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Commentary

Title:

*"Herbert Dow Destroys
Predatory Prices"*

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One of the firm beliefs of statisticians is that government needs to protect us from predatory price-cutting. Large corporations, according to this argument, have unfair advantages in the marketplace. They can cut prices, drive out their competitors, then raise prices later and gouge consumers. Antitrust laws are essential, so the argument continues, to protect small businesses and consumers from those corporations with large market shares in their industries.

The story of Herbert Dow, founder of Dow Chemical Company, is an excellent case study for those who think predatory price-cutting is a real threat to society. Dow, a small producer of bromine in the early 1900s, fought a price-cutting cartel from Germany. He not only lived to tell about it; he also prospered from it.

Born in 1866, Dow was a technical whiz even as a young boy. His father, Joseph Dow, was a master mechanic who invented equipment for the U.S. Navy. He shared technical ideas with Herbert at the dinner table and the workbench in their home in Derby, Connecticut. He showed Herbert how to make a turbine and even how to modernize a pin factory.

Dow's future as an inventive chemist was triggered when he watched the drilling of an oil well during his senior year at what is now Case Western Reserve University in Cleveland. At the oil site he noticed that brine had come to the surface. The oil men considered the oozing brine a nuisance. One of them asked Dow to taste it. "Bitter, isn't it," the driller noted. "It certainly is," Dow added. "Now why would that brine be so bitter?" the driller asked. "I don't know," Dow said, "but I'd like to find out." He took a sample to his lab, tested it, and found it contained bromine, which was used as a sedative and also to develop film. Dow wondered if bromine could be extracted profitably from the abundant brine in the Cleveland area.

The key to selling bromine was finding a way to separate it cheaply from brine. The traditional method was to heat a ton of brine, remove the crystallized salt, treat the rest with chemicals, salvage only two or three pounds of bromine, and dump the rest. Dow thought this method was expensive and inefficient. Could he find a better way to produce bromine and advance America's industrial future?

After graduation in 1888, Dow took a job as a chemistry professor at a local hospital in Cleveland. He had his own lab, an assistant, and time to work on the bromine problem. During the next year, he developed two processes—electrolysis and "blowing out." In electrolysis he used an electric current to help free bromine from the brine; in "blowing out" he used a steady flow of air through the solution to separate the bromine. Once Dow showed he could use his two methods to make small amounts of bromine, he assumed he could make large amounts and sell it all over the world.

The next 15 years of bromine production were a time of testing for Dow. He started three companies. One failed, one ousted him from control, and the third, Dow Chemical Company, struggled to survive after its founding in Midland, Michigan, in 1897.

The bromine market seemed to have potential, but Dow never had enough money because nothing ever worked as he expected it to. Electrolysis was new and untested. The current he passed through the brine was too weak to free all the bromine. When he strengthened the current, he freed all of the bromine, but some chlorine seeped in, too. Instead of being frustrated, Dow would later go into the chlorine business. After all, people were making money selling chlorine as a disinfectant. So could Dow. Meanwhile, the chlorine and bromine were corroding his equipment and causing breakdowns. He needed better carbon electrodes, a larger generator, and loyal workers.

Dow found himself working 19-hour days and sleeping at the factory. He had to economize to survive, so he built his factory in Midland with cheap local pine and used nails sparingly. "Crazy

Dow” is what the Midland people called him when he rode his dilapidated bike into town to fetch supplies. Laughs, not dollars, were what most townsfolk contributed to his visionary plans. To survive, Dow had to be administrator, laborer, and fundraiser, too. He looked at his resources, envisioned the possible, and moved optimistically to achieve it.

The Germans dominate bromine

For Dow Chemical to become a major corporation, it had to meet the European challenge. The Germans in particular dominated world chemical markets in the 1800s. They had experience, topflight scientists, and monopolies in chemical markets throughout the world. For example, the Germans, with their vast potash deposits, had been the dominant supplier of bromine since it first was mass-marketed in the mid-1800s. The United States alone emerged as a competitor to Germany, and then only as a minor player. Dow and some small firms along the Ohio River sold bromine, but only within the country.

About 30 German firms had combined to form a cartel, *Die Deutsche Bromkonvention*, which fixed the world price for bromine at a lucrative 49 cents a pound. Customers either paid the 49 cents or they went without. Dow and other American companies sold bromine in the United States alone for 36 cents. The Bromkonvention made it clear that if the Americans tried to sell elsewhere, the Germans would flood the American market with cheap bromine and drive them all out of business. The Bromkonvention law was, “The U.S. for the U.S. and the Bromkonvention for the world.”

