by this method the acidity has only been reduced about half. On the other hand, the acidity of plot 24 to which ammonium sulphate has been applied is materially increased, but Dr. Thorne writes me that the red clover grown on this plot is not visibly less than that grown on nearby plots to which nitrogen in linseed meal or dried blood was applied.

No explanation can be offered at this time of the behavior to both methods of plots 8 and 19 limed.

It appears then that while sodium nitrate and basic slag have diminished acidity, no fertilizer or combination of the fertilizers used has measurably increased acidity on this soil except where ammonium sulphate was applied. We can not apply this conclusion, however, to soils of different character. While the acidity due to the residue left by the taking up of plant food may reasonably be supposed to be irrespective of the nature of the soil, the acidity produced by decomposition reactions between the soil components and added salts is not. While in this soil the attack of neutral salt solutions upon what I have elsewhere called 'non-acid silicates' is small, with other soils it is very great, rising to 4,000 parts per million, and this fact must be kept in mind in attempting to measure the changes in soil reaction caused by the use of fertilizers.

F. P. Veitch.

### CARBONATED MILK.

In the course of an investigation relating to the chemistry of kumiss made from cows' milk, the question arose as to whether there is any action of carbon dioxide on milk-casein. No action appears to take place when carbon dioxide is passed through milk simply at atmospheric pressure; but, since in kumiss the gas is present under considerable pressure, it was decided to approximate this condition by treating fresh milk with carbon dioxide gas under pressure. Without stating here the detailed results of the work, it was noticed that the milk thus treated did not sour or curdle readily, keeping ten days to two weeks at a temperature of 60° to 70° F., when the pressure used was sixty to seventy pounds. Pasteurized milk keeps still longer. In addition to prolonging its keeping power, milk, when carbonated, makes a very palatable, refreshing beverage. Before the detailed results are published, further work is being done, carbonating the milk at higher pressure and keeping it at different temperatures.

L. L. Van Slyke,
A. W. Bosworth.
New York Agricultural Experiment Station, Geneva, N. Y.,
April 16, 1906.

## *NOTES ON ORGANIC CHEMISTRY.*

### PREPARATION OF PURE ETHYL ALCOHOL BY MEANS OF METALLIC CALCIUM.

Metallic calcium having now become a regular article of commerce, several chemists have investigated its properties, in order to discover what advantages are likely to result from its use in chemical reactions. For example, in the chemical laboratory of the Johns Hopkins University, experiments are in progress to determine how far it may be of service in promoting the condensation of ketones with esters (Claisen's reaction).

L. W. Winkler[1] has examined its behavior towards mixtures of alcohol and water. As is well known, there is no special difficulty in removing water from alcohol—say by means of quick lime and copper sulphate—until it is 99.9 per cent. pure, but the elimination of the last 0.1 per cent. of water has been attended, hitherto, with considerable labor. By Winkler's process commercial 'absolute' alcohol, containing usually several per cent. of water, is boiled for a short time with calcium and then distilled from it. About 20 grams of the metal, in the form of turnings, to each liter of alcohol should be used. The product contains only 0.1 per cent. of water, which is removed by another treatment with calcium, in the proportion of 0.5 per cent. of the weight of alcohol. A curious point about the behavior of calcium and alcohol is that, if the latter contains less than 5 per cent. of water, the metal is attacked the more vigorously the *less* water is present, but, on the other hand, ordinary alcohol, containing more than 5 per

[1] *Ber. d. Chem. Ges.*, **38**, 3,612.