

THE TAILOR BIRD.

The tailor bird, which is found in India and the Indian Archipelago, is a sober little creature, not more conspicuous than a common sparrow, and is chiefly remarkable for its curious nest, which is made in a singular and most ingenious manner. Taking two leaves at the extremity of a slender twig, the bird literally sews them together at their edges, its bill taking the place of the needle, and the vegetable fiber constituting the thread. A quantity of soft cottony down is then pushed between the leaves, and a convenient hollow scraped out, in which the eggs may lie and the young may rest at their ease.

Sometimes, if the leaf be large enough, its two edges are drawn together, but in general a pair of leaves are needed. A few feathers are sometimes mixed with the down. This curious nest is evidently hung at the very extremity of the twigs in order to keep out of the way of the monkeys, snakes, and other enemies which might otherwise attack and devour mother and young together.

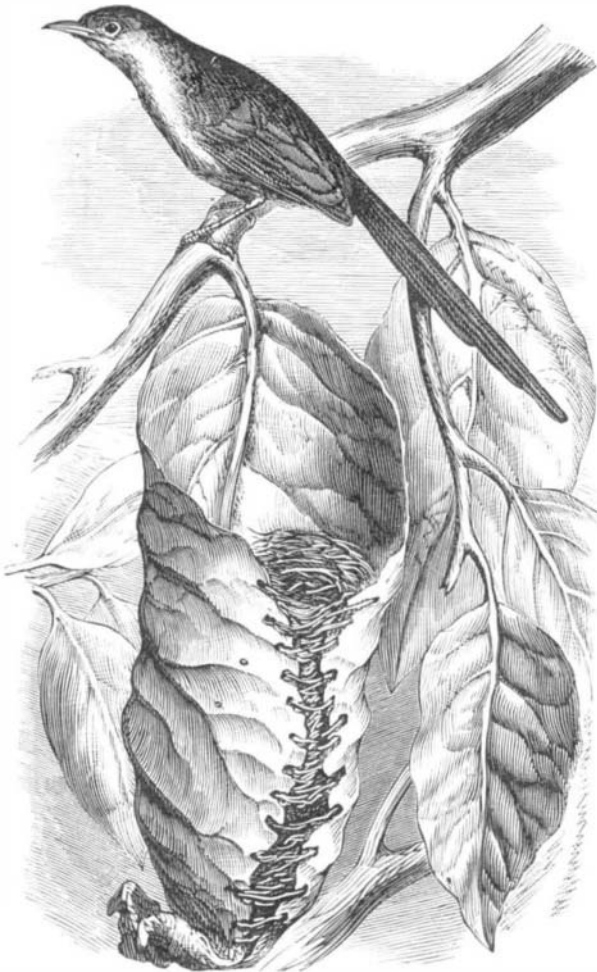
We take our illustration from Wood's "Natural History."

THE AMERICAN ARCTIC EXPEDITION.

Mr. James Gordon Bennett, the energetic proprietor of the New York *Herald*, having, by a liberal expenditure of capital and the indomitable perseverance of Mr. H. M. Stanley, succeeded in opening out the hitherto unexplored portion of the African continent, has now turned his attention from tropical to Arctic exploration, and is organizing an expedition, entirely at his own cost, which is to make yet another attempt to reach the North Pole. For this purpose he has purchased the well known Arctic yacht *Pandora*, which, under the command of Capt. Allen Young, has already achieved important work in the North Polar regions. The *Pandora*, which has been rechristened the *Jeannette* by Mr. Bennett, is a screw steamer of some 250 tons burden, and is fitted with engines of 80 horse power. She is specially built for Arctic service, and, in addition to a hull of more than ordinary strength, is sheathed from eight feet above her keel to two feet above her water line with a coating of American elm some three inches thick, so that her resistance to the nipping of the ice may be rendered as great as possible. The rudder can be dismounted and replaced in case of accident, and she is fitted with a perfect magazine of appliances and instruments for Arctic exploration, such as sledges, ice saws, tents, ice anchors, etc.; while she carries about 164 tons of coal, her daily consumption, when steaming four knots an hour, being reckoned at three and a half tons. The hull, for greater safety, is divided into three water-tight compartments, and, since the 1st of April, has been under the hands of the shipwrights, and has been thoroughly and completely repaired, any injured woodwork being removed and replaced by new. In the stern, also, a comfortable cabin has been formed for the officers. On June 18, as we have said above, Mr. Bennett rechristened the vessel the *Jeannette*, and she has now sailed for San Francisco, where her fitting out is to be completed in time to start on her journey next January, when she will attempt to attain the North Pole by way of Behring Straits. At the same time Mr. Bennett will dispatch another yacht, the *Dauntless*, which will also try to reach the Pole by way of Spitzbergen.

