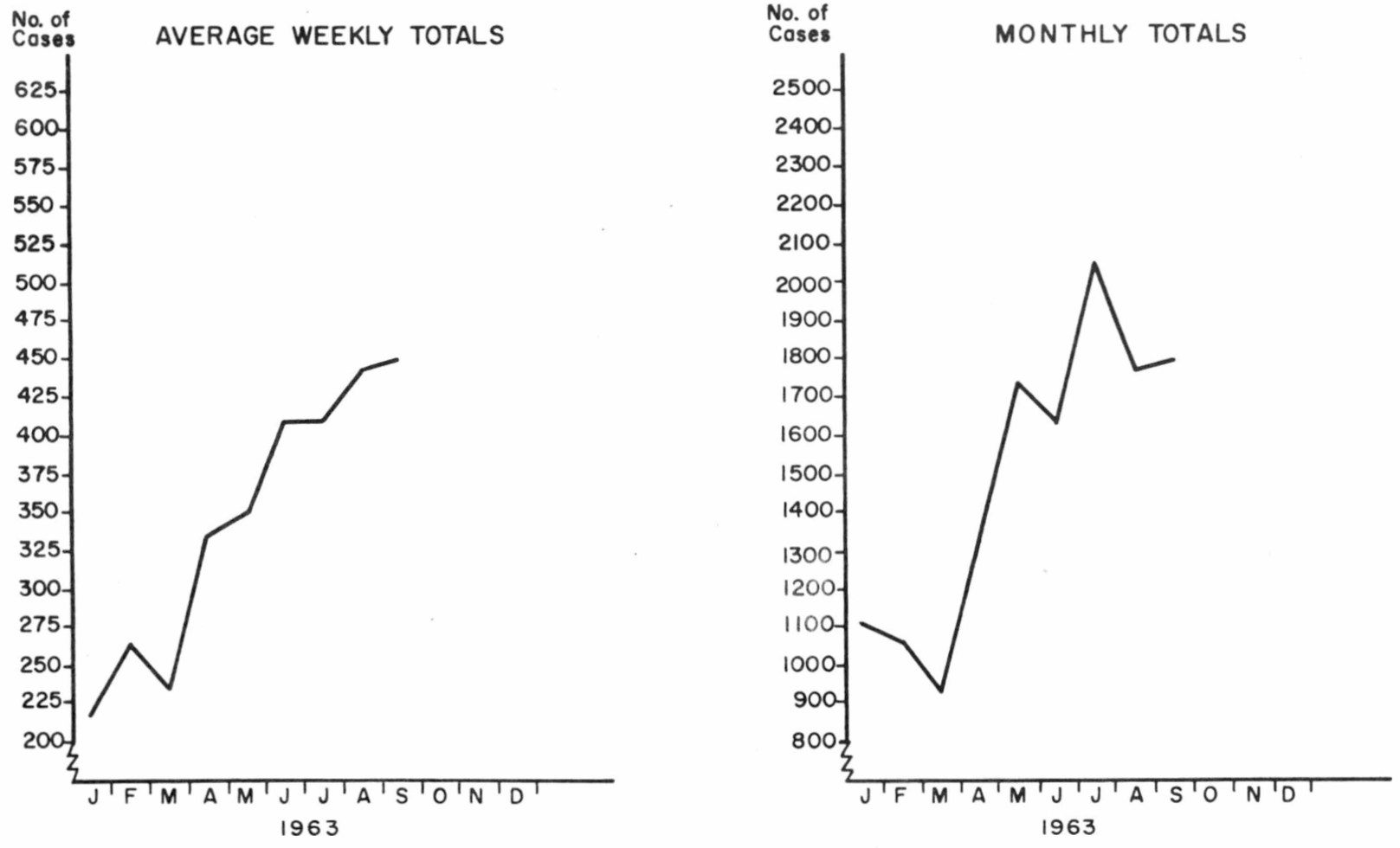

TABLE I
SALMONELLA SEROTYPES ISOLATED FROM HUMANS DURING SEPTEMBER, 1963

| SEROTYPE | REGION AND REPORTING CENTER | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | NEW ENGLAND | | | | | | | MIDDLE ATLANTIC | | | | | | EAST NORTH CENTRAL | | | | |
| | MAINE | NH | VT | MASS | RI | CONN | TOTAL | NY-A | NY-BI | NY-C | NJ | PA | TOTAL | OHIO | IND | ILL | MICH | WIS | TOTAL |
| abaetetuba | | | | | | | | | | | | | | | | | | | |
| albany | | | | | | | | | | | | | | | | | | | |
| anatum | | | | | | | | 1 | | 1 | | 1 | 3 | | | 2 | 3 | | 5 |
| atlanta | | | | | | | | | | | | | | | | | | | |
| bareilly | | | | | | | | | 1 | | | | 1 | | | | | | |
| berta | | | | | | | | 1 | | | 1 | | 2 | | | | | | |
| binza | | | | | | | | | | | | | | | | | | | |
| blockley | | | | 6 | | | 6 | 1 | 1 | | | 4 | 6 | 1 | | 1 | 1 | | 3 |
| braenderup | | | | | | 1 | 1 | | | | | 3 | 3 | | | 1 | | | 1 |
| bredeney | | | | | | 1 | 1 | 2 | | | | 6 | 8 | | | 4 | | | 4 |
| california | | | | | | | | | | | | | | | | 1 | | | 1 |
| carrau | | | | | | | | | | | | | | | | | | | |
| cerro | | | | | | | | | | | | | | | | | | | |
| chester | | | | | | | | | | | | 10 | 10 | | | | | | |
| cholerae-suis | | | | | | | | | | | | | | | | | | | |
| cholerae-suis var. kunzendorf | | | | | | | | 1 | | | | | 1 | | 1 | 1 | 1 | | 3 |
| clifton | | | | | | | | | | | | | | 1 | | | 2 | | 3 |
| cubana | | | | | | | | | | | | | | | | | | | |
| derby | 1 | | | 9 | 3 | 5 | 18 | 20 | 13 | | 6 | 50 | 89 | 5 | 4 | 13 | 3 | 1 | 26 |
| duesseldorf | | | | | | | | | | | | | | | | | | | |
| enteritidis | | | | 11 | 1 | | 12 | 3 | 4 | 5 | 7 | | 19 | 1 | | 5 | 3 | 4 | 13 |
| fayed | | | | | | | | 1 | | | | 2 | 3 | | | | | | |
| give | | | | | | | | | | | | | | | | | | | |
| heidelberg | 5 | | | 15 | | 3 | 23 | 3 | 7 | 4 | 1 | 6 | 21 | 1 | 1 | 3 | 6 | 4 | 15 |
| infantis | | | | 4 | | | 4 | 3 | 4 | 3 | | | 10 | | 2 | 6 | 2 | 2 | 12 |
| inverness | | | | | | | | | | | | | | | | | | | |
| irumu | | | | | | | | | | | | | | | | | | | |
| javiana | | | | | | | | | | | | | | | | | 2 | | 2 |
| kentucky | | | | | | | | | | | | 5 | 5 | | | 1 | | | 1 |
| litchfield | | | | | | | | | | | | | | | | | | | |
| livingstone | | | | | | | | | | | | | | | | | | | |
| manhattan | 8 | | | | | | 8 | | 2 | | | 1 | 3 | | | | | | |
| meleagridis | | | | | | | | | | | 1 | 8 | 9 | | | 1 | 1 | | 2 |
| miami | | | | | | | | | | | | | | | | | | | |
| minnesota | | | | | | | | | | | | | | | | | | | |
