REPORT NO. 30 OCTOBER 28, 1964 30

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#### COMMUNICABLE DISEASE CENTER

# SURVEILLANCE

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For the Month of September 1964

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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, lowa, 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 September, 2,624 human isolations of salmonellae were reported, for an average weekly total of 525, an increase of 81 over the August figure.

The percentage of <u>Salmonella</u> <u>derby</u> isolations reported continues to drop (Table VII). The percentage of <u>S</u>. <u>infantis</u> recoveries increased to 16.2 which was more than triple last month's figure. This was due entirely to a large hospital-associated outbreak of salmonellosis in Philadelphia attributed to S. infantis.

A total of 562 nonhuman isolations were reported in September, for an increase of 51 over last month.

#### II. REPORTS OF ISOLATIONS FROM THE STATES

#### A. Human

During September, 2,624 isolations of salmonellae from humans were reported. The average number of isolations per week (525) represented an increase of 81 over August and 80 over September 1963 (Figure 1).

The seven serotypes most frequently reported during September were:

Rank	Serotype	Number	Per Cent	Rank Last Month
1	S. typhi-murium &	713	27.2	1
2 3 4 5 6 7	<u>S. typhi-murium</u> <u>var. copenhagen</u> <u>S. infantis</u> <u>S. heidelberg</u> <u>S. newport</u> <u>S. saint-paul</u> <u>S. derby</u> <u>S. enteritidis</u>	426 212 124 111 109 <u>87</u> 1,782	$ \begin{array}{r} 16.2 \\ 8.1 \\ 4.7 \\ 4.2 \\ 4.2 \\ \underline{3.3} \\ 67.9 \\ \end{array} $	6 3 4 5 2 7

Total salmonellae isolated (September) 2,624

Of the 81 different serotypes reported during September, the seven most common (8.6 per cent) accounted for 67.9 per cent of the 2,624 isolations reported.

<u>Salmonella infantis</u> replaced <u>S</u>. <u>derby</u> as second most frequently reported serotype during September. This was attributed entirely to a large hospital-associated outbreak of salmonellosis in Philadelphia due to <u>S</u>. <u>infantis</u>. The number of <u>S</u>. <u>infantis</u> isolations increased fivefold over last month. The percentage of <u>S</u>. <u>derby</u> isolations during September dropped to 4.2 as compared to 8.5 in August. It appears that the incidence of <u>S</u>. <u>derby</u> infections is definitely on the wane. <u>Salmonella</u> <u>saint-paul</u> was responsible for two outbreaks which were apparently unrelated in New York City and Washington State. A preliminary report of a hospital-associated outbreak due to <u>S</u>. <u>saint-paul</u> in New York City is included in this issue under CURRENT INVESTIGATIONS. An intercounty outbreak of salmonellosis attributed to <u>S</u>. <u>saint-paul</u> in Washington is currently under investigation by the Washington State Health Department.

The family case to total case ratio during September was 18.4 per cent, consistent with past experience (Table II).

The age and sex distribution is consistent with past experience (Table IV).

#### B. Nonhuman

There were 562 nonhuman isolations in September. This was an increase of 51 over the previous month when 511 were reported. There were 53 serotypes identified among those submitted by 33 States.

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

<u>No.</u> 1	<u>Serotype</u> <u>S. typhi-murium</u> <u>S. typhi-murium</u>	Number	Per Cent	Standing Last Month
off. dend	var. copenhagen	119	21.2	1
2	S. heidelberg	55	9.8	3
3	S. bredeney	53	9.4	Not Listed
4	S. infantis	36	6.4	2
5	S. blockley	20	3.6	Not Listed
0	S. montevideo	19	3.4	Not Listed
1	S. newport, or	17	3.0	6
	S. saint-paul	(17)	(3.0)	(5)
		319	56.8	

These seven types accounted for 56.8 per cent of the total. Five of these seven types were the five most common types reported from man

Although chickens and turkeys continued as the two species from which most of the isolations were obtained with 126 (22.4 per cent) and 98 with 83 (14.5 per cent), the third species in order of frequency was turtles These isolations comprised 62.9 per cent of the total reported.

The isolations from turtles were reported from five States: Kansas, 77; Illinois, 2; Massachusetts, 2; California, 1; and Minnesota, 1. man, and the remaining 7 types have been associated occur commonly in nellosis. The increase in isolations reported from this source may be as the source of human infections.

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During the past three months, more isolations have been reported from eggs or egg products, 221 (13.2 per cent) than for the entire year of 1963, 152 (2.8 per cent). This probably reflects an increase in the sampling and examination of such products rather than an increase in prevalence of salmonellae from these sources.

#### I. CURRENT INVESTIGATIONS

A. Hospital-Associated Salmonellosis Due to <u>Salmonella saint-paul</u> (preliminary report). Reported by Tibor Fodor, M.D., and Harold T. Fuerst, M.D., Bureau of Preventable Diseases, New York City Health Department, and Richard N. Collins, M.D., EIS Officer, Investigations Section, CDC.

Between July 1 and October 15, 1964, 70 isolations of <u>Salmonella saint-paul</u> had been reported from patients and staff of a large metropolitan hospital comprising over 1300 beds. The earliest cases were among student nurses, registered nurses, and other hospital employees. Thirteen primary and secondary food handlers were subsequently found to be infected. A total of 18 isolations have been reported from hospital patients. Twelve of these appear to fulfill the criteria for hospital-acquired infection. In several instances there was evidence of person-to-person spread from asymptomatic ward personnel to patients. In one patient, a 3-year-old female child with severe biliary disease, salmonellosis due to <u>Salmonella saint-paul</u> was listed as the contributing factor in death. The means by which this serotype was introduced into the hospital remains obscure. Frozen whole eggs or egg whites may have been significant vehicles. Appropriate control and surveillance activities are now in progress and will be further reported in a subsequent issue.

#### 7. <u>REPORTS FROM STATES</u>

#### A. Arkansas

Salmonella montevideo Infection Traced to Homemade Ice Cream. Reported by J. T. Herron, M.D., State Health Officer, Arkansas State Board of Health.

During August, 15 members of four family groups at a family reunion became ill with symptoms of gastroenteritis within a few hours after eating homemade ice cream. Four persons were hospitalized. Investigation revealed that all persons ill had consumed a portion of homemade ice cream. A culture taken from the ice cream was positive for <u>Salmonella montevideo</u>. The author concluded that the 100 per cent attack rate suggested a uniform distribution of organisms throughout the ice cream and, therefore, it was likely that the ice cream was contaminated prior to the mixing and freezing process.

## B. <u>California</u>

Salmonella heidelberg in Turkey Poults. Reported by Philip K. Condit, M.D., Chief, Bureau of Communicable Diseases and Graham E. Kemp, D.V.M., California State Department of Health.

Salmonella heidelberg infections have recently been of some concern in the State of California. An outbreak of hospital-acquired salmonellosis due to this serotype affected over 100 persons at the Los Angeles VA Hospital in July of this year (SSR #28).

A turkey ranch in California recently experienced heavy mortality among turkey poults. <u>Salmonella heidelberg</u> was identified as the etiologic agent responsible for the infection.

