

HOW TO FIRE STEAM BOILERS.

Young engineers, if not some more experienced ones, will find some useful hints on a very important subject in the following article from the *Milling World*:

"By the application of a little skill and care, very unusual results may not unfrequently be attained by ingenious mechanics. This is especially the case with firing steam generators when the fuel used is salt or saw mill offal. Careless firemen fill the coal haphazard, as long as any can be got into the fire box, causing great volumes of dense, black, unconsumed smoke to issue from the stack, giving evidence to all who see it, and know anything about what is going on, that a large percentage of the fuel is being thrown broadcast into the air, not only wasting the money of the owner, and the labor of the fireman, but contaminating the atmosphere for the use and enjoyment of the public.

Nothing would seem to be to be more plain than that it is the duty of the fireman, for his own sake, if not for that of his employers, to use as little fuel and labor as possible, to do his duty a little better than any one else. To effect this, only a little care, combined with such knowledge and skill as may easily be acquired by any fireman, is necessary. In burning coal, the grates should be much nearer the bottom of the boilers than in burning saw mill offal, the fire should be much more spread out, and kept shallower, and in feeding coal the lumps should be broken up to hickory nut size, and only a small quantity thrown on at once and well spread on, so that the flames may attack it on every side and thoroughly consume all the carbon and bitumen of which ordinary coal is composed. It is of vital importance that all the air needed to thoroughly burn the fuel up should be applied under the grate as directly as possible, and as hot as it can be made. Not a little of the waste in fuel is caused by too much air passing through the furnace in various ways, all of which consume heat in unnecessary quantity. The furnace walls should be as near airtight as possible, and no useless air should be allowed access except through the proper spaces, otherwise the draught is injured and much of the fuel is wasted.

The back ends of the grate bars ought to be several inches lower than the front, that the air going up to consume the fuel may not meet with so short a curve. It is also best, in many cases, to leave the ashes banked up in the back of the ash pit and at the sides, that the air currents may be concentrated into a steady stream, carefully avoiding all eddies. The best method for each separate furnace can only be ascertained by trial and experimental tests, which the fireman must make for himself, and which he will be sure to do if he wishes to excel in his business.

A fire room should always be kept closed up tight, be kept as hot as possible, and free from cold air currents and blasts. It is very poor economy to spend labor and fuel to make steam only to condense and lose it before it is used. The boilers ought to be completely covered with an air and heat tight casing. Formerly it was supposed that the boiler would be injured if the flames had access to the steam space in the upper part above the water, but this long ago been proved to be a great mistake. Where the boilers are fired inside, mineral wool covered over the exterior flanged with wood or metal is excellent as long as it is kept dry. A boiler thus covered can be touched by the hand without any unusual or uncomfortable heat being experienced. Even in warm climates, boilers ought always to be well protected under weather proof sheds or buildings covering up perfectly tight all the rear parts, even using a bulkhead or partition just at the front, outside of which the fireman may stand if the heat is too much for him. It must stand to reason that a boiler room cannot be made too hot, or kept so, for economy and efficiency. How to do so cheapest and easiest, is the problem which both employer and operator should unite in striving to attain.

Not long ago the writer saw a portable saw at a fair, that burned only 24 lb. of coal per horse power an hour. The coal was broken up chestnut size, screened and washed, and fed into the furnace a pound at a time, being carefully

spread over the bed of glowing fuel in the fire box. No smoke could be seen issuing from the stack, and the object, that of entirely consuming the fuel, seemed to be attained. But this is not practicable in ordinary use, though it may be approximated more nearly than it is, in almost every case.

The use of steam in very minute jets in front of the fire box inside may be made to contribute largely toward heating up furnaces and consuming smoke, when intelligently and skillfully used. But when applied in excess it dampens down a fire and does much more harm than good.

Water, it is well known, is composed of two highly combustible gases, oxygen and hydrogen. When steam is injected into a very hot fire, the water of which it is composed is decomposed, or separated into these gases, which add greatly to the heat of the furnace.

