on the generalization of a concept of transportation forms in contra-distinction to forms of a compound which can only be described by formulas represented in the usual manner of structural chemistry. It would also be necessary, before we can wholly explain the reactivity of the transportation form as contrasted to the ordinary form in its relation to the various variables, to know the arrangement of the electrons within the compound and the rôle which the electrical forces[17] play in the activity of the transportation form.

It is intended to report later in greater detail the experiments which are now in progress.

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PROTEUS HENRICENSIS NOV. SPEC.

A MICROORGANISM believed not to have been previously described has recently been isolated from putrefying material. The characteristics of this bacillus are such that it may be placed in the classification of Castellani and Chalmers, but not in the classification of Bergey, *et al.*

The genus Proteus Hauser[1] is defined as "highly pleomorphic rods." Filamentous and curved rods are common as involution forms. Gram-negative. Actively motile, possessing peritrichous flagella. Produce characteristic amoeboid colonies on moist media and decompose proteins. Ferment dextrose and sucrose but not lactose. Do not produce acetyl-methyl-carbinol.

The tribe Proteae Castellani and Chalmers, 1918,[2] is defined as "Bacillaceae growing well on ordinary laboratory media, not forming endospores, aerobic, without fluorescence or pigmentation, but liquefying gelatin." The tribe may be divided into genera as follows:

(A) Rapid gelatin liquefaction; do not ferment lactose; mostly Gram positive—Proteus.

(B) Slow gelatin liquefaction; ferment lactose; Gram negative—Cloaca.

The isolated microorganism has the following characteristics:

Rods: 0.5 to 0.7 by 1.0 to 3.0 microns, occurring singly and in pairs. Actively motile. Gram-negative. No spores.

Aerobic and facultative anaerobic.

Gelatin colonies: Irregular, spreading, rapidly liquefying.

Gelatin stab: Rapid, stratiform liquefaction.

Agar colonies: Opaque, gray, spreading.

Agar slant: Thin, bluish-gray, spreading.

Broth: Great turbidity, with thin, bluish pellicle.

Milk: Slightly acid, becoming markedly alkaline in forty-eight hours. Quick peptonization.

Indol formation abundant.

Acetyl-methyl-carbinol not formed.

Nitrates not reduced.

H_2S formed. Lead acetate turned brown.

Acid and gas in dextrose, xylose, trehalose and galactose.

Acid in glycerol.

No acid or gas in lactose, sucrose, mannitol, dulcitol, raffinose, levulose, arabinose, inositol, maltose, dextrin, salicin or sorbitol.

Not pathogenic for guinea pigs or rabbits.

This organism appears to be closely related to Proteus diffluens Castellani, 1915. It differs from diffluens in that it peptonizes milk, produces indol and does not liquefy coagulated blood serum. No information is at hand as to the action of P. diffluens on xylose and trehalose.

The name Proteus henricensis is suggested.

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THE RELATION OF TEMPERATURE TO HYDROGEN-ION CONCENTRATION OF BUFFER SOLUTIONS

THE influence of temperature on optimum hydrogen-ion concentration for diastatic activity of malt has been discussed by Olsen and Fine.[1] The experimental evidence submitted showed that with "water suspensions of a mixture of wheat and malted barley flours . . . containing different amounts of dilute acid and alkali [HCl and NaOH were used] . . . the optimum pH changes from about 4.3 at 25° C. to beyond 6.0 at 69° C." These authors "suggested that this change is due to the increased activity of the hydrogen-ions present and that these apparently different pH measurements would represent approximately equal hydrogen-ion activities if measured at the temperature of the reaction."

Similar observations have been made for other enzymes. More than thirty-five years ago O'Sullivan and Tompson[2] observed for invertase that "the most

[17] Compare J. N. Mukherjee und B. N. Ghosh, *J. Ind. Chem. Soc. 1*, 213 (1924).

[1] Bergey, *et al.*, "Manual of Determinative Bacteriology," 1923, page 209.

[2] Castellani and Chalmers, "Manual of Tropical Medicine," third edition, 1919, page 943.

[1] Olsen, Aksel G., and Morris S. Fine. *Cereal Chem.*, Vol. I (1924), pp. 215–221.

[2] O'Sullivan, C., and F. W. Tompson. *Jour. Chem. Soc.*, Vol. 57 (1890), 834–931.