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CHINESE INDUSTRY FROM THE AIR

When the Great Leap Forward collapsed in 1961 a "cone of silence" descended over China. Mainland newspapers and magazines ceased to contain meaningful statistics on industrial activity in the country, radio broadcasts were emptied of all but propaganda, and travel by foreigners was largely restricted to tours of First Class Commune No. 1 and the Great Flood Control Dam of the Mangu. Even on purchases of plants and equipment from abroad there was often a costly forfeiture of associated guarantees because foreign technicians were not permitted to install them and the supplying countries were not even informed of their location. This almost complete blackout of information would have left the economic-industrial intelligence officer quite desperate had it not been for the

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High-altitude photography of course brings important information to others in the community besides the economist, notably to military intelligence officers, but in this article we are concerned only with the service it performs for the disciples of Samuelson and Galbraith. Taken alone, its information on industrial activity in Communist China gives only a minimal foundation for intelligence estimates. When correlated with pre-blackout data and the limited current information that comes in from other sources, however, it enables us to draw many valuable conclusions about the Chinese economy today. Though its usefulness with respect to different industries varies from high to negligible, over-all it is comparable in significance for China to the annual statistical yearbook for Soviet industry.

Pre-Blackout Data

The basic store of information on Chinese industry goes back to before the Communist takeover in 1949; much of the mainland industrial base was established by then. The huge iron and steel complex at Anshan and many of the varied industrial activities at Shanghai and Wuhan and in other widespread areas were developed by the Japanese

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on equipment housed in it, etc., and apply to all this his knowledge of the industry in question and the particular practices of the country.

Some industries are readily identified in aerial photos because of characteristic peculiarities either in the plant itself or in ancillary facilities. An excellent example of distinctive industrial configuration is presented by an integrated iron and steel plant, with its easily recognizable features such as blast furnaces, coke batteries, coke by-product plant, open-hearth furnace buildings, and rolling mills. Another easily spotted industrial facility is the petroleum plant: the tank farm jumps out at the PI on his very first scan. The large pot-room buildings of a modern aluminum plant with their associated rectifiers and transformer stations are also easily distinguished even by the novice PI.

There are other industrial plants, however, that a trained PI can identify only by a careful scanning of the photograph. Falling into this category are copper refineries, fertilizer and most chemical plants, and cement (unless marked by horizontal rotary kilns) and lime plants.

Finally, some industrial activities cannot be identified from aerial photography at all. A striking example of these is the manufacture of titanium: in the United States two of the leading titanium plants are currently housed in old steel works, without any alteration of their outward appearance. An identification of these from aerial photography alone would be likely to be a false one, as steel mills of some sort.

The correct identification of an installation may depend on getting accurate measurements of its features. If it is co-located with others, relative size is often enough of a clue, but otherwise real measure-

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Operational Status; New Construction

