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A Pioneer in the Woodworking Machinery Business

Engineering advances made in machine woodworking during the progress of a busy and useful career, steps taken in the study of machine improvement, and the international experience of a live inventor and tool builder

WHILE we were preparing the historical article for our January special issue we were repeatedly referred to work done by John Richards, both by those who remembered his engineering as well as his literary contributions to the art and in works treating of the various branches of the woodworking industry.

Still at Work

Learning that Mr. Richards was residing in Sausalito, Cal., we wrote him, but the information that was received arrived too late to be incorporated in our special issue. We are glad, however, to print a sketch of this pioneer's work, as he has done much to place the woodworking art on a firmer basis not only in America but in Europe as well. For the past twenty years Mr. Richards has devoted his attention to other lines of engineering, principally hydraulic.

When a small boy in Ohio he happened to visit a boat-building plant where he received his first introduction to the use of power machines for the working of wood. At a little later period he became a steam engineer, and at 18 years of age went to work in a chair factory near Cincinnati. He had already had a pretty general experience in mechanics, including steam engineering as it then existed, and he began overhauling the chair-making machinery. By simple changes, in some cases doubling the speed and arranging machines in better shape, he was able to double or in some cases more than double the product. Just as he got the plant going well it burned down and at 21 years of age he set out to qualify himself as an expert woodworker in all lines. He made an agreement with a cabinetmaker, according to the terms of which he paid thirty dollars per month and gave his work for instructions.

Early Practice in Millwrighting

At the end of a year he was able to make any kind of furniture turned out by the man with whom he had been working, but the furniture trade was then too tame to suit him and so he took up millwrighting, which in those days was a woodworking business. He constructed wooden water wheels, bolting machinery

John Richards

for flour mills, toothed gearing, and many other machines which would now be made of metal. His knowledge of steam engineering and steam machinery helped him to earn good wages.

Builds a Chair Factory

After a year at millwrighting he started to work as a joiner and soon mastered this branch, but as it was not to his liking, and preferring operations where machines were used, he undertook the construction of a chair factory at Greenville, Ohio. The executive management, however, was not in Mr. Richards' hands, and the factory failed for lack of financial backing and want of proper timber supply.

Bench Screws and Toolmaking

He next developed machinery for making a special form of bench screws having square threads of 1¼-inch pitch. These came to the notice of the Ohio Tool Co., at Columbus, Ohio. The management of this concern immediately entered into negotiations with Mr. Richards and induced him to become foreman of its prison department, which employed about 130 men, turning out wooden-bodied planes, hand-screws, handles, turned parts, and other specialties made from hardwood. He immediately commenced redesigning the equipment, making bold changes in the machines both for woodwork and for turning out the metal parts of the planes.

These improvements were so successful that at the end of a year the company presented him with a thousand dollars' worth of stock and in four years made him superintendent of the entire plant. That was in 1860. Mr. Richards humorously states that he still holds the position as he has never had a successor, the work having been suspended on account of the fact that the Civil War cut off much of the market for the product and made commercial conditions such as to render the continuation of the business unprofitable.

Designer of Woodworking Machinery

While waiting to see what would turn up in Columbus, Mr. Richards made trips to nearby points of interest and went to Cincinnati and there became a charter member of the J. A. Fay Co. with the title of engineer. He immediately made sweeping changes in the company's designs and methods. After seven years he left Cincinnati, going to his birthplace, Philadelphia. In 1869 he proceeded to Europe and in London produced a number of designs of woodworking machinery, many of which are still in use.

He also spent some time in Sweden developing an extensive business in the

manufacture of woodworking machinery. He states that he believes the best practice and the best machines for joiner work exist in Sweden. We presume that this statement is based on the theoretical considerations of the problem and the balancing of the various factors as they existed in that country.

Mr. Richards next returned to Philadelphia and formed the firm known as Richards, Thoen & Kelly, which later became known as the Berry & Orton Co., Mr. Kelly going with the H. B. Smith Machine Co. at Smithville, N. J., where he is still located, and Mr. Richards going to England and entering other lines of engineering. While in England he designed many woodworking machines for the royal Russian arsenal at St. Petersburg, and box-making machinery for the island of Ceylon. He also supplied designs for woodworking machinery for many special industries.

The firm of Richards & Atkinson was organized at Manchester, England, and became importers and makers of woodworking machines. This firm was later known as George Richards & Co., and still later as George Richards & Co., Ltd., Mr. George Richards being a son of John Richards. The firm is still doing a prosperous business but now handles metalworking machinery exclusively.

