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**Accuracy for
Seventy Years
1860 - 1930**

by Pratt & Whitney Company

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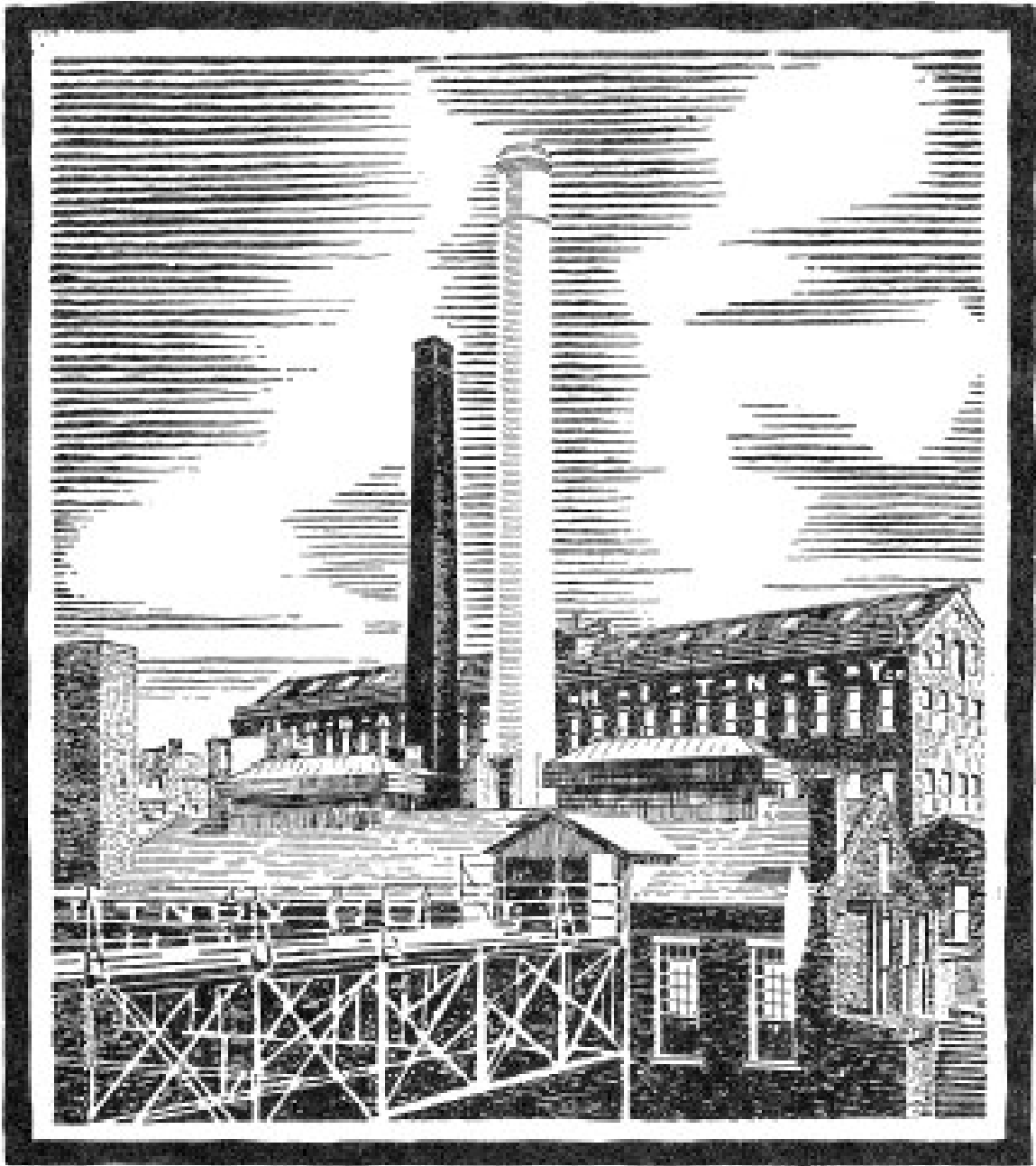
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TO * THOSE * MEN,
THEIR * SONS * AND
GRANDSONS WHO
HAVE LABORED THESE
THREE SCORE AND TEN
YEARS TO MAKE OUR
GOOD NAME BETTER
* WE DEDICATE *
THIS BOOK