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An investigation revealed that hatchery eggs at this same ranch were candled at the end of five days, and the nonfertile eggs were then shipped to an egg company in the Los Angeles area. No other information could be obtained concerning the disposition of these eggs, but it was assumed that they were used as food products, probably utilized by bakeries in the Los Angeles area.

#### C. Colorado

Salmonellosis in Cattle. Reported by Martin Baum, D.V.M., Chief, Public Health Veterinary Section, Colorado Department of Health.

Numerous isolations of <u>Salmonella typhi-murium</u> and <u>Salmonella newport</u> from cattle sources in Colorado were reported in August. Upon investigation, it was determined that the isolations were obtained from young heifers that had clinical manifestations of severe dysentery. The mortality rate was low and the infection responded well to therapy. There were well over 100 cases observed on several premises, including feed lots.

<u>Editor's Comment</u>: It is important to recognize that salmonellosis in cattle is a common cause of severe dysentery and often appears in young feed-lot stock. More information is needed to explain the important sources of salmonellosis in cattle. Carrier animals introduced into groups of susceptibles may explain the source in many outbreaks. Cattle purchased from many sales barns and shipped over the United States may account for the distribution of the serotypes observed; however, it would seem that <u>Salmonella dublin</u>, a common serotype in cattle, would <u>S. typhi-murium</u> isolates from outbreaks in different areas in the country, along with epidemiological investigation, would assist in better defining routes of transmission.

#### D. Illinois

1. <u>Salmonella panama</u> and Reptiles. Reported by Dr. Samuel L. Andelman, Commissioner of Health, Dr. Olga Brolnitsky and Dr. Herbert L. Slutsky, Epidemiologists, Chicago Board of Health.

A case of salmonellosis, type not specified, was recently reported to the Chicago Board of Health by a private city hospital. The patient was a three-month-old white female who had developed severe diarrhea and high fever the day prior to admission.

A Board of Health physician, in taking an epidemiological history from the mother, noted the father's occupation as an animal handler in the city zoo. This fact prompted a call to the family physician who stated that the father worked in the reptile house. Meanwhile, <u>Salmonella panama</u> was identified at the State Laboratory.

Stool specimens collected from the other family members (parents and a 13-year-old sister) revealed that the sister was an asymptomatic carrier. A turtle, brought home from the zoo as a pet for the older girl, was cultured and also was found positive for <u>S. panama</u>.

It is tenable that the infection of the infant occurred through direct contact with her sister who had helped feed her baby sister prior to the infant's illness.

 Outbreak of Gastroenteritis Due to Contaminated Chicken Salad. Reported by Dr. Samuel L. Andelman, Commissioner of Health, Dr. Olga Brolnitsky and Dr. Herbert L. Slutsky, Epidemiologists, Chicago Board of Health.

On Monday morning, June 29, 1964, the Chicago Board of Health received a telephone call from a person who had become ill after attending a wedding party the previous Saturday evening. Approximately 140 guests had been present in a private home where the food for the party had been prepared by a local catering firm.

The menu served consisted of chicken salad, open face sandwiches, watermelon fresh fruit basket, pastries and wedding cake, fruit punch, and coffee. Leftover food samples were collected and <u>Salmonella</u> <u>bredeney</u> was isolated from the chicken salad.

A simultaneous investigation was made of the catering firm and fecal specimens were obtained from all the employees. <u>S. bredeney</u> was isolated from four employees. Epidemiological histories disclosed that two employees had been ill with diarrhea and fever approximately 14 hours after eating some of the same chicken salad that had been served at the party. One was a waitress who served at the party, and the other was a cook who worked in the kitchen of the catering firm. Of the two asymptomatic carriers, one was the driver of the refrigerated panel truck used by the firm to deliver the food items. The other, a 39-year-old female, was the cook that prepared the chicken salad. She had, early on the morning of June 27, cubed several roasted chickens that had been left to cool on the meat table for one hour after cooking. She admitted the fact that her hands did come into contact with the chicken, but she emphatically denied eating any of the chicken salad. On the other hand, the asymptomatic delivery driver did eat some of the chicken salad, but he experienced no gastroenteritis.

# E. <u>Kansas</u>

Salmonella typhi-murium Traced to Contaminated Hamburger. Reported by Donald E. Wilcox, M.D., Director, Disease Prevention and Control, State Department of Health, Kansas.

An outbreak of bacterial food poisoning occurred in Lawrence, Kansas during the week of August 16 to 22.

The Health Department first became aware of the outbreak when a physician called to report six or eight cases of gastroenteritis in patients who had eaten at the same drive-in. An inspection of the suspect drive-in revealed no gross errors in food-handling technique with the exception of the mayonnaise, a serving container of which was kept at room temperature. Samples from the stock and serving containers were taken for analysis, and were reported later to be negative for pathogens.

The following morning physicians in Lawrence and two adjacent towns were canvassed by telephone to inquire of other cases of gastroenteritis. It was estimated that some 200 persons had seen or consulted their physicians complaining of a gastrointestinal disorder characterized by fever, nausea, and diarrhea. In the ensuing 14 days, 76 additional cases were reported by physicians. All cases had eaten hamburgers at the suspect drive-in during the week-end of August 15, 16, and 17. Among the victims were four of the seven drive-in employees, including the manager. Stool specimens taken from the employees of the drive-in who were ill, and a random sampling of other patients, all yielded Salmonella typhi-murium.

Further investigation revealed that although the hamburger patties were made from bulk hamburger during the week, prepattied meat was supplied for the week-end operation. One hundred and 25 pounds (approximately 700 patties) was delivered on Saturday. The patties were stored in the refrigerator and not handled until cooked. None of the suspect meat was available for analysis by the time the first case was reported. Inspection of the supplies, plant, and employees did not reveal any obvious source of contamination or break in handling techniques.

#### F. Massachusetts

Turtles as a Source of Salmonellosis. Reported by J. P. Reardon, M.D., Epidemiologist, Division of Communicable Diseases, and Arthur Wilder, D.V.M., Senior Assistant Veterinary Officer, Massachusetts Department of Health.

In view of the increasing number of reports of turtles as potential reservoirs of salmonella organisms, the Division of Communicable Diseases investigated cases of salmonellosis involving relatively uncommon serotypes which had been associated with turtles in other parts of the country. <u>Salmonella braenderup</u> was chosen, and two isolated cases which were reported in children were investigated. Upon questioning it was found that both had contact with pet turtles within their home.

One case involved an eight-month-old girl who became ill on August 1, 1964, with bloody diarrhea and fever. Symptoms persisted for approximately one week. At the time the family was caring for a neighbor's pet turtle. The infant apparently had no direct contact with the turtle, but the mother, in caring for the turtle, changed the turtle water in the kitchen sink. No other family member reported any symptoms of illness. On September 1, the turtle in question and the turtle water were cultured. Both were positive for <u>S</u>. <u>braenderup</u>.

