quantity of nitrate formed from ammonium sulphate was determined. The following is typical of the nitrification studies of these soils:

INFLUENCE OF CALCIUM CARBONATE AND MAGNESIUM CARBONATE UPON NITRIFICATION IN A MAGNESIAN SOIL

| | Check | $CaCO_3$ .25% | $CaCO_3$ 1% | $CaCO_3$ 2% | $MgCO_3$ .25% | $MgCO_3$ .75% | $MgCO_3$ 1.25% |
|---|---|---|---|---|---|---|---|
| Original nitrate | 60 | 60 | 60 | 60 | 60 | 60 | 60 |
| Incubated 14 days | 159 | 426 | 457 | 388 | 413 | 106 | 91 |
| Gain in nitrate | 99 | 366 | 397 | 328 | 353 | 46 | 31 |

It will be seen that in amounts exceeding 0.25 per cent. the magnesium carbonate added to this soil was positively inhibitive to nitrifying action; *i. e.*, toxic to the bacteria so important to the nutrition of plants, while the calcium carbonate was favorable up to 2 per cent., the highest quantity tried. That this difference in behavior of the two carbonates is due in part to the character of the soil used is evidenced by the fact that in a similar test using an alluvial soil magnesium carbonate gave greater nitrification than calcium carbonate.[3]

From these results it seems that fairly pure calcium carbonate should be obtained for liming soils already containing quantities of magnesium equal to or exceeding the calcium there found; in other words, the lime-magnesian ratio apparently exerts an effect upon nitrifying bacteria analogous to its effect upon some of the higher plants.

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[3] Cf. W. L. Owen, "The Effect of Carbonates on Nitrification," Georgia Experiment Station Bulletin 81, 1908.

## SOCIETIES AND ACADEMIES

### THE STATE MICROSCOPICAL SOCIETY OF ILLINOIS

The society held its regular June meeting in the Boston Oyster House, Chicago, on Friday evening, June 10, 1910, at 7:30 P.M., after the usual monthly dinner, President M. D. Ewell in the chair. After reading the minutes of the May meeting, Mr. D. C. Potter, of Chicago, was elected as an active member. The committee reported a minute in regard to the death of Hervey W. Booth, on January 6, which was adopted, and a copy ordered sent to Mrs. Booth.

W. F. Herzberg reported some notes of experiments in the use of erythrosin, as a staining medium; also gave an account of his making a good working micrometer, using a Zentmayer microtome as a dividing engine, and a crystal of carborundum in place of a ruling diamond.

C. O. Boring described the dwarf sunflowers growing far above timber line on the summit of Mt. Wood, in southwestern Colorado, so minute as to show fifty or more plants in the space of a silver quarter-dollar. A discussion followed as to the best preservative medium to permit such flowers to be kept for later study and for permanent mounting.

N. S. Amstutz described the present state of the science of photo-telegraphy—in which he was one of the very first successful experimenters—and showed the difficulties in the way, as shown by the microscope.

W. F. Herzberg exhibited specimens of the new diatom, *Arachnodiscus Herzbergi*, and Dr. Ewell exhibited a specimen of Bausch and Lomb's late student's microscope.

The principal speaker of the evening, Dr. Chas. E. M. Fischer, then gave an address on *Spirochæta pallida*, the germ which is the cause of the dreadful disease, syphilis—a protozoon, not a bacterium. He spoke of the long investigations before it was discovered, and proved to have a causal relation; described the difficulties of finding any stain that would make it visible, and how Dr. Ghoreyeb had, less than a year ago, announced a method of staining by a triple use of osmic acid, lead acetate and sodium sulphite, which requires but a short time, and produces results with certainty that allows of an infallible diagnosis of the presence or absence of this most destructive and incurable scourge. It may be mistaken for some resembling forms, such as *Spirochæta buccalis* or *S. refringens*. The differentia were described, and the stained specimens were then exhibited under the microscope, using a one-twelfth inch oil-immersion lens.

A very hearty vote of thanks was given Dr. Fischer at the close of his address, and the members and guests spent the remainder of the evening in the study of the various slides exhibited by Dr. Fischer and others.

Albert McCalla,
*Secretary*