Allen-Bradley: An American Story

By Harry L Bradley

Rockwell Automation

100 Years
1903 - 2003

Allen-Bradley

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An American Story

By
Harry Lynde Bradley

This is an edited version of a lost manuscript written by Harry Bradley, co-founder of the Allen-Bradley Company. Mr. Bradley, with help from professional writer Norman Beasley, began work on this document in 1957. The project was later set aside and left unfinished. In addition to Mr. Bradley's own words, the original manuscript contained material prepared by several of his longtime associates, including Allen-Bradley president Fred Loock, company lawyer Louis Quarles, treasurer Alex North and tax attorney Harvey Peters. In the course of preparing this document we discovered the original source material from these individuals and incorporated additional excerpts from their work in this manuscript.

Forward

The history of the Allen-Bradley brand has been told on a continuing basis since 1921, when co-founder Lynde Bradley began his first serialized account in *The Gossip*, the company's employee newsletter.

When Lynde passed away in 1942 the company published a special edition of the story he'd written to date, complete with photos, correspondence and facsimiles of historical documents. While this remained the definitive account for more than a decade, other official histories were published in subsequent years. These include an abbreviated book in 1966, a more comprehensive volume in 1988, and an official history web site in 2003.

But there *was* another attempt to tell the story, one which would have been in the voice of Harry Bradley, Lynde's younger brother. It began and was later abandoned, lost for nearly 50 years until the manuscript was found by Rockwell Automation vice-presidents Chuck Germain and Jim Hart in a vault at Allen-Bradley's Milwaukee plant. Fittingly, this discovery was made during the brand's centennial year, and we are happy to bring it to light now.

What follows is an account of how Allen-Bradley began, and what it had become by the middle of the twentieth century. It's a grand story, a pull-yourself-up-by-the-bootstraps tale of two young entrepreneurs, brothers too poor to receive a college education, but whose drive and enthusiasm overcame all challenges – be they technical roadblocks, unscrupulous business partners or economic setbacks.

The story was a work in progress. Not all of its content is included in this version. Original text included copious details from contracts and extensive discussions of United States tax law.

What was saved, we are proud to share.

Robert A Smith, Editor
November 2003

Books by co-writer Norman Beasley

- *The Cross and the Crown* (New York: Duell, Sloan and Pearce, 1952).
- *The Continuing Spirit* (New York: Duell, Sloan and Pearce, 1956)
- *Mary Baker Eddy: A Biography* (Boston: Christian Science Publishing Society, 1961)
- *Made in Detroit,* with George W. Stark. (New York: G. P. Putnam's Sons, 1957)
- *Men, Money, & Motors. The Drama of the Automobile,* written with Theodore MacManus (Date & publisher unknown)
- *Main Street Merchant: The Story of the J.C. Penney Company* (1948)
- *Men Working; A Story of the Goodyear Tire & Rubber Co.* (New York, NY: Harper & Brothers, 1931)
- *For the Years to Come: The Story of the International Nickel Company of Canada*, with John F. Thompson (Toronto: Longmans, Green & Company, 1960)
- *Small Wonder: The Amazing Story of the Volkswagen,* with George W. Stark (1988).

To my brother, Lynde.

Harry L. Bradley

C O N T E N T S

A P P E N D I X

1. So Began a Stout Friendship

Lynde Bradley was an employer who believed that when a man became an employer he assumed, among other responsibilities, two specific obligations: One obligation was to provide for the well being of all his employees. The second obligation was to assure continuing rewards for future generations of employees.

Lynde Bradley had no trouble accepting those obligations. As an employer he looked beyond the job and saw it as a door to opportunity – and a provider of food and clothing, shelter, happiness, education and security for a man and his family. He knew of no greater public service than to help another human being to help himself, and to be self-supporting.

Lynde Bradley was my brother. He was six years older, and because our father died when we were young, he was a father and a brother, both. Even as a boy he was mature. Or, so he *seemed* to me. For, even as a boy he was an inventor and a mechanic of ability, one who loved machinery, listened to it, and heard its secrets.

In 1893, Lynde was a student in the Eighteenth District School in Milwaukee. Here, too, was a boy named Ralph Skidmore who, although he had no particular talent for botany, was known to everyone but his teachers as Banyan. It was a nickname that came as the result of Skidmore's infatuation with the fig-bearing tree of the East Indies.

Knowing of Lynde's interest in electricity, Banyan showed up one day with a book he had borrowed from his brother's library. The title of the book was *Electricity for Engineers*. It was written by Charles Desmond, contained approximately 125 pages, and was published in 1891. That was about all there was to the incident.

It was enough. The book described the electric lighting and distribution systems in use at the time, and among the devices described was one known as the Brush Regulator. This was a regulator made of rectangular carbon plates stacked vertically in slate chutes. Its function was to maintain a constant current in a series of arc lights.

Lynde Bradley, 14 years old, was fascinated. Years afterwards, he recalled:

> *As near as I can remember, I sawed eleven discs of carbon 3/8-inch thick, from an old 5/8-inch diameter arc light electrode and placed these in a wooden tube, made from the hub of a magnet wire spool. The carbon column was a little longer than the tube, and the tube was fastened to one of the wooden jaws of a pattern maker's clamp and so arranged that by*

screwing down the clamp, the column could be compressed. Pieces of tin plate had been fitted between the carbon column and the clamp jaws for terminals.

The workshop where Lynde put together his first rheostat was a boy's workshop. It was in the cellar of our home at 191 Prospect Avenue (now 1619 Prospect) in Milwaukee, Wisconsin. It was a large house of many rooms, a number of which our mother rented out. We needed the money. One of Lynde's proudest possessions was a small woodworking lathe driven by a battery motor, which operated on about six volts. He earned the money to buy the lathe and the motor by selling subscriptions to the *Youth's Companion*.

After completing the rheostat, he connected it with the motor and to his "great delight and surprise," as he recalled, "it worked splendidly. It gave almost infinite control of the motor speed and even got hot. The latter fact, I think, impressed me even more than its resistance and characteristics.

From a boy's viewpoint, it was a great success. It never was subjected to very much service, as all the electrical energy that I obtained was derived from primary batteries and, therefore, I could not afford to operate the lathe very much by electric power, and in the course of time the rheostat found its way to the ash heap. I must say for it, however, it was a perfectly good rheostat.

At the time I was about eight years old, and was beset with a small boy's curiosity. Certainly I must have been a periodic nuisance to my brother. After all, a difference of six years is a monumental one when a boy is 14. Often, Lynde must have wondered what to do about me, but he matched his patience against my impatience, and opened for me the treasures of his own idealism.

I remember that rheostat. Not too clearly, of course, but I remember it. I remember, too, how pleased Lynde was over its performance. Not surprised, but pleased. He kept it around for quite a while before junking it. There were many times when we both wished he had kept it. In its way, it was the first Allen-Bradley rheostat.

In 1894, Lynde left school to go to work for Julius Andrea & Sons. The firm repaired bicycles, fixed locks, and did a good business installing electric doorbells. He remained with the firm until 1898 when, at the age of 19, he went into business for himself. The device he set out to promote was new but its workings, and its possibilities, had occupied his thoughts through the three years since the announcement of its discovery. It was the x-ray, discovered by Wilhelm Konrad Roentgen in 1895.

Early in 1898, Lynde opened an x-ray laboratory on the first floor of the Pabst Building, and almost at once tried to close it. On April 25th, the United States declared war against Spain, but almost a month previously Lynde wrote to Russel A. Alger, Secretary of War, offering his services as an electrician and a technician in x-ray. On April 9th he received a letter from the War Department:

Mr. L. Bradley
Pabst Building,
Milwaukee, Wis.,

Sir:

I am directed by the Chief Signal Officer to acknowledge with thanks, the receipt of your communication of April 2, 1898, offering your services to the Signal Corps as an electrician ... And to inform you that the same has been placed on file for consideration in case of necessity.

Very respectfully,
Robert Craig
Major, Signal Corps,
Assistant.

Hearing nothing further for nearly three weeks, Lynde wrote to the U.S. Surgeon General on the day after the declaration of war:

Sir:

I hereby offer my services as expert x ray operator. I have already volunteered my services to Hon. Russel A. Alger, Secretary of War, and received notice that my application had been filed, but now I am informed that I should have addressed you in this matter. I consider myself thoroughly competent, as I have had charge of the Milwaukee X-Ray laboratory and have had a large amount of experience. I send two radiographs by today's mail, to demonstrate the quality of the work I have been doing; also a newspaper article on this subject.
Trusting to hear favorably from you, I remain

Yours most respectfully,
Lynde Bradley.

The newspaper article he mentioned was a clipping for the New York Press (April 4, 1898) in which it was stated:

Brother Jonathan may use the x-rays if it comes to war. While he is rolling up his shirtsleeves and preparing to fight, he is also thoughtful of the men who may be wounded by Spanish shells or bullets. It is possible he will employ the rays to find these missiles, or pieces of them, in our sea warriors. The suggestion comes from Lynde Bradley, a Milwaukee electrician . . .

Determined to serve in what he believed to be the best way he could, Lynde wrote to John C. Mitchell, United States Senator from Wisconsin, requesting the Senator's assistance. The appeal to Mitchell was unproductive. So was the letter to the Surgeon General. But, there were compensations.

His letter writing had not been restricted to the military. He had sent out letters to doctors, and to lawyers – letters such as this one to the legal profession:

The Milwaukee X-Ray Laboratory is now prepared to furnish to the law profession SCIAGRAPHS, or x-ray pictures, of all portions of the human body, for

use in personal injury, malpractice, assault and other cases.

This recent discovery enables the plaintiff on the one hand, to secure incontrovertible evidence of the full nature and extent of his injuries by means of actual pictures of dislocation, broken bones, ill-set joints, foreign bodies, etc., and on the other hand, affords the defendant an equally strong method of confining the damage to the precise injury which the photograph shows, rejecting all false claims of pain, suffering and incalculable disability.

Already these pictures have been admitted as evidence in the courts of this and other states and they have been found the most powerful and convincing evidence for both court and jury.

W. J. Turner, Esq., of Milwaukee says: 'I used those x-ray pictures in a recent assault case together with Mr. Bradley's testimony as an expert and found them the strongest kid of evidence.'

If you are without these pictures, you are without your strongest evidence. Examinations made, photographs furnished, expert testimony given. Consultation invited.

Lynde Bradley, electrician.

Among those who came to investigate the newly discovered technique of x-ray photography was Dr. Stanton Allen, an orthopedic surgeon. And so began a stout friendship.

Contributing to the immediate liking of the two men for each other was one of Lynde's experiences with Roentgen's invention. Curious about how his own ribs and backbone would show up under x-rays, Lynde took a picture. What he saw scared the daylights out of him.

In the center of the negative, and resting cozily against his spine, was silhouetted a hunk of metal. With his pulse zooming in a series of back flips, he tried to remember where he had been, how and when and what he had been eating, or perhaps he had been shot, or none of these things. What? What!!! After several stimulating minutes, he reached behind his back and explored, with anxious fingers, his spine.

Gingerly, he touched one vertebra after another until his fingers came to shocked rest on a hard, smooth object. For a fraction of a moment he was terrified, then his heart stopped pounding. A grin of relief spread over his face as his fingers caressed the surface dimensions of a metal buckle attached to his suspenders.

The x-ray negative and the suspender buckle were on exhibition the next time the physician came to the laboratory, and Lynde's experience became the common property of both men – and a reminder not to jump to conclusions.

Of medium height, strongly built, and with a short, heavy beard, Dr. Allen was 40 years old. The difference in ages between Lynde and the doctor was of no importance. Each was interested in the same thing. As an orthopedic surgeon, Allen's interest in the x-ray was to be able to help those who came to him for help; Lynde's interest in the x-ray was to give the right answers to the physician's minute and searching questions.

Each man got to know the other. After operating it for nearly two years, Lynde closed his laboratory and went to work for the Milwaukee Electric Company, which made motors and dynamos, as well as a line of crane motors. Lynde was employed as a troubleshooter and erector.

One of the first items that attracted his attention was a crane controller. He soon learned that the controller was not altogether satisfactory and, rather than continue to defend it to customers, he worked out a design of his own. He took it to the chief engineer, his immediate boss, and encountered not only resistance, but also angry disapproval. Convinced the idea was not as bad as the chief engineer said it was, he asked for a few days off.

"How many?" asked the engineer.

"Ten, maybe."

The request was granted. For the next three or four days Lynde was up early and worked late in a shed out at the end of our backyard. This was where his workshop now was. He had added to his equipment. It now consisted of an old and well-work blacksmith's drill, an accumulation of machinist's tools, a foot-power metalworking lathe and, of course, the small, woodworking lathe he had as a boy.

Instead of the battery motor of six volts, he had a 500-volt power unit feeding in from the streetcar line on Farwell Street, a block distant. Not only did it give the transportation company a few extra pennies each moth, but it supplied Lynde with all the power he needed for his experiments.

He was just beginning to get his design into shape when he received a telephone call from the company, instructing him to report for work the next morning and to be prepared to go to Chester, Pennsylvania. He was kept busy for almost a year traveling from one city to another. But busy as he was, he did not forget the assignment that was waiting for him in his own workshop.

In his travels he had to deal with engineers and the occasions were few when the discussions did not include controllers or, if the word is preferred, rheostats. It became apparent that if he was going to make a better device, he had to create it.

He wrote about it, this way:

> *I arrived at the conclusion that so many more experienced men than I had been working on the proposition, and that there was little hope that I could improve the standard method of rheostat construction, and if I personally was going to get anywhere in the controller field, I must work along a path that had not been so thoroughly explored.*

In setting out along that path his memory took him to the carbon-pile rheostat he made when he was 14 years old.

He was in Sheboygan, Wisconsin in August of 1901 when he received a message from the company instructing him to turn over all unfinished work to other men, and "return to Milwaukee as soon as possible." He caught an afternoon train out of Sheboygan, was in Milwaukee that evening, and reported to the plant the following morning. To his dismay he found the organization seething with dissension.

Practically all the officers had been fired, or had resigned; nearly all the shop force had quit, or had been discharged. Having no wish to become involved in a bitter fractional struggle, Lynde turned in his resignation, to be effective the following day, which was August 15; and also made out his expense account "for the week in Sheboygan: $8."

On his first idle day he went to see Dr. Allen. He told the orthopedic surgeon of his resignation, received a nod of approval, and heard a question: "What are you going to do now?"

He answered by saying he wanted to work on the idea he had for a crane controller to be built on the carbon-pile principle. The two men discussed the idea for quite a long time until, finally, Dr. Allen inquired:

"Are you satisfied that the idea you have is workable?"

"Yes."

"Well, why don't you get to doing it? You're out of a job, and you need a job, so I'll make you a proposition. I'll put up a thousand dollars. You go ahead and build a model of the controller you have in mind, and we'll go halves on what you make."

Personally, I do not think that Lynde was surprised by the offer to help – but the sum of money that was offered was unexpected. My brother was deeply affected. Of course, the two men were friends, but a thousand dollars was a lot of money. A very much larger sum that than it is now. Besides, the doctor knew absolutely nothing about electrical engineering. It was clear to Lynde that Dr. Allen was risking his money solely on his confidence that the younger man could do what he was setting out to do.

Lynde accepted the offer and three days later he had a preliminary model to show the doctor.

"It was a simple device," said Lynde in later years. "It consisted of a single tube of gas pipe, 24 inches long, insulated with asbestos on the inside. It was supported vertically between two uprights and the pressure was exerted through the medium of a screw operated by a crank. There were 76 discs in this rheostat, sawed from a 3/4-inch electric light carbon."

In a diary he kept careful record of money spent, and hours of work:

August 15: Asbestos paper, 62¢; 1" gas pipe, 14" long, 35¢; carbon rods, 48¢; _" die stock and _" tap, $3.80; 5/8" drill, 56¢; carfare, 20¢. Total $6.01. Time: 10 hours. Borrowed voltmeter from the Milwaukee Electric Company and made test of the resistance of the 76 carbon buttons _" in diameter, and found that the best results seemed to be produced by giving them such pressure as to produce a drop of 7 volts with a current of 7 amperes. Returned voltmeter at 11 p.m.

August 16: worked all day on the construction of the controller. Time 10 hours.

August 17: hardware, 35¢; files, 53¢; drill 35¢; _" flap and die, $1.06; strap iron, 30¢; 2 _" stove belts, 20¢; maple block, 20¢. Total: $2.99. Time 10 hours. Controller nearly finished.

August 18: Got controller sufficiently completed to test it. Controlled the brilliancy of 4.5 volt c.p. [candle power] incandescent lamp and also one 50-volt motor in good shape. In the afternoon Dr. Allen brought Mills Combel to witness the operation of the controller, and Guy Clarkson came into the shop, and I called upon him to witness it too. Time 10 hours.

Satisfied he was in new surroundings, Lynde went to the public library. He spent hours looking over patent records. The only reference he found to the use of carbon discs for variable resistance was in Brush's Regulator. The device was described in the book *Electricity for Engineers*, which had been loaned to him by his schoolmate, nicknamed Banyan.

To be sure he was not infringing on Brush's findings, he re-read the description. To be double sure, he searched the records for a covering patent. He found none.

Of creative mind, Lynde so respected the work of others that he studied it not to imitate, but to learn, and so valued ideas that he was willing to prepare for their appearance. He knew from his studies that once the idea came, the real work was ahead.

On August 22, he received a telephone call from the Electric Company asking him to reconsider his resignation, and go to Bloomington, Ill., on a trouble-shooting job. He refused to reconsider his resignation but, after much discussion, did agree to go to Bloomington. He was there for a week.

While he was in Bloomington, the company again tried to persuade him to recall his resignation. This time (August 24) he mailed a letter in which he emphasized his determination not to recall it; and he was so sure he would hear no more about it that he wrote to Dr. Allen saying, in effect, "this time my resignation will stick."

On Tuesday, September 2, he went to the offices of the company to turn in the tools he had taken to Bloomington. He was met by company executives, and spent part of the morning talking with them about his resignation. This time he did make it stick. He told them about the progress he was making with his rheostat and, in contrast with a previous occasion, this time he found friendly ears.

On September 3, he started work again. As usual, he set down the events in meticulous fashion. They are interesting summaries because they tell of the daily one-man chores that always go into the beginnings of a business – and, they are important because they reveal so much about the man himself. Here are more entries from his diary:

September 3: Gas pipe, 45¢; hardware, $1.10; asbestos, 75¢; screen door, 40¢; rapid delivery, 15¢. Total $2.85. Spent morning downtown settling up affairs with Milwaukee Electric Company, and getting material for controller to test carbon dust. Time 5 hours.

September 4: Iron pipe, 40¢; washers, 7¢. Total: 47¢. Worked all day on controller, and found that _" diameter carbon tube too small for carbon dust. Time: 10 hours.

September 5: Pestle and mortar, $2.00; iron pipe, 70¢; carbon rods, $1. Total $3.70. Spent morning downtown. Worked on controller in the afternoon. Time 5 hours.

September 6: Assembled controller with granulated carbon. Interior of one tube holding carbon 2 inches. It worked apparently very well, but its capacity was very unsuitable. Tried a tube with carbon diameter of one inch. It also gave results, but carbon clung to the asbestos tube. Time 10 hours.

September 7: Glass $1.00; plaster of paris, 30¢; glycerin, 30¢; carfare, 10¢. Total: $1.70. Spent day cementing glass tube in iron tube for the purpose of making test of carbon granules. Time 10 hours.

September 8: Made tests of granulated carbon in iron tubes insulated with glass. But the results were bad as the carbon granules packed. Time 10 hours.

September 10: Called on the Milwaukee Electric Company, and they loaned me a 600-volt voltmeter and a 500 Amp ammeter to make tests on controllers. The results of the tests are duly recorded. I returned the instruments at about midnight of the same day. Time 10 hours.

September 11: Took controller apart to see if any change had taken place in regard to carbon buttons and asbestos, but found everything in perfect condition. Time 10 hours.

September 12 - October 7: Spent day designing controller. Time 10 hours, each day, and working on Sundays included, never less than 10 hours daily.

The preliminary work was over. Convinced he was ready for an official demonstration, he telephoned the Milwaukee Electric Company and arranged for a test of the controller. It was tested in the presence of three of the executives of the company, and Dr. Allen. The controller worked satisfactorily. With the test completed, Lynde communicated with Benedict & Morsell, patent attorneys, and instructed them to draw up the necessary papers in applying for a patent. On the following day (October 9) a draftsman from the office of the attorneys looked over the controller, and took away Lynde's drawings.

On November 15, Lynde supplied Dr. Allen with an itemized statement of the costs incurred in August, September and October. Here is how the statement was set up:

Wages a/c/ . . . Aug. 4 days
Sept. 30
Oct. 29
63 days at $2.30 . . . $144.90

Expenditures for material, electricity, carfare, etc. 55.00
$199.90

Balance due from previous a/c. $24.15
Cash paid at various times $55.00

$79.15
Due Lynde $120.75

(The above does not include any wages a/c for November.)

Within the week, officials of the Milwaukee Electric Company made an offer to buy a stock interest in the controller. On October 29, they had hinted that such a bid would be made. Lynde talked over the proposition with Dr. Allen, and the two men agreed "to allow the mater to hang fire until the patent was issued."

On December 11, the patent attorneys notified Lynde that "12 of the 15 claims had been allowed on the controller patent." Hearing about it, officials of the Milwaukee Electric Company first tried to buy out Dr. Allen, and then made an offer to sell the controllers on a profit-sharing basis. Each offer was declined.

There are two entries in Lynde's diary which tell the whole story of how the minds of the doctor and himself were working:

1902: January 17: Spent day looking for shop. Called on the Cellus Electric Co., at the Milwaukee Commutator Bar Co., at Wendland & Co., and at the Reliance Electric Co. Mr. Wendland said he would let us have the use of his shop for $17.50 per week, which included the use of one man.

January 18: More calls for use of shop. Mr. Cellus said $5 per month for use of his shop: called on several others – drew up and signed agreement with Milwaukee Commutator Bar Company to use space in their shop. Not much. $3 a week.

And so, Allen-Bradley moved out of the backyard shed in the rear of the Bradley home at 191 Prospect Avenue.

2. We Want to Know More about Mr. Jones

The Milwaukee Commutator Bar Company occupied a dingy, two-story, frame building on Florida Street, between Reed and Clinton Streets (Now South First and South Second Streets).

The rented space was small, the building was much in need of repairs, and the surroundings were poor, but Lynde was not interested in appearances. His concern was with facilities.

Up to now, in a business way, the partnership with Dr. Allen had made no progress. To all outward appearances, the rheostat worked well, but the idea of utilizing the carbon-pile principle was new; and, as often happens, what was new was viewed with suspicion. Lynde was confident the rheostat would prove itself to be useful, commercially, but he knew his invention had to be demonstrated under demanding conditions if it was to find financial backing.

Included in the rent of $3 a week was the use of a lathe, a drill press, and whatever power was needed to operate a hack saw – and, of first importance, the opportunity to keep the rheostat in almost constant use. In its operations the Milwaukee Commutator Bar Company made use of a small rolling mill in turning out commutator bars. (A commutator is a device for reversing the direction of an electric current). The demands of the rolling mill permitted the rheostat to be demonstrated in operation, a thousand times a day, six days a week.

From January through June, through July and into August, the rheostat kept its thousand, and more, daily appointments with the needs of the rolling mill. Among those who came to investigate, was Henry Cutler, of the Cutler-Hammer Company. Impressed, he sent two of his people to check his observations. They did, reported back to their employer, and were instructed to make independent tests.

In March, Lynde had connected one of his starters to a 110 volt 40 h.p. motor in the shop of the Chain Belt Company, and it was here that the Cutler-Hammer representative made their tests. They were exhaustive tests, and they were satisfactory. However, the Cutler-Hammer representatives told Lynde that his invention was too expensive to be a commercial proposition.

Disappointed, but far from being discouraged, Lynde went to the Morris & Obenberger Company machinists, located on Ferry Street, and asked for a price on making two controllers. After some figuring, and dickering, the firm agreed to make them for $140, or $70 each. Lynde described them this way:

> *These controllers, somewhat like the first, were almost entirely of angle and band iron, with the exception of the cams. I rated them at 40 h.p. each. They were of peculiar design*, I

admit. The pressure was exerted through the agency of a cam, which operated a pair of toggles. There were no pressure equalizers as were know them now.

The tubes rested on a series of rockers. There were two rows of six tubes each and the rockers were so arranged that if you pressed on any one tube that pressure would be transmitted to all of the others. The switching mechanism consisted of a pair of brass drums arranged on each side of the operating lever, and placed at the upper part of the controller casing. The blow out magnet was placed on the inside of the drum. In fact, the blowouts formed a series of magnetized spokes.

One of the controllers was delivered to the Allis-Chalmers Company, the other to the Falk Foundry, each company having expressed its interest. Meanwhile, and as a sort of dividend, Morris & Obenberger had agreed to allow Lynde the use of a small corner of the cellar as a testing and demonstrating showroom.

The ensuing year was a period of increasing tension. More and more as the months passed, it became clear that Morris and Obenberger were losing interest in the controller, and in its inventor. Lynde was without funds. His clothes were shiny from wear; whatever money he had for personal use he got from Dr. Allen, never asking for more than a few dollars a time. Whenever money was required for labor, for materials, or for rent, Dr. Allen provided it.

Increasingly, Lynde was contending with delay in the building of two controllers and two motor starters, drawings of which and specifications for which he had put on paper in evenings at home. Instead of angle and band iron, the controllers were built of cast iron and were lined with layers of asbestos. The starters were castings. As for the carbon discs, Lynde ordered some from a St. Louis firm. They were not good enough. Once more he made his own. Sawing and shaping the discs by hand was a hard, tedious and dirty job.

A full year was used in producing the two controllers and the two motor starters and, as the year ended, Lynde ended business relations with Morris & Obenberger. But not without a lawsuit. The company went into court to compel payment for services it never rendered, and for equipment it never delivered. It did not collect. The absurdity of the lawsuit appealed so much to Lynde's sense of humor that he was almost compensated for the many disappointments, and the lost time.

From Morris and Obenberger, Lynde went to the machine shop of Pfeiffer & Smith at 493 Barclay Street. At once he found interest and friendliness. Charles Pfeiffer and George H. Smith were machinists whose interest in Lynde's rheostat and starter was genuine, and whose friendliness for a struggling inventor was equally genuine. The arrangement Lynde made with them was similar to the one recently terminated.

He was provided with space to test and demonstrate the machines, and also was provided with sufficient electric power to operate a carbon-cutting lathe.

Access to this machine reduced the time, the work, and the dirt involved in saving the discs and greatly shortened the time involved in turning out completed controllers. It was not long before Lynde came to look upon the two men as something special and felt he owned them a particular debt of gratitude. I came to know them, and my brother was not mistaken in his estimate of them.

In them was the true spirit that freely shares its findings with others; they were men who honored their word, kept their principles, and for these qualities they expected no credit, nor deserved any. Born right, they were men who could not do otherwise than live right.

Within three or four months after moving in with Pfeiffer & Smith, Lynde was able to turn out four motor starters. He sold two to the Allis-Chalmers Company, and kept the remaining two for demonstrating purposes. Satisfied that the controllers and starters – especially the controllers - were commercial properties, and encouraged in this view by the partners, Lynde spoke to Dr. Allen about "going to Chicago to see what I can do in the way of promoting the controller."

