Some Things a Manufacturer Should Know About Coal.

ADDRESS BY E. G. BAILEY BEFORE THE NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.

dent upon the combustion of coal for the load. The amount and nature of ash in reeper tion of their mill. The man who is gard to the formation of clinker often need to be considered. responsible for the continuous and economic The liability of spontaneous tharacter and quality that his plant will not than the other. the rippled for lack of steam. (c) What coal The following table shows the analysis is the most economical for him to burn and results of evaporative tests of some of the

When plants are at any great distance from mill. the mines it becomes necessary to store a considerable quantity of coal. This involves additional expense, due to the extra handling, value of storage space, and loss of coal both nechanically and chemically. The loss due to exidation or weathering of coal not only reduces the calorific value of the coal but as the temperature of the pile rise, the oxidation becomes more rapid until the ignition temperature is reached and much additional labor and expense are necessary to prevent the burning of the coal and often the destruction of other property.

It seems that the rate of circulation of air through a coal pile has more to do with this question than any other condition outside of the character of the coal. The heating is mostly very irregular throughout a pile, as there are usually spots where the temperature is much higher than in the surrounding space

Many plants are so limited in boiler capacity, have such poor draft, or some kind of grate or stoker, that it is possible for their beiler room force to keep steam with only ideal state of affairs, it is a condition that exists in a large percentage of the power plants in this country and unless a man nows what coal will develop the required teller horse power in his plant he may have of difference in the rate of combustion of matter, coking properties, amount and nature depends this characteristic in various coals It is not always the better or higher priced

that may be developed from it is the measure that are greater with a poorer coal. of its value to you. There is no by-product that may be utilized except that in some cases addition d'expense Two coals at the same proc and containing the same number of heat units may not be equally desirable

overation of the plant should know: (a) of one coal more than another may make it Where he can always get coal when he needs advisable to pay several cents per ton more it. (b) Where he can get coal of such for one coal containing no more heat units

(d) How to convert a large percentage of the better coals, together with their price f.o.b Leat energy of the coal into useful work. cars at the plant of an inland New England that he was receiving an inferior quality of

The majority of manufacturers are depen-i more applicable in a plant with fluctuating D, but a certain characteristic appears in this coal that makes it different from any of the others. It is "crop" or "red" coal, coming from a part of the seam near the outcrop, and has become saturated with the surface water that has been percolating through it for hundreds of years. The moisture is much higher than in any of the other coals and it contains a still larger percentage of combined water that is not driven off by the more drying of the coal. If a man were depending upon the ash determination alone he would never detect coal; in comparison with coal A he would be

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A	1, 25	17.94	73.15	7.66	2.07	14,354	9.93	\$4.60	\$4.60	\$4.60
в	1.43	17.59	71.58	9.40	1.09	14,032	9.73	4.55	4.65	4.64
C	1.17	30.51	61.01	7.31	0.99	14,251	9.79	4.65	4.69	4.71
D	1.36	16.42	71.35	10.87	1.77	13,811	9.60	4.58	4.70	4.74
\mathbf{E}	1.75	19.58	71.95	6.72	0.82	14,533	10.03	4.86	4.80	4.79
F	3.72	21.06	66.90	8.32	1,36	12,834	8.80	4.40	4.92	4.96
G	1.74	31.16	53.68	13.42	2.93	12,833	8.67	4.60	5.14	5.27

In this case it appears that neither the paying 20 cents per ton less for the coal, yet he best nor the lowest priced coal would be the cheapest to buy.

order of cost for equal amounts of heat per year on a 50,000 ton contract. generated and equal evaporation, but in selecting a coal for any particular plant it might respondingly low in B.t.u., so that it would be policy to select a coal that would cost a be a very expensive fuel to burn at the price little more money in order to obtain some quoted, and in comparison with the other particular advantage that a certain coal coal, you would not consider it. Yet there might have over another. Comparing coals are thousands of tons of it being burned and certain kinds of coal. While this is not an Λ and B, coal A appears to be better in every the manufacturer seems to be willing to pay way except that it contains about one per cent. more sulphur than does B. For steam such conditions, for a cheaper coal might give expense of seven cents per ton as compared what he is getting, and prove to the coal com market, but the risk of experimenting has ton, and that would scarcely pay for the ad- contract. what two great for the management to con- ditional cost of handling ashes, the possibility In addition to knowing what is the most shr stepping out of the well beaten path, of not being able to carry the load without economical coal to buy, the manufacturer In buying steam coal the amount of heat the use of more boilers, and other expenses must know how to convert a large percentage

cheaper on an evaporation basis

Coals F and G are both much inferior is impossible to generate into available form The to the others and their purchase would not be all of the heat energy of the coal Some coal difference on volatile matter might cause the considered when any of the other coals were and carbon are lost with the ashes, while sortheorem more satisfactory under certain available at the given prices. Judging from combustible gases and carbon in the form of such the son and sulphur alone, it would seem smoke usually escape unburned to a greater Exter volatile coal would probably be that coal F would be better than either B or or less extent. The loss due to incomplete

would have to burn so much more of it to develop the same horse power that he would In this table the coals are arranged in actually be losing 32 cents per ton, or \$16,000

> Coal G is high in ash and sulphur and corthe price.

After the most economical coal has been purposes the sulphur is of little importance selected, it remains for the manufacturer to below two per cent. at least, so that coal A see that such coal is delivered. Throughout would probably be selected on account of its the year the coal company may send coal of the costly experience of shutting down being five cents per ton cheaper on a heat different quality from other mines, or the spart or all of his mill. There is a great deal unit basis, and there would also be less ash quality of the coal from the same mine may to handle. In case a plant had limited raft change, due to impurities encountered in the different coals. The percentage of volatile and boiler capacity a coal like C might be seam or lack of preparation at the mine. The selected in preference to B or even A, with a coal operator may know of the change in I ash are the principal factors upon which difference of nine cents per ton in favor of quality, as many of them follow up their coal A Should the prevention of smoke be product by chemical analysis and inspection an item of considerable importance coal D much more closely than does the purchaser, unds that give the best satisfaction under would probably be purchased at an additional but it is the manufacturer's place to know men satisfactory results than are being with coal C Of the two coals D and E pany that the coal has changed and that he is obtained with the highest priced coal on the there is a difference of only four cents per not receiving the coal he is entitled to by the

of the heat energy of the coal into useful work. While coal E is the best all round coal, it The efficiency of a boiler plant depends priwould not pay to purchase it when coal Λ marily upon the completeness of combustion the sale of ashes might be considered in this could be obtained for 20 cents per ton cheaper; of the fuel and completeness of absorption of outsection but their removal is generally an on a heat unit basis, and 19 cents per ton the generated heat by the water or steam in the economizer, boilce or superheater. It

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