The map of the North Polar region needs little explanation, as it shows the most northerly points which as yet have been reached by the various explorers. The first really authentic Polar expedition was undertaken by Sebastian Cabot,

in 1497, with three vessels; and he was succeeded in 1596 by Barents, who discovered Spitzbergen. Hudson and other Englishmen followed up his researches for the next ten years; and, in 1616, Baffin discovered the bay which bears his name, and the now well known Straits of Smith's Sound. In 1740, a Danish navigator in the Russian service, Behring, passed through the straits which separate Asia from the United States. These discoveries, which were mainly made while searching for the Northwest Passage, by which the Atlantic and Pacific were supposed to be united, early proved of great value to Arctic navigators, as they opened the three chief roads towards the North Pole, namely, those of Smith's Sound, of Spitzbergen, and of Behring Straits. By the first



THE TAILOR BIRD.

named several noteworthy attempts have been made to reach the North Pole, beginning with that of John Davis in 1585, when the latitude of Upernavik was attained, down to later days, when Ross and Parry made their well known expedition in the *Alexander* and the *Isabella*. In 1852 Inglefield attained the altitude of 78° 28'; and in the following year the American explorer, Dr. Kane, in the *Advance*, reached the latitude of 78° 45', and, being forced to pass a second winter in the ice, he sent out a sledge expedition under Lieutenant Morton, who reached 81° 20', from which point an open sea was descried. In 1860 another American, Dr. Hayes, who had served as a surgeon under Kane, sailed in a little vessel of some 133 tons, the *United States*, and reached 81° 35' by means of sledges; but found Kane's "open sea" covered with ice. In 1871 Captain Hall left New York in

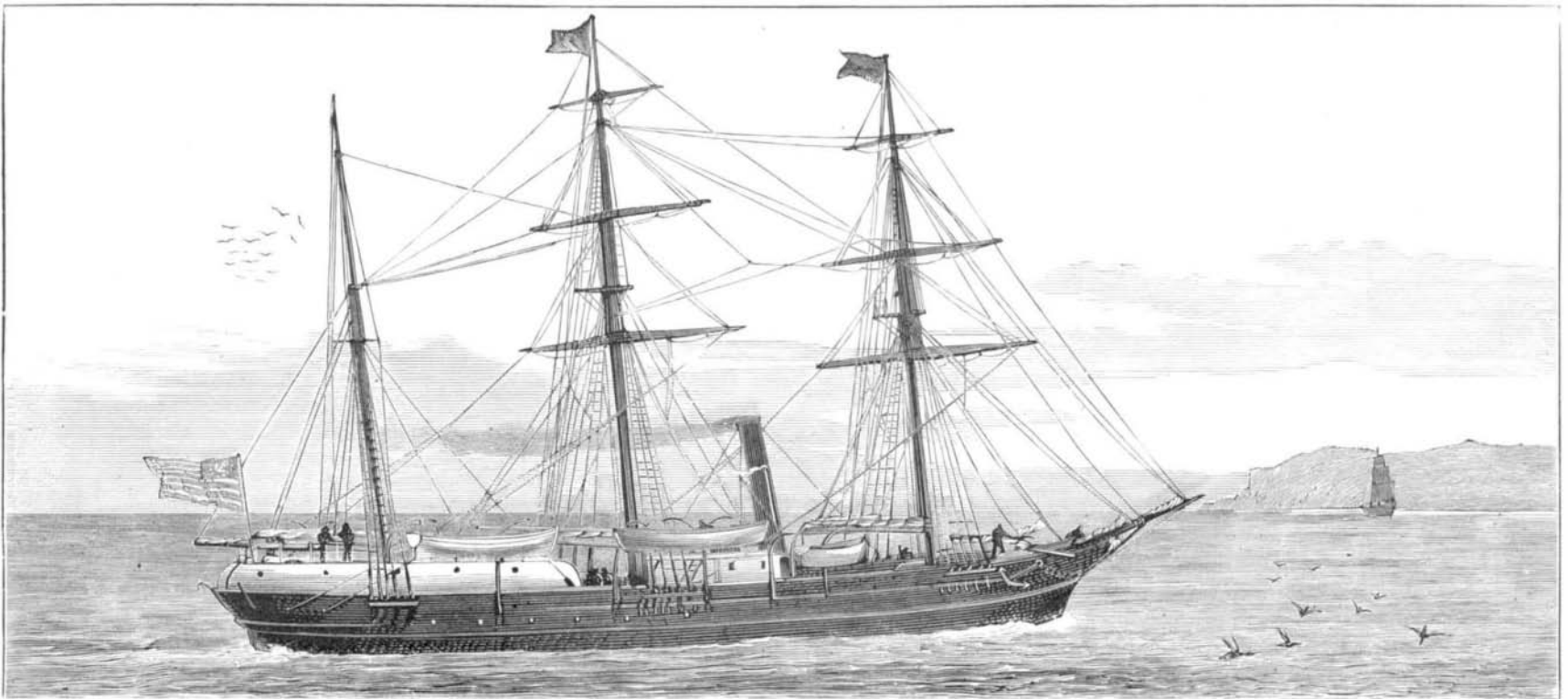
the *Polaris*, and reached the highest altitude as yet attained by a vessel, namely, 82° 16'; and next we come to the Nares-Markham expedition in 1875, when Captain Markham, in a sledge journey, reached the highest altitude yet recorded—83° 26'.