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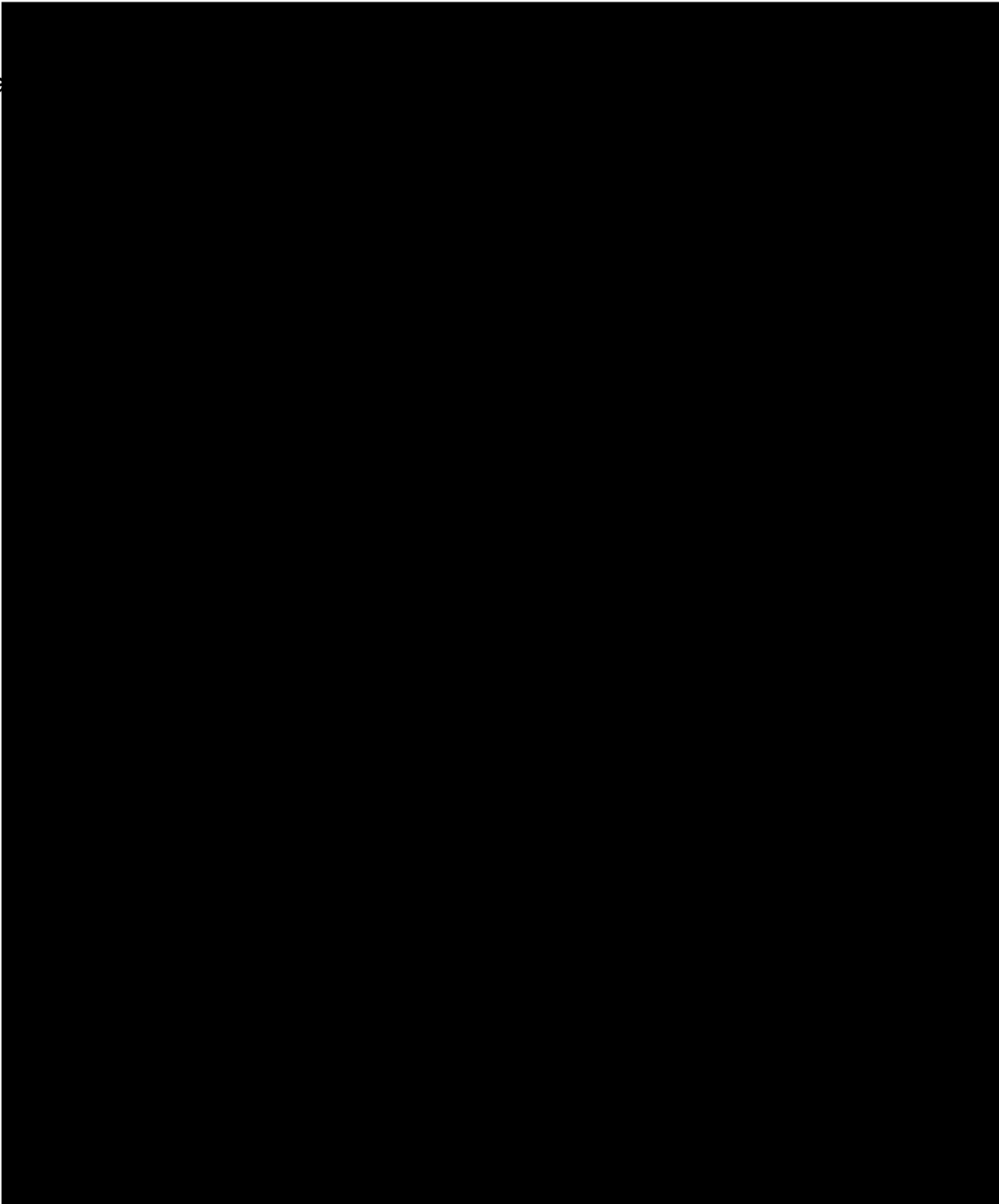
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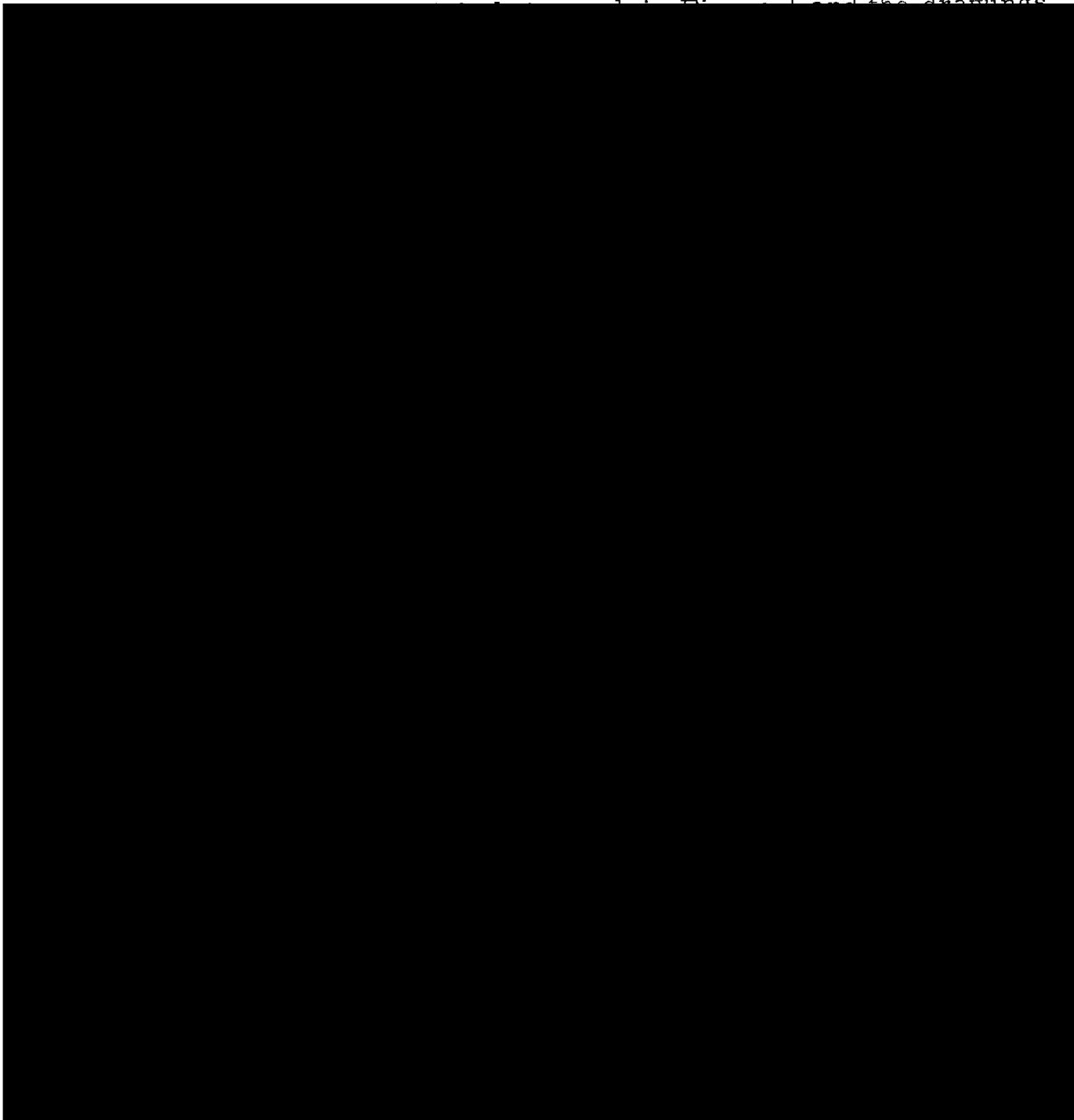
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An Iron and Steel Plant