The second case involved a family of six persons. On March 27, a six-month infant had severe diarrhea for three days. The stool specimen at this time was positive for <u>S</u>. <u>braenderup</u>. No other family members reported illness but cultures taken from a sister three years of age, and the mother, 31 years of age were positive for <u>S</u>. <u>braenderup</u>. This turtle's bowl was also cleaned in the kitchen sink. On September 9, the turtle was secured and found to be positive for <u>S</u>. <u>braenderup</u>. No further illnesses had been present since March within the family.

Following these two fruitful investigations, it was decided to randomly sample a number of chain stores supplying pet turtles to the community. Two turtles were secured from each of the five stores. Eight of these were positive for salmonella. Serotyping has not been completed. The two negative turtles were secured from the same store, where 140 mg. of Aureomycin (R) per 9 gallons of water were added to the aquarium to prevent the growth of "fungi". The effect of this level of Aureomycin on salmonella growth will be investigated. No isolates were made from samples of turtle feed used in these establishments.

Editor's Comment: A most valuable investigation. Worthy of note is the fact that the turtles positive for <u>S</u>. <u>braenderup</u> had in all likelihood been carrying the organism for some time. As is frequently the case, the feed was negative for salmonellae. In all likelihood the turtles are infected either at the store prior to distribution, or more likely at the turtle farm where rendered meat scraps and chicken offal are frequently used as food.

#### G. Michigan

Death in a Premature Infant Due to <u>Salmonella</u> <u>typhi-murium</u>. Reported by D. B. Coohon, D.V.M., Division of Epidemiology, Michigan Department of Health, and Frank J. Condon, M.D., Deputy Director, Oakland County Department of Health.

Within 48 hours following birth, a premature male infant developed an acute illness characterized by diarrhea and vomiting. Within hours he became jaundiced and shortly thereafter expired.

At autopsy, cultures were taken from the lung and blood. These were reported as positive for <u>Salmonella</u> typhi-murium.

Subsequently, the culture specimens of stool, urine, blood, and vaginal secretions were taken from the mother. All were negative for <u>S. typhi-murium</u>. No source for the infection was found within the nursery. In further follow-up efforts, the mother has been asked to submit additional specimens for culture.

#### H. <u>New Jersey</u>

 Investigations of <u>Salmonella stanley</u> Infection. Reported by William J. Dougherty, M.D., Director, Division of Preventable Diseases, New Jersey State Department of Health.

Because of the recent association of <u>Salmonella stanley</u> infections with primates, the families of the three children from whom <u>S</u>. <u>stanley</u> was isolated last year were questioned concerning such contact. Two of the children were taken to a shopping center in early September 1963, where there were monkeys in cages. It was felt that close contact with the monkeys was possible. <u>Salmonella stanley</u> was isolated from the two children on September 20, 1963. No other members of the

<u>Salmonella stanley</u> was also isolated from a child who entered the United States from Formosa in early September 1963. On September 25, nutrition, and a generalized to the hospital because of weakness, maland <u>S. stanley</u> identified. The child had been in an orphanage in Formosa before being brought to this country. No specific information was available concerning contacts with primates prior to the child's

 An Outbreak of <u>Salmonella typhi-murium</u> Infection Following A Wedding Reception. Reported by William J. Dougherty, M.D., Director, Division of Preventable Diseases, New Jersey Department On July 18, 1964, 235 people attended a wedding reception in New Jersey. Within 12 to 18 hours following the meal, 38 individuals became ill with fever, headache, abdominal cramps and diarrhea. Symptoms persisted from between 2 and 4 days. Of 20 people submitting fecal specimens, 9 were positive for <u>Salmonella typhi-murium</u>.

Food served at the reception included sausage, beef, cole slaw, potato salad, macaroni salad, and wedding cake. The reception was catered. Attack rates were determined for each food item for 107 of the 235 guests interviewed. These attack rates appear below.

	Ate	e Spec	ified It	ems	D	id Not	Eat Ite	ms
		Not		At.	121-3	Not		At.
	I11	I11	Total	Rate	111	<u>I11</u>	Total	Rate
Sausage	14	17	31	45	24	52	76	32
Beef	28	40	68	41	10	29	39	26
Cole Slaw	19	21	40	48	19	48	67	28
Potato Salad	31	29	60	51	7	40	47	15
Macaroni Salad	21	17	38	55	17	52	69	25
Wedding Cake	23	47	70	33	15	22	37	11
				A CONTRACT OF A CONTRACT OF				

Fresh and cooked sausage, gravy, and cake were submitted for culture but were negative for pathogens. None of the salads, including the suspect potato salad, were available for sampling.

One food handler was ill with diarrhea 3 days prior to the reception. She consulted a physician but no cultures were taken. Antibiotics were not used. Fecal specimens were collected from her 5 days after the reception and were negative for salmonella.

It was presumed that the pathogen was introduced during the preparation of the potato salad, and multiplication of the organisms occurred while the food was allowed to stand at room temperature.

#### I. New York

Typhoid Fever - New York City. Reported by Tibor Fodor, M.D., Bureau of Preventable Diseases, New York City Health Department.

Between August 11 and August 23, 9 probable cases of typhoid fever were reported to the New York City Health Department. All cases occurred in the Bronx, and all were in children under 15 years of age. Four cases

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were from the same family, and all but 2 of the remaining cases occurred in families within the same apartment building. The two remaining cases came from adjacent apartments. The children involved frequently played and ate together, and slept in each others homes. The fact that several of the cases had dates of onset between August 11 and 17 suggested a common vehicle of infection.

The water supply in the apartment buildings was checked and found to meet sanitary requirements. Studies are presently underway to determine the presence of carriers within the involved families and to define a possible common vehicle of infection.

#### SPECIAL REPORTS

A. Poultry and Egg National Board Salmonella Committee.

A special Salmonella Committee was recently appointed by the Executive Committee of the Poultry & Egg National Board. The purpose of this group, represented by authorities from all facets within the poultry industry, is to coordinate and aid in directing control efforts of various groups investigating the salmonella problem within the poultry industry and to determine ways to disseminate information to industry and to consumers.

In September, the Committee met with members of the Epidemiology Branch of the Communicable Disease Center, at which time there was an exchange and coordination of ideas of the two groups. A specific agenda for the future, emphasizing a practical and properly directed approach to control, was outlined. Future meetings are planned.

Editor's Comment: The formation of this Committee by the poultry industry is unprecedented and deserves the highest accolade. The poultry industry has been in the limelight of salmonellosis for some time, resulting in constant admonition of this industry, thus frequently excluding other groups equally associated with the spread of salmonellosis. The poultry industry recognizes their salmonella problem, as they have for some time, and much research has been and is being conducted within the industry to develop methods of control and prevention. However, the scope of the problem and the size of the industry necessitates that ideas be coordinated, research be properly directed, and goals of quality control appropriately and pragmatically attained. The Poultry & Egg National Board Salmonella Committee, which seeks to apply the knowledge of wise leadership, should not only educate the poultry industry and aid in solving their own problem, but should serve as a model for other industries and agencies who are equally in need of properly directed and coordinated investigation.

B. Justification for Pasteurization of Dried, Liquid or Frozen Eggs. Compiled by Mildred M. Galton, Veterinary Public Health Laboratory, Communicable Disease Center.