| mississippi | | | | | | | | | | | | | | | | | | | |
| montevideo | | | | 2 | | 2 | 4 | 1 | 1 | 1 | | 1 | 4 | 1 | | 10 | 1 | | 12 |
| muenchen | | | | | | | | | | | | 4 | 4 | | | | | 1 | 1 |
| newington | | | | | | | | | | | | | | | | | | | |
| new mexico | | | | | | | | | | | | | | | | | | | |
| newport | | | | 4 | 1 | 2 | 7 | | 4 | 1 | 1 | 4 | 10 | 2 | | 6 | 1 | | 9 |
| norwich | | | | | | | | | | | | | | 1 | | | | | 1 |
| oranienburg | | | 2 | 5 | | 1 | 8 | 2 | 1 | | | 5 | 8 | 3 | | 3 | 3 | 2 | 11 |
| oslo | | | | | | | | | | | | | | | | | | | |
| panama | | | | 2 | | | 2 | | 1 | 1 | 1 | | 3 | 1 | | | | | 1 |
| paratyphi A | | | | | | | | | 1 | | | | 1 | | | | | | |
| paratyphi B var. java | 1 | | | | | 1 | 2 | 1 | | | | | 1 | | | 1 | | 1 | 2 |
| paratyphi B | | | | 4 | | | 4 | | 1 | | | | 1 | 1 | | | 1 | | 2 |
| pensacola | | | | | | | | | | | | | | | | | | | |
| poona | | | | | | | | | | 1 | | | 1 | | | | | | |
| pullorum | | | | | | | | | | | | | | | | | | | |
| reading | | | | | | 1 | 1 | | | | | 9 | 9 | | | | | | |
| saint-paul | 5 | | | 5 | | 2 | 12 | 3 | 3 | 1 | | 13 | 20 | 2 | 1 | 2 | 4 | 1 | 10 |
| san-diego | | | | 2 | | | 2 | | | | | | | 1 | | | | | 1 |
| saphra | | | | | | | | | | | | | | | | | | | |
| schwarzengrund | | | | | | | | | | | | | | | | 2 | 1 | | 3 |
| senftenberg | | | | | | | | | | | | | | | | | | | |
| stanley | | | | | | | | | | | 2 | | 2 | | | | | | |
| tennessee | | | | | | | | | | | | 1 | 1 | | | | | | |
| thomasville | | | | | | | | | | | | | | | | | | | |
| thompson | | | | | | | | 7 | 6 | 2 | 1 | 9 | 25 | 4 | | 1 | 1 | 3 | 9 |
| typhi | 1 | | | 2 | | | 3 | | 7 | | 1 | 2 | 10 | 5 | 3 | 2 | | 6 | 16 |
| typhimurium | 7 | | 3 | 22 | 2 | 8 | 42 | 13 | 15 | 17 | 7 | 56 | 108 | 35 | | 16 | 11 | 5 | 67 |
| typhimurium var. copenhagen | | | | 6 | | | 6 | | | | | | | | | 1 | 6 | | 7 |
| weltevreden | | | | | | | | | | | | | | | | 1 | | | 1 |
| worthington | | | | | | | | | | | | | | | | | | 1 | 1 |
| untypable | | | | | | | | | | | | | | | | | | | |
| untypable Group B | | | | | | | | | | | | | | | | | | | |
| untypable Group $C_1$ | | | | | | | | | | | | | | | | | | | |
| untypable Group $C_2$ | | | | | | | | | | | | | | | | | | | |
| untypable Group D | | | | | | | | | | | | | | | | | | | |
| unknown | | 1 | | | | | 1 | 1 | | | | | 1 | | | 1 | | 1 | 2 |
| TOTAL | 28 | 1 | 5 | 99 | 7 | 27 | 167 | 64 | 72 | 37 | 29 | 200 | 402 | 65 | 12 | 85 | 53 | 32 | 247 |

New York (A - New York State, B1 - New York Beth Israel Hospital, C - New York City)