The Wuhan iron and steel plant will serve as a good example from this industry, showing how well it lends itself to identification.



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steel it produces into some kind of finished or semifinished product. What the mix might be cannot be ascertained.

In sum, the following estimates can be made on the Wuhan plant by evaluating the combined information from all sources:

Pig iron capacity is about 2.5 million tons per year with all three blast furnaces operating full time, according to collateral information. Aerial photography permits the conclusion that the plant was probably operating at a high rate throughout 1966, and a reasonable estimate of its pig iron production in 1966 would therefore be about 2 million tons.

A crude steel capacity of about 1.5 million tons is derived from collateral reporting. Aerial photography leads to the conclusion that the open-hearth shop was probably operating near capacity all through 1966, so well over 1 million tons of crude steel was probably produced. The excess pig iron is sent to Shanghai for processing.

Finished steel capacity is not given in collateral reporting, but the number of rolling mill buildings visible lends confidence to an estimate that all the crude steel produced here is probably rolled into some finished or semifinished form. Applying the usual rule of thumb that finished steel amounts to about 75 percent of the crude, we get somewhat near 1 million tons as Wuhan's finished product in 1966.

Aluminum

Probably the second most easily identifiable industrial facility is the modern aluminum plant. Because it recovers the metal by

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Cement

Although the cement industry is a decentralized one, spread out

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Electric Power

High-altitude photography is of great value in determining the existence and location of power plants, and it gives reasonably accu-

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Copper

Most of the Chinese copper production is concentrated at four large combination plants at mine sites. These plants process the ore, smelt it into blister copper, and then refine this electrolytically into

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Railroads and Other Uses

Aerial photography is of little use in determining the production of railroad rolling stock, but it is a direct and accurate means of following the development of the railroad network of a country. It has been especially useful in application to the more remote areas of Communist China. From the initial preparation of the roadbed through the construction of tunnels and bridges to the final laying and aligning of track, the whole construction process can be watched. Good-quality photographs even show trains in transit on the completed lines. The

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Some insight into capacities or operational levels of other sectors of the Chinese industrial base can be gained from aerial photography, and the purpose of new construction can often be determined if it is associated with a known installation. Plants pointed out by other sources can be watched and in some cases their operational status defined.

The over-all level of industrial activity in China can be surmised by projecting the activity in the key industries discussed above, particularly the iron and steel industry. Sometimes referred to as the "bellwether" of an economy, certainly steel output signals the general trend of economic activity in China, even though its correlation with GNP, national income, and the index of industrial activity is not perfect. The more skillful we can become in evaluating high-level photography on the most photogenic industries the better we will be able to assess the general economic situation in China.

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