The new stack rising above and replacing the old one in 1918 symbolized the steady growth and progress of Pratt & Whitney Company

Pratt & Whitney Measurement Systems

1860 – 2003

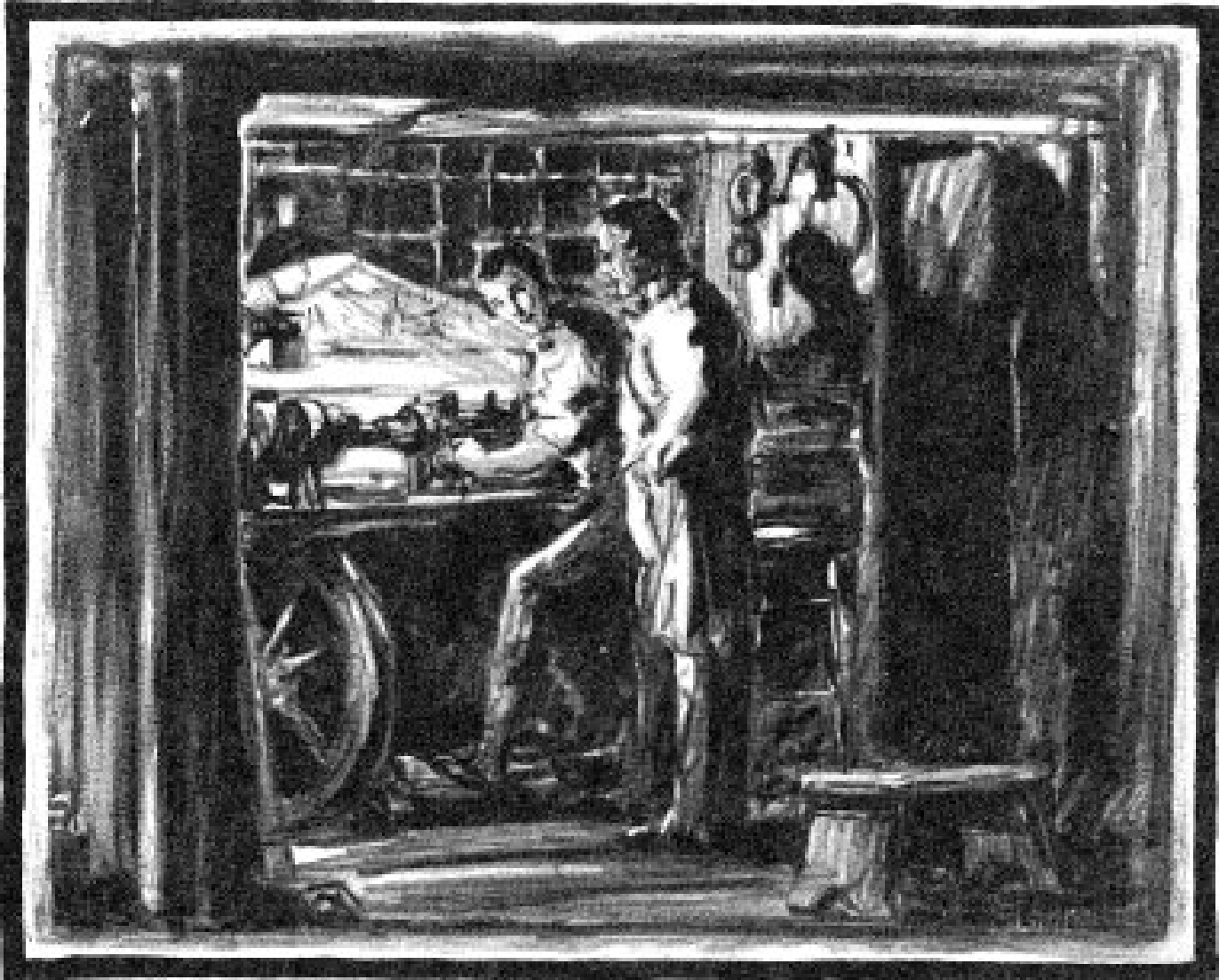
For over 140 years, the employees of Pratt & Whitney have carried on the legacy of searching for higher degrees of accuracy and quality. In the 1930's the company president Clayton Burt stated,

“Its founders were men who saw the coming need for a degree of precision then undreamed of, and they determined that every product bearing their name should be the best that could be built.”

