THE HYDROGEN-ION CONCENTRATION OF BLOOMINGTON WATER, NORMAL WATER, AND OF BLOOMINGTON-NORMAL SEWAGE DURING THE PRESENT SCHOOL YEAR.

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In connection with the new Bloomington-Normal sewage treatment plant it was deemed advisable to determine and record variations in the pH values, or hydrogen-ion concentrations, of Bloomington water, Normal water, and Bloomington-Normal raw sewage during the present school year. The determinations covered a period of about six months extending from October 11, 1927, to March 31, 1928, and were made at intervals of about seven to ten days throughout that time. Determinations were made by the colorimetric method, using La Motte standards. Corrections were made for turbidity and coloring of sewage.

Tests were made at three places, involving four points, namely, (1) where water is pumped from the ground into the reservoir at the Bloomington Water Works, (2) where water is pumped from the reservoir into the city mains at the Bloomington Water Works, (3) where water is pumped from the reservoir into the city mains at the Normal Water Works, and (4) at the point where the combined sewage of the two cities flows from an intercepting sewer into a small stream known as a branch of Sugar Creek. In other words, tests were made at two points at the Bloomington Water Works and at one point each at the Normal Water Works and at the outlet of the Bloomington-Normal intercepting sewer.

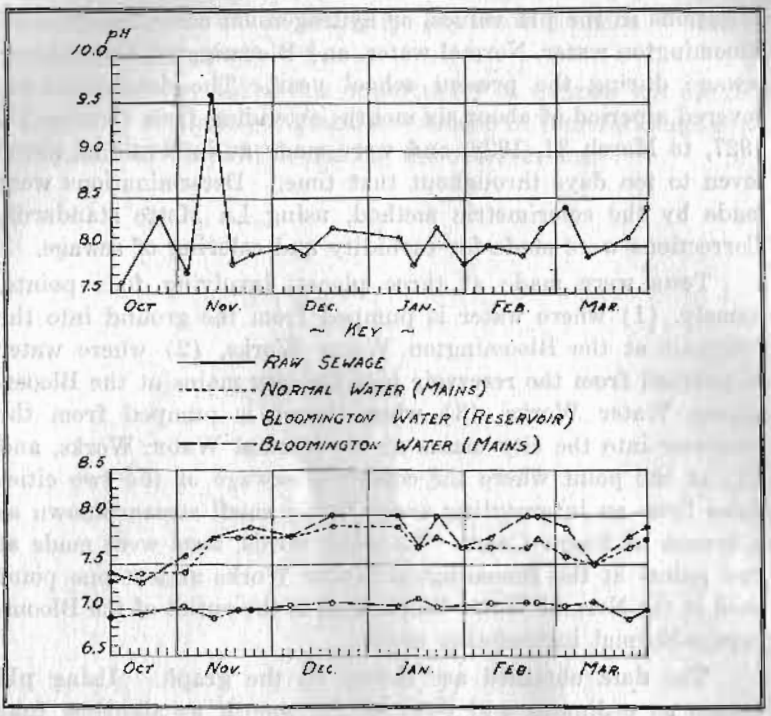
The data obtained are shown on the graph. Using pH values as ordinates and days of the month as abscissas four curves were plotted. The graph shows the following things to be evident:

1. Bloomington water at the point where it issues from the ground is practically neutral. The curve varies from 6.9 to 7.15.

2. Bloomington and Normal waters, at the point where they are pumped from the reservoir into the city mains, and combined Bloomington-Normal raw sewage have pH values which show them to be alkaline. These values are fairly constant.

3. Bloomington water, at the point where it is pumped from the reservoir into the mains is slightly more alkaline than Normal water at the point where it is pumped from the reservoir into the mains. The pH values range from 7.3 to 7.9 in the case of Normal water and from 7.4 to 8.0 in the case of Bloomignton water. pH values of the two waters were the same in five instances.

4. The curves of the pH values of Bloomington water at the mains, Normal water at the mains, and of combined Bloom-



ington-Normal raw sewage lie relatively close together when these values are plotted on a graph, the correlation between pH values of sewage and water being greatest in the case of the curve for the raw sewage and the curve for Bloomington water at the mains.

5. Of all the curves there is greatest fluctuation in the curve of pH values of sewage.

6. There seems to be some correlation between pH values of Bloomington and Normal waters and the season of the year.

Inasmuch as the waters under consideration are highly buffered, and since both waters and sewage show fairly constant alkaline pH values, it is inferred that digestion of sludge should take place nicely in the Bloomington Imhoff tanks with little necessity for addition of lime to the sewage which they will contain.