Readings began one hour after exposure to environmental conditions. The results show: 1. A rise in blood pressure and pulse rate while smoking, followed by a gradual return to the previous level on cessation of smoking. 2. A fall in the average skin temperature of the left fingers from 32.1°C. to 26.2°C., and in left toes from 26.4°C. to 24.9°C. while smoking, followed by a gradual rise in the skin temperature on cessation of smoking. A negligible change in the skin temperature occurred while going through the motions of smoking with a small paper tube.

This peripheral vaso-constrictor effect of tobacco smoking was demonstrated in man by Bruce, Miller and Hooker,[1] and Simici and Marcu,[2] using the volume changes in the hand and arm.

In general, the results shown with K. H. have been corroborated in 20 other subjects, both light and heavy smokers. Control experiments substituting cubebs for cigarettes, using the water pipe principle or first passing the smoke through a layer of cotton moistened with $FeCl_3$, produces a negligible fall in the skin temperatures. These controls substantiate our opinion that the peripheral vaso-constriction produced is the result of active products absorbed from the tobacco smoke.

5942

Influence of Vitamin A and B Deficiency upon Intestinal Acid-Base Equilibrium and Bacterial Flora.

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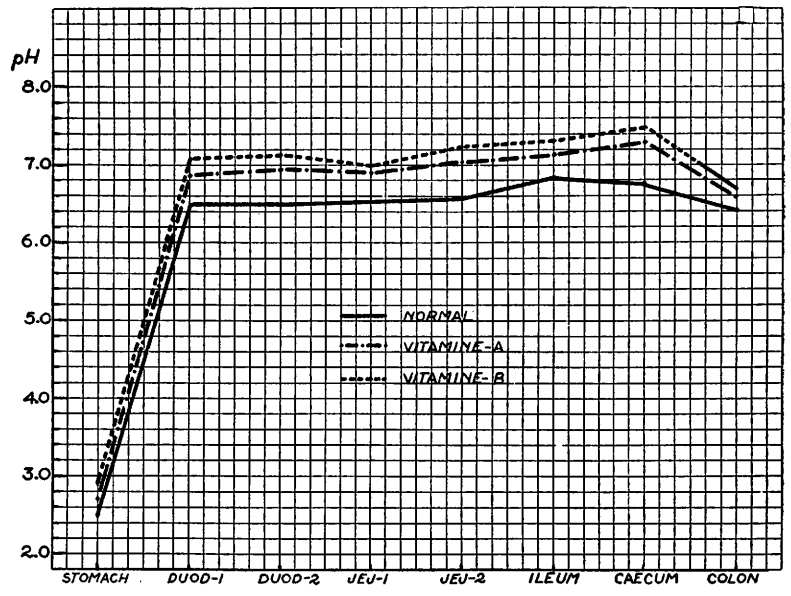
The intra-intestinal acid-base equilibrium and the distribution of the bacterial flora have been investigated in certain vitamin deficiencies. The basic diet consisted of casein, cornstarch, Osborne and Mendel salt mixture, butter fat and dried yeast. In the vitamin A deficient diet, the butter fat was omitted. In the vitamin B deficient diet the yeast was omitted. Sixty-five 50 gm. rats were placed upon each of these 3 diets. The vitamin A deficiency series were

[1] Bruce, James W., Miller, James R., and Hooker, Donald R., *Am. J. Physiol.*, 1909, **24**, 104.

[2] Simici, D., and Marcu, I., *J. de Physiol. et de Path. Gen.*, 1927, **25**, 58.

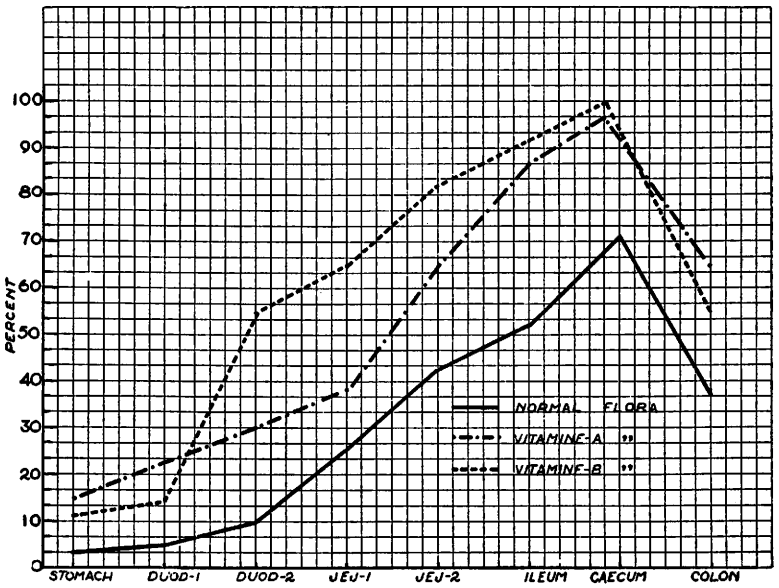
killed in gas chamber after 7-8 weeks, the B deficiency series after 3-4 weeks. The end point was determined at the time the weight curve was stationary for 4 successive days. The controls were fed for 8 weeks.

All animals were put in single cages and fasted for 24 hours. Illuminating gas lethal chambers were used to kill the rats. The specimen of gastro-intestinal contents were removed after ligature of the segments with hemostats. The upper portion of the tract was empty and to make conditions comparable, 0.4 cc. of distilled water was used to flush out each 3 cm. length segment of the isolated loop to obtain specimen. Finely drawn out Wright's pipettes were used. One drop was used to seed surface of agar plates, the same spreader was used for a second plate for dilution. The capillary Heiligs colorimeter was used to determine the h-ion concentration of the same specimen. Not more than 5 minutes must elapse before this determination is made, otherwise the pH becomes progressively more alkaline with time until the blood reaction is reached. The number of colonies have been recorded. We can best express our results by taking the caecal bacterial flora of the highest count as 100 and arranging the various segments in percent of these figures. The



GRAPH 1.

Ordinate: pH of the contents of the gastro-intestinal contents.
Abscissa: various segments of the gastro-intestinal tract.
Continuous line represents the normal. Dot-dash line represents the vitamin A deficiency series. Broken line represents the vitamin B deficiency series.



GRAPH 2.

Ordinate: % of bacterial flora, the caecal flora of the vitamin B series was the heaviest and is taken as 100.

Abscissa: segments of gastro-intestinal tract as indicated.

The lines indicating the same as in Graph I.

vitamin deficient rats had a denser bacterial population within the intestinal lumen than the normal. The H-ion concentration also shows a difference. The accompanying graphs show the results in condensed form. Each line represents the average findings of 65 rats.

5943

Absorption of Yeast from the Large Intestine.

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Following investigations into absorption of yeast from the small intestine,[1] a series of experiments have been conducted to demonstrate absorption of yeast through the wall of the large intestine into the splanchnic circulation.

[1] Fisher, Virginia, PROC. SOC. EXP. BIOL. AND MED., 1931, **28**, 948.