Capt. Cobb and I remained on the ground as spectators. The horses were started into a gallop, and the kite rose, slowly and heavily, but steadily upwards. I glanced at my watch; it was twenty minutes past two o'clock. The kite continued to rise, with a slight swaying motion, higher and higher. It seemed as though the daring aeronaut must become sick and dizzy at his lofty hight. Suddenly I was startled by an exclamation from my companion, and noticed a dark object falling from the kite and fluttering slowly downwards. It was the parachute which Smith had thrown away! The persons in the wagon, which was now half a mile distant, did not seem to notice this occurrence. Obviously Smith's situation, if his invention should fail, had become one of appalling danger; since it is almost impossible to bring a kite to the ground without a violent and jerking lateral motion. It seemed equally perilous to stop or to proceed. Trembling with anxiety, we watched with straining eyes his fast-receding form. I had an excellent field glass, which gave me a perfect view of his every motion. And now we noted that both the bladders and the wings had begun to expand. Higher he rose, but we could detect in his attitude no sign of doubt or trepidation. The bladders soon became distended so as to almost hide the man from view. He had now reached an elevation, as near as I could judge, of 1,200 to 1,500 feet, or about a quarter of a mile. He now detached his arms from the ladder, his feet remaining upon it, and waved the wings upward and downward, as if to try them. For an instant he stood thus, and then, relinquishing all support, he sprang off into the empty air! For a moment my heart stood still. I held my breath, expecting to see him dashed to the earth. But he did not fall; he did not even seem to tend downwards. His wings played with great swiftness, and he floated in a horizontal position, with apparent ease. Again, I glanced at my watch. The hand pointed to twenty-seven minutes before three. The kite, deprived of its ballast, had sunk to the ground. Watching narrowly, it was evident that Mr. Smith was slowly moving forward. It appeared to me that the bladder slightly contracted and expanded alternately, as one's chest does in breathing. Of this I could not feel absolutely certain, since the appearance may have resulted from their fluttering motion; yet, the Captain's opinion coincided with my own. After a few minutes (which seemed like hours), we perceived that Mr. Smith had begun to descend. Very gradually this was accomplished, and exactly at a quarter before three he touched the ground. We ran toward him, and found that he was considerably exhausted. He responded cheerily, however, to our hearty congratulations. As the wagon had already returned, it did not take long to stow away the kite, etc., and we then returned to the city.

"I have thus given a plain and exact account of this most extraordinary occurrence. I will not offer any speculation, concerning the nature of Mr. Smith's invention, and in fact do not consider myself at liberty to do so. But, I am greatly mistaken if the name of David K. Smith is not soon familiar to the public as one of its greatest benefactors. Any one can satisfy himself as to his character and standing in this community, by inquiring of Hon C.E. Vanderburgh, Judge of the District Court, or of almost any citizen of Minneapolis. Any person wishing to inquire further is at liberty to call upon me at my office, No. 26 Larmon Block; or a letter will reach me through the Chicago P. O., Box 6,026.

"WALTER V. COLLINS."

THE WATER POWER OF MINNESOTA.

The St. Paul Weekly *Press* has a long article upon the flourishing condition of manufactures in Minnesota, and gives interesting statistics of the value of some [redacted] of trade there carried on. We copy:—

THE WATER POWER.

In order to turn this vast power to practical use the St. Anthony Water Power Company was organized in 1855. This company is now composed principally of Eastern capitalists. In 1856, the Minneapolis Mill Company was organized. In 1857 and 1858 the company proceeded to build a dam twenty feet high, running from the shore out into the river four hundred feet, thence up the river twelve hundred feet. Five hundred feet of the twelve hundred is a dry dam, the same hight as the portion running out from shore, and the remainder is lower, allowing the water to pour over it. Besides this dam the company built a canal at the shore end, one hundred and fifty feet long, which largely increases the opportunity for erecting manufacturing establishments. Mills situated on the dam pay for the use of the water alone, while the owners of those on the canal buy the ground and lease the water power. One of the saw mills pays $1,200; four pay $900, and one $600 per annum for the use of water. Next season the company intend to extend the canal five hundred feet beyond its present limit.

THE LUMBER TRADE.

The most important branch of trade is in lumber, a business in which an immense capital is already employed, and which, owing to the great demand for the article, is being rapidly increased.

WHERE THE LOGS COME FROM.

Ninety miles above the falls, on Rum river, and one hundred and fifty above on the Upper Mississippi, are the pineries, which afford an almost inexhaustable supply of logs. Here, in the winter, large gangs of men ply the ax vigorously, and by spring millions of feet are ready for the drives.

DRIVING.

As soon as the river opens in the spring, if the stage of water permits, the work of driving the logs down commences—a work which is far from agreeable and oftentimes dangerous. Few have any adequate conception of the expense and perplexity incident to the drives. For two months this season the log owners were compelled to pay men four dollars per day and board them, and the expense of bringing the logs to the mills has been at least two dollars for every thousand feet of lumber obtained.

All the logs on the Upper Mississippi, some ten million feet, have been brought down, but in the drives on Rum river there are still twenty-five million feet.

THE MINNEAPOLIS SAW-MILLS.

