

Candidate Mr. H. Grabbe reports on new discoveries of dinosaur tracks in Wealden sandstones of Bückeberg.*

In his excellent work on the Wealden of the Hannover region, Official Mr. Struckmann in Hannover describes the discovery of very interesting tracks in a Hastings sandstone quarry near Bad Rehburg. He connects it with Beckles's earlier discoveries of three-toed tracks in 1851 and 1852 in Wealden sandstones at Hastings. Beckles assigned these to a giant bird, or at least a giant bird-like creature, and described them under the name *Ornithoidichnites*. He was especially good to follow these tracks widely on the slightly inclined layers of Hastings sandstone at Hastings, drained at low tide, and came to the conclusion that they were left behind by animals progressing along on their hind legs.

The present Rehburger tracks match with the English in size, shape, and step. They were discovered 2 years ago in a quarry of the Rehburger Berg, and found in the lowest layers of the steeply dipping Wealden sandstone. The slabs are now in the museum at Hannover, the palaeontological collection of the University of Göttingen, and Bückeberg. Now no more are to be expected from there for a long time. On the other hand I have found recently these tracks in Wealden sandstones of Bückeberg. They come partly from the numerous quarries at the foot of the Bückeberg that lie on a path extending from the village of Wendthagen until past the Obernkirchen saddle, but partly also from the large quarries on the crest of this beautiful mountain range. The tracks I discovered seem to derive from at least 3 different animals, and I distinguish them as follows:

1. Tracks with big blunt, outstretched, leaf-shaped toes from Rehburg depicted in Struckmann's works. I give the proportions of two tracks located on a stone slab, the same size and therefore probably forming a step:

outermost length 41 cm;

width between the tips of two outer toes 42.4 cm;

length of the inner toe 37 cm;

length of the outer toe 31.2 cm;

the widths of the toes are:

the outer 11.6 cm;

the middle 11.6 cm;

the interior 12.7 cm;

the step is 87.3 cm.

*Original citation: Grabbe, H. 1881. Neue Funde von Saurier-Fährten im Wealdensandsteine des Bückeberges. *Verhandlungen des Naturhistorischen Vereines der Preussischen Rheinlande und Westphalens, Vierte Folge* 38:161–164. Translated by Matthew Carrano, Smithsonian Institution, August 2015.

2. The second form is characterized by an extraordinarily prolonged, slender, straight middle toe. I give the proportions of a track from a quarry on the crest of the Schaumburg-Lippe area:

maximum length: 48.4 cm;

width between the tips of the two outer toes: 39.2 cm;

width of the middle toe: 8 cm.

3. The third form has a quite different habitus from the former two. It is characterized by a triangular toe whose base is very widened. The bases of the two outer toes are separated by a longitudinal groove, on the bottom of which runs an elevated longitudinal ridge; it is noteworthy that the middle toe is shorter than the two outer ones. I give below the proportions of this form as:

the length is 32.9 resp. 37.8 cm;

the width of the inner wider toe at the base is 16.6 cm, the outer ones diminish to 14 cm;

the greatest width of the groove between the two outer toes is 10 cm;

the length of the two equally long outer toes, measured from the pointed cut-off base, 16.4 cm.

The track comes from the Meiers' quarries at Nienstädt. Besides these and many others, I yet found a trail in the Bergamts quarry at Brandshof, where the imprint of a web spread between the toes can clearly be seen; the track is 48 cm long and also in relief, like all found so far found on the Bückeberg. *Struckmann* also depicted a trail from Rehburg with a web, but judging from the picture, my impression is considerably clearer.

Also, some twenty years ago, as head foreman Mr. *Heidtmeier* of Nienstädt imparted, after the Pleistocene and only about 1-meter-thick upper Wealden were removed from the slightly inclined layers of Hastings sandstone in the Dreiers' quarry at Wendthagen, impressions of increasingly ordered tracks were said to have been laid bare over a distance of about 100 meters, and described as extremely blunt, found sunken, and had the appearance as if they were left by two-legged animals.

The tracks found are already so numerous to suggest that if only the workers are alerted to this occurrence, especially in the quarries on the crest of the Bückeberg, they can still be found in large numbers.

It is important for transport that the thick slabs can be cut by the stone sawmill on the Bückeberg to a thickness of 5 cm.

Finally, a few words about the possible origin of these tracks!

As mentioned above, *Beckles* assumed they were made long ago by a giant bird, or at least a bird-like beast. More likely, however, is the now almost universally accepted view that they are attributable to large saurians, and indeed probably large dinosaurs, perhaps iguanodontids. Although no remains of these great terrestrial and herbivorous dinosaurs are as yet found in the German Wealden, their presence has become very likely to me by the discovery of large limb bones with an extensive medullary cavity.

The tracks could also partly originate from those saurians already found in the Wealden sandstones of the Bückeberg, *Macrorhynchus meyeri* Dunker and a still unpublished find from not long ago, clad with armor plates. The fact that the animals in question had apparently paced along on their hind legs can perhaps be explained that while walking, the footsteps of the rear feet approximately coincided with those of the front feet. The impressions of the back feet were of course always made last, and therefore provided for a series of such tracks as if they were left by a two-legged animals. This assumption seems likely to me also in that the edges of most tracks are doubled, and several were observed upon one other in Rehburg.

Altogether there seem to occur many more reptiles in the German Wealden, according to bone and tooth remains collected by my intermediaries in the Wealden shales on the Bückeberg, as well as according to a formal bonebed directly discovered by me in the Hauptstein coal seam, than the two hitherto known saurians described in the Dunker monograph by H. von Meyer, *Pholidosaurus schaumburgensis* and *Macrorhynchus meyeri*, and *Emys menkei*. So to me, for example, the presence of *Goniopholis crassidens* becomes probable by the discovery of a shield with a very long insertion spike.