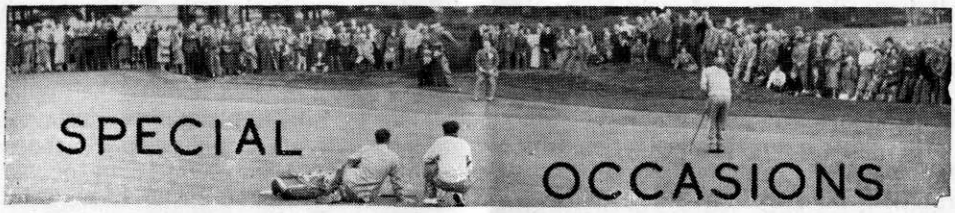

AUG. 9-10-11th	**Annual Tournament, Whitley Bay.**
SEPTEMBER 12th	**Autumn Tournament, Southern Section, Moor Park Golf Club.**
14th	**Northern Section, Annual Match v. Sheffield Section, Scarcroft Golf Club.**
14th	**North West Section, Autumn Meeting, Manchester Golf Club.**
16th	**Midland Section, Autumn Tournament, Bloxwich Golf Club.**
29th	**East Midland Section, Autumn Tournament, Birstall Golf Club.**
29th	**Welsh Section, Autumn Tournament, Neath Golf Club.**
OCTOBER 7th	**S.G.G.A. West Section, Autumn Meeting, Pollock.**
19th	**Northern Section, Autumn Tournament, Leeds Golf Club.**
29th	**Midland Section, Annual Dinner, King's Head Hotel, Bearwood.**

Manganese and Iron

Besides soil pH, soil air and water content, degree of soil compactness and soil organic matter are related to availability of iron and manganese. Since plants require only small amounts of these two nutrients for satisfactory growth, toxicity from their over abundance may be as great a problem as deficiency from their short supply. Excess supply is likely to occur under extremely acid conditions while deficiencies are usually noted within the pH range 7.5 to 8.5. At high pH levels iron deficiency may occur because of an unfavourable iron-calcium balance within the plant which renders the absorbed iron ineffective. In this instance sufficient iron is absorbed, but utilization is prevented.

These deficiencies occur more on sandy soils than on heavier soils and are more likely to be noted in spring and early summer than later in the year.

How to make Soils less Acid

When soil pH levels drop below 5.8, treatments should be made to elevate the pH to 6.5-7.5. Lime is the material most often used for this purpose. Calcitic limestone contains calcium carbonates. Dolomitic limestone contains calcium carbonates and magnesium carbonates (equivalent to 15 to 20 percent magnesium oxide). Limestone may be broken down into calcium oxide and carbon dioxide. Calcium oxide is called quicklime. Quicklime plus water yields hydrated lime. Hydrated lime and quicklime are more soluble and faster acting than ground limestone. Mixtures of finely ground limestone and hydrated lime are called Agricultural lime. Actually soil acids in the presence of limestone or hydrated lime produce calcium and magnesium ions which are attracted to the clay particles in exchange for hydrogen ions which react with the carbonate to form carbonic acid. Carbonic acid is weak and slowly breaks up to form carbon dioxide and water.

The chemical composition of lime determines its neutralizing power. The relative neutralizing power of lime has been calculated on the basis of pure calcium carbonate being equal to 100 percent. Accordingly

100 lb. of calcium carbonate
74 lb. of calcium hydroxide
88 lb. of magnesium carbonate
56 lb. of calcium oxide
40 lb. of magnesium oxide —