Qualities of Timber---The Proper Time for Cutting it.

We commence, in this number, to present a few brief articles on the subject indicated in the above caption. It had been our intention to present them some time ago, but this, perhaps, is the very best time we could have selected—the beginning of a New Year—when the whole of the seasons are before any of our readers who may also choose to make experiments. The articles, with the consent of the able author, are selected from Griffith's Naval Architecture.

"We are glad to learn that the Navy department have adopted measures to determine the best or proper time for cutting timber, and the best mode of curing it, or securing it against dry rot; in connection with this, their investigations also combine a determination of the specific gravity. Those experiments are confined to the three principal kinds of ship timber, viz., live-oak, white oak, and yellow pine, and will be of incalculable benefit to the naval and commercial interests of the United States; when we remember that there is no table of specific gravity that is at all reliable for any meridian of North America, and that our mechanics have been making calculations from tables of specific gravity found in European works, we shall begin to approximate a conception of its value; a location in the timbered districts of this wooded country (for practical purposes) will satisfy the most incredulous that little is known about the productions of the American forest—a location of two years for this purpose, satisfied the author that he knew but little about the natural science of the forest timber growth of the United States. We are doubly gratified to learn that this important and responsible trust has been committed to Mr. James Jarvis, of Virginia, a mechanic whose unbending energy and zeal in the dischargeof duty, fully qualifies him for this important trust, and who, having filled the office of Inspector and Measurer of Timber for the Government, at its principal depot, for many years, has acquired a knowledge of its defective properties to an extent unsurpassed, doubtless, by any man in this country. Mr. Jarvis has discretionary power given him by the Department at Washington; he has kindly furnished us with the result of his experiments for the first year, commencing on the 15th of September, 1849, and continuing in regular order up to the 15th of August, 1850.

These experiments will perhaps be better illustrated in the following order:—On the 15th of September he received, in twelve feet lengths, the butts of ten trees of live-oak, and an equal number of white oak and yellow pine. Five of each kind were worked square at the place where cut, and the remaining five were brought round with the bark on; after their arrival they were subdivided into 3 feet lengths. The squared pieces are from 12 to 15 inches square; the round pieces in bark from 12 to 15 inches in diameter. The specific gravity of each piece is at once obtained, and they are located as follows: 4 pieces of the squared live-oak, and 4 pieces of the round live-oak in bark, are placed in tanks under cover, where are the solutions of corrosive sublimate, copperas, alum, and coal tar. The same number of white oak and yellow pine pieces, amounting in all to 32 pieces of each species of ship timber, one half of which are square pieces, the other half round and in bark. These live-oak, white oak, and yellow pine pieces were kept in the tanks submerged one month, at the expiration of which time they were distributed as follows: under cover, in open air, planted as posts and laid as railroad sills. There is a suitable number of the pieces which have not been prepared, also under cover, in open air, planted as posts and laid as railroad sills: a proportion of the pieces, one square, and one round, are water-seasoned for six months; after being removed from the water, two pieces are made of one, and one kept under cover, the other in open air. The pieces which have not been in the solutions, are the *test pieces;* amongst these pieces Mr. Jarvis has fitted some together, wood and wood, except having between them tarred paper coated with charcoal dust. A few years will prove, by occular demonstration, which of the solutions, substances, or water, will make timber most durable. The pieces which have had no preparation on them, and are kept under cover, are weighed each month, to observe the amount of the juices or moisture lost by evaporation in one month and in one year. The weighing of the first piece felled in September, 1849, had been weighed twelve times in August, 1850; therefore it will take until September, 1851, before the timber felled and received in August, 1850, can be weighed twelve times. The object in weighing or obtaining the specific gravity each month in the year, is, that he may be able to determine the best time for cutting ship timber, or whether it is of any material consequence; and by testing the weight of the same kinds of timber in connection with its durability, and thus set this matter at rest.

