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Spontaneous agglutinability of bacteria in relation to the antagonistic action of certain cations.

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Spontaneous agglutinability of five separate, single-celled (pure line) cultures of diphtheroid bacilli was shown to be a function of growth-cycle developments. The bacillary phase, growing at 37°, was immediately and completely agglutinable by any solution tried. The coccus phase, growing at 20°, formed stable emulsions in NaCl and other salt solutions. By reversing the growth temperature, even on the same media, the agglutinability and morphology were reversed. Certain of the cultures, still completely agglutinable by NaCl, formed stable emulsions in Tyrode's and other equilibrated solutions. The mutual antagonism of the Na, K and Ca ions is believed to explain the phenomenon. The Mg ion was especially beneficial. With various cultures of different age and environment, all possible variations in agglutinability were observed. The amplification of these observations, now in progress, promises to explain some of the paradoxes of the bacterial agglutination, and the observations in themselves constitute the first systematic application of these principles to agglutination.

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Blood pressures and heart rate, in girls, during adolescence. A preliminary study of 1,700 cases.

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The data were obtained from over 800 girls in the public schools of Ithaca, N. Y., whose ages ranged from 9 to 16 years and from about an equal number of young women in Cornell University, from 16 to 26 years old.

Blood pressures were taken by Korotkow's auscultatory method, using in all cases a Princo mercury sphygmomanometer. The reading for the diastolic pressure was made at the beginning of the fourth phase. All girls were examined in the sitting posture.

There is a rapid rise in the systolic pressure from 104 mm. at 9 years to approximately 124 mm. at 14 years. This remains at the same level through the next year. Then there is a rapid fall of over 10 mm. to 18 years. From that age on the pressure remains fairly constant around 110 mm. up to 26 years.

The diastolic pressure rises evenly from 63 mm. at 9 years to about 76 mm. at 14 years. It maintains about this level throughout the remaining years.

The pulse rate drops rapidly from 98 at 9 years to 80 at 18 years and then continues with little change.

Since, at 14 years of age, practically all girls in this climate have begun to menstruate, these curves would seem to indicate, that allowing 3 or 4 years for recovery from metabolic disturbances incident to the onset of puberty, the blood pressures and pulse rate vary little during the following 8 years.

In the height curves, the systolic pressure rises gradually from 104 mm. at 50 inches to 113 mm. at 69 inches. The diastolic pressure rises slightly more rapidly—from 64 mm. to 74 mm. The pulse rate drops rather evenly from 106 to 82 per minute.

The weights are arranged in classes of 10 lbs. each.

The systolic pressure rises rapidly from 104 mm. for the 51–60 lb. class up to 118 mm. for the 91–100 lb. class. Then it runs along without much change until it reaches the 151–160 lb. group. Here the rise is abrupt up to about 130 mm. for the 200 lb. class. The diastolic pressure shows a gradual rise from 58 mm. in the 41–50 lb. class to about 90 mm. at 200 lbs.

The pulse rate shows a decline from 102 at 51–60 lbs. to 78 at 200 lbs.

The conclusion from a consideration of these data is that in determining the normal blood pressures and pulse rate for girls between 9 and 26 years of age, it is necessary to consider, not age alone, but weight and height as well.