Dow entered bromine production with these unwritten rules in effect, but he refused to follow them. Instead, he easily beat the cartel’s 49 cent price and courageously sold America’s first bromine in England. He hoped the Germans, if they found out what he was doing, would ignore it. Throughout 1904 he merrily bid on bromine contracts throughout the world.

Predatory price cutting in action

After a few months of this, Dow encountered in his office an angry visitor from Germany—Hermann Jacobsohn of the Bromkonvention. Jacobsohn announced he had “positive evidence that [Dow] had exported bromine.” “What of it?” Dow replied. “Don’t you know that you can’t sell bromides abroad?” Jacobsohn asked. “I know nothing of the kind,” Dow retorted. Jacobsohn was indignant. He said that if Dow persisted, the Bromkonvention members would run him out of business whatever the cost. Then Jacobsohn left in a huff.

Dow’s philosophy of business differed sharply from that of the Germans. He was both a scientist and an entrepreneur; he wanted to learn how the chemical world worked, and then he wanted to make the best product at the lowest price. The Germans, by contrast, want to discover chemicals in order to monopolize them and extort high prices for their discoveries. To those who challenged them, the German cartels had a “yellow dog fund,” which was money set aside to use to flood other countries with cheap chemicals to drive out competitors.

Dow, however, was determined to compete with the Bromkonvention. He needed the sales, and he believed his electrolysis produced bromine cheaper than the Germans could. Also, Dow was stubborn and hated being bluffed by a bully. When Jacobsohn stormed out of his office, Dow continued to sell bromine—from England to Japan.

Before long, in early 1905, the Bromkonvention went on a rampage: it poured bromine into America at 15 cents a pound, well below its fixed price of 49 cents and also below Dow’s 36 cents. Jacobsohn arranged a special meeting with Dow in St. Louis and demanded that he quit exporting bromine or else the Germans would flood the American markets indefinitely. The

Bromkonvention had the money and the backing of its government, Jacobsohn reminded Dow, and could long continue to sell in the United States below the cost of production.

Dow was not intimidated; he was angry and told Jacobsohn he would sell to whomever would buy from him. As Dow boarded the train from St. Louis, he knew that his company—if it had a future—depended on how he handled the Germans.

On that train, Dow worked out a daring strategy. He had his agent in New York discreetly buy hundreds of thousands of pounds of German bromine at the 15-cent price. Then he repackaged it and sold it to Europe—including Germany!—at 27 cents a pound. “When this 15-cent price was made over here,” Dow said, “instead of meeting it, we pulled out of the American market altogether and used all our production to supply the foreign demand. Tis, as we afterward learned, was not what they anticipated we would do.”

Dow secretly hired British and German agents to market his repackaged bromine in their countries. They had no trouble doing so because the Bromkonvention had left the world price above 30 cents a pound. The Germans were selling in the United States far below cost of production, and they hoped to offset their U.S. losses with a high world price.

Instead, the Germans were dismayed. They had expected to run Dow out of business; and this they thought they were doing. But why was U.S. demand for bromine so high? And where was this cheap bromine into Europe coming from? Was one of the Bromkonvention members cheating and selling bromine in Europe below the fixed price? The tension in the Bromkonvention was dramatic. According to Dow, “The German producers got into trouble among themselves as to who was to supply the goods for the American market, and the American agent [for the Germans] became embarrassed by reason of his inability to get goods that he had contracted to supply and asked us if we would take his 15-cent contracts. This, of course, we refused to do.”

The Germans in retreat

The confused Germans kept cutting U.S. prices—first to 12 cents a pound and then to 10.5 cents. Meanwhile, Dow kept buying cheap German bromine and reselling it in Europe for 27 cents a pound. Eventually, the Bromkonvention caught on to what Dow was doing, but they were befuddled on how to respond. As Dow said, “We are absolute dictators of the situation.” He concluded: “One result of this fight has been to give us standing all over the world.”

The bromine war lasted four years, from 1904 to 1908, when finally the Bromkonvention invited Dow to come to Germany and work out an agreement. The Germans agreed to quit selling bromine in the United States; Dow agreed to quit selling in Germany; and the rest of the world was open to competition in bromine. Predatory price cutting had failed, prices for bromine had dropped, and Dow had more capital to invest in other chemical products where he would soon establish a strong international corporation.