

François and Paul Ellenberger. - *On a new vertebrate footprint slab, discovered in Basutoland (southern Africa).*

In previous notes, we have signaled the discovery of vertebrate footprints in the diverse sedimentary stages of the Stormberg series (roughly Upper Triassic-Rhaetian) from Basutoland. The most interesting are those of the basal Molteno stage; this is because, in particular, of the fine Seobeng slab (near Lérivé - P.E.M.S.), discovered in 1955 by one of us [P. Ell.]. This slab shows three main types of prints: *a*) tracks of bipedal dinosaurs of moderate size; *b*) a very good track made by a large, unknown quadrupedal, pentadactyl, and apparently unguligrade animal; *c*) the tracks of another quadruped vaguely similar in general to *Cheirotherium*, but on larger, more gathered feet, with five digits nearly merged into a single subcircular footprint.

The track-maker (*b*) above could be an giant unknown theromorph with a heavy stride, according to Mr. A. W. Crompton (oral communication 1960), as seen for example in *Kannemeyeria*. The animal (*c*) is unknown. The great rarity of fossil bony material in the Molteno stage (except at its extreme top) gives more interest to these tracks.

The Maphetsung slab. - Now, the present note signals the discovery of a new footprint slab, from Maphetsung, in the south of Basutoland. The tracks there are less distinctly imprinted than at Seobeng, but are more numerous and distributed on a much larger surface. It is here a little higher in the Stormberg series, in the inferior part of the Red Beds stage.

The footprints are preserved in a depression on the upper surface of a wide bed of soft, feldspathic sandstone stretching to 4 or 5 m, in a crisscrossed stratification, forming a small commanding plateau south of the indigenous village of Maphutseng P.E.M.S. They had been seen by one of us (P. Ell.) in 1955, but half-eroded or hidden, all along the edge of a sandstone table, 90 m in length from N to S. In the setting of the 1959 C.N.R.S. mission to southern Africa, we were able to locally expose the footprint slab from the sandstone bed that masked it, this notably on a rectangular surface 14 m by 5 m represented here in figure 1.

The subhorizontal sandstone bed with footprints is dominated by a talus formed, on its summit, by about ten meters of red sandy clay, to sandstone beds, which provided us, in two places a little farther southeast, with the long bones of saurischians of moderate size (bipedal prosauropods of a type analogous to *Gryponyx*). Lower, the red colors disappear abruptly; the gray-green to olive of sandy-sandstone clays to wide beds of sandstone there are characteristic of the Molteno stage. This is precisely beneath the footprint slab, towards the west, about 20 m in cross-beds lower than it, that contains a bone-bearing lens

with large bones of quadrupedal prosauropods (similar to *Melanorosaurus* or *Euskelosaurus*) that we discovered and excavated in 1955-1956 with A. W. Crompton, then in 1959 with L. Ginsburg and H  l  ne Ellenberger.

DESCRIPTION OF TRACKS. - 1. The most numerous tracks are those of small bipedal saurischians (fig. 1, D, E, F; fig. 2, K). Average length of footprints: 20 to 25 cm; none from 0.65 m to 1.50 m. Median digit very far forward of the other two and a little turned towards the interior; neither pollex or talon is visible. Claws occasionally well-marked. These tracks, of a type seen in the pseudo-genera *Eubrontes* and *Grallator* of the Triassic of Connecticut, are very similar in close details to other bipedal saurischian footprints from Basutoland, in the Molteno beds as from the Cave Sandstone.

2. The other tracks are those of a heavy quadrupedal animal similar to those from Seobeng (animal *c*, above) but larger. The principal characters are as follows: functionally quadrupedal; footprints of the hands indistinct, slightly in front of those of the feet, smaller than these and less deeply marked, feet with a wide flat sole as in "elephant feet", four short and rounded digits hardly distinct, to the front, with occasional clear claw-marks, only of the internal digit; average apparent length of the foot: 0.50 m; of a double step: 2.30 m; remarkably straight stride (footprints of the right and left limbs nearly aligned). The track-maker remains completely problematic; this is not altogether true because, according to A. W. Crompton (oral comm.), he is excavating a heavy prosauropod nearby (fig. 1A and B, fig 2I).

3. The mysterious pentadactyl, unguigrade "giant theromorph" from Seobeng (above, *b*) found here (fig. 1, C), and then truly not only from Molteno, but also from the lower Red Beds epoch. The tracks are less complete than at Seobeng; the footprints are in general only visible from one of the trackways, without doubt the trackway before, heavier, according to A. W. Crompton, than the trackway behind. The double step is on the order of 1.20 m, the * of 0.50 m, with traces of blunter external digits.

4. One observes a number of small tridactyl tracks from a bipedal animal, slender, relatively heavy in its dimensions. The length of the footprints varies from 5 to 8 cm, that of the step would be on the order of 0.20 to 0.25 m or more. Such footprints exist in other beds (Molteno and Red Beds) from Basutoland. They are similar to the pseudo-genus *Anomoepus* of Connecticut that, according to Lull, corresponds to the tracks of primitive ornithopod feet (fig. 1H).

5. We signal finally for work on isolated small, compact, tetradactyl track such as J (fig. 2) and G (fig. 1), a little similar to *Comptichnus* from Connecticut.

CONCLUSION. - This new slab shows that the association of bipedal dinosaurs and two large types of unknown quadrupeds, revealed by the Seobeng slab, is without doubt neither by chance nor ephemeral; it persists from the Molteno to the Red Beds. Now the bones recovered this far from Basutoland in the same beds correspond poorly enough to these prints: they are above all the bones of bipedal or quadrupedal

prosauropods, and more rarely the remains of skulls or mandibles of large cynodonts and also labyrinthodont amphibians (unpublished mandible under study).

The neighboring districts in the Union of South Africa complete a little this list, notably for the rare pseudosuchians (*Erythrochamps*, *Sphenosuchus*). Ornithopods are unknown except from an incomplete mandible (*Geranosaurus*) that comes from a higher bed. Thus once more, the faunal spectrum recorded by the tracks of steps shows us how our collections of bone elements are still insufficient and far from including all contemporaneous vertebrate fossils.