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.

7422 P

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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the neck, strabismus, ptosis of left eyelid, diplopia, twitching muscle fasciculi and lethargy from which she could be fairly easily roused. There was gradual improvement after about the tenth day. Ten weeks after the onset there remained some speech defect, difficulty in feeding herself, dysmetria, sprawling gait, slight nodding of head, emotional instability and impaired memory.

Spinal fluid obtained December 15 was hazy and contained 812 cells per cu. mm. (95% small lymphocytes). The sugar content was 37 mg. per 100 cc. and the gold curve 0023321111. Subsequent specimens gave a paretic curve. Repeated Wassermann tests have been negative. Inoculated guinea pigs failed to develop tuberculosis.

Of special interest is the fact that an apparently new Gram-positive bacillus was obtained in pure culture from the spinal fluid on December 18, 19, 21, 22, 26, 28, 1933; January 3, 8, 10, 18, March 8, April 12, 1934. Cultures made May 10 were negative. A rabbit inoculated intracerebrally with 0.5 cc. of the spinal fluid obtained on December 28 developed a severe encephalitis 2 days after inoculation. The same organism was cultivated from the brain tissue of this animal.

In the original broth and blood agar cultures the organism is a short, plump, bacillus (0.4-0.6 x 0.6-1.0 μ) with rounded ends, which on subculture on certain media becomes longer (1-2 μ). In Veillon agar stabs, incubated at 37°C., it tends to give rise, even in young cultures, to much longer rods (2-10 μ), sometimes mixed with straight and spiriliform threads (15-20 μ), short comma forms, ring forms and solid spherical bodies. These forms revert promptly to short, plump rods on transplantation to broth or other media. It is Gram-positive, but easily decolorized, non-motile, does not form spores, is not acid-fast and not capsulated. What seem to be small metachromatic granules and polar staining may occasionally be observed in suitably stained larger forms. It is a facultative anaerobe, grows well on the usual laboratory media and is not exacting in its temperature requirements. On blood agar plates, it forms small streptococcus-like colonies which may in several days reach a diameter of about 1 mm. After 48 hours a well defined zone of almost complete hemolysis is present. Growth on blood agar slants is delicate and resembles that of hemolytic streptococcus. On glycerine agar growth is more evident and whitish in color. A faint uniform turbidity is imparted to liquid media. It ferments the following carbohydrates without gas production: dextrose, levulose, rhamnose, xylose, maltose, dextrin salicin, and adonitol. Lactose, sucrose and glycerol are fermented slightly after some days. It does not

ferment galactose, raffinose, inulin, erythrol, mannitol nor dulcitol. Neither does it liquefy gelatin nor coagulated blood serum. Hydrogen sulphide and indole are not formed. Litmus and methylene blue are strongly reduced, but nitrates are not.

The organism is pathogenic for mice, guinea pigs, rabbits and rhesus monkeys, freshly isolated cultures generally being fatal within 72 hours after intravenous or intracerebral inoculation. Evidence of meningeal irritation and incoordination is frequently prominent. Rabbits seem most susceptible. The most characteristic gross lesions are minute (0.5-1 mm.), yellowish, opaque miliary lesions which may be located in the meninges, brain, kidney, adrenal, heart muscle, spleen and liver. The adrenal may be markedly congested. Microscopically there are small foci of necrosis, surrounded and invaded by proliferating histiocytes and leucocytes and frequently interstitial hemorrhage. In the central nervous system, the lesions are found particularly in the leptomeninges and the adjacent nervous tissue. The organisms are easily cultivated from infected tissues.

Further studies on the properties of the organisms are in progress. The evidence at hand indicates that systematically it falls in the so-called diphtheroid group. We suggest for it the name *Corynebacterium parvulum.*

7423 P

Phosphatase Activity of the Serum and Tissues in Osteogenesis Imperfecta.

ARILD E. HANSEN. (Introduced by Irvine McQuarrie.)

From the Department of Pediatrics, University of Minnesota.

Robison[1] has pointed out that the enzyme phosphatase is an important factor in the calcification of bone. Kay[2] has more recently summarized the evidence for its activity in connection with studies on a wide variety of clinical conditions. Since osteogenesis imperfecta is an outstanding example of defective bone formation for which no pathogenesis has as yet been discovered, a comprehensive study of the various metabolic factors which might be involved in this condition was begun by the writer in 1931. The present report deals with the phase of that study which concerns the phosphatase activity of the blood serum and fixed tissues.

[1] Robison, R., *Biochem. J.*, 1923, **17**, 286.

[2] Kay, H. D., *J. Biol. Chem.*, 1930, **89**, 235, 249.