In Chicago the next day, Lynde called on Kempster B. Miller, a distant relative. A graduate of Cornell University and an electrical engineer, Miller was a partner in the engineering firm of McMeen & Miller, having gone into this partnership after having been in charge of telephone patent applications in the United States Patent Office, in Washington, in the years of 1894-96. Lynde and Miller were together for several hours, with Miller asking questions, and with Lynde answering them while penciling sketches on his controller and his motor starter.

Near the close of the afternoon, Miller suggested to Lynde that he remain in Chicago overnight, and to this suggestion, added, in substance:

> *I've been thinking about you wanting to keep control of the machines while somebody else puts up the money to make and sell them. There is a fellow here in town who might do it. His name is Jones. Frank G. Jones. He is head of the American Electric Fuse Company, has offices on Jackson Boulevard, and has a factory in Adrian, Michigan. I don't know much about him, but he seems to be smart and, certainly, he has a lot of energy.*
>
> *What I think you should do is to telephone Dr. Allen, and have him come to Chicago tomorrow morning. Have him meet you here, and I'll arrange an interview with Jones. Personally, I'd like to get another look at Jones, so I'll go along with you, and the doctor.*

Accompanied by the patent expert, Lynde and Dr. Allen saw Jones on the following afternoon. At the conclusion of the interview, they felt greatly encouraged. Plainly impressed by the presence of Kempster B. Miller, and the engineer's interest in Lynde's controller - especially the new controller, details of which had already been filed in the patent office - Jones said he would visit Milwaukee the following Wednesday (November 18) to test the machines, and see them in operation.

Jones was not able to keep the appointment, but was in Milwaukee on the ensuing Wednesday. In his diary Lynde wrote of the meeting:

Mr. Jones of the American Electric Fuse Company arrived in Milwaukee today (November 24) on the 1:45 p.m. train from Chicago in order to inspect the controller. The Dr. and I met him at the depot. The Doctor talked with him for a few minutes, and then left. I took him to Pfeiffer & Smith's shop to see the controllers. After the demonstration, we returned to the Plankinton House where we again met the Doctor, and we three walked to the train, which left for Chicago about 4.p.m. Mr. Jones said that we were to consider the matter clinched.

With Jones's departure, Lynde called Miller on the telephone, recounted the events of the day, repeated Jones' assurance of a forthcoming contract, and inquired: "If I come to Chicago tomorrow morning, can I see you in the afternoon? The doctor wants to know more about Mr. Jones. So do I."

In Chicago, the next day, Lynde and Miller spent most of the afternoon talking about Jones, about the American Electric Fuse Company, and exploring the possible benefits to it, and to Dr. Allen and himself, as partners. Lynde left Miller's office, and returned to Milwaukee. He was happy over the prospects, and was anxious to get under way.

When he was in Milwaukee, Jones expressed great interest in the new controller, and identified the contract he had in mind as one that would take over the manufacturing of the controllers on a royalty basis. Acting on this assumption, Dr. Allen took on the task of writing what he thought would be a fair agreement. He went to his friends and acquaintenances and borrowed all the royalty contracts he could find; and, after studying them, set out to prepare what he believed, and as Lynde reported, "would be broad enough to cover all the contingencies which might arise, and assure a square deal to both parties."

While the doctor was preparing the document, Lynde had a telephone conversation with Jones in which he was asked to come to Chicago with Dr. Allen for a discussion of the contract. They met in Jones' office on December 9. The doctor told Jones what he was preparing. Jones seemed pleased, and after a lot of searching, the three men found terms of agreement. In his diary Lynde noted:

Mr. Jones agreed to have the contracts typewritten as per our talk, and send them to us. Mr. Jones also agreed to pay me $100 per month for the first six months dating from the first of December. I was to begin work at once, and he was to notify me when he and I were to go to Adrian, Michigan, to look over the factory.

Upon their return to Milwaukee, Dr. Allen completed drafting the contract and gave it to his lawyer for polishing. The document came back filled with legal phrases, and empty of all penalties for violation of its terms. Not being familiar with a lawyer's way of writing a contract, and assuming the legal phrases covered the penalties he had so carefully written, the doctor sent the document to Jones.

Jones, who was a lawyer, must have noted the absence of any penalties for violating the terms of the contract, although he made no mention of it at the time. But he did suggest two changes. He said he did not like to do business with a partnership. In accordance with his wishes, Lynde and Dr. Allen formed the Compression Rheostat Company, and incorporated it under the laws of the State of Wisconsin. The other suggestion pertained to the identification of each company.

In the original contract, Lynde and the doctor were identified as "parties of the first part." Not so when the document was ready for signature on January 6, 1904, in Jones' office. The American Electric Fuse Company was identified as "party of the first part," and the Compression Rheostat Company as "party of the second part." In this sense it is an unusual legal paper.

More, almost than any other one thing Lynde and Dr. Allen wanted the devices advertised as "Allen-Bradley" products. Not having complete confidence in Jones, they could foresee a day when they would not be in business with him. Against such a day they wanted their products to have the benefit of whatever advertising was done by the fuse company, and by whatever goodwill was developed by the products themselves.

The selling price for the devices, and for the parts, was fixed by the fuse company; in turn, it agreed to pay the Rheostat Company ten percent of the gross amount of sales of both items, the finished products and the separate parts. These royalties were to be paid "on, or before, the 15th of each calendar month." The minimum amount to be paid in royalties each year was $1,000 and, unless such an amount was paid, the Rheostat Company could terminate the contract on 30 days' notice.

The rheostat company also could terminate the contract upon written notice if the fuse company "failed to skillfully and properly to manufacture and to put upon the market as many controlling devices hereinbefore provided for as are demanded or called for by the trade, and within a reasonable time." The fuse company kept the books but Lynde and the doctor were free to examine them; the rheostat company was required to protect the fuse company in all patent disputes.

Lynde and Dr. Allen were aware that the contract was lop-sided (years passed before they learned *how* lop-sided) but needing a manufacturing and marketing organization, they were willing to go along, in the hope that better days would come. They continued to build their controllers in Milwaukee, and having signed with the fuse company, they felt justified in spreading out a little. They rented space on the third floor of the Pfeiffer & Smith shop, and used it for preparing the carbon, assembling the resistance units, and testing the completed controllers.

It was at this time – February 27, 1904 – that Lynde telephoned Jones to say, "I need a man who is an electrician, a draftsman, and a mechanic, and while such a man is pretty difficult to find, I think I have one who will fill the bill in good shape."

"Who is it?" promptly asked Jones.

"My brother, Harry," answered Lynde. "I need him and I want to employ him. I'd like to pay him sixty dollars a month."

I was nineteen years old. By implying I was an electrician, a draftsman, and a mechanic, Lynde did not give me any of the worst of it. However, I believe I can say that I had something more than a smattering of understanding of the ways of electricity. Earlier Lynde had completed a course in electrical engineering provided by the International Correspondence School of Scranton, Pa. It was a very good course; and, having the books available, I studied them under Lynde's tutelage. I did have a mechanical turn of mind, and I was able to draw things on paper.

I went to work the next day, which was Sunday, February 28, 1904, and my first job was at the drawing board. Waiting were a lot of other things, and soon I was into them. Lynde gave me the job of supervising the progress of our work in the Pfeiffer & Smith machine shop, of preparing the carbon for the controllers, of insulating the tubes, of assembling and testing the controllers.

This really sounds like a lot of work. It wasn't.

We were small. We were short of carbon, tubes, and insulating material for the tubes. In Chicago, our appeals for raw materials were given slow acknowledgement. I was kept busy, of course, but not so busy that I did not have time to keep the books and do the office typewriting. The typewriter was on Oliver. The rental charge was $3 a month.

About ten days before I was hired, Lynde completed work on the first controller built under the terms of the contract with the American Electric Fuse Company. The date was February 17, 1904, and the device was installed in the center crane in the Smith Steel Casting Company's foundry in Milwaukee. The first controller I worked on, and the second controller built under the contract, was shipped on April 22, 1904, to the Louisiana Purchase Exposition in St. Louis.

In response to a message from Jones, Lynde had gone to Chicago on March 8, where Jones asked him to make such a controller, dress it up by having it enameled and nickel-plated, and to go to St. Louis himself. This Lynde did. In his diary, he noted:

Matters to tend to:
See how much you have in the bank.

Take check to St. Louis so as to pay life insurance when due.
Money that I took with me when I started for St. Louis was $17.95 in my pocket, and $41 in belt, making a total of $58.95.

The visit to the Exposition was one Lynde remembered:

The (controller) parts that ordinarily were painted black were enameled, and the parts not ordinarily painted were nickel-plated. The resistance tubes were made of extra heavy pipe, machined to size, highly polished and blued like a gun barrel. Most of the plant engineers that visited our exhibition smiled when they asked us if we finished all our machines that way . . . (but) were able to give a pretty fair demonstration of the advantages of the carbon-pile resistance.

While Lynde was in St. Louis, the entire plant of the Smith Steel Casting Company was destroyed by fire. We didn't lose much because we did not have much to lose, but I had to write Lynde telling him of the loss of some patterns. That was about all. When Lynde returned a few days later the steel company was back in business. It was in temporary quarters in a beer pump factory on 32nd and Vliet Streets.

Almost the first person Lynde saw was George H. Smith. Pleased with the controller he had used, Smith gave Lynde an order for thirteen, which were to be installed in the cranes that were being rebuilt for the foundry. Smith agreed to pay $1,000 for the controllers. It was the first order for Allen-Bradley products received by the American Electric Fuse Company. The date was May 12, 1904.

Having an order in hand, Lynde decided to manufacture two extra controllers, one to be sent to the Western Electric Company, in Chicago, and one for use by the fuse company as a sales exhibit. In the case of the Western Electric Company, Lynde was hopeful it would find the controller useful enough to merit adoption in the various power devices it was making.

With a typewriter to operate, books to keep, records to preserve, drawings to make and with Lynde having bought a desk and a chair – paying $22 for the desk, and $4 for the chair – it was evident that we needed an office to ourselves, instead of sharing space with Pfeiffer & Smith. Lynde found a place. He rented a room on the second floor of a building fronting Clinton Street, at the corner of Madison Street (now South First and East Madison streets).

The old building was of frame construction, was once a dwelling, and its ground floor was occupied by "A. Lewis, Highway 15 Grocery." At the street level, on each side of the building, was a door. One door led upstairs where, aside from the room rented for an office, were other rooms that were occupied as housekeeping facilities. The other door led into the grocery store.

Prominently displayed and prominently advertised by the Highway 15 Grocery were Gorton's Codfish, Hire's Root Beer and Coca-Cola. Our landlord's name was Ohmig. I have forgotten how much we paid in rent, but you can be sure

it was not much: two or three dollars a month. We did have two windows, and they looked out on Clinton Street.

We were there about six months and, as Lynde often said, “I was never in a place that smelled so villainously.” Between the smell – not the fragrance, the smell – of the cooking, the accumulated mustiness of an old building, and the redolence of decaying of food and generations of rats, it was hard going. Finally, George H. Smith invited us to move into a large, comfortable room adjoining the offices of the rebuilt Steel Casting Company.

The controller we hoped the Western Electric Company would find useful brought an invitation to visit the company’s Chicago plant. Accompanied by Frank G. Jones, Lynde did so on July 19, 1904. The engineers who had tested the controllers were impressed. They had questions. There followed more tests, more visits by Lynde, and more questions. Soon after the first of the New Year, Western Electric bought sixteen controllers for use in its Hawthorne plant.

A week or so later, Lynde and Jones were invited to a conference with Western Electric officials. The meeting was held in Chicago on February 3, 1905. To the surprise of both men, the discussion did not involve the use of controllers in the company’s power devices. Instead, the company was interested in manufacturing Lynde’s controller. Company officials, four of them, spent a good part of the day inquiring about patents and sounding out Lynde, as well as Jones, as to what sort of a proposition would be acceptable.

The meeting ended with Jones agreeing to furnish a set of blueprints and a list of all parts, including the weights and costs of all materials supplied by the American Electric Fuse Company to Pfeiffer & Smith. For their part, Western Electric officials agreed to submit a proposition after they had been given an opportunity to study costs. To Lynde was given the job of assembling the weights of the materials and setting down, in proper order, the detailed costs. The negotiations were proceeding satisfactorily when troubles of a most serious nature came upon us.

First, the controllers were displaying a lack of staying qualities. Second, the American Electric Fuse Company was not paying its bills.

Taking to the road, Lynde visited fifteen cities between Chicago and New York, and came back satisfied that the fault was in the carbon. He was also very, very disturbed over the instability of Jones’ credit. The fuse company was not at all prompt in paying its bills, salary checks for Lynde and myself were always a month or so late, which made living difficult for us. As far as Lynde and I were concerned, the dark moment came on July 28, 1905, when Smith and Pfeiffer shut off Jones’s credit and refused to fill any more orders unless the American Electric Fuse Company paid what it owed.

In recalling those days, Lynde wrote:

The situation became pretty blue and depressing and it appeared that we had succeeded in tying a worthless scheme to an irresponsible firm and involved our friends and ourselves in the tangle. It would seem that we should have discovered long before the middle of 1904 that our machines were not commercially practical, but it must be appreciated that we knew little about the control business and less about the characteristics of our own devices and further, in most every case, the model controllers from which we got our data were not in service longer than 3 to 6 months and were in comparatively light service at that.

Had they been in heavier service and over longer periods they would undoubtedly have broken down as did the machines which we put into the hands of the public under strictly commercial conditions, and I am quite confident had the tests of the Western Electric Company extended over a longer period, they would not have made the favorable report they did, and probably the Allen-Bradley Company would not have come into being.

But as it was, we got into the proposition pretty deep before we found that we were in trouble, so we had to stick to save our honor and the time and the money we had put into the business - so, Harry and I went to work with this end in view. We tested every sort of carbon we could get, and appeared to have the suitable form and characteristics for our purpose. We had samples made up by all the companies available.

I visited the American Carbon & Battery Company in St. Louis, and called on the National and the U.S. Carbon Companies in Cleveland. I also went to St. Mary's, Pa. to have a talk with Mr. Speer, of the Speer Carbon Company. We procured carbon rods from Europe, which we sawed into discs, but none of the carbons had sufficient endurance to make the controllers a success, although of course, some grades of carbon were better than others for our purposes.

We built a machine for automatically testing the specific resistance of the discs and were able to get through this means, from each batch of discs sent us from the various carbon companies, discs having a resistance 100% higher than the average. We also would find many discs whose resistance was considerably lower than the average. Detecting all these high resistance discs was some gain, as an occasional disc in a column would undoubtedly tend to go to pieces in a controller sooner than the remaining discs of normal resistance.

The obtaining of columns of uniform discs was the first step toward a better machine.

I'd like to take a moment to add something to this narrative. It should be no secret to observing persons that human experiences and particularly hardships suffered, contribute to making persons more resourceful. The individual who has been through a struggle in life is much more apt to have an understanding of what to do in relation to what may lie ahead. To the contrary, the person who has not experienced "rough going" sometimes seems to make extraordinary progress and attain great success, only to flounder and fail the first time he is really tested. I view with considerable misgiving the procedure of giving succeeding generations "all the benefits father did not have." Such procedure appears unmindful of the point that father may have become a substantial citizen primarily because he *did lack*, and had to *himself supply*, some of the things he "missed."

Getting more specific, there has never been any doubt in my mind that the troubles we went through in the early days made us more and more conscious that

quality had to be built into our devices. This emphasis on quality became so fixed in our characters, and the characters of our associates over our history, that the trademark of Allen-Bradley Company places full emphasis upon the word "quality," viz:

A-B
Quality

Even more important is the fact that our customers buy our products because they have demonstrated quality by their use.

It is my sincere hope that as the Allen-Bradley Company moves ahead, future management will never bypass quality. They must understand that even as an absence of quality almost killed the company at birth, so has the later emphasis on quality brought it to maturity and large size.

It is true that prices of products must be competitive, but too often, businessmen take the short cut and try to make their prices competitive by a sacrifice of the quality of their product. The lower price may get an order, but any product lacking in quality will seldom secure a customer, and the repeat orders that make a business succeed.

Our early history emphasized too, the need for exercising full responsibility, and not relying upon others to be responsible for us. The first troubles with the controller were the result of simply purchasing a type of carbon, and placing the carbon in the controller. Bitter experience taught us that the carbon initially used – amorphous carbon – was not suited for the controller. These early experiences taught us that very extensive tests are required to determine whether materials will stand the service they get in actual use.

We have learned well that where a part requires exacting properties it is best to make it in our own shop instead of buying it outside, even though this might involve a higher cost.

The Allen-Bradley Company purchases many non-critical parts from outside suppliers at a cost less than we could make them ourselves.

The critical parts we *do* make often require special production machines, which we design and make on our own premises because this involves many facts that we want to keep to ourselves.

3. We Quit Our Jobs

I often think of those days, comparing the tools with which we worked, to the equipment we have today. I suppose, fifty years from now, our successors in the management of Allen-Bradley will look back, and make similar comparisons between what they have, and what we have.

Fifty years ago, so far as manufacturing facilities are concerned, was the Davy Crockett era in the history of American industry. In those days not much equipment was needed to roam beyond the frontiers. A horse, a rifle, a knife, some shot and dry power. That was enough. Today, whether at the North Pole, or the South Pole, equatorial Africa or the Gobi desert, the modern Davy Crockett uses airplanes and Geiger counters.

What is true of today's geographical frontiers is no less true of the frontiers of science. To explore today's frontiers of science requires tools and facilities quite as complex as the subjects under investigation. Yet, with all the complexity of today's equipment, the fundamental of manufacturing is the same. A better product is the only thing that will keep a company in business, and permit it to grow.

The tester Lynde worked out to establish the resistance of the carbon discs was an interesting piece of equipment, and a better piece of equipment.

In a general way it can be described as consisting of a heavy glass plate about 30 inches by 12 inches, by one inch thick, through which was drilled a one-inch hole. The plate was made to reciprocate vertically between two iron tanks containing mercury. The sliding contacts between the glass and the tanks were provided with suitable packing so that the mercury did not escape.

The arrangement of the tanks was such that they would be electrically connected when the glass plate was lowered sufficiently so that the one-inch hole was beneath the surface of the mercury. The discs to be tested were automatically held one-at-a-time opposite this hole beneath the surface of the mercury, and the resistance was registered in the machine by means of a Wheatstone Bridge device. (An instrument to measure electrical resistance of a circuit, or a constituent part of a circuit, invented by Sir Charles Wheatstone, a British physicist).

The discs having a higher, or a lower, resistance would be put through the machine a second time, or a third time, or however many times were needed until all the discs would be tested, and graded. By doing it this way we knew what was in each shipment of discs, and how they could be used.

I know, of course that the descriptions of the machine and the process are pretty poor, but so were we, both in money and in experience. Nevertheless, the machine did give satisfactory service, and we abandoned it only after we ceased to use carbon that was indeterminate in quality as well as in shape.

Lynde built another machine, the function of which was to test the mechanical strength of the discs. It consisted of a plunger, which was resiliently driven, under which the discs were passed by means of an inclined chute. The adjustment was such that each disc rested for a moment on a three-point bearing beneath the plunger and, while there, was subjected to a resilient pressure. If the discs were properly made, the pressure did them no injury; if improperly made, the pressure broke them into pieces.

To me was given the job of working out a machine for grinding carbon discs. Frank Sweet, who was our first engineer and draftsman, made the drawings while Charles Pfeiffer offered to help build the machine. It was an offer that was accepted, without delay.

The device we put together consisted of two cup carborundum wheels facing each other. A chute was so placed as to lead the discs between the wheels, which were star-shaped for the purpose of pushing the discs through the chute. Although carbon is quite hard to grind, the machine gave pretty good service. It had a capacity of about a thousand discs an hour, and the trick to its operation was keeping the grinding wheels sharp. To do this, a wheel dressing contrivance was attached to the machine.

All this grinding, testing and selecting of the carbon discs was bound to improve the performance of the controllers. But they were not good enough. We began looking for a way to make an insulating coating on the inside of the steel tubes that would permit the heat to escape and, at the same time, would have better wearing qualities than the asbestos paper insulation.

We bought some extra heavy pipe and coated it with vitreous enamel similar to that used on kitchenware. It did not do well. Lynde then conceived the idea of cementing a sheet of asbestos paper against the enameled surface. The paper had to be formed into a tubular shape, and a silicate of soda spread over the outer surface as it was slipped into the tube. Pfeiffer and I made the tools needed for inserting the asbestos lining; Pfeiffer designed the rollers that worked their way into the tube after the pair was in place, and pressed it firmly against the enamel surface.

The experiment was not satisfactory. The drying was slow, and no matter how careful we were, some of the coats blistered. We looked around for a better way. In trying to find dependable enamel insulation, we used steel tubing, which Pfeiffer & Smith cut into 19-inch lengths, after which another company turned in

a shoulder on one end. Often there was distribution in the tubing that came back to us.

One day while Pfeiffer, Lynde and I were wrestling with the distortion problem, Pfeiffer recalled a machine that made bicycle tubes for the A.O. Smith Corporation in the 'nineties' and said he felt pretty sure the machine was still in existence, although not in use. At our request, the machine was put back into operation, and the Smith Company began supplying us with tubes.

We experimented for almost a year trying to find tubing that would be satisfactory, an enameling that would be satisfactory, and a carbon that would stand up. We made progress. But it was progress that was so slow, and our troubles with Frank Jones were so many, that in the late summer of 1906 the future of the little company seemed most discouraging.

On April 17, Lynde and I were in Muskegon at Jones's request. The President of the American Electric Fuse Company was in an ebullient mood.

In the Michigan city was a new factory which, with the power plant (and with some restrictions), was given to the fuse company by the Muskegon Chamber of Commerce. The factory, which was located on about four acres of land, consisted of two fairly large, three-story buildings, and a third building of four stories, all connected. The power plant was attached to the main building. There were drying sheds for lumber. The sheds were extended to include an electro-plating department, and other manufacturing processes which would have been unsuitable in the larger buildings.

In his deal with the Chamber of Commerce, Jones agreed to abandon the fuse company's plants in Chicago and in Adrian, Michigan, and to move the equipment, and organizations, to Muskegon. This he did, but left in Chicago his partner, a former banker named Charles L. Johnson. There was a reason for leaving Johnson in Chicago – as you will see, later. Jones took us through the factory to see what machinery could be adapted to our needs, and it was agreed that we would make every effort to join up with him in Muskegon by July 1, and sooner, if possible. As an inducement Jones said Lynde's salary would be $125 a month and mine would be $75 a month, beginning the moment we were in Muskegon with our equipment. To this promise, Jones added another:

"Lynde, I am so anxious to have you and Harry here that on the first of January 1907, your salary will be $150 a month, and Harry's will be $100 a month."

Smiling, Lynde responded: "Thanks, very much. We'll think about it."

A little later, when we were alone, Lynde grinned. “I hope you don’t think I was taken in by Jones on that salary proposal. He knew that I knew he didn’t mean it.”

From April until well into the summer of 1906, Jones kept postponing the time for the removal of our equipment to Muskegon. Also, he kept getting further behind in the payment of bills, including our salaries; until one day in August Lynde came to me:

“Harry,” he said, “if I were you, I’d look for another job. This deal with Jones isn’t working out well at all, and I think you’d be better off putting in your time where you can be sure of getting your pay.”

“No.”

“Yes.”

“No. Not unless *you* do.”

“If I were in your position, I would. But I’m not in your position. I’ve got to stick. The doctor and I have been over this thing a dozen times, as you know. He agrees that however much we distrust Frank Jones, we are tied to the fuse company by a contract. That contract is valid. Months ago the doctor and I were in full agreement that the best course to pursue is to make our branch of the fuse company as much a success as possible. I told you that, too.”

“Yes, I know,” I argued, “but you know, and the doctor knows, and I know that nothing would please Frank Jones more than to put something over on you, or on anybody else. How do you know that isn’t what is he doing now?”

“I don’t,” answered Lynde, “but what I think, or what I might suspect, doesn’t mean that I can cancel the contract with the fuse company.”

“I suppose not,” I agreed, and started to walk away. Lynde stopped me. “Don’t forget what I said,” he reminded. “You get yourself another job.”

On August 26, 1906, I went to work for the Battery Power Company, a firm which was developing a new storage battery. One of my jobs with the battery company was to ride up and down the streets of Milwaukee in a beaten up automobile, trying to break down the batteries I had built.

I was with the battery company about three months when Lynde sent for me. In September, Jones instructed Lynde to pack up his shop equipment, and move it to Muskegon, which was almost directly across the lake from Milwaukee. On September 16, and with the help of a carpenter and a gang of riggers, Lynde moved the entire equipment, and stock, of Allen-Bradley, into a large boxcar,

which had been pushed on a siding in the railroad yards across the street from Pfeiffer & Smith.

The car was fitted to the load. When everything was in place, the carpenter had to be hauled out on his stomach from between the freight and the roof, so the door could be closed and sealed. Lynde went to Muskegon that same night, going by boat, and arriving the next morning, which was Tuesday.

One of the first things Lynde did after arriving in Muskegon was to get a bicycle. He needed it to go to and from work. Nor was he in Muskegon long before his effort to improve the controller began to show results. Although better than any similar product on the market, it still was not good enough in Lynde's opinion. Jones thought differently, and told the sales organization to guarantee the controller for one year, stipulating, in the guarantee, if "for any reason whatsoever the purchaser was not satisfied after a year's trail, the device could be returned, and full credit would be given."

Lynde objected strongly, but was over-ruled. Jones admonished Lynde for being "faint-hearted," insisted this was "the best way to introduce the controllers," gave assurances that "most of our customers will give us a square deal," and promised "I will stand the loss on all those who do not." It was not long before Jones made changes in the policy. It was much too easy for competitors to see to it that the controllers were burned out, and returned. The fuse company's sales organization began using a more sensible approach.

Two of the first people I met in Muskegon were Carl Calkins and John Freitag. They were with the fuse company, and had been moved to Muskegon. Two others were Henry Jones and Percy Jones, brothers of Frank Jones. Calkins and Freitag were in production; Henry and Percy Jones were in sales. Percy was a decent fellow; Lynde and I had a good deal of trouble with Henry.

Tall, with thick, curly, red hair, a flowing mustache, and a competitive tongue, Henry was older than his brother Frank, and not nearly so smart. He traveled the east, a controller under one arm, and a soapbox under the other. By day he sought to persuade employers to buy controllers; by night, he sought to convert their employees into socialism.

Frank Jones told us that Henry was in the pay of the Socialist party; Henry told us that unless Frank Jones paid what he owed him, he, Henry Jones, would make a speech on the subject in front of the Muskegon bank where the company did business. So far as I know, the speech was never made, but Henry Jones was not neglectful of a Judas dollar.

He made a real attempt to steal patents belonging to Lynde and me, and tried to persuade the Cutler-Hammer Company into going into a manufacturing

proposition with him, but never quite succeeded. But he was around for a number of years, and made quite a bit of trouble for us.

In Muskegon my principal job, so to speak, was to superintend the activities of our own department. My second job was to improve the carbon discs. After eight months of intermittent work I finally produced the first graphite discs coated with amorphous carbon. Lynde recorded the date as being July 31, 1907. This was one of the developments Jones tried to steal, although not immediately.

Lynde put the treated discs into immediate use and, with the improvements he had been making, controller sales began moving up to the point where they were reaching a fair volume.

