139. Outline of the Cambrian System in the Yangtze Basin III.

*The Cambrian Palaeogeography of the Yangtze Basin.**

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The salient facts so far known of the Cambrian system in the basin are summarized and the opinions of the previous workers criticized in the preceding two papers, with the result that a new correlation can be suggested in table 2. Further discussion is presented here on the basis of this correlation.

So far as I can gather from the reports concerned, the absence of oolitic limestone is one of the characteristics of the Cambrian formations in the Lower Yangtze region in marked contrast to the abundance of oolitic limestone in the Huangho basin. This may be, I presume, one of the reasons why the Hsuning directly underlying the Lower Ordovician formation have been brought down to the Sinian by Chinese geologists. In regard to this characteristic they agree with the Cambrian of not only South Chosen but also the Middle Yangtze and Yunnan-Tonkin Border where oolitic or pisolitic limestone is found only in a few horizons.

In the Lower Yangtze region the sandstones of the Sohsan facies rests on the basement complex of Fukien massive on its north side but in the Middle Yangtze Valley it lies on the Sinian disconformably. A formation of similar facies is known also in eastern Yunnan, but its base is unexposed. The basal sandstone bed exists in North Hupeh but is very thin. Namely the Luchiapo sandstone is only 10 m. thick. This thickness together with the occurrence of *Kootenia yui* and *Obolella* cfr. *wirralpensis* in it suggests that it is a transgressive deposit on the side of a low land. The Bunsanrian (?) sandstone subjacent to the Tsanlangpu is much thicker, more than 300 m. showing that sand was supplied probably from the west or northwest in large quantities. In the Lower Yangtze region the supply of terrigenous material is presumed to have been largest seeing that the Pihyuan sandstone attains 1200 m. in thickness. Such an immense thickness together with the intercalation of conglomerate beds in the Taoshuiwa shows that the mother land of the sediment was high and near. Limestone is absent in these sandstones and also rare in the Tsanglangpu formation in Yunnan, but the archaeocyathid limestone facies of Shihlungtuñ is extensive in the north in Kweichow, Hunan, Hupeh and Szechuan. In the Yangtze gorge the Mantoan series is no more than 200 m. in thickness and the Changhian and Chaumitian are each about 300 m. thick. The last two formations may become somewhat thicker or thinner in the Lower Yangtze Valley but the existing

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Palaeogeographical Map of China in the Cambrian Period.

I. Mongolia	IIIa. Heihoku Land
II. Hwangho Basin	IIIb. Keiki-Shantung Land
IIa. Taitzuho Basin	IV. Tsinling-Keijo Axis
IIb. Heinan Liaotung Basin	V. Yangtze Basin
IIc. Shankiangnan Basin	VI. Reinan-Fukien Land

Black: Cambro-Ordovician Chosen group.

Vertical lines: Archaeocyathid limestone Facies of Shihlungtung.

Horizontal lines: Black carbonaceous shale and limestone Facies of Machari.

Points: Basal Sandstone Facies of Sohsan.

knowledge is unfortunately insufficient to make an exact comparison. The true thicknesses of the Tsanglangpu and Changpoung series are also unknown, but because Deprat gave about 1000 m. for the former and 2000 m. for the latter, it may be admitted that these Cambrian formations, especially the Changpoung, are much thicker than the afore-mentioned. The limestone is undeveloped in the Tsanglangpu and a large amount of sandstone and greywacke is contained in the Changpoung series. These facts on their facies and thickness as a whole mean that the thick terrigenous sediment must have been supplied from the neighbouring lands.

Black carbonaceous shale and limestone facies of Machari are tracable from the middle zone of the Yokusen geosyncline in South Chosen through the Lower Yangtze to the western part of Hunan. The only fossil so far described from the formation of this facies is *Lopnorites* aff. *rectispicatus*. Remarkably enough, this trilobite is markedly different from all other Cambrian trilobites in the Yangtze basin which are closely allied to the said species of the Torsugtagh fauna in Tienshan and also to *Kogenium* in the Machari fauna of South Chosen, and the Torsugtagh is most closely allied to the early Olenidian and the latest Paradoxidian fauna, i.e. the fauna of the *Agnostus laevigatus* zone, is the next closest ally. The Machari facies is distributed along the middle of the eastern Yangtze basin inclusive of the Yokusen geosyncline. Floating algae are in my opinion the most probable source of the carbonaceous matter in the shale and limestone. *Lopnorites* as a stranger in the fauna can be nicely explained when the facies is assumed to indicate an off-shore deposit like in the Sargass sea of today.

Finally the Yangtze basin in the Cambrian period will be outlined. It was subtriangular, its northeastern extremity being occupied by the Yokusen geosyncline. The Reinan-Fukien (嶺南福建) land which was relatively high at least in the Mantoan period was located on the southeast side. From the Huangho basin it was probably separated by a chain of low islands along the elevating axis through the Tsinlingshan, Waiyangshan (秦嶺淮陽山) and the Keiki land. Trilobites can migrate from North to South or in the reverse direction through the straits. Little is known however, of the outline of the land i.e. Tibetia on the west side of the basin. However, there must have been at least a strait on the north and another on the south side of the western land. *Lopnorites* have migrated, through the northern one, sometime in the Kushan or Changshanian age. On the other hand *Redlichia* in Spiti and Iran, *Bailiella*, *Tonkinella* and several other Fouchoan trilobites in Kashmir and Spiti and *Chuangia* and other Chaumitian ones in Iran, record the fact that the southern strait was open at times. The black carbonaceous shale of the Machari facies is probably a sediment in the central part of the basin.