Today's employees carry the same high standards in their work combining new technology with old world craftsmanship. The men who founded this business would be proud of the many accomplishments made over the decades. We have achieved 50 nanometer accuracy over long measurement ranges and Pratt & Whitney instruments can be found in the best metrology laboratories throughout the world. Our past has given us the foundation upon which we will build the future of our company.

David Stelly & Daniel Tycz

Pratt & Whitney Measurement Systems, Inc.
www.prattandwhitney.com



Preface

Two men meet, and in that meeting, perhaps in a few words, the foundation of a great Company is laid and the destinies of thousands of people are forever determined. Two men, Francis A. Pratt and Amos Whitney, young men working together in 1860, found in the fusing of their minds a single idea out of which has come a growth so marvelous that they could not even have dreamed of it in their most visionary moments. They worked by day in the Phoenix Iron Works. They talked in their spare hours until their ambition rented a small room, bought a few tools and a stove, and after their regular daily work, led them to the designing and developing of machinery.

So started the Pratt & Whitney Company.

The Civil War came. Through all its grief and disaster it brought to Pratt & Whitney the opportunity to test their idea—to put into metal the dream that possessed them—to make things for the benefit and service of mankind. There is strange irony in the fact that their first chance to create should be in the making of firearms for the killing of people—they who later were to ease the tired fingers of seamstresses, help to change the pen to the typewriter, make many machines that took the burden from the eyes, the souls and bodies of so many people throughout the world.

Yet it is true! The Civil War, the Franco-Prussian war of 1870, the World War of 1914, all were responsible for great

developments in the Pratt & Whitney Company. But war only used them temporarily, and humanity gained for all time from the knowledge found in the exigencies of war.

From the beginning, Pratt & Whitney were fired with an enthusiasm for accuracy—not accuracy as it was then known in the metal-working industry, but an accuracy finer than could be seen by the human eye or measured with known instruments. They realized that only from such theoretical accuracy could come the practical accuracy of metals cut to thousandths of an inch, to ten-thousandths.

They foresaw the need for this actual accuracy in the making of identical parts in quantities, so that costs could be reduced and mechanical inventions of all kinds be available to great masses of people.

Pratt & Whitney began to cut down the margin of error, to devise ways and means to measure finer dimensions and still finer. Absolute accuracy was and is impossible. But the margin narrowed down through the years until in today's regular routine of work, millionths of an inch are dealt with as casually as machinists talked thirty-seconds before the Civil War. Much water flowed under the bridges of Hartford before "Accuracy" became almost a trademark of the Pratt & Whitney Company throughout the world. The two young men who started in 1860 gathered around themselves associates and workers who caught the flame of their own enthusiasm. As the Company grew older and larger, there were always men in the organization who were as bright and steadfast as stars in their contributions to the Company. Occasionally, real genius would flare through the organization. Sometimes it

would be inventive genius — then again an organizing genius.

