and the recently described *S. virginia* (VIII:d) of Saphra and Seligmann.[7] In addition a culture received from the Virginia State Department of Health had the formula VIII:d-1,2,3 . . . Also two cultures of *S. newport* isolated from a snake by Dr. W. R. Hinshaw had only antigen VIII. Non-motile variants isolated from the same animal had identical O antigens. It is well known that antigens that are subject to form variation may be totally lacking in certain cultures. For instance, Kauffmann demonstrated variation involving antigen I in a number of types of groups A and D. Cultures of these types are found which contain no I antigen. Likewise Kauffmann found that a fraction of antigen XII (XII_2) was subject to variation and that it was totally lacking in a strain of *S. typhi*, a species which ordinarily contains the antigen. Therefore, it is to be expected that VI_1 would be lacking in certain VI_1,VIII strains. These probably represent loss variants of cultures with typical O antigens.

Summary. It was found that antigen VI_1 was subject to a reversible form variation similar to that reported by Kauffmann for antigens I and XII_2. This variation occurred both in the *S. choleræ-suis* and *S. newport* groups. Colonies which were deficient in VI_1 had a normal content of VI_2. So far as is known the latter antigen is not subject to form variation.

[6] Edwards, P. R., and Bruner, D. W., *J. Immunol.*, 1942, **44**, 319.

[7] Saphra, I., and Seligmann, E., PROC. SOC. EXP. BIOL. AND MED., 1945, **58**, 50.

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A new Salmonella type: *Salmonella pensacola.**†

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Salmonella pensacola, the type to be described, was isolated from a severe case of acute gastro-enteritis in a laboratory worker and was forwarded to the writers by Mrs. Mildred Galton. The source of infection was not known. On preliminary examination, the culture proved to be a motile rod which possessed the usual cultural and biochemical characteristics of the Salmonella group. Hydrogen sulfide was produced and Jordan's tartrate was fermented but indol was not formed nor was gelatin liquefied. Acid and gas were formed in 24 hours from glucose, rhamnose, xylose, arabinose, maltose, trehalose. dulcitol, mannitol, sorbitol, and inositol. Cellobiose was fermented after 6 days incubation. Lactose, sucrose, raffinose, and salicin were not attacked. Dextro-tartrate, levo-tartrate, mucate, and citrate were utilized but meso-tartrate was not attacked.

On serological examination the organism was found to be a member of group D of the Kauffmann-White classification and in absorption tests it completely removed agglutinins from *S. gallinarum* serum. The O antigens of *S. pensacola* are IX, XII. When the H antigens were examined it was found that *S. pensacola* was flocculated in low dilution by the majority of serums derived from forms related to *S. enteritidis, i.e.*, the monophasic forms containing antigen g. However it was agglutinated in high dilution only by serums derived from *S. california* (IV,XII:g,m,t . . .) and *S. oranienburg* (VI,VII:m,t . . .) In these two serums it was agglutinated to titer. When

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TABLE I.
Agglutinin Absorption Tests × 100.

Antigens	Serums: Oranienburg (m,t...) Unabsorbed	Oranienburg (m,t...) Absorbed by: Pensacola	Oranienburg (m,t...) Absorbed by: California (g,m,t...) + Pensacola	California (g,m,t...) Unabsorbed	California (g,m,t...) Absorbed by: Pensacola	California (g,m,t...) Absorbed by: Oranienburg (m,t...) + Enteritidis (g,m...) + Pensacola	California (g,m,t...) Absorbed by: Derby (f,g...) + Pensacola + Oranienburg (m,t...) + Enteritidis (g,m...)	Pensacola Unabsorbed	Pensacola Absorbed by: Oranienburg (m,t,...)	Pensacola Absorbed by: California (g,m,t...)	Pensacola Absorbed by: Berta (f,g,t...)	Pensacola Absorbed by: Budapest (g,t...)	Pensacola Absorbed by: Oranienburg (m,t...) + Berta (f,g,t...) + Moscow (g,q...)
Derby (f,g...)	<1	<1	<1	5	5	2	<1	2	1	1	<1	<1	<1
Berta (f,g,t...)	10	<1	<1	20	5	<1		100	1	1	<1	10	<1
Enteritidis (g,m...)	2	2	<1	10	10	<1	<1	2	<1	<1	1	1	<1
Montevideo (g,m,s...)	5	2	1	1	<1	<1		5	<1	2	5	5	<1
California (g,m,t...)	50	10	<1	400	100	2	<1	100	1	<1	20	10	<1
Dublin (g,p...)	<1	<1	<1	10	10	<1		5	<1	<1	2	2	<1
Rostock (g,p,u...)	<1	<1	<1	10	10	<1		1	<1	<1	<1	<1	<1
Moscow (g,q...)	<1	<1	<1	10	<1	<1		20	5	2	1	1	<1
Senftenberg (g,s,t...)	2	<1	<1	10	<1	<1		10	<1	<1	10	<1	<1
Budapest (g,t...)	5	<1	<1	20	1	<1		50	<1	1	20	<1	<1
Oranienburg (m,t...)	50	20	5	400	50	<1	<1	100	<1	2	100	10	<1
Pensacola	50	<1	<1	400	<1	<1	<1	400	200	200	200	200	20

