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## ANTHROPOLOGICAL STUDY OF AN AENEOLITHIC NECROPOLIS AT THE TOWN OF TARGOVISHTTE (BULGARIA)

**ABSTRACT** — The skeletons of eleven burials from an Aeneolithic necropolis in the southern part of the town of Targovishte have been studied. A detailed metric and racial-typological analysis has been made. The pathological changes along the bones are described, paying attention particularly to the dental-maxillary apparatus. The high caries affection of the individuals studied, is pointed out, the caries frequency being 87.50 and the caries intensity — 17.39. The racial-typological analysis shows the different stages of gracilization of the Mediterranean Race — from the Proto-mediterranean racial type to the gracile Mediterranean Racial Type, characteristic of the Balkan Peninsula, as well as three craniums of the robust Nordic racial type, close to the Cro-magnon type, assuming that they are as a result of migratory processes from the North.

**KEY WORDS:** Aeneolithic skeletons — Metrical Data — Dental status.

A necropolis was found in 1979 during the archaeological excavations in the southern part of the town of Targovishte, under the guidance of Ilka Angelova from the Regional Museum of History. The funerals were realized by laying the body in the grave in contracted position. The funeral rites and the burial gifts found, such as small stone adzes, a stone ring, earthenware and beads of spondylus give us grounds to trace the necropolis as far back as the epoch of Aeneolithicum.

The classical anthropometric methods (Martin, Saller, 1957) were used in the anthropological study. Racial diagnosis was carried out by Boev's method for different racial types and variants of the European race (Boev, 1972). A palaeopathologic study (Rohlin, 1965) was carried out too, with a view to elucidate more completely the pattern of labour and manner of life of the studied population.

### BURIAL No. 1

Skeleton of a maturus man (about 50 years of age). The long bones are medium solid, the relief of the points of attachment of musculature are well

expressed. The height calculated by Manouvrier's method, is 168 cm, i.e. in a category of more than medium height. Only the cervical vertebrae have been preserved out of the vertebral column. The vertebral bodies are deformed, with intended edges and with bone growths on them. These changes are result of chronic degeneration, being a mark of premature aging of bones and joints (*Fig. 1*). The cranium was found in fragments but it has been restored almost completely (*Fig. 3*). Only parts of the nasal bones and of the cranial base are missing. The neurocranium is very long, medium wide and high, dolichocran, hypsicran, acrocran, ovoid in shape (*Table 1*). The forehead is very wide, inclined backwards, eury-metop. The upper orbital relief is strongly expressed (glabella — 5, superciliary arches — 1.5). The occiput is roof-shaped, slightly bulging, with a strongly expressed relief — torus occipitalis. Small inserted bones and an oval os apicis are seen in the lamboid suture. Processus mastoidei are strongly developed (category 3). The face is narrow and medium-high, with a small upper face height, leptoprosop, mesen, with a vertical profile — orthognath. The orbits have large dimensions and are square in shape — mesoconch. The nose orifice is pear-shaped, of small width and