The Spitzbergen route will be ever famous by the Franklin-Parry Expedition of 1827, when the altitude of 82° 45' was attained, this being the first occasion on which sledges were used by Arctic explorers. In 1868 Dr. Petermann sent Koldewey northwards, when he attained to 81° 5'; and in 1869 Hegeman and Koldewey, in the *Germania* and *Hansa*, reached, in the former vessel, 75° 30'. In 1872 Count Wilczek fitted out the *Tegethoff*, and intrusted an expedition to the two Austrian explorers, Weyprecht and Payer, who, by means of sledges, reached 82° 5' (the *Tegethoff* only attained 79° 54'), and discovered Franz-Josef Land. The Behring Straits have been principally explored by Russian expeditions, including those of Anjou and of Wrangell in 1821; but, in 1849, Kellett discovered "Kellett Land" and "Herald Island," since which time no expedition has attempted this route, which is now to be explored by the *Jeannette*. As may be seen by the map, the current in the straits sets northward, toward the Pole, while in Smith's Sound it flows in a southerly direction. Thus, a vessel entering Behring Straits would be assisted on its way by the course of the current, while all vessels going by the Baffin's Bay route lose half their time in combating the stream. The Arctic winds which mainly prevail blow from the northwest, and they cause the floating masses to drive toward the east, and thus open channels on the shores of the Arctic peninsula. A way, therefore, is expected to exist along the coast of Kellett Land, by means of which it is hoped that the *Jeannette* will attain her object. The fact that extremely thin and fragile ice exists in this direction, and that an open sea has been seen by Anjou, Wrangell, and Kellett, tends to corroborate the theory of the advantages to be attained by the choice of this route.

A New Steamship.

The *City of Columbus* is an addition to the fleet of the Ocean Steamship Line, of Savannah, and recently sailed on her first trip from this port. Both hull and engines were constructed by John Roach & Son, and are similar to those of the *City of Macon* and *City of Savannah* of the same line. A fourth vessel, the *Gate City*, of same capacity and power, will be ready for sea in a few days.

The principal dimensions of the *City of Columbus* are the following: Length 275 feet, beam 38 feet, depth 26 feet, burden 2,000 tons, Custom House register. There are three decks, exclusive of the hurricane, the main deck being of iron covered with wood. The vessel was built under the special survey of the French Bureau Veritas and the American Shipmasters' Association. The main saloon is commodious, and, like the other new steamships of this line, is superbly finished in hard polished woods. The propelling machinery consists of compound engines of 1,500 horse power. The high pressure cylinder is 38 inches, low pressure cylinder 68 inches in diameter. The surface condenser has 2,800 square feet of condensing surface. Length of connecting rod 10 feet 6 inches, diameter at middle 7½ inches, diameter of crank shaft 13 inches, diameter of line shaft 12½ inches, diameter of propeller shaft 14 inches. The boilers are four in number, of the circular tubular type; diameter of shell 12 feet 8 inches, length of shell 10 feet 6 inches. Tubes 3¼ inches outside diameter, length 7 feet 10 inches, 199 in number. There are three furnaces in each



BENNETT'S YACHT JEANNETTE FOR THE AMERICAN ARCTIC EXPEDITION.

boiler, 3 feet 2 inches in diameter, grate bar 6 feet 6 inches long; grate surface is 252 square feet. Heating surface is 6,850 square feet. Thickness of iron plates of shell  $\frac{3}{8}$  inch; of furnaces  $\frac{1}{2}$  inch; of tube sheets  $\frac{1}{4}$  inch; of all other parts  $\frac{3}{8}$  inch. The longitudinal braces are  $1\frac{1}{2}$  inch diameter.

