

conditions but not under acid conditions, whereas in other soils, the reverse is the case.

**The Occurrence and Distribution of Manganese.** Results obtained with manganese as a cure for chlorosis under field conditions check and confirm the results obtained under experimental conditions and afford evidence that manganese is vitally concerned in the synthesis of chlorophyll which is a fundamental factor in the growth of plants and in the production of foods. The results further show that certain plants apparently require more of this element for their normal growth than others and accordingly thrive best on soils containing relatively large amounts of this element. Results obtained with corn plants grown in sand cultures show that a small amount of copper apparently has an additional beneficial effect on the growth of plants in connection with manganese. Results were also obtained with buckwheat which showed that perfect seeds developed only in cultures containing a combination of manganese, copper, zinc and boron, indicating that zinc and boron may have some function in the fructification of plants.

Experiments showed that rats fed a synthetic diet containing small amounts of organic compounds of the elements manganese, copper, zinc and nickel, have a longer survival period and attain a larger weight than do rats confined to a diet from which these metals are excluded as nearly as possible.

Analytical results show that Kentucky bluegrass, *Poa pratensis*, is relatively rich in manganese, copper and zinc, and contains traces of nickel and cobalt. When fresh green blades of bluegrass are air-dried in the shade, finely ground, and fed to rats in connection with a synthetic diet without the metals mentioned, the rats make a fairly normal growth, which indicates that this important forage crop contains the growth promoting properties in a fairly ample amount. A considerable amount of the green blades of bluegrass was extracted with hot alcohol, which removed practically all the chlorophyll. Rats confined to a synthetic diet plus the chlorophyll-free bluegrass blades did not thrive as well as others receiving the unaltered