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THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 408,

For the Week ending September 22, 1883.

Price 10 cents. For sale by all newsdealers.

THE STORAGE OF WIND POWER.

This interesting subject continues to be discussed by several of our valued correspondents. We give some of their contributions in another column. We notice they omit to give estimates of the works they propose. It would add to the value of such papers if approximate bills of the probable expenses for apparatus, machinery, care, interest, etc., were given. Some of the writers appear to think there is no other way of storing wind power than to pump water to an elevated pond in the country, and use the force of the descending column to drive mechanism. When that is said, they consider the subject exhausted. But what is greatly needed, especially in such a city as New York, the largest manufacturing place in the country, where the local charges for water alone for every ten horse engine are one hundred dollars a year, is a practical mode of using the power of the wind that now runs to waste above the tops of the shops and manufactories.

THE GREAT BRIDGE AS A SPECTACLE.

During all the years of its building, from the sinking of the first caisson to the establishment of the line of electric lights, the construction of the bridge has attracted the interest of engineers and mechanics. But it is doubtful if it has been accorded its value as a work of art and "thing of beauty," except by casual visitors to New York, who have not watched its gradual progress for a dozen years. And yet the bridge is beautiful in itself. Between the two majestic towers, more than one-quarter of a mile apart, the flooring of the bridge makes a very gradual sweep that by its slender curve presents a fine contrast against the level horizon.

From the river, either by the Roosevelt Ferry boats, or those of the Fulton Ferry, the best perspective view of the bridge can be had. From the deck of the ferry boat the wonderful structure looks like a daring gigantic spider's web against the sky. The eye sees all the understructure of the bridge, and unless one is a calculating, almost agnostic mechanic, it is hard to believe that the suspended structure represents solidity and permanency. The four great white lines that connect the two gray towers and extend their inland sweep for a quarter of a mile each way, appear by their curves to be doing no more mechanical service than the curving line of the string of the paper kite on which the boy sends up his messengers. Vehicles and persons by thousands go across this web-like structure in perfect safety. But these appear only as flies, and it is a wonder to the safe passenger on a ferry boat or on a Sound steamer that people will risk themselves on so frail a structure.

But the bridge is a marvel of beauty viewed from the level of the river. In looking at its vast stretch, not only over the river between the towers, but over the inhabited, busy city on either shore, it appears to have a character of its own far above the drudgeries and exactions of the lower business levels.

Of its actual strength nobody can understand by figures and other statistics. Only by going on the bridge can a passenger over it, or a questioner of it, be convinced that it is a permanent structure.

After nightfall, when nothing but the bridge itself interposes between it and the dark sky, with its gracefully curved lines revealed by electric lights and defined by the darkness of the water below, and the other darkness of the sky above, the bridge appears like a gossamer structure, and has a fairy like appearance.

THE FOREMAN.

The position of foreman of a shop or boss of a gang of workmen demands as its object the turning out of a fair amount of good work. Some fill one portion of this demand and others the other portion, but it is only the manager of men who fills both.

Employers are sometimes at fault in demanding from foremen the largest possible amount of work in a given time, always prodding and pushing, grumbling because a job occupied more time than they expected, and picking up every trifling interruption as a deliberate attempt at imposition. If a foreman is honorable and sensitive he will not bear this nagging, and so in shops ruled by such a proprietor changes of foremen are frequent. One such instance occurs to mind, just now, of a proprietor of a very thriving business, requiring the services of nearly a hundred good workmen besides apprentices, who had lost three foremen within two years either by resignation or dismissal. "Can you recommend a good foreman?" he inquired. "You have an excellent man for the place now in your shop," was answered, naming him. "Oh, he'll never do, he's one of the men himself. I don't want a man who is familiar with the workmen; I want a driver, and he ought to be a stranger." The position of foreman in that establishment is periodically vacant, and a stranger who can bring fair recommendations and has the qualifications of a "driver" can generally have assurances of a position, even if he has to wait a short time for his predecessor's shoes. And yet, this proprietor is in no usual sense "a hard man;" he simply has a wrong idea of the duty of a foreman. His ideal foreman is a mechanical blusterer who stirs up cyclones in the shop, produces an atmosphere of general uneasiness, and "makes the men hop round lively," as he once remarked. The workmen make trouble for every new foreman, and his "life is not a happy one."