Raw or inadequately cooked eggs are used in many types of foods such as custards, cream pies, eclairs, eggnog and milk shakes. These foods often represent a major part of the diet of young, aged or debilitated individuals who are more susceptible to salmonella infection. The salmonellae organisms may enter the egg by ovarian infection, or the shell may become contaminated from infected fecal material. Up to 100 per cent of some lots of frozen and dried eggs have been found to contain salmonellae. As a result, reports implicating these processed egg products as sources of salmonellosis in man appear frequently. Abramson (1) described a widespread outbreak of <u>Salmonella montevideo</u> infection in infants due to infected dried eggs used in cream pies were the source of a large outbreak of <u>S. typhi-murium</u> infection in Washington State in 1962 and an outbreak of <u>S. heidelberg</u> infection involving 300 students in 1963.

There is little information to provide a reliable estimate of the prevalence of salmonella infected eggs in this country. During an investigation of a case of S. anatum infection attributed to hens' eggs, Newell and Murdock (2) found the same type in 1 of 60 eggs from the suspected flock and from feed given to the chickens. Buxton and Gordon (3) found the shells of 9 of 166 eggs obtained from the floor of the chicken house contaminated with S. thompson but only 1 out of 608 eggs collected in "trap nets" was positive. During the S. derby outbreak in 1963, the Communicable Disease Center, Veterinary Public Health Laboratory, examined 4,350 grade A eggs and found no salmonellae, but 5 (12 per cent) of 42 slurries (15-18 eggs per slurry) of cracked eggs contained salmonellae. In the investigation of the outbreak of S. heidelberg infection in Washington, salmonellae were isolated from 427 (24 per cent) of 1,747 samples of frozen egg examined. Twenty-one different salmonella serotypes including S. heidelberg were found. Even though the proportion of infected shell eggs is probably very low and extremely variable, the infected egg will contaminate a large batch of liquid, frozen or dried egg, and whenever temperatures during processing are suitable, the salmonellae will multiply.

The urgency for production of liquid, frozen or dried egg products free from contamination with salmonellae is obvious. Because it is economically impractical at this time to produce these products from only naturally clean eggs and because of inherent difficulties in producing all eggs free of salmonella contamination, a method to eliminate salmonellae during processing is necessary (4). Pasteurization of liquid whole egg and egg yolk has been effectively applied but in spite of the fact that this method has been available for more than a decade, it has been adopted by only a few processors and is usually used at the request of the buyer. Until recently adequate pasteurization of liquid egg white was not possible because the necessary high temperatures caused serious damage to the egg white proteins. However, the Western Regional Research Laboratory, U. S. Department of Agriculture, has recently developed a method to stabilize the egg white so that it is heat stable. This stabilized egg white can be effectively pasteurized without damage by the procedure now used in the United States for whole eggs, i.e., heating to 140-143° F. for  $3\frac{1}{2}$  to 4 minutes (SSR #29).

Many countries (Canada, United Kingdom, Denmark, Germany, Italy, and others) and at least one State have passed regulations requiring that only salmonellae-free products as determined by bacteriological examination be sold. Industry groups are cognizant of the problem and are taking steps to promote establishment of pasteurization in all plants. State health officials should work closely with local industry groups in solving these mutual problems.

The milk industry has solved a similar problem by the application of bacteriological control beginning on the farm and pasteurization. It is reasonable to assume that the poultry and egg industries can do likewise.

- Abramson, H., Greenberg, H., Plotkin, S., and Oldenbusch, C. Food poisoning in infants caused by egg-yolk powder. Am. J. Dis. Children <u>87</u>:1-6, 1954.
- 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. J. Hyg. (Camb.) <u>57</u>:92-105, 1959.
- Buxton, A., and Gordon, R. F. The epidemiology and control of <u>Salmonella thompson</u> infection in fowls. J. Hyg. (Lond.) <u>45</u>:265-281, 1947.
- See SSR #29, pages 11 to 14 for reference (abstract of paper by Dr. Leo Kline).

#### INTERNATIONAL

A. Isolations of Salmonellae - Australia. Submitted by K. F. Anderson, M.D., M.R.A.C.P., M.C.P.A., Senior Medical Bacteriologist, Salmonella Reference Laboratory, Institute of Medical and Veterinary Science, Adelaide, South Australia.

A total of 1,331 isolations of salmonellae were consummated by the Salmonella Reference Laboratory, Adelaide, South Australia from human and nonhuman sources between July 1, 1961 and June 30, 1964. Of these, 773 (58.1 per cent) were from man. The number of isolations from the respective sources for the three fiscal years involved were:

	<u>FY 1962</u>	FY 1963	FY 1964	Total
Human	221	251	311	773
Nonhuman	155	_234_	169	558
Total	376	485	480	1,331

The data representing human isolations indicates a possible increasing trend in the incidence of salmonellosis in Australia. This has been the experience in the United States and Canada in recent years.

Of the seven most frequently recovered serotypes from human and nonhuman sources, <u>S</u>. <u>typhi-murium</u> was most common, which was true in the United States during 1963. Other types appearing in Table VIII from human sources also relatively common in the United States were: <u>S</u>. <u>newport</u>, <u>S</u>. <u>typhi</u>, <u>S</u>. <u>saint-paul</u>, and <u>S</u>. <u>muenchen</u>. <u>Salmonella bovis-morbificans</u> and <u>S</u>. <u>adelaide</u> are rarely seen in this country.

The most frequently recovered serotypes from nonhuman sources are all seen fairly commonly in the United States.

B. Abstract: The Isolations of Salmonellae from Kangaroo Meat Sold as Pet-Food. Reported by Kevin Anderson, M.D., M.R.A.C.P., M.C.P.A., Senior Medical Bacteriologist, and E. F. Crowder, A.I.M.L.T., Chief Technician from the Salmonella Reference Laboratory, Institute of Medical and Veterinary Science, Adelaide, South Australia, and Philip Woodruff, M.D., D.T.M &H., F.R.A.C.P., Director-General of Public Health, Adelaide. (To be published in entirety in future issue of the Medical Journal of Australia).

During the period 1962-1964, a number of unusual salmonellae were isolated from human sources with increasing frequency in the Salmonella Reference Laboratory at Adelaide. At the same time it was noted that samples of kangaroo meat submitted for bacteriological screening prior to export were occasionally yielding similar serotypes. The sale of kangaroo meat for pet-food in Adelaide shops did not, at first, appear to be a significant hazard since legislation provided for protection of other meat sold for human consumption. However, the isolation of salmonellae from the feces of two cats in a house where gastroenteritis had occurred, suggested another route of transmission which might implicate pet-food as the source of human infection. It was therefore decided to examine samples of kangaroo meat sold as pet-food in a number of city and suburban shops.

Thirty-six samples were purchased over a two-week period and forwarded to the Salmonella Reference Laboratory. Bags were opened with sterile scissors and a portion of meat transferred to a sterile jar containing sterile saline. This was agitated and 0.5 ml of the washings was added to 5 ml of selenite broth. An additional 20 gm sample meat was minced with a sterile scalpel and covered with 50 ml of selenite broth. After shaking mechanically for 3 minutes, all cultures were incubated at 37°C.