The timber used for these experiments is thus described:—The live-oak and white oak are of excellent quality, and felled purposely for those experiments, with a few exceptions. The yellow pine is not as good as is used in the Navy: its specific gravity will not prove the fact. The very best of yellow pine is not of the greatest density. Pitch-pine is not as good for decks or deck frames as other fine-grained pine from the South. There is a species of yellow pine from about Wilmington, N. C., whose specific gravity is about the same as the pine used in the experiments, and corresponds (difference of time when cut considered) with that found in the table of specific gravities of dry timber—·610. The very best yellow pine timber is that in which the even fineness of the grain is continued to the centre or pith of the tree. By careful observation, much information that is valuable may be obtained from the tables of specific gravity. Notwithstanding the thickness of the bark on the yellow pine, and its lightness (the specific gravity differing not materially from that of cork), we find that the pine timber in bark weighs much more than the square timber; this, to the casual observer, would hardly seem possible; the man unacquainted with the nature of yellow pine sap-wood, would be likely to doubt the correctness of the table; but such is the nature of the exterior coating immediately under the bark of yellow pine, that we cannot find a more analogous substance than that of sponge; its retentive properties are very similar, and the turpentine with which this sap-wood is saturated, is the cause of its increased specific gravity above that of the squared timber when covered with bark. The thinner the sap-wood the less the specific gravity.

There is an error in the prevailing opinions in relation to the durability of yellow pine timber. Our Government has become a heavy stockholder in this prevailing error, by acting on the supposition that yellow pine timber required a great amount of seasoning. The consequence has been, that large timber houses have been erected and filled with yellow pine timber, which has been kept for many years, and when in a state of decay has been used both for new vessels and those undergoing repairs; this is a great mistake; an equal number of months would have answered a better purpose than as many years. As it regards the shrinkage of yellow pine, when in pieces of any considerable size, it shrinks but little when the vessel is in active service, and when used as deck plank should be made narrow. The convictions of our judgment lead us to this conclusion, that yellow pine requires no seasoning to make it durable; the ebb and flow of turpentine is through the sap, as the specific gravity will show; hence we say, that the capillary tubes of the heart wood have no more of the resinous property (if cut at a proper season) than is required for strength, and to render it durable, which we think Mr. Jarvis's experiments will fully prove. The continued use of yellow pine timber in the private shipyards of New York city, has already proved it incontestably; we could name ships, built in this city some twenty-five years ago, that have their first yellow pine beams in their decks, and we could point to others that have exhibited a durability in their deck frames unknown in the Navy of the United States. Proper care should be taken to clear the timber of all sap; and as it regards shrinkage in the naval vessels, if the same measures were adopted as in the private yards, of making strakes of plank narrow, we think there will be no cause of complaint; the strakes of deck plank, clamps, and bulwarks of Navy vessels are too *wide*."

(To be continued.)

Recent Foreign Inventions.

Gas Burners.—Mr. Harding Hallen, of Burslem, England, recently obtained a patent for an improvement in gas burners, which consists of fire-clay, or other clay composed of any mixture of potters' materials with metal, in the construction of gas-burners, the external portion of the burner being of metal, and that portion of the burner in which the holes are pierced being made of clay, which is much better calculated to resist the action of the flame or the corrosive action of the products of combustion, which speedily destroys gas-burners made entirely of metal. The improved compound gas-burners are also more accurately manufactured in the first instance, and insure a uniform and permanent flame, which will retain its size and shape for any lengthened period.

The drawings in the specification represent a fish-tail burner and an Argand burner constructed according to the invention, the external portions thereof being composed of metal, and the inner portions of a button, and a ring of clay respectively. The button for the fish-tail burner, and the ring of the Argand burner are each formed in suitable moulds, while the clay is in a plastic state, after which they are dried and burnt till of sufficient hardness, when they are fixed into their place in the body of the burner, either by cement alone or by burnishing down the edge of the metal upon the upper surface of the clay. It is obvious that a great many varieties, if not all kinds of gas-burners may be formed in the manner just explained for forming fish-tail and Argand gas-burners; that is to say, by the insertion of perforated buttons, rings, or pieces of pot or fire-clay into that part of the burner through which the gas issues.

India-Rubber Cement.—Mr. Alfred Newton, recently obtained a patent for the accompanying improvements relating to India rubber compounds:—

They consist in compounding or combining the gum called gum-lac, or gum shellac, or seed-lac, or stick-lac, with caoutchouc or India rubber. The materials are combined in various proportions, according to the purposes to which the compound is to be applied. Sometimes one part of the caoutchouc is combined with from one to eight and more parts of gum-lac or shellac; and sometimes one part of gum-lac or shellac is combined with from one to eight parts of caoutchouc. The greater the proportion of the caoutchouc employed, the more elastic the compound will be; and the greater proportion of gum-lac or shellac employed, the stiffer, harder, and less elastic will the compound be. The two ingredients are mixed together, mechanically, by grinding or trituration, or by means of their solvents, in the manner well known to manufacturers of caoutchouc.—Among the advantages to be derived from the combining of gum-lac or shellac with caoutchouc are—an economy in the manufacture, and the prevention of the disagreeable odor which generally pertains to India rubber compounds.