There are, however, some foremen who are instructors rather than managers of men. Under their rule more time is spent in the details of work, in correcting errors, in "doing over," than should be required to complete the job. The scrap heap under their management grows to enormous proportions; every slight error in work and every slight mistake in apprehension of an order makes another accretion to the growing pile. Under such foremen the workmen never learn economy of time or of material.

A truly capacitated foreman is a possibility, and his portrait is drawn from no fancy sketch. In the establishment where he is a manager a strike has not occurred since it had an existence—twenty-five years. Probably there are many like him, and his portrait may stand for those of others.

Although he is generally as exact as the workmen to the "bell hour," there is no stir among them if he is late and no letting down of attention when he goes out. He assumes a part of every job and does it, wearing his honorable overalls like his men. He is not afraid of a loss of dignity or a relaxation of authority by addressing his men familiarly. He suffers no diminution of well earned superiority in asking advice of some of his more experienced men. If one of his men "runs against a snag," he goes at once to his foreman, who either knows what to do, or has some proper and timely suggestion to make. He contrives to have his men interested in the work from incipiency to finish, and when one of them shows hearty interest in the work and turns out a good job, he is told of it in plain words that cheer his heart, instead of being rewarded with a grumpy "That'll do."

MACHINE SHOP MANAGEMENT.

"My own idea of a machine shop is that the money made out of it is always made because the mechanical manager of it is sharper than other people. I never knew a machine shop to make money the head of which was not a skilful mechanic. To manage a machine shop a mechanical man with business qualifications is needed."

This opinion is reported from a conversation in which the veteran machinist, William Mason, of Taunton, described himself very accurately. There are competent mechanics, industrious workers, judicious overseers of men, and capable layers out of work, who have had little success financially in the business of conducting a shop. Yet the ordinary observer would suppose that these enumerated qualifications comprehended all that was necessary to success. But there is one other qualification without which all these are of no avail in business; and that is the faculty of conducting a business. This faculty may be considered a natural gift rather than an acquired qualification, but there are living evidences and examples that it may be acquired. It consists, in one phrase, in "the capability of noting details while dealing with general facts."

The manager of a machine shop business ought to be able to sum up, at least once a week, the salient facts of expenditures and income, and he ought to know wherein the improper proportion between them exists, if it does exist. The little daily wastes of oil, of files, of slow feeds, of loose and slipping belts, of temporary tinkering, of fussing about a job, and other unnamed wastes, all using up time and delaying the progress of work—all should be noticed by him. The correction of these slight errors would be sufficient, sometimes, to change the balance sheet at the year's end. Unless he is a good mechanic many of these leaks in the productiveness of the shop would be unnoticed because he could not see them, or seeing them could not understand them or suggest a remedy.

But all these requirements do not comprehend the entire qualifications necessary to the successful manager of a machine shop business. The actual cost of the production of an article, which is usually reckoned by cost of material and cost of time used, includes a large number of items any one of which is subject to occasional variation. For instance it would be folly to fix the same price on an article composed of iron, steel, and work when iron, and steel, and labor were at their highest price as when either one or perhaps all were at a lower price. And yet this fixed price rule has been the method of business of some shop manufacturers who made barely a living profit under the more favorable conditions and suffered heavy losses under the unfavorable conditions.

Paper Gas Pipes.

These are made by passing an endless strip of hemp paper, the width of which equals the length of the tube, through a bath of melted asphalt, and then rolling it tightly and smoothly on a core, to give the required diameter. When the number of layers thus rolled is sufficient to afford the desired thickness, the tube is strongly compressed, the outside sprinkled with fine sand, and the whole cooled in water. When cold the core is drawn out, and the inside served with a waterproofing composition. In addition to being absolutely tight and smooth, and much cheaper than iron, these pipes have great strength; for when the sides are scarcely three-fifths of an inch thick they will withstand a pressure of more than fifteen atmospheres. If buried underground they will not be broken by settlement, nor when violently shaken or jarred. The material being a bad conductor of heat, the pipes do not readily freeze.

DICTATOR, 20 years of age, a celebrated stallion, sire of many fast horses, has lately been sold for $25,000. This horse is of Hambletonian origin, and a brother of the famous Dexter.