PEAT AS FUEL.

There are thousands of acres in the country covered with peat bog to the depth of several feet, and in some parts of the country this article has been in use for fuel at least fifty years. It is cut with sharp shovels into blocks somewhat in the form of bricks and about twice the size, and piled in rows to drain and dry, when it is ready for the fire. It is especially convenient for keeping fire over night, as a block of it placed upon the fire at bed time is found to be a mass of live coal in the morning.

The present high price of coal and wood has caused more attention to be directed to peat as a substitute, and extensive experiments have been made in this country and England with this fuel for various uses in the arts, especially for driving locomotives. At the recent meeting of the British Association at Birmingham, D. K. Clark, C. E., author of the able and learned work on the locomotive, read a paper on the use of peat, from which we take the following extracts:—

"Peat, it is well known, possesses many most valuable properties as a raw material for fuel, but the attempts hitherto made to utilize peat on a large scale have proved failures, owing to the difficulty of dealing with a substance exceedingly bulky, very loose, and holding from 75 to 85 per cent of water.

"To separate the water and to condense and mold the peat into convenient sizes at a cost sufficiently low to render it commercially available as fuel, is a problem which has baffled the efforts of many operators.

"At Horwich the problem has been carefully studied, and the difficulties appear to have been successfully overcome. Until a mode of artificially drying peat rapidly and economically had been worked out, air-drying was necessarily resorted to; and where limited quantities of fuel—say about 100 tuns a year—only are required to be made, air-drying may suffice, but for large quantities it would be, in our fickle climate, too uncertain a process to be dependent on, and for seven months in the year it would not be available at all.

"According to the system matured and established at Horwich the peat, as it comes from the bog, is thrown into a mill expressly constructed, by which it is reduced to a homogeneous pulpy consistency. The pulp is conveyed, by means of an endless band, to the molding machine, in which, while it travels, it is formed into a slab and cut into blocks of any required size. The blocks are delivered by a self-acting process on a band, which conveys them into the drying chamber, through which they travel forward and backward on a series of endless bands at a fixed rate of speed, exposed all the time to the action of a current of heated air. The traveling bands are so arranged that the blocks of peat are delivered from one to the other consecutively, and are by the same movement turned over in order to expose fresh surfaces at regular intervals to the action of the drying currents, so that they emerge from the chamber dry, hard, and dense. To the peat substance thus treated the name of 'torbite' has been given, from the Latin *torbo*, by which name peat is constantly mentioned in ancient charters.

"The next stage in the process is the treatment of the torbite in close ovens, when it may either be converted into charcoal for smelting purposes, or may be only partially charred for use as fuel for generating steam, or in the puddling furnace.

"The charcoal made from torbite is extremely dense and pure; its heating and resisting powers have been amply and severely tested, and with the most satisfactory results. At the Horwich works pig iron has been readily melted in a cupola. About 80 tuns of superior iron have been made with it in a small blast furnace measuring only 6 feet in the boshes, and about 26 feet high. The ore smelted was partly red hematite and partly Staffordshire, and the quantity of charcoal consumed was 1 tun 11 cwt. to the tun of iron made, but in a larger and better-constructed furnace considerably less charcoal will be required. It has also been tried in puddling and air furnaces with equally good results, considerably improving the quality of the iron melted. For this purpose the fuel was only partially charred, in order not to deprive it of its flame, which is considerably longer than that om coal. Some of the pig iron made at Horwich was then converted into bars, which were afterward bent completely double, when cold, without exhibiting a single flaw. Messrs. Brown & Lennox, in testing this iron for chain cables, have reported that its strength was proved to be considerably above the average strength of the best brands.

"For the generation of steam the fuel made at Horwich has also been well tested, and its superiority over coal practically demonstrated both in locomotives and stationary engines. On the Northern Counties Railway, of Ireland, a train was driven with it from Belfast to Port-rush, a distance of seventy miles. The result at the end of the journey showed a saving, as regards weight consumed, of 25 to 30 per cent over the average of three months working with coal on the same journey. There was an excess of steam throughout the run, though the fire-door was constantly open and the damper down. At starting the pressure was 100 pounds, but during the trip, and while ascending a steep incline, it rose to 110 pounds, and afterward to 120 pounds, with the fire-door open. While running there was no smoke, and very little when standing still.

"At the Horwich works the fuel was tested against coal under the boiler there. This was done on two consecutive days, the fire having on each occasion been raked out the night previous.

"The following results were obtained:—Coal got up steam to 10 pounds pressure in 2 hours 25 minutes, and to 25 pounds pressure in 3 hours; peat fuel got up steam to 10 pounds in 1 hour and 10 minutes, and to 25 pounds in 1 hour and 32 minutes; 21 cwt. of coal maintained steam at 30 pounds pressure for $9\frac{3}{4}$ hours; $11\frac{1}{4}$ cwt. of peat fuel maintained steam at the same pressure for 8 hours.

"But in addition to this a large economy is effected by the use of peat fuel for the generation of steam in the saving of boilers and fire-bars from the destruction caused by the sulphur in coal, from which peat is free. In Bavaria, peat fuel has been used on the railways for several years past, and the economy effected by its use in the wear and tear of the engines is stated by the officials in their reports to be very considerable."

The Ancient Wreck.