- 13 -

for 18 hours. Subcultures were made onto S.S. medium and suspicious non-lactose fermenting colonies were subsequently transferred in the usual manner for further and final identification.

Of 36 samples submitted for examination, 21 yielded salmonellae on culture. The results are shown in the following table.

#### Table I

#### Serotypes Isolated from Kangaroo Meat, Adelaide, Australia, 1964

Serotype Isolate	Number	of	Positive	Samples
S. saint-paul	trends. N	1.00	10	
S. adelaide			5	
S. london			3	
S. fremantle			3	
S. brisbane			1	
S. muenchen			ĩ	
S. dublin			ī	
S. tunis			ĩ	
S. bareilly			ĩ	
Awaiting identification			ĩ	

The number of isolations from kangaroo meat sold as pet-food is extremely high. Although salmonellae have been isolated from kangaroos in captivity, there is little evidence to suggest that these animals represent a natural reservoir of infection. It seems likely that the meat is heavily contaminated after slaughter by contact with bags and other containers used to carry meat or bone. This suggestion examined during this investigation, and it seems unlikely that one salmonellae.

There can be little doubt that kangaroo meat sold as pet-food constitutes a serious danger to public health if the observed degree of contamination with salmonellae is allowed to continue. It should not Paper sacks lined with polythene are now freely available and would be ful butchering with equipment regularly cleaned with one of the numerous dental contamination and would ensure that the final product was fit

#### I. FOOD AND FEED SURVEILLANCE

A. Bacteriological Evaluation of Frozen Eggs. Reported by George A. Michael, B.S., Director, Division of Food and Drugs, and Arthur Wilder, D.V.M., Senior Assistant Veterinary Officer, Massachusetts Department of Health.

During August, 1000 thirty-pound cans of frozen eggs were brought into the State of Massachusetts by refrigerated trucks from Iowa. Upon arrival at the warehouse, the eggs were found partially thawed due to faulty refrigeration. Samples for culture were taken from 60 cans, using an aseptic core sampling procedure. Thirty of the cans examined were positive for salmonellae. The serotypes isolated are listed in the following table.

	Serotype	No. of Isolates
<u>s</u> .	oranienburg	8
s.	infantis	6
s.	tennessee	4
s.	montevideo	4
s.	schwarzengrund	2
s.	give	1
s.	muenchen	1

Alarmed at the high isolation rate from whole frozen eggs, which was supposedly USDA inspected at the plant of origin, the Federal Food and Drug Administration in Boston plans to do weekly sampling of frozen eggs entering the Boston market area.

B. Imported Canned Corned Beef. Submitted by Dr. Betty Hobbs, Food Hygiene Laboratory, Central Public Health Laboratory, Colindale Avenue, London, N.W. 9, England.

Dr. Betty Hobbs has recently informed us that they have examined many cans of corned beef from the same consignment as that involved in the Aberdeen typhoid fever outbreak as well as cans from other South American establishments. The results they obtained are in Table IX. Although §. typhi was not recovered, one can was found to contain S. typhi-murium. Isolations have been obtained by direct cultures taken from the inside seams of the cans and surface area of the meat. Dr. Hobbs stated that they no longer believe that central core samples only, can be relied upon to establish sterility of canned foods.

During the past month, the Veterinary Public Health Laboratory, CDC, obtained in the local markets another 15 cans of corned beef imported from Argentina. The 15 cans consisted of 3 each of 5 different brands from 5 establishments. Nine of the cans were 12 oz., 3 were 15½ oz. and 3 were 7 oz. Gram-positive cocci and/or Gram-positive bacilli were found on direct stained smears prepared from swabs of the seam and surface area of the meat in 13 of the 15 cans. Gram-positive cocci were cultured from these same areas in 14 cans, Gram-positive aerobic bacilli from 8 cans and alpha streptococci from 1 can.

C. Abstract: An Improved Method of Isolating Salmonellae From Contaminated Desiccated Coconut. Reported by J. B. Iveson, N. Kovacs, William Laurie, J. Clin. Path. <u>17</u>:75-78, 1964.

The efficacy of 3 different enrichment media was compared for the isolation of salmonellae from desiccated coconut from Ceylon and the Philippines. Selenite and tetrathionate were used in parallel tests with Rappaport's enrichment. Salmonellae were recovered from 138 (18 per cent) of 757 samples of coconut from Ceylon. Ninety-three per cent of these samples were found positive in the Rappaport medium, 18 per cent in selenite broth and 27 per cent in tetrathionate. Of 292 samples of Philippine coconut, 96 (32 per cent) were positive for salmonellae. These samples were examined only in selenite and Rappaport media. Again, Rappaport enrichment was superior with 88 per cent of the positive samples compared to 55 per cent from selenite.

<u>Editor's Comment</u>: These differences in the rate of recovery of salmonellae from desiccated coconut are indeed striking. They illustrate again the fact that the same method cannot be applied with equal success for the isolation of salmonellae from all types of foods.

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

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

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

Those interested in applying for the January 11-22 session should do so by December 1, 1964.

# Figure / REPORTED HUMAN ISOLATIONS OF SALMONELLAE IN THE UNITED STATES 1963-1964



	1964
	SEPTEMBER,
	DURING
I	HUMANS
TABLE	FROM
	ISOLATED
	SEROTYPES
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1963 TOTAL	157 43	43 5 279	35 100 7	3 146 12	46 27 1,090 504	45	1,135 673 108 34	34	133 46 11 20 330	210 813 8	374 99 8 95	107 4 42 39	414 91 5	115 26 12 91	11 216 578 4,053 105	1	21 222 43 35 45	3	13,419
7, NINE MONTH TOTAL		2.1			13.4		8.2		2.3	4.4	2.5		2.9		1.8 3.4 30.0				
NUNE HTNOM TOTAL	1 3 9 196 67	41 14 1 334 1	6 2 76 157 26	1 2 4 60 12	29 248 24138 543	1 2 63 9	1,316 40 1,018 181 16	48 7 1 1 3	149 33 10 26 368	185 2 27 705 10	400 3 135 5 179	123 7 30 30 1	12 470 1 119 1	100 82 5 5 5 5	1 285 544 6,311 150	3 18 16 1	38 236 69 43 30	1 1 2 78	15,970
PERCENT OF TOTAL		2.0			4.2		8.1 16.2		2.1	4.7	2.1		4.2		2.7 3.2 3.2 26.2				
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TABLE I-A HUMAN SEROTYPES REPORTED PREVIOUSLY DURING 1964 BUT NOT IN SEPTEMBER