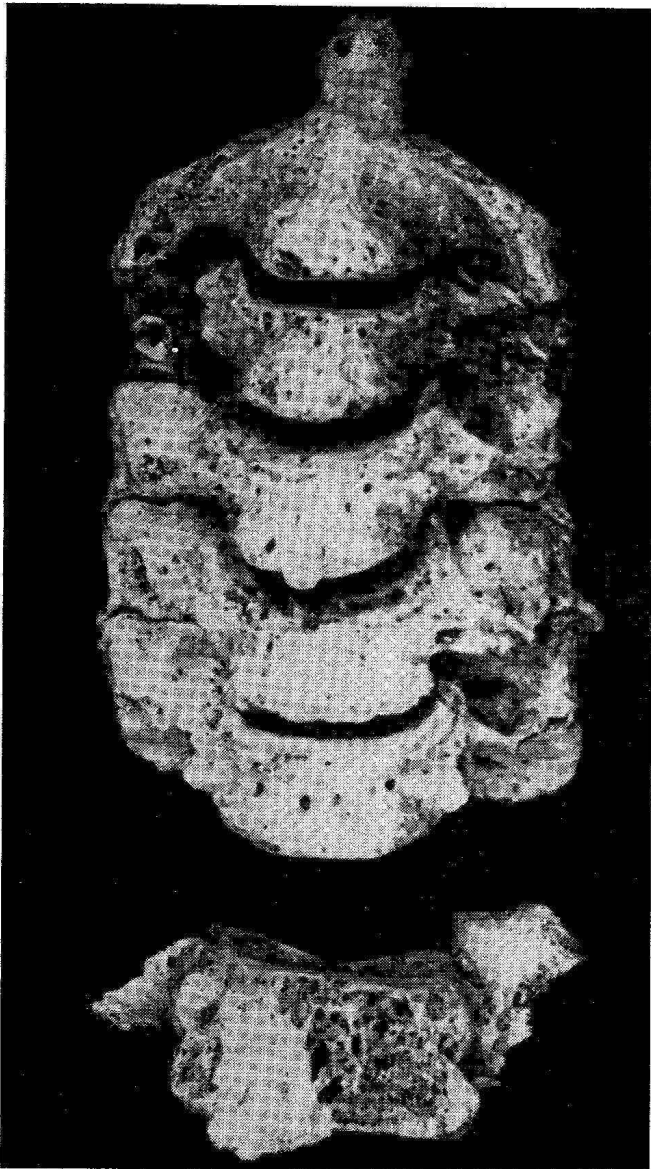
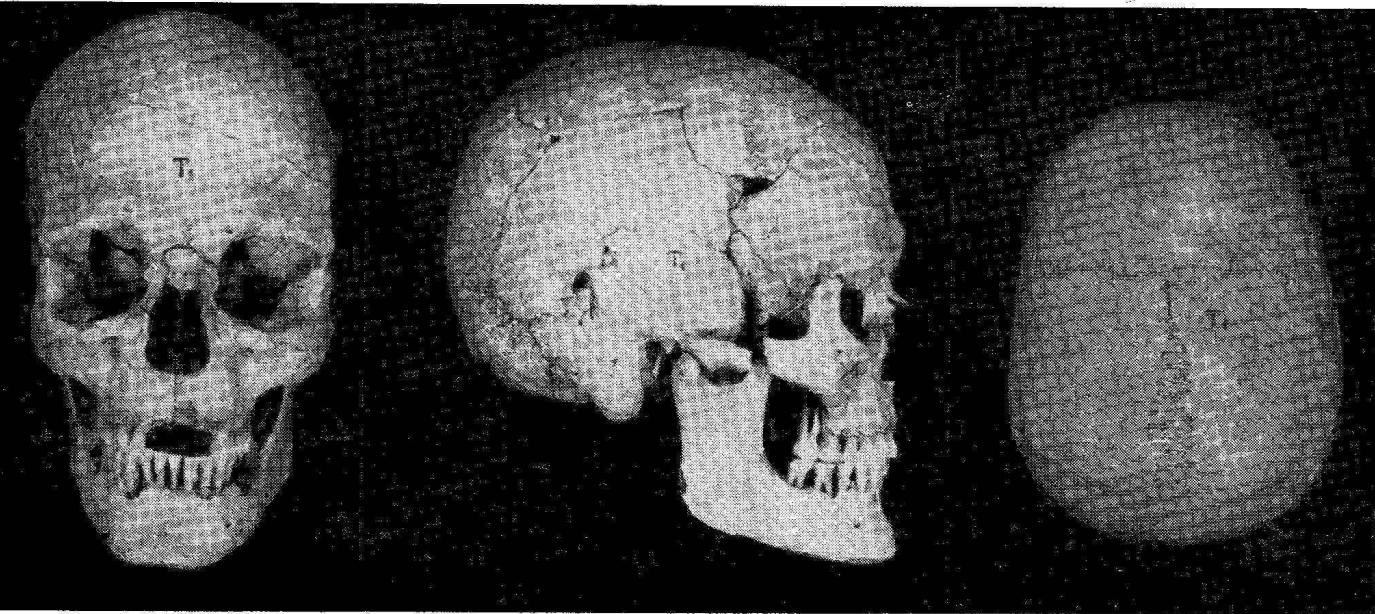


