

The Aluminum Pioneers

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ON A WARM SUMMER DAY in July 1888, my father, Captain Alfred E. Hunt, was working on a metallurgical problem in the small quarters of the Pittsburgh Testing Laboratory, on Fourth Avenue of that city. He was expecting a visit from an acquaintance, Romaine C. Cole, who had assisted him earlier in the 1880's with experimental but unsuccessful attempts to convert alumina (that is, aluminum oxide) into aluminum through the use of an open hearth furnace.

Later, Romaine Cole met a young man at Lockport, New York, who had an entirely new process for making aluminum. Cole had watched this process in operation and had begun to appreciate its possibilities. Remembering Captain Hunt's interest in aluminum, he made a trip to Pittsburgh to tell him of the discovery, hoping to secure his help in promoting it. The electrolytic process, invented by Charles Martin Hall, immediately aroused the interest of Captain Hunt.

Through training and experience, Captain Hunt was well equipped to make a sound scientific appraisal of the invention about which Cole told him that summer afternoon in 1888. The Pittsburgh Testing Laboratory had already established a good reputation for itself in the field of testing materials, engineering inspection, chemistry, and metallurgy—and Alfred E. Hunt, the metallurgist, was one of its proprietors.

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A New Englander by birth, he was graduated from Massachusetts Institute of Technology with a degree in Metallurgy and Mining, in 1876. His first job was obtained in Boston, with the Bay State Iron Works, which was then operating the first open hearth steel furnace in the United States of America. Following that, he was in charge of the open hearth department of the Nashua Iron & Steel Company, in Nashua, New Hampshire. In a manner of speaking, you might say that I know the story first-hand from here on.

Captain Hunt came to the City of Pittsburgh in 1880 to take charge of the open hearth department for the Park Brothers, at their Black Diamond Steel Works. Associated with him there was a young chemist named George Hubbard Clapp, son of the firm's treasurer. One of the jobs being handled by the Black Diamond was that of producing steel for a series of new bridges then being erected across Pittsburgh's rivers under the direction of Dr. Gustave Lindenthall, whose name you will recall as a famous builder of bridges.

Two youthful engineers just out of college were serving as inspectors on the bridge projects. Their names were William Kent and William F. Zimmermann. To handle their work properly they had to design, build, and operate a number of testing machines to prove the strength of the various bridge members. Quite naturally, they became acquainted with Messrs. Hunt and Clapp at the steel plant.

When the bridges were completed, Kent and Zimmermann stayed in Pittsburgh with their testing machines. They organized the firm of "Kent & Zimmermann, Pittsburgh Testing Laboratory," for the testing of materials, and for engineering inspection. As time went on, they found they needed chemical and metallurgical knowledge which they did not personally possess. It is understandable, therefore, that they went to Alfred E. Hunt and George H. Clapp for this type of technical assistance. These young men from the Black Diamond Works at first worked part time for Kent and Zimmermann; but, by 1883, Hunt and Clapp had gone into partnership as proprietors of the Chemical Department of the Pittsburgh Testing Laboratory; and, in 1887, they had acquired right, title, and property to the company, under the name "Hunt & Clapp, Pittsburgh Testing Laboratory."

William Kent thereafter went into other fields to achieve his fame. His name is no doubt familiar to many of you as the originator of Kent's "*Mechanical Engineer's Pocket Book*," the handbook which has long been the "bible" of that branch of the engineering profession. William F. Zimmermann joined the organization of another illustrious

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Pittsburgher, George Westinghouse, as chief engineer, and thence moved to the Pacific Northwest, where he designed and built the Spokane and Inland Empire System, one of America's first electric railroads.

At the Pittsburgh Testing Laboratory under Hunt and Clapp, Alfred E. Hunt was the salesman of the firm, as well as the engineer. His activities won him considerable prominence in national and international engineering and metallurgical circles. He was a member of numerous professional societies, and frequently contributed treatises to prominent technical publications. He became quite an authority on strength of materials.