Average number of revolutions per minute 62. Speed  $12\frac{1}{2}$  knots per hour. Pressure 80 lbs. per square inch.

#### Our Enormous Consumption of Timber.

In pleading for the protection and perpetuation of forests, the *Lumberman's Gazette* gives some interesting particulars of the amount of timber consumed every year in this country. "We have now," it says, "about 90,000 miles of railroad; the annual consumption for ties or sleepers alone is 40,000,000, or thirty years' growth of 75,000 acres. To fence these roads would require at least 130,000 miles of fence, which would cost \$45,000,000 to build, and take at least \$15,000,000 annually to keep in repair. We have 75,000 miles of wire, which requires in its putting up 800,000 trees, while the annual repairs must take 300,000 more. The little, insignificant lucifer match consumes annually in its manufacture 300,000 cubic feet of the finest pine. The bricks that are annually baked require 2,000,000 cords of wood, which would sweep the timber clean from 50,000 acres. Shoe pegs are quite as important an article as matches or bricks, and to make the required annual supply consumes 100,000 cords of fine timber, while the manufacture of lasts and boot trees takes 500,000 cords of maple, beech, and birch, and about the same amount is required for plane stocks and the handles of tools. The packing boxes made in the United States in 1874 amounted to \$12,000,000, while the timber manufactured into agricultural implements, wagons, etc., is more than \$100,000,000. The farm and rural fences of the country consume an immense amount of lumber and timber annually, but as we grow older as a nation, this consumption may, and probably will, be reduced by the more general use of live fences or hedges. Our consumption of timber is not only daily on the increase, but our exportation of timber is also rapidly increasing. Our staves go by the million to France annually, walnut, oak, maple and pine to England, and spars and docking timber to China and Japan."

#### The Growth of Texas.

Ex-Governor Pease, of Texas, asserts that immigration has done more for Texas, within the past eight or ten years, than it has done for any other State; and a notable feature of this growth is the circumstance that the immigrants have come, not, to any considerable extent, from Europe, but from other States in the Union. During the six or seven years immediately following the war, tens of thousands of people who were born and had always lived in Mississippi, Alabama, Louisiana, Georgia, South Carolina, and other Southern States—but especially Mississippi—finding themselves seemingly ruined at home, migrated in crowds to the wider and newer fields of Texas.

The greater part of the immigration into Texas, during the last three or four years, has been, and now is, from the Northwestern States. People from Wisconsin, Iowa, Minnesota, and all that region, tired of the long, severe winters of the Northwest, are flocking southward into the more genial climate of Texas.

That great State, which is very nearly equal in geographical extent to the whole of France, with an addition equivalent to the size of New York State, can support a population equal to the last census of the United States. Its division into two, three, or four States is only a question of time. It possesses in its northern part a great wheat growing region. Its western slopes and plains are finely adapted to grazing and to sheep culture. Winter pasturing is always sure. Texas has no "rainy season;" its rains are uncertain as to season, and are scattered through the year; though the supply is probably not always fully equal to the needs of the agriculturist.

