

Chimpanzee, *Pithecia hirsuta*, and the *Hapale penicillata* both are present, but they are coalesced so as to form a single muscular mass. In the Lemur the two muscles are largely developed, and although they lie side by side are yet easily separated from each other.

The foregoing facts have an important bearing upon the development of these muscles in the human foot. Dr. Ruge¹ has conclusively proved that the transversalis pedis or adductor transversus at an early stage in the development of the human embryo lies in apposition to the adductor obliquus, and that its transverse position in the foot of the adult is due to its travelling forwards towards the heads of the metatarsal bones. The occasional absence of the adductor transversus in Man, together with the fact that, in the young subject, it is always better marked than in the adult (Ruge) would seem to indicate that this muscle is undergoing regressive changes (probably from the confinement of the foot in a boot, and the consequent limitation of the range of movement of the hallux) and that in the course of time it will disappear altogether, or only appear occasionally as an interesting abnormality.

A study of the other members of the plantar layer in the Quadrumana yields results of an equally interesting nature. As a general rule all three (viz., the adductor indicis, adductor annularis, and adductor minimi digiti) are present, so that the plantar group of muscles is represented by its typical number of elements. These are inserted so as to draw the digits towards a line drawn through the medius. The following abstract from Bischoff's memoir upon the *Hylobates leuciscus* will show the arrangement of the adductors:—

<i>Cynocephalus maimon.</i>	} Plantar layer consists of	} 1. Adductor hallucis (the two heads of which may be separated or united).
<i>Macacus cynomolgus.</i>		
<i>Cercopithecus sabaeus.</i>		
<i>Pithecia hirsuta.</i>		
<i>Ateles.</i>		

To this list we may add the *Cebus apella* (Ruge) and the Lemur,² in both of which the same factors of this group of muscles are found.

<i>Hapale penicillata.</i>	} Plantar layer consists of	} 1. Adductor hallucis (the two heads united).	
			2. Adductor indicis.
			3. Adductor minimi digiti.

¹ Processes in the Development of the Muscles of the Human Foot, Morphologisches Jahrbuch, 1878, p. 132.

² Murie and Mivart in their memoir upon the Lemuroidea figure and describe only two adductors (in addition to the adductor hallucis), one "going to the peroneal side of the flexor of the index" and the other "going to the tibial side of the fifth digit." In the specimen I dissected there was also an adductor annularis, but it was feebly developed and partially fused with the subjacent muscles. The deep division of the external plantar nerve passed under it, and on detaching the other two adductors from their origin and throwing them forward it also was raised. Its feeble development may be due to abduction taking place, with reference to the annularis. Ruge, on the other hand, in his article upon the deep muscles of the sole of the foot (p. 649), says:—"In the Lemurs, in *Loris gracilis*, I could find contrahentes for all and even the third toe. The first contrahens (abductor hallucis) consists of two quite distinct heads."