FIGURE 1. Cervical spondyloarthrosis in a skeleton of a man in matus.



height, mesorrhin, the lower part being antropine. Spina nasalis is medium developed (category 3). The maxilla has average dimensions, brachystaphylin, with an oval shape of the dental arch. The fossa canina is medium deep. The mandibula is solid, of medium length and large longitudinal dimensions, with a high ramus. The chin is square, slightly protruding. 22 teeth of the dentition have been preserved. Seven teeth were lost ante mortem. Caries superficialis is observed in the distal end of the second lower right molar. Severe pathological changes are observed in the alveolar part of jaws. As a result of inflammatory resorption the edge of the alveolar process is destroyed and the roots of most teeth are exposed up to 2/3 of their length. Bone cavities are observed around all teeth, they are particularly deep in the lower mollars (Fig. 2).



FIGURE 2. Mandibula of a male cranium in matus, showing severe pathological changes in the alveolar part and formation of bone cavities.

FIGURE 3. Male cranium in matus, a robust Nordic Racial Type.

TABLE 1. Dimensions and indices of the male crania from the aeneolithic necropolis at the town of Targovishte

No. according to Martin	Dimensions and indices	Graves No.		
		1	2	10
1.	Cranial length	198	191	187
8.	Cranial width	142	148	143
9.	The smallest cranial width	109	103	91
10.	The largest cranial width	124	126	115
11.	Ear width	115	120	—
12.	Occipital width	116.5	—	112
20.	Height from porion	128	129	—
32.	Frontal angle from nasion	86	92	—
gl/m	Frontal angle from glabella	79	84	—
38.	Volume according to Pearson	1 673	1 690	—
43.	Upper facial width	111	107	103
43 <sub>1</sub>	Interorbital chorda	105	100	98
77.	Nasomalar angle	132	141	—
Zg	Zygomaxillary chorda	104	95	—
Zgm	Zygomaxillary angle	130	122	—
44.	Biorbital width	105	—	99
45.	Cheek-bone width	130	—	—
46.	Width of the middle part of the face	101	92	100
47.	Facial height	121	123	—
48.	Upper facial height	68	73	—
49a	Dacrial chorda	25.5	—	—
50.	Interocular width	21	—	—
51.	Orbital width from mf.	44	44.5	—
51a	Orbital width from d.	41.5	41	—
52	Orbital height	36.5	33.5	—
54.	Nasal width	23	23	—
55.	Nasal height	48	49	—
57.	Simotic chorda	12	—	—
60.	Length of the alveolar arch	—	58	—
61.	Width of the alveolar arch	—	64	—
65.	Condylar width	122	—	—
66.	Bigonial width	100	100	106
72.	Angle of the face	85	93	—
73.	Angle of the middle part of face	87	95	—
74.	Alveolar angle	74	78	—
79.	Mandibular angle	115	—	116
FC	Depth of the fossa canina	5	6	—
8 : 1	Cranial index	71.72	77.49	76.47
20 : 1	Length-height index	64.65	67.54	—
20 : 8	Height-width index	90.14	87.16	—
9 : 8	Cross frontoparietal index	76.76	69.59	63.64
44 (1) : 44	Nasomalar index	112.38	—	—
47 : 45	Index of the face	93.08	—	—
48 : 45	Upper facial index	52.31	—	—
52 : 51a	Orbital dacrial index	87.95	81.71	—
54 : 55	Nasal index	47.92	46.94	—
DS : 49a	Dacrial index	54.90	—	—
SS : 57	Simotic index	41.67	—	—

Robust features are observed which could not be referred to the Protomediterranean race characteristic of the epoch of Aeneolithicum in our land, since the cranial height is very large. The face is flat, but in contrast to the classical Cro-magnon man it is very high. According to Boev's methods the case concerns a rough Nordic racial type, close to the Cro-magnon man.

