

SCIENTIFIC MUSEUM.

For the Scientific American.
Yankee Enterpriser.—Transporting Timber from the Mountains.

Your paper being the repertory of all that is new and useful, I propose to give you an account of a new form of overcoming resistance, used by Mr. Cochran, an enterprising Yankee of East Dorset, Vt. Allow me to premise that, during the construction of the Western Vt. Railroad, it became necessary that a very large amount of railroad ties should be procured in a very short time; whereupon Mr. C. (who is one of the Directors) contracted to furnish 30,000 yellow birch ties and a large amount of bridge and other timber. As the only place from which Mr. C. could procure the ties and timber was three miles distant from the railroad, on the tops of the Green Mountains, in a place inaccessible by any feasible road. Mr. C.'s friends and foes joined in predicting that it was impossible for him to fulfill the contract. Mr. C. ascended through a rocky ravine to the mountain's top, and there gathered, in one vast pile, 32,000 ties, and other timbers. Then the question arose with every one, by what means is all this to be conveyed to the railroad? Only a few weeks of hot summer weather is allowed to accomplish it in, and nothing but rocks and gulfs intervene. Surely "necessity is the mother of invention." Mr. C. goes to work and builds a small substantial spout or flume of long narrow plank stretching from rock to rock down the mountain gorge. Here it rests on a rock, there high on the branches of a tree, and there again high in the air it threads across the valley, supported like a telegraphic wire. In four or five weeks the whole three miles is completed—all built in the most simple, cheap, and substantial manner. A small stream of water is turned into the flume, and twenty men go merrily to work dashing in the heavy ties and timbers; away they fly on the wings of the water over rock and gulfs swifter than the wings of a dove. In four summer days that pile of 3,500 tons of lumber is conveyed without cost from the Green Mountains in Per. to the railroad in Dorset.

The flume remains still uninjured ready for further use, Mr. C.'s thousand's of acres of land (heretofore worthless), is now willing to be cleared of its rich burden of lumber and fuel, and be transported by the same magic process. The limpid stream is willing still to do its part; and more willing than all is Mr. C. to perform another such feat. M.M.M.
East Dorset, Vt.

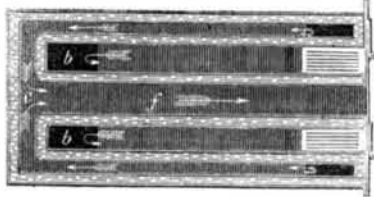
Manufacture of Combs.

The greatest comb manufactory in the world is in Aberdeen, Scotland; it is that of Messrs. Stewart, Rowell & Co. There are 36 furnaces for preparing horns and tortoise-shell for the combs, and no less than 120 iron screw presses are continually going, in stamping them. Steam power is employed to cut the combs, and an engine of fifty horse-power is barely sufficient to do the work. The coarse combs are stamped or cut out—two being cut in one piece at a time, by a machine invented in England in 1828. The fine dressing combs and all small-tooth combs, are cut by fine circular saws, some so fine as to cut 40 teeth in the space of one inch, and they revolve 5,000 times in a minute. There are 1928 varieties of combs made, and the aggregate number produced, of all these different sorts of combs, average upwards of 1200 gross weekly, or about 9,000,000 annually; a quantity that, if laid together lengthways, would extend about 700 miles. The annual consumption of ox-horns is about 730,000; the annual consumption of hoofs amounts to 4,000,000; the consumption of tortoise-shell and buffalo-horn, although not so large, is correspondingly valuable; even the waste, composed of horn-shavings and parings of hoof, which from its nitrogenized composition, becomes a valuable material in the manufacture of prussiate of potash, amounts to 350 tons in the year; the broken combs in the various stages of manufacture average 50 or 60 gross in a week; the very paper for packing costs \$3,000 a-year.

A hoof undergoes eleven distinct operations before it becomes a finished comb. In this great comb factory, there are 456 men and boys employed, and 164 women—in all 620

hands. This company commenced business twenty years ago, on a very small scale, being much smaller than the smallest works in England. By that determined energy, perseverance, and shrewdness which is characteristic of that people, they have shot ahead of all competitors in Britain. There is a temperance society and a library connected with the works.

On Boilers.—No. 15.
FIG. 26.



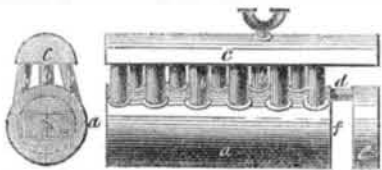
FRAZIER'S BOILER.—This boiler was patented by James Frazier, of Houndsditch, Eng., in 1827. It was intended for a steamboat.