Before then, or on June 24, 1907, Lynde wrote to Dr. Allen who, for reasons of health, had moved to Hood River, Oregon. In his letter, Lynde spoke of rising trouble with Jones. Here are some paragraphs from his letter:

Harry and I are somewhat puzzled at the manner in which Jones handles the controller proposition. As soon as I left Muskegon for the East, Jones inveigled Harry into giving a part of his time to the development of the machine, which they have been trying to build for the last two years for the purpose of putting a varnish-like insulation on magnet wire.

They have built a number of machines, all of which have been an absolute and utter failure.

. . . Harry spent about a month dividing his time between carbon research and the wire machine with but little result in either case, Jones gradually bringing pressure to bear in favor of the wire machine until after a period of about six weeks, Harry's entire time was devoted to the wire machine and nothing to the controller in any shape or manner.

Upon my return, Harry and I had a talk with Mr. Jones in regard to the situation in general and he stated that he was up against it on the wire proposition, and if Harry would just stick to it long enough to allow him to get out a few samples of wire so that he could make up a few coils for demonstrating, that he would not ask Harry to do anything more.

He said he had somewhere between five and ten thousand dollars in this machine, and it would be virtually a personal favor to him if Harry would help him out. Harry thought he could get out some samples of wire in approximately ten days and I thought it best to let Harry go ahead and do it . . .

After the machine was in good shape, Harry discovered that the compound, which is a secret owned by a man named Brown, to whom Jones has been paying a salary starting at a hundred dollars a month and now a hundred and fifty for two years, was not any good; that is, it could not be put on small-sized wires successfully . . . Harry told Jones that he had done all he could and that he could go no further unless he knew the formula of the insulating material.

Jones had a contract drawn up at once, signed by himself and the above-mentioned Mr. Brown, which they asked Harry to sign. In this contract, it was stated that Harry was to be given this secret formula in order to perfect this insulating process, but that he was not to divulge it to anyone else or to use it for his own benefit, and it was also understood that

anything he might devise was to be the property of the American Insulating Company, which Brown, Jones and Mr. Johnson call themselves.

I showed the contract to Lynde and, after reading it, he suggested we have it read by a lawyer. I told Jones what I wanted to do, and he became very angry. He jumped all over me, and he jumped all over Lynde (who was present); but we went to see a lawyer. The attorney read over the document, and advised me not to sign it.

Lynde and I went back to see Jones. We made no reference to what the lawyer had advised, but told Jones that I would like to drop the wire proposition completely and confine myself to working with Lynde in the making of a better controller.

Lynde recalled this incident in his letter to Dr. Allen, and also recalled my answer to Jones when he asked:

"Why do you want to spend all your time on the controller?"

"Because," I said, "there is more in it for the Bradleys."

Lynde continued in his letter:

He (Jones) had a regular case of hysterics, and said if we would not do what he wanted us to do, and that if our spirit was as Harry expressed it, he did not want us in his employ another minute. I got up, told Jones that Harry had expressed our spirit and ideas perfectly and that there was nothing more to be said. Then we left his office and closed the door.

In about five minutes, he hunted us up. He had a green complexion, and he looked anything like Jones, and he wanted to know how soon our resignations would take effect. 'Well,' I said, 'what do you mean by that?' He replied, 'How soon can you finish your work?'

As I saw Jones was not responsible for what he was doing, and also appreciated that if he was on the square, he couldn't afford to have us quit any more than we could afford to leave, so I said, 'Let's talk this thing over.' 'No,' he said, 'there is nothing to talk over.'

Then I told him it would be best to quit at once.

This seemed to bring Jones to his senses . . . After about an hour's session it was decided that Harry was to spend two months on the carbon, and to leave the wire machine to itself . . . At the end of two months we hare to have another talk.

When Jones was in his hysterics he told us that fifteen months ago a proposition had been made to him . . . to keep this controller off the market for which he was to be duly compensated, and it would be only necessary for him to pay our thousand dollars a year royalty and make a pretense at manufacturing. Of course I don't know how true this is, but the situation is peculiar.

Jones is paying out at present about seven hundred dollars a month. There has been no one soliciting controller business since January and but little work was done in this direction previous to this time. He is doing absolutely no advertising. The data for the catalogue, which he urged me so strongly to get to him in a hurry and which I furnished him two months ago,

has been shelved. I have been writing an instruction book since my return, but Jones does not seem to be interested . . .

On January 1, 1909, Lynde received a check for $1,000 in payment for the minimum royalties due on that date. He was not satisfied and, after giving the matter some thought, he went to Jones and insisted that, beginning with February 1, 1909, he be given a monthly statement as to the number of devices sold, to whom, and the price charged for each device.

"Under our contract with the fuse company," he told Jones, "Dr. Allen and I are entitled to this information, and to monthly payment of royalties. We want both – beginning, as I said, on the first of February."

Jones agreed, and promised to supply both the information and the check.

On February 1, neither was forthcoming. Lynde made another demand. Jones made another promise. At two-week intervals until well into the summer, Lynde repeated his demands. As regularly, Jones repeated his promises. It was in this period that Lynde became very much disturbed over the deteriorating quality of the workmanship on the controllers. He made frequent protests to Jones. Instead of getting better, the workmanship got worse.

Losing patience, Lynde finally strode into Jones's office. Stiff words were passed between the two men, resulting in these words from Jones:

"Lynde Bradley, if you don't like the way this factory is being run, you can quit."

"That I will do now, and without further discussion," snapped Lynde. Turning to Jones' secretary, he dictated his resignation, and walked out.

That evening, the evening of July 17, Lynde left for Milwaukee where, on the following day, and after telegraphing Dr. Allen, he went to Pfeiffer & Smith hoping to make an arrangement under which they would manufacture the various devices. Lynde was fully convinced that the fuse company had voided the contract and, while he expected legal difficulties, he was confident he was right, legally and honestly.

I went to the boat with Lynde that night, not only to be with him, but also to tell him of my own plans. After Lynde had gathered together a few personal belongings, and left, Jones sent for me, told me he wanted me to stay, that I would be promoted, would get more money (I was getting $100 a month) and that the future was rosy indeed. I said I did not see how I could stay, but instead of displaying anger, he urged me to think it over. I made no promises.

After Lynde's boat had pulled away from the dock, I hired a dray and, with Carl Calkins, went to the plant, loaded all our belongings on the wagon, and

left. It was a surreptitious way to do it, but I wanted to avoid trouble. Besides, what was loaded on the dray belonged to us. As for Calkins, he, too, was mistrustful of Jones. So was John Freitag. Both followed us to Milwaukee within a short time.

I was back in Milwaukee by July 23, but on July 21, Lynde had mailed a notice of termination of our license agreement to Jones. Under date of July 23, Jones replied, threatening litigation. Lynde answered on July 29, demanding payment of all royalties accruing up to July 21, and followed this demand with another, under date of July 30. In the follow-up letter, he demanded formal statements of number of machines sold, to whom, and at what prices.

A couple of days later, a lawyer representing the American Electric Fuse Company was in Milwaukee to make a settlement. Lynde introduced the visitor to our lawyer. Our lawyer's name was Louis Quarles. As boys, Lynde, Louis and I had grown up together. As a young man, Louis went to Michigan and then studied law in his father's office, being admitted to the Wisconsin bar in February 1908.

The meeting ended without a settlement, and with the visitor shaking his head in sorrow over Lynde's stubbornness.

On August 9, Lynde received a check for $1,238.61 on account of royalties accruing up to July 21. He acknowledged the check by mailing a receipt, and stating payment was "subject to verification and without prejudice to the rights of either party." One week later, the same company lawyer who had tried to negotiate a settlement was again in Milwaukee with an additional check for July royalties. This check was for $307.17; and in presenting it, the lawyer served notice on Lynde to assign more of his patents to the fuse company.

Instead, Lynde informed the lawyer in writing, and on that same day, that we has holding the check and that he would "not waive any rights of Compression Rheostat Company (and would) insist upon the termination of its contract with the American Electric Fuse Company by notice dated July 21, 1909," and repeated his request of July 30 for satisfactory statements.

Meanwhile, Dr. Allen had responded to Lynde's telegram by coming to Milwaukee. Not only did he agree with Lynde's action in pulling out of the fuse company, but he went with Lynde to see Pfeiffer & Smith, and began the drafting of a memorandum of agreement with that company for the manufacture of our electrical control devices. It was while he was preparing this agreement that the Doctor received a letter signed by Frank Jones. In part, the letter under date of July 30, 1909 read:

> *There are none so blind as those who will not see, and if the Compression Rheostat Co., its stockholders, officers and directors prefer not to inform themselves before taking any action, affecting their rights, of the present and past situation so far as the American electric Fuse Co. is concerned, we cannot help that unfortunate fact.*

But inasmuch as we express ourselves willing to accord you every facility for investigation, we feel that you do yourself an injustice if you are unwilling to come or send someone to represent you, in whose judgment you have confidence, who could report to you and advise you as to the facts.

If we are to have a litigation it will be of your choosing, not ours. We afford you the opportunity of reaching an understanding of our differences by a mutual knowledge of the facts. You have now one side of it only, and must appreciate the fact that there are two sides.

The writer is expecting to leave the city the latter part of next week and be gone a week or so. Therefore, if you wish to discuss this matter, or have your representative do so, you will please oblige us by coming, or sending your representative here, prior to August 5th.

In case you do not reply on this matter, we will assume that you do not care to take this matter up, and will feel that we have discharged our full obligation of courtesy to you in connection with it. We trust, however that your business sense and interest in this matter will make it seem advisable to you to investigate for yourself the actual facts before permitting yourself to be involved in a litigation which must inevitably affect your rights.

Every man contemplating litigation must conceive the possibility of defeat, and however confident you may be with your present knowledge of the correctness of your position, you must admit that you may lose when the matter gets into court. And if you lose, you are doubtless aware of the fact that we will have a heavy claim for damages on account of the acts of the Compression Rheostat Co., injurious to our contract.

We sincerely trust that you will find yourself desirous of meeting us and we are certain that you will find our position entirely correct with regard to the contract, and differences between us and Mr. Lynde Bradley.

Yours very truly,
Frank G. Jones.

So began years of litigation.

It was litigation out of which came the tragedy of prison for one man, a suicide's grave for another man; and yet, there also came events having a very great bearing on the future of a company upon whose continued well-being of a great many people depend.

4. A Left-Handed Draftsman Starts to Work

Dr. Allen was not taken in by Jones' wheedling. He suspected, as Lynde and I had long suspected, that the records of the American Electric Fuse Company would not bear inspection. We had no proof, but in Muskegon, there were many factory stories of crooked deals and, from personal experience, Lynde and I knew that Jones had surrounded himself with slippery assistants. Consequently, we were sure Jones would never start legal action against us, or against any customers, because if he did, we would be in a position to force him to open the company's books.

For our part, we had no intention of bringing him into court. In the first place, all we wanted was to be left alone to develop our own opportunities in our own way, and to build our own business, the name of which we had changed from the Compression Rheostat Company to the Allen-Bradley Company. In the second place, we had neither the time, nor the money, to spend in litigation.

Already, and to our dismay, we had discovered that the contract Lynde and the doctor had signed with the American Electric Fuse Company on January 6, 1904, was little more than a memorandum of agreement that was almost without teeth, so far as enforcement was concerned.

It was with the idea of starting all over again to build a business that we signed the new agreement with Pfeiffer & Smith on August 6, 1909. We expected, and so did Pfeiffer & Smith, that Jones would harass us; nevertheless, we started to make drawings, and began the manufacture of electric control apparatus on that day. In the three years of our absence, the partners had moved their shop from Barclay Street, between East Madison Street and East Greenfield Avenue, to 495 Clinton Street, between West Madison Street and West Greenfield Avenue. (This is part of the property on which the present Allen-Bradley plant stands)

We were beginning to get under way when, on invitation, Lynde and Dr. Allen met with officials of the Allis-Chalmers Company. What they had in mind was taking on the manufacturing and distributing of our products, or, if not that, to buy us out. Lynde was caught by surprise, and so was the doctor. After some general discussion, they told the Allis-Chalmers people that they would like to have time to think about the matter.

A week later, Lynde made another call at the Allis-Chalmers offices. This was on January 24, 1910. During the week Lynde and I had a number of long talks. He had two moves in mind, and I was a major factor in each. One move was if we were to sell the company we should get enough money to pay the doctor a handsome profit on his investment, and have enough left so I would have a generous participation. The other view was to turn down any offer and succeed, or

fail, on our own account. As for the proposal to take over control of our output, that was out – completely out.

"How much money do you want for the company?" I asked.

"Two hundred and fifty thousands dollars."

"They won't pay it!" I exclaimed.

"I don't think they will, either," grinned Lynde. I listened as he continued. As well as I can remember, these were his words:

"I have talked over this whole matter with Louis Quarles. I have told him, as I have told you many times, that I am sure we can build a good business if we make good products, and if we get, and train, good people. I also told Louis that if anything happens to me I want you, Harry Bradley, to be in control of the company. Not the doctor. You!

"I admire the doctor tremendously, but running this company is a job for which he has no training. He knows it. He also knows that I look upon him as a friend, as well as a financial benefactor. He looks upon me in much the same way – as a friend, and being a friend, as someone to help. As an investor in this company he should be well paid, and he *will* be well paid. Of that, I am sure.

"But, as I said to Louis, my concern is your future, and the future of this company. I told Louis I wanted him to draw up option contracts for our signatures so that whatever happens to you or to me, the one who is left will own and run, the business.

"Needless to say, I was much affected by Lynde's concern and confidence. Dr. Allen was in accord with Lynde's views. None of us was surprised when Allis-Chalmers turned down with great emphasis, firmness and promptness the price Lynde put on the property. The price was $250,000.

With no further delay, the Allis-Chalmers Company began work on the development of carbon-pile apparatus, and filed a number of patent applications covering devices of this sort. We were worried over their entrance into the field because there were large areas awaiting development, which our patents did not cover. We knew it was possible for them to block us along some lines of development that would have brought future embarrassment to us. They never did. [Editor's Note: In October 1909, Cutler-Hammer offered to buy out the Bradleys and Dr. Allen with an offer of $10,000 for Lynde's patent and salaries of $150 a month for each of the Bradleys. Allen and the Bradleys rejected the offer.]

Although resolved, the Allis-Chalmers propositions remained a topic of occasional conversation and, one Saturday afternoon, after laughing together over

the abruptness with which Lynde's offer was rejected, I suggested to my brother that what we most needed was a line of apparatus, rather than three or four items.

> "I agree," nodded Lynde, "But I can't run the shop, do the selling, keep the books and sit at the drawing board, all at the same time."
>
> "I know you can't," I returned, "So why don't you go back to your drawing board, and let me run the business."

At the time we were sitting together in an automobile in front of the Meisenheimer Printing Company's establishment and I remember the look of astonishment on Lynde's face as he swiveled his head to stare at me. After a moment, or two, a smile covered his face, and he said:

"Harry, I just realized that you're no longer a youngster – that you've grown up, and have been grown up for quite a while." Thoughtfully, he turned his eyes to look out of the car window, then turned them back to me, and began to talk, of what he was to do, of what I was to do, and what we could do together.

We decided between ourselves that beginning on Monday morning we would try out the idea. We did. Lynde continued in the capacity of designer and engineer; I took on the job of running the business. From that day until the day of his passing, more than thirty years afterwards, Lynde never interfered; and later, much later, the finest thing a brother could say of a brother, Lynde said to me. In recalling this decision, he wrote: "I have never, at any time, had occasion to regret my faith in him."

As for Frank G. Jones, he overlooked no chance to discredit us, and no opportunity to destroy us. One of his attacks took the form of a statement, which was widely distributed. The statement follows:

N O T I C E

We learn that a company known as the Allen-Bradley Co., of Milwaukee, Wis., composed in part of former employees of our company, is advertising it has the right to manufacture Allen-Bradley Compression Type Rheostats. We notify the public that we control exclusive manufacturing and selling rights upon all types of compression resistance rheostats covered by the patents of Lynde Bradley and Stanton Allen. Our license is perpetual and not revocable, and has not been terminated and cannot be terminated by any notice from the inventors.

The proper method for the termination of a license is by court proceedings. No legal measures for the cancellation of our license have been taken. The reason is obvious. Our contract is not subject to cancellation. This matter is in the hands of our attorneys with instructions to start suit against the Allen-Bradley Co., of Milwaukee, Wis., so that our rights under our exclusive license may be determined.

Meantime we shall continue as heretofore to furnish Allen-Bradley apparatus and guarantee to all customers purchasing same, protection upon all apparatus purchased. The public is warned against buying any type of compression rheostats not manufactured by the American Electric Fuse Co.

Our original contracts and licenses, together with all other facts relating to this matter, are subject to inspection of any of our customers or their attorneys.

Respectfully
AMERICAN ELECTRIC FUSE CO.
Frank G. Jones,
President.

We took advantage of the attack to tell the world using our new letterhead that Stanton Allen was president, Lynde Bradley was vice president and treasurer, and that I was secretary and superintendent of the new company. By using our names we made it clear that the new company was not composed of disgruntled former employees of the fuse company, as Jones inferred, but was Allen-Bradley – not in fiction, but in fact.

The guerilla warfare continued for nearly two years, with both sides losing. Not wishing to get mixed up in what appeared to be a court row, prospective customers shied away from the fuse company, and from us. Consequently, few controllers were sold by them, or by us. For his part, Jones tried to strengthen the position of the fuse company by adding to its line of products. For our part, we were able to stay in business, largely because of the friendship of Charley Pfeiffer and George H. Smith.

Not only did they stand with us morally, they gave us credit well beyond our expectations, and far beyond our visible capacity to pay.

On June 9, 1911, we received some rainy day news. It came in a telegram from the Bradstreet Agency in Grand Rapids, Michigan to the effect that the American Electric Fuse Company was in financial difficulties and had made an assignment of its assets. Frank G. Jones was in jail charged with fraud. On June 13, 1911, the Muskegon News Chronicle, after trumpeting his arrest, said of Jones:

Fuse president takes rank with world's greatest swindlers . . . his cleverness, fertility of invention, coolness, audacity, and resource, the admiration and wonder of leading financiers of the west . . . is now a prisoner in the Kenny County Jail while the story of his forgery and business methods is amazing the nation . . . Jones estimates the fraudulent dealings with which he sought to place the American Electric Fuse Company on a permanent, stable financial basis, and which now have involved him for this company at an aggregate of seven hundred and twenty thousand dollars.

With Louis Quarles, I was in Muskegon on the day after the assignment for the purpose of protecting our patents. In Muskegon we called on Paul S. Moon, who had been appointed receiver on the previous day. We served notice on

him that bankruptcy terminated the license agreement, and demanded its cancellation. Moon was not disposed to accede, but invited us to go with him to the plant.

We did. In Jones' office and on Jones' desk, Moon found a sheet of translucent glass that could be lighted from underneath, and which Jones used for tracing signatures. In an upper drawer of the desk was an assortment of letterheads, and envelopes, of companies that purchased controllers. The letterheads, and the envelopes, appeared to be authentic. They were not. Jones had had them printed.

In another upper drawer of the desk were a lot of rubber stamps, all bearing the signatures that were used to sign letters, as well as other documents, and to endorse company notes at the bank in Muskegon. Picking up one at random, Moon stamped it on a sheet of paper. I can still see the look of horror on his face, still hear his wail of anguish: "My Lord, it's my signature!"

He rushed out of the office and down to the bank where he was a director, to learn that his name was on the back of quite a number of company notes. The amount was substantial.

In the contents of the desk, Moon had the answer to the Jones' machinations. And here is how Charles L. Johnson fitted into the scheme. As a partner in the fuse company, Johnson was in charge of the Chicago office. In Muskegon, Jones would receive an order from, let's say, the Pennsylvania Railroad for ten controllers. Jones would forge this order to read 1,000 controllers, and then send the forged order, together with a 90-day or six-month' sight draft on the railroad company to Johnson, in Chicago. In turn, Johnson would take the order, and the draft, to a Chicago bank and discount the paper. When the draft came due, Johnson would pick it up paying for it out of funds secured by another transaction of similar character.

If the bank questioned the draft, or was reluctant to discount it, Johnson would inquire: "Will you accept an acknowledgement of the order by the purchaser if he writes on his own letterhead?"

Invariably the response was in the affirmative. In a few days, from Jones would come an acknowledgement on the firm's stationary, signed by a company executive. Taking the forged document to the bank, Johnson would get the money, and forward it to Jones.

One day, Johnson was sick. A draft was dishonored. The creditors flocked in, and Moon was given the unenviable job of cleaning up a real mess. When he came back from his hurry-up trip to the bank with the news of forging of his own name, Quarles informed him that we would appear before the referee in

bankruptcy, and demand the return of our rights under the patents by the cancellation of the license agreement.

The weeks and months that followed were anxious ones. Whatever money was owed us for royalties was of a small amount compared with our fears that the referee in bankruptcy might sell the controller department to a competitor who would continue the harassment. In April 1911, we filed suit against Paul S. Moon, Trustee in Bankruptcy of the fuse company for infringement of patent.

Acting as our representative, Louis Quarles attended the first meeting of creditors of the fuse company in Chicago on July 14, 1911. His purpose was to prevent bills passing by estoppel. He notified "the referee in bankruptcy, the trustee, the special advisory committee of the trustee, creditors generally and intending purchasers that the fuse company and the trustees were, in manufacturing rheostats and motor starters, infringing certain letters patent owned by said Allen-Bradley Company; that the continuation of the manufacture thereof would be an infringement, and that said Allen-Bradley Company would ask the court for infringement of said letters patent."

Explaining that while we had no desire to embarrass the trustee in his efforts to close up the business, Quarles was firm in his declaration that the trustee had no right "to continue the business, and sell it as a going concern." As our representative closed his statement, the attorney for the fuse company was on his feet, and was charging that Quarles was making threats to intimidate the referee, the trustee and the special advisory committee to the trustee for the purpose of "blocking sales."

Quarles denied the charge, whereupon the fuse company representative said:

"Young man, I have my own opinion as to why you are here, and I want to say to you that not only are you in contempt of court by your statements, but, also, you have made yourself personally liable in damages for any loss in sale price that might be occasioned because of your statements."

"All right," smiled Quarles, "I'll stand for any damage that can be legally attributed to me. Also, if I am in contempt of court, I will be willing to go to jail."

"Still threatening, I see," returned the fuse company's lawyer. "Well. You're not scaring me."

"I'm not making any threats," retorted Quarles, "and I am not trying to scare you. My statement to the effect that Allen Bradley will ask the court for leave to bring suit against the trustee for infringement of patents was no more than a statement of what will be done. As for being scared, and so far as I know, nobody is scared."

A representative of one of the credit companies interrupted to ask: “How long has Allen-Bradley been making rheostats?”

“I do not know and, further, I am not here for the purpose of being catechized,” answered Quarles.

“Have they been manufacturing since 1904?” insinuated the fuse company attorney.

“I have already said I am not here for the purpose of being catechized,” coldly reminded Quarles.

The company lawyer said he had been informed that the rheostats and motor starters were manufactured under a contract, that the contract had always been lived up to by the fuse company, and that Allen-Bradley had nothing but an empty claim. The representative of the credit company expressed the opinion that Quarles was bluffing.

Quarles assured his listeners that he was not assuming the role of a prophet but, unless his request was granted, he was sure there would be a lawsuit, “and when the same is ended, all parties will know exactly what their rights are.” He requested notice of the time and place of sale, so that he might “notify intending purchasers of the liability which would attach to them in case there was an attempt to manufacture the rheostats.”

Arrogantly, the fuse company lawyer told Quarles that he “would get no more notice than anyone else, and certainly no special notice.”

Ignoring the statement, Quarles turned to the referee and trustee and insisted that he be given a special notice “for the purposes I have stated.”

A puzzled expression on his face, the opposing lawyer stared at Quarles, and asked:

“Where are you from?”

“Milwaukee.”

“Are you a lawyer?”

“I am,” and added, “in that capacity I am also representing the A.O. Smith Company, a creditor.”

The fuse company’s lawyer asked no more questions, but the representative of the credit company strongly objected to any examination by

Quarles of bills of sale, or of the books of the fuse company on the grounds that he represented hostile creditors. The objection was sustained, and it was announced that there would be a bankruptcy sale on November 1, 1911, but the referee did suggest that written notice of the Allen-Bradley claims be served on him, and on the trustee. Quarles agreed.

The Allen-Bradley assets were not sold and, on February 10, 1912, an agreement was reached between the company and Paul S. Moon, as Trustee, under which we got back the rheostat business, including jigs, fixtures, patterns, drawings, etc. The price was $4,000, which we borrowed. We also received all the patents and the capital stock of the American Electric Fuse Company, of Illinois, plus a consent decree against Moon.

It appeared that although the license agreement ran to American Electric Fuse Co. of Illinois, the American Electric Fuse Company, of Michigan, had conducted all transactions at Muskegon. By getting the stock of the Illinois Company, we were assured of having cleared any cloud on the full title to patents. To complete the clean up, so far as the fuse company was concerned, Quarles visited Frank G. Jones in prison at Ionia, Michigan and departed with an assignment of an additional patent or two. On July 6, 1911, Jones was given an indeterminate sentence of from four to fourteen years in the Ionia prison. The court recommended ten years. Jones was pardoned after serving between four and five years.

When negotiations were ended, we were happy to announce:

IMPORTANT NOTICE

To users of Allen-Bradley Electric Controlling Apparatus.

The Allen-Bradley Company wishes to announce that it has purchased the rheostat department of the American Electric Fuse Company of Muskegon, Michigan, bankrupt, including all drawings, patterns, tool dies, engineering data, patents, copyrights, trade marks, good will, books of account, mailing lists, and other records.

This added to its own complete line of apparatus insures the user that his future demands for compression electric controlling devices will be well taken care of.

Allen-Bradley Company
493-7 Clinton Street
Milwaukee, Wisconsin
April 15, 1912

But we were not altogether rid of our association with the fuse company. While the details of purchase were being completed with Trustee Moon, we received a letter from a New York legal firm, threatening suit in behalf of Henry T. Jones. The charge was infringement of patent. Lynde sent the letter to

Kempster B. Miller, in Chicago, for reply. In turn, Miller wrote the New York attorney:

> *. . . The product of the Allen-Bradley Company, which your letter alleges is an infringement of the Jones patent, has been manufactured, sold and in public use since a time prior to May 1909. The Jones patent was filed on May 9, 1911. Moreover, Mr. Jones was fully aware of the fact that this product of the Allen-Bradley Company was on the market and in public use prior to May 1909, and this fact is one that can easily be proved.*
>
> *I have thought it best to give you a frank statement of these facts, as it may be the means of saving both your client and mine some unnecessary annoyance…*

Gradually, the correspondence between the lawyers lessened, and then ended. Henry Jones had killed himself.

Of far more importance than threats of infringement or the outcome of a receiver's sale was our association with Pfeiffer & Smith. Early in 1912 and well prior to the receiver's sale, or the threats by Henry Jones, George H. Smith became ill. The sickness continued and, much disturbed, Lynde went to see Louis Quarles.

"The doctor isn't at all hopeful," he told Quarles, "and I am worried not only because Mr. Smith is very sick, but also, what will happen to the partnership and, if to the partnership, what will happen to us in the event of his passing? We owe them a lot of money, and I see no immediate way for paying it."

Quarles suggested that the debt be funded by the issuance of five-year notes. "I am sure," he said, "If I were Smith & Pfeiffer, I would rather have the notes than a series of entries in an open account. Why don't you suggest this?"

