dollars per day. From these figures (which do not include the original cost of the logs) some idea of the expenses of the business can be derived.

THE NAVAL CONTROVERSY.

In the last number of the SCIENTIFIC AMERICAN we made brief allusion to the fact that the war of words between the Navy Department and Mr. E. N. Dickerson, of this city, had resulted in a challenge, and stated that Mr. Dickerson had not accepted the same at the time of publication. He has since consented to a trial of his engines against those designed by the Navy, but protesting that the results will prove nothing. We find the following letter in the daily *Times*. It appears to be semi-official, and contains a clear statement of what the Department expect to do. When the trial takes place, we shall give all the facts in the case.

WASHINGTON, Aug. 1, 1865.

Several letters have recently been published on the subject of the machinery of the United States steamer *Algonquin*, written by E. N. Dickerson, Esq., of New York. Since he has thus brought the matter before the public, the following facts, from official sources, may be of sufficient general interest to warrant their publication:—

Mr. Paul S. Forbes, a wealthy merchant, and a patron of Dickerson, sought and obtained from the Navy Department, in March, 1863, a contract to construct the engines and boilers of a double-ender, according to Dickerson's patent, to compete with similar machinery designed by Mr. Isherwood, the Chief of the Bureau of Steam Engineering in that Department. The price was to be the same, and the contract contains the following guarantees, namely:—

It is further agreed, and mutually understood, that the variations from the specifications [of Mr. Isherwood's machinery] hereunto attached, and forming part of this contract, are to be in the dimensions and arrangement of the cylinder, and such parts as are thereby affected; in the design of the valve-gear; and in the design and arrangement of the boilers; and also in the surface condenser.

These changes are not to increase the weights of machinery, nor the space occupied by it, nor to decrease the weight of coal carried in the bunkers within the limits allowed for the engineer department, with the machinery described in the attached specifications.

And it is also agreed and mutually understood that, if, on the completion of the machinery and a careful trial thereof by such persons as may be directed by the Secretary of the Navy, it shall be found by them that its performance, either in amount of power developed, or in the cost, pro rata, of that power in coal, is less than those of the machinery described in the attached specification, they, the said parties of the first part, will remove it, and replace it at their own cost, with the machinery described in the attached specifications.

These terms show that the contract requires simply this: The department to ascertain by usual tests—first, the maximum power the two competing systems can be made to develop; second, the cost of the power, pro rata, in coal. The usual tests are the measurement of the power developed by means of the well known "indicator," employed the world over for this purpose, and the weighing of the coal. The division of the first into the number of pounds of the latter consumed per hour, is the solution of the problem. This, the department has ordered to be done by a board composed of persons than whom none are supposed to be more competent. The machinery of the *Winooska* was selected to compete against that of the *Algonquin* simply because the *Winooska* was the most convenient vessel of her class at command.

The trials are to be made at the wharf with the paddle surface sufficiently reduced in diameter to enable the engines to work off all the steam that can be obtained from their boilers, and are to be continued 96 consecutive hours to give a reliable mean, which cannot be obtained from short trials. The powers developed are to be measured by the "indicator," the coal is to be taken from the same pile and carefully weighed as it is used, but before being carried on board, so that the draught of water and dip of wheels of both vessels will remain constant, and be the same throughout the trials.

The test is not of the speeds of the two vessels, for they are duplicates, and are to have duplicate wheels by the express terms of the contract and specifications. The test is simply whether the boilers, condenser, and valve-gear of the *Algonquin* are equal to, better or worse, than those of the *Winooska*, and the trial, as directed by the department, will not only conclusively show these facts, but how much better or worse. By making them at the wharf they can be continued longer, be made in a really philosophic manner with strict accuracy, and be witnessed by all who may feel interested in them, which could not be the case were they made in the river or at sea.

The Navy Department has not accepted a challenge from Mr Dickerson; it has no correspondence with him and has nothing whatever to do with him, but is simply carrying out the provisions of the contract with Mr. Forbes, to determine whether the engine shall be accepted and paid for, or whether it shall be removed from the vessel. The contract does not provide for a trial of speed at sea. The vessels being the same, the result arrived at in the proposed trial will, however, unerringly determine which is the fastest vessel. The Navy Department will not be swerved from its duty to the contractor, or led into any controversy with Mr. Dickerson by any public statement of the latter.

JUSTITIA.

Train Oils.

The different oils that go under the one name of train oil, may be classified as follows:—A. That which is made from fish. This is made from the lard of the great marine animals, such as whales, sea-dogs, seals, etc., and sometimes even made from herrings. The quality will vary according to the peculiarity of the animal it is made from. The oil mostly in use, and known under the name of "Southern Sea Train Oil," is made from seal. The quality will also vary according to the preparation. B. Whale oil. This is of a brown color, is quite transparent, and when boiled with rarified sulphate acid, will throw out brown flakes. The liquid is not very thick and does not smell as bad as the following oils, which are obtained by fermenting the lard. C. Sea-calf's oil. This oil is of a pale brown color, much thinner than the former, is transparent, and when boiled with sulphate acid, will gradually settle to the bottom. D. Dog-fish oil. This is of a dark brown color, is much thicker than both the former, but its smell is unbearable. E. Herring's oil. The herrings are boiled in water and constantly stirred; when they are thoroughly cooked cold water is poured in; this brings up the oil to the top, it is then taken out and filtered and put into casks. Sweden is almost the only place where this oil is produced. F. Cod oil. This is made from the liver of the codfish, and is mostly manufactured in Helgoland and in Bergen. There are two kinds of it, one is white, the other brown. The white is obtained by melting the fat, not on fire, but merely by exposing it to the sun. It has the appearance of poppy oil, pale and yellow. It has a sweet taste, but when mixed with reagent, tastes somewhat acid. It dissolves in spirits of wine, and is much used in medicine.