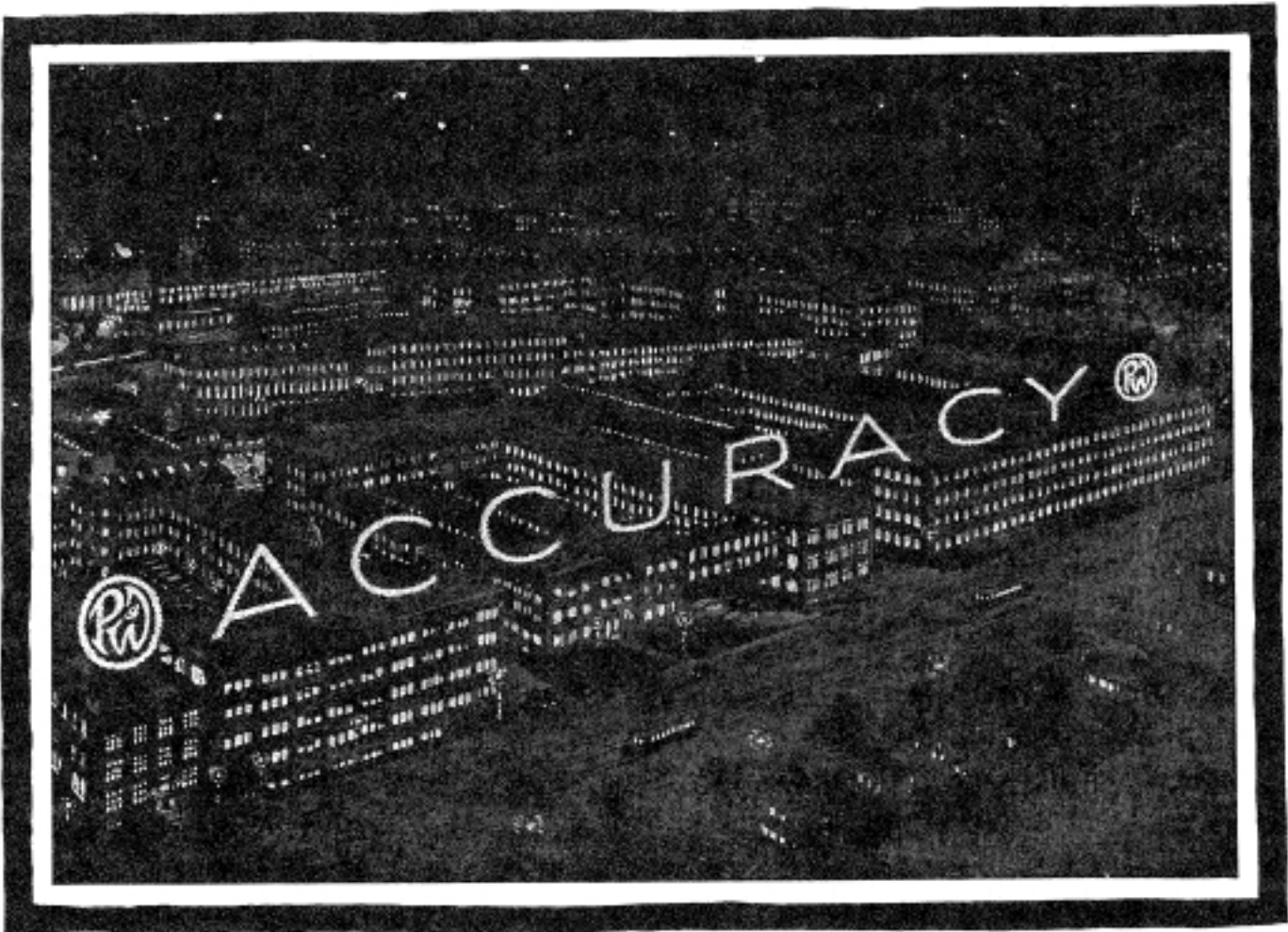
Several times in the history of the Company, rapid growth or changing conditions drove the Company into desperate straits that might have ended it abruptly. The foundation, however, always was sound. “Accuracy” as a watchword is all-inclusive of quality, integrity and an unblemished code of honor.

The price paid for accuracy during the seventy years could not be computed in money. It is true that money was poured into it lavishly. But the greater price is in the time of men who have given all their working lives, every thought of their working brains, to the ideal of accuracy.

The search for accuracy carried Pratt & Whitney through many foreign realms of thought. To embody accuracy in metal meant that metal must be produced which had an inherent quality of maintaining accuracy. That simple sentence cost Pratt & Whitney hundreds of thousands of dollars. It demanded a long, continuous study of steel and methods of heat-treating so that steel could be cut, ground and worked down to accurate dimensions, and that it would then stay accurate.

Accuracy, in itself, is not an end. Pratt & Whitney visioned that through accuracy would come ways of making interchangeable parts, and of making them in quantities at a fraction of previous costs. From this idea has grown the mechanical age in which we now live. It gave us sewing machines, bicycles, automobiles, aircraft, radios, vacuum cleaners and practically every mechanical device in use today.