TABLE I
BY SEROTYPE AND REPORTING CENTER

| REGION AND REPORTING CENTER | | | | | | | | | | | | | | | | | | |
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| WEST NORTH CENTRAL | | | | | | | | SOUTH ATLANTIC | | | | | | | | | | |
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| | | | | | | 1 | 1 | | | | | | | | | 2 | 2 | abaetetuba |
| | | | | | | | | | | | | | | | 1 | | 1 | albany |
| | | | | | | | | | | | | | | | | 2 | 2 | anatum |
| | | | | | | | | | | | 1 | | | | | | 1 | atlanta |
| | | | | | | | | | 2 | | 1 | | | | 1 | | 3 | berta |
| | | | | | | | | | | | | | | | | | 1 | binza |
| | | | | | | | | | | | | | | | 1 | | 1 | blockley |
| | | | | | | | | | | | | | | | | | | braenderup |
| | | | | | | | | | | | | | | | 1 | | 1 | bredeney |
| | | | | | | | | | | 1 | | | | | | | 1 | california |
| | | | | | | | | | | | | | | | | | | carrau |
| | | | | | | | | | | | | | | | | | | cerro |
| | | | | | | | | | | | | | | | | | | chester |
| | | | | | | | | | | | | | | | | | | cholerae-suis |
| | | | | | | | | 1 | 2 | 1 | | | | | 1 | | 5 | derby |
| | | | | | | | | | | | | | | | | | | cholerae-suis var. kunzendorf |
| | | | | | | | | | | | | | | | | | | clifton |
| | | | | | | | | | | | | | | | | | | cubana |
| 2 | | 1 | | | | | 3 | | | 1 | 1 | | | | 1 | | 1 | duesseldorf |
| | | | | | | | | | | | 3 | | | | | | 5 | enteritidis |
| | | | | | | | | | | | 1 | | | | | | 1 | fayed |
| | | 3 | | 1 | | | 4 | 2 | 1 | | 7 | | 1 | | 6 | 2 | 19 | give heidelberg |
| 2 | | 4 | | | | 1 | 7 | | | | | | | | 7 | 1 | 8 | infantis |
| | | | | | | | | | | | | | | | | 1 | 1 | inverness |
| | | | | | | | | | | | | | 6 | | | 1 | 7 | irumu |
| | | | | | | | | | 1 | | | | | | 5 | 1 | 7 | javiana |
| | | | | | | | | | | | | | | | 1 | | 1 | kentucky |
| | | | | | | | | | | 1 | | | | | | | 1 | litchfield |
| | | | | | | | | | | | | | | | 1 | | 1 | livingstone |
| | | | | | | | | | | 1 | | | | | 1 | | 2 | manhattan |
| | | | | | | | | | 1 | | | | | | 1 | | 2 | meleagridis |
| | | | | | | | | | | | | | | | 2 | 4 | 6 | miami |
| | | | | | | | | | | | | | | | 2 | | 2 | minnesota |
| | | | | | | | | | | | | | | | 1 | | 1 | mississippi |
| 1 | | | | | | | | | 1 | | 1 | | | | 1 | 25 | 28 | montevideo |
| | | | | | 1 | | 2 | | | | 1 | | | | 1 | 3 | 5 | muenchen |
| | | | | | | | | | | | | | | | | | | newington |
| 1 | | | | | | 5 | 6 | | 1 | | | | | | 9 | 14 | 24 | new mexico |
| | | | | | | | | | | | 1 | | | | | | 1 | newport |
| | | | | | | 11 | 11 | | 1 | | | | 1 | | 2 | 51 | 55 | norwich |
| | | | | | | | | | | | | | | | | | | oranienburg |
| | | | | | | | | | | | | | | | | | | oslo |
| 1 | | | | | | 5 | 6 | | | | | | | | | | | panama |
| | | | | | | | | | | | | | 1 | | | | 1 | paratyphi A |
| | | | | | 1 | | 1 | 1 | | | | | | | | | 1 | paratyphi B var. java |
| | | | | | | | | | | | | | | | 1 | | 1 | paratyphi B |
| | | | | | | | | | | | | | | | | | | pensacola |
| | | | | | | | | | | | | | | | | | | poona |
| 1 | 1 | | | | | | 2 | | 1 | 2 | 1 | | | | 3 | 3 | 10 | pullorum |
| | | | | | | | | | | | | | | | | 1 | 1 | reading |
| | | | | | | | | | | | | | | | | | | saint-paul |
| | | | | | | | | | | | | | | | | | | san-diego |
| | | | | | | | | | | | | | | | | | | saphra |
| | | | | | | | | | | | | | | | | | | schwarzengrund |
| | | | | | | | | | | | | | | | | | | senftenberg |
| | | | | | | 1 | 1 | | | | | | | | 1 | 3 | 4 | stanley |
| | | | | | | | | | | | | | | | | | | tennessee |
| 1 | | | | | | | | | | | | | | | | 1 | 1 | thomasville |
| | | | | | | 1 | 2 | | | | 2 | | | | 1 | 1 | 4 | thompson |
| 4 | 2 | 2 | | | | 1 | 3 | 1 | 2 | | 1 | 1 | 1 | | | 5 | 11 | typhi |
| | | 9 | 3 | | 1 | 7 | 26 | 2 | 6 | 2 | 10 | | 5 | | 19 | 9 | 53 | typhimurium |
| | | | | | | | | | | | | | | | | | | typhimurium var. copenhagen |
| | | | | | | | | | | | | | | | | | | weltevreden |
| | | | | | | | | | | | | | | | | | | worthington |
| | | | | | | | | | | | | | | | | | | untypable |
| | | | | | | | | | | 1 | | | | 1 | | | 2 | untypable Group B |
| | | | | | | | | | | | | | | | | | | untypable Group $C_1$ |
| | | | | | | | | | | | | | | | | | | untypable Group $C_2$ |
| | | | | | | | | | | | | | | | | | | untypable Group D |
| | | | | | | | | | | 2 | | | | | | | 2 | unknown |
| 13 | 3 | 19 | 3 | 1 | 3 | 33 | 75 | 7 | 19 | 12 | 31 | 1 | 15 | 1 | 70 | 130 | 286 | TOTAL |

TABLE I (Continued)

