
Review

Source: *Journal of Ecology*, Vol. 6, No. 3 (Nov., 1918), pp. 231-232

Published by: British Ecological Society

Stable URL: <http://www.jstor.org/stable/2255311>

Accessed: 27-06-2016 03:11 UTC

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at
<http://about.jstor.org/terms>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



British Ecological Society, *Wiley* are collaborating with JSTOR to digitize, preserve and extend access to
Journal of Ecology

NOTICES OF PUBLICATIONS OF GENERAL BEARING

STUDIES ON SOILS AND MINERAL SALTS.

Russell, E. J. and Appleyard, A. "The atmosphere of the soil." *Journ. Agric. Science*, Vol. VII. 1915-16, p. 1.

Investigations carried out on Rothamsted soils have led to the recognition of two soil atmospheres, one, the free atmosphere occupying the pore-spaces of the upper six inches of soil, and another, of very different composition, dissolved in the surface films of water and colloids on the soil particles of the same region. The free atmosphere is similar in composition to ordinary atmospheric air, but differs from it in two respects, slightly in regard to composition and markedly in respect to constancy of constitution. It contains rather less oxygen and more carbon dioxide and nitrogen than ordinary air and is liable to periodic fluctuations of composition—especially seasonal—which are doubtless determined by the effect of corresponding fluctuations in external conditions on the activities of the microorganisms of the soil. The dissolved atmosphere, on the other hand, is almost devoid of oxygen and consists mainly of carbon-dioxide with some nitrogen. This dissolved atmosphere supplies the conditions for anaerobic life and its recognition makes it possible to conceive of anaerobic activities going on side by side with those aerobic changes common to drained cultivated soils, which we are accustomed to think of as providing essentially aerobic conditions.

Hutchinson, H. B. and McLennan, K. "Studies on the lime-requirements of certain soils." *Journ. Agric. Science*, Vol. VII. 1915-16, p. 75.

A method is described by which the degree of acidity of soils may be estimated by determining what is called by the authors the 'lime requirement,' namely, the amount of calcium bicarbonate required to render the soil water alkaline. A number of acid soils from heaths and commons apparently similar but bearing different types of vegetation were investigated by means of this method and it was found possible to classify them in terms of acidity and vegetation. It is pointed out that the conventional method of soil analysis with reference to lime content is frequently at fault and fails to give an index to observed differences in the vegetation. The method described is a simple one and is worth the attention of ecologists.

Hendrick, J. and Ogg, W. G. "Studies of a Scottish drift soil." *Journ. Agric. Science*, Vol. VII. 1915-16, p. 458.

A contrast is pointed out between the glacial drift soils of the north of Scotland composed of slightly weathered materials and those of south-eastern England, the mineral particles of which have been subjected to age-long weathering. Great caution is needed in applying conclusions based on a study of soils of the latter type to glacial drift soils of the comparatively unweathered type.

Prescott, J. A. "The phenomenon of absorption in its relation to soils." A résumé of the subject. *Journ. Agric. Science*, Vol. VIII. 1916, p. 111.

An historical review of the literature and experimental work dealing with absorption by soil of salts and colouring matters in solution. The fact of such absorption has been on record since the time of Aristotle, who noted that sea-water lost some of its taste by filtration through

sand. The acidity of certain soils has been attributed by modern workers to absorption phenomena rather than to the presence of free organic acids and there is a tendency in recent soil work to associate all soil absorptions with the general phenomena of adsorption. The part played by different soil-constituents in the various kinds of absorption observed is still unknown but it is stated by the author of this paper that "probably we are working towards a more precise definition of available plant foods based on our knowledge of how the soil absorbs them in the first instance."

Lipman, C. B., Burgess, P. S. and Klein, M. A. "Comparison of the nitrifying powers of some humid and some arid soils." *Journ. of Agric. Research*, Vol. VII. No. 2, 1917, p. 47.

It has been stated on the authority of Hilgard (1906) that nitrification is especially active in arid soils. As the result of an extended experimental study of arid soils in California the authors of the present paper reach a different conclusion, holding that there is no evidence that the nitrifying powers of soils are more intense in arid regions than they are in humid regions.

Sharp, L. T. and Hoagland, D. R. "Acidity and adsorption in soils as measured by the hydrogen electrode." *Journ. Agric. Research*, Vol. VII. No. 2, 1917, p. 123.

The authors of this paper hold that "soil acidity should not be set apart and considered as a phenomenon unrelated to the ordinary concepts of acidity." They have investigated the acidity, i.e. the H-ion concentrations, in various soil suspensions and soil extracts, using the hydrogen electrode method and an apparatus modified from that of Hildebrand (1913). Experimental data were also secured with respect to the lime requirements of soils and the so-called "adsorption of bases." They conclude that soil acidity is due to the presence of an excess of hydrogen ions in the soil solution and that direct evidence of this can be given by hydrogen-electrode measurements. Several phases of "adsorption" phenomena were studied and some general theoretical considerations bearing on the relation of adsorption to chemical reactions in soils are presented in the paper. An electrometric method for the determination of the lime requirements in soils is suggested and a convenient method described for utilizing the hydrogen electrode in soil studies.

Wyatt, F. A. "Influence of calcium and magnesium compounds on plant growth." *Journ. of Agric. Research*, Vol. VI. 1916, p. 589.

There is conflicting evidence as to the effect of compounds of these metals on plant growth under crop conditions and as to the necessity for a definite CaO/MgO ratio for optimum growth (Loew, 1892). Among other results the authors found experimentally that the crop yields and the ratio of calcium to magnesium in the plants have no direct relation to the ratio in the natural carbonates applied. They found also that different ratios of calcium to magnesium within rather wide limits produced no marked differences in yields and that all the plants grown (wheat, soy beans, alfalfa and cow peas) showed tolerance of calcium and magnesium salts.

Headley, F. B., Curtis, E. W. and Scofield, C. S. "Effect on plant growth of sodium salts in the soil." *Journ. Agric. Research*, Vol. VI. 1916, p. 857.

During the reclamation of a tract of salt land in Nevada, laboratory experiments were made to determine the degrees of tolerance of certain plants to the common salts of sodium.