

with Professor Pumpelly, the opportunity to examine the finds from Schweizersbild and to test the correctness of the published determination of their age. We became convinced that the disagreement is more apparent than real between the datings of the Anau time-scale and those of Dr. Nuesch, who places at 8000 B. C. the beginning of the "Gray Culture" stratum at Schweizersbild, which contains both *Ovis palustris* and *Sus palustris*. (1) The gray culture-stratum is very variable in thickness, causing uncertainty in the estimation of the age, at any one point, of the contents; it may vary thousands of years. (2) The excavation was not conducted, as at Anau, in such a manner that the bones of each layer were kept separate. On the contrary, all the contents of the gray culture-stratum were mixed, the whole stratum being taken as a unit. Any find from this stratum may have come either from the bottom or from the top.\*

As regards the occurrence in the paleolithic "yellow stratum" (Gelbe Schicht) of a sheep called by Studer "*Ovis* sp., small form," but by me *Ovis palustris*, it is evident that any one acquainted with the locality must admit the possibility of the displacement of the respective pieces from the "gray stratum" to the underlying "yellow stratum." It is easy to understand how, in very thin layers, such a displacement could occur in any one of many ways, such as the digging of one of the 27 graves, the removal of a large stone and the refilling of the cavity, etc.

According to a friendly communication of Dr. Frank Conner, the age of the English remains is uncertain to the extent that they may be early neolithic quite as well as paleolithic. As far as the history of the domestic animals is concerned, there is consequently no objection to the assumption that that part of the early neolithic period which is characterized by the turbarry fauna began after the VII millennium B. C.

The question of the distribution of the cattle is here much more complicated. The first remains of the long-horned breed (*Bos taurus macroceros*) belong at Anau about 8000 B. C. We find the same animal again about 3000 to 4000 B. C. in Babylonia and Egypt. At about 6000 B. C., however, we find that the large long-horned animal of Anau has become small and small-boned and had developed into a short-horned breed (*Bos brachyceros*). Therefore, all who do not believe in an autochthonous domestication of the animals for each separate culture-sphere must admit that the original large and stately long-horned ox of Anau was spread by tribal migrations before 6000 B. C. to Persia and Mesopotamia and into Egypt and Central Africa on the one hand; and on the other hand, to India and Eastern Asia, where, according to Chinese accounts, it arrived 3468 B. C. (compare plate 85).

Did the migration to the west occur only after the small breed had become established, *i. e.*, about 6000 B. C., or even between 6000 and 7000 B. C. when the turbarry sheep had formed? To this question we have as yet no answer. We must, however, add that it was not in Anau alone that through unfavorable conditions of life the originally large and stately ox was changed into the stunted short-horned form (*Bos taurus brachyceros*). The same change took place in

\*This was not the fault of Dr. Nuesch, but was due to the thinness of the stratum, which averaged less than 1.5 feet, while its slow accumulation of refuse from meals and occasional falls of small fragments from the rock above represent a long period of time during which so thin a layer would be subject to frequent disturbance of the mass.—R. P.