| SEROTYPE | REGION AND REPORTING CENTER | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | EAST SOUTH CENTRAL | | | | | WEST SOUTH CENTRAL | | | | MOUNTAIN | | | | | | | |
| | KY | TENN | ALA | MISS | TOTAL | ARK | LA | OKLA | TEX | TOTAL | MONT | IDA | WYO | COLO | NM | ARI | UTAH | NEV | TOTAL |
| abaetetuba | | | | | | | 1 | | | 1 | | | | | | | | | |
| albany | | | | | | | | | | | | | | | | | | | |
| anatum | | 1 | | 1 | 2 | | 1 | | 1 | 2 | | | | | | | | | |
| atlanta | | | | | | | | | | | | | | | | | | | |
| bareilly | | | | | | | | | | | | | | | | | | | |
| berta | | | | | | | 1 | | | 1 | | | | | | | | | |
| binza | | | | | | | | | | | | | | | | | | | |
| blockley | | | | | | 1 | 6 | | | 7 | | | | | | | | | |
| braenderup | | | | | | | | | | | | | | | | | | | |
| bredeney | | 1 | | | 1 | | | | | | | | | 1 | | 1 | | | 2 |
| california | | | | | | | | | | | | | | | | | | | |
| carrau | | | | | | | | | | | | | | | | | | | |
| cerro | | | | | | | 1 | | | 1 | | | | | | | | | |
| chester | | | | | | | 1 | | | 1 | | | | | | | | | |
| cholerae-suis | | | | | | | | | | | | | | | | | | | |
| cholerae-suis var. kunzendorf | | | | | | | | | | | | | | | | | | | |
| clifton | | | | | | | 1 | | | 1 | | | | | | | | | |
| cubana | | | | | | | | | | | | | | | | | | | |
| derby | | 2 | | | 2 | | 5 | | 1 | 6 | | | | 2 | | | | | 2 |
| duesseldorf | | | | | | | | | | | | | | | | | | | |
| enteritidis | | 2 | | | 2 | | | | 1 | 1 | | 1 | | | | | 1 | | 2 |
| fayed | | | | | | | | | | | | | | | | | | | |
| give | | | | | | | 2 | | | 2 | | | | | | | | | |
| heidelberg | | | | | | | 3 | | 10 | 13 | 1 | 1 | | 7 | | | 2 | | 11 |
| infantis | | 2 | 1 | | 3 | 1 | 4 | 1 | 4 | 10 | | | | 1 | | 1 | 1 | | 3 |
| inverness | | | | | | | | | | | | | | | | | | | |
| irumu | | | | | | | | | | | | | | | | | | | |
| javiana | | | | | | 2 | 4 | | 9 | 15 | | | | | | | | | |
| kentucky | | | | | | | 2 | | 1 | 3 | | | | | | | | | |
| litchfield | | | | | | | 1 | | | 1 | | | | | | | | | |
| livingstone | | | | | | | 2 | | | 2 | | | | | | | | | |
| manhattan | | | | | | | 1 | | | 1 | | | | | | | | | |
| meleagridis | | | | | | | | | | | | | | | | | | | |
| miami | | | | | | | | | | | | | | | | | | | |
| minnesota | | | | | | | | | | | | | | | | | | | |
| mississippi | | | | | | | | | | | | | | | | | | | |
| montevideo | | | 2 | | 2 | | 3 | | 6 | 9 | | | | | | 1 | | | 1 |
| muenchen | | | | | | | 1 | | | 1 | | | | | | | | | |
| newington | | | | | | | | | | | | | | | | | | | |
| new mexico | | | | | | | | | | | | | | | | | | | |
| newport | | 1 | 1 | | 2 | 1 | 10 | | 5 | 16 | | 2 | | | | | | | 2 |
| norwich | | | | | | | | | | | | | | | | | | | |
| oranienburg | | 1 | | | 1 | 1 | 5 | | 3 | 9 | | | | | | | | | |
| oslo | | | | | | | | | | | | | | | | | | | |
| panama | | | | | | | | | 1 | 1 | | | | | | | | | |
| paratyphi A | | | | | | | | | | | | | | | | | | | |
| paratyphi B var. java | | | | | | | 3 | | | 3 | | | | | | | | | |
| paratyphi B | | | | | | | | 1 | 2 | 3 | 3 | | 1 | | | | | | 4 |
| pensacola | | | | | | | | | | | | | | | | | | | |
| poona | | | | | | 1 | | | 2 | 3 | | | | | | | | | |
| pullorum | | | | | | | | | | | | | | | | | | | |
| reading | | | | | | | | | | | | | | | | 1 | | | 1 |
| saint-paul | | | 1 | | 1 | | 1 | | | 1 | 1 | | | 1 | | | | | 2 |
| san-diego | | | | | | | | | | | | | | | | | | | |
| saphra | | | | | | | 2 | | | 2 | | | | | | | | | |
| schwarzengrund | | | | | | | | | | | | | | | | | | | |
| senftenberg | | | | | | | 3 | | | 3 | | | | | | | | | |
| stanley | | | | | | | | | | | | | | | | 2 | | | 2 |
| tennessee | | | | | | | | | | | | | | | | | | | |
| thomasville | | | | | | | | | | | | | | | | | | | |
| thompson | | | | | | | | | | | | | | | | | | | |
| typhi | 6 | 4 | | | 10 | 6 | | 1 | 5 | 12 | | | | 1 | 1 | | | | 2 |
| typhimurium | 4 | 7 | 2 | | 13 | 1 | 8 | 4 | 15 | 28 | | 2 | | 9 | | | 7 | | 18 |
| typhimurium var. copenhagen | | | | | | 1 | | | | 1 | | 2 | | | | | | | 2 |
| weltevreden | | | | | | | | | | | | | | | | | | | |
| worthington | | | | | | | | | | | | | | | | | | | |
| untypable | | | | | | | | | | | | | | | | | | | |
| untypable Group B | 1 | | | | 1 | 1 | | | | 1 | | | | | 11 | | 1 | | 12 |
| untypable Group $C_1$ | | | | | | 3 | | | | 3 | | | | | 3 | | | | 3 |
| untypable Group $C_2$ | | | | | | 1 | | | | 1 | | | | | 3 | | | | 3 |
| untypable Group D | | | | | | 7 | | | | 7 | | | | | 5 | | | | 5 |
| unknown | | | 1 | | 1 | | | | | | | | | | | | | | |
| TOTAL | 11 | 21 | 8 | 1 | 41 | 27 | 72 | 7 | 66 | 172 | 5 | 8 | 1 | 22 | 23 | 6 | 12 | 0 | 77 |

TABLE I (Continued)