SEROTYPE	MONTH(S)	REPORTING CENTER(S)	NUMBER OF ISOLATIONS
hony	Ian	N. YC	1
delaide	Jan	Pa(1)	1
	Mar	Calif(2)	
	Apr	Obio(1)	4
lbany	Jan	La(2)	· · · · · · · · · · · · · · · · · · ·
	May-Jul	Mo(2)	
	Jun	F1a(1)	5
msterdam	Apr	Colo	1
rdwick	Apr	111	1
rechavaleta	Jun	Okla	1
tlanta	Apr-May-Jun-Jul	Ga	5
anana	Jul	Ariz	1
rancaster	Jul	Ind	1
randenburg	Jun	Colo	1
ristol	Aug	Tex	1
ambridge	Jan	TIL	1 î
olorado	Jan-Jun	Hawaii	2
oncord	Feb	Colo	1
ecatur	Aug	Okla	6
lenver	Apr	Callif	1
luesseldorf	Jun	Pa(1)	
	Aug	Tex(2)	3
mek	Jul	Calif	1
galimea	Apr	Colo	1
gaminara	Jul	La	1
eatuni			
goettingen	Jan	Fla	1
grumpensie	Jul	N.C.	1
halle	Mar-May-Jun	Hawaii	4
halmstad	Jun	Mass	1
	Apr	Mich	1
hato	Mar	Colo	1
Irumu	May	Mo(1)	
	Jul	Colo(2)	
iohanneshurg	Jul	N.C.(1)	4
Journessourg	Apr	Calif(1)	
kottsbus	Apr	N.YA(1)	2
lexington	Aug	N.YA	1
landan		rex	1
luciana	Feb-Jun	Va	3
madalia	Jan	Aris	1
mologaridie	Feb	Wisc	1
mercagiluis	Jan	Ohio(1)	
	Feb	N.YB.I.(1)	
	Feb-May-Jun-Jul	I11(6)	
	Feb	Ga(1)	
	AnnaMan	Minn(1)	
	Apr-Hay	Pa(2)	
	Jun-Jul	Fla(1)	
	Aug	Hawaii(25)	
	Aug	Calif(1)	
michigan	Apr-Jun	N.C.(1) Calif	40
mission	Aug		-
new-brunswick	Mar	Fla	1
	Apr-Jul	111(1)	
newhay	Jul	Calif(2)	
ohio	May	Ga(1)	4
oslo	May-Aug	Idaho	1
	Jan-Jul-Aug	Calif	3
	Mar	Calif(1)	
	Mar	Arta(1)	
	Jul Aug	N.YB.I.(1)	
otherancel		Va(1)	7
pullorum	Jan	Tex	
redlands	Mar	Ga	1
shipley	In	Ga	1
siegburg	Aug	N.YC	1
simsbury		Mich	1
sundsvall	May Feb	Ga	1
callanassee	Jul	Ariz	1
Weslaco	Jul	Fla(1)	the second s
Westhamton	Jul	N.J.(1)	2
	Mar	Tex	1
TOPLE		Hawaii	1
IUIAL			
			130

#### TABLE II

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

	Total Number of		Number of I	solates
Reporting Center	Isolates Reported	0.21) W 1,-24	From Family	Outbreaks
Alabama	12		2	28-326
Alaska	9		4	and a second
Arizona	17		C	
Arkansas	24		1	Section Stands
California	222		56	
Colorado	34		12	
Connectiont	53		12	18-98
Delevere	6		C	and the second
District of Columbia	13		C	
Planida	11/		16	
Compile	116		42	A120
Georgia	20		4	
nawall	2		5	
Idano	127		19	1
Illinois	127		3	TAT
Indiana	30		- 0	)
Lowa	11		9	)
Kansas	/1		(	)
Kentucky	1(0		27	1000
Louisiana	168		5	;
Maine	9		12	
Maryland	42		24	•
Massachusetts	104		18	1
Michigan	65		5	i
Minnesota	35		2	and a second
Mississippi	9		5	5
Missouri	40		(	)
Montana	6		(	)
Nebraska	1		2	2
Nevada	3			3
New Hampshire	4		2	THE THE
New Jersey	43		- 10	)
New Mexico	31		10	)
New York - A	108		11	and a starter
New York - BI	114		8	3
New York - C	79		4	÷
North Carolina	30		1	2
North Dakota	7		13	2
Ohio	78			+
Oklahoma	18		1	3
Oregon	23		7.	1
Pennsylvania	390			10
Rhode Island	11			0
South Dakota	3			4
Tennessee	45			6
Texas	/3			ALLAS SAL
Utah				4
Vermont	5			8
Virginia	52		1	2
Washington	30			0
west Virginia	1.2			0
wisconsin	42		48	2
Totals	2,624			

# TABLE III Infrequent Serotypes

Center	September	9 Month Total*	1963 Tota1**	Comment
NY-BI	1	1	0	First isolated 1933 from
				the feces of an eleven-
				month-old child with vomit-
				ing, diarrhea, and fever
				in Northeast Scotland.
NY-BI	1	3	10	Six of 8 nonhuman isola-
				tions during 1963 and
				1964 from poultry.
OKLA	1	9	20	0
		-	39	Cause of an outbreak in
				1963 in LA involving 3/
				people.
HAI	1	1	0	Accounted for 13 of 28,000
				isolations at CDC between
				1947 and 1958. Twelve of
				these from HAI; 3 humans
				and 9 wild rats.
KAN	1	1	42.	Mary
		-	104 -	1963 recovery from FLA.
				Previously reported from
				N.M., N.Y., and VA.
MAGO				
MASS	1	6	4	Sixth most common sero-
				type recovered from
				humans in the Nether-
				lands in 1962.
NJ	1	2		
		2	0	Previous isolate from a
				patient in MO. Extremely
TTP V			114 11	rare.
IEX	1	1	0	Future la successor First
			30 0	known isolate in the U.S.
FLA	1			known isolate in the
	•	2	1	All 7 nonhuman recoveries
				at CDC between 1947 and
				1958 from dogs from FLA.
GA	1	4		
		- Contraction	0	Sixteen of 25 nonhuman
			45	isolates during 1963 Hom
CALTE				animal feed and fertilize
A A	1	1	2	Commonly recovered from
			-	Cattle in far Western
				States.

TABLE III (con	t'd - 1)				
<u>Serotype</u>	Center COLO	<u>September</u> 1	9 Month <u>Total*</u> 1	1963 <u>Total*</u> 0	<u>Comment</u> Only previous known
					recoveries from a turkey in VA in 1952 and a human in S.D. in 1953.
<u>S</u> . <u>florida</u>	FLA	1	2	0	First isolated 1943 from
					diarrhea in FLA.
<u>S</u> . <u>gallinarum</u>	MISS	2	3	0	Rare cause of human ill- ness. Commonly recovered from poultry.
<u>S. loma-linda</u>	CALIF	<b>1</b> 83	1	6	All previous known iso- lates from CALIF, ORE, and ARIZ.
<u>S. lomita</u>	LA	4	4	0	First isolated around 1950 from an apparently normal
					County, TEX.
S. manchester	VA	1	3	2	Third most commonly
					man in Germany in 1959.
S. muenster	LA	1	2	5	1963 recoveries from LA (3), TEX (1), and FLA (1).
<u>S</u> . <u>orion</u>	FLA	1	3	3	Eleven nonhuman isolates to date this year. All from turkeys from CALIF
					(8), MINN (2), and WISC (1).
<u>S. paratyphi A</u>	CALIF	1	5	8	Five of 1963 recoveries reported from CALIF.
<u>S. pensacola</u>	NC & VA	2	7	6	All six 1963 recoveries from Southeastern U.S.; VA (3), FLA, GA, and LA.
S. richmond	KAN	1 monise 10 -	1 an its los i	5 1 	Extremely rare serotype. 1963 isolations from KAN (4) and MD.
S. <u>salinatis</u>	CALIF	1	1	0	First isolated 1941 from rat feces in CALIF. All 5 recoveries reported to this unit since 1962 from

CALIF.