Fig. 26 is a horizontal section. There are two furnaces, the current of air and flames from which first proceed horizontally, as shown by the arrows, then descending at *b b*, they unite and take a contrary course in a wider channel, immediately underneath the upper one, to the front of the boiler; here the current separates, a part going as it were to the right, and a part to the left, into the narrow side flues at the farthest extremity of which, *c*, the currents unite again, and proceed by the middle channel, *f*, to the front of the boiler, where they ascend into the chimney. The steam pipe, safety valves, man-hole, &c., being the same as in other boilers.

This boiler being especially designed for the use of steam-boats, no part of the furnace or flue is allowed to come in contact with the wood-work of the vessel, but is wholly surrounded by water; the disposition of the latter in thin layers, divided by long intervening flues, is ingenious, and well calculated to produce steam with rapidity and economy.

TIPPETT'S BOILER.—Fig. 27 is a front end view, and fig. 28 a side view, of a boiler patented by Thomas Tippett, of Cornwall, Wales, in 1828.

FIG. 27. FIG. 28.



a is a double cylinder of the usual construction of the cylindrical boiler, the internal cylinder constituting the fire-place and flue. From the external cylinder, which contains water, proceed three rows of open vertical pipes, *b b b*, which support a semi-cylindrical vessel, *c*. At the farthest extremity of the cylinder, *a*, proceeds horizontally a short open pipe, *d*, communicating with a small supplementary boiler, which is a cylinder of the same area as *a*, but very short. This boiler is built in a furnace, in which the flues are so arranged, that the heated air, in passing out at the end *f* of *a*, shall impinge against the vertical side of the supplementary boiler; the flue thence proceeds upward and along the underneath flat side of the semi-cylindrical vessel, and between the vertical tubes to the front of the boiler; here it descends and passes under, *a*, round the back of the supplementary boiler, then rises again over the top of the semi-cylindrical vessel, and proceeds to the chimney, which is in front, nearly over the furnace doors.

The Orinoco.

This is the name of a new steamship belonging to the West India Co., and was to be the consort of the unfortunate Amazon; she is of the same size—2,245 tons—about the size of the Asia. She is built so as to be fitted up, if necessary, with a tremendous armament. Her engines were built by Messrs. Maudsley, Sons & Field, of London, the gentlemen who built the engines of the Great Western, and who have a high reputation as engineers. The engines are peculiar; they are 400 horse-power. They are different from any of our marine engines, or those of the Scotch steamers. Each engine has two cylinders 68 inches in diameter, being equal to 98 inches in the single cylinder. They are direct acting, and not

like the side lever kind. There are eight boilers, each one has three furnaces, and the aggregate evaporative power is 9,000 gallons of water per hour. The paddle wheels are 40 feet in diameter and are on the feathering principle—(Galloway's Wheel). The engines are said to be beautiful; they are at least different from any in our steamships. The feathering paddles, are new to us in marine vessels. The Amazon, in a trial of speed made 12½ statute miles per hour, with 13 revolutions per minute; the steam pressure 12 lbs. This was very good. Our engineers must keep a look out for the performances of the feathering paddle-wheel. It is our opinion that it will not answer so well for the stormy Atlantic voyages, but if it does, we must adopt it in our new steamships.

Extinguishing of Fires.

It is our opinion that no man in England is qualified to invent a Fire Annihilator suitable for practicable purposes in America. This opinion is advanced not to throw any disrespect on the inventors of England—we esteem them highly, but to invent any machine or apparatus suitable to accomplish a certain object, requires an acquaintanceship with the conditions of the evil to be remedied. In England there are few conflagrations in comparison with those in the United States. Our houses generally contain far more timber than the English, and when ignited they go like tinder. Our firemen, by constant exercise, are the most expert in the world, and they are quite capable of judging about this and that invention, got up for the extinguishing of fires. We are acquainted with a very ingenious Englishman in this city, who invented a machine for sawing down standing trees; he thought it was a great invention, but he had never cut down a tree in his life. We soon convinced him of his error.

We have just received the specification of a patent, granted in England to Mr. Charles Cameron, a very eminent chemist, of whom we have heard a number of times; the patent is for a new application to extinguish fires. The nature of it consists in mixing ground chalk, or aluminous clays, in a finely subdivided state, with water, and applying this liquid compound to the flames of a fire by a fire-engine. The quantity of whiting or aluminous clay, that would be required for fires in our city, would lead to an expense far greater than all the benefits that could accrue from the same. The whiting is put into a large tub—the waters from the hydrants are let into the tub, which mixes them all together, and then the suction of the fire-engine is placed in the tub, and the order passed "play away boys." Our firemen would not be troubled with such an arrangement; but there can be no doubt of the virtues of limous and aluminous waters in resisting the action of fire. A short time ago a gentleman inquired of us if he could get a patent for using alkaline leys to extinguish fires. We said, no: the nature of aluminous clays and alum water, in resisting the action of fire, is well known to every chemist.