| REGION AND REPORTING CENTER | | | | | | OTHER VI | TOTAL | PERCENT OF TOTAL | NINE MONTH TOTAL | % NINE MONTH TOTAL | CDC TOTAL | PERCENT OF TOTAL | SEROTYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PACIFIC | | | | | | | | | | | | | |
| WASH | ORE | CAL | ALASKA | HAWAII | TOTAL | | | | | | | | |
| | | | | | | | 1 | | 1 | | | | absetetuba |
| | | | | | | | | | | | 1 | | albany |
| 1 | | 6 | | | 7 | | 22 | | 157 | | 1 | | anatum |
| | | | | | | | 1 | | 8 | | | | atlanta |
| | | | | | | | 3 | | 43 | | 2 | | bareilly |
| | | | | 1 | 1 | | 5 | | 43 | | | | berta |
| | | | | | | | 1 | | 5 | | | | binza |
| | | 2 | | | 2 | | 27 | 1.5 | 279 | 2.1 | 3 | 1.6 | blockley |
| | | 1 | | | 1 | | 6 | | 35 | | 1 | | braenderup |
| | | 5 | | | 5 | | 22 | | 100 | | | | bredeney |
| | | | | | | | 1 | | 7 | | | | california |
| | | | | | | | | | | | 1 | | carrau |
| | | | | | | | 1 | | 3 | | | | cerro |
| | | 1 | | | 1 | | 12 | | 146 | | | | chester |
| | | | | | | | 1 | | 12 | | | | cholerae-suis |
| | | | | | | | | | | | | | cholerae-suis var. kunzendorf |
| | | | | | | | 4 | | 46 | | 1 | | clifton |
| | | | | | | | 1 | | 1 | | | | cubana |
| | | | | | | | 3 | | 27 | | | | derby |
| 1 | 1 | 5 | | 9 | 16 | | 164 | 9.2 | 1,090 | 8.1 | 8 | 4.2 | |
| | | | | | | | 1 | | 3 | | | | duesseldorf |
| | | 2 | | | 2 | | 59 | 3.3 | 504 | 3.8 | 4 | 2.1 | enteritidis |
| | | | | | | | 1 | | 2 | | | | fayed |
| | | 1 | | | 1 | | 6 | | 45 | | 2 | | give |
| 7 | | 14 | | 5 | 26 | | 132 | 7.4 | 1,135 | 8.5 | 6 | 3.1 | heidelberg |
| 1 | | 15 | | 2 | 18 | | 75 | 4.2 | 673 | 5.0 | 8 | 4.2 | infantis |
| | | | | | | | 1 | | 3 | | | | inverness |
| | | | | | | | 7 | | 33 | | | | irumu |
| | | | | | | | 24 | | 108 | | 2 | | javiana |
| | | 1 | | | 1 | | 11 | | 34 | | | | kentucky |
| | | | | | | | 2 | | 34 | | | | litchfield |
| | | 1 | | | 1 | | 4 | | 11 | | | | livingstone |
| | 2 | 1 | | | 3 | | 17 | | 133 | | 8 | | manhattan |
| | | | | 1 | 1 | | 14 | | 63 | | 1 | | meleagridis |
| | | | | | | | 6 | | 46 | | 3 | | miami |
| | | | | | | | 2 | | 11 | | 1 | | minnesota |
| | | | | | | | 1 | | 20 | | | | mississippi |
| | | 7 | | 1 | 8 | | 68 | 3.8 | 330 | 2.5 | 4 | 2.1 | montevideo |
| | | 2 | | | 2 | | 15 | | 210 | | 4 | | muenchen |
| | | | | | | | | | | | 1 | | newington |
| | | | | | | | | | | | 1 | | new mexico |
| | 1 | 13 | | 1 | 15 | | 91 | 5.1 | 813 | 6.1 | 7 | 3.6 | newport |
| | | | | | | | 2 | | 8 | | | | norwich |
| | 1 | 2 | | | 3 | | 106 | 5.9 | 374 | 2.8 | 2 | 1.0 | oranienburg |
| | | | | | | | | | | | 1 | | oslo |
| | | | | 5 | 5 | | 18 | | 99 | | 5 | | panama |
| | | 1 | | | 1 | | 2 | | 8 | | 1 | | paratyphi A |
| 1 | | 2 | | | 2 | | 11 | | 95 | | 1 | | paratyphi B var. java |
| | | 1 | | | 2 | | 18 | | 107 | | 1 | | paratyphi B |
| | | | | | | | 1 | | 4 | | | | pensacola |
| | | 1 | | | 1 | | 5 | | 42 | | 1 | | poona |
| | | | | | | | | | | | 1 | | pullorum |
| | 3 | | | | | | 14 | | 39 | | | | reading |
| | | 7 | | 1 | 3 | | 66 | 3.7 | 414 | 3.1 | 10 | 5.2 | saint-paul |
| | | 1 | | | 1 | | 5 | | 91 | | 2 | | san-diego |
| | | | | | | | 2 | | 5 | | | | saphra |
| | | 11 | | | 11 | | 14 | | 115 | | 2 | | schwarzengrund |
| | | | | 1 | 1 | | 4 | | 26 | | 3 | | senftenberg |
| | | | | | | | 4 | | 12 | | | | stanley |
| | 1 | 3 | | 1 | 5 | | 11 | | 91 | | 1 | | tennessee |
| | | | | | | | 1 | | 11 | | | | thomasville |
| | | 1 | | | 1 | | 41 | 2.3 | 216 | 1.6 | 3 | 1.6 | thompson |
| | | 10 | | 1 | 11 | | 78 | 4.4 | 578 | 4.3 | 53 | 27.6 | typhi |
| 29 | 18 | 81 | | 11 | 139 | | 494 | 27.7 | 4,053 | 30.2 | 27 | 14.1 | typhimurium |
| | | | | | | | 16 | | 105 | | 6 | | typhimurium var. copenhagen |
| | | | | 4 | 4 | | 5 | | 41 | | | | weltevreden |
| | | 2 | | | 2 | | 3 | | 21 | | | | worthington |
| | | | | | | | | | | | 2 | | untypable |
| | 1 | 1 | 2 | | 4 | | 20 | | 222 | | | | untypable Group B |
| | 1 | | | | 1 | | 7 | | 43 | | | | untypable Group $C_1$ |
| | | | | | | | 4 | | 35 | | | | untypable Group $C_2$ |
| 1 | | | | | | | 12 | | 54 | | | | untypable Group D |
| | 1 | | | | 2 | 1 | 10 | | 60 | | | | unknown |
| 41 | 30 | 201 | 2 | 44 | 318 | 1 | 1,786 | | 13,419 | | 192 | | TOTAL |