Lynde went to Pfeiffer and made the suggestion. Pfeiffer was in agreement; in fact, he expressed, as Quarles anticipated, a preference for the notes. The notes were made out, were signed, were delivered and were accepted a little while before the death of Smith on June 4, 1912.

A few days afterwards, a brother of Smith notified Lynde that an immediate settlement was expected – "that, or we will have to take over your business," he said. Informing his visitor that the debt had been funded, Lynde suggested that he check the information with Charley Pfeiffer, or with the Pfeiffer & Smith bookkeeper. The brother did, and came back to apologize.

In a way, George H. Smith's brother could not be blamed for trying to take over our business. While we were always pressed for money, it was not because we had too few orders, but because were not able to keep even with them. Every penny that came in was spent before it arrived, in improving our products, in bettering our tools, and in expanding our operations.

Charley Gross was our first employee in Milwaukee. John Freitag and Carl Calkins had come over from Muskegon to rejoin us.

Charley Gross lived in back of the home of Henry Loock, on Richards Street. One evening after work, Charley went over to the big house and asked for Fred, the 18-year-old son of Henry Loock. The youth appeared, and Gross inquired: “Fritz, do you know anything about drafting?”

“Yea. Took mechanical drawing school. Why?”

“Well, Lynde Bradley, my boss, is looking for a boy who knows something about drafting. I told him you had just graduated from high school and were looking for a job. He told me to bring you down in the morning. Want to do it?”

The following morning, after a few probing questions, Lynde asked the boy, “When can you start to work?”

“Now,” grinned young Loock. “I brought my lunch with me” he said, and held out a paper bag for Lynde’s inspection.

Returning the grin, Lynde motioned to a drafting board. A left-handed draftsman and a future president of Allen-Bradley, Fred Loock was paid six dollars a week. The workday was from 7 a.m. to 6 p.m. six days a week, with a half-hour off for lunch. There was extra pay for Saturday afternoon. It amounted to 75¢.

But then, Saturday afternoons were not always busy. I remember one Saturday not long after Fred came with us when we spent most of the afternoon taking pictures of the office cat.

5. Laying the Foundations

These years of 1910 and 1911, were the years in which we laid the foundations for building the personnel of the Allen-Bradley Company.

We started well with Carl Calkins and Fred F. Loock. We intended to add to them. What we wanted, and what we made up our minds to get, were men whose skills were for sale, but whose principles could not be bought. Not clever men, but productive men; not brilliant men, but steady men – men who, in a crisis, would stand firm because their principles would not allow them to surrender to a moment of expediency.

We wanted men who, however small the business, or however small the transaction, would give top service to both because, being born to business, it was as natural for them to make and distribute goods as it was for a born sailor to go to sea, or a born healer to help the sick. In short, men who knew, and no one had to tell them, that there is work to do that only business can do, and a part to play in a nation's existence that only business can play – that part being to build the nation's economy, and to keep on building it.

In 1910 and 1911 we were all so busy building a business that we did not know how badly off we were. Furthermore, we had no one to tell us. All we knew was if we wanted something to eat, an education, a suit of clothes, a pair of shoes, a home, or a business, we had to work and we had to save – and if another person could earn these things, so could we.

In those days we were so sure we had to work and save to get the things we wanted, that we would have paid no attention to any words to the contrary. We had no politicians around to promise, if elected, everyone would have a job (and if he did not have a job he would be paid anyway), and everyone would have a secure future, free from want and free from care.

Somehow, we would not have believed that by the simple act of electing someone (anyone) into political office, we would endow him with the power to carry us with giant steps to the candy mountains – and we would never have to take a single step for ourselves.

We would have known there was a catch in such a promise. There always is when promises are political. The catch is in the additional spaces needed in the pay envelope to note the government deductions for "security."

We chose to walk on firmer ground. Brought up in a climate of self-help, we accepted the teaching that a nation's strength is found in the personal morals and individual initiative of its people – and nowhere else! The most important

security we can have as human beings is the dignity of personal independence. Moreover, this is not a mere expression of sentiment. Personal independence is not a sentiment. It is a power cut loose.

I don't suppose a day went by that Lynde and I did not talk about the sort of company we wanted to build, and the kind of people we needed if it was to be built. One thing was sure. There would be no room for people who did not understand that the state exists for the People, and not the people for the State; who did not know that his country's welfare and his own welfare were the same thing and that both could never be in anyone's hands but his own; who did not see that the place where he worked was a field to be planted and harvested, and unless he sowed the seed and gathered the crop, those things would not be done.

Lynde wanted, and so did I, people who thought of their jobs not in terms of paychecks, but as the end result of their own work. We were small, but we were building for more than a day, and for more than a year. To us, every job was an open door to the high ground of human freedom and general happiness.

We occupied space behind two or three windows on the second floor of a two-story, brick structure tenanted by Pfeiffer & Smith. Excepting for the Pfeiffer & Smith office, which was on the northeast corner, and the presence of Pfeiffer's automobile, which the owner used to bring up in the elevator almost every day, we had the run of the floor. Often I caught myself looking at the vacant space, and tasting the day when we would make use of all of it.

In Muskegon we built some direct current starters that we rated up to 20-horsepower. We also built starters of a different form that we rated up to 75-horsepower, and a model that was rated up to 150-horsepower. The first battery charging rheostats and A.C. motors starters also came into being over there. We built some small sized crane controllers, and a controller of small capacity with the resistance unit mounted on the operating lever.

With the rapid growth of the electricity industry, our line changed from a few simple direct current appliances to a complex and varied line of both direct and alternating current devices. In the years 1912-15, and with full time to spend on development, Lynde brought out a number of new devices, and obtained seven different patents covering current controllers, resistance devices, telephone transmitters and a process for lining containers.

In these years a number of persons came into our organization, among them Walter Shackton, Chester Baird, Henry D. Lindsay our first engineer, and Gustav O. Wilms. Of the four, Wilms was of particular help to Lynde. Born in Germany and an engineer of high order, Wilms came to us from Cutler-Hammer in 1915. In almost know time at all, he gained Lynde's full confidence. Mine too. This way:

After a brief examination of a controller, he said to me:

"The guy who designed this should design one more, and quit."

"Think you can do any better?" I enquired, a little nettled, because it was Lynde's design.

"If I can't, I'd quit."

"Go ahead, and let's see what you can do."

Wilms made good on his claim. Lynde promptly adopted him.

Early in 1916, Lynde faced a very difficult decision. Dr. Allen had returned to Oregon after our blow up with Jones in 1909 and, late in February 1916, he wrote Lynde at length. He was not well. He was homesick for Milwaukee. He wanted to sell his Hood River property, come back, and go to work for the company.

Much distressed, Lynde brought the letter to me. Although prospects were good, financially we were in poor shape. We made a little money in 1915, but we lost $18,052.39 in the years 1913 and 1914. We talked about the proposal across several days, and, after much rewriting, Lynde mailed his reply:

March 8, 1916

Dear Doctor:

It is as difficult to reply to your letter of the 27th as it undoubtedly was for you to write it. Looking at the situation strictly from a business viewpoint, I do not see where we could make it worth your while to leave Hood River and join us, much as we would like to have you.

Our salary scale, compared to that of other firms, is low; the men are all sticking to us because they believe the company will eventually develop into something worth while and that they will get a square deal; the last reason is probably holding them more than any other.

I am the highest paid employee, receiving one hundred and fifty dollars per month. Our designing engineer receives one hundred and ten dollars per month. He is a well-educated German engineer of about fifteen years' practical experience. Henry Lindsay, who has been out of college six years and is exceptionally capable and holds the position of consulting engineer, receives but one hundred dollars per month and refused to accept any more or let his friend, Chester Baird, get a raise, as he says we cannot afford, at present, to pay any more, and there are other fellows connected with the company that are similarly situated.

I write this merely to show you how salaries are being paid. Our books show a profit of five thousand dollars for 1915. This is not in cash in the bank, but principally in accounts receivable and merchandise.

We actually owe Pfeiffer & Smith more than we did at the close of 1914, but the increased indebtedness to Pfeiffer & Smith is offset by the increase in accounts receivable. Our business last year amounted to eighty-six thousand dollars, and we received a large percentage of this the last two months of the year. It appeared for the first two-thirds of the

year that we would be lucky if we did fifty thousand dollars worth of business. This year promises well, and Harry and I hope to make it a profitable one.

Harry and I personally are glad to be of any assistance we can, but we do not see where the Allen-Bradley Co., can make it worth your while financially to make so great a change as that of leaving Hood River and joining us in Milwaukee. This relates to the immediate situation, however.

There are many problems to be worked out yet; among them is taking care of a number of notes that fall due in about a year. Harry and I believe we can manage them all right, as we have been through a lot of things before, but it may make a lot of hardship and trouble during the process.

Now Doctor, this is written from the view point you suggested, a strictly business one. We should be glad, however, to receive any comments you care to make.

Sincerely,
Lynde

Dr. Allen's reply was typical of the man. He allowed as how, temporarily, his homesickness had gained the upper hand and that, actually he did not feel that his health permitted him to be more than an interested spectator.

In his letter of March 8, 1916, Lynde did not dilute the facts. Almost two years previously, and disturbed over the possibility that our shallow cash position might encourage a creditor into filing bankruptcy proceedings, Louis Quarles had suggested that we organize a new company, transfer our patents to it, and have it authorize the Allen-Bradley Company to make the appliances.

"By so doing," explained the lawyer, "you will protect Dr. Allen, your key employees, and yourselves. You will provide this protection because, in the event of bankruptcy of the Allen-Bradley Company, the license would be terminated. You would keep your patents. You would still be in business."

Lynde wrote Dr. Allen, told him of our acceptance of the recommendation, and solicited his opinion. The doctor was in agreement, and asked that, if a new company was formed, whatever shares of stock we felt were due him to be issued in his wife's name.

On July 28, 1914, we incorporated the Reliance Company under the laws of the State of Wisconsin. The capital was $55,000, of which amount $30,000 was in preferred stock, and $25,000 was in common stock. The stock distribution was made this way: Maria Allen, preferred stock, $30,000; common stock: Lynde Bradley, 63 shares; Harry L. Bradley, 61 shares; Louis Quarles, 1 share, assigned to Harry L. Bradley.

Dr. Allen Died October 17, 1916. The Reliance Company was dissolved December 26, 1927. Mrs. Allen was paid $30,000 plus dividends at the rate of 6% per annum, payable quarterly since July 28, 1914. It is true the sum paid her was

several times the amount the doctor advanced to Lynde. It is equally true that when Dr. Allen made his investment, so to speak, he took a great risk. In our darkest day, his confidence never weakened – and he never failed to insist he had made a sure bet when he backed Lynde. There were many times when Lynde was far from sure. So was I. As Lynde so often said, "Dr. Allen was a splendid man."

To me, our greatest asset was my brother's inventive abilities, and right behind those abilities were the loyalty of our people. Wilms, Baird, Lindsay, Shackton, Calkins – all came to us for less money than they were paid elsewhere, and would have been paid had they chosen to go elsewhere. The fact that they had confidence in us, made us determined to establish a company where people would continue to work, and continue to be rewarded. Lynde did not know how it would be done and I didn't known how it would be done, but we promised each other it *would* be done.

We talked about it with Louis Quarles, and all felt it would be best if the ownership of the company remained within the family. As a first step toward doing it, Lynde and I signed a contract on May 23, 1917, in which after dividing the Allen-Bradley stock, we stated our desire "to keep control thereof in Lynde, except that (our) holdings are to be substantially even;" and provided that:

> *Lynde transfers to Harry all of this stock in both the Allen-Bradley Company and the Reliance Company, that he might hold at the time of his death, and any patent applications on rheostats that he might hold at the time of his death, and Harry is to hold it in trust with full power to control, to pay the income annually, or oftener, to Lynde's wife, the trust to terminate on Harry's death, or when he relinquishes the trust, and then the entire property is to go to Lynde's wife.*

There was a similar provision regarding the transfer of my stock to Lynde; and the contract was subject to dissolution, only by mutual consent of both contracting parties.

There was an immediate reason for the contracts. Since the death of his partner, George H. Smith in the early summer of 1912, Charley Pfeiffer had steadily lost interest in his own company, so that by the autumn of 1916 he was spending more time with us than in his own shop. Nor was this because our business was growing so fast that we were never able to save enough out of profits to keep pace with our obligations on the books of Pfeiffer & Smith. It was because he was more interested in our progress, and in the new things that were coming from Lynde's drawing board.

Actually, he was so much interested that I suggested to him one day that he might like to sell out to us – if we could find a way to finance the proposition – and continue to keep a hand in what was going on by serving in an advisory capacity. He listened with interest, and when I proposed, specifically, that he serve as a designer of special tools and machinery, that he wasted no time in taking me up on the proposal.

It was a transaction that could have been made only between individuals who had confidence in the other. Under date of December 16, 1916, we acquired the entire assets of Pfeiffer & Smith, paying $10,000 in cash, giving a purchase money mortgage of $50,000 and turning over 950 shares of first preferred stock, each share having a par-value of $100. On January 2, 1917 the sale was announced, and on that day we signed and gave to Mrs. Emma P. Smith, widow of George H. Smith and Pfeiffer, notes totaling $50,000. The notes carried due dates of January 1 in each of the following years: 1928, 1929, 1930, 1931 and 1932. They took the place of the purchase money mortgage.

Later we made changes in the dates and methods of payment, but the event that made the greatest impression was one that directly involved Pfeiffer. After Lynde and I had signed the notes, I gave Charley his pledges, which amounted to $25,000. Instead of taking them, he pushed them back across the desk and said:

"Keep these things for me, will you Harry, until I get back from California?"

"No," I told him, shoving the notes back to his side of the desk. "Keeping them is your job, not mine. Besides, when are you going to California, and when are you coming back?"

"I'm going tomorrow, and I'll be back in a couple of months."

As Pfeiffer got up from his chair, I reminded him: "Charley, pick up those notes, and put them in a safe place."

On that same day, he sent out a formal announcement to the trade:

Pfeiffer & Smith
Machinists and
Manufacturers of Special Machinery
495-497 Clinton Street
Milwaukee, WI
January 2nd, 1917

American Hair Felt Co.,
Milwaukee, Wis.
Gentlemen:

We wish to advise you that the Allen-Bradley Co have purchased our entire business taking effect Jan. 1st 1917. They will retain substantially our entire organization and equipment with the exception that they have disposed of some of the larger machine tools, and, therefore, will be able to take care of part of your jobbing work, if you care to have them do so, and will be very glad to receive your consideration in this regard.

Mr. Charles Pfeiffer will be actively associated with the Allen-Bradley Co., in an advisory capacity.

We thank you very much for the business you have given us in the past and extend to you the compliments of the season.

Yours very truly,
PFEIFFER & SMITH

In March, Pfeiffer returned to Milwaukee and came to see me on the same day. He was worried.

He said, and all in one breath, "Harry, do you remember those notes you and Lynde signed that I asked you to keep for me the day before I went to California?"

"I remember the notes," I replied, "but I did not keep them. I gave them to you, and told you to put them in a safe place."

"That's what I was afraid I'd hear," groaned Pfeiffer, and slowly added: "I seem to remember you saying that, but damned if I can remember taking the notes, or where I put them."

We speculated for a full half hour over where they might be until, tiring of the guessing game, Charley decided to get into some overalls and do a little work at a bench. Within three minutes he was back at my desk. His mouth was stretched in a full-grown grin: in one of his hands he was holding the notes.

"Where did you find them?" I asked.

"Here," he chuckled, and pointed to a pocket in his overalls. The overalls had remained where he left them – hanging on a nail in the wall of the washroom.

With the taking over of Pfeiffer & Smith, Lynde saw the need for tightening up the organization, and bringing its members closer to each other. Without delay, he wrote and mailed the first issue of what has come to be a very useful publication – the A-B-C Gossip.

The first issue contained four typewritten pages. The circulation was twelve copies, the distribution being among department heads, our seven, and branch offices. The first page was set up in this fashion:

A - B - C G O S S I P
Allen-Bradley Company

THIS PAMPHLET

Is a combination of ideas, suggestions and matters of general interest contributed by all departments of the organization.

ITS OBJECT

Is to bring our sales in closer touch with the factory, stimulating their interest by giving them engineering, sales, factory and personal data, which will tend to bring them in more intimate contact with the factory and its products.

SUGGESTIONS

On any subjects from the branch offices are solicited and will be greatly appreciated. They will be given due consideration in A-B-C Gossip, which will be published monthly during 1917.

There were two featured items. One concerned the purchase of Pfeiffer & Smith; the other told of the signing of a contract with the New York Railways for a 125-circuit battery installation. In speaking of the sale it was stated that the installation was made at the "New York Railways station at 14th Street and Avenue B to be used for charging storage batteries of electric streetcars, which are operated on streets where the company cannot secure franchises to lay cable or have overhead trolleys. These cars are the lines last abandoned by the horse cars."

Signing of the contract for the Allen-Bradley Company was the left-handed draftsman who had come to us for a job, and was so sure he would get it that he brought along his lunch. His name, of course, was Fred F. Loock.

Not long after Fred came with us we had a chance to get Walter Shackton, whom we knew as an experienced draftsman with the American Electric Fuse Company. We hired him, and I went to where Loock was bent over his drawing board. "Fred," I said, "how would you like to change your job?"

"I don't know. What do you want me to do?"

"I'd like to make you a purchasing agent."

"All right."

Fred was eighteen years old, which was pretty young to be a purchasing agent. But, then, the job wasn't nearly so exacting as it came to be. In 1910, it was mostly a job of keeping tab on the stock bins, and letting Lynde, or myself, know what was needed. It was not long before Fred was looking around to see what else he could do. He was interested in everything, but mostly he was interested in trying to help Chet Baird, who was in charge of sales.

He did so well with Baird that, in 1915, we sent him to New York, giving him the title of New York Sales Representative. As such, he had no office, no telephone, and no automobile. But he was paid a salary of $100 a month, and he did have a large undeveloped territory all to himself. A furnished room in a rooming house on Riverside Drive was his first business address. The rent was $4 a week.

On his first night in New York, Fred Loock thought of what Lynde had told him on his last day in the office: "You are going to a big city, and you are going to be homesick, a good many times. You will get over it. But while you are recovering, and after you have recovered, remember these two things:

> *See your job as a chance for the adventurous use of your legs and your mind because you are going to do a lot of walking and you are going to run into a lot of grief in your efforts to establish a new line. The second thing to remember is to not be in too big a hurry to make a sale. Take time to help a customer to buy. Making a customer is far more important than making a sale.*

Thinking of the devices he was offering as being used by other men to make their living, Loock brought a service to the New York market that could not go unnoticed. Nor, did it. Within two years, or by 1917, he was calling on and getting business from long established companies.

One of his customers came by way of a lunch at which the piece de resistance was anything but inviting. On a particular morning, Fred was passing a restaurant and he saw a sign in the window: "Bear steaks!" In almost no time he was grabbing at an idea that flashed into his mind – for, on this very day, a prospective customer was having lunch with him.

Getting to his office (by this time he had an office, a secretary, and an assistant), he telephoned to make sure the date was till firm. It was. Fairly bubbling in anticipation, Fred informed the prospect that a real treat was waiting and resisted, with difficulty, saying what it was. That noon, as they neared the restaurant, he disclosed his secret:

"Ever have a bear steak?"

"No."

"Want to try one?"

"Are they any good?"

"Are they any good? Are they any good! Out in Wisconsin, during the hunting season . . ." and in a torrent of rapturous words over which the prospect could feel the snow beginning to sift down and hear the sharp winds whistling through the threes, the long search, and the sudden shot, Fred had his man drooling in anticipation of a thick, juicy, tender bear steak broiled over a hot fire and served on a platter heaped with golden slices of German fried potatoes – 'That's what we, out where I come from, call eating," finished Fred.

They had their bear steaks. Fred never tried them again, either.

As they left the restaurant, Fred guessed as how "I was carried away by my own enthusiasm, but I never tasted a bear steak before. It's going to last me for a long while – as long as I live, I wouldn't be surprised."

The prospect became a customer.

In March 1917, with war threatening and with the thought of helping our people to be worth more to the country, to the company, and to themselves, we formed a class to study the principles of electricity. The hours for study were two on Wednesday evening and three on Saturday afternoon, or weekly sessions of five hours. There were no fees. There were 16 enrollments, four from the office and six each, from the factory and from the drafting room. The instructor was my brother.

Years before, when an x-ray technician, Lynde completed a course in electrical engineering. His Alma Mater was the International Correspondence School Course of Scranton Pennsylvania. He found it such an interesting course that he insisted I study it with him. I did, but he was the one who had to take the examinations. I still have the books. In 1916, Lynde added to his library. On the 14th of January, and at the age of 37 years, he again turned to the correspondence school for help, taking out a subscription for a scholarship in chemistry.

His studies brought back such a keen appreciation of what he had learned about electricity from the same source, that the desire to pass along some of this knowledge was inevitable. Hence, the class.

War was declared April 6, 1917. In the same month the size of the Gossip was increased from four pages to six. The circulation remained at 12 copies. The pages continued to be typewritten, and so remained until October when they were mimeographed. That year there were such items as these:

> *Of 25 men in various departments of the office, 11 are eligible for the draft, 6 above age limit, 6 too young, and one a foreigner. Of those in the factory, 7 are subject to draft. At present time, the company is employing 150 people . . . Freight situation is very acute. All lines each embargoed 90% and deliveries as to time cannot be assured . . . Boston office opened April 1, with H.C. Boswell in charge; on same date, R. Fishback assumed management of Pittsburgh office . . . a new flag adorns the staff of the Allen-Bradley factory. It is 8' by 16' . . . study class progressing nicely . . .*
>
> *Officers of the company: Lynde Bradley, president; Harry L. Bradley, vice president and treasurer; Louis Quarles, secretary . . . representation for company on Pacific Coast, in Los Angeles and in San Francisco . . . Liberty loan drive in shop and office . . . night shift in machine shop . . . November sales broke all records . . . company did a gross business of $400,000 in 1917.*

For the record, the actual figure was $404,683.

There was no let up as the New Year began, nor throughout its twelve months. However, there was one near casualty. That was the *Gossip.* Busy in war

work, everyone who was expected to supply news was too rushed to write, and Lynde was too occupied with other things to be a publisher. After the May issue, publication was suspended for the rest of the year, but prior to suspension, there were these bits of information:

> *January: Contract received for 85 charging panels for United States destroyers. Fuel-less Mondays necessitated five workless days. Concerned over pay losses, company paid half time for idle days. March: Walter S. Pfieffer, a benedict. April: Property alongside factory bought for expansion, increase in manufacturing space to be 75%. May: Running in short supply on many items; in general, not able to ship orders in less than 30 days.*

Sales for the year of 1918 totaled $593,278.

6. New Markets Are Opened

In February 1919, the new building was nearing completion, and long before the year was ended we were occupying it. We had sales representatives in quite a number of cities, and we were becoming a threat to the larger companies. They were beginning to knock our product.

The war was ended, of course, but it had established us in a positive position in the control industry. It had given us the opportunity to demonstrate our apparatus and to prove its worth, because the older companies were overloaded with orders. The military had to turn to concerns that could supply the things that were needed. It was not long before we, too, were overloaded with orders. As usual, we were cramped for money, but the addition to the plant was vital if we were to make what we had contracted to make.

Fred Loock come home for the Christmas holidays in 1919 and, while in Milwaukee, gave up his post as New York sales representative. For months, Fred had been critical of our sales policies. I took advantage of his visit to invite him to lunch. Before the time came to pay the check I was convinced that changes had to be made. I told Fred the job of making changes was his, and he could call himself Sales Manager, or General Manager, whichever he wished.

"I don't care what the title is," he returned, "just so long as I can do some things the way I think they should be done"

Since 1915, Fred had insisted that we make a radical change in our dealings with distributors. At the time it was common practice for manufacturers of control equipment to market their products through a number of distributors operating in the same territory. Loock recommended that we use one distributor, and give him an exclusive franchise for the territory. In turn, he had to be an exclusive Allen-Bradley distributor. It was Loock's contention that not only would the customer be better served, but handing one line would be more profitable for the distributor.

Those who objected maintained there was not enough business in a lesser-known line to attract a good distributor. Loock said his critics were wrong, and the war came along to help him prove they *were* wrong. As indicated, our products became very well known when the demands of war brought them into general use. It also was Loock's contention that by supporting one distributor, a company's salesmen could help measurably in developing that same distributor's business.

Although only 27 years old, and in the sales end of our company but a few years, Loock had his own ideas of what made a salesman. Over the lunch table he

insisted that selling was nothing in the world but methodical and steady work, five days a week, and 52 weeks in the year – "and if a man went at his job this way, he could not fail to move goods off a distributor's shelves in sufficient quantities as to make the distributor a willing and eager partner."

"The thing that is wrong with us," continued Loock, "is that we have been collecting opinions on how to sell, instead of teaching people how to do it. To my mind, there is only one way to teach a man to sell, and that is to hold him right up against the job of selling. Certainly, it is no help to him, or to us, to do his selling for him. The field representative will need help, all right, but it must be the sort of help that enables him to stand up to his challenges "and not," growled Fred, "the sort of help that was given to me in New York."

"What do you mean?" I asked.

"Perhaps I shouldn't say it, but while looking for something the other day I found a whole slue of my sales reports in the files. They were unopened. I jumped all over Chet Baird, but got nowhere. He said he never bothered to read sales reports from the field. Said it was a waste of time. That such reports were so much fiction. We traded some pretty stiff words."

"I know. Chet told me."

"He did?"

"Yes, and I told him I was going to bring you back to Milwaukee and offer you the job of being Sales Manager, or General Manager, whichever you wanted."

"What did Chet say?"

"He wasn't too happy, but he'll get over it. I offered him another job."

That was Fred Loock's first big promotion.

Quite honestly, I think I can say I never doubted his capacity to fill the job. In the nine years he had been with us, he was always willing to make a heavy investment in personal effort, no matter what the job. To him, the job was always the real show. From the day he came, he never lacked confidence in the future of the company. He quickly saw that a quality product, whether diamonds or controllers, is not a price-cutting item, and he understood that the greatest handicap anyone can load upon himself is to indulge in the luxury of familiarity with the responsibilities of his own work. To do that is to keep oneself from seeing that the job itself lays down its own terms, and favors only those who meet its terms.

Robert W. Whitmore was another who came to help us. Early in 1917 we advertised for an electrical helper. Whitmore applied, and was interviewed. “Tell me about yourself,” invited Lynde. “Where did you go to school? Where do you work now, where have you worked, and what have you done?”

“I went to Armour Institute, in Chicago, graduated in 1914, and went to work for the Milwaukee Electric Railway and Light Company,” responded the black-haired plainly eager applicant. “For the most part,” he continued, “I tested motors in the car show. I was laid off, and got a job with the Winton Motor Car Company. I worked in the garage. I was there only a little while when the electric company called me back. Since going back I have been doing general office work, and assisting in the testing of boilers. That’s about the story, Mr. Bradley.”

“Then you are still working for the electric company.”

“Yes.”

After some discussion of the qualifications needed to fill the vacancy, Lynde told the applicant, “I don’t think you have enough experience for the job I have in mind – but come back in a few months. Maybe, in a few months, there will be a place for you.”

Whitmore did not wait a few months, but he did wait a few weeks. In May, he was back again. This time, instead of seeing Lynde, he saw me. But he did tell me of his talk with Lynde. After asking him a lot of questions, I offered him a job helping us with our new catalog.

“What do you want me to do?” he asked.