# TABLE III (cont'd - 2)

Comotom -	Conserve 2	Tils207	9 Month	1963				
Serotype	Center	September	Total*	Total**	Comment			
<u>o. saphra</u>	TEX	1	1	5	1963 isolates from FLA, LA (3), and TEX. All			
					from children less than			
noit Carl Sausi Vine anget state					5 years of age who required hospitalization.			
S. schoeneberg	FLA	1	1	0	First isolated around			
					daughter who were asymp-			
					known recovery in the U.S. from swine in TEX; 1962.			
S. stanley	NY-BT	1	1.1					
	LEXA box	1	5	13	Commonly recovered from monkeys. Commonly			
					recovered from humans in			
Appendity notice					the Netherlands in 1962 and Germany in 1959.			
S. thomasville	FLA	1	1	11	1963 isolates from FLA,			
S. used					GA, and ILL (9 in one family).			
5. <u>uganda</u>	LA man	3	3	0	Reported this month from			
					individuals in three separate parishes in LA.			
outraan isolales this year. All					Extremely rare; not previously seen in this country.			
S. virchow	MD	1	2	1	Of 4, 1963 recoveries from			
1361 reasons for				1	eggs in COLO and 1 from red meat in MO.			
5. westerstede	TEX	1	1		1. Pirat,			
			-	1	Very rare serotype. Only			
in hearst two hears in hears in hears in hears back in hears back the hears back of					2 known previous isolation in the U.S., both from humans; GA (1962) and TEX (1963).			
nine mont	s 15,970 h hs of 1964	uman isolat •	ions of sa	almonella	e during the first			

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

#### TABLE IV

Age and Sex Distribution of 2,552 Isolations of Salmonella Reported for September, 1964

Age	Male	Female	Total	Per Per
Under 1	145	110	255	Per Per Per
1-4 yrs.	186	148	334	Pero Pero Pero
5-9 yrs.	99	70	169	8
10-19 yrs.	105	105	210	1
20-29 yrs.	85	97	182	1:
30-39 yrs.	43	75	118	
40-49 yrs.	36	65	101	2 · 2 · 2 ·
50-59 yrs.	36	50	86	2 · 2 · 2 ·
60-69 yrs.	32	32	64	2:
70-79 yrs.	27	19	46	
80+	8	16	24	
Unknown	475	488	963	
Total	1,277	1,275	2,552	
% of Total	50.0	50.	0	

							N	ON-H	MAN	ISOL	ATES	REPO	RTED	BY T	THE M	ATIO	ONAL I	DISE	ASE	LABOR	AIUN	1	+	1	1	-	11	-		-	1		1		1	1						1963	11.57	
	cockerel	chicken	turkey	pigeon	quafl	combird	avain	equine	bovine	ovine	porcine	canine	feline	lab mouse	lab rat	monkey	mink porcunine	chartel	cheetan	ess white	egg yolk	powdered eggs	frozen eggs	egg environment	egg shell	food mix	coconut	poultry feed unknow	animal feed unknown	tankage	animal protein	turtle	snake	fish	lizard	sevage	turtle water	alligator tank	turtle tank	egg environment	unknown	TOTAL	9 Mos TOTAL	SEROTYPE
S E R O T Y P E		-	2									-	+	+	+	,			-	2											1											3 1 9 2 5	6 2 200 17 34	alachua albany anatum bareilly binza
albany anatum bareilly binza		1	1						1		2		-	+	+	-	+	-		1	-		1		3				4			7 2 31		2			12	-	8			20 4 53	91 10 97	blockley braenderup bredeney california
blockley braenderup bredeney california		1	1 1								1	1			2		1		1000			1		1			E		2	1		2		ST.		-	2		Ċ	1		5	38	cerro
chester cholerae-suis v kun	-		10		1						6	2	T	T		1														111		8				1						10 6 3 13 1	135 87 31 190 21	chester cholerae-suis v kun cubana derby dublin
derby dublin			3						1		1	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-	1	t		,									1 6	1 71	duesseldorf enteritidis
duesseldorf enteritidis gallinsrum eive		1 9 3							1	:02						3							10						1	1		12										9 4 55	45 33 356	give heidelberg
heidelberg illinois indiana infantis	2	17 3 19	13 2 4			6					1		1	0.040			112			4	1	101	62	00	1		200		2	1		20		202		1		1	1.25			2 5 36 6 2	6 19 278 27 27 2	illinois indiana infantis kentucky lille
kentucky 1111e			2	_	-		-	-	-	-	+	-	+	+	+	+	+	+	+	+	+	+	+	-	-	+	-		-		1	6		1								7	11	litchfield livingstone
litchfield livingstone manhattan meleagridis		3	1						1		1			1	ı	1															1											1	42 35 2	manhattan meleartidis miami
niami montevideo muenchen new brunswick		10 2	21	1	-			1		03	1	1	T	1	-						1	1	4						1	1		7				1						19 6 1 4 17	161 62 1 29 105	montevideo muenchen new brunswick newington newport
newington newport		1	3	_	1	-	-	-	2	-	+	+	1	+	+	+	+	+	+	+	+	+	+	-	-	+	+	-	-	+	+	-	-					-	1	t	t	1	10	ohio
hio granienburg grion glo			1									100		2	2						1		1									1			1		1	9				1 9 3	11 9 14	orion oslo panama
ullorum reading saint-psul san-diggo schwarzengrund		11 5 5	2 7 3								2									2			5 1 1			2																11 2 17 5 11	175 12 158 68 89	pullorum reading saint-paul san-diego schwarzenarund