VI - Virgin Islands

TABLE II

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

| Reporting Center | Total Number of Isolates Reported | Number of Isolates from Family Outbreaks | Per Cent of Total |
|---|---|---|---|
| Alabama | 8 | 0 | 0.0 |
| Alaska | 2 | 0 | 0.0 |
| Arizona | 6 | 0 | 0.0 |
| Arkansas | 27 | 6 | 22.2 |
| California | 201 | 14 | 7.0 |
| Colorado | 22 | 3 | 13.6 |
| Connecticut | 27 | 1 | 3.7 |
| Delaware | 7 | 0 | 0.0 |
| District of Columbia | 12 | 0 | 0.0 |
| Florida | 130 | 40 | 30.8 |
| Georgia | 70 | 11 | 15.7 |
| Hawaii | 44 | 4 | 9.1 |
| Idaho | 8 | 0 | 0.0 |
| Illinois | 85 | 8 | 9.4 |
| Indiana | 12 | 0 | 0.0 |
| Iowa | 3 | 0 | 0.0 |
| Kansas | 33 | 13 | 39.4 |
| Kentucky | 11 | 0 | 0.0 |
| Louisiana | 72 | 9 | 12.5 |
| Maine | 28 | 9 | 32.1 |
| Maryland | 19 | 0 | 0.0 |
| Massachusetts | 99 | 12 | 12.1 |
| Michigan | 53 | 9 | 17.0 |
| Minnesota | 13 | 0 | 0.0 |
| Mississippi | 1 | 0 | 0.0 |
| Missouri | 19 | 4 | 21.1 |
| Montana | 5 | 2 | 40.0 |
| Nebraska | 3 | 0 | 0.0 |
| New Hampshire | 1 | 0 | 0.0 |
| New Jersey | 29 | 4 | 13.8 |
| New Mexico | 23 | 0 | 0.0 |
| New York-Albany | 64 | 5 | 7.8 |
| New York-Beth Israel | 72 | 2 | 2.8 |
| New York City | 37 | 2 | 5.4 |
| North Carolina | 15 | 5 | 33.3 |
| North Dakota | 3 | 0 | 0.0 |
| Ohio | 65 | 15 | 23.1 |
| Oklahoma | 7 | 0 | 0.0 |
| Oregon | 30 | 4 | 13.3 |
| Pennsylvania | 200 | 47 | 23.5 |
| Rhode Island | 7 | 0 | 0.0 |
| South Carolina | 1 | 0 | 0.0 |
| South Dakota | 1 | 0 | 0.0 |
| Tennessee | 21 | 0 | 0.0 |
| Texas | 66 | 0 | 0.0 |
| Utah | 12 | 0 | 0.0 |
| Vermont | 5 | 0 | 0.0 |
| Virginia | 31 | 4 | 12.9 |

TABLE II (Continued)

| Reporting Center | Total Number of Isolates Reported | Number of Isolates from Family Outbreaks | Per Cent of Total |
|---|---|---|---|
| Virgin Islands | 1 | 0 | 0.0 |
| Washington | 41 | 9 | 22.0 |
| West Virginia | 1 | 0 | 0.0 |
| Wisconsin | 32 | 9 | 28.1 |
| Wyoming | 1 | 0 | 0.0 |
| TOTAL | 1786 | 251 | 14.1 |

TABLE III
Infrequent Serotypes

| Serotype | Center | September | 9-Month Total* | CDC** | Comment |
|---|---|---|---|---|---|
| S. abaetetuba | LA | 1 | 1 | 2 | First isolated in 1952. No human case has occurred in an inhabitant of USA (See State Reports). |
| S. atlanta | GA | 1 | 8 | 21 | Third isolation in as many months from GA. Seventeen of 21 CDC isolations from Fla. & Ga. |
| S. binza | VA | 1 | 5 | 17 | Seventeen CDC isolations scattered geographically: 7 from humans, 7 from turkeys, 1 from a dog and 2 from food products. |
| S. california | ILL | 1 | 7 | 143 | Infrequent cause of human disease. |
| S. cerro | LA | 1 | 3 | 35 | Only previous human isolates from NY and Texas. |
| S. cholerae-suis | DC | 1 | 12 | 29 | Of 29 CDC isolations, 19 from humans and 6 from swine. |
| S. clifton | LA | 1 | 1 | 0 | First isolated from a turtle in 1954 (Monthly Bull. Ministry of Health, London 13,195,1954) |
| S. duesseldorf | VA | 1 | 3 | 10 | Nine CDC isolations from poultry in VA. Two previous isolations reported this year from NC and Hawaii. |
| S. fayed | VA | 1 | 2 | 0 | Only previous 1963 isolation from Fla. in June. First isolation in 1945 from blood of a German prisoner of war in Egypt, who subsequently died of endocarditis due to this organism. |
| S. inverness | FLA | 1 | 3 | 6 | All previous known isolations from South (Ala. 1, Fla. 5, La. 1) except 1 from NY in April. |

| Serotype | Center | September | 9-Month Total* | CDC** | Comment |
|---|---|---|---|---|---|
| S. livingstone | CAL<br>GA<br>LA | 4 | 11 | 0 | All previous reported isolations from Eastern United States. |
| S. minnesota | GA | 2 | 11 | 81 | Originally isolated from a turkey in 1936. Fifty of 81 CDC isolations from Fla. & Ga. of which 32 were from dogs. |
| S. norwich | OHIO<br>VA | 2 | 8 | 25 | Recent recoveries from swine, pork products & dogs. |
| S. paratyphi A | CAL<br>NY-BI | 2 | 8 | 40 | All but 2 CDC isolations (1 from water & 1 from a sheep) from humans. |
| S. pensacola | GA | 1 | 4 | 28 | Twenty-five of 28 CDC isolations from South-eastern states. |
| S. saphra | LA | 2 | 5 | 0 | All but one of the total isolates have been traced to Texas (See Reports from States). |
| S. stanley | ARI<br>NJ | 4 | 12 | 68 | Twenty-nine CDC recoveries from Texas (28 from monkeys) |
| S. thomasville | FLA | 1 | 11 | 25 | Nineteen of 25 CDC isolations from Fla., Ga. & Texas. Only 3 of 25 CDC recoveries from humans - 10 from turkeys. |

* Represents 13,419 human isolations of salmonellae reported to the Salmonella Surveillance Unit - January 1 - September 30, 1963.

