

APPENDICES Appendix 1 Hrdlička's Transcription of Dubois' Report to the Royal Dublin Society, 1898.

By order of the Netherlands Indian Government I conducted in Java, from 1890 to 1895, explorations for a fossil vertebrate fauna, of which already some remains had been discovered, many year ago, by Junghuhn and others, and later extensively described by Prof. K. Martin, of Leiden. I found a very large quantity of remains of mammals and reptiles, for the most part derived from extinct species, which show, as might be expected, an unmistakable relation to the later Tertiary and Pleistocene faunae of India.

The chief localities of these finds are in the southern slope of a range of low hills, the Kendengs, which extends between the residences Kediri, Madiun, and Surakarta on one side, and Rembang and Samarang on the other, in a length of about 60 miles. The area in which these vertebrate remains are abundantly found, in many places, many have on an average a breadth of from one to three miles. They are contained in beds of cemented volcanic tuffs, consisting of clay, sand, lapilli stone, which especially, through the very general occurrence of the remains of freshwater animals, and of the fluvial structure which English geologists call current-bedding, or false bedding, prove to be of fluvial origin. The strata have undergone, in the whole area, considerable disturbances by folding, on account of which they have, from east to west, dips of 3° to 15° in a general southerly direction. The whole formation reaches a maximum thickness of more than 350 meters. The strata rest, unconformably, upon beds of marine marl, sand, and limestone, recently determined by Prof. K. Martin to be of Pliocene age. The fossil vertebrate fauna, which they contain, is everywhere in the Kendeng, and also in other places in Java, the same, and a homogeneous one. Its age can only be judged when the description of my collection, which I intend to give in the course of a few years, shall be published. But I have studied it already a little, and it can be said, in accordance with geological circumstances, and the relations which this fauna has with the Post-Tertiary and Pleistocene vertebrate fauna of India, that, most probably, it is young Pliocene; in no case, however, can it be younger than the oldest Pleistocene. For, whilst on the one hand the species surely belong almost exclusively to living genera – only the genus *Leptobos* and the sub-genera *Stegodon* and *Hexaprotodon* are extinct – and it must therefore be younger than the principal part of the Upper Miocene or Lower Pliocene Siwalik-fauna, including not a few extinct genera; on the other hand, the number of the extinct species seems to be in proportion somewhat greater than that of the Nabadá-fauna, which is put in the early Pleistocene. Further, the inclination which the strata show does not well agree with a Pleistocene age

From Trinil to Ngawi the steep banks of the Bengawan or Solo river, for an extent of 7½ miles, consist exclusively of the above-mentioned volcanic sands and lapilli, cemented into soft rocks, very much like the rocks which I saw in the Siwalik hills. The strata have in this area a general dip S. of about

60 5°, and are only concealed by a thin covering of vegetable soil. In these strata the Solo River has cut its channel 12 to 15 meters deep near Trinil.

North and west of Trinil the Pliocene marl and limestone appear under them. It was near Trinil, in the left bank of the river, at the foot of the Kendeng, that I came, in August, 1891, upon a place particularly rich in fossil bones, and found there, in that and the following year, among a great number of remains of other vertebrates, bones and teeth of a great man-like mammal, which I have named *Pithecanthropus erectus*, considering it as a link connecting together Apes and Man.

Among hundreds of other skeleton remains, in the lapilli bed on the left bank of the river, the third molar tooth was first found in September; then, the hole having been enlarged, the cranium a month later, at about 1 meter distant from the former, but in the very same level of that bed. The species of mammals, of which remains were found in the same bed, are, for the greater part at least, extinct ones, and almost certainly none of them are at present living in Java. Among these remains we find a great number of the above- mentioned small species of *Cervus*, which certainly is not extant in the Malayan isles. Also many bones of *Stegodon* were found. One or two *Bubalus* species seem to be identical with Siwalik species; a *Boselaphus* undoubtedly differs from the known species, living and fossil. Further on there were found the extinct genus *Leptobos*, the genera *Rhinoceros*, *Sus*, *Felis*, *Hyaena*, and others; a Garial and a Crocodile, differing little from the existing species in India, but which cannot be classed among them. Of the animals found in the same strata in other places, the most interesting species are a gigantic Pangolin (*Manis*), three times as large as the existing Javanese species, and a Hippopotamus belonging to an extinct Siwalik subgenus. Further a Tapir and an Elephas.

The work having been brought to an end that year on account of the setting in of the rainy season, it was taken up again at the beginning of the dry season in May, 1892. A new cutting was now made in the left rocky bank, which comprised the still unfinished part of the old excavation. Thereby bones were again found in great numbers, especially in the deeper beds; and among these, again in the same level of the lapilli bed, which had contained the skull-cap and the molar tooth, the left femur was found in August, at a distance of about 15 meters from the former; and at last, in October, a second molar, at a distance of 3 meters at the most from the place where the skull- cap was discovered, and in the direction of the place where the femur had been dug out. This tooth I did not describe, because I only found it later among a collection of teeth derived from the place stated above. (Dubois 1898)