These suggestions are made largely for the attention of firemen and engineers, who can readily see what a margin for improvement is before them."—*Scientific American*.

AID OF MACHINERY TO LABOR.

Labor is a natural burden upon humanity; yet it is the key which unlocks the storehouse of wealth, convenience and luxury. By the use of invented and applied machinery muscular work is greatly relieved, and results cheaply and extensively obtained. In all this, however, intelligent skill is not supplanted; but rather there is a wider field created for the same, and more and more does it come into demand as the facilities for production multiply. Man, of course, may exist as our forefathers did, living in a rude and limited way on the necessities of life, and even those secured only at the expense of oppressive toil; but as improvements are made, and varied and enlarged benefits flow therefrom, he rises in the scale of being, and the sphere of life is extended. The easy supply of wants in any direction only begets efforts in others; and as matters thus progress, instead of the demand for useful industry being diminished, there is more and more inducement to laborers to employ themselves with the exercise of every faculty.

It is a mistaken view, therefore, to imagine that there is the least tendency in the use of machinery to supersede the necessity of workmen, and take from them all opportunity to labor. Their skillful hands, discerning eyes, and intelligent brains are surely destined to find an ever widening field. Of course, the worker must not remain stationary, content to live and die an antiquated fossil, while all the world about him is changing and progressing. What he once did painfully and slowly with the hands alone he must now more abundantly accomplish through the agency of labor-saving devices and tools. Society has need of more production, and will only be satisfied with still more and more. With its prosperity and progress the laborer shares; and to-day he has more of the comforts and luxuries of life than were enjoyed by him a hundred years ago. The prejudice against improvement, and the jealousy against capital and associations in their efforts to manage and direct production in a more efficient and beneficial channels should disappear. As changes occur, old rules should be promptly abandoned. By adapting himself to circumstances as they are thrust upon him, there is not a man who cannot succeed and find a market for his labor far beyond his ability to supply.—*Dubuque Trade Journal*.

THE U. S. MARKETS.

Saginaw, in one sense, is the key to the lumber business in the country at large. It occupies a position midway between the prairie interior and the seaboard, and was from an early period the centre of the most important pine-producing region in the country. Though West Michigan, and its great market, Chicago, have of late years exceeded the Saginaw valley in producing and distributing capacity, the complexion of affairs at Saginaw points must still be counted on as paramountly significant of the true condition in the country at large, East and West, because of its relation to all the trade south and east, and to a certain extent to the westward. Hence it is, that when the report from Saginaw comes, as it does this week, that

never since the panic times of 1873 was there so little inquiry for lumber as now, it must be taken as a very important statement bearing on the present condition of the lumber trade. It shows conclusively that at the present time lumber merchants in all the territory tributary to the Saginaw sources of supply have all, or nearly all, the lumber they want. The reason of this apathy about further purchases is not hard to reach—an overstock all along the line, and an uncertainty concerning the future both in respect to the volume of next season's demand and the value of lumber.

When we seek corroborative evidence bearing on the same point from other sources outside of Saginaw, there is a striking unanimity. Wholesale dealers in this market have neglected the question of future supply all winter, their anxiety to sell what they have on hand overbearing all other considerations. At Albany, Buffalo, and minor eastern points, the same quietude is observable, and Mississippi markets are dormant. Undoubtedly the exceptionally severe winter and the snow blockades have intensified the sluggish condition, but that does not really put a better face on the matter, nor inspire any hope for the immediate future. Though there is an excessive stock being carried over this winter, if the cold season had been more favorable to building operations and the movement of lumber, a larger volume would have gone into consumption, and the stocks been more reduced than will now be the case. In all the large cities the excessive and long-continued inclement weather has nearly stopped building, and has thus very seriously reduced the yard trade.

This adverse condition, added to an overstock, has put the lumber trade into even a worse shape than the most hopeless individual feared early in the winter. The possibility of it was foreshadowed by the *Lumberman*, though the brighter view was also presented of the opposite extreme. But the seasons carry with them their effects in spite of hope or fear.

