

COAL CLEANING AND BENEFICIATION.

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It is now recognised that at least a large majority of the coals of India are difficult to clean by any known wet or dry process. This is due to the very fine state of division of much of the mineral matter and to its very intimate association with the coal substance.

One might well enquire the reason for this unfortunate characteristic of most Indian coals as compared with many coals in Europe and America.

The writer suggests that it is due to the fact that the coal seams of India—at least the Gondwana seams—are of drift formation in contrast to an *in situ* origin. There is definite geological evidence in favour of the formation of the Gondwana seams from vegetable debris that has been carried down by rivers into low-lying tracts presenting conditions suitable for its accumulation. During the course of transit, finely divided mineral matter would undoubtedly become associated with the organic debris and would also tend to impregnate the latter when it held partially decomposed into a soft gelatinous mass. As a result, this mineral matter would become intimately associated with the coal substance.

But, in pronouncing judgment on the possibility of cleaning the coals of India, one must remember that washability is a relative factor and the limiting economic conditions of one country or even of one particular area may be quite different from those of another.

Thus, although it will probably be economically impossible to clean Indian coal so as to yield a product containing less than 12 per cent of ash, it does appear likely that the washing of inferior grades—particularly the Barakar seams of coking property—from an ash percentage of 20 to 25 down to some 12 to 15. This possibility has recently been referred to by Mr. A. Farquhar in his Presidential Address to the Mining, Geological and Metallurgical Institute of India. Fine grinding, prior to washing, will doubtless be necessary and this will obviously enhance the cost appreciably.

On account of the intimate nature of the ash, an appreciable proportion of coal substance will doubtless remain along with the 'refuse' (the 'sinks') and the amounts of 'refuse' will no doubt be relatively large. Much of it will contain a percentage of ash as low as some 25 to 35 per cent. In view of the fact that pulverised coal containing up to 40 per cent ash can now-a-days be burnt successfully in furnaces fitted with suitable burners, it may well be possible to utilise much of the pulverised 'sinks' for steam-raising. Obviously, it would not pay to transport this high-ash fuel to any great distance but, in conjunction with any large industrial schemes in the coalfields, such as

the electric generating plants suggested in this Symposium, the use of this cheap fuel might deserve consideration.

As mentioned previously in my note on the 'storage of coal', in any large enterprise involving pulverisation, the question of spontaneous combustion will have to be considered, though the liability to spontaneous ignition will no doubt be much less in the case of the high-ash products than with the relatively low ash coal.

The subject is one on which considerable research is necessary both in the laboratory and on a larger scale; the possibilities of success are, I consider, not unpromising.