have the same difference in composition, is a truth beyond cavil. Now, how can those limes be economically applied by one ignorant of their composition, and ignorant of the composition of the soil? How can we arrive at the constituents of each? How can this knowledge, necessary, *absolutely* necessary, be obtained but by an analysis, both of the lime which we apply, and of the soil to which it is applied?

When it is remembered that magnesia is as necessary to constitute a good soil as any other one substance whatever, and that being absent or deficient, it must be supplied, how can its absence or deficiency be known, without a chemical analysis of the soil? And, even when this is ascertained, how can the right lime be applied, without an analysis of it, to see whether or not it contains magnesia? Let a soil containing an abundance of magnesia, but deficient in lime, be treated with the Schuylkill, Reading, or New York lime. The quantity of lime in these varieties will doubtless increase the crop and permanently improve the land, but how immeasurably greater would have been the benefit from oyster shell or Baltimore lime? Many sensible, practical men purchase Schuylkill lime, when they would not have our common lime given to them, because they, by experiment, know the value of the one and the worthlessness of the other to *their* soil. Many, again, in the same way, have found out the superiority of oyster shell lime to all others. Should not the expense incurred by experiment have been saved to them? This knowledge could and should have been afforded. *The whole aim of the application of manures being the greatest yield in crops, from the smallest outlay* of money, it is not enough for a farmer to know that the application of a particular substance does *well;* he should not be satisfied unless he *knows* that it is the *best* for his particular soil which can be used. That different substances, when applied indiscriminately to all soils, must be productive of disappointment and loss, is so apparent that I shall not pursue the subject any farther. In the application of millions of bushels of lime, decidedly differing in their composition, upon soils equally different from each other, with no rule to guide, no law to direct, a hundred times more money is annually lost to the agricultural interests of the State, than the amount of all the appropriations ever made for its benefit.

If the office of Agricultural Chemist had shown nothing but the proper adaptation of particular varieties of lime to particular soils, the State would derive a hundred times more benefit from it than the cost has been for its maintenance. I will not now say more on this subject. Axioms admit of no demonstration—self-evident truths need no proof.

I have found, and I believe I am the first to notice the fact, that the proportion of phosphate of lime varies with the localities in which oyster shells are found. As we approach the ocean, the