Having noted the progress of the logs from the forest to the boom above the city, we next turn our attention to the mills. Situated on the dam heretofore mentioned, extending from the shore into the river, stands a block of six saw-mills, 360 feet long by seventy feet wide, with three Ls, 32x40, the whole under a single roof. A visit to these mills will prove of interest to any one, as the scale on which business is done is unusually large.

SORTING THE LOGS.

All of the mill owners or lessees have peculiar marks, which are cut upon each log with an ax in the pineries. They then come down promiscuously to the St. Anthony boom, fully a mile above the mills, where they are sorted—those belonging to the Minneapolis mills being driven into the Minneapolis boom, and floated down to the mills. Directly in the rear of the building each mill owner has a pond, defined by floating timbers lashed together, and when the logs reach these ponds from the boom above they are again sorted and driven into the pond of their respective owners, from whence they are drawn up the slip by machinery into the mill.

A BUSY SCENE.

Entering the mills, the visitor cannot fail to be struck with the life and activity visible. As they are only separated by frame-work, a person can look through the whole length and see a great collection of men and machinery, all moving with the utmost regularity. It is, emphatically, the hive of industry, and the indolent man would blush to find himself a spectator of such a scene.

THE SAWS AND THEIR USES.

The greater portion of the work is done by gangs of saws, which, with a single run, will convert any but the largest logs into boards. A gang consists of from twenty to twenty-two saws, according to the size needed for the logs; and of the gangs there are two kinds, the *live* and the *pony* gang. The live gang is used principally for flooring, fencing and inch boards, and is rarely adjusted to make lumber of a different thickness.

The largest logs are taken to the double circular saw, one saw being located just above the other, in order to complete the work if the log is too large for the lower one, and in this way anything short of California trees will meet their doom in short order. These saws are used in making timber, dimension stuff, etc., and also in preparing the log for the pony gang, either by slabbing it or cutting it into bolts. The pony gang differs from the live gang in that it is used to saw lumber of nearly every kind and thickness, the number of saws being frequently increased or decreased according to the thickness desired.

In connection with the gangs are three other saws (circular), one edger and two trimmers. As soon as the gang has passed through a log, the boards go to the edging table, where the edges are smoothed and they are made of the same width, from whence they pass to the trimming table, where each end is sawed off at the same time, making them exactly the same length.

POWER AND CAPACITY.

It requires 40-horse power to run a gang of saws and 10-horse power to drive the edger and trimmers which go with it. The length of time required to run the gang through a log varies of course with the size; but eight minutes is ample time to transform a two-foot log into boards, and in fifteen minutes after a log comes up the slip in the rear of the mill it passes out to the sluice in front, finished lumber, and glides away to the raft. In ten hours a gang of saws can turn out about twenty thousand feet, and the double circulars from ten to twelve thousand.

NUMBER OF SAWS, ETC.

Number of gangs (22 saws in each), 9; number double circular saws, 6; number shingle machines, 6; number lath do., 6. Cost of six mills, $143,000; capacity six mills (24 hours), 430,000 feet; men employed, 300.

If these mills are run night and day, they can manufacture nearly half a million feet of lumber every twenty-four hours. Some of the mills are already running both night and day, all of them probably will be soon.

WHERE THE LUMBER GOES TO.

Three rafts have been sent from Minneapolis and two from St. Anthony this season; and five more are nearly ready. Some of these rafts go as far as Memphis. Three million feet have been sent to St. Louis, and taken thence by steamer to New Orleans. In Minneapolis, all the dealers have large yards in which there are immense stacks of lumber.

THE PRODUCT OF THE SEASON.

Though compelled to commence late in the season, the Minneapolis mills have sawed twelve million feet, and the St. Anthony mills six millions. It is estimated that on the Minneapolis side, thirty-eight millions, and on the St. Anthony side, nineteen millions more will be sawed before the close of the season. This will make the entire product of this season, seventy-five million feet.

PRICE OF LUMBER.

The following is the present price list of lumber at the mills:—

Common lumber and fencing per M.	$16 00
1st Siding	22 60
2d Siding	20 00
No. 1 Shingles	2 50
X Shingles	4 00
XX Shingles	5 00
Flooring, dressed	30 00
Flooring, rough	28 00
Dimension Stuff	16 to 20 00
No. 1 clear	30 to 35 00
No. 2 clear	20 to 25 00
No. 1 Pickets	20 50
No. 2 Pickets	15 00
Laths	2 75

This shows a large reduction, as for the past two years common lumber has been $22 per thousand, and superior lumber correspondingly high.

WHAT KEEPS UP THE PRICE.

Those who anticipate any material reduction in the price of lumber this season will undoubtedly be disappointed. The great demand, a wide market and high price of labor, all tend to render it impossible to supply it at a lower figure. Having been without logs for two years, the home stock of lumber became so reduced that the demand in our own State is immense; and add to this the close of the war, which makes a market extending from the Falls of St. Anthony to the Gulf, and the result may be imagined. The expenses are also enormous. During the winter, the men received from $40 to $50 a month and board, for working in the pineries; and for driving the logs, owners are, and have been, paying four dollars per day. Where driving formerly cost fifty cents per thousand, it now costs two dollars. Wages at the mills at the present time, range from two to four

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.