It would be absurd for Pratt & Whitney to take credit for these achievements. Such is farthest from our thoughts. But



in the evolution of all of them we have had some indirect effect, and a very direct influence on many.



We have said that wars and firearms brought forth inventions from Pratt & Whitney that afterwards were turned to the use of peace—the swords beaten into ploughshares. It is true. The machine which drilled a hole in the barrel of a rifle now drills one in the crankshaft of a motor bus so that oil may properly reach the bearings. What we learned about making guns now is used for making cars. The accuracy that permitted us to make tools for war, now enables us to make tools that make machines for every phase of human endeavor. We know of no large company in the metal working industry, and few outside, who do not depend upon Pratt & Whitney for certain machines, gages or small tools.



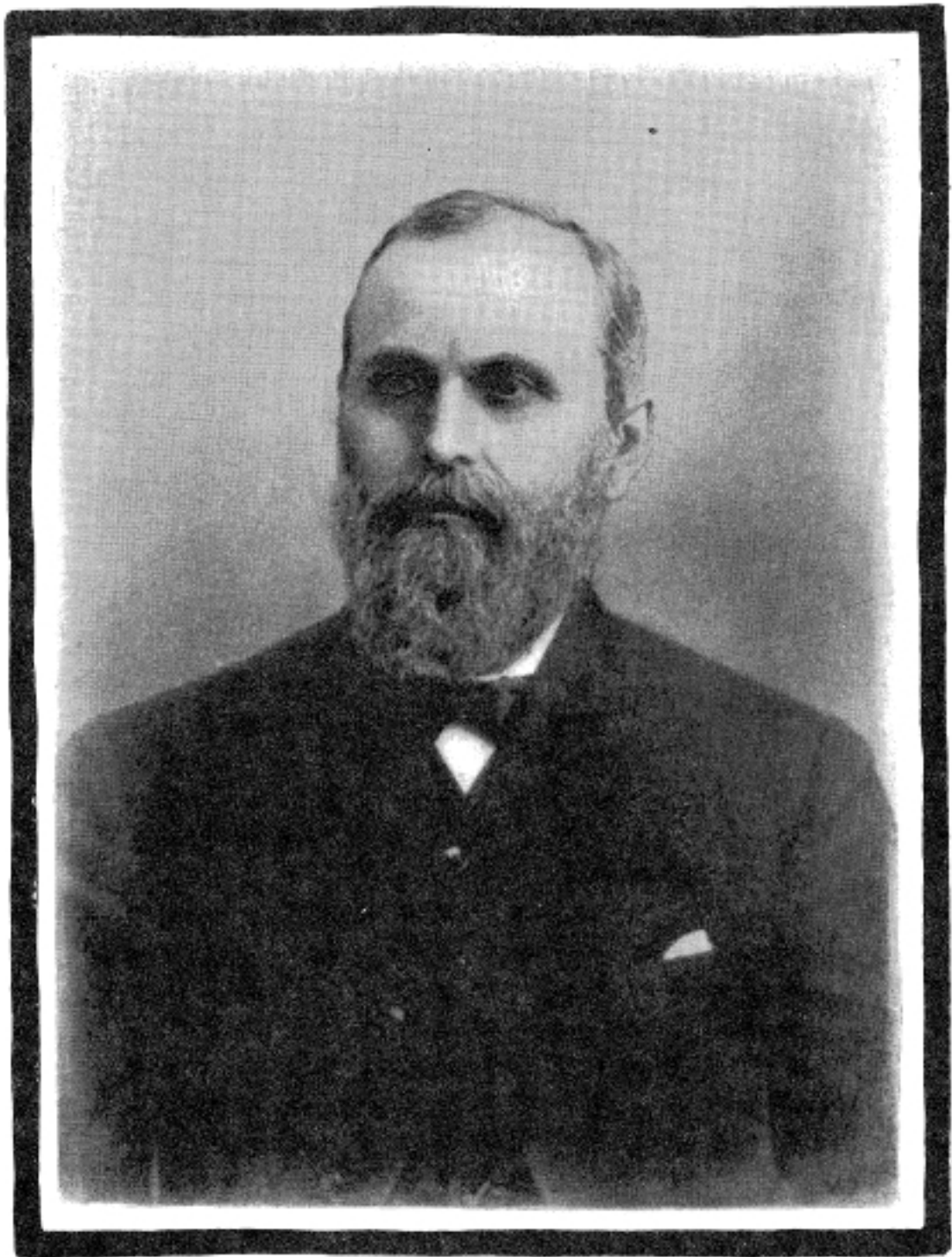
The seventy-year history to date has been a splendid record. There have been dark days but we lived through and beyond them. On other pages are written the physical accomplishments of the Pratt & Whitney Company. It is a proud record. But we who are here, who have taken the torch from hands that served until they could no longer hold it aloft, are infinitely more proud of the men of Pratt & Whitney. The true record of the Company is in the lives of these men. To them, wherever they may be, we offer this book as a mark of our appreciation. On them and their ideals we have builded, and on them we shall continue to build.



