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SCIENTIFIC AMERICAN SUPPLEMENT

No. 822.

For the Week Ending October 3, 1891.

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REAL AND IMAGINARY SPEED OF STEAM YACHTS.

There seems to be ground for the fear that stories about steam yacht speed, like fishermen's tales, will become the synonym for exaggeration. There was good illustration of this recently. The Norwood, a tight little steam launch of uncommon speed, crosses the bow of and runs away from the Sandy Hook twin screw steamboat Monmouth, and is heralded far and near with making extraordinary speed, variously estimated at between 24 and 25 miles an hour. Then the Vamoose, designed by a rival builder, does the same for the Hudson River steamboat Mary Powell, and is credited with the same or even more speed than the Norwood. The builder of the Norwood informs the public that his craft, while on a trial trip on a Massachusetts river, made 30 miles an hour for two consecutive hours before witnesses, whose names and confirmatory statement be appended. As to the Vamoose, it is declared in cold type that "The contract called for a speed of 25 miles per hour, and while in her two trials she did not quite reach this speed, her owner is confident that she can make between 26 and 27 miles an hour under favorable conditions."

Perhaps she can. Perhaps her rival can do the same, or even better. We hope to see each of them realize the maximum that is expected. But, putting aside hopes and promises, let us set to work to discover just what each has done up to the present time in these waters, and then we can put a peg in at that point, and thus be able to determine hereafter just what improvement is made.

The steamboat Monmouth, which the Norwood outran on the course between the Narrows and Sandy Hook, is not much faster than the old St. John. When she has a strong ebb tide with her she makes the 21 miles run from New York to Sandy Hook in about 55 minutes, which, if we estimate the speed of the current at 2½ miles an hour, gives a speed of something less than 20 miles an hour for the Monmouth. Thus a craft whose engines could be worked up for a short spurt of 20·5 miles could readily overhaul and pass the Monmouth if starting, as the Norwood did, close astern. As to the 30 miles an hour during the trial trip in Massachusetts waters, the witnesses, there is reason to believe, were altogether unused to making tests for speed and very much exaggerated what they saw, though no doubt without any intent to deceive.

It is, indeed, curious how easily an inventor and his friends can deceive themselves as to the speed of a boat. We remember sending an expert to test a steam yacht once which was alleged to have made 26 miles an hour, and the best that could be forced out of her proved to be 15 miles an hour.

As to the alleged race between the Vamoose and the Hudson River steamboat Mary Powell, in which the former readily overhauled the bigger craft, we have been informed by the Powell's master that she was not at that time racing, nor ever does engage in such contests while on her regular trips with passengers aboard. We are satisfied that this is really the case, and, moreover, it is evident that with a boatload of passengers running from side to side, the craft meantime listed heavily to port or starboard, she could not make even ordinary speed. Again, the Mary Powell, as is well known, has never, since rebuilding, been as speedy as formerly, and it is not likely that she was making more than 18 or 18½ miles an hour when the Vamoose came up. Hence to beat the Powell, loaded with freight and passengers while running her regular trip, can scarcely be considered a remarkable feat for a steamer built by one of the cleverest designers in the country with a special view of speed.

If the speed of these two boats is to be reckoned by what the inventor or owner says they can make or by circling harbor and river traffickers presumably speedy, there is no limit to what the imagination may picture. But if performance is that amount of actual work that can be sustained by statistics, neither the Norwood nor Vamoose has yet shown much better speed than 20·5 or 21 statute miles an hour.

SHOP RULES.

The majority of shop rules, although intended to secure orderly conduct, efficient service and a harmonious forwarding of the work in hand, quite as frequently interfere with superintendence as assist it. Rules often fail where they set forth facts and penalties relating to common honesty, order, disobedience, and the willful, malicious, or accidental destruction of property, or relate to defects in work. The instances where the rules do not fit will be found to be the great majority of cases, and arbitrarily to force the rules to fit such cases, or to force the cases to fit the rules, is much harder work than it would be if the management were left free to decide for the right unhampered by any rules whatever. No business or body of men can be managed by the blind application of set rules, any more than a fleet of ships can be steered by one rudder. Every craft obeys its helm, but yields according to its peculiarities of build and motive power; so every man can be ruled if his peculiarities be understood and a reasonable allowance made for them. If a concern could possibly have a full and complete set of rules to meet every case and every variety of fault, and to cover every interest of the business, and be fair to every employe, these rules could not execute themselves. They would not be a satisfactory equivalent for an energetic superintendent or a faithful foreman. The responsibility of superintendence cannot be evaded by the printing of rules.

