* * * * There is a certain species of machinist who makes mistakes—always and continuously. His ten feet four inches and a quarter is an eighth short or long. His inch and a half is in the neighborhood only, of an inch and a half. He forgets the washer on this job, and don't cut the thread up far enough on that one. He drills this hole too far from the edge of a flange, and drills that tap hole the size of the outside of the tap, and he never gets a hole the right size for a tap, and he never chucks a job true enough, and he sets a lathe over, so as to turn a crowning pulley very much more tapering on one side than on the other; he won't make a key bear on the sides, and no wrench will fit all around on the bolt head he files up; he taps holes crooked and runs pipe taps in too deep; he cuts shoulders up a sixteenth too far, and makes the driving fit on the wrong part of the job; he is a good workman for all these things are nicely done. He simply forgets or neglects, or something or other, and is a nuisance, for you never can depend on him. When he lays a job down, you never can have the assurance that it is right until you measure everything about it. The work that such a man does costs lots of money, because you must provide a special supervision over every thing he does. Such a man will turn a foreman's hair gray if he lets him keep on. He never will get any better as long as he works in the same position. To cure this man, reduce his pay and put him at the very foot of the ladder, telling him to raise his own pay by learning to be "sure." No man continually liable to small mistakes around me, if you please.

* * * * Another man is awfully cautious, careful and sure. It is painful to watch him. He calipers a fit, turns his work nearly to size, hesitates, doubts, and goes through the whole calipering process again. When done he will ache for a chance to try his work to see how it will fit. He measures everything twice and then isn't sure about it. These anxious men are never sure of anything. The more pains they take to assure themselves, the less sure they are. They have no confidence in themselves. No decision, no boldness. The thing grows on them, and they grope their way through life. When this man locks up his tool box at night he must always go back and put the key in the lock to see whether he locked it or not.

* * * * Another kind of a chip is the man who never becomes so preoccupied with a thing that he doubts details. He is a man of bold and decided action. He has self confidence enhanced by self confidence. Watch him caliper a job. He knocks his inside calipers with a motion that means something. They move an inch blow. The last hard blow is lighter, but decisive. Then come the gentle strokes, soft and delicate, but effective. Finally, he gets the fit, and when he does he leaves instanter. He has got all he came after. He goes to his lathe and sets his inside calipers, and when he gets them right he stops trying to see if they are right; he knows they are. Then he tries the job in the lathe. Good deal to come off. He gives the crank a pronounced turn and takes a big cut over the job. Does he hold his calipers in his hand, and think about the fit in the mean time? Not a bit of it. He starts his new cut, tries his calipers, and sees that he has the right size; lays the calipers down, and lets her go. His mind is now free. He don't wonder if his job is the size of his outsides; he don't wonder if his outsides are the size of his insides; he don't wonder if the insides are the size of the hole; he don't wonder if the "feel" in the hole was just about right; he don't wonder about anything. He *knows* what he has done. He will follow up his job with his calipers, and keep the thing turning straight, and, when done, he will lay the job aside, and don't care a cent who the first man is to try his work together. He don't know what relief is, because he don't know what anxiety is. There is no luck, or ill-luck in the universe for him. A man who makes caliper fits with confidence holds the universe in his hands, and shapes his future with effective strokes. When he raises a sledge hammer he hits where he intends to. He don't wonder where that hammer is coming down.

* * * * From Chordal's Letters in *The American Machinist.*

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JAMES WARING SEE died at his residence in Hamilton, Ohio, Jan. 31, 1920, in the seventieth year of his age.

Mr. See was better known to the readers of mechanical journals as "Chordal," a pen name used by him for much of his writing.

About 1880 he began a series of articles in the *American Machinist*, then a struggling young paper, under the title of "Extracts from Chordal's Letters." These articles were of the shop by a shop man and their popularity contributed greatly to the success of the *American Machinist*. They attracted widespread interest, and through their influence more than one young man has been inspired to do better and greater things.

Mr. See was born in New York City on May 19, 1850, and was the only child of George C. and Sarah See. Both his parents, while natives of New York, were descendants of sturdy and vigorous ancestry of Huguenot origin.

