123 typical hemolytic strains originally isolated from superficial human tissues, representing such diseases as erysipelas, furunculosis, and fistula, septic sore throat, sinusitis, and acute gastric disturbance; and (c) 38 cultures of veterinary origin, representing such animals as cow, horse, hog, dog, deer, and rabbit. The lytic tests thus grouped are recorded in Table I.

Groups I and III are in practical accord with the Tillett-Garner data. Group II, however, suggests a much less sharp differentiation between antihuman and antiveterinary streptococci than their data indicate. The low percentage of fibrinolytic hemolytic streptococci in this group suggests that a fibrinolytic typing of superficial human infections might be of clinical interest.

Thirty-three strains of *S. viridans* were tested in connection with this work. All were non-fibrinolytic.

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Lactose Degraded Colon-Aerogenes Organisms in Normal Feces.

LELAND W. PARR.

From the Department of Bacteriology, Hygiene and Preventive Medicine, School of Medicine, The George Washington University, Washington, D. C.

The type of degradation of lactose-fermentation here considered is that in which bacterial growth in lactose broth produces no fermentation the first few days of incubation. After 2 to 14 days, acidity and gas production may appear. In other strains it is only after repeated subculture on lactose that this sugar is fermented. As a result of lactose-fermenting deficiency, degraded organisms are entirely missed in water analysis. Since dextrose fermentation is normal, degraded strains grow on Endo and Russell's medium like paratyphoids and complicate the examination of suspect material for members of the Salmonella group. Many, but not all, strains ferment saccharose promptly. This led Krumwiede[1] to add saccharose to Russell's medium to exclude these degraded forms designated in Park and Williams as "paratyphoid-like intermediates". Kennedy *et al.*[2] have presented data for 22 strains of colon bacilli showing delayed lactose fermentation, in urine, stools and water.

We have been interested in the *Escherichia-Citrobacter-Aerobac-*

[1] Krumwiede, Charles, and Kohn, L. A., *J. Med. Res.*, 1917, N. S. **32**, 225.

[2] Kennedy, J. A., *et al.*, *J. Infect. Dis.*, 1932, **50**, 333.

ter ratio in saline suspensions of feces, fresh and after storage at 37° and icebox temperature. Lactose degraded organisms have been encountered. The fecal suspensions were first plated on Endo from which representatives of all colony types were fished to dextrose broth. From these tubes plates were again made on Endo and a well isolated colony picked to lactose broth. From this growth a third Endo plate was made from which again a well isolated colony was fished to lactose. By such technique we were reasonably assured of pure cultures and were able to exclude growth which failed to ferment dextrose. The strains isolated were tested for their gelatin liquefaction, action on litmus milk, growth on Simmons' citrate agar, production of indole and hydrogen sulfide, their methyl red and Voges-Proskauer reactions and for fermentation of saccharose, dulcite, cellobiose, α-methyl-d-glucoside and Levine's boric acid lactose broth.

In this manner 27 different fresh fecal suspensions yielding 306 strains were studied. Three of the original suspensions were kept at 37° until no more colon-aerogenes organisms could be recovered (60, 73, and 77 days respectively), during which time 303 strains were recovered from 47 platings. Six original fresh fecal suspensions, of which 3 duplicate those kept at 37°, have been stored in the icebox and have yielded 449 strains on 80 platings. In no one of these icebox suspensions have all colon-aerogenes yet disappeared (longest interval 173 days).

One lactose degraded organism *(Aerobacter)* was encountered among the 306 from fresh feces, 45 (35 *Aerobacter*) among 303 strains from suspensions stored at 37° and 82 (78 *Aerobacter*) among 449 strains from suspensions in the icebox. Nine of the 128 degraded strains were indole-negative *Escherichia* and of these 8 were from suspensions stored at body temperature. Three were *Citrobacter* and 2 did not fall into our commonly accepted classifications.

Lactose degraded colon-aerogenes organisms are not numerous in freshly excreted feces but increase greatly in numbers when fecal suspensions are stored. That this deficiency is due to a degradation of ordinarily normal organisms seems likely. To test this point pure cultures of typical Escherichia and Aerobacter were inoculated into flasks of sterilized fecal suspension and stored. The lactose fermenting capacity of the *Escherichia* has been but slightly influenced thus far but it has been possible to reduce the *Aerobacter* to a typical slow lactose fermenter. At the same time its dextrose, saccharose and cellobiose fermentations have not been affected.

Furthermore the degraded strains encountered have in many cases been reverted to typical lactose fermentation.

The lactose deficient Coli previously described by many workers probably represents a type of organism degraded by processes more significant than those ordinarily occurring in the normal bowel or in simple storage. Bacteriologists should know that types apparently *Salmonella* deserve careful study including serological indentification before being designated paratyphoids. This is particularly true in examinations of suspected carriers or of materials concerned in food poisoning. The value of the Krumwiede modification of Russell's double sugar medium as an aid in eliminating saccharose fermenting, lactose degraded organisms of this group has been confirmed but it must be remembered that a certain number of these deficient organisms will not ferment saccharose (14 of Kennedy's 22, for example) and hence would still pass culturally as *Salmonella.* The desirability of holding lactose broth cultures for several days when negative results are apparently obtained or indeed inoculating such tubes in series day by day, should be borne in mind. It is striking that the fermentation of lactose, the carbohydrate of prime importance in this group, should be the function most subject to degradation and that *Aerogenes,* an organism of reputedly strong fermentative power should appear as the predominant degraded organism under normal conditions.

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Bacteriological Observations on a Case of Meningo-Encephalitis.*

E. W. SCHULTZ, M. C. TERRY, A. T. BRICE, JR., AND L. P. GEBHARDT.

From the Department of Bacteriology and Experimental Pathology, Stanford University and the U. S. Veterans' Hospital, Palo Alto, California.

On December 12, 1933, a nurse became suddenly ill and repeatedly vomited bile stained material. The following morning she had a severe chill, a temperature of 101°F., severe headache, some rigidity of the neck and a doubtful Kernig's sign. A day later her temperature reached 105.3°F. and the meningeal symptoms were more marked. During the first 10 days of her illness the more prominent symptoms were: fever, headache, occipital tenderness, rigidity of

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