#### Fish Culture in the Far West.

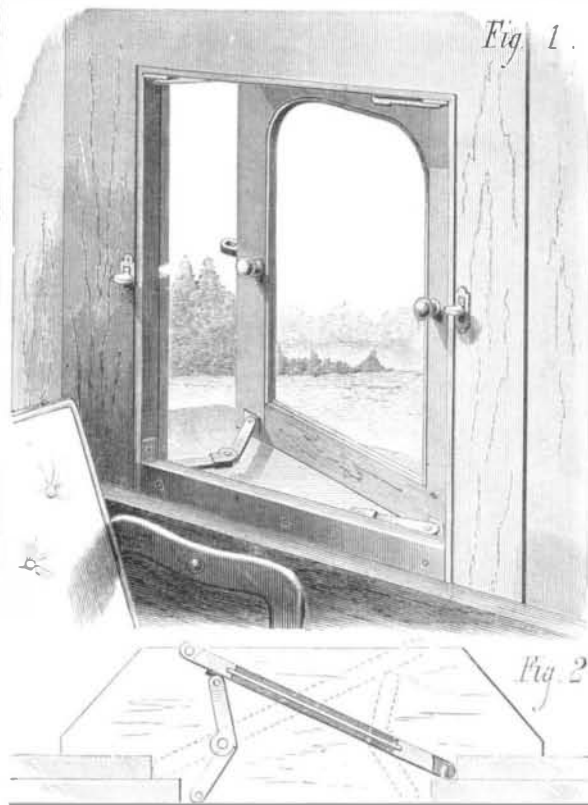
The propagation of salmon at the United States fish hatchery establishment on the McCloud River promises well. It is said that the run of fish is plentiful, and preparations have been made for securing 12,000,000 eggs. The catfish placed in the Sacramento some years ago are doing well. No further distribution of catfish will be made by the commissioners, as they think the supply already distributed will be sufficient for the State. It is said that shad are becoming abundant. The commissioners expect to receive a supply of superior carp from the Government some time this year. Fish Commissioner Parker, of Nevada, has obtained 2,500 catfish to stock the Humboldt River. Nevada also receives this year 500,000 salmon, to be placed in the Truckee River, so that they can go to Pyramid Lake. The California commissioners will get 2,500,000 young salmon this year to replenish the stock in the Pitt, McCloud, and Sacramento rivers.

#### Steel Tow Lines.

The Cleveland *Plaindealer* says that steel tow lines are becoming popular on the lakes. They are found to work well. Of a line recently imported the *Plaindealer* says: "It is 660 feet long and weighs less than 800 lbs.; is made of the best crucible steel, at the same factory that supplies the British navy. It left Liverpool sixteen days ago, was imported and fitted by Messrs. Upson, Walton & Co. for the owner, Mr. R. K. Winslow, and is now on its way to Lake Superior. This may be considered quick work."

#### A NOVEL RAILWAY CAR WINDOW.

Every traveler knows too well the discomfort of dust and cinders which with the present ventilating devices seek an entrance to the car with every fresh breath of air. The problem of avoiding this annoyance without obstructing the view from the car window has been solved by Mr. C. T. Deblois, of 51 Dwight street, Boston, Mass., who patented April 30th, 1878, the device shown in the accompanying engraving, Fig. 1 being a perspective view, and Fig. 2 a horizontal section showing the arrangement of the hinges.



A NOVEL RAILWAY CAR WINDOW.

The invention consists in a novel arrangement by which a car window of any size now in use on ordinary or palace cars may open outward diagonally from either side according to the direction of movement of the train, thereby effectually preventing the annoyance from cinders, smoke, and dust. A simple hinge at the top and bottom of each side of the sash connects it with the window frame, the hinges being so arranged as to allow the window to swing outward from either side. In addition to this support each side of the sash is provided with an ear having a hole to receive a pintle, or equivalent, connecting with a thumb piece on the inside of the car. When both pintles are in the eyes both sides of the sash are firmly closed. By removing either pintle or by lifting the thumb piece, the other pintle serves as a pivotal point for the sash, and it is obvious by lifting the rear thumb piece the sash from that side may be thrown outward, and a window so held and supported at each side may open to the right or left according to the direction of movement of the car, for purposes of ventilation, without at all obstructing the view. A projecting "cap" at the top and a similar projection or shelf at the sash make, when the window is open, a complete inclosure from cinders, smoke, and dust. The necessary expense of windows with this improvement is but little if any more than for those now in use, which fact recommends it to the managers of railroads as well worthy of their consideration and approval. For further particulars address the inventor.

#### NEW COFFEE POT.

The making of a really good cup of coffee is an art which



NEW COFFEE POT.

comparatively few have acquired. While it occasionally happens that a good cup is produced by the ordinary methods, it only happens, and is the exception rather than the rule. To render the process positive, and to insure a uniformly good product, Mr. A. B. Place, of Denver, Col.,

has devised the coffee pot shown in the accompanying illustration.

The exterior portion of the coffee pot is of the usual form. A vessel, A, having a conical bottom, perforated sides, and a flaring top, is fitted to the outer portion of the coffee pot, and contains a wire gauze or perforated sheet metal vessel, B, which is flanged and supported by a ledge in the vessel, A.