THE FOUNDERS

FRANCIS A. PRATT
AMOS WHITNEY





FRANCIS A. PRATT

1827

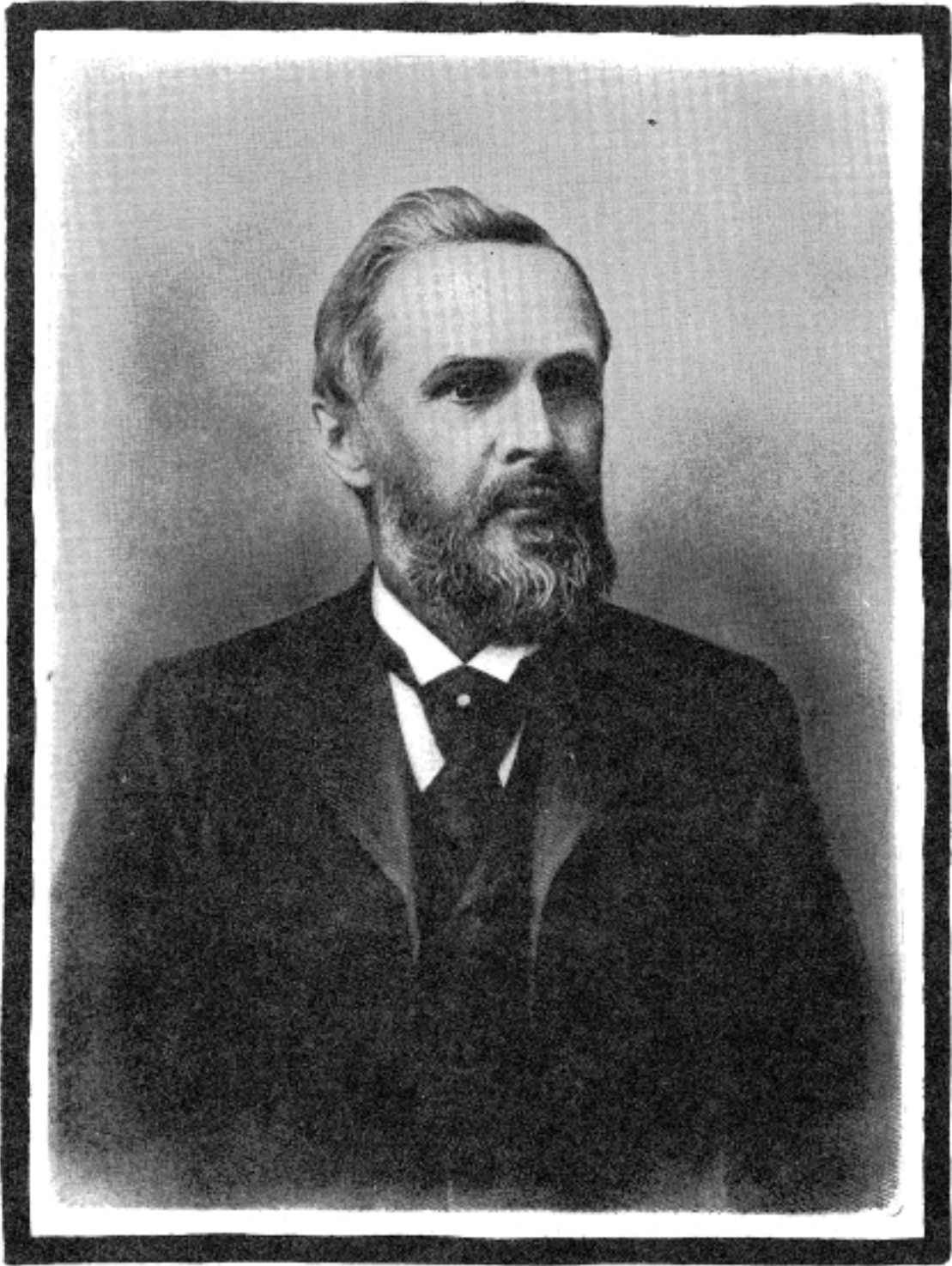
1902

If some people are born with a definite destiny written out for them, Francis A. Pratt was marked for a designer of machinery almost from his cradle. He was born in Jay, N. Y., in 1827, but at eight years of age his family moved to Lowell, Mass. After a grammar school education, he was apprenticed to Warren Aldrich, a thorough mechanic and a wise teacher of the old school.

In the mind of the young Pratt was established the principles of machine design and with them a respect that was almost sacred for "accuracy." Whatever else of genius he possessed was guided and governed by the certainty that through "accuracy" the world of mechanics would be revolutionized.

He was only about twenty-five years of age when he came to Hartford to work in the Colt Armory. This was almost a training school — a higher college for the finest mechanics the country was developing. Two years of intensive study and work brought to Mr. Pratt an invitation to become the superintendent of the Phoenix Iron Works of Hartford — a Company that had been established in 1834 by Levi Lincoln. Incidentally, this is now the Taylor & Fenn Company.

