Communs geol. Surv. S.W. Africa/Namibia, **3**, (1987) 61-62

A TERRESTRIAL CONGLOMERATE OF CRETACEOUS AGE - A NEW RECORD FROM THE SKELETON COAST, NAMIB DESERT

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The post-Gondwana succession in the South West African/Namibian sector of the Namib Desert is poorly dated.

The earliest known onshore sediments are the marine Wanderfeld IV beds of Cenomanian (Upper Cretaceous) age near Bogenfels in the Southern Namib (Klinger, 1977; SACS, 1980; Dingle *et al.*, 1983, p. 226). This note documents a new find of a terrestrial conglomerate of Cretaceous age approximately 20 km north-east of Terrace Bay on the Skeleton Coast (Fig. 1). These deposits have considerable implications for an understanding of the break-up history of West Gond-

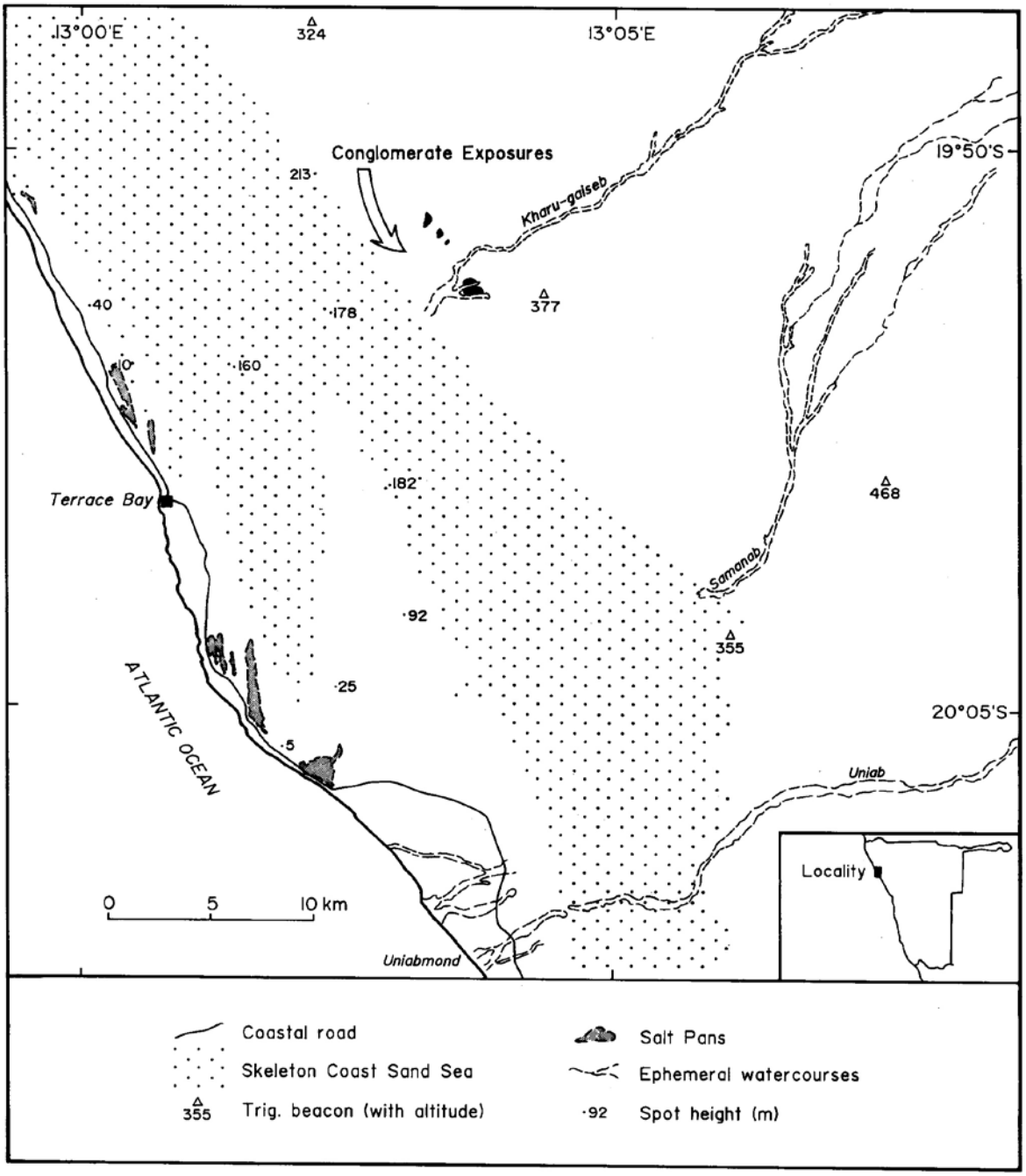

Fig. 1: Locality (arrowed) of Kharu-gaiseb conglomerate north-east of Terrace Bay, Skeleton Coast, northern Namib Desert.

wana. The conglomerate was first noted in November 1982 by JDW and subsequently visited by both authors in August 1985.

