with ammonium molybdate. If, however, this same filtrate, free from inorganic phosphates be hydrolyzed with dilute acid before the test is done a yellow precipitate characteristic of phosphates appears immediately.

To tungstic acid blood filtrate was added under definite conditions uranium acetate. The washed precipitate was decomposed and the resulting filtrate on digestion gave a nitrogen content of about 4 mgm. of nitrogen per 100 c.c. whole blood. Blanks were negative. Adenine nucleotide added to blood was recovered quantitatively by this method.

Conclusions. Adenine, probably bound is present in considerable quantities in normal human blood. There is some evidence presented to show that it is bound in the form of adenine nucleotide.

A method is outlined whereby nucleotides may be determined quantitatively in small samples of tungstic acid blood filtrate.

It is suggested that a large part of the undetermined nitrogen in the tungstic acid filtrate of Folin and Wu is adenine nucleotide.

The work is being continued at The Thorndike Memorial Laboratory of the Boston City Hospital.

ABSTRACTS OF COMMUNICATIONS, MINNESOTA BRANCH

Eighth meeting.

Minneapolis, Minnesota, December 13, 1922

84 (2044)

A statistical study of the form and growth of a diphtheroid bacillus.

By ARTHUR T. HENRICI.

[*From the Department of Bacteriology and Immunology, University of Minnesota, Minneapolis, Minn.*]

In a previous communication[1] I described changes in the size of the cells of *Bacillus megatherium* during the growth of a

[1] PROC. SOC. EXP. BIOL. AND MED., 1921, xix, 132.

culture, and variability in size, particularly the bimodality of the frequency curves in the early stages of growth. Further observations of this organism, varying the number and age of the cells in the inoculum showed that these changes are constant but vary in degree, the increase in size, and variation in size, and the tendency to bimodality being greater with smaller and older seedings; and that, while these changes take place during the vegative phase of the culture, there is apparently no actual correlation between the variations in size and the rate of cell division. It is noteworty that the coefficient of variation increases and decreases with the size of the cells.

I have made a similar study of a chromogenic diptheroid bacillus isolated from lake water. It is larger than most members of this group of bacteria, but like the rest of the group decreases in size during the vegetative stages of growth and increases during the resting period; the curve for size is therefore just the reverse of that for *B. megatherium.* The decrease in size began after a latent period and during the logarithmic growth phase. As the cells decreased in size the frequency curves became more symmetrical and the variation decreased; as the size increased again the curves became more extended and showed skewness. There was no tendency to bimodality. the single mode gradually shifting. The coefficient of variation decreased with the actual decrease in size, *i.e.,* during the period of most rapid cell divisions. Therefore the coefficient of variation cannot be used as an index of rate of reproduction with organisms such as these, where the entire population is subject to fluctuations in size independent of the growth of the individuals from youth to maturity. The numbers of metachromatic granules also decrease during the period of active growth and increase during the resting period, and there is a positive correlation between the size of the cells and the numbers of granules. But the number of granules decrease more rapidly and extensively than the size of the cells, and therefore the coefficient of correlation is high during the resting phase and low during the vegetative phase.