AMERICAN ENGINEERS' ASSOCIATION.

[Reported for the Scientific American.]

On Wednesday evening, January 9th, the regular weekly meeting of this association was held at its room, No. 24 Cooper Institute, this city—Thomas B. Stillman, Esq., President; Benj. Garvey, Esq., Secretary.

NEW INVENTIONS.

Merrick's Propeller Engine.—The President introduced to the association Mr. B. E. Merrick, of Buffalo, who, by aid of drawings, explained to the several members present the plan and general operation of a propeller engine invented by himself, and which is now in successful operation in the steamer *Northern Light*, running upon one of the Western lakes. Mr. Merrick presents several important modifications and alterations in his engine, as compared with others now in use, and strongly advocates their entire practicability. His propeller wheel or screw is very similar to George Hibsch's, of Albany, but was wholly an invention of his own. When the report from the appropriate committee upon this engine comes before the association, we shall refer to it at greater length.

McNeill's Low Water Detector.—Mr. J. McNeill, of Marion, Iowa, submitted to the society (by letter) the drawings of an entirely new low water alarm, an invention of his own, and one which he thought might be very successful in its operation. He had sent it to them for their opinion thereon, which the association will give at an early day. Mr. McNeill expressed it as his opinion that the different investigations entered into by the American Engineers' Association in relation to low water detectors were of the highest value, and would, without doubt, result in the greatest good to those directly interested.

Vanderweyde's Barometer.—Dr. Vanderweyde, Instructor in Physics and Chemistry, Cooper Union, New York city, presented to the association an improved barometer. He had experienced much difficulty in experimenting with the ones generally used; they were, in fact, insufficient for the important work intended to be performed by them, which induced him to attempt to produce a better; the instrument submitted was the result of his labors: It consists of a pipe six feet in length and three-fourths of an inch in diameter attached to a small dial-faced cap, which was graduated to 1,000° C., equal to nearly 2,000° Fah. The construction of this barometer partook, in a great measure, of that of the "Compensation Pendulum," its operation being the expansion of different metals, platina and iron, the iron being covered with copper to prevent corrosion or blistering. These metals were within the pipe or tube, and directly attached to a ratchet wheel within the cap, which caused the operation of it to be exceedingly simple but very effective. During the explanation of the parts of his instrument, Dr. Vanderweyde entered into details in relation to the other barometers in use, and made thereon many interesting and instructive suggestions.

The above inventions were duly referred to the Committee on Science and New Inventions, who will speedily report thereon.

At this juncture, the Special Committee appointed to re-examine Messrs. Warren & Banks' "Alarm Gage or Low Water Detector" (Warren's patent), submitted the annexed report:—

The Special Committee appointed, &c., &c., would report that the principles upon which this instrument is constructed are as follows:—

1. When a tube is connected with a steam boiler, so that one end opens into the steam space and the other end into the water space, the water will stand at the same level in both boiler and tube, unless the boiler foams; and, in such a case, the water will stand at a level in the tube due to the real quantity of water in the boiler, and not to the hight to which the water foams.

2. A metallic tube filled with water or steam will quickly attain the same, or nearly the same, temperature, as its contents.

3. Such a tube, when heated, expands with a force equal to that with which it would resist a crushing pressure, and, when cooled, contracts with a force equal to that with which it would resist a tension strain.

4. A spring having the form of an arc of a circle, with small rise, will receive considerable motion at the crown of the arc when the ends of the spring are imperceptibly moved toward or from one another; in the same manner and for the same reasons as in the joggle joint, when nearly straight, a very small motion of the ends gives a considerable motion at the joint.

5. When the tube is connected with the boiler, as mentioned, the temperature of the water in it remains constantly much below the boiling point, unless there be too high water, when a circulation takes place, and the water becomes hot enough to expand the tube and give an alarm.

The first four of these principles are well recognized, and are acted upon daily in every engineering establishment; and all the committee had to do was to see if they were judiciously embodied in the instrument under consideration, and, after careful examinations, they are unanimously of opinion that they are so embodied.

