

# SCIENCE

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## EROSION AS A FACTOR IN SOIL DETERMINATION<sup>1</sup>

By M. F. MILLER

UNIVERSITY OF MISSOURI

It is common knowledge that soils may deteriorate more or less seriously under agriculture. The fundamental changes accompanying this deterioration may include such alterations as a decline in the original store of organic matter, a decrease in the amounts of total and readily available nutrients, an increase in the hydrogen-ion concentration, a modification of the biological activities, and a change in the physical properties of the soil. The extent to which erosion is responsible for such changes has been the subject of much recent speculation. Simple observation warrants the statement that under favorable conditions for erosive action, erosion may be the principal contributing factor responsible for such deterioration, while under less favorable conditions its importance may be of minor significance. There is little doubt,

however, that taking the agricultural regions of the United States as a whole far too little consideration has been given to this matter.

Erosion through the action of wind or water is a natural phenomenon with which most people are familiar. The development of the existing topographic relief in any given section of the country is to a large degree the result of erosive action. It, therefore, has a great geological importance in determining the character of land surfaces. But erosion is also of importance in determining the character of both virgin and cultivated soils, and as a consequence it has a great significance to agriculture. Under nature, soil removal through erosion takes place slowly, but under agriculture, particularly a type of agriculture which makes no provision for soil preservation, such losses may be tremendously magnified.

Wind erosion, which is confined largely to semi-arid and arid regions, may under systems of grain farming

<sup>1</sup> Address of the retiring chairman and vice-president of Section O—Agriculture, American Association for the Advancement of Science, Cleveland, Ohio, December, 1930.

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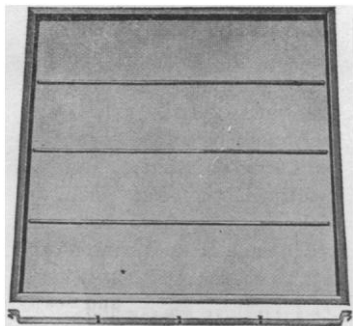
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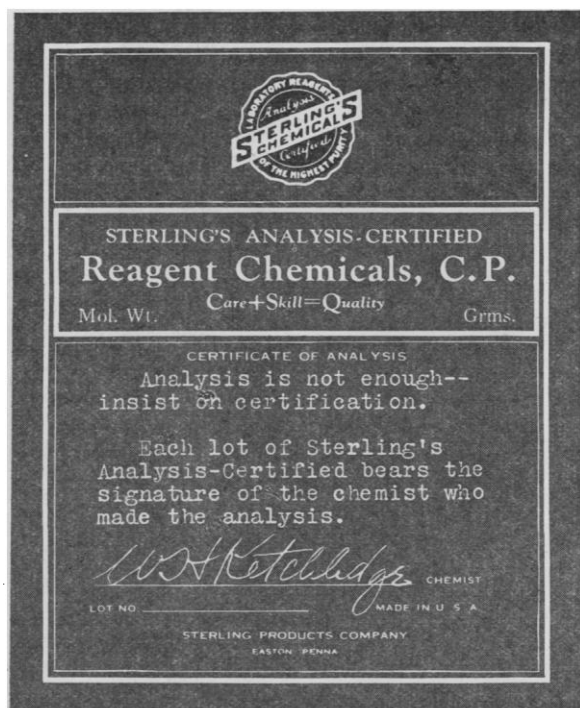
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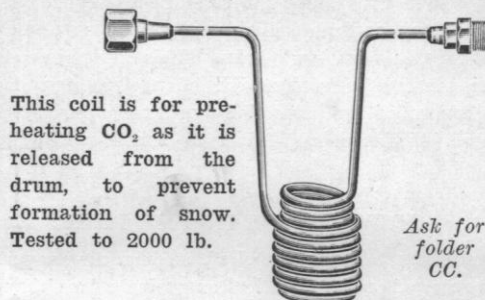


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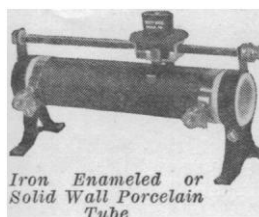
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