

THE PALAEOBOTANICAL CORRELATION OF COAL SEAMS IN INDIA.

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There is one aspect of 'Coal in India' which I feel has not received due attention in our country and in which considerable progress has been made in recent years in America, England, Belgium, Holland, France, Germany and Russia. I mean the correlation of coal seams with the help of the plant remains, particularly the spores, contained in the coal itself.

The Polished Section method.—I know of only two publications bearing directly upon the subject and these are a brief paper by Dr. A. K. Banerji who investigated in the laboratory of Professor Gothan at Berlin some polished sections of samples of Indian coals (Banerji, A. K., *Microscopic Study of some Indian Coals. Rec. Geol. Surv. Ind.*, LXVI, pp. 333-347, 1932-1933), and a brief note by Mr. J. Lomax published in a paper by G. S. Caldwell (*Trans. Inst. Min. Met.*, LXXIV, 1927). This method deserves much further development and no doubt has great possibilities. But while polished sections frequently reveal characteristic types of plant remains which can be used for correlation purposes the observations are necessarily limited to the plane of the section.

The Maceration method.—Much greater possibilities lie in the method by which known quantities of coal, taken from different seams or from exactly measured levels within each seam, can be subjected to maceration in bulk and their 'flora' analysed in detail both quantitatively and qualitatively. The variations in the flora from seam to seam or from level to level within a given seam will give the clue to correlations of seams between different coalfields as well as within a coalfield. Of course, the limitations of this method should also be admitted: the reliability of the results must depend upon the number and variety of samples investigated.

There is urgent need in India of a thorough study, on a large scale, of the spores and cuticles of Indian fossil plants, particularly of those from the Lower Gondwanas, which contain such a vast proportion of our most valuable coals. Once we possess a standardised knowledge of the spores and cuticles of known species of plants found in the associated shales, the correlation of these with spores and cuticles obtained by maceration from coal samples would be greatly facilitated with results that may be of far-reaching economic significance.

Luckily, this is a line of investigation that can be pursued by laboratory workers even far removed from the coal areas, provided they are assured of a supply of authentic samples from known localities and horizons.

The Geological Survey Department and the coal concerns would do well to provide the relatively small funds necessary for such research before advising or undertaking the expense of large operations that might prove fruitless in the end. Incidentally this kind of work provides excellent ground where palaeobotanists working at Universities in India can co-operate with the mining concerns and with the Geological Survey.