#### BURIAL No. 2

Skeleton of a matus man (about 45 years of age). The long bones are solid, the relief being strongly expressed. The bones are unmeasurable, but according to the parts preserved one may consider that the

height was about medium. The cranium has been restored from a great number of fragments (Fig. 4). Parts of the forehead, the left crown and cervical bones are missing, as well as the right ramus of the mandibula. The neurocranium, pentagonoid in shape, is very long, wide, and high, mesocranial, hypsican, acrocran. The forehead is very wide, inclined backwards, with a strongly expressed superciliary relief, eurymetop. The occiput is rounded, with a strongly expressed relief — torus occipitalis. Processus mastoidei are strongly developed. The face is high and narrow, leptoprosop, with a vertical profile. The orbits are wide, medium high, rounded, chamaeconch. The nose orifice is short and narrow, leptorrhin, pear-shaped, antropine. The fossae caninae are medium deep. The maxilla is of very large length and medium



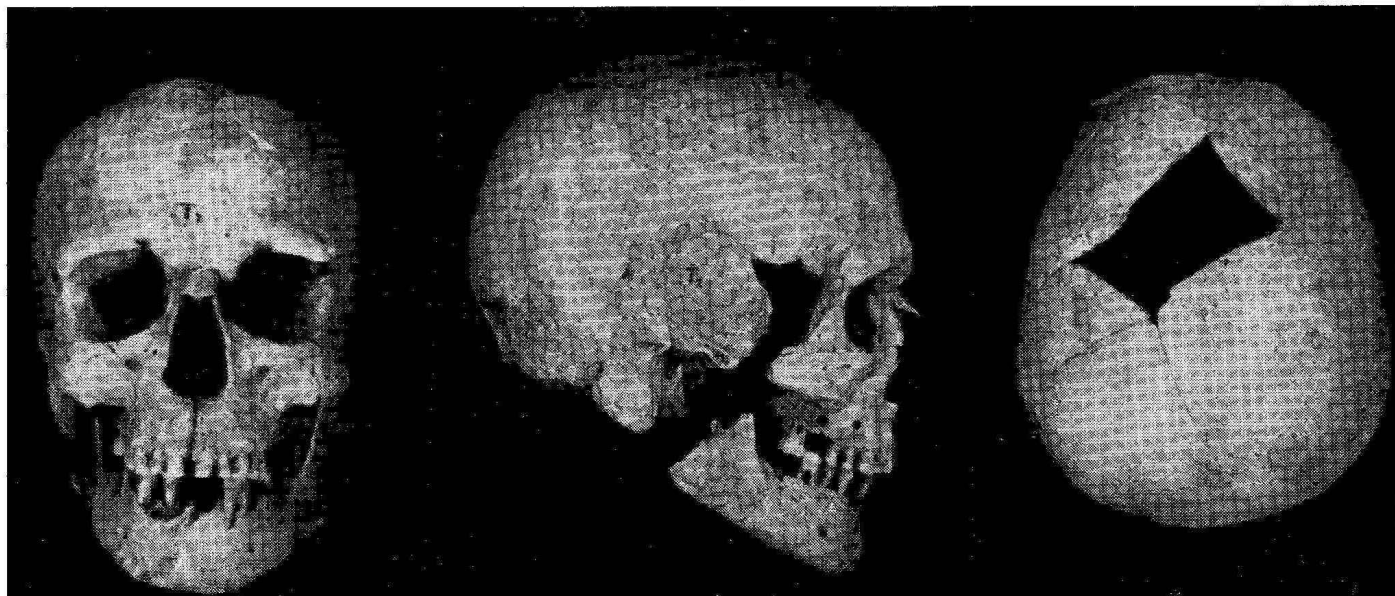


FIGURE 4. *Male cranium in maturus, a robust Nordic Racial Type.*

width, mesuranide, with an oval shape of the dental arch. The mandibula is of large dimensions and with strongly developed relief of the points of attachment of the musculature. The shape of the mandibular dental arch is parabolic. The chin is square, slightly protruding. Eighteen teeth of the dentition have been preserved. