After two years' experience they realized that the product could be looked upon as an undoubted commercial success. Methods of manufacture have been simplified and cheapened, and it is now necessary to double the existing plant in order to cope with the increasing orders.



View of Complete Plant, Showing Lime en route to Kiln.

Nitrogen is the most important of the plant foods. It is usually the first element to become deficient in cultivated soils, yet when good forms and proper amounts are furnished, crops respond to it with a more direct and immediate effect than to application of phosphate and potash.

All the combined nitrogen now in existence on the earth's surface came from the atmosphere at some time. Previous to the discovery of cyanamid the only practical means of directly fixing atmospheric nitrogen was by the action of bacteria. These bacteria, themselves living on plants or plant refuse, take nitrogen from the air and combine it into chemical forms that plants can absorb. If plants were not removed, but were left to decay where they grow, the fertility of the soil would probably never decrease. When crops are removed, however, not only is the nitrogen carried away but also the plant matter on which the bacteria feed. Then, in order to maintain fertility, it is necessary to restore combined nitrogen to the soil from other sources.

Cyanamid is a bluish-black, odorless, powdered material. It contains from 18 to 20% ammonia, about 12% carbon, or lamp-black, and the equivalent of about 70 pounds of slaked lime. The material is shipped in burlap bags and can be stored indefinitely.

Ninety-six Cyanamid nitrogen is readily soluble. per cent. will dissolve out in cold water and is therefore available as plant food. On contact with the soil it reacts quickly and forms first the organic compound, urea, and then changes into the form of double ammonium compounds. These compounds are not leached or washed out of the soil, but are made available to crops by bacterial action and the solvent effects of plant roots. This action insures a slow, steady supply of nitrogen that has the advantage of not overfeeding crops a few weeks and then starving them, but of supplying this element throughout their principal period of growth. Since the soil duration of cyanamid nitrogen is from 60 to 80 days, crops are not fed when they should be maturing, and therefore ripen earlier and more uniformly.

Every 100 pounds of cyanamid contains the equivalent of about 70 pounds of slacked lime, which adds considerably to its value as a fertilizer. This line costs the farmer nothing—cyanamid is sold on the basis of the ammonia it contains as determined by analysis.

The beneficial action of lime is well known. Briefly its advantages are as follows: (1) It corrects soil acidity and produces conditions favorable for the growth and



Kiln Shells Being Erected and Fire Clay Lining Commenced.

activity of nitrifying bacteria, which supply plants with much combined nitrogen. These bacteria are destroyed by acid conditions, but thrive in limed soils. (2) Lime



General View of Plant.