In 1880 John Richards journeyed to California and engaged in the manufacture of machine tools and hydraulic machinery. He states that his experience in woodworking machinery "has only been enough to learn the principles of this diversified art. From the forest to the finished product nearly all the processes differ in this country and Europe. These facts discouraged me and I took up engineering branches that are nearly uniform in all lands. Woodworking is an art endless to learn except in a few specialties."

The woodworking trades of all nations owe a great debt to Mr. Richards. He has been a prolific writer on these subjects and his books are still standard.

The Off-duty Skill of a Bright Mechanic

BY H. H.

An expert workman whose close measurements are not employed in all his undertakings surprises a critical observer and he probes further to unearth the causes

ONE of my neighbors is a skilled machinist. He has charge of one of the fine lathe departments of an engine-building concern, doing his work to the exactness of a thousandth part of an inch. Everything is done to micrometer measurements. The variation of the thickness of a sheet of tissue paper would throw the work out, so he is kept keyed up to a high tension every hour of the day.

When he comes home at night, tired from the strain, he takes his few carpenter tools to begin patching around the house, making tables and benches, screens for doors, lattice for porches, walks to cross the yard and other little fittings or conveniences that suggest themselves to a man who owns his home. It is all done at a hop, skip and jump rate, hit or miss, by guess and thumb measurement.

Misplacing Mechanical Ability

That was somewhat of a puzzle to me, one for which there seemed but this solution: I must have been misinformed about his ability. Instead of the fine mechanic who worked closely, he must be entitled to the name only from the fact that he worked where fine work was done. So I had about concluded that the chance of cultivating the acquaintance of some one further up in the mechanical line than I was not to be with this new friend. But by what trifles are we led in new paths that open to our surprised eyes, strange views of what we had thought commonplace from our own experience? One of the children dropped a pebble down the pump from which we both get our drinking water. Like most things unexpected, the pebble found its way to the bottom of this deep-well pump, lodging under the valve.

Our cause now being a mutual one, gave me the opportunity to extend my knowledge, possibly to an explanation of this paradox of a good mechanic who seemed to enjoy doing rough, badly-fitting work. We labored on that well pump for two hours, getting the lower piston and plunger disconnected at the bottom of a 16-foot dry well. When we started at the job I naturally expected to be "helper." But no, my friend looked to me for advice, for directions. The only suggestion he made turned out wrong, and that too on a simple point concerning the valve. This only added to my convictions of there being some cause for the entire change in the man from the reputed careful control of his daily work to the rough and uncertain way in which he handled other forms of measurement usually familiar in theory and practice to most mechanics.

When our task was completed it had brought us to a stage in our acquaintance where a little familiarity was allowed, so I turned the conversation toward his work with the idea of getting him to voluntarily relieve me from my doubts. A piece of matched flooring that he could not use was lying on the bench. I tried the matching with a short piece of cut-off; neither of the pieces I had would match itself or the other piece, the matching being out nearly 1/8 inch on the groove side, a fault caused by the head dropping unnoticed by the operator.

My friend just laughed at the little lecture I was giving in my best style for his benefit. I wanted to impress him with the idea that as a woodworker I was a close operator on a machine. My efforts were wasted on an unappreciative listener. The fiery oratory of Cicero would scarcely have made an impression on him. In my efforts to talk and act "shop" at home, I had struck the key of the seemingly strange results of his work. "Do you know," he said, "that I work so close on my machines and lathes that when I come home and get hold of this old saw, I cut around here without looking at a rule, knowing that I can run a fascia or a batten along the ends and cover up bad cracks or ragged edges. It gives me a certain relief to the high tension under which I work all day. I don't know of any other means of working off a surplus of 'nerves' that is as effective as trying your hand at being a 'wood-butcher.' I have seen you inspecting my work and I knew you were either amused or disgusted with what you considered my blunders. But the fact is, it is a relief to get something done without having to put a gage to it or to take a caliper to see that it is a close fit."

The Recreation for Workmen

I suppose this unexpected explanation made me look as if I had some lingering doubts about it being just exactly correct so he concluded by asking me if I could not rest better after a hard day's labor if I turned my mind into some other channel than the one following my line of work. That is true for all of us. The mental strain does not always end when the whistle blows. A change is sometimes as good as a rest, a statement that will be readily indorsed by those whose occupation compels the use of a single set of muscles for a long time on one kind of work.

I believe much of the poor work done is because we are running on three legs, so to speak. Unlike our canine friends, we do not get any rest from hobbling along short of motive power. With many of us it is too great an anxiety to get out a big lot of work in a given time, while to many others it is just pure laziness.