“Help us put it together.”

“You mean, like writing it?”

“Yes.”

He shook his head. “No, Mr. Bradley, I would not be any good at that – but if I could get a job in the shop I would be willing to take my chances as to what I might do.”

“You mean you’d take <u>any</u> job in the shop?”

“I would.”

“When can you start?”

“Tomorrow, if you say so.”

He started the next day. His first job was winding blowout coils. These coils were made of flat copper, a few thousands of an inch thick, and about an inch and a quarter wide, with a layer of asbestos in between. Between cuts from the copper wire, and drying of the hands by the asbestos, it was a rough job.

We moved Whitmore around quite a bit during the next couple of years. He rearranged the storeroom, he was a stock chaser, an inspector, receiving clerk, shipping clerk, so that in 1919 when he became Plant Superintendent, he had been in nearly every job in the shop. In the latter part of 1919, in addition to being superintendent, he was appointed Production Manager.

The war was not long over when depression set in. As far as we were concerned, it came at a particularly bad time. Our investment in the new building had prevented us from accumulating surplus funds. If we were to remain in business, all we could do (so it seemed) was to lay off people, and curtail all development work. These things we did. Then, as suddenly as it came, the depression left. We were able to accept only a portion of the orders that flooded in because we could not bring up production soon enough to meet the demands. We were hurt in two ways. We lost customers. We lost profits. But, what we learned more than compensated for what we lost.

The experience taught us that in our type of company, at least, it is imperative to maintain the heart of the organization.

To lay off people, especially salaried people, and to stop development work, in order to reduce operations expenses, even for a short while, is a very costly proposition. I made up my mind then and there never to do it again – and, when again faced by similar conditions, to try other ways to meet the problems and the responsibilities of management.

An experience of William S. Knudsen, when he was president of the Chevrolet Division of General Motors illustrates the point. Visiting Knudsen was a Russian who was a professor of mathematics at the University of Moscow. After explaining that his government wanted to get into the automobile business, the professor said:

"I want to buy a set of tools so the Russians can make motor cars. I want to buy a set of drawings for a building, and I want some of your men to go back to Russia with me to supervise the construction of a building, to set the tools in place, and to show us how to build motor cars."

"How do you want to do this?" asked Knudsen.

"We want to start the whole thing at once and, when it is ready, to start building motor cars."

"You can't do it that way," cautioned Knudsen, "because you haven't got the people who are trained to do it."

The professor dissented: "We will have the tools, we will have the people, and once we get them together, we can make motor cars."

"No, you can't."

"We have to do it that way, Mr. Knudsen. This is the way my government wants it done, and that is the way it will be done, and we want General Motors to do it that way."

"You mean you want us to build and operate a branch plant in Russia?"

"Yes."

"Not under those conditions. You, nor we, nor anyone else can do it that way. What you must understand is that every tool and every machine in every factory in the United States was built by people. Skilled people were needed to make them; skilled people are needed to use them. People – skilled people – come first in any automobile operation. You must have trained people before you can build automobiles."

"My government wants it done its way," argued the Russian, and repeated: "We will have the tools and we have the people. Once we get them together, we will make motor cars quickly."

"I'll tell you what I'll do with you," said Knudsen. "I will sell you the whole Chevrolet factory, tools, machinery, and buildings, all on the hoof, if you let me keep the people I have. Then, I will start all over and I will have new buildings, new machines and new tools, and I will make more motor cars and better motor cars than you will make – and I will be making them before you even get started."

The professor took his business elsewhere. Knudsen followed the results with interest. The results were as he said they would be.

In 1921, we were back into depression. This time, we used the company magazine to explain the situation to our people, and to ask for their cooperation:

> *The present depression corresponds with the period immediately following the war. In the previous depression, we reduced expenses by cutting overhead and when prosperity was again upon us, we had to take valuable time in which to build up our organization . . . We thus seriously delayed our opportunity to progress. We must not repeat our previous mistake. Instead, we must solve our problems of reducing expenses to meet the business conditions . . . from another angle.*

It will surprise you to know that in spite of the various adjustments we have made and the general savings in expenses which we have effected, our cost of doing business this year is slightly higher than for the same period last year when business was booming. The reason for this apparent anomaly is that salaries have gone up, and also we have deluded ourselves, somewhat, in our savings efforts.

These have not been uniformly or continuously applied and, consequently, expenses have continued to go up. We are confident that if we at no time take our eye from expenses, we can show some very marked and considerably improved results.

Surely we must work together in checking all unnecessary expenses and even the necessary items must receive careful scrutiny. In passing (here are the figures on) our office and shop overhead payroll for the month of April in the years 1919, 1920 and 1921:

April, 1919: office payroll, $7,385.59, shop payroll, $4,834.29, total $12,669.88; April 1920: office payroll, $8,938.40, shop payroll, $8,561.34, total $17,499.34; April 1921: office payroll, $9,778.23, shop payroll, $6,127.20, total, $15,905.43. (In other words, the office payroll in April 1921 exceeded the office payroll in April 1920 by $839.83.)

Perhaps we could continue to struggle along if we were keeping pace with our order sales of 1919. Unfortunately, this is not the case. Our net volume of sales since April has been sinking below the average, which in direct proportion increases our losses. April 1921 fell about twenty-five percent below the 1919 four months' average while the records for May will hardly show one bit better. For our mutual welfare, the company must not go on losing money at the pace it is now doing. We solicit your whole-hearted help in our efforts to correct the present situation.

Much as we dislike doing so, we must make an adjustment in salaries in order to curb our losses. The amount of the adjustment will be ten percent throughout for all salaried employees, and this includes officers of the company, the outside sales force, office boy – everybody. It goes into effect June 1 and will be kept in force until our balance sheet begins to smile at us once more.

Now don't get the blues as you read this announcement, because – well, the adjustment need not be 10%. Perhaps we can eliminate it entirely. This question hinges on two things, namely increase of sales and decrease of expenses. Let's make this our slogan, and play the game as hard as we can according to the following rules:

In the first place, it must be thoroughly understood that our company is not passing along all of the losses to you, but is only asking you to carry a small share of the load. Also, please consider that we are only now looking to you for help, which is many months after the company alone has absorbed such losses, during which other firms were making decided cuts in wages and salaries. Though our losses have been greater in proportion, we do not at this time intend to make a larger adjustment in salaries than the 10% already mentioned. Also, only as much of an adjustment will be made as is necessary to help cover the loss for the month in question.

We did not have to make a second adjustment. We learned a great deal in the months of post WWI depression in 1921. Among the things we learned was that, as businessmen, we could not solve problems by shoving them off on someone else – and that any counsel that urged us to do so was harmful counsel. It became our conviction that even in the best of times, business is well below its possibilities, largely because businessmen themselves fail to recognize the full

possibilities of their own opportunities – and that when business is bad, it is a summons to the businessman to *be* what he says he is.

To Lynde, and to me, this conviction was inseparable from the whole fabric of freedoms that is in the design of our country. It was clear to us that as a people we were not enterprising because we were free. We were free because we were enterprising – and this is as true of business as it is of religion, of speech, of assembly, or of any other freedom.

Obviously, it is not until a people lose their religion that they lose their religious liberty, not until they cease to speak as free men and women that they lose freedom of speech, not until they permit themselves to be herded into a subservient rabble that they lose their freedom of assembly – and, as business men, not until they begin to rely on outside help, political or otherwise, that they lose their freedom to manage their own establishments.

Believing these things, it was clear to Lynde, and to me, that the only way we could bring back our business to where it should be was to go out and do it – bit by bit.

In 1920, something that a few years before was looked upon as a toy, was beginning to send music and the human voice to the market places. It was radio, of course. On August 31, 1920, the *Detroit News* broadcast what is thought to be the first news program in radio history and, about the same time, a radio station in Pittsburgh began a similar public service. Within a short time there were tens of thousands of receiving sets in operation, and other tens of thousands were in the process of building.

Lynde went to work to develop what became the Bradleystat Perfect Filament Control Radio Vacuum Tube although, in August 1921, the *Gossip* admitted, "we know so little around here about radio that we do not even know in what part of the system the rheostat is used." The availability of the tube was announced in March 1922. Within three weeks we had orders for 40,000 and, quickly, for another 60,000, causing the Gossip (April 1922) to point out that porcelains, molded knobs, screw machine parts and springs in 50,000 lots do not grow overnight."

Up to 1922, our manufacturing was confined to crane controllers, speed regulators, reduced voltage starters and rheostats making use of the "carbon-pile" principle of current control. As a result, the growth of the company was restricted to the limits of the usefulness of its products. In the depression of 1921, we did not repeat the mistake of laying off key people, nor of dropping development work. Rather we looked around for ways to improve our products, and to make new things that we might bring the company to what we considered its proper place in the competitive field that is the American free enterprise system.

In addition to starting work on devices for radio, we developed a new switch for the electrical industry. This switch we called the Type J-1552. It was released to the public in September 1921. An "across-the-line" starting switch, it was a big improvement over the J-1602-B switch, which was the first across-the-line starter to be manufactured. We introduced the J-1602-B switch in 1915. In announcing the new switch, we said:

> *The increase in the use of alternating current for power and the consequent general application of the squirrel cage motor, especially on the smaller horse power loads, have created a need for an automatic across-the-line type of starting switch. In fact, one might say that the development of these three things has been so closely tied together that no one of them has been the cause, alone.*
>
> *The more general use of alternating current was desirable because of the simpler and cheaper distribution. The squirrel cage motor is low in price because of its simplicity. It is operated with a minimum of maintenance and is entirely satisfactory for line shaft machine tool pump, compressor and many other drives where straight starting is required without excessive starting torque, or without speed control. The smaller squirrel cage motors may be started by connecting them directly to the line . . .*

The rapidly expanding use of alternating current, and the advent of radio opened vast new markets for our products – and, because in 1921 we did not lay off people, or stop development work, we were ready for the great change that came in 1922.

In that year we began producing graphic disc compression rheostats trademarked Bardleystats, Bradleyohms and Bradleyleaks. They were supplied – in the millions! – to amateur set builders for their radio receivers. They were the forerunners of the present day resistors. Likewise, today, the Allen-Bradley Company is the largest producer of high quality molded composition resistors for electronic devices. (Editors note: Allen-Bradley exited the molded resistance business in the early 1990s.)

Also, in the Type J-1552 switch, we had the forerunner of the simple, solenoid operated, across-the-line starter now known as the Bulletin 709 line. Today, the greater part of the Allen-Bradley industrial controls is in the form of solenoid switches for across-the-line starters, reversing switches, and multispeed motor controls of different types.

In 1922, we managed to make a little money, after losing quite a bit in 1921. In 1923, our net sales reached $953,120 and, in 1924, we went through the million mark for the first time. Our net sales were $1,161,380. The policy we had adopted in 1921 of keeping our organization together, and continuing our development program, was paying off.

With us, as with many companies, the middle and late Twenties were years of great prosperity – with one important difference. Having no outside stockholders to consider, and no directors to interfere, we were able to plow back

our earnings into expansion. Surely, had there been outside stockholders, such a policy would not have been acceptable. Directors would have insisted (I am not quarreling with the point of view) that the money – in part, at least – be paid out in dividends, another part set aside as surplus, and a third part used to maintain adequate working capital.

So it was that instead of being forced to put a priority on dividends, working capital and surplus, Lynde and I were able to emphasize research, incentive compensation and the best possible working conditions. We believed those values were the companions of growth.

We knew our policies were not orthodox. We relied on the fact that we were so well informed on the company's internal problems that we were able to judge a given situation and meet any emergency resulting from the use of unorthodox procedures.

In placing emphasis upon the important elements of research, the best possible working conditions and incentive compensation methods on a scale equally unorthodox, we did not consider ourselves to be philanthropists. We were businessmen, and what we were doing was nothing more than good business.

Early, too, we believed it good business to make, and to continue to make, the best product we know how to make. This was where research came in. I know, of course, that few companies (they were the large companies) were emphasizing research and development work prior to World War I. It was natural that we should be doing it. Lynde was an inventor. A born inventor, I might add. Being an inventor, he knew better than to gear research to production and sales. He geared production and sales to research. It was his conviction that no company is as vulnerable as the one with an inferior product – and he often said that whatever the product, smugness has no defense against the impact of a new idea.

Let us look at it this way.

Let us suppose that, in 1910, we had taken our finest rheostat, prettied it all up, and sealed it in a glass case from which all air had been removed – in other words, in a complete vacuum. Then, after taking these precautions, we had taken further precautions and kept the sealed glass case in total darkness so that, when opened today, the device was in as perfect working order as it was on the day it was sealed off. Well, how would you like to try to sell it in today's competitive market?

So with automobiles, refrigerators, electric light bulbs and almost everything else. Today's salesman could not sell the steel that was rolled in 1910, or the rubber that was made, or the glass, or a thousand other products. And, as today, so tomorrow. Today's finest products will have no market tomorrow. Thus

it is that the future of Allen-Bradley, as a company, is in the research laboratory; so is your future, and mine, as individuals.

We know this, and have known it for a long time. Have known, too, that the best equipped, and the best paid is the most economical labor to employ. Long since the American economy passed the point where, to earn more, men and women had to work harder and longer. Higher wages and shorter hours did not originate in the minds of labor union officials. They did not have birth in the halls of Congress.

They originated in the minds of employers. They found verification in better tools and efficient direction of work, *both supplied by management*. To this, I would like to add that better tools, and the better direction of work, are the only things that create better value for the customer and better wages for the employees. They are the only things that can.

7. The Need for Key People

Increasingly, Lynde and I were checking, and re-checking, the type of company we were building, and giving thought to ways by which we could pay the debt we owed to the officers and employees. We had many meeting with Louis Quarles, who, in addition to being our legal counsel, became secretary of the company in 1917.

From the beginning it was Lynde's intention to have a family-owned company. That, as you know, was the reason for the agreement between us – that the surviving brother should be in control of the business. With ownership settled, our concern was for its continuance and, also, for the men and women who worked with us. It was our desire to establish a company in which no pressure of insecurity would drive people elsewhere for work, and no lack of opportunity would force them to go elsewhere for promotion.

We believed it was possible to set up a company in which generations of men and women would find work in pleasant surroundings, would be well paid for what they did, and would be well rewarded for their contributions. We did not know how to go about doing it, but we were sure that in some way, or by some means, we would find a way.

"I take it that when you talk about 'generations of workers,' you are thinking of ownership, and management, in terms of twenty-five years, or fifty years, or a hundred years from now?" observed Quarles, the first time Lynde brought up the subject.

"Yes."

"Then what you really have on your mind is the operation of the company when you, and Harry, are no longer here?"

"That's right."

"The best way is to create a trust, and put in as trustees men who are familiar with your views, and in whom you would have confidence to carry out the future operations along the lines you, and Harry, have been establishing."

I remember the grin that lurked in the corners of Lynde's mouth, as he inquired: "Is it as simple as that Louis?"

"No, of course not," replied the lawyer, returning the grin.

"How do we do it?"

"I don't know," answered Quarles. And with a wider grin added, "It may astonish both of you to hear me, a lawyer, making such a confession. But, I am making it. I do not know what sort of a trust it should be. I do not know what the law says should be the form of the trust. I'll have to look it up. It's going to take some time because, first, we are going to have to settle on what sort of a trust we want to create."

We discussed many subjects in that first meeting; and as I recall, the subject we discussed most was the future of those we looked upon as key people – and the environment under which their successors would work. The discussions continued through the years of the twenties, and into the early forties.

The year of 1929 was a year of continued expansion. In net sales, it was the greatest in our history, net sales reaching nearly three million dollars. In 1930 we did not do quite so well, but it was such a good twelve months that it lent an unreality to the clouds of depression that were dropping lower and lower. On October 29, 1929, the stock market had collapsed, bringing losses of $30,000,000,000 and creating panic.

Before the end of April 1930, more than 3,000,000 men and women were without jobs; by the beginning of 1931 the total unemployment was nearly 5,000,000; by March 1933, the total was at 10,000,000 – and the figure remained at 10,000,000 for seven years despite all of the pump-priming, and all the boondoggling that political minds could devise.

As I said a moment ago, in 1930 we did pretty well, although our profits were less than half of what they were in 1929. There were two reasons. Business fell off sharply in the latter part of the year and, to provide representatives with more things to sell, we spent more money in research and development. In 1931, we ran into heavy losses, and into heavier losses in 1932. We were up to our necks in trouble although, in 1931, we had brought out four new products. They were a limit switch, a new drum switch (both reversing and non-reversing), the Type A. Bradleyometer and ignition suppressors for automobiles and radios.

Finally, in October 1931, we had to reduce wages and salaries so as to keep them in line with sales. Despite the financial reserves we had built up in 1926 to 1930 by retaining earnings in the company, our savings were exhausted, and so was our credit with the banks. In fact, and in order to keep the banks in a mood to ride along with us on the loans we had, we were compelled to liquidate a little here and there, in addition to reducing the accounts of our other creditors so as to keep them from closing in on us.

Helping us greatly in this difficult period was A.F. North, who began to work for us on January 1, 1929. I became acquainted with him in the autumn of 1920. At that time, the Allen-Bradley Company was having some work done by a

firm of auditors in Chicago, and North was with the United States Internal Revenue Bureau, also as an auditor. Among his duties was the checking of our reports as made out by the Chicago auditors.

It was well that North came with us when he did. In the profitable years of 1929, he was able to change over a good many procedures to machine operations so that when the lean years came he had things pretty well in hand, and he knew enough about the ins and outs of our business to be able to listen to table-pounding bankers, and do some pounding back – to assure, and reassure creditors it was in their interest to continue to do business with us.

Before reducing wages on October 1, 1931, Lynde and I, acting as a company, petitioned the Public Service Commission, in Madison, for permission to issue preferred stock as an offset for wage cuts that would have to be made.

Since the depression began in October 1929, general business had declined, but we tried to keep our business going as usual so that we could pay wages as usual. We did so for two years and two months after that. We borrowed a lot of money from the banks to do this and they finally refused to lend us any more. Then, we had to cut wages, or close up.

We were one of the last firms in the city to cut. But we simply had to; there was nothing else we could do.

So we found ourselves petitioning the Public Service Commission with our stock proposition. More than a little skepticism greeted the request, but after asking a lot of questions and doing a lot of investigation, the Public Service Commission granted it.

Having in mind the urgent need of keeping costs in line with sales, we announced:

Proposal to Employees respecting cuts in wages and salaries to be paid in Preferred Stock. The Management has proposed to the employees that wages and salaries be reduced, based upon monthly orders, or shipments, or a combination of both, in accordance with the following schedule:

Monthly Orders and/or shipments	*Cut in wages or salaries*
Over $85,000	*No Cut*
85 to $80,000	*8.5%*
80 to $75,000	*15.0%*
Under $75,000	*24.0%*

It is proposed that in lieu of the amount of this reduction in wages and/or salaries, the employees will receive from time to time Preferred Stock at par.

Unfortunately, business went from bad to worse and we were hard pressed to keep the business going at all. For myself I can say I wouldn't want to go through it again.

In August 1932, our business became so small – less than a third of what we did in 1929 – that we had to make additional cuts. We tried every way to avoid it, but there was no way out. We were out of cash; the money we had saved was long gone; the banks were deaf to all our entreaties. The only way we could get money to meet our payrolls was through the apparatus we shipped, so we based cuts on a sliding scale of shipments. The months in which shipments were the poorest we had to cut the most; and when shipments were better, we could and did pay more.

The stock program was a way to give Preferred Stock equal to the amount of the cuts made. We were told that this was unnecessary, and a mistake. But we felt differently, and we were sure that while it would not help employees to meet their immediate needs, they would realize that we were in earnest in our efforts to do everything we could do.

It was not until 1934 that we got our monthly orders back to the $85,000 mark. The ceaseless buffeting of the days, and weeks, and months between wearied us and, doubtless wearied our people just as much. But the pressure of events did not wear them down. They knew, as did we, that harder conditions had armed earlier Americans with courage and confidence. They knew, as did we, that it is only when courage and character are not what they should be that despair takes over. Once more, Lynde and I were moving through a period that made us even more sharply aware of our debt to our people.

By the spring of 1934, we had made such substantial reductions in our bank loans, and in our other debts, that we went to our employees March 30, with a new proposal. Titling it "Good News," Lynde wrote:

> *Your fine attitude during the times when business was bad towards questions of wages and salaries was of great help to the company. Your cooperation was very much appreciated.*
>
> *Now that business is better, the company wants to demonstrate its appreciation for the help you gave. Bearing in mind that the future is still somewhat uncertain, though quite promising, we have worked out the following wage and salary system, which permits you to share in our increased business.*
>
> *The total net of the shipments for the current month will determine your wage and salary during the following month. On a net total of shipments amounting to $125,000, all wages and salaries, except those of salesmen and district office employees, will be increased 5%. For every $5,000 in shipments above $125,000, the wage or salary will be increased by 1%. In other words, net shipments of $130,000 during a given month will pay a 6% increase in wages or salaries during the following month. Shipments of $135,000 will pay a wage or salary increase of 7% and so on. For instance, shipments during March probably will exceed $150,000 and, therefore, the wage or salary increase to be paid during April will be 10% . . .*

Incidentally, it is understood that if shipments should drop below $125,000, then you will receive your present rate of compensation.

On the following day, Lynde made a second announcement:

On April 1, 1934, the company intends to pay you 10% of the amount previously dedicated from your pay and credited toward the purchase of Preferred Stock. The company, as you will recall, instituted this method of paying part of your compensation in Preferred Stock when business was so bad . . . as conditions improve, further payments will be made.

Before going further, and for purposes of clarification, I think I should say that 1934 was not one of our good years, financially. Our books showed a loss for the year, but it was a loss largely attributable to increases in the payroll. In 1933, our payroll was $849,931.42; in 1934, it was $1,052,538.74. Our net loss on the year was less than $10,000, which, percentage-wise, was about three percent of our losses in 1932.

This does not sound like very much, but as a company, we were much like an average family. We had to work with small means. Even in good times, to say nothing of depressions, we did not have the money to finance mistakes. Despite this, we tried to leave things on a positive note:

The future of the Allen-Bradley Company never looked brighter than it does now. We have every confidence that general business is going to improve, and we know our own business will improve at a faster rate. Our salesmen are in a better position than they were before because of the new apparatus such as speed regulators, drums, relays, and the new line of solenoid switches and other devices that are about to go on the market. All of these devices were developed during the depression, and have helped to make jobs . . . In closing, and in answer to the petition regarding the payment of the Preferred Stock – a petition which was signed by a great majority of our employees – we are glad to announce that until further notice we will arrange so that when any money can be spared, even though it is only a small amount, it will be placed in a fund to redeem Preferred Stock in the following manner:

The Credit Committee of the Credit Union will decide which of the holders of the stock are most in need of money, and their stock will be redeemed first. If any money is left after these amounts have been paid, further stock will be redeemed paying the smallest amounts of stock first. Anyone who is in great need of money for provident purposes should ask their foreman who will have complete information regarding the procedure to be followed. We believe that the signers of this petition have shown a spirit of true generosity and justice for their fellow worker who might be in need, and we wish to thank them for helping us with this problem.

The business continued to improve and we made a small profit on the year. Eventually the Preferred Stock was retired at its full face value, but that was some time in the future.

One of the big items that was bringing us out of the depression was the Bulletin 709, which was a new solenoid operation magnetic starter with overload protection. We announced the new product in October 1933, and began manufacturing it in the same month.

We offered it in two sizes. Two additional sizes were announced in December 1934, and the remainder of the line, through Size 7, was added after 1940. The starter was an immediate success; in fact, it was so successful that competitors lost no time in coming out with their own versions of the same device.

The new product was the yield of several minds – Lynde's, Gus Wilms, and Hans Peterson, who was Wilms' assistant – but mainly out of the mind of Wilms. In the spring of 1931, Gus began giving consideration to something new in switches. He told Lynde about his idea, saying what he wanted was a solenoid starting switch that employed double-break contacts for each pole – as opposed to a clapper.

Lynde was intrigued, and Gus began making tests, and working our problems on paper. In the spring of 1932, Wilms told Peterson to develop "a switch, a three-pole switch, of one hundred ampere capacity, solenoid operated, and with an entirely closed hood."

While Peterson was working on his assignment, Wilms continued his calculations on paper, trying to get the contactor into shape and to reduce it to practice. He stopped work on June 29, 1932, having solved the problem of arc interruption. Remaining were the problems of reducing the contactor to practice, of coming within the cost, of coming within the size, and – of high importance – finding a good insulating material which was arc resistant.

There was no such substance on the market, so Wilms took his problem to the General Electric Company. Here he obtained a new material. It was cemented asbestos.

In the autumn of 1933 the switch was on the market, again proving that in industry at least, the *only* source of really growth is in the depth and fertility of the mental soil of the inquisitive mind.

The new switch proved, once more, that vast, undeveloped fields are always waiting for the pioneer. To the pioneer, the great stimulus is not the presence of a traveled road, but the absence of one.

That is the way it was with Gus Wilms. When he died, more than fifty patents had been issued in his name. Physically, he was a small man who seemed always to be peering at tomorrow through the thick-lensed, steel-rimmed spectacles that were fitted closer to his eyes.

8. Trouble with our People

In emphasizing the continuing need for key people, Lynde was realistic. He believed that earning a living was an essential part of everyone's education; and, a practical man, he knew that whatever the company, the jobs of the many depend upon the work of the few. The few are the key people. The key people are those who think out the products and the better ways for making and selling, the men who, through their own initiative, provide the jobs, who pay wages, and who through wages, enable their fellowmen to move into higher standards of living.

This is the exact opposite of paternalistic programs, which must be patterned in terms of the lowest common denominator. The long road of history is lined with the ruins of nations whose rulers drugged the wills of their people by promises of government security, and led them to disaster by the same promises.

During this time, we were approaching such a period in our own country. A period when the American people were ballyhooed into accepting all sorts of schemes, most of which were designed to restrict the liberties of the people and expand the authority of the politicians.

It was not until 1940 when, in anticipation of America's participation in World War II the Federal Administration began bringing back into production the nation's heavy goods industries, that unemployment began to disappear.

But in the late 1930's, strangers loitered on the sidewalks outside the entrances to our plant, button-holing our people, passing out handbills on which it was charged that the preferred stock we gave in lieu of making a wage cut was a "gyp" because we had no intention of redeeming it, and yelling "the President of the United States wants you to join a union."

From communist organizers, we heard that the depression was the fault of persons such as ourselves, who had oppressed labor, bought too many machines thus robbing men of jobs, made too much money, and who generally were a selfish and high-handed gang of pirates. The new evangelism promised that all that was wrong would be made right through the legislative control of production, and the unionization of workers.

The communist organizers could not overlook the industrial plants of Milwaukee, any more than they could overlook similar plants in Detroit, Cleveland, Chicago or any other manufacturing center. They lost no time shouldering and wheedling their way into the lives of the employees of Allis-Chalmers, A.O. Smith, Allen-Bradley, and every other company in Milwaukee. They talked with our employees in the street, and called on them at their homes.

After giving it a great deal of thought – I decided to take our story directly to our people.

> *I know that there has been more of less talk around the plant about joining a union. The question whether you should join a union and obligate yourselves to pay dues and give up a certain amount of your personal freedoms is a matter for each of you to decide. All I can say about that is that we do not think there is any need for a union and you will be better off if you do not join.*

What followed was a review of the preferred stock program, and various other measures that had been put in place over the years in our attempts to cope with the depression, while keeping people employed.