At the Phoenix Iron Works, there is no question that Francis Pratt developed much of his executive ability while retaining by a many-sided experience, the mechanical ingenuity that was his own special gift. But the most important factor in his Phoenix Iron Works experience was the meeting there of a man who, in due time, was to become his partner in an enterprise that would carry their joint names into the distant places of the world, and so far into the future that no man may even guess the years these names will survive.



AMOS WHITNEY

1832

1920

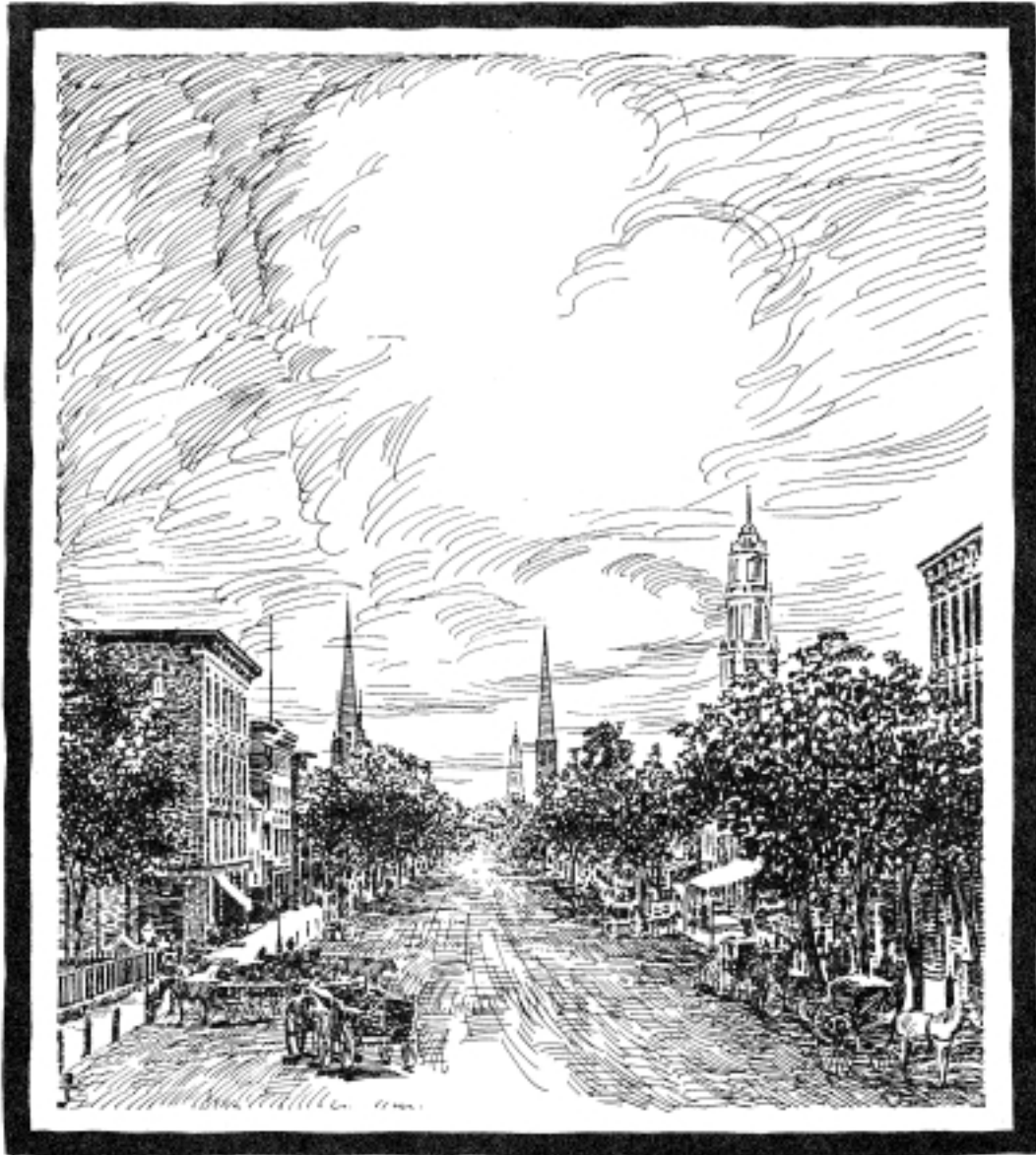
In Biddeford, Maine, in 1832, a boy was born to Aaron and Rebecca Perkins Whitney. They named him Amos. The Whitney name had long been connected with things mechanical. Eli Whitney, who was famous for the development of fire arms and the cotton gin, was from another branch of the same family, while Aaron Whitney himself was an expert machinist and a locksmith.