When the compound is intended for the manufacture of any thin fabrics, it has been found useful to mix with it a small quantity of finely-divided sulphur, either by grinding or triturating the sulphur with the compound, or by mixing with the compound a solution of sulphur in a solvent of sulphur, or by applying the finely-divided sulphur in the form of dust or powder to the surface of the thin fabrics. The proportion of sulphur thus employed is very small: it may be about one pound of sulphur, finely divided, to one hundred pounds of the compound. The fabrics, made of the compound thus mixed with sulphur, or dusted with sulphur, should be exposed to the rays or heat of the sun until the compound is deprived of its stickiness.

Gum-lac or shellac, when combined with caoutchouc, by means of camphene or other solvents, makes a useful cement for many purposes. To make this cement, one part of gum-lac or shellac is mixed with two parts of caoutchouc, by grinding or triturating them together in the usual manner; and then a sufficient quantity of camphene, or other solvent of caoutchouc is added, to render the compound of the proper consistency. A small quantity of finely-divided sulphur is generally mixed with the cement:—say two or three ounces of sulphur to one pound of the composition used.

When the compound of gum-lac or shellac, prepared with finely-divided or dissolved sulphur, is used to make thin fabrics or masses, the inventor submits the compound, so prepared, to a high degree of artificial heat (say about 270° Fahr.), for the purpose of curing or vulcanizing the prepared caoutchouc.

We are indebted to our invaluable exchanges, "Newton's Repertory of Arts," "Patent Journal," "Mechanics' Magazine," and other London Journals," and to the "Genie Industriel," &c., of Paris, for the above, in substance.

Interesting Hebrew Relic.

By the politeness of Col. Lea, Commissioner of Indian affairs, we have seen a curiosity of great rarity and interest, left for a few days at the Bureau. It was brought from the Pottawatomie Reservation, on the Kansas river, by Dr. Lykins, who has been residing there nearly twenty years of the thirty he has spent on the frontier. It consists of four small rolls or strips of parchment, closely packed in the small compartments of a little box or locket of about an inch cubical content. On these parchments are written in a style of unsurpassed excellence, and far more beautiful than print, portions of the Pentateuch, to be worn as frontlets, and intended as stimulants to the memory and moral sense.

Dr. Lykins obtained it from Pategwe, a Pottawatomie, who got it from his grandmother, a very old woman. It has been in this particular family about fifty years. They had originally two of them, but on one occasion, as the party in possession were crossing a rapid in some river in the lake country of the North, the other was irrecoverably lost. The one lost was believed by the Indians to contain an account of the creation of the world. That brought by Dr. Lykins has been kept for a very long period in the medicine bag of the tribe, used as a charm, and never allowed to suffer any exposure, until, by strong entreaty and the great influence he had with Topinepee, the principal Pottawatomie chief, he was permitted to bring it on to Washington, but under a firm pledge to restore it on his return.

It has hitherto been most carefully kept from the rapacious vision of the white man. Pategwe had it in his possession many years before his curiosity prompted him to cut the stitches of the cover and disclose the contents. But this coming to the knowledge of old Billy Caldwell, chief of the Council Bluff branch of the tribe, he strenuously advised Pategwe to shut it up and keep it close, and say nothing about having it. Dr. Lykins came to a knowledge of the circumstance of its possession from a half breed.

The wonder is how this singular article came into their possession. When asked how long they can trace back its history, they reply they cannot tell the time when they had it not. The question occurs here, does not this circumstance give some color to the idea, long and extensively entertained, that the Indians of our continent are more or less Jewish in their origin?—[National Intel.

[There is some *hocus-pocus* about this piece of parchment which has apparently a near relationship to the woolly horse—at least that is our view of the subject. The Indians have not a single Jewish trait about them.

Frauds in the Weight of Coal.

A correspondent of the Philadelphia Ledger justly points out the frauds perpetrated upon those who purchase coals by the ton. The ton of coal, he says, should be 2,240 lbs. and not 2,000. He warns the citizens of Philadelphia against being cheated by small coal carts, and suggests the passing of a law to protect the purchasers of coals being cheated. In New York nobody thinks of getting 2,240 lbs. for a ton, and every purchaser knows that cheating in weight is a very common sin, but one very difficult for those who purchase coals in cart loads to detect and provide a remedy. We know of no business where honest men are more required, and where dishonest men can act with more impunity than in coal dealing.