Cure for Toothache.

Mr. James Beatson, of Airdrie, Scotland, says:—

"Gum copal, when dissolved in chloroform, forms an excellent compound for stuffing the holes of decayed teeth. I have used it very frequently, and the benefit my patients have derived from it has been truly astonishing. The application is simple and easy. I clean out the hole, and moisten a little cotton with the solution; I introduce this into the decayed part, and in every instance the relief has been almost instantaneous. The chloroform removes the pain, and the gum copal resists the action of the saliva; and as the application is so agreeable, those who may labor under this dreadful malady would do well to make a trial of it.—[Medical Times and Jour. Dent. Science.

Saliva.

Human saliva, when fresh, is colorless or bluish. Saliva is necessary for the digestion of starch, which is converted by it into sugar, which cannot be affected by gastric juice. By a careful analysis, the following substances have been found in saliva: phosphorous, soda, colorium, potash, sulphur, cyanogen, lime, magnesia, and organic matters.

Steamship Baltic.

This noble steamship left this city for Washington on Wednesday last week. She arrived there on Friday, (opposite Alexandria) at 1 P. M. The invited guests who went with her had a fine time of it. We hope that Congress will make a further appropriation to this noble line of steamships.

The steamer Prometheus arrived at this port on last Saturday morning from San Juan. She brought \$90,000 in gold dust. Much stabbing and the like were still going on in California.

LITERARY NOTICES.

THE ANCIENT HISTORY OF HERODOTUS.—Translated from the original Greek by William Beloe, with the life of Herodotus; Bangs, Brother & Co., 43 Park Row, N. Y. pages 490. Cicero denominated Herodotus the Father of History, and the chronicler informs us that he was born 484 B. C. we are therefore eminently interested in whatever record he has transmitted to us of the barbarous ages. His writings have been severely questioned in times past, but the interesting discoveries of Layard & Rawlinson. In Nineveh and Babylon was vindicated the general correctness of this history. The style is simple and eloquent, and few authors have appeared since his day with an easier style of address.

His description of the once proud Babylon as he saw it, is thrillingly interesting, and will repay an attentive perusal.

The same firm have issued Gellies' History of Ancient Greece, containing the same amount of matter. It is a work of unquestioned merit, and is probably the most reliable extant. These publications are timely, and the public will thank Messrs. Bangs, Bro. & Co. for supplying a want which is doubtless felt to a great extent, and no person at all interested in historical writing should suffer the present opportunity to pass unimproved. We have scarce ever read a work of greater excellence than Gellies' Greece. The author was an eminent Greek scholar and royal historiographer of Scotland.

QUINTEN MARSHYS, or the Blacksmith, of Antwerp.—Published by Garrett & Co., N. Y., is the title of a new romance by Pierce Egan, an able English Editor. His writings, we believe, have been well received, but as we cannot find time to read the one before us, our readers must judge its character without our endorsement.

THE PRACTICAL MODEL CALCULATOR.—Nos. 7 and 8 of this excellent work, by Oliver Byrne, C. E., published by H. C. Baird, of Philadelphia, are now before us. This work, when completed, will be a very valuable book to our mechanics and engineers; it is the most comprehensive work relating to all subjects in which calculations are necessary: it treats of logarithms, trigonometry, hydraulics, surveying, and mathematical calculations in general. It is for sale by Dewitt & Davenport, this city.

LAYS OF THE SCOTTISH CAVALIERS.—Mr. Redfield, publisher, Clinton Hall, this city, has given the American Republic a most excellent reprint of this book of poems, by Prof. Aytoun, Editor of Blackwood's Magazine. These Lays come up to the ancient and thrilling Ballads which give us so much pleasure to read. Old Hardyknute and Chevy Chase, have oftentimes made the blood course through our veins in rapid order. These lays especially recommend themselves to Scotchmen in our country who often look back with a kind of joyous grief to their "old mountain mither." The history of Scotland is an unbroken romance, from the days of Macbeth to those of Charles Stewart. Prof. Aytoun is a Jacobite, and many of these are Jacobite Lays, still we like them, but our sympathies are all with the brave old Covenanters—those men who, with the Puritans, formed the Solemn League & Covenant, and did so much for Liberty and Parish Schools.

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Mechanics and Manufacturers

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