He was also a soldier. In 1884, he helped to organize Battery B of the Pennsylvania National Guard, and was made its first captain. He led this battery into service during the Spanish-American War. In the Puerto Rican Campaign of that conflict, he contracted a fever which brought him to lingering ill health and led to his death, in 1899, at the age of 44 years.

George Clapp spent a great deal of his time in the laboratory, occasionally going outside into the mills to do actual inspection work. The Pittsburgh Testing Laboratory, which today has a reputation second to none in its field and is internationally regarded as the leader in the inspection and testing of materials, owes a great debt to Mr. Clapp who was its guiding light and prime mover for many years.

As I brought out at the beginning of this story, it was in the Summer of 1888 that Charles Martin Hall, the inventor of the electrolytic process for the production of aluminum, arranged through Romaine C. Cole to present his process to Captain Hunt. Captain Hunt's earlier interest in aluminum no doubt influenced the decision to cast his lot with the Hall process. With little delay, he gathered a group of young men, friends and associates, and told them of the opportunity which had presented itself. He even put his friend and partner George Hubbard Clapp into the venture without asking him—the Clapp family was touring Europe when Cole came to Pittsburgh. This small group met, on July 31, 1888, in Captain Hunt's living room at his home in Pittsburgh and decided to go into the business of making aluminum by the Hall process. This meeting was the first step in the organization of The Pittsburgh Reduction Company, renamed Aluminum Company of America in 1907.

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It is a legend that the founders were constantly embarrassed during the 'Nineties by persons who persisted in confusing The Pittsburgh Reduction Company with a local garbage-disposal firm. A story is told that one official was called to the telephone late at night and blasted to eternal perdition by an irate citizen taking umbrage over the failure to remove a dead horse from a nearby alley!

The founders, relying on Captain Hunt's conviction that the Hall process had genuine commercial potentials, scraped the bottoms of their financial barrels to subscribe the sum of \$20,000 for the purpose of building and equipping the required pilot plant. The plan was that if the pilot experiments proved successful, a sizeable corporation would be formed in which the inventor and his associate, Romaine C. Cole, would receive nearly half of the capital stock. If the venture were to prove a failure, the financial fate of the investors was only too obvious.

As it turned out, the venture was a success, although it had many trials and moments when the future was beset with misgivings. Hard times quite generally preceded periods of encouragement for the new venture—as they do so frequently under American free enterprise and the profit-and-loss system. But therein, I firmly believe, lies the strength of private enterprise. Guaranteed success is most certainly nothing more than an enervating illusion. The risk of failure is an essential ingredient of progress.

Of the other founders of the aluminum industry in America, the best known was George Hubbard Clapp, of whom I spoke earlier. He became directly active in the business affairs of The Pittsburgh Reduction Company, serving loyally and faithfully as treasurer, secretary, and vice-president. But in the early days of the aluminum project he devoted a major portion of his time to the affairs of the Pittsburgh Testing Laboratory, leaving his partner free to promote the new venture. Let it be said that George Clapp, industrialist and philanthropist, maintained a keen interest in aluminum throughout his life, which was devoted to the service of humanity as well as to his many business interests. He continued on the Board of Directors of Aluminum Company of America until his death, in 1949, at the age of 91 years.

It was only natural that the other men who grasped the opportunity of putting their savings into the formation of The Pittsburgh Reduction Company and participating in its organization would be identified with the Steel Industry. Howard Lash was head of the Carbon Steel Company; Millard Hunsiker was sales manager for the same company;

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Robert Scott, a mill superintendent for the Carnegie Steel Company; and W. S. Sample, chief chemist for the Pittsburgh Testing Laboratory. The eldest in the group was thirty-five years of age. Captain Hunt was only thirty-three.

Perusal of the early minute books of The Pittsburgh Reduction Company discloses the name of yet another young man, “fresh from Amherst,” who became one of the first employees—Arthur Vining Davis. His arrival in Pittsburgh came about in this way: Captain Hunt’s parents, during their residence in Massachusetts, attended a Congregational church in the town of Hyde Park, of which The Reverend Perley B. Davis was pastor. When his son was graduated from Amherst, Pastor Davis wrote his former parishioner, Captain Hunt to inquire if he could find a position for young Arthur. Captain Hunt could—and did.

