PALAEOTOPOGRAPHY OF THE KOTHAGUDEM COALFIELD

Kothagudem Coalfield is the most important coal producing centre in the Godavari Valley basin in Andhra Pradesh. Though a number of seams have been recognised in the Barakars, only the King and Bottom seams are found to be workable. These two seams were studied in 5, 6 and 10 inclines situated in a roughly N—S direction.

The King seam is split into the top and bottom sections by a sandstone parting. The King seam increases in thickness from 2.1 mts. to 31.3 mts., the parting from 2 mts. to 30 mts. and the Bottom seam from 4 mts. to 12 mts. in N—S direction. But the thickness of the intervening strata decreases from 6 mts. to 2 mts. in that direction.

The cleats in the coal increase in intensity and magnitude towards south coinciding with the increase in the thickness of sediments and indicating increase in superincumbent pressure. Similar increase in the abundance of mineral matter is also observed. This suggests that the basin was becoming deeper towards south. Fox (1931) expressed the view that the drainage of the Godavari river during Gondwana times was northwards, while PASCOE (1959) believed that the drainage was in the same direction as it is to-day, that is towards south.

The evidence for the southward deepening of the basin is forthcoming also from the nature of distribution of pyritic sulphur and ash, with reference to palaeotopography. In palaeotopographic high in the north, the coal has low ash content in its vitrain bands and fairly high ash content in the durain bands. The sulphur % of durain is found to be generally higher than that of vitrain (Table-1).

Table1—Ash and Sulphur percentages of Vitrain and Durain from King seam

(average of 10 samples in each case)

Band	ASH			Sulphur
	5 incline	6 incline	10 incline	
Vitrain	2.3	2.7	4.8	0.15
Durain	13.0	12.9	8.5	0.20

The mineral matter is generally finely dispersed and intimately associated with different macerals. Pyrite is the most common mineral found as crystals and encrustations. It occurs in the form of strings of grains and also as clusters of grains.

The possible high percentage content of sulphur in the palaeotopographic depressions may be explained by the probable presence of ferric iron which is insoluble in alkaline solutions and transported into the peat swamp by currents which follow topographic lows. Such ferric iron might have been reduced to ferrous iron and migrated into adjacent reduced parts of the peat and combined with sulphide sulphur to form pyrite. Those parts of the coal seams which are located in the palaeotopographic depressions contain more detrital material possibly causing the formation of coals with higher ash content than the coals in the topographic high.

Thus the nature of coal seams, intervening strata and their thickness and the nature and

distribution of ash and sulphur support the view that the Gondwana basin in the area was gradually deepening towards south.

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