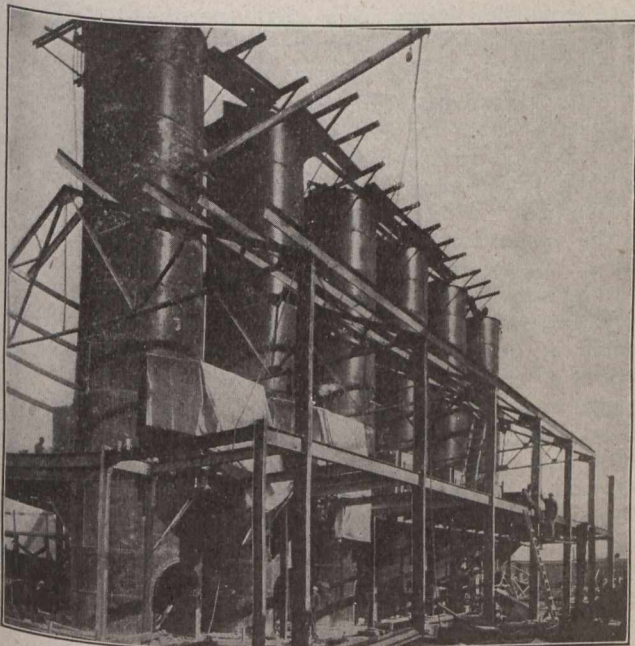


hastens the decomposition of waste products used as manures. (3) It destroys many injurious insects and soil diseases. (4) It makes available the phosphoric acid and potash often held too firmly in combination by some soils. (5) It improves the mechanical condition of all soils, making clay more porous and sand more retentive.

A regular application of cyanamid to soil in good condition should ordinarily neutralize the acids occurring therein. The ease with which the lime content of the soil is kept at a desired point makes this fertilizer especially valuable. Many other fertilizers tend to increase soil acidity until finally heavy liming is necessary. The yearly addition of lime as a part of the cyanamid fertilizer involves no extra expenditure of time, labor or money.

The manufacture of cyanamid depends upon the chemical fact that calcium carbide at a high heat combines with atmospheric nitrogen and forms calcium cyanamid. Calcium carbide is made by fusing together

foul during this cycle coal is then passed through the retort, which acts as a revivifier for the reducing agent. The nitrogen is then forced through pipes into the electric



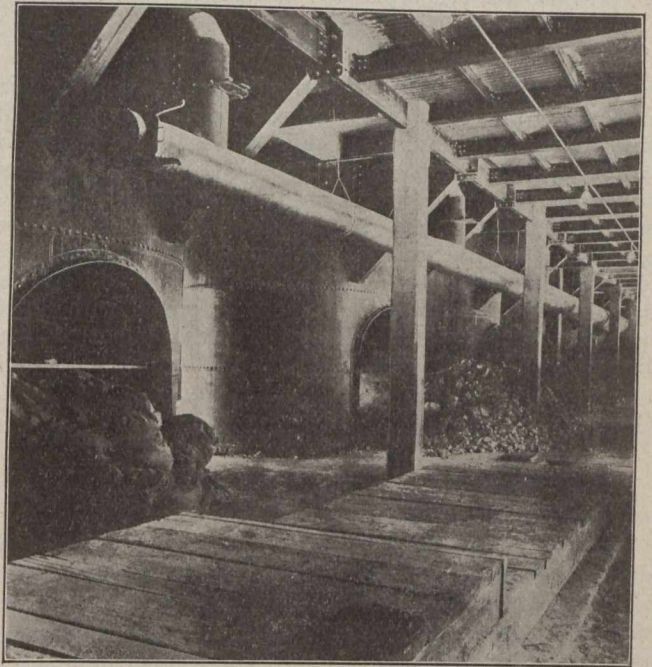
Kiln Shells Completed and Piping Being Installed.

lime and coke in an electric furnace. The carbide is placed in the ovens heated by electricity to a white heat and nitrogen is led into the ovens and is there combined with the carbide, forming calcium cyanamid. After cooling, this material is ground, treated with water and put through a mechanical finishing process.

It will readily be seen that for economical production of cyanamid the plant must be located where electricity can be secured at the lowest possible cost.

Before the installation of the cyanamid plant at Niagara Falls another matter of importance was to determine the kind of reducing gas to be used in the preparation of the nitrogen. After careful consideration a coal gas plant was decided upon as the entire output of coke could be used in the manufacture of calcium carbide and the coal gas gave the greatest amount of carbon content for use in the nitrogen ovens.

The nitrogen ovens consist of a series of vertical retorts heated by small individual furnaces. Copper oxide is placed in these retorts, and when the retorts are brought to the proper temperature air is forced through the retorts and the oxygen of the air combined with the copper and cupric oxide leaving the nitrogen free. The air is then shut off and as the oxide has gradually become



Lime Discharge Floor, Showing Handling Arrangement.

furnaces where it combines with the calcium carbide and forms calcium cyanamid, or commercial cyanamid.

The lime plant for the manufacture of lime to be used in the cyanamid plant was designed and installed by the



Arrangement of Charging Doors of Kilns.

Improved Equipment Company. The original plant consisted of six Doherty-Eldred lime kilns equipped with the Eldred process and induced draft.

American pine, treated with 22 pounds of creosote oil per cu. ft., is used in Cuba for piling. Native timbers are sometimes given a coat of cement, $\frac{1}{4}$ to $\frac{1}{2}$ inch in thickness, and these timbers are said to be hand-wrapped, but their usefulness has not as yet been fully demonstrated.