Arthur Vining Davis arrived in Pittsburgh shortly after the new company was organized. When the aluminum pilot plant was ready to start, Hunt & Clapp decided Davis was just the fellow to team up with Charles Martin Hall in operating it. At that time Arthur Davis had reached the age of twenty-one years. He and Hall divided between them the job of superintending operations. This entailed working twelve-hour shifts every day, for aluminum production is an around-the-clock proposition. The plant employed five men.

Hall and Davis made an outstanding team—Hall at heart a research man and inventor, Davis an earnest, driving, production superintendent within whom lay the seeds which grew to make him one of the great industrialists of our times. There were the headaches when manufacturing problems arose at the pilot plant, while Captain Hunt busied himself with the over-all corporate problems and the search for customers who would try the new and unfamiliar metal.

It was not in the books for A. V. Davis to remain a plant operating man. A splendid salesman and organizer, he had the fortunate knack of knowing how to “make friends and influence people,” and to inspire confidence in himself and his company.

By September 1889, the pilot plant had conclusively proved the feasibility of the Hall process, and thus the next great need was for larger amounts of capital to go into commercial production of aluminum. Later on, that month, the directors authorized the increase of capital stock to one million dollars, represented by 10,000 shares, of which

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Hall was given more than 3,500, with additional shares going to Cole. Captain Hunt and his venture capital associates received 2,500 shares, leaving the remainder to be sold for improvements and expansion.

The act of authorizing shares of capital stock does not solve all financial problems. The Pittsburgh Reduction Company, early in 1889, was in dire need of \$4,000 to meet an overdue note at a Pittsburgh bank. A friend suggested making contact with the banking firm of T. Mellon & Sons, also of Pittsburgh; and volunteered to provide the necessary introductions. An appointment was arranged. Andrew W. Mellon and his brother, Richard Beatty Mellon, gave the aluminum people courteous attention. Without receiving a decision, they were told to come back the next day for an answer.

That must have been a long day and night for the prospective borrowers. When morning finally came, they were greeted with the surprise of their young lives. "My brother and I," as A.W. Mellon put it, felt The Pittsburgh Reduction Company needed considerably *more* than the \$4,000 they had been seeking! To shorten the story down to essentials, T. Mellon & Sons granted a loan sufficient to pay off the company's whole immediate indebtedness, and to provide substantial working capital.

The Mellons of Pittsburgh have been the principal bankers for Aluminum Company of America since those early days. A.W. Mellon, who became a director of the company in January 1891, and his brother, R.B. Mellon, who became a director in September 1895, had faith in the men of aluminum and in their process for producing it. They believed in Captain Hunt, in George Clapp, in Charles Martin Hall, and in Arthur Vining Davis. And they were quick to envision the future of aluminum. In 1984, the records indicate the Mellon brothers had 1,235 shares in the company. As of 1920, stock ownership by the Mellon family amounted to about one-third of the total outstanding shares.

In short, The Mellons of Pittsburgh, that city's most illustrious banking family, pioneered from the early beginnings of the aluminum industry, taking the same venture capital risks as those assumed by the founders themselves.

Among the other prominent Pittsburghers to enter the picture as aluminum pioneers were David L. Gillespie and Alvah K. Lawrie. Gillespie was the head of a prosperous Pittsburgh lumber firm, and Lawrie, a successful contractor. Both came to the financial rescue of the struggling young organization at times of financial crisis; and both remained as stockholders and directors for many years. One of the early pioneers who today is still a director of the company is Mr. Robert E. Withers, treasurer for 45 years.

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Upon the premature death of Captain Hunt, in 1899, R.B. Mellon became president of the company, with dynamic A.V. Davis as his general manager. By that date, The Pittsburgh Reduction Company had spread itself out and assumed a small but significant role in commerce. The infant industry had outgrown its Pittsburgh birthplace and moved to nearby New Kensington, Pennsylvania. While New Kensington is still known as “The Aluminum City,” it could not long contain the growing company. In 1894, deposits of bauxite ore were purchased in Georgia. By the following year, a reduction plant had been erected and put to work at Niagara Falls, New York—the first industrial user of the huge hydroelectric potentials of that thundering scenic Wonder of the World.

