

tic convention, the location of rock images and a number of other circumstances.

The rock carvings of the 3rd—1st millennia B. C. indicate that both the second period of rise in hunting and the high standard of animal husbandry were possible only due to a high level of farming-surplus grain to supply winter feed for the animals. But animal husbandry developed even more rapidly than farming and the consistently growing flocks of animals were likely to be in need of summer and winter fodder.

As archaeological data point out, it was in this period that the use of winter pastures

was initiated, the practice sustaining itself in the following thousands of years in the plain of Moughan-Gharabagh, the middle course of the river Araxes, the farming oasis of Van, etc. This explains the occurrence of groups of images in at least two of those areas. Following the herds our ancestors acquired new pasturelands which at the same time held good for farming. This rise in economy may explain the migrations en masse, in the 3rd millennium B. C., of the Armenian Highland tribes to Asia Minor and the Near East which had been several centuries before occupied by local people with their own particular cultures.

CHAPTER FOUR

ROCK CARVING AS A RELIABLE SOURCE IN PALEOBIOLOGY

Rock-carvings can be used as rich sources of paleobiological information provided one is certain of their reliability. Actually, in attempts to reproduce the animal as precisely as possible, at the same time preserving the generally stylized lines, the pre-historic artist often achieved such perfection that enabled him not only to convey the external features of the animal but also, to some degree, its frightened alertness, quiet state, characteristic movements and other details. These factors make it possible to discern not only the bird and animal as such, but also to distinguish their species (swan, goose, crane, goat, bull, deer, elk, etc.).

Listed in Table IX are all the species of animals encountered with their bone remnants along the shore of Lake Sevan and the cultural layers of neighbouring neolithic-Bronze Age settlements.

Dominant among rock-carved animals was the bezoar goat, widespread in the high Alpine zones of pre-historic Armenia. It was also adapted to the lower Alpine lands. By the horns one can distinguish the old and young males and females and their young and observe the peculiar features of their life and environment. The he-goats are often pictured alone or stooped in the moment of struggle, while the she-goats appear only in compositions accompanied

by their male counterparts and their kids. The scenes where man handles the animals by "peaceful" means driving them to the hollows and the dens are very expressive. Armenia offered favourable conditions for early goat and sheep domestication and improvement through crossbreeding with wild stock. All of this information available from rock carvings, the vast amounts of well preserved goat remnants collected around the Lake Sevan basin and the bone remains of other archaeological monuments, make it possible to recognize the ancient area of distribution of bezoar goats. In the past they had roamed all the mountainous regions of Transcaucasia and spread throughout the Caucasus. This was followed by a reduction of the confines of their locus. The last bezoar goat was shot in the Gegham mountains in 1947.

High in artistic quality (if not in number) among all the images in the Gegham mountain range are the multiform carvings of deer, which impress with their realistic form. Interestingly, in series of compositions the deer are pictured grazing, in peaceful surroundings in the company of men. They testify to deer-breeding in the remote past. The deer are likely to belong to the synanthropic species. To this testify the bone remnants of deer re-

covered in ancient settlements and in the littoral layers of the Sevan basin. They inhabited, until recently, the blotypes of forests in Northern Armenia, presently they are altogether extinct. In line with the development of stockfarming and hunting three types of dogs stand out in the pictures—the wolfhound, the husky and the greyhound. The bone remains of the mentioned dogs are represented in the lenses and the necropolises of the Sevan basin (Table X).

The rock carvings make also a prominent display of Armenian wild sheep, domesticated and wild types, albeit few in number (Mufflons) (Table X). The latter are shapely, thin bodied and strong, while the former are more stout and fleshy. In the past they lived in the lower parts of the Ghegham and Pambak mountain ranges. Rarely, they are encountered in the higher zones, too. The work analyses in the same manner the species of wild bulls—two species of aurochs and domestic oxen (Table X). Their exact counterparts are indicated in littoral layers, in the remains of ancient settlements and necropolises, their locus is established, and the thesis of the autochthonous origin of domestic cattle is advanced.

Along with Northern India, the Armenian Highland was one of the centres of animal domestication.

The study of rock carvings has brought to light another member of the extinct Pleistocene fauna—the elk (Table X). The fact of its existence in Armenia remained in the dark until recently. Subsequently, the recovery of bones in the Paleolithic cave of Yerevan and Noyemberian made it possible to mark its area of distribution. In the same way the existence of the wild camel—the dromedary, has been determined (Table X).

Observations are made also on figures of cats—leopards, lions and heparids; their bone remnants are examined, areas of distribution

are established, noted is the correspondence between the characteristic formal aspects and the actual nature, habits and peculiarities of the species. Detailed examinations are made on the recurrent figures of heparids, that were known as swift runners and "bold hunters" of horned goats, young hoofed animals, rabbits, or big fowl. They were easily domesticated by man and were used like dogs as skillful aids to hunters. This practice survived until the late Middle Ages.

Interesting data is derived also from the study of bird figures (Table X). Most of them are conspicuous for their delicate appearance and high artistic execution, proportions, postures and the genuine reproduction of their features. This circumstance allows us to discriminate the various species of birds—cormorant, goose, duck, bustard, pelican and crane. Only one picture of noddy is available in the Ghegham mountain range (Table X, Figs. 14-20). It was of rare occurrence in the past and is no more available at present. It hibernated in the Ararat valley and its bone remnants were recovered in the excavation of the Urartean city of Argistihinili. Those birds were not only of economic importance. They are encountered in ritual scenes, legends, myths and epos as satellites of luminaries, as bearers of good tidings.

The figures of animals discovered in rock carvings, their bones in natural deposits and cultural layers allow to establish the Paleoclimatic conditions. The occurrence of animals adapted to dry weather (bezoar goat, slim-legged deer, hepard) makes it possible to adjust the extent of the arid landscape, whereas the occurrence of deer, chamois, wild boar, aurochs, etc. suggest more humid blotypes. These types of climatic conditions, no doubt, characterized the high Alpine zone and the foothill areas and river valleys respectively.