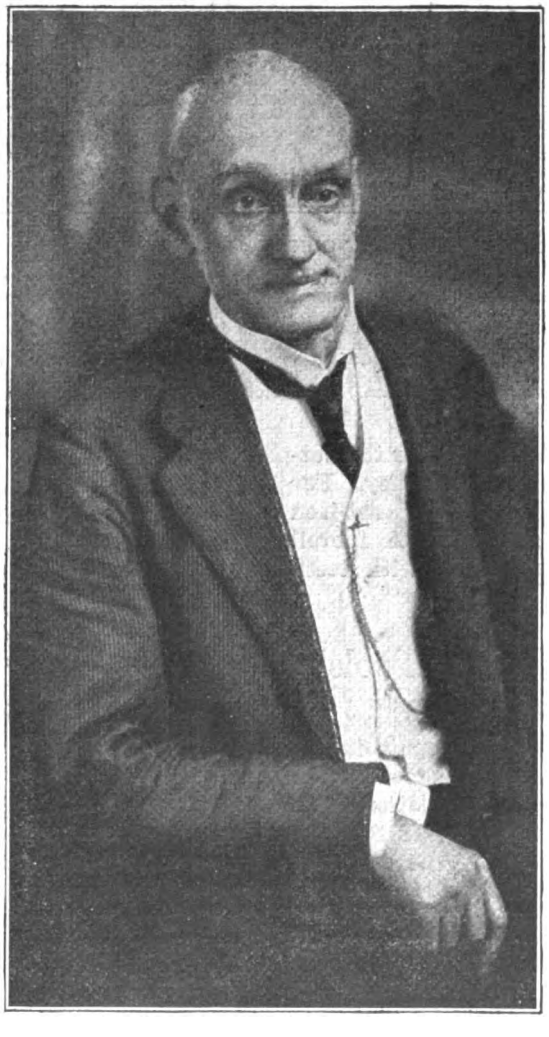
Mr. See received his earliest education in a country school at Rutland, N. Y., though he later attended schools at St. Louis, Arcadia, and Springfield, all in Missouri. In the latter place he got himself into trouble by teaching some darkies how to read. Though he did not know it, this was contrary to the law, and his father was waited upon by a committee and told that such proceedings would have to be stopped.

At the outbreak of the Civil War young See was employed in the Springfield military hospital as an assistant in the dispensary and in the operating ward. After the battle of Carthage he was made telegraph messenger to the Federal forces in and around Springfield.

Upon the ending of hostilities Mr. See served an apprenticeship as machinist at the Springfield Iron Works and it was there he laid the foundation for his future career. At the completion of his apprenticeship he found employment in various shops located from St. Louis to Yanktown, S. D., eventually settling at Omaha, Neb., where he started a shop of his own.

The story is told of him that being disappointed in a lathe he bought from the Niles Tool Works he wrote to that firm to the effect that if he could not design a better lathe he would eat it. Alexander Gordon, head of the Niles Works, testily replied that if he was able to design a better lathe than the one in question he wished he would come to Hamilton and do it.

Long after Mr. Gordon had forgotten the incident there appeared in his office a tall, lanky individual who said with a drawl, "My name is See and I came up here to design that lathe for you." He was put off with one excuse after another until in disgust he appropriated an empty drawing board and did design a lathe that made Mr. Gordon sit up and take notice.



Yours Truly
James W. See.

He was at once employed by the Niles Works, filling positions as foreman, chief draftsman and chief engineer respectively.

In 1876 Mr. See opened an office in Hamilton as a consulting mechanical engineer and his keen insight into mechanical matters soon brought him a wide practice in connection with some of the largest machine establishments in the United States and Europe.

With the invention of the telephone Mr. See became greatly interested in its practical workings and was the inventor of several valuable devices connected with central-station apparatus. In recognition for his work he was made an honorary member of the Telephone Exchange Association. For a time he was editor of the *Telephone Exchange Reporter*. He built the first telephone line in Hamilton. Also, in connection with Alexander Gordon and James K. Cullen, he built an electric-light plant at the Niles Tool Works, the first in Hamilton.

As Mr. See's business increased he became a patent attorney and as such developed an enviable reputation as an expert in patent litigation. He has been called upon to give expert testimony in more than three hundred cases, among which was the litigation involving the validity of the patents issued for the original McCormick reaping machine.

He took great interest in airplane development and was counsel for Wright Brothers in their litigation with the Curtiss company.

By appointment of Governor Campbell, Mr. See acted as one of the commissioners for Ohio to the World's Fair held at Chicago in 1893.

Perhaps we cannot pay a better tribute to the memory of Mr. See than that contained in the following telegram from James K. Cullen, president Niles, Bement, Pond Company, to one of the Hamilton papers:

New York, Feb. 2, 1920

Hamilton Daily News: In the death of James W. See, Hamilton has lost a most exemplary, gentle and kindly gentleman, and an able and widely known engineer. His interest in the welfare of the city was always manifested and he lent liberally of his time, his money, and his ability to enhance its reputation and improve its condition.

While modest and unassuming to a marked degree, his knowledge of mechanical and industrial affairs brought him in touch with many of the largest manufacturing concerns, and a large number of eminent engineers who greatly admired his talent and appreciated his advice. His literary productions were read and favorably received by employers and employees engaged in mechanical pursuits throughout the country, and brought prominently before the people, not only the man, but the city of which he was a resident.

Honest and honorable, he was trusted implicitly in all business transactions, and socially, while of a retiring disposition, he endeared himself to a large circle of admiring friends who will sadly miss him in the years to come.

JAMES K. CULLEN.

On June 1, 1881, Mr. See was united in marriage to Miss Hester R. Rose, of Forestville, Ohio, by whom he is survived, together with three sons and one daughter: Robert M., of Chicago, Ill.; Willard and Howard, of Atlanta, Ga.; and Mrs. Thomas A. Allen, of Evanston, Ill.

Mr. See was a charter member of the American Society of Mechanical Engineers, a member of the Franklin Institute, the Hamilton Club and the Union League Club of Chicago.

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