The conglomeratic deposits crop out in several small exposures situated to the south and the north of the Kharu-gaiseb River, a few kilometres upstream from its present endpoint against the dunes of the Skeleton Coast Sand Sea (Fig. 1). We therefore propose here the informal term, Kharu-gaiseb conglomerate, for these rudaceous deposits until a more thorough investigation has been undertaken. From our preliminary observations, the Kharu-gaiseb conglomerate is composed entirely of volcanic material derived from the Etendeka Formation, which has been dated at 114-136 million years, i.e., Lower Cretaceous (Siedner and Miller, 1968; SACS, 1980; Erlank *et al.*, 1984). The beds dip markedly in an east-north-east direction (Fig. 2), and the eastern limit of the exposure appears to be a fault. The lower and upper boundary could not be delimited during our reconnaissance visits. In the southern-most outcrop, the Kharu-gaiseb conglomerate is at least 500 m thick and displays no overall, upward-fining trend. However, the conglomerate contains upward- fining, boulder/cobble-based beds in which the fine fraction is also composed of volcanic material (Fig. 3). The constituent clasts are mainly subangular to angular. Significantly, sedimentary structures (notably, cross-stratification and crude imbrication of larger clasts) indicate that the conglomerate was derived from a source area situated to the west.

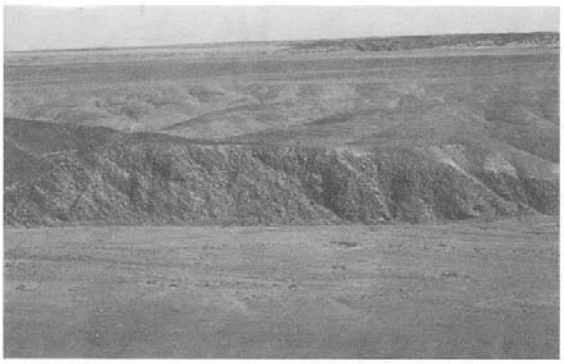

Fig. 2: View northwards of easterly-dipping, rudaceous Kharu-gaiseb beds exposed in the bank of a tributary wash south of the Kharu-gaiseb watercourse. Highest section exposed here is about 10 m.

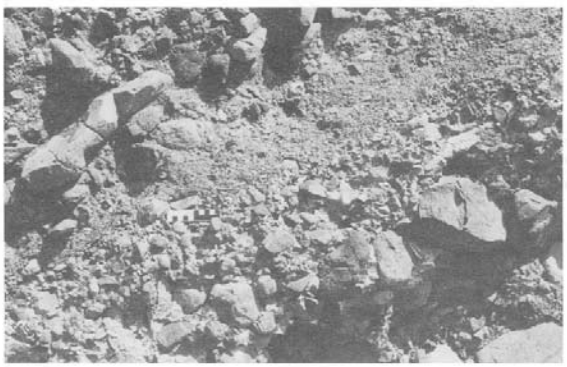

Fig. 3: An upward-fining bed in the Kharu-gaiseb conglomerate. Bar scale 10 cm long.

The abundance of boulders and cobbles, together with their poorly-rounded nature, strongly suggests that the Kharu-gaiseb beds were laid down in a proximal depositional environment with a source area to the west. The lack of an upward-fining trend in, and the substantial thickness of, the Kharu-gaiseb conglomerate implies that this proximality did not change in spite of the erosion which must have occurred. Thus the source area must have been a scarp that was not reduced significantly in height during the deposition of the Kharu-gaiseb sediments, implying, therefore, a growth fault of considerable magnitude.

It is tempting, then, to speculate that the rudaceous Kharu-gaiseb deposits were shed eastwards off a high-lying rift shoulder that developed after the extrusion of the Etendeka volcanics and was situated in the vicinity of the present coastline. This scarp (source) area then subsided following cooling of the upper mantle cushion as postulated by Martin (1975) in his model for the break-up of West Gondwana. Consequently, a westerly-directed drainage pattern, as exists today, was established to the new base level formed by the Atlantic Ocean.

We thank Dr R. Miller, Director of the Geological Survey of SWA/Namibia, for permission to investigate these exposures and the CSIR (CSP section) for supporting JDW during his 1979-1982 Kuiseb project.

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