But the persuasiveness of the organizers prevailed. Of course, the sympathetic interference of the Washington administration on the side of unions was not a handicap. Characteristically, because politicians (in unions, or in public life) always have to have an issue, the negotiators presented us with a list of grievances, all of which would disappear if (1) we would give a wage increase, (2) we would agree to a closed shop and (3) would sign a contract recognizing the union.

After more than a little disagreement ("bargaining," it was called) the representatives said they would settle for an increase in wages. They were reminded of the already established basis under which we shared profits with our employees on monthly shipments, and they were told, "We are sure our employees will be better off, financially, at the end of the year than they will be under the fixed wage scale you have set up."

In 1939, we had a strike. The issue was of the closed shop. After ninety days, the strike was called off, its leaders having become convinced that we would not change our previously stated position.

During the strike, we used a vacant office in a downtown building where we kept our accounts receivable records. We surprised the banks by paying off our loans, and we were able to do it because we liquidated our inventories by keeping up shipments, although we could not bring in materials.

The union representatives were not impressed. "We are interested in what we get today, not in what we may get tomorrow," they said. We objected, strongly. They refused to budge. The subject of a closed shop was brought up. This was a subject we refused to discuss at all. Finally, the union stopped insisting on it and a contract was signed.

If I lived to be a hundred and ten years old, I will never understand the mental processes of people who play games with the individual freedoms of their fellow men. I am referring specifically to the closed shop. Involved in the closed shop theory is a principle that must not be violated by unions or by employers.

Involved is the principle that denies to anyone the right to rob Peter to pay Paul. And that is precisely what an employer does when he agrees to a closed shop. He robs his employees of their freedom that he may pay a union to free him of responsibility.

This must not be taken to mean that I am saying an employee should not belong to a union. If an employee wants to pay dues for what a company offers at no cost, that is his business, not mine. The only thing I am insistent about is that everyone has complete freedom of choice – to join a union, or not to join a union. Progress is a result of widening the areas of individual freedom, not in restricting them.

Certainly, if we are to progess as individuals, or as a nation, the differences that rise between employers and employees must not be permitted to separate them into hostile armies, as some union officials are trying to do.

All income is from work. Employer and employee have the same source – production. That is why it is so important that if there is to be progress, and if we in industry are to continue to do our part in raising the standard of living, that we protect the freedom of opportunity for the individual to progress in any organization that employs him.

Nearly one hundred years ago, we went to war against each other in this country over the issue of human beings being classified as property. Unless we change our thinking about human values, it can happen again, although I am confident it will not. I have every confidence that given time, and given the truth, the American people will reduce every problem, including this problem, to its proper level and keep it there, regardless of pressures in the form of unions, employers or any other form.

It is not enough for employers to concern themselves with products and markets, with raw materials, costs, working conditions, unions and stockholders. They also have on their hands the job of taking a good look at the spot they are on: By the quiet processes of legislation, a generation of political theorists have reached the point where they are in a position to put an end to the independent system of enterprise that has given the American people a standard of living is the envy of the world.

In 1938, we had our last losing year of the depression period. The loss was comparatively small, and it had no influence one way or the other, on the plans Lynde and I were making, and in the discussions we were having with the lawyers, the bankers and the tax experts regarding the future of the company. One of the things that disturbed us most was the argument by lawyers and bankers and that we should have as directors of the company persons whose principal interest were outside the company.

We had only three directors, and they were the officers of the company. Their names were Lynde Bradley, Harry L. Bradley and Louis Quarles. Lynde was president; I was vice president and treasurer; Quarles was secretary. Naturally, as officers of the company and as its directors, we sought to visualize the company that would be in existence without Lynde and without me. Quarles agreed with the view that we should enlist the services of outsiders in the capacity of directors.

Lynde was vigorous in his opposition. So was I. We were of one mind in the belief that outside directors would not understand our basic philosophy of keeping the Allen-Bradley Company a separate and distinct organization. We had with us about twenty people whom we considered our key employees (see Appendix). We believed our first obligation was to them, and that only they could train people for the longer picture. We believed our way of operating a company was sound and, if managed by persons who were familiar with our methods and who believed in them, we were sure it would be management that would make for greater company security than supervision by outsiders.

We were not unaware of the dislocations of mergers. A few years previously in Milwaukee, men and women lost their jobs when several companies joined their efforts. These were men who had earned promotions, and who had invested money and years with their companies. They were shoved aside in the personnel shuffle that followed the mergers. They came to us looking for work, and we were happy to employ them.

Lynde recalled the unhappy experiences to Quarles, and added "Louis, we don't want any of our key employees to be subjected to the torment of uncertainties."

To be sure, Fred Loock, Gus Wilms, Bob Whitmore and the others were employees – but not employees in the sense of an hour's work for an hour's pay. They were as much a part of the company as we were. The fact that Lynde and I owned the business was no barrier. So long as we had a place to work, so did they – and they knew it.

Because of the emphasis we place on people, I am asked very often, to identify the quality that distinguishes a key employee. I always have to answer the question by first stating what I believe is good business. I believe it is good business to make a product someone needs, is willing to pay more for than it costs to make, and after using it believes it to be worth more than he paid.

So it is with the key employee. He is the employee who is held to a job by the belief that this is where he belongs – and, no matter what the obstacles, he is going to keep this particular business moving ahead.

To give greater freedom to the key executives, we established on January 2, 1937, what was called the Allen-Bradley Key Executive Trust Agreement. Under its terms it was agreed that each of said employees (Fred F. Loock, G.O. Wilms, A. F. North, R.W. Whitmore and L. H. Matthias) is to receive a bonus, in addition to his regular compensation, equal to one half of 1% of his respective salary for each $10,000 of net profits earned by the company over and above $100,000." Additionally, the company established a Pension Trust for the benefit of these employees, so they "will be better able to devote their entire thought, talents and efforts to . . . the interests of the company." This agreement was retroactive to include the year 1936 and ensured that the company could not take away the rights of any participating executive, and further ensured the trust was entirely separate from the company and its assets.

Signing the agreement was one of Lynde's happiest moments. By insuring the continued presence of creative minds, he felt he was certifying the future of the company.

9. Suddenly, Lynde Was Gone

My brother and I talked many times, about firming up an estate plan under which would be established a definite procedure as to stock control of the Allen-Bradley Company, but Lynde died without anything having been done. He had been sick, was feeling much better, was up and around, and was planning to return to his office in a day or two. Suddenly, he was gone. The date was February 8, 1942.

Always in our discussions, Lynde and I speculated about the best way to make sure the key people who had helped us to develop the business would be assured a place to work and would find, in their work, proper rewards. It was Lynde's conviction that, almost always, the philosophy of a business is of more importance than its management. His great interest was in the contributions of a business to its people and to the community, rather than in its profits to its owners.

He thought this way, not because he believed that profits were unimportant. He well knew that without profits, a business could not long survive. But he believed that profits were the natural result of serving the common good.

This philosophy explains his whole attitude. He rejected the theory of "going along with a policy know to be wrong because it is safer to do so than to stick out your neck." To compromise a principle was to surrender a part of his heritage. He could no more have done that than he could have changed the length of his legs.

It was never Lynde's intention, nor mine, to distribute stock among employees, however highly placed in management. In our wills, each provided that the surviving brother would be the only stockholder. Lynde left all his stock (51%) to me, not realizing what severe tax penalties would be visited upon his estate.

Lynde was strongly opposed to the idea of his widow being a stockholder in the company. Of a thrifty nature, he had provided for her support through the purchase of annuities, insurance policies and high-grade bonds. His reason for opposing her presence as a stockholder took into account the fact that, from its inception, the company had encountered financial difficulties. It never seemed to have enough money to finance needed expansion. There were the severe money troubles in the years of the great depression.

My brother knew that, as a stockholder in a close corporation, his widow would be required to endorse all loans of the company. He also knew she might have to "make good" on the endorsements. He did not want her to dissipate the other and more conservative assets he had provided.

I think it is important to keep in mind that we, my brother and I, never looked upon the stock of the company as an asset to be traded in, or bargained with, or as wealth by itself. To us, the stock was something to be held permanently for the purpose of assuring a place where the stockholders might work – and where the stockholders could provide for persons working with them in a mutual endeavor. At no time did we ever look upon the stock as something to be traded in for purposes of making money.

It was not long after Lynde's passing when the problems of estate taxes began assuming serious proportions. One problem concerned the raising of funds to pay them. The taxes were far in excess of anticipated amounts because of the unexpected high valuation placed upon the stock of the company by the authorities. The sum demanded was large. It was money I did not have. A second problem came when Lynde's widow decided to exercise her dower rights to take one-third of the company stock, which was held by Lynde at the time of his passing.

Believing that the opinions of investment bankers as to the value of stock in a close corporation would carry weight with tax authorities, I suggested to three investment organizations that they study our problems and make recommendations. Also, I suggested to them that they give thought to the other problem of raising funds to pay the estate taxes.

The investment bankers agreed that the values established by the tax authorities were much too high, but they were very critical of the company's balance sheet, and its manner of financing capital improvements. At the time, the company was making large additions to its plant facilities without having set aside funds for payment of such expenditures, except as arose out of current receipts. As had been our custom, we were relying on the fact that these plant expenditures could be charged off over a maximum period of five years amortization under Certificates of Necessity issued with respect to war facilities.

In 1940, William S. Knudsen, member of the Council of National Defense in charge of production, persuaded President Franklin D. Roosevelt to recommend to the Congress a ruling permitting an amortization time of five years for emergency plant facilities. Congress approved. Prior to this ruling, the Treasury's amortization rate required that sixteen years must elapse before a manufacturer could get back his money in the form of tax credits.

Our hand-to-mouth method of financing capital improvements was most unacceptable to investment bankers. They believed that current, short-term elements should not be confused with more permanent, long-term factors in a business operation. They would not accept the view that construction of a factory building could be started in the expectation – even though it was a confident expectation – that funds would be available when payments were due. More

important, they would not accept the doctrine of absorbing earnings from operations in the form of long-term capital improvements.

The reports of the investment bankers gave me a new insight into business and financial procedures. Although it was to my advantage in my dealings with the tax authorities to admit that the company was not in the best shape financially – or so the investment bankers said – I was chagrined to learn what others thought of us.

Briefly, this was their verdict: If it was to continue in business, control of the Allen-Bradley Company had to be turned over to strangers.

They insisted that the financial problems respecting my brother's estate could only be solved through the sale of stock by the estate; they also insisted there would have to be a sale of stock by the company itself to provide (1) adequate working capital, and (2) to assure regular dividend distributions.

It was stated that a minimum of $1,000,000 additional working capital was necessary. To obtain it, the bankers proposed selling several thousand shares of stock, which meant the control of the Allen-Bradley Company would have passed permanently from persons identified with the management.

I opposed this. Equally opposed was the management group.

After months of exploring many, many options, we eventually settled upon an ingenious trust structure, one that was authored by our young tax attorney Harvey Peters. This plan distributes company stock to a carefully engineered series of interlocking trusts – trusts controlled by key members of our management team, and the Bradley family. I sold the trusts, all of my holdings in the company, and became a paid employee for the remainder of my career.

This unique arrangement is what allowed us to go forward in the years ahead as an independent company. It assured that current company shareholders –not outsiders – would determine the fate of Allen-Bradley.

Our company has not followed orthodox methods for the sake of being orthodox, nor has it followed unorthodox procedures for the sake of being unorthodox. Based upon careful analysis of what is right, it has followed what it believes to be right, irrespective of the orthodoxy of the method.

For illustration, the company has conducted its research, and developed new products, with the thought in mind of developing a product to do a particular job. An example of this procedure is reflected in the company's development and sponsorship of solenoid products. We introduced these products over their rejection by others. Within a few years, the entire industry had to follow suit.

Another venture in the field of unorthodoxy was the development of the variable method of compensation. Briefly described, it is a method, which compensates employees on the basis of the company's increase in orders and shipments over an established base. There is little doubt but that this procedure kept many employees with the company in the post World War II period, when switching jobs was the rule. The employees recognized that they would share in the company's success to the degree that business improved, without regularly petitioning for a changed salary status.

A word about taxes. Taxes are necessary and proper. They should be paid, and they must be paid. Furthermore, good government is worth all it costs. On top of that, costs of government, under ordinary circumstances, are very reasonable.

When the founders of this country set up our form of government, they placed upon the people, the responsibility of paying the costs. In the same document, the Constitution, the founders gave to the administrators of government the power to tax, but gave to the people the authority to remove the administrators. What the founders did not do, and perhaps should have done, was to have written into the Constitution more explicit restrictions on the taxing powers.

Years ago, Emerson wrote, "a man who cannot be acquainted with me, taxes me; looking from afar at me, he ordains that a part of my labor shall go to this or that whimsical end – not as I, but as he happens to fancy." And centuries before, kings learned that people could be taxed into rebellion, but not into submission.

Modern officialdom is no less gluttonous in its appetite for taxes – only more deceptive. Instead of openly taxing all the people, and doubling up on all the people when more spending money was desired as English kings once did (thus fingering everybody), modern officialdom uses propaganda to steam up bias against selected individuals or groups, charges them with cheating on their taxes, and scalps them in the tax courts.

As for corporate and business taxes, for the most part, these taxes are passed along to the consumer in the form of hidden taxes. These are taxes that are concealed in the price of everything everyone buys, whether the purchase is a penny, or a dollar. The gum manufacturer hides taxes in a stick of gum; the steel manufacturer hides taxes in the price of an automobile or a wheelbarrow; the meat packer hides taxes in every steak, and in every pork chop.

The taxing authorities know where taxes come from, and who pays them. It is easier for the authorities to pick out whipping boys, and blame them, than to admit publicly they could be wrong. After all, they do have their halos to protect. They would not agree, but they know that waste, and excesses in taxation, come from only one cause. That cause is bad management.

A nation's progress is measured by the character of its people, and not by the promises of its politicians. It seems hard for politicians to comprehend one simple truth: There is no source of national income, but the work of the people.

The source of most of that work is business. And when taxes against a business (large or small) become too heavy, the assessment – whatever it may be – is paid. But not in money. It is paid in fewer jobs.

Keeping company with the politician's inability to comprehend the source of taxes is his equal inability to keep from promising, come election time, to "reduce taxes, especially for low and middle incomes, encourage small business and correct inequalities." That theme song has long introduced Republican and Democratic candidates alike.

10. The Productive Affairs of Life

I have heard it said by scientists "whatever is possible is inevitable." It sounds reasonable, and perhaps it is possible to establish wages scientifically. At present, however, there is no way for measuring accurately, the value of each employee's contribution to the end product of manufacturing, whether that product is a washing machine or a jackknife.

If there were, it is obvious that some wages would be cut. Salaries, too! Also bonuses! Scientifically, how would you go about measuring the contribution of a floor sweeper, or a food handler, to the selling price of a solenoid motor starter?

Until the time comes when such contributions can be measured scientifically, we will have to get along with what amounts to a rule-of-thumb answer. Meanwhile, while we do not know, precisely, how much a floor sweeper, or a food handler contributes to the selling price of a solenoid motor starter, we do know that more often than not, the floor sweeper, and the food handler, are breadwinners in their families. This means that the company has a responsibility beyond what the arithmetic might show.

Under such conditions it is the duty of management to see that the company is in a position, financially, to pay a wage that permits a family to be a self-supporting, self-respecting unit of American society.

Unfortunately, the issue of wages is a subject so saturated with emotion that few persons, comparatively speaking, go to the bother of examining how wages and more wages are made possible. Wages are made possible by production, and more wages are made possible by (1) training men to be worth more, (2) providing men with better tools, and (3) establishing better production methods so men can earn more.

These three things: Training, better tools, and better production methods are all supplied by management – and *only* by management.

Believing the dignity of a human being requires security of personal independence; believing, too, it is the duty of an employer to be always searching for wiser methods to build a better company, we announced on November 30, 1943, a Profit Sharing and Retirement Trust Plan under which "the Allen-Bradley Co., will pay over to a Trust Fund a reasonable part of the earnings of the company, which will be used for the sole benefit of its employees to provide them with retirement benefits."

On November 25, 1949, we established a supplemental retirement program called the Allen-Bradley Pension Plan. The Pension Plan has two objectives: (1) to supplement the Profit Sharing and Retirement Plan by providing retired employees with a monthly income, and (2) to give recognition to service accumulated before the Profit Sharing and Retirement Plan was adopted.

Also instituted in the late 1940s was a Group Accident and Health insurance plan.

A number of years ago, John Maynard Keynes, an English economist, wrote: "I believe the day is coming when the economic problem will take a back seat where it belongs, and the arena of mind and heart will be occupied by our real problems – the problems of life and human relationships, of behavior and religion."

In putting our "real problems" and our "economic problems" in separate compartments, Keynes overlooks the fact that human beings had to go quite a distance along the path of "human relationships of behavior and religion" before they were aware of the presence of an economic problem.

In truth, it was not until we had a great deal of experience with economic problems that we began to see it is not possible to deal with them without dealing with problems in human relationships of behavior and religion, and to understand that as problems they go together.

A better agriculture, a better industry, a greater and freer flow of goods among people – is that not also serving the "real problems?" If not, what becomes of "the problems of life and human relationships of behavior and religion" if they cannot find practical answers in the productive affairs of life?

It seems to me that the English economist erred when he inferred that economics is necessarily a materialistic subject. Men are not made materialists by the possession of material things – but by their lack.

11. The Company We Built

Come into our building and you will see Lynde Hall. It is on the eighth floor of the factory, and it is named in memory of my brother. It is a sort of combination theater and gymnasium.

The stage, occupying one end of the hall, is completely equipped as a professional facility.(Editors note: In 1976, this facility which still serves Rockwell Automation employees, was renamed Bradley Hall to honor both Harry and Lynde Bradley) Periodically, the drama club, directed by a full-time coach, presents a one-act play for the employees during the noon hour. The club also produces a series of plays for evening entertainment – and takes a leading part in the annual Christmas Party, which long has been a fixture on our calendar.

The Christmas Party is for the children, and their parents. It is a party that has grown to such proportions that, years ago, we had to make a hard and fast rule. It is a rule that denies admission to all childless employees of the company. Even so, it has still become necessary to divide "the party" into separate performances, running twice daily through several days before Christmas.

In many ways – and perhaps, because it is for children – it has become our great event of the year.

It began in a simple way back in 1924. We had less than one hundred children. Along in December someone said out loud, "We ought to have a Christmas Party for the kids." It sounded like such a good idea that we took stock of the situation. Since Lynde Hall had not been built, we rented the Milwaukee Auditorium, and held the first party on December 27, 1924.

We continued to hold the parties in the Milwaukee Auditorium until 1930 when, largely for economic reasons, they were discontinued. In 1942, we resumed them. By this time Lynde Hall had been established, and was in operation on a year-round basis.

The expanding operation has brought pleasant problems in transportation, gift-distribution, entertainment, and the complexities of handling 4,000 small fry. Someone with a flair for statistics has figured that more than 20 tons of Christmas packages were assembled, and distributed in 1957. In each package was an assortment of candy, popcorn balls, balloons, figs, dates, raisins, nuts, cookies, oranges, apples, and a tassel cap.

For the children – six years, and older – the 1957 Christmas package included a pair of roller skates, which made the weight of the bag roughly thirteen pounds. For the younger children who could only cause trouble for themselves

with roller skates – and probably for their mothers – simple toys were selected, and the weight of each bag was about ten pounds.

The Santa Claus story may be an old one, but when, at the end of the stage performance, Santa makes his appearance, strong walls are needed to contain the welcome of thousands of voices, not all of them young. I have often wondered what would happen to the merry-eyed gentleman if he did not have helpers to lend a hand to the small recipient who is often hard put to drag his, or her, present off the stage.

We try to leave bright memories with all our guests. In addition to Christmas packages for the children, and entertainment for everybody, we try to surprise our guests with something different each year.

All this activity had to have a beginning, and the start was made in November 1917, when bowling teams representing the sales and engineering departments began throwing spares, strikes and splits at each other. The sales department won the tournament. Total pins knocked down were Sales 9,963; Engineering 9,045. The individual scores ranged from 74 to 214 pins a game for the winners, and from 57 to 185 pins a game for the losers. The scores weren't much, but the enthusiasm was.

Some maintain the real start was made August 14, 1920, when the company sponsored its first outdoor picnic. The picnic was held at Grant Park, on the shores of Lake Michigan. Transportation was by chartered streetcars. The event was characterized by all the shenanigans of a company holiday, including a baseball game between the married and single men. Time has its way of erasing the details of such games. Nobody remembers who won. By design, no official scorekeeper was on hand.

There were other events, such as the monkey race, the shoe scramble, the cracker-eating and whistling contest, the gumdrop contest, the potato race, the three-legged race, the fat man's race, and the watermelon-eating contest. The employees brought their families; in all, several hundred were in attendance.

An orchestra was hired for dancing on the only portable dance floor in Milwaukee. This was a surface twenty-four by twenty-six feet. It was built for the purpose at the plant. It was built in sections, was readily dismantled for transportation purposes, and served many picnics. These annual outings were continued until 1932, when economic conditions interfered.

Dancing remains. Instead of a portable dance floor, we have Lynde Hall, and instead of a pick-up orchestra, has come the Allen-Bradley Orchestra. Right here, may I say that the Allen-Bradley Orchestra and Chorus, some fifty strong, is the pride and joy of the Allen-Bradley personnel, shop and management. So

renowned has this music ensemble become that its reputation has spread beyond Milwaukee, to the west, to the east, the south and to the north.

Social activities run the full scale in Lynde Hall – embracing such disparate exercises as motion pictures, cards, chess and photography. The athletic activities include four shop golf tournaments a year, and three for the women. Since Milwaukee is regarded as the capital of bowling, we are well represented in the shop leagues and in the tournaments. So it goes with softball, basketball, tennis, volleyball, table tennis, dart throwing, bait casting, archery – name the sport, we have it. And don't forget baseball.

Often, the baseball team has won the championship of the Milwaukee Industrial League. So has the softball team. Eight teams, averaging fifteen men to the team, make up the shop softball league. The basketball team has won the title in the Wisconsin State A.A.U., and has represented the State in the national basketball tournament at Denver, Colorado. The girls have their own basketball and softball teams, and they represent the company in contests with other industrial teams.

Other company-sponsored sports include trap-shooting, boxing, badminton – in all more than five hundred athletes of both sexes are brought together on more than one hundred different teams. There are other forms of recreation, less strenuous – dancing, calisthenics, a garden club, a rifle club, a camera club and fishing.

All in all, the editor and the staff of the Gossip have a busy time covering all the activities, and recording them for those who, next to participation in athletic events, like to read about them – and to examine the rows of trophies that line the walls, and fill the many glass-enclosed cases.

In the big recreation room is an open fireplace and scattered about the room, chairs and davenports extend their own invitations to come in and sit. There is a grand piano, kept in tune. One never knows when people will want to play and sing. Or, they may prefer to read, or smoke, or just sit. There is a convenience for every mood, and the Milwaukee Public Library finds it necessary to maintain a rental branch library for the convenience of our people.

To me, quite the nicest thing about the entire program is that it has not resulted from any long-planned sociological survey, nor is it the result of a welfare expert's recommendations. It is a program that has come from the employees themselves – and perhaps, it is something that has evolved from that old Milwaukee gemutlichkiel. I know of no word quite like that German noun which, if one is not familiar with the language, is difficult to pronounce and most difficult to define.

It may be enough to say, hopefully, that it means good living. But it goes beyond that. It is a word that means understanding and friendship. It is a word that means the ideal of social conduct. It is a word that means the sort of fellowship that brings people together, and leaves them singing. But, whatever the precise meaning, it is something that helps employer and employee alike, in the stability of employment charts.

Adjoining Lynde Hall is the cafeteria. Through wide, eighth-floor windows is a view of homes, churches, schools, tree-shaded streets; inside, is told the story of the company's technical developments, from Lynde's boyhood rheostat to the latest devices – all in exciting mosaics in walls and pillars. Done in marble and tile, and largely executed in Italy, the intricate mosaic pattern is worked out in bright colors to form a blueprint of the steady advance of electronics.

Tables seating four to six persons, other tables seating a dozen, all with soft-seated chairs to match, are waiting twenty-four hours every day in servicing three shifts of employees. Employees may bring their own lunches, or, they may buy meals at cost. The great kitchen, with its stainless steel equipment, is kept spotless. Be sure of that. It is subject to medical inspection, without notice, by our own medical people, in addition to the periodic inspections made by city health authorities.

I could look it up and tell you exactly how much money we spent in laying out, and equipping the cafeteria. I am not going to do that – it is enough to say the cafeteria had its beginnings in 1928 when Walter Lehnhoff, now director of all our social activities, set up shop with eighteen candy bars and a string of hot dogs.

One facility in which we take a great deal of pride is our hospital unit. In addition to a physician, four registered nurses are on our staff, so that at least one nurse is always on duty. The clinic includes two rooms with beds for patients slightly ill, or too ill to be moved immediately. Treatment rooms are equipped with therapy tables, and the finest equipment we can buy. A whirlpool tank, short wave or diathermy machine, ultraviolet ray machine, or artificial sunlight, zoalite or infra-red ray lamp, sterilizers, x-ray machines and equipment for minor surgery constitute the major appliances.

We do not have many accidents, and we attribute our low accident rate to the good health of our employees, a condition for which the clinic is in good share responsible. In support of that contention, it can be stated that a mobile tuberculosis-examining unit found no active case after making a great many films. Medical authorities say it is a record unusual for a plant employing 6,000 people, a third of them women.

12. The Catalyst of Good Management

Looking back, and thinking about Lynde's efforts to make a better rheostat, it is not out of context to say that some day, in its search for peace, the world will tire of its careless promisers and will find peace in the place where peace has always been – in the work of its people.

In the lifetimes of many still among us, scoffers ridiculed one who believed light could be sent to far places over a wire. Edison did it by observing natural law, and the incandescent electric light he invented has freed more human beings from slavery than any decree of emancipation ever promulgated. In addition, the engineering development that has come from Edison's discovery has done more to free the black man from slavery and squalor than Lincoln could have dreamed when announcing his immortal Proclamation.

Of the same lineage as Edison was another who (or so it was said) watched steam rising from a kettle, and there came to him the idea of building a steam engine. His name was James Watts. To have a steam engine, he had to have a cylinder. He went to a blacksmith, explained what he wanted, and told the blacksmith to make it.

The blacksmith did, but first had to devise a machine that would turn an accurate bore – and thus began the whole machine tool industry, the products of which have lifted the burden of heavy labor from the backs of men. Nor, is that all.

The steam engine of James Watt broke chains that, for centuries, fastened galley slaves to their oars, and made obsolete the sailing ship as a messenger of trade, freed commerce from the change of wind and storm – and brought men, and their work, closer together than any treaty ever signed between them, than any United Nations they could form, than any military or political pact that could be written.

Night after night another seeker of knowledge watched his wife tediously sewing, until in a dream (so tradition has it) savages closed in on him, thrusting spears, spears that were giant needles with holes in their heads. The next day, Elias Howe abandoned his experiments with a double-ended needle; its eye in the middle, to work on one that had a hole in its head. In the whirr of the shuttle that Howe invented was a melody of deliverance of human hands from the slavery of stitch-stitch-stitch that human beings, born to drudgery, should be free.

That shuttle of Howe's moved industry out of the home, and into the factory. It made the home a home, and not a place to toil for all the family from dawn to dusk. It permitted one member of the family to earn enough to feed,

clothe, shelter, and educate his children. It freed more men and women from the treadmill of toil than any law ever passed – all because in a search for knowledge, a man found a better way to shape a needle.

Another man built an iron horse, and it was ranging the railroads in the time of the War Between the States, doing more than armies to keep our country from dissolution and, with the war ended, serving better than any political leader, to build our country and weld it into one nation.

A man named Morse tinkered with something called a telegraph; another, named Bell, envisioned a telephone; McCormick fashioned a reaper, Whitney a cotton gin, the Wright brothers an airplane. And unbelievers ridiculed them as they ridiculed Edison. A dreamer named Hoe filed metal column rules into the shape of wedges and build the high speed rotary press, causing the aging Thackeray to declare "There she is . . . the great engine . . . she never sleeps. She has her ambassadors in every quarter of the world, her couriers, on every road," while perceiving that with the high-speed rotary press, all knowledge and all instruction could be conveyed in words and pictures and made available to great masses of people everywhere.

Hoe, Bell, Morse, Howe, McCormick, Wright, Watt, Edison – and with them in the same lineage, was one who watched wasps building a nest. From a knowledge of natural law common to insects (knowledge of how to build a nest, and call it instinct if you wish) came instruction that resulted in paper, just as instruction came to another who saw in the seal of a king's ring, something more than royal approval of hand-written decrees. That something was printing.

Add the names of Faraday (electromagnetic induction); Moore (harvester); Roentgen (x-ray); Sauria (match, phosphorous); Westinghouse (air brake); Fahrenheit (mercury thermometer); Galileo (pendulum) – these, and hundreds of other seekers of knowledge have changed the world and its human values more than a Genghis Khan, a Hitler or a Stalin.

Tomorrow as today, and today as yesterday, it is seekers of knowledge who lead people to the prosperity of freedom, no matter what the ambitions of a departed Stalin, or a future Khrushchev.

They do it because they see no romance in calloused hands that hold the shape of axe handle or plow, gun or knife; no song in men sweating with pick and shovel building a railroad; no glory in the destruction of the world's greatest asset, its youth, in mankind's greatest deception, war.

Through discovery, seekers of knowledge have led mankind across the frontier of a brute existence into the vast living room that was vacant until an inquiring mind learned that fire was not an enemy, but a friend . . . before another,

more curious than the rest, shaped a wheel, and thereby banished sun-up to sun-down struggle for survival.

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13. The Business of Business

Throughout my lifetime, I have heard people talk about business success, but unfortunately, they usually discuss success in terms of money or profits, and that's only a part of the story.

Business success is something far more important than making money, even though profits are necessary to a successful business. To me business is one of the games of life, if not *the* game of life, and as in any other game, there are relatively simple requirements and simple rules. Unfortunately, you must devote a lifetime of effort in understanding and meeting the requirements and in following the rules, and few persons have the tenacity and endurance to spend a lifetime at anything.

If I were to explain business success, I would divide my explanation into the following subdivisions –

(1) What is the object of the game of business.
(2) What you need to conduct a successful business.
(3) What principles must be followed to establish success in business.

I will briefly discuss each element contributing to business success.

Object of the game of business

Some people do not even understand the objectives of business, and this includes many businessmen, and certainly includes many, many employees. When persons erroneously think that the primary objective of business is to gain profits, they are truly in the state of being lost in the woods, If these persons would realize that not too long ago man took care of his own wants primarily through his own efforts (he captured his own food, build his own shelter and made his own clothes) they would realize that what we call business is simply a procedure whereby each person concentrates on what he is qualified to produce, that he sells his surplus to others, which in turn gives him funds to enable him to supply his wants from the surplus of others. When you introduce to the actor that there are many persons making the same thing, we create the condition we call "competition." By competitive operation, you give the customer a choice, and if he has the free exercise of choice, you have free competition. As soon as you restrict or deny the customer's element of choice, you have created a monopoly, i.e., there's only one place where he can obtain his particular requirements in a particular field.

From the foregoing, it should be obvious that there is only one objective in business, and that is to satisfy the customer to the extent that he will choose your product over those of your competitors, whether his choice is dictated by type of goods, quality, or price, or more likely, a combination of all these factors.

Now in today's world, it is quite an order to try to satisfy the customer, because it means that you must not only satisfy his needs and wants today, you must also anticipate what he is going to want tomorrow, and what he is going to want a year from tomorrow. You must produce the goods at a price he can afford to pay, or you will discourage or prevent him from being a customer tomorrow. Sometimes you have to start out by convincing the customer that the product you are selling is the product he should use. Often this presents the task of explaining to a customer what your research staff has learned over a period of many years of experimentation.

This matter of satisfying a customer is relatively simple when you had many craftsmen and the customers came to the shop of the craftsman. However, in today's complex business operations, the customer may be many miles from your plant, and you are required to deal with him through salesmen, dealers, and distributors. It is impossible for you talk with him directly; you must use all types of advertising media.

We at Allen-Bradley take pride in having met the objective of satisfying our customers. Throughout the development of our products, we have placed emphasis upon simplicity of design and operation, because we know that this is the one thing our customers need. Through our constant drive to simplify the design of the product, we have automatically cut our own costs in the production of these products, thus enabling us to sell quality products at a lower price.

Too often businessmen are so busy following their competitors that they forget the objective of satisfying the customer. At Allen-Bradley, we have paid attention to what the customer wants, and not what our competitors think the customer should want.

What you need to conduct a business

In today's business world we seldom conduct business on the single person model of operation, because today even sole proprietors have employees and assistants. Irrespective of the size of the operation, a business requires the following elements, and I am listing them in what I believe is the correct order of their importance:

1. A management team.
2. Products that satisfy customers.
3. Plant and equipment that can economically produce satisfactory products.
4. A productive work force.
5. Capital.
6. Profits.

Some business operations seem to start farther down the line in the above enumeration, but this does not change the emphasis in the order presented, because sooner or later the failure to supply the elements with proper emphasis will doom the venture to failure. For example, many times a business gets started by the founder developing a particular product (as in the case of my brother Lynde), but having developed the product, the founder must succeed in establishing a management team that in turn will provide the other elements required for a business.

I place the greatest emphasis on the management team because capable management will see to it that you have a succession of products over a period of time, and such team will provide the plant and the work force. And the result will be profits.

When I mention "product" I am not thinking of one product, because over a period of years you will seldom satisfy the customer with one product. Even in the case of a single-product business, it is required that the product be constantly improved, so as to keep the customer satisfied.

Too often, businessmen place undue emphasis upon plant and equipment. While it's true that a company must have a plant that can produce products on an economical basis, it is also true that a plant will produce nothing without a capable management team, products to produce, and a productive work force to manufacture the products.

You will note that I put capital quite a ways down the line, and by "capital" I mean investment in the business. Often, too much emphasis is placed upon capital. It is true that every business requires capital, even as it requires a plant, but it has always been my feeling that a business that is well supplied with management and products can find the required capital. I would say that the difficulty with the capital element is that many times too high a price has to be paid for the capital – whether the excessive price consists of a demand for share in profits, high interest rates, or insistence on interfering with the management of the business. At Allen-Bradley we have spent a lifetime trying to provide our own capital through retained earnings. At first it was difficult to accumulate enough profits to finance continuation and expansion of the business, but lately the difficulty has been provided by tax laws that seek to enforce distribution of earnings to stockholders – so that the profits can be double taxed – irrespective of the fact that the business may need the earnings if the business is to develop, expand and furnish jobs.

Without a productive work force a business cannot succeed, because a plant without personnel will produce nothing. You will note that I put the emphasis on "productive" because I recognize that some businessmen of today pay so much emphasis upon education and personality in choice of employees, that they forget that the most educated person, or the person with the most pleasing personality, is not necessarily productive. Today's emphasis on education seems to ignore entirely the point that education is only a tool, and as with all tools, it is absurd to assume that the tool of education can be used by everyone to advantage in terms of production.

Although I place profits last in line, business would starve and shrivel up without profits. Unfortunately, many people in this country do not understand that profits are not "money in the bank," like wages and salaries. Profits are the food that enables a firm to stay in business. Without profits business could not carry on research and development and enable business to anticipate tomorrow's wants. Without profits business cannot supply the constant improvement and expansion of plant and facilities that is required to make better products cheaper from one day to the other. Without profits business would be in no position to keep the plant operating during periods in which there is a recession or depression, or a fall-off in sales.

It us unfortunate but true that the American public has not been educated on the point that profits are not in cash, and they are not stored in a bank vault somewhere, but are constantly at work in improving the business, and in improving the process of better serving customers.

Having gone through several depressions, I have noticed that during the so-called prosperity that precedes a recession or depression, we have persons (including pseudo economists, politicians, labor leaders, government administrators, and investment bankers) who are so interested in dividing what they consider the "spoils" of prosperous business, that they forget that a large portion of business profits must be retained in the business, if a business is to continue successfully. It should be noted that after these persons have promiscuously and carelessly divide the "spoils," they are later surprised to find that depressions will follow their conduct. They are like the farmer who wears out his land, and then wonders why it later fails to produce.

Incidentally, it is unfortunate that during periods of prosperity such emphasis is placed upon temporary gains obtained through security speculation that people lose sight of reality, and they forget to pay enough attention to the business that is really producing the profits on which excessive speculation thrives. For example, investment bankers who dictate dividend policies on the basis of what dividend will best maintain the excessive price of a particular company's stock on the stock market, rather than on the basis of needs of the business.

Principles that must be followed to attain business success.

The Allen-Bradley Company has had unusual success over its life of roughly fifty years, and in my opinion this success has been predicated upon the establishment of guiding principles, which have been followed continuously from the day that the business was first established. Anyone who has lived with the company for a period of years begins to understand that these principles have been maintained, irrespective of what others have thought, and irrespective, too, of any temporary difficulty in preserving these principles. To me, these principles form the "character" of the Allen-Bradley Company. Evan as it is difficult to uncover, or describe, the principles that have contributed to the character of a human being, so it is difficult to spell out in words the principles that have been carried on, and that have established the character of the Allen-Bradley Company. Nevertheless, I will try to describe these principles.

1. You must desire to excel at your work.

The one single factor that spells success in any field is the desire to excel in that particular field. This is true whether you are a musician, businessman, worker, clerk, or a professional in sports. Oftentimes the word "professional" best denotes this quality of a desire to excel in a particular field.

Sometimes it takes many years for a man to find the field in which he has the desire to excel, and it is tragic, but true, that most persons never find their field. In travels about the country, I have actually found persons that I would nominate "professionals" in positions ordinarily not reflecting "success." For example, I have been transported by cab drivers who were so skilled in the operation of their vehicle and in performing their duties, that they could be described as "professionals." If you consider this an exaggeration, think of many instances where a waiter, an elevator operator, or a receptionist, has so completely satisfied your particular request that you could truly describe them as "professionals." Everyone can recall persons of this type, who stand out from the multitude in such a dramatic fashion that you remember them even though their position is life is not one of high prominence.

It stands to reason that anyone who looks upon a job as "a job" will never excel in his daily activity, and will never rise far in the world of today. Too often persons set their sights too low in the matter of excelling at their job, and having attained a relatively small plateau, believe that have "arrived," and yet these same persons wonder several years later why their apparent early success was not long continued.

When does a successful man lose his drive to excel? The day he dies or retires. Obviously, any person who starts out with the idea that he has a certain objective as to position and annual income will never fill the bill from standpoint of being successful. Such person fails to realize that there is no such thing as "status quo" in everyday life, and that you are either going forward, or you are going backward, but you never stand still, even though you may appear to stand still for long periods of time.

The Allen-Bradley Company has been blessed thus far with persons on the management team that had this drive to excel, and it is this drive that has carried the company forward.

When a person has the drive to excel, he must recognize the need of correlating this drive with the similar drives of others, if he intends to be part of a team, whether the word "team" is used in a sports sense, or in a matter of a business or profession. Too often the drive to excel is confused with a drive to dominate, and persons who are otherwise proficient wonder why they do not seem to progress.

To me, anyone on a business team must daily determine what the objectives of the team may be, so he can make his contribution to the work of the team, and often this requires that he forget about his own ego. The daily newspaper is constantly affording

examples of persons who appear to have hidden for long periods, only to have their contributions to society's betterment highlighted and publicized at a later date.

It has been discouraging to me to learn that many otherwise competent persons never make the grade, because they are so busy insisting that their own ego be satisfied with "merit badges" that they cannot possibly contribute to the success of anything.

2. You must enjoy your work.

It goes without saying that a person cannot excel in something that he does not care to do, and this requires that he must enjoy his work. As a matter of fact, if he enjoys his work, it is not even proper to refer to his daily activity in terms of "work." It's lucky for the human race that a person ordinarily enjoys doing the things in which he can excel, but, unfortunately, sometimes it takes many years to find the exact field in which one *can* excel. If anyone really likes his work, and has the drive to excel, it is unnecessary to suggest that he should never tire of doing the particular job.

In prosperous times such as these, it's not unusual to find that persons are so interested in the monetary gain accompanying success that their attention is diverted from the objective of continuing to excel. It's disturbing to find that some persons retire at an early age, or they adopt so-called hobbies that attract their attention, or they get submerged in some sidetrack operation. Too often these persons so enjoy the taste of publicity that they forget that publicity is a by-product of the real objective they're trying to achieve.

3. Never compromise with principles or with the right way of doing things.

The average person starts out in business life with a pretty good idea of the right way of doing things, and a pretty good idea of what constitutes real principles, because he has learned them throughout his childhood. However, over a period of years he is over-eager to obtain this element called success that he often loses sight of the fact that a temporary gain obtained through digression from principle, or digression from the right way, is actually no attainment over the long run.

Disturbing is the fact that during these periods of boom and prosperity it appears that success is not based upon maintaining principles and following the right road. As a result, society temporarily loses sight of principles and the right road, only to reaffirm principles at later date when a nation is confronted with a depression, and when persons realize that their ego carried them down the wrong road.

At Allen-Bradley we have tried to maintain principles, and we have tried to follow the right road to the extent that we have understood principles and the right road. Sometimes, of course, we have been misled, or we have been guilty of faulty thinking, but not for long, because we would not have grown and expanded had we forgotten about principles.

Unfortunately, our life today places an exaggerated emphasis upon compromise. We are so imbued with speed in attaining objectives that we actually pin medals on persons who can best be described as professional "compromisers." There is nothing wrong with compromise, and a person could not exist without daily compromise, but this does not mean that you can compromise principles.

Throughout Allen-Bradley history, we have been required to tell associates, customers, labor union representatives, and yes, even the Government, that we were not going to compromise with a principle, irrespective of the fact that we might have had a temporary gain (or by-passed a temporary loss) through compromise, only to suffer in the long run.

Discouraging is the management of some publicly owned corporations, who too often compromise a principle in order to satisfy a group or person *of the moment*, be it a labor union, the government, or the press.

Anyone following a road based on principle must expect to be confronted with hardships and disappointments, because often this is the price you pay for sticking to principles. However, when you eventually reach that point where your job is done, you'll likely discover (humorously enough) that where you steadfastly refused to compromise a principle, the elusive element called "success" was a by-product of your actions.

4. Realize that a profession or job is a "jealous mistress."

Back in the days when life was harder, it was not difficult to instill in people the fact that their job or profession was a serious and important element. Today, it is easier to make a living, and the world furnishes many diverting influences. I need not invade the field of medicine and psychology to suggest that everyone needs recreation and other interests to enjoy a full life. However, too often these diversions become an important objective of a person who has attained remuneration that will finance recreation and amusement on a broad scale. As soon as these persons begin to spend too much time on the recreation factor, they cease to excel in their profession and actually become "has beens," even though their prior success may "carry them" for a while.

Too many people lose sight of the fact that the person really interested in excelling will consider each goal attained as actually setting up his drive toward a newer and higher goal. Stated another way, records of achievement are established only to be broken, and the real pride should come in breaking not only the records of others, but your own.

There are some persons who, having attained an element of stature in a business or in a community, then decide that they are proficient to enter other fields, and there is plenty of evidence as to the failure that often attends such procedure. Amusing to me is the attitude of some members of the press and the intelligentsia, who constantly pick upon a businessman's lack of proficiency in other fields as evidence that his prior success was accidental and not merited, These persons do not realize that our free nation was

established on the basis of giving people the freedom to show their proficiency, and not on basis of a caste system, or any form of aristocracy. In this free country we are supposed to give credit for accomplishments, and we are not supposed to pay homage to names or an aristocracy. Now the fact that a baseball player may establish new records in home run hitting should hardly indicate that such baseball player would have equal skill at being a violin virtuoso. Yet in today's life there are many (usually disgruntled) persons who have available a means of communicating their ideas to the public, and who find great sport in ridiculing business leaders, because leaders in business are not equally proficient in fields of literature, learning, or what have you. To me these persons are a nuisance, and have done nothing except to injure our national progress.

In brief, anyone who gives full force and effect to his daily work is apt to invite ridicule, but instead of trying to invade other fields, where in most instances he cannot show the same proficiency, he had better stick to his knitting, and get his own job done, irrespective of what these self-appointed "geniuses" might say. Incidentally, I have often wondered how persons reporting the news can be so brilliant in all fields, and I have suspected that perhaps they were not actually brilliant in any field.

Finally, a successful man is often described as being a failure with his family, and I find no reason for this conclusion. More likely, his family fails to appreciate the importance of the job that is supporting the family, and his family does not understand that they too must cooperate if success is to be continued. Where there's a family fully mindful of the obligations of the chief breadwinner, there should be no difficulty in that breadwinner having a happy family life as well as success in business. As a matter of fact, I can think of nothing more detrimental to a happy family life than a husband who is unsuccessful in attaining his objective.

In brief, whether we like it or not, a person overly-conscious of his duties as a spouse and parent (however detrimental such attitude may be on his family) is most apt to fall short in attaining his objectives in business life, or for that matter, in any sport or profession.

5. Humility.

One of the most important characteristics for a successful man in any field (all publicity advertising artistic temperaments to the contrary) is the factor of humility. I do not mean false humility, but I refer to real, genuine, humility. This involves the condition where one knows and appreciates that he can only spend a short lifetime on this globe, that he is only one of billions of humans who have populated, and will populate, this globe, and in the universe he is not even a speck.

Too often persons who attain their objectives in life are inclined to adopt an attitude of superiority and if this superior attitude is conveyed to others, their success is doomed. This applies to companies and individuals. Here again, history is replete with examples of institutions whose success went to their heads and who forgot their purpose in life.

However, some people think it sufficient to make an outward show of humility, without actually being humble. These persons even hire press agents to convince the public that they are humble. It seems to me it is better to so live, and conduct a business that you do not have to advertise humility through press agents. It's dangerous to advertise something that doesn't exist. All you have to do is highlight *the fact* that it doesn't exist.

With due consideration to the qualities that a person may exhibit, he must pay heed to the fact that many things have contributed, at least to the extent of permitting him to exercise his abilities. It goes without saying that without the world, and the resources of the persons in the world, none of us could have accomplished anything.

In business life, the matter of ignoring humility is best evidenced in the constant demand for titles, and the constant demand for an outward show that one has attained a particular goal. In course of Allen-Bradley's growth we were not overcome by this condition. My brother, Lynde, was an unassuming persona and shunned the limelight despite his accomplishments. Our present President Fred Loock was with our company almost forty years before he was made a director, and was with our company over forty years before he became President. This did not deter him in the slightest in his drive toward accomplishing his goals, which have always been the success of the Allen-Bradley Company. Fred actually has spent a lifetime shunning titles.

Finally, in closing the book on humility, I would like to emphasize that it is not what you think that makes you great and important, but what others think. While it is all right to toot your own horn, you are apt to make others tired of hearing the tooting.

6. There must be Indians as well as Chiefs.

Too many organizations are staffed with "top brass," and little else. I can usually pick out a successful man by the way he is always willing to do almost any job, even menial tasks if they are necessary at the moment. Such person realizes that he is merely a cog in a machine, but the entire machine must operate if his performance is to be of value to anyone.

At the Allen-Bradley Company we have closed fifty years of operation following a policy of having a small number of directors, and a small group of elected officers. This does not mean that many others are not a part of management, but it does mean that the final vote or decision is placed in the hands of a small group after a full review of the opinions of others. Consider if you will the ridiculous result of having a Board of Directors composed of 25 persons, or an officers' group composed of 50 persons. This is almost like suggesting we have a Supreme Court composed of 50 judges! I am sure the directors and officers of the company can't possibly have all the brains and information necessary to make every decision, but I am equally sure that you won't improve the picture by having all the persons with information on the Board of Directors, or serving in the capacity of officers.

14. The Productive Affairs of Life

Whether the designer of the long bow, the discoverer of the nature of fire, the discoverer of the wheel, or the discoverer of atomic energy, these are the creative minds who believe "the best is yet to be, the last of life, for which the first was made." They are the frontiersmen who see that for the first time in all its history, mankind holds power to shape its human destiny.

"One box car of atomic fuel will produce enough energy to heat every building, illuminate every electric light bulb, and operate every machine in the world for 1,000 years. Less than 15 pounds of atomic fuel will produce enough electrical energy to meet all the demands of the United States for one year." (Howard Fritz, former Director of Research, B.F. Goodrich Co.)

These are but hints of a civilization yet to be, sure to be, in the vast, unoccupied empire of health, goods and leisure awaiting exploration, organization of production and extension of services. Tomorrow, humanity will lose its sense of panic and will begin to understand the real use of atomic energy. Today, and because in its first public use, atomic energy was the destroyer of Hiroshima, physical scientists are held responsible by many for the dark clouds of fear that press down upon the earth.

It may require terrible destruction before the peoples of the world recognize – fully! – the futility of war. It is not possible, even in Russia, for dictators to keep their subjects forever ignorant. Nor, is it possible for rulers to change the laws of nature, although they may dismiss those who displease them.

In Lord Broughton's Recollections is told the story of Sir John Pringle's disagreement with George III, of England. In their conversation, the king was talking with Pringle about Benjamin Franklin's discovery that the attraction of a pointed body is greater than that of a level, or circular, surface. Disbelieving, the king ordered Pringle to publicly disagree.

"Sire," protested Pringle, "I cannot alter the laws of nature."

"Then" replied George III, "you are not fit to be the President of the Royal Society," and ordered the scientist's dismissal.

Scientists (leastways, the important ones) have always seen that the most amazing quality of the universe is its orderliness. If nothing else, it is this orderliness that disposes of any theory that we are on earth by chance. We are here! And we have arrived at our present state of civilization because there have been watchers who have focused on the pivotal points of natural law. Without such watchers, there would have been no discoverer of the usefulness of fire, and no invention of the wheel, steam engine, electric

light, printing, and or shuttle. Mankind, even today, would not be conscious of anything better than a cave civilization.

This is not to say that scientists have not blundered, The Academy of Sciences, in Paris, when asked by Napoleon for an opinion on the usefulness of Fulton's steamboat, reported: "Sire, we have effectively found a motive power in steam, but of a nature comparatively so feeble that a child's toy would hardly be put into action by it."

Napoleon's interest in the steamboat was a conqueror's interest in anything that would provide a weapon in war. The scientists blundered in their estimate of the steamboat. Nevertheless, each year the interest of the scientist in natural law is to find out what is true, that mankind may not be led by what is false. The scientist knows his discoveries may be used in war. He knows such uses are temporary. He also knows that whether in operation in Russia, China, or on Mars, truth must lead to freedom for all people.

The quest of the scientist for new and useful things finds its fullest expression in the research laboratories of American industry. In American industry there is realization that the quickest way to destroy our economy and, with it, the social structure is by doing precisely what backward minds propose. Industry knows, if backward minds do not, that the American economy has not been built by chloroforming creative instincts.

Without a strong economy how can we support our homes, our churches, our schools and our form of government? Most of us know we cannot; but, most of us in our impatience with the imperfectability of things, forget that whatever damages the foundation also damages the structure.

Judging by American standards, our social structure and our economy, both would be far ahead of where they are now, had we not taken time off to listen to orators who sought – and still seek – to persuade us to turn over our problems to politicians for solution.

For years, and with each recurring squabble, at home and abroad, we have heard the cry "the government needs more power," or "we need a stronger administration." As one result, politicians have contracted from us the habit of viewing their talents under magnifying glasses. We are both wrong. History proves that in whatever the crisis, surrendered responsibilities come back to the people in burdens far heavier, and far costlier, than the ones the people sought to evade.

More than a century ago a group of men wrote a document called the "Constitution for the United States of America," and made inseparable from it a number of safeguarding amendments, which came to be called a Bill of Rights. With few changes, the document, with its safeguarding amendments, has served the people of this nation in all the years since 1789. Yet, it is by no means certain that, as a people, we understand why the liberties and personal rights were so carefully guaranteed for us by men, who underwrote with their lives, the independence of our country.

Having experienced oppression (political, ecclesiastical and economic) the men who wrote our Constitution, and its Bill of Rights, designed it as an instrument that, in –perpetuity, would protect the people of the United States from the ambitions of their own kind in public office. It is well to remember that when the proposed Constitution was submitted to the people for approval, it met with instant *disapproval.* The reason: The people saw that the Constitution as submitted was very specific on what administrators of government could do, and very hazy on what they could not do.

To quiet the outcries, the founders, in substance, made this pledge: "Put the Constitution into operation, and Congress will submit to you all desired amendments."

On those terms, the people adopted the Constitution. The approval of nine states was needed. True to its promise, the Congress submitted 79 amendments, as prepared by the nine states, and an additional 46 amendments as submitted by the states which delayed ratification. Of the 134 proposed amendments, the House of Representatives approved 17. The Senate reported out 11, and submitted them to the legislatures of the states. Ten were approved. They became known as The Bill of Rights.

The Bill of Rights concerns itself with one proposition – and only one proposition. That proposition is the sanctity of the individual citizen. In all, 13 points are covered. They are religion, free speech, a free press and public assembly, the citizen's person, his home, his possessions, his rights when involved in criminal proceedings – and these 11 points are sheltered by the Ninth and Tenth Amendments"

> ***Article IX****: The enumeration in the Constitution of certain rights shall not be construed to deny or disparage others retained by the people; and* ***Article X****: The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people.*

The Bill of Rights is a mandate the people laid down on their Government – *but not on themselves.* The ten amendments – each one – is a command imposed by the people upon the administrators of government. It is a command which instructs public servants "not to go beyond the limits, we the people, have lain down;" which says "when changes are made, we the people will make them, and until we make them, they are powers withheld from you, and forbidden to you."

To repeat:

The Constitution, with its Bill of Rights, is law the people have written to protect themselves from their own servants. It is law which governs the agencies of government – and only the agencies of government.

There have been Presidents, and there have been Congresses, and there have been Supreme Courts that have gone through the stoplights set up by the people. Every such violation has brought losses to the people. Nor should these statements be construed as a stricture against Presidents, or Congresses, or Supreme Courts. The question that is being

raised is a question of more importance than any President, or any Congress, or any Supreme Court.

The question that is being raised has nothing to do with political parties, nor with political personalities; and to discuss it in political terms is to dishonor the whole subject of human freedom. What is being pointed out is that no matter how well meaning the administrators of government, there are areas in which they are not able to function successfully. As said earlier, one of these areas is a nation's economy. The experience of every nation in the world that has tried, or is trying, government control of its economy is proof of the statement that the more limited the authority of government officials, the stronger the economy, and the more prosperous the people. Examine the world, and it will be seen that the most prosperous nations are those in which every family is permitted to build its own security, and maintain its own self-determination through its own efforts.