** Represents approximately 28,000 isolations of salmonellae from all sources between 1947 and 1958.

TABLE IV

Age and Sex Distribution of 1710 Individuals from Whom Salmonellae were Isolated - September, 1963

| Age (Years) | Male | Female | Total |
|---|---|---|---|
| Under 1 | 92 | 91 | 183 |
| 1-4 | 159 | 129 | 288 |
| 5-9 | 81 | 66 | 147 |
| 10-19 | 61 | 54 | 115 |
| 20-29 | 36 | 55 | 91 |
| 30-39 | 35 | 49 | 84 |
| 40-49 | 30 | 45 | 75 |
| 50-59 | 28 | 33 | 61 |
| 60-69 | 23 | 28 | 51 |
| 70-79 | 14 | 15 | 29 |
| 80+ | 6 | 7 | 13 |
| Unknown | 292 | 281 | 573 |
| Total | 857 | 853 | 1710 |
| % of Total | 50.1 | 49.9 | |

TABLE V

NON-HUMAN ISOLATES REPORTED BY THE NATIONAL ANIMAL DISEASE LABORATORY AND STATE REPORTING CENTERS BY SEROTYPE AND SOURCE – SEPTEMBER, 1963

| SEROTYPE | SOURCE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | TOTAL | 9 MO. TOTAL | SEROTYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CHICKEN | TURKEY | DUCKS | PIGEON | CHICKEN HOUSE | HATCHERY | LITTER FROM TURKEY PEN | PHEASANT | AVIAN | EQUINE | BOVINE | PORCINE | CAPRINE | CANINE | FELINE | LAB. MOUSE | LAB. RAT | GUINEA PIG | MINK | JAGUAR | EGG ALBUMEN | EGG SHELL | POULTRY BY-PRODUCT | COMMERCIAL FEED | MEAT SCRAPS & BONE MEAL | ANIMAL BY-PRODUCT | FEED UNKNOWN | SNAKE | LIZARD | FLY | WELL WATER | TURTLE WATER | UNKNOWN | | | |
| amager | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 8 | amager |
| anatum | 16 | 2 | | | 1 | | | | | | 5 | | | | | | | | | | | | | | | 1 | 1 | | | | | 26 | 230 | anatum |
| berta | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 5 | berta |
| binza | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 23 | binza |
| blockley | 7 | 2 | | | | 1 | | | | | | 1 | | | | | | | | | | | | | | | | | | | | 11 | 89 | blockley |
| braenderup | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2 | 3 | braenderup |
| bredeney | | 1 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | 2 | 91 | bredeney |
| california | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 1 | 19 | california |
| cerro | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | 1 | | | | | 3 | 18 | cerro |
| chester | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 74 | chester |
| cholerae-suis var. kunzendorf | | | | | | | | | | | | 3 | | | | | | | | | | | | | | | | | | | | 3 | 103 | cholerae-suis var. kunzendorf |
| cubana | | | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | 1 | | | | | | 3 | 19 | cubana |
| derby | | 2 | | | | | | | | | 2 | 1 | | | | | | | | | | 1 | | | | 2 | | | | | | 8 | 84 | derby |
| dublin | | | | | | | | | | | 3 | | | | | | | | | | | | | | | | | | | | | 3 | 31 | dublin |
| enteritidis | 1 | 6 | | | | | 2 | | | | | 1 | | | | | | | | | | | | | | | | | | | | 10 | 54 | enteritidis |
| gallinarum | 10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 10 | 47 | gallinarum |
| give | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 45 | give |
| heidelberg | 7 | 18 | | | | | | | | | 1 | | | | 1 | | | | | | | 1 | | | | | | | | | | 1 | 29 | 231 | heidelberg |
| indiana | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 21 | indiana |
| infantis | 14 | | | | | | | | | | | 2 | | | | | 1 | | | | | | | | | 3 | | | 1 | | | 21 | 250 | infantis |
| litchfield | 4 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 6 | 17 | litchfield |
| livingstone | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | | | | 1 | 27 | livingstone |
| manhattan | 3 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 5 | 26 | manhattan |
| miami | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | | 1 | 15 | miami |
| minnesota | 1 | | | | | | | | | | | | | | | | | | | | 3 | | | | 2 | 2 | | | | | | 1 | 6 | minnesota |
| montevideo | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 29 | 184 | montevideo |
| muenchen | | 2 | | | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | 3 | 51 | muenchen |
| newington | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 54 | newington |
| newport | | 2 | | | | | | | | | 27 | | | | | | | | | 1 | | | | | | | | 1 | | | | 31 | 163 | newport |
| oranienburg | 2 | | | | | | | | | | | | | | | | 1 | | | | | | | | | 3 | | | | | 1 | 7 | 43 | oranienburg |
| paratyphi B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 4 | paratyphi B |
| pullorum | 29 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 29 | 150 | pullorum |
| reading | 2 | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 34 | reading |
| saint-paul | | 7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 7 | 141 | saint-paul |
| san-diego | 2 | 1 | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | 1 | | | 5 | 50 | san-diego |
| schwarzengrund | 3 | 38 | | | | | | | | | | 7 | | | | | | | | | | | | | | | | | | | | 2 | 50 | 135 | schwarzengrund |
| senftenburg | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | | | | 3 | 35 | senftenburg |
| singapore | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | 1 | 1 | singapore |
| tennessee | 1 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 5 | 67 | tennessee |
| thompson | 4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 4 | 53 | thompson |
| typhi | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 1 | 2 | typhi |
| typhimurium | 18 | 7 | | 1 | | | | 1 | 1 | 3 | 66 | 4 | 1 | 1 | | 1 | 1 | 2 | 1 | | | 1 | | 1 | | 1 | | | 1 | | | | 112 | 777 | typhimurium |
| typhimurium var. copenhagen | 11 | 5 | | 4 | | | | | | 1 | 1 | | | | | | | | | | | | | | | | | | | | | 22 | 213 | typhimurium var. copenhagen |
| typhi-suis | | | | | | | | | | | | 2 | | | | | | | | | | | | | | | | | | | | 2 | 3 | typhi-suis |
| urbana | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | 3 | urbana |
| worthington | | 4 | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2 | | | | | 7 | 80 | worthington |
| unknown | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2 | unknown |
| TOTAL | 167 | 108 | 1 | 5 | 1 | 1 | 2 | 2 | 1 | 4 | 106 | 22 | 1 | 1 | 2 | 1 | 5 | 2 | 1 | 1 | 3 | 3 | 1 | 1 | 5 | 14 | 6 | 2 | 2 | 1 | 1 | 4 | 8 | 485 | 3,965 | TOTAL |