The fifth principle enumerated, is the most difficult for your committee to pronounce upon, for if there be a rapid condensation of steam in the tube leading from the boiler, the condensed water would have the temperature of boiling water at the moment of condensation, and, being specifically lighter, would remain in the tube and displace the colder water. To have this occur, however, would require so great a condensation of steam that the instrument is not very likely to be so placed as to have a sufficient length of tube filled with steam, and so exposed to cooling agents as to produce this circulation to a serious extent.

To ascertain the practical working of this instrument, the majority of the committee visited several places in the city where it is in use, and in all cases it was found to operate speedily and well.

Your committee, therefore, report that, in their opinion, this is a reliable low water detector, high water detector and sight gage, and that it is not liable to get out of repair.

But, in making this report, they would not be understood to say that this or any other instrument can be used with safety by any person but a skillful, sober engineer, who will see that everything about his boiler and engine is always in good order, for the most accurate instruments produced by man are liable to derangements from a thousand causes, and nothing but intelligence can again put them in order. All of which is respectfully submitted.

[Signed.] C. F. HOLDEN, JOHN C. MERRIAM, BENJ. GARVEY. } *Committee.*

After the reading of this report, it was, on motion of Mr. Louis Koch, laid upon the table for one week, for consideration by the members.

A letter in relation to steam boiler inspections was received from an "Engineer of the Metropolis." It was referred to the Committee on Accidents.

The meeting then adjourned.

Annual Statement of the Whale Fishery for 1860.

[From the Whalemen's Shipping List.]

We lay before the readers of the *Shipping List*, the Seventeenth Annual Statement of the result of the whale fishery for 1860. The year commenced with no flattering prospects, nor has its success exceeded the moderate anticipations which were entertained. The whole number of vessels employed in the American whale fishery on the first of January, 1861, is five hundred and fourteen, against five hundred and sixty-nine on the first of January, 1860, showing a diminution of fifty-five vessels, and an aggregate of 18,803 tuns.

The imports of sperm oil amount to 73,708 bbls.; of whale oil 140,005 bbls., and of whalebone 1,337,650 lbs.

Six ships have been fitted from this port the last year for Davis' Straits—three from New Bedford and three from Fairhaven, whose success remains to be proved.

Of the Northern fleet only two ships have been lost—the *George & Mary*, of New London, wrecked in Ochotsk Sea, June 7, and the *Paulina*, of this port, lost in a gale of wind off Lahaina, Nov. 15.

We cannot now estimate the imports of oil for the current year; but, while we think sperm oil will come fully up to that of the past year, whale must fall short.

The number of vessels employed in the right whaling business will be considerably diminished this year. Many of the largest will be withdrawn and put into the freighting business, while others, which need heavy repairs, will be sold and broken up.

The imports of 1859 were, sperm oil 91,400 bbls.; whale oil 190,421 bbls., and of whalebone 1,923,850 lbs., showing a falling off the past year of 17,700 bbls. sperm, 50,406 bbls. whale oil, and 536,200 lbs. bone.

The average prices during the past year have been, for sperm oil 1.41½ cents; whale oil 49½ cents per gallon, whalebone—Northern 80 1-5th cents, and South Sea 73¾ cents per lb.

The exports of oil and bone for the year have been as follows:—Sperm oil 32,792 bbls.; whale oil 13,097 bbls., and of whalebone 911,226 lbs.; showing a falling off in the export of sperm from 1859, 19,415 bbls., and in whalebone 796,703 lbs., and an excess in whale oil of 4,828 bbls.

The news from the Northern whaling fleet the last season is very discouraging. During the season of 1860 about 140 American ships cruised North, including Kodiak, Arctic and Ochotsk Seas. From the information received it does not appear that their average catch will reach 600 bbls.—the lowest average since the whaling business was pursued in these seas, according to the number of ships.

Estimating the amount of blood in the human body at twenty-four pounds, twelve pounds pass through the heart every minute.

Steamboat Disasters on Western Rivers.