The second sort is extracted by boiling the liver; its color is brown, and the fluid thick, and has a very offensive smell, and a cutting, bitter taste, but is easier dissolved in spirits of wine than the former. When boiled in water it throws out flakes, and more so when mixed with sulphate acid. The flakes, when dissolved in turpentine, or spirits of wine, show that gall fat is mixed with it. Its specific weight is 92. G. Dolphino oil. This is produced by melting the fat of the dolphin in hot water of 60°. Its color is pale yellow, has the smell of sardines, but, when exposed to the light and fresh air, it loses the offensive odor, and changes the color, first becoming brown and then almost colorless. This train oil is dissolved by adding five parts of boiling spirits of wine.—*Gerber Courier.*

Raising the "Congress" Frigate.

An attempt to raise the wreck of the frigate *Congress*, sunk by the *Merrimac* in Hampton Roads, has been partially successful. On the portion of the wreck which was recovered are two rusty guns, covered with oysters and barnacles. The woodwork is, of course, rotten and worthless, but the great amount of metal in and about the wreck will be quite valuable. Several pieces of coin have been found on the deck, which are prized highly by the finders, and will be treasured as relics of peculiar value. Several naval buttons were picked up, and at once fastened to watch guards. Among other things, one of the spectators found a complete set of artificial teeth. No human remains have as yet been recovered.

Magnesium Light for Telegraphs.

On Tuesday last some experiments with the magnesium light were made on board the *Great Eastern*, off Shoeburyness, by Capt. F. J. Bolton, of the 12th regiment. The night was windy, but signals were transmitted to and received from the shore at Shoeburyness, a distance of about six miles. This system of telegraphing, in which an alphabet on the Morse principle is used, bids fair to become universal, the Board of Trade being about to introduce it into the commercial code of signals. It is the opinion of Capt. Bolton, that the magnesium will be cheaper than the oxy-calcium light, and equally powerful in its effects. On Tuesday night the light on shore was the oxy-calcium, while on board the *Great Eastern* the lime light was used. The lamp in the latter case not being so constructed as to keep out the wind effectually, there was some difficulty at first in getting a steady light, a delay which Shoeburyness noticed by signalling "Look sharp, look sharp; fire away!" An animated conversation between the ship and shore then took place, Shoeburyness finishing with "Good night, good night—our light nearly gone." The magnesium light has never been used by the Government for this purpose before Tuesday last, whereas the oxy-calcium light has been on trial for three years, so any conclusions as to the comparative merits of the two would be premature.—*London Examiner*, July 14.

The Speed of the Pen.

A rapid penman can write thirty words in a minute. To do this he must draw his quill through the space of one rod—sixteen and one half feet. In forty minutes his pen travels a furlong; and in five and one-third hours one mile.

We make, on an average, sixteen curves or turns of the pen in writing each word. Writing thirty words in a minute, we must make four hundred and eighty-eight to each second; in an hour, twenty-eight thousand eight hundred; in a day of only five hours, one hundred and forty-four thousand; in a year of three hundred days, forty-three million two hundred thousand.

The man who made one million strokes with a pen in a month was not at all remarkable. Many men make four millions.

Here we have in the aggregate a mark three hundred miles long, to be traced on paper by each writer in a year.

In making each letter of the ordinary alphabet, we must make from three to seven strokes of the pen—on an average of three and a half to four.—*Com. College Monthly.*

MARKET FOR THE MONTH.

	Price June 28.	Price Aug 2
Coal (Anth.) ₩ 2,000 lb.	$ 8 50 @10 00	$8 50
Coffee (Java) ₩ lb.	24 @ 25	25 @ 28
Copper (Am. Ingot) ₩ lb.	29 @ 30	30 @ 31
Cotton (middling) ₩ lb.	50	48
Flour (State) ₩ bbl.	$5 20 @ 6 15	$6 00 @ 7 00
Wheat ₩ bush.	1 70 @ 2 15	1 85 @ 2 30
Hay ₩ 100 lb	1 00	1 00
Hemp (Am. drs'd) ₩ tun.	260 00@270 00	255 00@265 00
Hides (city slaughter) ₩ lb.	7½@ 9	9 @ 10
India-rubber ₩ lb.	47 @ 70	48 @ 70
Lead (Am.) ₩ 100 lb.	9 75 @10 00	9 00 @9 62½
Nails ₩ 100 lb.	5 00 @ 5 25	6 50
Petroleum (crude) ₩ gal.	35½	32½@ 33
Beef (mess) ₩ bbl.	$10 00 @16 00	10 00 @14 50
Saltpeter ₩ lb	24	24
Steel (Am. cast) ₩ lb.	13 @ 22	13 @ 22
Sugar (brown) ₩ lb	9½@ 15¼	8@ 16¼
Wool (American Saxony fleece) ₩ lb.	75 @ 77	75 @ 77
Zinc ₩ lb.	12 @ 12½	12¼@ 13¼
Gold	1 39	1 45⅝
Interest (loans on call	4 @ 5	7

OUR MERCANTILE MARINE.—It has been definitely ascertained that more than six hundred sea going vessels belonging to citizens of this country have been sold during the war to British subjects. Those sold to citizens of other countries will probably bring up the total to a thousand vessels that were four years ago carrying the stars and stripes and are now sailing under foreign colors. The capacity of the vessels transferred is estimated at five hundred thousand tuns.

HEAVY ENGINE.—The Taunton (Mass.) *Gazette* says one of the largest locomotives ever manufactured in that place was sent from the Taunton Locomotive Manufacturing Co. It weighs 34 tuns, and is destined to the New Jersey Central Railroad.