It was natural for him to apprentice Amos in the Essex Machine Company of Lawrence, Mass, at the age of fourteen. For three years the boy worked on the cotton machinery, locomotives and machine tools made at the Essex plant and after one more year as a journeyman on machinist's tools, Amos Whitney followed his father to "Colt's Pistol Factory" in Hartford.

Though Amos Whitney and Francis A. Pratt had known each other for some time previous to 1860, it was in that year that they began their business association that eventually was to become "Pratt & Whitney."

Amos Whitney was a remarkable worker. Ten working hours a day was normal for him, and from 1860 to 1883 he never had more than one or two days' vacation a year.

He was a splendid executive, a good salesman, with enough mechanical knowledge and skill to supplement the great talent of Francis Pratt. By his own example, Amos Whitney invoked the loyalty of the men in the shop and the integrity of all he dealt with in the outside world. Especially in the Pratt & Whitney shop was there a remarkable bond of sympathy between the workers and their employer. As it was summed up by one work-



Main Street, Hartford, at State
House Square about 1858

man — and what greater tribute could be paid to a man —

“He is perfectly straightforward in all dealings with men and there is no need for a contract with him if his word has been given.”

Mr. Whitney gave his life to his business. He had no taste nor inclination for public office and declined to participate in political affairs. He was a staunch republican and did his duty as a citizen, always taking a great deal of interest in party questions and party matters. He was a man of domestic tastes, and enjoyed his beautiful home on the corner of Whitney Street and Farmington Avenue.

Mr. Whitney is ranked justly as first among the self-made men of Hartford, and the city is indebted to him for his share in building up a gigantic industrial establishment which has made a name and reputation for Hartford in nearly every civilized country in the globe.



Not often does the world see such an example of perfect harmony between business associates as existed between Francis A. Pratt and Amos Whitney. Theirs was a noteworthy association which went far deeper than most. Mutual trust, complete understanding, a striving toward the same high ideal, all were part of that relationship. The fine association of these two men was the rock upon which Pratt & Whitney Company has grown. We honor them not only for what they did, but for the men they were.