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(Illustrated articles are marked with an asterisk.)

Table listing various articles such as 'Adaptation of the Hydraulic Jack to Starting Engines from their Dead Centers', 'The Career of a Working Man', 'The East River Bridge', etc., with corresponding page numbers.

THE IMPORTANCE OF LEARNING A TRADE.

We do not intend, under this heading, to speak of the importance of becoming an apprentice to any mechanical business, but of the importance of learning—acquiring—a trade, of becoming a workman at the business chosen.

In no case is the term required to learn a trade too long. According to the value and difficulties of the business, it varies from three to seven years, and the most faithful and observant apprentice, after having filled his full term of apprenticeship, finds he has much to learn before he can honestly claim to be entirely and thoroughly competent.

Nor is such conduct of any real, permanent advantage to the apprentice. He becomes the Bohemian of the workshop, a waif driven hither and thither, having a smattering of knowledge and yet understanding no one thing thoroughly.

The ambition of the apprentice to be ranked among journey men is a laudable one when properly directed, but it can only be realized by an honest and persistent sticking to his obvious and plain duties.

ous pecuniary loss to his employer, simply because it is difficult to fill his place.

These considerations have nothing new in them, but because they are so trite and hackneyed they are not enough considered by apprentices. We earnestly invite their attention to the subject, believing it will be to their present and prospective advantage to deal honestly in this as well as other respects.

MEASURING MECHANICAL POWER—THE UNRELIABILITY OF BELTS.

Probably no one thing is provocative of more dispute between landlords who let power and tenants who use it, than the amount thus let and used. The landlord, assuming to know the actual power of his engine and the amount used by one tenant, concludes that another employs a larger proportion than he pays for.

Now, scarcely anything can be more deceptive and unreliable. A belt running horizontally and another vertically, although of the same length and width, are two entirely different mediums for the transmission of power.

But the proper means of estimating power must be looked for in the prime mover; and in the measuring of the amount of power from it diverted to any portion of the work performed by the engine, may be seen one of the advantages of the steam engine indicator. This implement has not, as yet, attained the notoriety to which it is entitled.

Every engine should be indicated. What is the use of talking about the "nominal" horse-power of an engine? One man building an engine with cylinders 7 by 10 inches and another one 8 by 10 inches, and another 8 by 8 inches, all claim for their respective engines the same horse-power.

THE EAST RIVER BRIDGE.

Operations upon the projected bridge which is to connect this city and Brooklyn, have actually begun. For several days past workmen have been engaged on the Brooklyn side of the river, in making borings to determine the character of the substratum where it is proposed to build the piers.

The narrowest part of the East river is between Fulton ferry slip, Brooklyn, and near Pier 29 on this side, and here will be located the towers. The initial point of the bridge in Brooklyn city will be, without doubt, at or near the intersecting of Sands and Fulton streets.

The lowest estimate of the cost of this bridge is \$6,000,000, and the company who are to build it must have a capital of not less than \$8,000,000. Many details of construction can not now be given, but will appear as the work progresses.

ing the foundations, and four or five more must pass before the undertaking will be completed.

The proposed bridge promises to be a magnificent structure; but the stockholders will pay dearly for the whistle. For the six millions which this one bridge is to cost, seven or eight tunnels might be laid down across the bed of the river, one for each of the principal streets of Brooklyn.

THE CAREER OF A WORKING MAN.

We do not intend to select an exceptional case in noting a few facts in the life of the mechanic whose course is the subject of this paragraph: this case is chosen because it is not exceptional; there are hundreds of a similar character, and the encouragement to young and struggling mechanics is all the more valuable.

A short time ago the workmen employed by Mr. John Snowdon, the proprietor of the Snowdon Iron Works, of Brownsville, Fayette county, Pa., made him a presentation as an evidence of their respect and esteem for him as a man and employer. Fifty years ago Mr. Snowdon came from Yorkshire, Eng., and settled in Brownsville.

Many men have done greater things, met with more notable success and been better known in the world, but Mr. Snowdon's course is none the less instructive because unobtrusive. It is simply that which is open to hundreds of others who unite with common capabilities for business, industry, perseverance, and will.

COMPARATIVE WEIGHT OF ENGLISH AND AMERICAN SCREW ENGINES.

In the Paris Exposition there are the engines for the English sloop of war Sappho, built by Penn from designs of the Chief Constructor of the English navy. The Engineer gives their dimensions and weight, by which it appears that although calculated to work up to 2,000 indicated horse power the total weight of the engines is but 74 tons.

On the other hand, the engines of the Lackawanna and other screw sloops of our navy are reported by the board of examiners—composed of such men as Copeland, Bromley, Wright, Hibbard, Everett, Coryell, Merrick, Bartol, etc.—as being of only 1,000 horse-power, yet they say if proper proportions had been observed 60 tons of weight might have been saved!

TRIAL OF STEEL RAILS—NOVEL RAILROAD OFFICE.

The New York and New Haven Railroad Company are testing the steel rail in a section between Port Chester and Greenwich. The President of the road, Hon. W. D. Bishop, formerly Commissioner of Patents, is an energetic, practical man, and we shall look to him for a report on the subject which will be conclusive of its practicability.

AGRICULTURAL ENGINEERING.

Once in four years the Royal Agricultural Society offers prizes for the best portable and fixed steam engines (of dimensions prescribed within certain limits) entered for trial at the Worcester show in 1863, and that for this year has just been concluded at Bury St. Edmund's. The various portable engine factories in the kingdom, perhaps forty or fifty in number, are now able, if fully employed, to complete upwards of fifteen hundred engines yearly; a fact sufficient to show both the extent of the trade and the competition which attends it.