the leaders this will be found true. Lippincott's "Dictionary" contains sketches of some 3,000 Americans. Each of these persons, it is fair to say, attained high distinction. Of *all* Americans they may be said to be at the top within a fraction of one per cent. of the highest. From this work (Lippincott's) I took at random and regardless of any consideration 25 names, counted the adjectives of praise applied to them, and the lines of space devoted to their sketches. The average number of adjectives found was .64 and the average number of lines of space, 8.68. Many hundred names may be found without a single adjective. Again, in the above table it will be observed that only 9 men received less than 16 adjectives and only 10 received less than 200 lines. This shows an agreement little short of remarkable. In this study of historiometry it is not a question of *order* within the series. It matters little in a list of 50 or 500 whether a name holds tenth or fortieth place. Any apparent disagreement in the above then is really negligible.

The fact that a certain name received on the first ballot 47 electoral votes (notwithstanding the fact that it requires but 51 votes to elect a name to the Hall of Fame) and on the next only 29, the same occurring in several other instances only to a less marked degree, is strong evidence in favor of the reliability of the objective methods. It should also, in all fairness, be kept in mind that the electors were not granted absolute freedom to select whomsoever they would. The sixth rule governing the proceedings required that the first fifty names chosen must include one or more representatives of a majority of the fifteen classes of citizens therein enumerated. Just how great an influence this attempt to insure the "recognition of the multiformity of human activity" had, we do not know. There is, however, reason to believe that the figures, showing the final votes received, afford a fair résumé of the electors' judgments of the relative standing of America's great men.[2] The Hall of Fame votes have been useful in giving us something reliable to work by in our study of the objective methods. The mere "relative standing" feature aside from this has been more interesting than useful. As stated above it is not, for historiometrical purposes, a question of *order* but rather of groups "objectively compiled."

By the above comparisons and others which I have undertaken, including a study of Cattell's list of great men (space method) I am in spite of my original prejudice convinced that either of the objective methods (adjective or space) may be successfully employed in the selecting of a list of indefinite length. Indeed I know of no other method that even approaches them in efficiency. They promise invaluable aid to students of historiometry as the science develops.

M. D. LIMING

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[2] See "Hall of Fame Official Book," by H. M. McCracken, New York, 1901; also subsequent reports.

LIME AND LEGUME INOCULATION

IT has been long recognized that liming produces different effects on different soils, and it has been pointed out[1] that for the growth of flowering plants, lupins especially, there is an optimum relation of lime to magnesia. In certain portions of the coastal plain it has been observed that oyster-shell lime is markedly superior to stone lime, especially in its effect on securing stands of alfalfa and clover. The stone lime, in many cases at least, was found to be derived from dolomite and therefore highly magnesian. Soils from some of these regions are rather high in magnesia.[2]

The effect of magnesium carbonate on nitrifying organisms was studied in connection with one of these soils. In our tests magnesium carbonate and calcium carbonate in quantities varying from 0.25 per cent. to 2.00 per cent. were added to a sandy loam showing the above-mentioned characteristics; ammonium sulphate was also added. At the end of an incubation period of fourteen days the

[1] Oscar Loew, "The Relation of Lime and Magnesia to Plant Growth," Bureau of Plant Industry Bulletin No. 1, 1901.

[2] Bureau of Soils Field Operations, 1901, pp. 186.

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