Here are two rules that indicate about all that need be said in a general way to the employes of any concern, and that leave the management free to consider every case on its whole merits.

RULES.

1. In consideration of the fact that each and all employes of this establishment are regularly paid such wages as have been mutually agreed upon as a fair equivalent for their full services within stated hours, the management requires as full and as faithful a rendering of the stated service from each of its employes as it renders to them the stated sums in payment therefor.

2. Every question that may arise between employes and overseers, or relating to work, discipline, order, honesty, and every other question affecting the establishment, will be decided on its merits by the officers, having in view the interests of the business.

These rules are not intended to serve as exact patterns for all shops, as special additional rules may be needed for each particular business, but the above are sufficient to indicate that the necessary regulations for a shop may be made very few and brief, and to emphasize the fact that rules are good only as they are explicitly stated and energetically enforced.

The Expense of Government.

Some very interesting statistics in regard to the government's account with the people are published by Edward Atkinson in the current issue of the *Forum*. The total amount of the normal cost of the government proper of the United States for the fiscal year ending June 30, 1889, was $146,478,144. These expenses included the entire cost of the civil service and of the military establishment, including fortifications and river and harbor improvements, and of the navy including appropriations for the construction of new vessels. This entire amount, however, great though it is, is covered by the duties which were paid on liquors and tobacco. The amount of this revenue was $148,883,788.

It will be seen, therefore, that were it not for the war and its accompanying train of burdens, the entire expenses of our government could be met by the taxes on liquor and tobacco alone.

The tables indicate that since 1871 the revenue from this source has increased more in proportion than the increase of population.

The other items of expense and revenue for the year ending June 30, 1889, will also be of interest. The expenses are:

Indian account	$6,892,207
Interest on public debt	41,001,484
Arrears of pensions settled	21,442,349
Current annual pensions	66,182,429
Total	$135,518,469
The expenses of government before mentioned.	146,478,144

The revenues are:

From duties (other than liquors and tobacco)	$204,851,854
Sale of public lands, etc.	22,170,538
Sundries, internal taxes	978,611
Nominal profit on purchase of silver bullion	10,165,264
To this should be added revenue on wines, spirits, beer, and tobacco	148,883,788

The entire expense of government during that year was $281,996,615.60. The entire revenue amounted to $387,050,058.29, and the surplus was $105,053,442.69.

The changes of ratio of the national debt account to the pension account is very interesting.

In 1871, the interest on the public debt was	$125,576,565
The pensions	34,443,894
In 1891, the interest on the public debt was	36,099,284
The pensions for fiscal year ending June 30, 1891.	124,415,951

Prevention of Yellow Fever by Inoculation.

At a recent meeting of the Academy of Sciences, Paris, a paper was read on the preventive inoculations of yellow fever by M. Domingos Freire. The author has inoculated 10,881 persons with cultures of *Micrococcus amaril*. The mortality of those so vaccinated was 0·4 per cent, although the patients lived in districts infected with yellow fever, while the death rate of the uninoculated during the same period was from 30 to 40 per cent. These results have led the government of the Brazilian States to found an institute for the culture of the virus of yellow fever and other infectious diseases, and to appoint M. Freire the director.

Utilization of Old Tin Cans.

According to W. L. Brockway's invention, waste tin plate, fruit cans, etc., are heated to 1,000° Fah. in a furnace in which a reducing atmosphere is maintained. It is claimed that in about from three to seven minutes the tin and solder are completely separated from the iron and fall to the bottom of the furnace, while the iron is left in such a condition that after cleaning, cold rolling, and annealing it is suitable for applications in which a tough high-class iron plate or foil is required.