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

TABLE VI

NON-HUMAN ISOLATES REPORTED BY THE NATIONAL ANIMAL DISEASE LABORATORY AND STATE REPORTING CENTER BY SEROTYPE AND STATE – SEPTEMBER, 1963

| SEROTYPE | STATE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | SEROTYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ALA | ARK | CALIF | DEL | FLA | GA | ILL | IND | IOWA | MAINE | MD | MASS | MICH | MINN | MISS | MO | MONT | N.J. | N.Y.-A | N.Y.-B | N.C. | OHIO | PA | S.C. | TENN | TEX | UTAH | VA | WASH | WIS | WYO | TOTAL | 9 MO. TOTAL | |
| amager | | | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 8 | amager |
| anatum | | | 6 | 1 | | 1 | 3 | 6 | | | | | | | 2 | 4 | | | | | 2 | | | | | 1 | | | | | | 26 | 230 | anatum |
| berta | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 5 | berta |
| binza | | | | | 1 | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 2 | 23 | binza |
| blockley | | | | | 1 | 5 | 1 | 3 | | | | | | | 1 | | | | | | | | | | | | | | | | | 11 | 89 | blockley |
| braenderup | | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 2 | 3 | braenderup |
| bredeney | | | | | | | | | | | | | | 1 | | | | | | | | | | | | 1 | | | | | | 2 | 91 | bredeney |
| california | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 19 | california |
| cerro | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | 2 | | | | 3 | 18 | cerro |
| chester | | | | | | | | | | | | | | 1 | | 1 | | | | | | | | | | | | | | 1 | | 3 | 74 | chester |
| cholerae-suis var. kunzendorf | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | | | | 1 | | | | 3 | 103 | cholerae-suis var. kunzendorf |
| cubana | | | 1 | | | | 1 | | | | | | | | | 1 | | | | | | | | | | | | | | | | 3 | 19 | cubana |
| derby | | | | | | 1 | 1 | | 2 | | | | | 2 | | 2 | | | | | | | | | | | | | | | | 8 | 84 | derby |
| dublin | | | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 3 | 31 | dublin |
| enteritidis | | | | | | 1 | | 1 | | | | | | 7 | | | | | | | | 1 | | | | | | | | | | 10 | 54 | enteritidis |
| gallinarum | 1 | 1 | | 1 | | | | | 2 | | 4 | | | | | | | | | | | | | 1 | | | | | | | | 10 | 47 | gallinarum |
| give | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 45 | give |
| heidelberg | | | 3 | | | 7 | | 2 | | | | | | 14 | | | | | | | | | | | | | | 1 | | 2 | | 29 | 231 | heidelberg |
| indiana | | | 1 | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | 2 | 21 | indiana |
| infantis | | | 1 | | | 3 | 1 | 7 | 3 | | | | | | | 4 | | | | | | | | | | 2 | | | | | | 21 | 250 | infantis |
| litchfield | | 4 | | | | | | | | 1 | | | | 1 | | | | | | | | | | | | | | | 1 | | | 6 | 17 | litchfield |
| livingstone | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | 1 | 27 | livingstone |
| manhattan | 1 | | | | | | | | | 1 | | 1 | 1 | | 1 | | | | | | | | | | | | | | | | | 5 | 26 | manhattan |
| miami | | | | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 15 | miami |
| minnesota | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 6 | minnesota |
| montevideo | | 1 | | 1 | | 13 | 5 | 4 | | | 2 | | | | | 2 | | | | | | | 1 | | | | | | | | | 29 | 184 | montevideo |
| muenchen | | | | | | | | | | | | | | | | 1 | | | | | | 1 | | | | 1 | | | | | | 3 | 51 | muenchen |
| newington | | | | | | 1 | | 1 | | | | | | | | | | | | | | 2 | | | | | | | | | | 4 | 54 | newington |
| newport | | | 27 | | | | 1 | | | | | | 1 | | | 2 | | | | | | | | | | | | | | | | 31 | 163 | newport |
| oranienburg | | 1 | | | | 1 | | | | | | | | | | 3 | | | | | | 1 | | | | 1 | | | | | | 7 | 43 | oranienburg |
| paratyphi B | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | 4 | paratyphi B |
| pullorum | 5 | 8 | | 1 | | | | | | | | | | | | 6 | 6 | 1 | | | | | 1 | | | | | | | 1 | | 29 | 150 | pullorum |
| reading | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 3 | 34 | reading |
| saint-paul | | | | | | | | 2 | | | | | | 3 | | | | | | | | | | | | | | | | 2 | | 7 | 141 | saint-paul |
| san-diego | | | 1 | | | | | 2 | | | | | 1 | | | | | | | | | | | | | | 1 | | | | | 5 | 50 | san-diego |
| schwarzengrund | | | 40 | | | | | 3 | 7 | | | | | | | | | | | | | | | | | | | | | | | 50 | 135 | schwarzengrund |
| senftenburg | | | | | | | | | | | | | 1 | | | | | | | | | | | | | 2 | | | | | | 3 | 35 | senftenburg |
| singapore | | | | | | | | | | | | | 1 | | | | | | | | | | | | | | | | | | | 1 | 1 | singapore |
| tennessee | | | | | | | | 1 | | | | | | | | | | | | | | 2 | | | 1 | | | | | 1 | | 5 | 67 | tennessee |
| thompson | | 2 | | | | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | 4 | 53 | thompson |
| typhi | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | | | | 1 | 2 | typhi |
| typhimurium | 1 | 4 | 28 | | | 2 | | 7 | 3 | 1 | | 2 | 5 | 30 | | 4 | | | 1 | 1 | 3 | 1 | 1 | 1 | | 4 | 3 | 2 | 2 | 5 | 1 | 112 | 777 | typhimurium |
| typhimurium var. copenhagen | | 3 | | | | 7 | | 5 | 1 | | | | 1 | | | | | | | | | | 2 | | | | | | | 3 | | 22 | 213 | typhimurium var. copenhagen |
| typhi-suis | | | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | 3 | typhi-suis |
| urbana | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | | | 1 | 3 | urbana |
| worthington | | | | | | | | | | | | | | 1 | | 1 | | | | | | | | | | 1 | | | | 4 | | 7 | 80 | worthington |
| unknown | | 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 2 | unknown |
| TOTAL | 9 | 28 | 114 | 4 | 3 | 46 | 13 | 48 | 18 | 2 | 6 | 3 | 10 | 60 | 4 | 31 | 6 | 1 | 1 | 1 | 6 | 8 | 5 | 3 | 1 | 15 | 4 | 7 | 7 | 19 | 1 | 485 | 3,965 | TOTAL |

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

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.

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