A correspondent of the Boston *Advertiser* writes to that journal as follows:—The remains of an old ship supposed to be identical with the one described by Governor Bradford (Plymouth Plantation, pages 217–251), which was wrecked "before a small blind harbor, that lies about the middle of Manamoyake Bay, to the southward of Cape Cod," in the beginning of the winter of 1626–27, is now on exhibition upon Boston Common, and is attracting considerable attention.

The wreck was discovered about two years since, on "Nauset Beach," imbedded in the sands, and Mr. Amos Otis, of Yarmouth Point, prepared a paper upon it, which is published in the January number of the *Genealogical Register*, 1864. The wreck has recently been removed to Boston, and the parts put together in proper order by Messrs. Dolliver & Sleeper, experienced ship builders, so that persons curious in such matters may be enabled to pass their judgment upon the question whether these are the actual remains of the old ship described by Bradford, as wrecked 239 years ago.

That these relics bear the impress of great age, no one who has seen them can doubt. But the appearance of age is, of course, not all that is wanted to prove, or to render probable, that they are parts of the old ship referred to.

While visiting the wreck the other day I listened to some adverse criticisms upon it—from an apparently intelligent source—like the following, viz.:—That it indicated a vessel of not over forty tuns burden—too small to have made the passage of the Atlantic with many passengers "and sundry goods"—as related by Bradford. That the timbers (ribs) are made of saplings, many of the sticks unhewn, and put in just as they were cut; quite unlike the way in which a vessel would be built in England, even at that day; but just the way we should suppose a small vessel would be built upon the coast of New England at an early date. That treenails (trunnels), which had been extensively used in building this vessel, were not used in England at that early period—iron spikes being used instead.

The value of some of these criticisms can probably be better appreciated by others than by myself. As to the size of the vessel, I suppose it is somewhat difficult to determine this with precision from these few remains. A model has been prepared by Mr. Lawler, a naval architect, which has the approbation of Messrs. Dolliver & Sleeper, and which indicates a vessel of about seventy tuns, large enough to navigate the Atlantic. As to the small timbers, may they not have been the limbs of full-grown trees rather than saplings, which, it was said, the English would not have cut.

As to the use of treenails at that time in England, I will refer to Captain John Smith's "Sea Grammar," published at London in 1627—the year after the incident of the wreck—which tells us all about the building, rigging and manning of ships. In describing the planking of a ship, he says:—"Now all those planks under water, as they rise and are joined one end to another, the fore end is called the butt end in all ships; but in great ships they are commonly most carefully bolted, for if one of those ends should spring or give way, it would be a great, troublesome danger to stop such a leak; the other parts of those planks are made fast with good treenails and trunnions of well-seasoned timber, through the timbers or ribs" (pp. 3 and 4). A little further on he says:—A "drive bolt is a long piece of iron to drive out a treenail, or any such thing; beside divers others so useful that without them and long iron spikes and nails, nothing can be well done; yet I have known a ship built, hath sailed to and again over the main ocean, which had not so much as a nail of iron in her, but only one bolt in her keel" (pp. 5 and 6). This settles the question about the "treenails."

I incline to the opinion that the place where this wreck was found may answer Bradford's description of the whereabouts of the vessel which he visited in distress; though Bradford does not say that this was Potanumaquut Harbor, as he is made to say, on page 25 of the pamphlet issued on "The Ancient Wreck." Neither is there any good authority for the name which is given to Bradford's lost ship, viz., the *Sparrow Hawk*, which is set forth on the title page of this pamphlet. Bradford gives no name; neither does Morton, nor indeed any of the old chroniclers. Mr. Otis says that there is a tradition, "uncertain and unreliable," that this was the name of the "old ship." The avidity with which this name is caught up by the exhibitors of this old wreck has a tendency to cast doubts on many other statements in the pamphlet, which, doubtless, have a good foundation. There is no propriety, either, in calling this the "Pilgrim Ship." She was bound to Virginia, whither her passengers—many of them "untoward people"—went as soon as they could find means of transportation; and there, doubtless, are their decendants among the "chivalry" of the "Old Dominion."

I think there is a good reason to believe this wreck to be the veritable remains of the "ship" described by Bradford, and I hope all will go and see it.

To Apply French Polish.

The wood must be placed level, and sand-papered until it is quite smooth, otherwise it will not polish. Then provide a rubber of cloth, list, or sponge, wrap it in a soft rag, so as to leave a handle at the back for your hand, shake the bottle against the rubber, and in the middle of the varnish on the rag place with your finger a little raw linseed oil. Now commence rubbing, in small circular strokes, and continue until the pores are filled, charging the rubber with varnish and oil as required, until the whole wood has had one coat. When dry repeat the process once or twice until the surface appears even and fine, between each coat using fine sand-paper to smooth down all irregularities. Lastly, use a clean rubber with a little strong alcohol only, which will remove the oil and the cloudiness it causes, when the work will be complete.

THE brown color on guns and iron generally is produced by superficial oxydation, either by repeated dipping in dilute nitric acid or by applying the following mixture:—Two parts chloride of iron (U. S. Ph.), two parts strongest solution of chloride of antimony, one part of gallic acid, four or five parts of water. Linseed oil or wax are put on lastly as protection.—*Druggists' Circular.*