IABLE V

AND STATE REPORTING CENTERS BY SEROTYPE AND SOURCE, SEPTEMBER, 1964

typhi urban wasa worth untyp	murium anaar ington able gr TOTAI	oup C	-1 2	14 1 126	4 5 2 98 7 Nati	2 conal t	1	4 4	47 orator	1 17 y. Ame	2	2 1 a and	6 I	1 1 1 Salmon	1 ella :	1 11 Surves	1	5 Ce Rep	2	40 40	1 3	3 vidua	1 1 Sta	3 1 ates 1	12 17	2 les Aug	6 83	1 2 3	1	5 13	9	1 9 1	1	23 10 6 1 4 5 1 562 4164	2 2 2 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4
0						ON- HI								~					-	100	>							ate R	eporte						
SEROTYPE	F					0.4-110	/MAIN	ISOL	ATES I	EPOR	TED B	Y THE	NATI	ONAL A	UN I MA	L DI	SEAS	E LAB	TAE	BLE V	AND	STA	TE R	EPOR	TING	CENT	ER BY	( SE	ROTY	PE ANI	STA	TE SEF	PTEMI	BER 1964	
achua bany atum reilly nza		a Ari	k Cali		o Con	n Fla	Ga	111 1 2	Ind I	owa K	I	Md M	lass M	ich Mi	inn M	iss	Mo N	IJ NY-		A T I	1 1 1	k1a	Ore	Pa S	C Te	nn Te	x Ut.	ah V	a Was	h Wis	c Wyd	o Tota	1 9 3 1 9	Months To 6 2 200	tal SEROTYPE alachua albany anatum
ckley enderup deney ifornia ro	1	1	1	1					1	51			1 2		1	1	1				2			3		2		2				20 4 53	5	91 10 97	binza blockley braenderup bredeney
eter erāc-suis v kun ina in			1						1	8	1				1 1 1 1				3					2						8	-	5 10 6 3		135 38 135 87 31	californía cerro chester cholerae-suís v kun cubana
seldorf ritidis inårum elberg	3	3	1 4		4		1	3	1	12	1			1		2 2			1				1	1			1				-	13 1 1 6 9		190 21 1 71	derby dublin duesseldorf enteritidis
nois ana ntis ucky e	6		10	Dav -		L'and	1000	3	1	2	10.00	1	Nava Set dar	1	1	CALL NO	1		100	5	11212		+	110	area -	1	10		1			4 55 2 5		33 356 6	gilinarum give heidelberg illinois
hfield ngštone attan agridis			1					1	2	6						3	1	100	1				-				62		1	1		36 6 2 7		278 27 2	Indiana infantis kentucky lille
ni tevideo achen brunswick	1		4			1	2	1	1				-	1	2	4				2				1				1				8 1 1 1		37 42 35 2	livingstone livingstone manhattan meleagridis miami
o nienburg			2		NAN OL		1			7			3		5	1				1						1	4	1				19 6 1 4 17		161 62 1 29 105	montevideo muenchen new brunswick newing ton newport
					0.00					5				1	1									1		1	1	2				1 7 1 9 3		10 90 11 9 14	ohio oranienburg orion oslo panara

oranienburg orion oslo panama

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

Serotype	Month(s)	Reporting Center(s)	Number of Isolations
		Mich	2
laide	Jan	Ca(1)	
iger	May	Flo(1)	2
STATES AND	Aug	Mich	1
lem	Mar	Mich	
rta	Mar-Jul	N.C.(2)	
	May	Mo(1)	
	Jul	Ga(2)	6
	Aug	Calif(1)	6
ukwa	Mar-Apr	Mich	2
		Ind	1
mbridge	Jul	Ind (10)	
olerae-suis	Jan-Apr-May-Jun	(10)	
A Share and the second of the second	Jan-May-Jun-Aug	0110(7)	
	Mar	Calif(1)	
	Apr	Tenn(1)	
	May	Colo(1)	
	May	S.C.(2)	
	May	Tex(2)	
	Jun	F1a(5)	
Carl Press and the second	Jun	N.C.(1)	30
aminara	Tun	Ind	1
aminara	Jun	Mich	1
rumpensis	Aug	Mich	1
nverness	Jan	Mich	
aviana	Feb	La	1
ohannesburg	Feb	A1a(1)	
	May	Mo(2)	3
anila	Jan	Mo	2
inneanolis	Jan-Aug	T11	2
innecoto	Jan-Aug	A1c(/)	
innesota	Jan-Aug	Ala(4)	
	Jan	Tex(1)	
	Feb	Ohio(1)	
	Mar	Calif(1)	9
	Apr	Miss(1)	0
mission	Jan	Мо	2
muenster	Jun	Minn	1
new-haw	Tul	Minn	1
naratunhi P	Jui	Miss	1
paracyphi B	Aug	Pa	
paratyphi B v java	Feb	Calif(1)	2
		La(1)	
pomona	Jul-Aug	Mich	3
poona	Feb	Mich(1)	
	Mar	Calif(1)	2
rubislaw	Jul	Iowa	1
seigburg	Feb	Ala(1)	
	Feb	Ga(1)	
	Mar-Jul	T11(2)	4
simsbury	Jan-Apr-Jun-Jul-Aug		
S REAL PROPERTY AND	Jan		
	May	Va(1)	
	Jup	S.C.(1)	8
	Juli	Fla(1)	
taksony	Jun.	Calif	1
thomassille	Apr	Fla	1
tunhi	Jun	Ga	1
cyphi-suis	Feb-Jun	Mass(2)	
	Mar	Wiec(1)	
	Jul	(a)((1)	4
wandsbek	Jan	Mich	1
zehlendorf	Apr	Mich	1

#### TABLE VII

<u>Salmonella</u> <u>derby</u> Isolations and Total Salmonella Isolations Reported by Month\*

		Total Salmon Isolations	nella	<u>S</u> . <u>derby</u> Isolations	Per Cent of Total
1962	November	922		18	2.0
	December	794		16	2.0
1963	January	1,111		30	2.7
	February	1,059		22	2.1
1	March	931		28	3.0
	Apri1	1,330		61	4.6
1	May	1,738		139	8.0
	June	1,640		203	12.4
	July	2,133		303	14.2
	August	1,770		155	8.8
	September	1,786		164	9.2
(	October	2,462		228	9.3
1	November	1,381		127	9.2
I	December	1,439		175	12.2
1964 3	January	1,601		213	13.3
F	February	1,442		301	20.9
M	larch	1,279		290	22.7
A	pril	1,882		399	21.2
M	lay	1,545		277	18.0
J	une	1,758		195	11.1
J	uly	2,159		217	10.1
A	ugust	1,777		151	8.5
S	eptember	2,624		109	4.2

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

#### TABLE VIII

Salmonella Serotypes Isolated Most Frequently from Human and Nonhuman Sources at the Salmonella Reference Laboratory, Adelaide, Australia, July 1, 1961 - June 30, 1964

Human			Nonhuman
Serotype	No.	%	Serotype
<u>S. typhi-murium</u>	377	48.8	S. typhi-murium
<u>S. newport</u>	44	5.7	<u>S. cholerae-suis</u> & <u>cholerae-suis</u> <u>var. kunzendorf</u>
<u>S. typhi</u>	40	5.2	S. anatum &
S. bovis-morbificans	36	4.7	S. oranienburg
S. saint-paul	30	3.9	S. derby
S. adelaide	23	3.0	S. give
S. muenchen	_20	_2.6	S. saint-paul
Total	570	73.7	
Total (all serotypes)	773		

	Appearanc	e of sample	Bacteriological Results										
Meat establishment	External (Can)	Internal (Appearance and odor of meat)	Direct smear	Viable count per gram 35° C for 2 days	Direct cultures Enrichment cultur								
Uruguay 5	Blown	Normal	Numerous Gram- negative bacilli	150 x 10 <sup>6</sup>	Profuse growth of	E <u>Enterobacter</u> cloa <b>cae</b>							
Argentina 12	Blown	Normal	Several Gram- positive cocci and bacilli	250,000	<u>Enterobacter</u> <u>cloacae</u>								
Argentina lA	Damaged corner, otherwise normal	Normal	-	500	No bacterial growth	<u>Pseudomonas malto-</u> philis and a non-							