To be remembered is the fact that it was a king's interference with an economy that was one of the great causes of the war that made us a self-determining people. Keep in mind the additional fact that it is only when a people are free that they are able to produce goods of peace. In all lands where the people have surrendered to ambitions men, a low economy is the rule, the direct result of dictator interference with trade and the dragooning of the work of the people into the making of weapons.

Ours was a favored land when the Indians roamed over it. The soil was fertile, and beneath the soil were minerals; food was in the streams and lakes and on the plains; shelter was in the forests. All was here, awaiting development. There were hardships, and there were wars, but through hardship and war the natural instinct of men to trade with each other always surged forward. Mingling with the thud of settlers' axes and the roar of patriot's muskets was the undertone of business, beginning to shape the destiny of the nation.

In the swamplands, in the valleys and on the mountains, settlers were listening for the paddle of the trader and the saddle of the trader, and were crowding eagerly about the packs of merchandise opened before them.

Transportation moved ahead with the introduction of the stagecoach and the Conestoga wagon, and moved ahead again with the digging of the canals so that, in 1830, there were more than 2,500 miles of inland waterways under construction, or completed, in the United States.

There were scoffers then, as in the time of Edison, and as now. Railroads were coming but the scoffers ridiculed "the fools down Baltimore way who could not see that the steam railroad was just a fad, and never could compete with the canal." The conviction of the times was recalled by John Bach McMaster in his *History of the People of the United States:* "Canals…are facts…railroads are theories…a farmer cannot own railroad wagons. But for a few hundred dollars he can buy a boat, or with the help of his own hands can build one to carry 25 tons…into his boat the farmer can put an assorted

cargo of flour, bacon, hemp, lumber and vegetables, draw it to market with his own horses, sell it any village on the way and bring it back loaded with what he pleases…"

In 1910 there were automobiles, and two brothers in Dayton had built and flown an airplane. But railroad executives were saying: "No outside competition can touch us … there can be no competition to the railroad except another railroad; the experience of the canals proves that…"

The history of transportation is typical of American business. In 1850, the investment in canals approximated $150,000,000. Despite the brave words for the promoters (the canals were state-owned and financed) the market value of canal bonds collapsed so quickly that by 1856, there was a panic. The losses were heavy, but were recovered in the far greater gains made by the railroads. In 1910, the market value of all railroad securities was estimated at $20,300,000. Today, the market value of all railroad securities is a lot less, but the gains made by the automobile and airplane industries has multiplied, several times over, the losses of the railroads.

The same thing that happened to the canals and the railroads happened to the silk industry and to the cotton industry by the introduction of synthetic fibers such as rayon and nylon. It happened to the whale oil industry by the introduction of kerosene. To kerosene by the gaslight, to the gaslight by the electric light; to the building of sailing ships by the introduction of the steamboat; to the scythe and flail by the harvester and the reaper – to an endless list of products in the steady advance that is the American economy.

The automobile, the electric light, the printing press, the steam engine, the airplane, radio, television, plastics – these, and all the other things, did not just happen. They are the findings of creative minds searching and working to transform nature's raw materials into useful things for human needs.

Imagine, if you can, our present economy had American business accepted the opinions of canal promoters who insisted "railroads are theories;" the beliefs of railroad operators who thought "no outside competition can touch us;" the pessimism of Henry L. Ellsworth, United States Commissioner of Patents who, in 1884, prophesied "the arrival of that period when human improvement must end;" the pronouncement of Woodrow Wilson who, when President of Princeton University in 1908, declared: "Nothing has spread socialistic feeling in this country more than the automobile;" or the preachment of Franklin D. Roosevelt, while President of the United States, that we have "no more frontiers…our industrial machine is built." (Within ten years the size of the industrial machine had quadrupled.)

Our American economy is a natural development of a competitive system. In 1906, when Woodrow Wilson was feeling grumpy about the automobile, seventy-five percent of our people were employed in the production and distribution of food. Then, as now, the farm was the basis of our prosperity, but the farm alone could not produce enough to pay wages that provided much more than the necessities. Within a few years a

number of events contributed to satisfying the desire of the working man to get the highest possible wage for what he produced, and the equally proper desire of the consumer to pay the lowest possible price for what he bought.

This seemingly insolvable problem was tackled and solved by management. Realizing that unless people could afford to buy what is made, what is produced will remain a luxury, management uncovered a truth that long had gone unnoticed. That truth was: The producer and the customer are the same person.

Perceiving this, management found the solution to higher wages and lower costs by adding the ingredient called production. To prove its finding management used the lowest common denominator (production per man-hour of work) and introduced machines that permitted the employee to turn out a hundred, or ten thousand, items in the same time that he was formerly able to produce one, or ten. The results were immediate.

Products were better because there was accuracy: costs were lower because there was volume; wages were higher because production per man-hour of work was greater. The approach was entirely mathematical. Work was organized to get production, and machines were positioned to save human beings every possible ounce of physical labor.

Being geared to the proposition of organizing the work that has to be done, it was management that introduced research to American industry, and made it a partner. This is a partnership that is adding to our knowledge more in a single year then on any previous hundred years in the history of the world. It is a partnership that has opened the vaults of nature:

Radio, television, air-conditioning, transistors, color photography, glass fibers and threads with tensile strength ten times that of mild steel, aluminum – once a rare metal – in fantastic columns from mud, vitamins from common weeds, synthetic quinine, synthetic rubber, magnesium from an almost inexhaustible source – the sea, sulfa drugs, Salk vaccine, insulin, penicillin, scores of synthetic fibers, the airplane – these and thousands of other useful products; all without mystery and, it may be observed, without benefit of anyone passing a law.

Our capitalistic system, in which research and management play such important parts, is a development straight out of a national philosophy, which teaches that prosperity is not found in the laws we write, but in the work we do. It is a philosophy which rejects the need for poverty, which covets no neighbor's land, and no neighbor's possessions. It is a freedom, which proves that what the pocketbook lacks, the individual can make up with his hands and with his brain.

As harmony is the catalyst in achieving good management, so is management the catalyst in the growth of a company. Allen-Bradley has been trying to acquire and keep good, competent, internal management since the inception of the company.

Management exists and functions as a team, and, as in the case of a team, it requires not only capable men, but also requires that capable men function in harmony. What is most important, the team must be suited to the task of meeting the particular corporation's problems, and attaining the corporation's objectives.

Even as a conservative, financially-minded management team could be relied upon to carry a corporation through periods of stress and depression, an aggressive, sales-minded management would be best suited to carry out a broad expansion program. Recognizing the fact that management teams are not reorganized at regular intervals, the general objective is to form a well-rounded team composed of members who can meet any problem, so that the activity of the team at any given time will depend upon the problems and objectives then confronting the team.

Once a well-rounded management team is established, it is essential to keep each of the members of the team satisfied, to maintain a high level of morale, and to eliminate disturbing influences. By itself, this is a subject of great, great importance. The jobs of everybody (and all are employees, including the executives) depend upon it.

The End

An Interview with Harry L. Bradley

Editor's Note: The following "Question and Answer Statement" was found among the papers of Harvey Peters, tax attorney for Allen-Bradley. The document dated April 9, 1958, appears to be the transcript of a legal deposition. Even so, the answers given by Harry Bradley reveal colorful details about him, his brother Lynde, and their early struggles to launch the Allen-Bradley Brand.

Q. Why do you think that Lynde wanted to start his own business?

A. Well, he practically always had his own business when he was working at the house. He was always fixing people's doorbells and many such things, and there was an electric heater that he put in.

Q. Was Lynde satisfied with having somebody else do a thing in this new field of electricity?

A. He was satisfied with having somebody else do the thing in electricity. He was not always satisfied with the way they did it.

Q. In other words, Lynde's interest was in having these things made the way he believed, right. Is that true?

A. Well, that's a pretty broad statement. The electric industry was a big industry, but he had positive ideas on many things as to how he thought they should be done.

Q. Would you say his positive ideas covered the whole industry, or only a small segment of the industry?

A. The industry was so big, even at that time, that no one man could cover the whole industry. Lynde came from an inventive family, and he was an original thinker. He educated himself so he was used to doing things himself. He was an experimenter from very early on and that naturally gave him his own ideas about the way things should be done. He always wanted to improve. His interest was in quality.

Q. Well, when the business developed, he could not continue to insist upon his doing the work could he?

A. Well, the first controllers were made with his own hands. His first endeavor was to make a controller, which was better than what was in general use. Such as the one at the Milwaukee Electric Company, which gave considerable trouble.

Q. Once he developed a better controller, did he not turn production of that controller over to others?

A. Well, yes the production, but not the design.

Q. After he had a better controller, and you were producing the controller, what other products did he experiment with?

A. His experimentation was always along the line of controllers.

Q. Is that what we refer to as motor controllers?

A. Yes.

Q. Lynde died in February 1942. Would you say that he retained that attitude as to experimentation until about the time of his death?

A. He encouraged it. For many years he was only active in an advisory capacity.

Q. In other words, he had others do the experimenting and developing?

A. Yes, and a lot of the design.

Q. But nevertheless under his supervision?

A. Yes.

Q. Do you believe that Lynde succeeded in conveying his ideas and philosophies to others?

A. In every respect to the conduct of the business.

Q. On the matter of your own participation, did you also do experimental work?

A. Yes.

Q. Was that the case from the very beginning?

A. We worked side by side. We worked together, we went home together, and slept together. He had a very serious childhood and like mistakes many fathers made, he did not want me to go through what he had gone through.

Q. Did you work on the original controller?

A. No, not the one tried out originally. I was at school. We were unusually close, and being six years younger, it was more like father and son. I remember one day he brought some caramels home. I took all the wrappers off and rolled them into balls and put them back in the bag. They all melted down, and it was a horrible mess, but he never said a word. He used to come home and I would get on the floor and he would soap my face with suds and clean it off with a paper knife to shave me.

Q. When you experimented with these various types of controllers, what prompted you to go into other types? I mean, what was the reason behind it?

A. It was the matter of other application of the same type of controllers, trying to get a market to sell.

Q. Were others manufacturing these controllers of these various types of applications?

A. Yes, but not with the principle that Lynde adopted. Not the carbon-pile.

Q. Did Lynde and you believe that these other controllers were not as good?

A. We were sure of it.

Q. From your experimentation?

A. Yes.

Q. Would you say that your type of controller was similar to other types of controllers produced by others?

A. I would say there were only about three, Cutler-Hammer, General Electric and Westinghouse.

Q. Were they much bigger than your company?

A. Oh, tremendously.

Q. Didn't you rely upon this size as indicating what type they were producing?

A. No. We knew the way the device was operating that it left a lot of room for improvement.

Q. In other words, is it safe to say that you did not pay much attention to orthodox procedures?

A. Not in the least.

Q. Has this feeling persisted to the present day in your organization?

A. To the present day.

Q. As I recall, in the early 1930's you introduced a type of controller known as a solenoid type. Is that correct?

A. Yes. That was a different way of operating the carbon-pile controller.

Q. Was it still a carbon-pile controller?

A. Yes.

Q. Incidentally, prior to your introducing the solenoid, had others adopted the carbon-pile principle?

A. No.

Q. Why?

A. Well, we had patents on it.

Q. Well, getting on to this solenoid type, was anybody else using the solenoid type switch prior to the time you introduced it?

A. Not to operate the devices which were then on the market. Used for different purposes. Our solenoid's great progress came after the carbon-pile was practically abandoned. At the time that alternating current became popular, Lynde and I thought it was the eventual end of our business. Then we got into the switching business. We made of the first cross-line magnetic switches. We made an automatic cross-line switch with just a magnet. Those were single brake switches and they had to have a jumper. We were the first to use silver on the switches. Most metals oxidize, but not the silver. That was the great impetus – our business began to grow with the solenoid starter.

Q. When you came out with the solenoid starter, what was the reaction of customers and competitors to this product?

A. In the development of the solenoid starter, we were able to make a much smaller starter and a much more rugged starter than had been on the market, and that was brought out at the end of the Big Depression and at that time it was becoming more popular to put the motor right on the machine or tool.

Q. Was the first reaction of customers and competitors favorable?

A. Very favorable.

Q. Is it correct to say that every time your company has come out with a new product you were prompted by the desire to furnish something that would do the job better?

A. Was and still is today.

Q. Would you go so far as to replace a product of your own manufacture that was doing well from a standpoint of being acceptable by the customers?

A. Yes.

Q. In your sale of these various products, what determined the price?

A. At the very early days sales price was computed on basis of cost. Today the industry is so big that it is based on what the current price is which is established by competition and give and take. Sometimes we build a new device that is so new there is no competition and we still base that price on cost.

Q. Assuming you make a better product, is it not apt to be the result that your cost is higher that that of competitors?

A. I do not quite get the question.

Q. Well, if you tried to put more quality and ingenuity into the product doesn't that make the cost higher?

A. It so happens in design that a better design is always cheaper. It takes a long time to make it and a lot of brainwork. You can make a design very complicated, but you finally work down to a simple design.

Q. Is it apt to be the case that in trying to satisfy the customers' requirements you are also apt to satisfy your own requirements at a low cost?

A. Almost always.

Q. Allen-Bradley Company still includes the word "Quality" in its seal. How long has that word been directly attached to your seal?

A. On I would guess fifteen years. When I worked at the M&O Company [Morris & Obenberger Company, machinists] I was a tester. That's quite a story. My brother Lynde made arrangements with the jobbing shop called M&O Company who were doing a general jobbing business and were going to make a line of motor controllers. It so happens that Harry Morris was an engineer at the old Milwaukee Electric Company. They made controllers. They got to the point later where they turned out starting motors, and Lynde tested them. Lynde told them he would like his brother to do the testing, that his brother knew testing and they could get me for $50 a month. I was across the lake on a yacht at the time and Lynde wired me that if I came back immediately, I could have the job as tester. So I came back and went to work and got into the repair business of motors. I was sent out to test a Wagner motor. It was a motor that advertised quality. I was imbued with the fact that it was a Wagner motor and a quality motor. They got into a little trouble financially and competition was too much for them. I knew the advertising agent and he had to

drop the "Quality." I had thought so much of the Wagner advertising quality and told Fred Loock, thinking we could use it. He grunted and said "yes," and in a couple of months he had quality as our trademark and it has a hypnotic effect. Today electricians feel it is good because we say it is quality.

Q. You have no idea when "Quality" was first introduced?

A. Fred would know right off.

Q. Isn't there something much more than the desire to advertise through the use of the word "Quality?"

A. It represents the attitude of our company towards its products. If we can build something better, it has always been the policy of our company to invent our own things.

Q. You mean that you do not get a license or get an assignment from some other inventor?

A. We bought it outright from an inventor on one occasion only.

Q. In other words, your products have been developed from your own line and with your own people who have been there long enough to understand what you are after?

A. Well, today we do get good ideas from people who have not been there too long.

Q. Have there ever been situations where the cost of your product was such that you were required to demand a higher price for the product as compared with the prices of the competitors?

A. The answer to that question is no. We have been able to build a better product.

Q. As your firm developed, you required additional personnel. How did you get such personnel?

A. Well, that goes back to our attitude toward our employees. They came to us by word of mouth, because we established a reputation of being a good place to work.

Q. That's true even way back?

A. Yes. We got Wilms that way. It was called a push and pull.

Q. What elements do you think contributed toward making the Allen-Bradley Company a good place to work?

A. Well, I think it was Lynde's personality reflected in some measure by me. We were both over-all workers and Lynde's reputation among the working people of Milwaukee dated back to when he had worked in the various jobbing shops around the country.

Q. You state you were "over-all workers." Let us amplify that. Would you say that you appreciated the problems they had?

A. Yes. We would accept suggestions from them and were sympathetic to any troubles and problems they might have. We came from a shirtsleeve family and we knew what it was to be without money. My mother kept a boarding house and we kept going by means of money she had inherited.

Q. Would you say you overpaid these people?

A. We made it a rule almost universally not to overpay what people were worth, and in addition, not to overpay the going rate.

Q. How were you any different from the others?

A. I think that most manufacturing plants in those days were very impersonal.

Q. You were not?

A. No, never.

Q. Could we also say that Allen-Bradley tried to have a man developed to his fullest ability so that you could automatically pay him higher wages?

A. Oh, yes.

Q. Has it not been the case that the Allen-Bradley Company tried to prevent shoving a fellow into a corner where his abilities are wasted?

A. Very definitely. If he invented something, we had it patented with increase in his remuneration.

Q. The fact that you were workers yourselves, you and Lynde, contributed to your being able to find out what they were able to do?

A. Absolutely.

Q. You retained this element of, shall we say being able to sense ability, by having close contact with your employees?

A. That's correct.

Q. Is that true today?

A. Yes, although it is a big organization and I personally cannot be in contact with all, but people have been with us so long that they have absorbed our ideas.

Q. Would you say, too, that if your supervisory help are not constantly in fear of being subjected to politics, that they are apt to be fair with those under them?

A. Absolutely. We do our best to stamp out politics.

Q. How much responsibility do you confer upon your key executives and supervisory employees?

A. That's a personal thing. It has always been my policy to give a man a position and then not interfere with the way he does it. I can tell by results if he is doing it properly. If he has a problem, he comes and talks to me about it.

Q. Would that responsibility involve the right on his part to ignore, for example, the emphasis on quality?

A. No.

Q. In other words, he is given responsibility, but he is also required to observe the principles upon which the company has operated since its inception?

A. Correct. All the men in responsible positions do appreciate the principles that have always been adhered to.

Q. You and Lynde for a period of years each owned approximately one-half of the stock and were the sole stockholders and you received dividends of sorts?

A. For many years, we lost money.

Q. But if you had profits, you did pay dividends?

A. Well, yes.

Q. As your firm developed, some people became prominent in management. Did these people acquire stock?

A. No.

Q. Why?

A. Lynde and I had a feeling that it would create interference with the management and there are all kinds of methods of distributing stock. If you give stock to the employees, it is liable to create envy and jealousy, and liable to interfere with the free operation of the business by those who own it.

Q. Well, didn't some of these executives that grew with the company feel that they wanted a share in the ownership of the company?

A. Well, I cannot tell you their innermost thoughts. They told me that it was better to have the business remain as a close corporation and not sell any stock to anyone, and they still say that.

Q. Is it correct that you differentiated between the status of an officer and the position he might have as a stockholder? In other words, that you appreciated the problem to be to compensate him properly?

A. Yes. So long as he was properly paid, why should he care about stock ownership?

Q. Do you suppose that some of these people did accumulate some money in later years?

A. I know they did. They invested money somewhere else, and they were successful. They feel that there should be no association between investments and their job. We pay our executive end of the business much higher than the going price.

Q. Up until about 1941 your company had three directors, being Lynde, you, and Louis Quarles, your counsel. Why were not some of the key men serving as directors?

A. I do not know if I can answer that. It was a matter of continuing the way we had always been, and any decision made by the existing board of directors was a compound with consultation with responsible executives.

Q. In other words, although the directors, group was limited, they did base their decisions upon opinions they might have obtained from executives of the company?

A. Yes.

Q. In the period roughly from 1942 to date, your company has had five directors and while there are included some executives, there are not included what you might call other key men. Do you still feel that same attitude has prevailed since 1942?

A. Yes. It still exists and is very desirable.

Q. Can we summarize that and say that the final decision should be tested in a small group, but such group should not act arbitrarily, but with full consideration of the executives who have to implement the decisions?

A. That would be correct.

Q. Do you think that stockholders should be represented on the Board of Directors?

A. Well, I think if you have stockholders they are entitled to some representation on the Board of Directors. That's why we did not want to sell stock.

Q, This is a moot question. Assuming you had a stockholder who owned stock but was not active in the business. Do you feel he should be entitled to representation on the Board of Directors?

A. No.

Q. Why?

A. I do not think he would be intimately acquainted with our problems, except possibly in finance, and we can get that information without having a director.

Q. Assuming that you had many stockholders who were not active in the business, would you feel that they should be directly represented on the Board of Directors, by, oh, some investment banker, or other representative?

A. Yes. And I would think the whole conduct of the business should be with the stockholders in mind.

Q. Your position is that even in the case of key employees who are not on the Board of Directors, the rights of stockholders should be considered, but should not be permitted to run the show.

A. I think that key executives' rights and ideas should be considered.

Q. I believe it is correct to state that this pattern indicates a departmentalization of rights and functions. In other words, all of these various people have rights, but observing their rights should not interfere with the conduct of business.

A. That's right. Their interests have different motives – a stockholder's interest is in what money he gets. The key executive is interested in the successful operation of the business.

Q. Does not your pattern of procedure also show the philosophy that if a man is well paid you eliminate his concern for money to a great extent, and you permit him to devote his full energies to the business?

A. That is the idea of paying a man well.

Q. Your company has many employees in the key executive category who have been there many years. Would you say that these people have a vested right in their position through such tenure?

A. Well, that is the idea of seniority, and I believe in seniority to the extent that a man is able to do his work.

Q. What if a younger man came along and showed considerable more ability. What would you do? Insist upon his being in an inferior position because some other man had been there longer?

A. As regards pay, the fact that he was a new man might be given consideration at the start, but if he proves of outstanding ability, he should be paid according to that ability even though it is as much as a man who has been with us a long time.

Q. What about the matter of authority of the one over the other?

A. Well, that is a good deal the matter of the man. A man of ability has to exert authority by his very ability and capability. You cannot give a man authority by just saying he has authority. If he has not ability, he may never have authority. He may have a name, position, but that's it.

Q. In developing an organization of people with long tenure, are you not apt to develop prima donnas who won't tolerate interference from younger and more capable men?

A. Yes, there is a tendency, but the extent is not too great.

Q. To a degree do you not meet this problem by adequately compensating the younger men?

A. Yes.

Q. Don't you meet the problem, too, by keeping the place growing?

A. Yes, yes. We have never tried to fleece our customers, our suppliers, or our competitors. A lot of our suppliers have grown with us and we have treated them fairly – customers and suppliers both.

First Customers

Editor's Note: By mid 1904, Lynde and Harry Bradley were acutely aware that they had a quality problem on their hands. Their Allen-Bradley brand controllers were burning out and being returned to the factory at an alarming rate. (The problem was later discovered to be the kind of carbon disks they were using). The list below – their attempt to re-trace shipments and track returns – reveals the names of the very first Allen-Bradley customers.

1904

American Steel Foundries, Alliance, Oh.
Bethlehem Steel, Mines/Metallurgy World's Fair, NYC.
George H. Smith Steel Casting Co, Milwaukee Wis. (13 controllers)
Gould Storage Battery Co, Depew, NY.
Jenckes Machinery Company, Sherbrook, Quebec, Can.
John Mohr & Sons, 96th & River Sts. Chicago Il.
Latrobe Steel & Coupler Co, Melrose Park Il.
Pennsylvania Steel Company, Steelton Pa.
Shaw Electric Crane Company.
Strong Carlisle & Hammond.
Trenton Iron Co., Trenton, NJ.
Western Electric Co., Chicago, Il.
Whiting Foundry & Equipment, Harvey, Il.
Yale & Town Mfg. Co, Stamford Con.

1905

American Bridge Co, Pencoyd Pa.
Baldwin Locomotive Works, Philadelphia, Pa.
Baltimore & Ohio Rail Road, Washington, Ind.
Buckeye Steel Casting Co, Columbus, Oh.
Colorado Fuel & Iron Co, Minuequa, Col.
Electric Storage Battery Co, Philadelphia Pa.
F. W. Wolf & Co, ordered by W.E. Co. Chicago, Il.
John R Roebling, Trenton NJ.
Latrobe Steel & Coupler Co, Melrose Park Il.
League Island Navy Yd., Philadelphia Pa.
Logan Iron & Steel Co, Burnham, Mifflin Co., Pa.
New York City R.R., New York, NY.
New York Navy Yard, Brooklyn, NY.
Otis Elevator Co, Yonkers, NY.
Pennsylvania Steel Co, Steelton, Pa.
Standard Steel Co., Burnham, Miffling County, Pa.
Western Electric Co., Hawthorn Plant, Chicago, Il.

Whiting Foundry & Equipment Co, Harvey Il.

1906

American Locomotive Wks. Co., Richmond, Va.
American Steel Foundries, Chester Pa.
Colorado Fuel & Iron Co, Minnequa, Col.
Eaton Cole & Burnham, Bridgeport, Con.
Fred W. Wolf, #141 Reis St., Chicago, Il.
Jenckes Machinery Co, Sherbrock, Quebec, Can.
Lackawanna Steel Co, Lackawanna NY.
Midvale Steel Company, Philadelphia Pa.
New Albany Mfg. Co, New Albany, In.
Newport News Shipbuilding & Dry Dock Co., Va.
Penn Steel Casting & Machine Co, Chester Pa.
Southern Steel Co, Alabama City, Al.
Standard Sanitary Mfg. Co, Louisville, Ky.
U.S. Cast Iron Pipe and Foundry Co, Chattanooga, Tn.
Western Electric Co., Hawthorne Plant Chi Il.

Key Men

Editor's note: Several places in his manuscript, Harry Bradley speaks of "key men," employees who were as much a part of the Allen-Bradley organization as he was. In his words, "the key people are those who think out the products and the better ways for making and selling, the men who, through their own initiative, provide the jobs, who pay wages, and who through wages, enable their fellowmen to move into higher standards of living." These loyal individuals worked alongside the Bradleys in various capacities over the decades. Some were brilliant inventors or master mechanics; others were savvy purchasing agents, financial wizards and logistics experts. Still others built the sales organization and managed employees on the shop floor. Harry Bradley felt that all of these men helped him build Allen-Bradley, from the ground up. They're the individuals he continuously expressed concern for, should his company fall into outside hands. This list of Harry Bradley's key men was drawn up in 1952.

Name/Position	Stock holdings	Age	Yrs service
Harry L. Bradley, Chairman of Board	None	67	49
Fred .F. Loock, President	None	60	42
Robert W. Whitmore, Vice Pres.	None	62	35
Alex F. North, Treasurer	None	57	23
W. J. Jaeckel, Cincinnati sales mgr	None	59	36
Frank Hawley, Chief of Production	None	56	35
Carl N. Calkins, N.Y. Sales Mgr	None	65	35
Albert G. Dawe, Foreman test floor	None	65	35
I. F. Herbes, Works manager	None	52	32
Walter S. Freeburg, Plant Engineer	None	59	29
Theron Child, Purchasing Agent	None	54	29
Arthur J Benner, Assist. to President	None	58	28
D. S. W. Kelly, Radio Sales Mgr.	None	52	27
George F. Pain, Phila. Sales Mgr.	None	63	26
George Megow, Employment Mgr.	None	48	26
Gerald W. Lohf, Assist Plant Engineer	None	44	26
Lynn Matthias, Director Research	None	48	25
John Mc C. Price, Chicago Sales Mgr.	None	69	23
Henry G. Rosenkranz, Adv. Mgr	None	41	23
Eugene Ragatz, Chief Chemist	None	43	21
Allen K. Wolfe, Milw. Sales Mgr.	None	46	21
Walter S. Pfeiffer, Patent Engineer	None	59	21
Frank Fisher, Assist. Chief. Eng.	None	55	20
Homer Thompson, Radio Research Eng	None	57	19
Arloe Paul, Syracuse Sales Mgr.	None	42	19
Clayton Senneff, Radio Sales Mgr.	None	43	19
R.J. Roy, Cleveland Sales Mgr.	None	55	18
Edwin Hanke, Plant Supt.	None	44	15
Gustav O. Wilms, Engineer	None	54	29