

## Soils

*Their compound parts—how formed and kind best  
suited for golf turf*

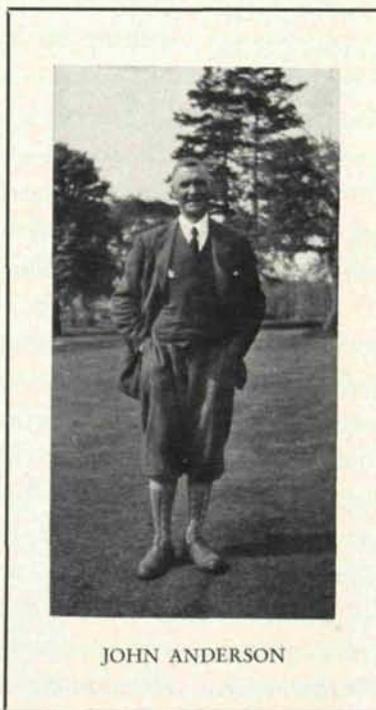
By JOHN ANDERSON, *Greenkeeper*  
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SOIL is formed from various kinds of rocks and their residues, after long periods of time—decaying and forming unconsolidated material such as sands, gravel, clays, and minerals released by weathering, exposure to rain storms and surface water, wind, and ice storms. The classes or series of soils are determined by the mode of formation.

The color of the soil is influenced by the topography of the land. On hills or highlands the color will be lighter than in valleys or lowlands, due to washings off the high parts and disposals in the valleys. On the parts where drainage is excessive the color and texture will be different than on parts where the drainage is poor; this also determines the soil class or texture.

Lightness or heaviness of the soil is dependent on the size of the particles which a soil contains. The particles, fine gravel, coarse sand, sand, fine sand, very fine sand, loamy coarse sand, loamy sand, loamy fine sand, loamy very fine sand, coarse sandy loam, sandy loam, fine sandy loam, very fine sandy loam, loam, silt loam, sandy clay loam, silty clay loam, clay loam, sandy clay, silty clay, clay.

On virgin soil, or land that has not been cultivated, the top layer or top three to six inches is called the top soil. This is where all plants take root and grow. This top layer composed of organic mat-



JOHN ANDERSON

ter is in more or less advanced stages of decomposition. The organic matter is derived from dead plants and decomposed vegetation, dead leaves, animal manures, roots, etc.

Organic matter is of great importance in soils. It brings about very desirable physical conditions, making light or sandy soils more water-retaining, and heavy clay soils more porous and adaptable to plant growth. This organic matter is often referred to as humus. Thus a soil which has a top layer of five or six inches in which a great deal of decomposition has taken place for a number of years, is very desirable for plant growth.

GOLF COURSES RARELY HAVE  
GOOD SOILS

GOLF courses rarely have soils which are best adapted to the growth of turf grasses. Other factors generally have a greater bearing when the land is selected for a golf course, than whether the soil is suitable. Thus, although the soil is the very foundation for the growth of fine turf grasses, it is very often left to the greenkeeper to make this suitability of soils and very often after the course is made he has to try to improve soil conditions especially on the greens.

Soils best suited for turf grasses are of a sandy loam, that is, they contain both large and small

(Concluded on page 18)

# Market Place and Buyers' Guide---

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## Seaside Bent

Seaside Bent Company

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L. R. Nelson Mfg. Company  
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Dan F. Ryan

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Diamond-Calk Horseshoe Company

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## Sulphate of Ammonia

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## Tee Mowers

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Jacobsen Mfg. Company

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International Harvester Co. of America  
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Roseman Tractor Mower Co.  
R. S. Horner  
Gravely Mower & Cultivator Co.

## Tractor Wheels and Spuds

R. S. Horner

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## Water Pipe

McWane Cast Iron Pipe Co.

## Worm Eradicators

Peter Henderson & Co.  
C. B. Dolge Company  
Reade Mfg. Company

## Soils

(Concluded from Page 5)

particles with abundant pore space to provide the best aeration and assure that excess of water will be removed rapidly, give or assist capillary action, and yet hold the moisture that is always necessary for the grass plants to thrive.

To modify a heavy clay soil will require a great deal of sand. Yet a sandy soil will not require nearly as much clay in proportion to make it a sandy loam. A sandy soil, before it can be called sandy, has to contain 80% or more of separate sand. The balance could be all clay. A clay soil on the other hand can contain 30% or more of the separate clay, the balance can be all sand; thus only by adding 10% of clay, a soil may be changed from one extreme to the other.

## Soil Nutrients

(Concluded from page 9)

### MAKING SOILS PURPOSELY ACID

THE best practical method for making soils purposely acid is to add sulphur. Crude sulphur flour is the material to use, at the rate of 7 to 15 pounds per thousand square feet. It has no burning effect on grass, and rather quickly changes to sulphuric acid in soil. All of the sulphur is changed to acid during one growing season.

A more rapid but expensive method is to add alum (aluminum sulphate) up to 6 pounds per thousand square feet. Alum is already acid and is at once effective. In buying this material, be sure to specify aluminum sulphate. The alum of trade contains potash, which ought to be left out of the picture. One might even use ammonium alum for the nitrogen contained. This would acidify soil just as much as ordinary alum.

Much the same condition applies in acidifying soil as in liming, namely that the acid-forming substance affects only that part of the soil with which it comes in contact. Such a condition no doubt accounts for the failure of continued sulphate of ammonia treatments to eliminate clover from greens. The acid has little or no effect on soil a few inches down where the clover roots thrive.



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