The central portion of the vessel, B, extends to the cover of the coffee pot, and a tube extends upward from the conical bottom of the vessel, A, into the central opening of the vessel, B.

The parts being in the position shown in the cut, the ground coffee is placed in the vessel, B, boiling water is poured through the central opening of the vessel, B, in the desired quantity, and the apparatus is placed over the fire, and the water allowed to boil a few minutes. As the water boils the conical shape of the chamber at the bottom of the coffee pot causes the water to rise through the central opening of the vessel, B, and a current is established which extends through the coffee in the vessel, B, and quickly extracts the strength therefrom. Any fine grounds which may be forced out through the perforations in the vessel, B, will fall into and be arrested by the annular trough in the bottom of the vessel, A, where they are retained. If desired, the cup or vessel, B, may be removed after the strength is extracted from the coffee, leaving only the liquid coffee remaining in the apparatus.

For further information address the inventor as above.

#### Important Use of Natural Gas.

The petroleum product of Pennsylvania now reaches the fabulous sum of eighty millions of dollars per year, while the exportation runs to about sixty millions. Until recently, or at least within a few years, but little use has been made of the natural gas which has discharged into either the open air or been burned in huge torch lights through the oil regions. In Beaver Falls, a manufacturing town of considerable note, located about thirty miles west of Pittsburgh on the Fort Wayne and Chicago Railroad, one well was put down about sixteen years ago for oil, and struck gas at about 1,100 feet in depth, whence it poured continuously until about two years ago, when it was leased, cased up, and brought into use. This induced the Harmony Society to put down more wells in different localities (five in number), all of which give out liberal supplies, some as high as one hundred thousand feet every twenty-four hours, which is now being used in nearly every manufacturing establishment in the town. About one half of the gas used for lighting the town comes from these wells; it is also used under the gas retorts for heating (five in number). The large cutlery works use it in 49 heating furnaces; the hinge works, in three large heating furnaces; the pottery works, in two large kilns and two very large furnaces for drying ware; the shovel works, in one large heating furnace; the file works, in seven large annealing furnaces; the saw works, in one very large heating furnace, 14 feet long by  $11\frac{1}{2}$  feet wide, which is run to a very high heat. It is also used in one forging furnace. Two drying kilns for seasoning lumber use it. And it is also introduced into dwelling houses, heating furnaces, and stoves and cooking stoves, and is exclusively used direct from the wells for lighting one large dwelling. Other wells are now going down, and everything indicates the exclusive use of this gas for all heating, illuminating, and manufacturing purposes. Its value is really incalculable in working steel. It is said to be fully equal to charcoal, if not superior, there being no base substance like sulphur or other matters so damaging to its quality. A remarkable feature about it is, that men work right along in a room filled with it, take it freely into their lungs, in short, breathe it as they do air; and it appears rather healthful than otherwise, while manufactured gas is actually dangerous to inhale. The flame is clear white and gives an intense heat with very little smoke. There seems no diminution in the supply; there may be a limit to the supply, but the gas is in all probability being constantly produced down deep in the earth.

J. E. EMERSON.

#### Large Shipments of Cheese and Meat.

The cheese shipments by steamer for Europe, from this port, August 24, exceeded anything before made in one day, the total amount being 68,500 boxes. The steamship *Devon*, of the Great Western Line, for Bristol, carried 7,000 boxes of cheese, 200 sheep and 50 head of cattle; the *Germanic*, of the White Star Line, for Liverpool, had 33,500 boxes of cheese and 200 tons of fresh meat; the *Bolivia* carried to Glasgow 15,000 boxes of cheese and 800 quarters of fresh meat, and the *Helvetia*, of the National Line, for Liverpool, took 13,000 boxes of cheese and 45 tons of fresh meat.

#### American Paper for Export.

Holyoke manufacturers report a steady growth of export trade in American papers. The export of the country has risen from \$491,000 in 1871 and \$856,000 in 1876-77 to over a million in 1877-78. It is said that the ability of American manufacturers to compete in price with those of Europe is largely due to the fall in the price of rags, brought about by the large use of wood pulp.

PRIMARY instruction is indispensable; it is the fruitful mother of manual labor as well as of arts and industry; it alone frees men from the gloom of superstition, helps them to understand their duties as sons, fathers, and citizens, and enables them to render themselves worthy of liberty.—E. Ogier.