undulating districts, rather than the precipitous heights to which goats are partial. It may be added that the long tails of most tame breeds are, like wool, in all probability the results of domestication.

The Pamir plateau, on the confines of Turkestan, at an eleva- tion of 16,000 ft. above the sea-level, is the home of the magnificent *Ovis poli,* named after the celebrated Venetian traveller Marco Polo, who met with it in the 13th century. It is remarkable for the great size of the horns of the old rams and the wide open sweep of their curve, so that the points stand boldly out on each side, far away from the animal’s head, instead of curh\*ng round nearly in the same plane, as in most of the allied species. A variety inhabiting the Thian Shian is known as *O. poli carelini.* An even larger animal is the argah, *O*. *ammon,* typically from the Altai, but represented by one race in Ladak and Tibet *(O. ammon hodgsoni),* and by a second in Mongolia. Although its horns are less extended laterally than those of *O*. *poli,* they are grander and more massive. In their short summer coats the old rams of both species are nearly white. *Ovis sairensis* from the Sair mountains and *O. littledalei* from Kulja are allied species. In the Stanovoi mountains and neighbouring districts of E. Siberia and in Kamchatka occur two sheep which have been respectively named *O*. *borealis* and *O. nivicola.* They are, how- ever, so closely allied to the so-called bighorn sheep of N. America,

that they can scarcely be regarded as more than local races of *O. canadensis*, or *O. cervina,* as some naturalists prefer to call the species. These bighorns are characterized by the absence of face-glands, and the comparatively smooth front surface of the horns of the old rams, which are thus very unlike the strongly wrinkled horns of the argali group. The typical bighorn is the khaki-coloured and white-rumped Rocky Mountain animal; but on the Stickin river there is a nearly black race, with the usual white areas (*O*. *canadensis stonei),* while this is replaced in Alaska by the nearly pure white *O. c. dalli;* the grey sheep of the Yukon (*O*. *c. fannini)* being perhaps not a distinct form. Retum- ing to Asia, we find in Ladak, Astor, Afghanistan and the Punjab ranges, a sheep whose local races are variously known as urin, urial and shapo, and whose technical name is *O. vignei.* It is a smaller animal than the members of the argali group, and approximates to the Armenian and the Sardinian wild sheep or mouflon *(Ovis orientalis* and *O*. *musimon)* (see Mouflon). We have in Tibet the bharal or blue sheep, *Ovis (Pseudois) bharal,* and in N. Africa the udad or aoudad, *O. (Ammotragus) lerνia,* both of which have no face-gIands·'·and in this and their smooth horns approximate to goats (see Bharal and Aoudad).

The sheep was domesticated in Asia and Europe before the dawn of history, though unknown in this state in the New World until after the Spanish conquest. It has now been introduced by

man into almost all parts of the world where agricultural operations are carried on, but flourishes especially in the temperate regions of both hemispheres. Whether this well-known and useful animal is derived from any one of the existing wild species, or from the crossing of several, or from some now extinct species, are matters of conjecture. The variations of external characters seen in the different breeds are very great. They are chiefly manifested in the form and number of the horns, which may be increased from the normal two to four or even eight, or may be altogether absent in the female alone or in both sexes; in the shape and length of the ears, which often hang pendent by the side of the head; in the peculiar elevation or arching of the nasal bones in some eastern races; in the length of the tail, and the development of great masses of fat at each side of its root or in the tail itself; and in the colour and quality of the fleece.

On the W. coast of Africa two distinct breeds of hairy sheep are indigenous, the one characterized by its large size, long limbs and smooth coat, and the other by its inferior stature, lower build and heavily maned neck and throat. Both breeds, which have short tails and small horns (present only in the rams), were regarded by the German naturalist Fitzinger as specifically distinct from the domesticated *Ovis aries* of Europe; and for the first type he proposed the name *O. longipes* and for the second *O. jubata.* Although such distinctions may be doubtful (the two African breeds are almost certainly descended from one ancestral form), the retention of such names may be convenient as a provisional measure.

The long-legged hairy sheep, which stands a good deal taller than a Southdown, ranges, with a certain amount of local varia- tion, from Lower Guinea to the Cape. In addition to its long limbs, it is characterized by its Roman nose, large (but not droop- ing) ears, and the presence of a dewlap on the throat and chest. The ewes are hornless, but in Africa the rams have very short, thick and somewhat goatlike horns. On the other hand, in the W. Indian breed, which has probably been introduced from Africa, both sexes arc devoid of horns. The colour is variable. In the majority of cases it appears to be pied, showing large blotches of black or brown on a white ground; the head being generally white with large black patches on the sides, most of the neck and the fore-part of the body black, and the hind-quarters white with large coloured blotches. On the other hand, these sheep may be uniformly yellowish white, reddish brown, greyish brown or even black. The uniformly reddish or chestnut-brown specimens approach most nearly to the wild mouflon or urial in colour, but the chestnut extends over the whole of the under- parts and flanks; domestication having probably led to the elimination of the white belly and dark flank band, which are doubtless protective characters. The feeble development of the horns is probably also a feature due to domestication.

In Angola occurs a breed of this sheep which has probably been crossed with the fat-tailed Malagasy breed; while in Guinea there is a breed with lappets, or wattles, on the throat, which is probably the result of a cross with the lop-eared sheep of the same district. The Guinea lop-eared breed, it may be mentioned, is believed to inherit its drooping ears and throat wattles from an infusion of the blood of the Roman-nosed hornless Theban goat (see Goat). Hairy long-legged sheep are also met with in Persia, but are not pure-bred, being apparently the result of a cross between the long-legged Guinea breed and the fat-tailed Persian sheep.

The maned hairy sheep *(Ovis fubata),* which appears to be confined to the W. coast of Africa, takes its name from a mane of longish hair on the throat and neck; the hair on the body being also longer than in the ordinary long-legged sheep. This breed is frequently black or brown and white; but in a small sub-breed from the Cameroons the general colour is chestnut or foxy red, with the face, ears, buttocks, lower surface of tail and under-parts black. The most remarkable thing about this Cameroon sheep is, however, its extremely diminutive size, a full-grown ram standing only 19 in. at the withers.

In point of size this pigmy Cameroon breed comes very close to an exceedingly small sheep of which the limb-bones have been