Figures indicate highest dilution at which agglutination occurred.

tested in absorbed serums for single factors f, m, p, q, s, t, and u it was flocculated vigorously by m and t serums but was unaffected by the remainder. Agglutinating serum was then prepared from *S. pensacola*. Results of pertinent agglutination and agglutinin absorption tests are given in Table I. The tests not only demonstrated the close relationships existing among *S. californica, S. oranienburg,* and *S. pensacola* but they also emphasized the complicated mosaic of antigens present in *S. enteritidis* and related forms. It was not surprising that *S. pensacola* possessed a strong specific factor since the complexity of the antigens represented by the symbol t is well known.[1,2,3,4] Inasmuch as *S. pensacola* is very closely related to *S. oranienburg* and *S. californica,* is agglutinated by serums for factors m and t and has definite relationships to the remainder of the *S. enteritidis* group, it is proposed to designate the type by the formula IX,XII:g,m,t . . . For diagnostic purposes it is not necessary to introduce a new symbol to designate the specific antigen of the culture and until such time as that becomes necessary it seems undesirable to further complicate the diagnostic schema by the introduction of new symbols.

Summary. A new Salmonella type isolated from gastro-enteritis in man was described. It was called *S. pensacola* and was assigned the formula IX,XII:g,m,t . . .

1 Kauffmann, F., *Z. f. Hyg.*, 1937, **120**, 177.

2 Rauss, K., *Z. f. Immunitatsf.*, 1939, **95**, 489.

3 Hormaeche, E., Peluffo, C. A., and Salsamendi, R., *Arch. Urug. de Med., Cir. y Espec.*, 1938, **12**, 377.

4 Edwards, P. R., Bruner, D. W., and Hinshaw, W. R., *J. Inf. Dis.*, 1940, **66**, 127.

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Effect of Feeding Calcium Arabonate in Diet of Rats for Successive Generations.

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In former studies with carbohydrates, various sugar alcohols were fed to rats for long periods of time.[1] These substances failed to affect deleteriously the rate of growth in 3 successive generations of rats. Recently calcium arabonate has been suggested as a dietary supplement to provide additional calcium in the diet. As such a use would indicate rather large doses of this compound it was deemed advisable to conduct similar long-term feeding experiments with rats.

Material and Methods. Calcium arabonate is a white crystalline powder, 2% soluble in water at 20°. The compound is obtained readily in a pure form from intermediates used in the synthesis of riboflavin. In the form of its normal salt crystallized with 5 molecules of water calcium arabonate possesses a specific rotation of $[\alpha]_D^{25}$-3.0° in 2% water solution.

Fifteen young male and 15 young female rats were selected for this study. The average weight of each group was 106 g at the beginning of the experiment. Five percent calcium arabonate was mixed intimately with the food of each group of animals. A balanced diet of purina chow fortified with additional vitamins served as the basic diet. On the 24th day one male and one female were placed in each of 15 cages. At periods of time thereafter male animals were sacrificed for histologic examination of the important viscera. This experimental plan was followed with 2nd and 3rd generation rats. A summary of the data obtained is illustrated in the form of growth curves compared with a group of untreated animals from the stock colony of the laboratory (Fig. 1).

1 Ellis, F. W., Carr, C. J., Wiegand, E. J., Krantz, J. C., Jr., PROC. SOC. EXP. BIOL. AND MED., 1943, **52**, 260.