There are few lumbermen sanguine enough at the present time to predict that prices in 1883 will equal those of 1882. It is now settled beyond a doubt that they will be scaled lower, but how much it remains for the opening spring to determine. As a matter of fact, values now are considerably below those prevailing last year at this time, when there was a veritable boom in demand, and prices were tending upward. The question now is as to whether they will fall materially lower, and how much, and as to where they will stop, and when become settled. In respect to these very serious matters to the trade every body at present is at sea.

Bearing on the general situation are the probabilities of the log crop and the early or late starting of the mills in the spring. The deep snows are seriously interfering with work in the woods, and it now seems likely that the output will not be as large as was first intended. This may prevent an overabundant supply, as earlier in the season seemed probable. Besides, there is a prospect of a late opening of the streams, and a consequent late coming down of the logs and starting up of the mills. Navigation may also open late. If these may be all become realities they will defer the opening of the re-supply season, so that if the demand for stock to go into consumption should be active as soon as the building season begins, the condition of oversupply may be somewhat modified. The *Lumberman* is not now making such a prediction, but only indicating what borders on the probability. In the present locked-up state of affairs this is about all that can be done.—*Northwestern Lumberman*.

Joinery for England.

The London *Timber Trades Journal* says:—With regard to the joinery trade, the business seems to be divided between the work done at home and the importations from Sweden and America, which goes on, side by side with fluctuations, America having apparently the biggest share.

Referring to a circular before us issued by a large American branch firm on this side, we observe that there has been a falling-off in the imports of ready-made doors, both from the United States and Sweden, to an extent that is corroborative of the dull trade of the past year,

and to which we made special allusion in reviewing the importations of 1882 in last week's issue.

Dye from Poplar.

The young growth of the poplar tree yields a dye which may be extracted as follows: The young twigs and branches are bruised and boiled for twenty minutes with a solution of alum (ten pounds of wood requiring one pound of alum), in three gallons of water. The solution is filtered hot and allowed to cool, and after standing some time is again filtered from a resinous deposit. On exposure to air and light it develops a rich gold color, and may be used directly for dyeing orange and yellow shades upon all classes of goods.—*Buffalo Lumber World*.

A Soap Producing Tree.

In the temperate region of Southern Chili, of which it is a native, grows a tree which promises to be an acquisition to any country where it can be acclimated. It is called the quillai tree, and belongs to the botanical family Rosacea. It grows to a large size in the ravines of the spurs of the Andes and the coast range of hills. Its value is in its bark, which contains an alkali of extraordinary saponaceous virtue, and for washing and cleansing wool or silk has no equal as a detergent which thoroughly cleanses without injury.

FORTUNATELY Valvular disease of the heart is not very common, its disturbed action may be due to indigestion, liver irregularities &c. A Stomach disturbed with wind, or indigestible food will cause pain and fluttering by crowding on the nerves of the heart. Burdock Blood Bitters will speedily remedy all such difficulties.

WORTH KNOWING.—A Fact Worth Knowing. The best household remedy known for Coughs, Colds, Bronchitis, Asthma, Whooping Cough and all throat and chest troubles tending toward Pulmonary Consumption is Hagar's Pectoral Balsam, to be procured of any druggist.

GOOD ADVICE.—If our readers will accept proffered advice, they will always keep a bottle of Hagar's Yellow Oil at hand for use in emergencies, such as Burns, Scalds, Wounds, Lameness, Croup, Chills, Rheumatism and all varieties of aches, pains and inflammations. It will ever be found reliable.

MR. THOMAS W. RACE, Editor and Proprietor of the *Mitchell Recorder*, writes that he had a prejudice against Patent Medicines, but being induced to try Burdock Blood Bitters, for Biliousness that occasioned such violent headache and distress as to often disable him from work. The medicine gave him relief, and he now speaks of it in the most favorable terms.

Health is Wealth.

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