The St. Louis *Bulletin* has published a long list of accidents and disasters to steamboats, barges, canal and coal boats, and other river craft, on the Western rivers during the year 1860. The number is unusually large, and the loss of life attending the disasters is also above the average of former years. The following is a synopsis of the statement:—

Number of steamboats destroy and damaged	299
Number of canal boats and barges	48
Coal and flat boats	208
Steamboats totally destroyed	120
Total loss of life	254

The disasters are attributed to the following causes:—

Sunk	111
Burned	31
Explosion	19
Collision	24
Snagged and damaged	44
Damaged by storm	39
Breaking machinery	21
Collisions with river bank	8

The total loss in steamboat property, including canal boats, coal boats and barges, exceeds $2,000,000. The loss on cargo cannot be ascertained.

Chicago and its Exports.

The Chicago *Tribune* publishes a tabular statement of the exports of that city in flour, grain and provisions, and other leading country products, during 1860. We append the table:—

	Amount.	Rate.	Value.
Flour, bbls	713,339	$4.50	$3,210,025.5
Wheat, bush	12,487,684	0.87	10,864,285.08
Corn, bush	13,743,172	0.45	6,184,427.40
Oats, bush	1,039,779	0.26	270,341.54
Rye, bush	129,156	0.64	82,659.84
Barley, bush	290,211	0.52	150,909.72
Seeds, bush	117,838	2.80	330,845.40
Broom corn, tuns	2,585	85.00	219,725.00
Highwines, bbls	57,617	7.25	417.723.25
Alcohol, bbls	3,883	16.38	63,703.54
Live hogs, No	133,612	12.00	1,603,344.00
Dressed hogs, No	22,672	12.00	272,084.00
Beef cattle, No	104,122	30.00	3,123,660.00
Pork, bbls	80,095	17.00	1,361,676.00
Beef, bbs	84,414	9.00	579,726.00
Cut meats, lbs	19,074,377	0.07	1,335,206.39
Provisions (not classified) bbls	2,025	13.00	26,325.00
Lard, lbs	9,150,899	0.11	1,006,598.89
Tallow, lbs	2,858,944	0.09¾	295,424.21
Butter, lbs	1,697,311	0.12	203,677.32
Hides, lbs	11,669,345	0.10	1,160,934.50
Wool, lb	733,755	0.40	303,502.00
Mill stuffs, tuns	906	10.00	9,060.00
Lead, lbs	12,114,268	0.05	605,708.40
Hay, tuns	1,312	10.00	13,120.00
Eggs, bbls	4,750	5.75	28,312.50
Poultry, game, lbs	94,844	0.10	9,484.40
Total value in 1860			$33,737,489.88
Total value in 1859			24,280,890.47
Total value in 1858			19,928,495.83

The same paper states that a considerable export trade, under the general head of "merchandise," is not included in the foregoing exhibit. The excessively high rates of freight, also, are said to have reduced the aggregate about one-sixth.

MANAGEMENT OF CREAM IN COLD WEATHER.—For some reason not yet known, cream skimmed from milk in cold weather does not come to butter, when churned, so quickly as that from the same cow in warm weather. Perhaps the pelicles, which form the little sacs of butter in the cream, are thicker and tougher. There are two methods of obviating this trouble in a great degree. One is to set the pan of milk on the stove, or in some warm place, as soon as strained, and let it remain until quite warm—some say until a bubble or two rises, or until a skim of cream begins to form on the surface. Another mode recommended, is to add a table spoonful of salt to a quart of cream then it is skimmed. Cream thus prepared will generally come to butter in a few minutes when churned. It is thought the salt acts upon the coating of the butter globules and makes them tender, so that they break readily when beaten by churning.—*Maine Farmer.*

[We believe, upon good authority and practice, that the best temperature for churning milk is about 62° Fah. It should never much exceed, or be allowed to fall below this. If churned at a lower temperature, the butter will not separate freely; and if churned at a higher temperature, a considerable portion of the casein is always found combined with the butter. This gives it a lard-like appearance and taste. By the addition of hot or cold water, as may be required, and the use of the thermometer to test the temperature, there is but little trouble experienced in churning it.—EDS.

ANOTHER COURSE OF LECTURES BY FARADAY.—Professor Faraday is now delivering a course of lectures before the Royal Institution of Great Britain, on the "Chemical History of a Candle." The publication of these lectures, profusely illustrated, will be commenced immediately in the SCIENTIFIC AMERICAN.