As of 1890, The Pittsburgh Reduction Company could make only aluminum pig or ingots. Few customers existed who could provide a regular market, as long as these products were the sole available forms of the metal. Special rolling mills had to be constructed to work the aluminum ingot into saleable commodities. Strip roll sheet was first made at New Kensington, with flat sheets coming a little later.

The aluminum sheet business was but the first of many fabricated products which the little company was called upon to produce. Through the years, it became necessary to add other machinery that would fashion wire and electrical conductor cable, extruded and forged shapes, rods, bards, castings, foil, powder and paste, and screw machine products. More often than not the decision to take up a particular type of fabricating operation was forced upon the company because of the reluctance of others to try the new metal. Certainly all of us are aware that you cannot sell a product unless you give it to the customer in the form he desires.

The entry of the company into the cooking utensil business came about for a slightly different reason. Mr. Davis tells how a representative of Hill, Whitney & Wood, producers of kitchen equipment, came to see him, one day in 1901, and asked if it was the intent of The Pittsburgh Reduction Company to go into the cooking utensil business. Mr. Davis replied that it was not their present plan to do so, to which Mr. Whitney retorted: “You’re in the cooking utensil business now, because we can’t pay you what we owe you for aluminum and you will have to take over our company.” Mr. Whitney was right, and E.C. Darling became the first manager of a subsidiary company, named The Aluminum Cooking Utensil Company, making the *Wear-Ever* line of aluminum.

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It has been my purpose to confine these notes and remarks largely to those adventure-some years which saw the aluminum industry started on its way, and to tell you of the men whose inspiration and daring were responsible for the accomplishments. As you know, Arthur Vining Davis, who became president of Aluminum Company of America in 1910, remained president until 1928—always a dynamo of energy who lived and breathed aluminum. He personally poured America's first commercial aluminum ingot, and he serves us yet in the esteemed capacity of Chairman of the Board of Directors. It is little wonder, therefore, that people call him "*Mr. Aluminum*" wherever he goes.

The story of aluminum's rise from a virtually unknown "laboratory" metal to a position as the leader of the non-ferrous group, from the standpoint of volume produced, covers the relatively short period of *sixty-three years*. Yet in that period America has been embroiled in three major wars, and is again faced with a tremendous rearmament program. In such periods of turmoil and international disturbance, the aluminum industry has been called upon to play a leading and dramatic role. But that, too, is another story.

It is as true today as it was in 1888 that the accomplishments of the tasks at hand—and the meeting of the challenges before us—depend upon the courage and daring of the pioneers among us. Aluminum is still pioneering, because it is backed and bulwarked by men who are thinking not of yesterday *but of tomorrow*.

You will permit me to digress in order to make a comment I believe of importance in American life today. In my Credo there are 5 *allegiances* that we have. I put them in order of their importance.

- (1) To Almighty God: broadest Mainstay of spiritual destiny.
- (2) To our Country: no need to elaborate this one.
- (3) To one's self, including one's family.
- (4) To the organization for which you work—
and also in which you have an interest.
- (5) To charitable, civic, and community organizations,
which, as one grows older, take more and more time.

To all of you I commend these five. They constitute my own philosophy.

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One more and concluding reference to my main subject of tonight:
I will never forget *a dream* that came to me a few years ago, in which I was forced to choose between seeing the destruction of all the plants and equipment of Aluminum Company of America or the loss of the key men on the company staff.

I wrote that dream down. I am glad that, even in my sleep, the answer came quickly and clearly: "Destroy the plants, but spare our people. *We can build the plants again.*"

THE END

"Actorum Memores simul affectamus Agenda!"

This Newcomen Address, dealing with the history of Aluminum Company of America, was delivered at a National Newcomen Dinner of The Newcomen Society of England in New York, New York, United States of America, on April 26, 1951.