ELECTROCHEMISTRY

Likelihood of Industrial Growth in Northwest Debated

Possibility of Great Power Center on Columbia River Cited; Another Sees Trend Toward Cheaper Coal Plants

THE POSSIBILITY of a new industrial "Niagara Falls" of the northwest United States was suggested in the technical paper presented to the Electrochemical Society by Carl F. Floe, assistant professor of metallurgy, State College of Washington. Prof. Floe pointed out that a great part of the immense hydroelectric power output of the government's Bonneville and Grand Coulee Dams on the Columbia River would be offered to the metal producing industries which use electricity in their processes just as they do in the Niagara Falls area.

Third of Water Power

One-third of the total water power in the United States is in the northwest area, said Prof. Floe. Location of aluminum industries near the Bonneville and Grand Coulee Dams is a possibility for the future. This will not come immediately, Prof. Floe explained, because there are no nearby deposits of aluminum ore.

There are very large deposits, however, of clay containing from 25 to 40 per cent aluminum oxide which could become a source of aluminum metal as soon as suitable processes of treatment can be developed. This may come sooner than expected because of the rapid depletion of the high-grade bauxite deposits of the United States.

While at present unable to compete with existing sources, the presence of cheap power and large deposits of magnesium carbonate in the Northwest may some day find magnesium metal being manufactured there. The rapid expansion of the demands for magnesium may make such production feasible in the future.

Copper and zinc production may some day be added to possible metals industries of the Northwest, continued Prof. Floe.

Calcium carbide is used to the extent of from 10,000 to 15,000 tons on the Pacific Coast, but little is produced there despite the presence of the two needed raw materials, high-grade limestone and coke. With cheap electric power there is no reason why such an industry should not come into being.

Economics of Power

In contrast to Prof. Floe's rosy vistas for new industries in the Northwest, L. W. W. Morrow, editor of *Electrical World,* maintained that cheap power is not a dominant factor in the location of an industrial plant and that, in fact, power costs are about the same the country over.

Power is cheapest and best when the plant using it is located near the source.

It is unlikely, Mr. Morrow added, that industry will move to the new hydroelectric power plants.

The point, he maintained, is that it costs about 2.5 times as much to transmit electricity for distances from 50 to 100 miles as it does to move coal by rail that distance and it is therefore economical to build a smaller coal burning power plant at the factory. With coal seemingly now sufficient for the next 5,000 years, Mr. Morrow sees trends toward the less expensive and better operating fuel-burning power plants rather than toward hydro plants.

Calcium Carbide

How the early attempts to make aluminum metal from alumina led to the unwitting production of calcium carbide was traced by R. A. Witherspoon and A. F. G. Cadenhead of the Shawinigan Chemicals, Ltd., of Montreal, Canada.

The outgrowth of this commercial manufacture of calcium carbide did four things for modern industry, they pointed out. First it created a demand and need for large electrical equipment, especially in transformers.

In the formation of carbide the power of Niagara Falls was transmitted chemically to out-of-the-way settlements and mines where the acetylene gas generated from it was used for illumination. Then, as other forms of lighting superseded acetylene, the carbide furnaces and their operating techniques were carried over into the manufacture of the various ferro alloys such as ferro silicon and ferro manganese.

Another contribution of the carbide industry was in the development of oxy-acetylene welding and cutting.

For Explosive and Planes

By the time the World War came along acetylene was in demand for the manufacture of synthetic organic chemicals. The British, for example, wanted large quantities of acetone for the manufacture of the explosive cordite. Then, too, during the war, there came a great demand for airplane "dope" of cellulose acetate to coat the fabric of airplane wings. Large quantities of acetic acid were therefore necessary and the acetic acid was produced from acetylene.

But with the letdown from wartime production in 1918 there soon arose another use for acetic acid in the production of artificial silk or celanese.

Here are the chemical steps which turn calcium carbide, which you can burn in a lamp, into a pair of synthetic silk stockings.

Carbide mixed with water makes acetylene gas. Acetylene gas plus water makes acetaldehyde. Combine the acetaldehyde with oxygen and you get acetic acid. Two molecules of acetic acid robbed of one molecule of water creates acetic anhydride which has the ability to combine with pure cellulose to form cellulose acetate (airplane dope). Cellulose acetate forced through tiny spinnerets can produce threads of gossamer fineness that can be woven into the finest hosiery.

Science News Letter, October 17, 1936

METEOROLOGY

New "Sky-High" Observatory For Weather Bureau

NEARER the sky than any other weather observatory in the eastern United States, a new Weather Bureau station has been set up on the summit of Mt. Mitchell, near Asheville, N. C. It is under the charge of Ed Wilson, forest warden, and Warren Jones. The two men will spend their entire time on this peak, loftiest mountain east of the Rockies. Every six hours they will send reports by telephone and telegraph to the Weather Bureau observatory at Atlanta. These "sky-high" meteorological observations are expected to be of particular value in connection with commercial aviation in the East and Southeast.

Science News Letter, October 17, 1936

Natives of Malekula in the South Seas still eat their enemies in ritual feasts.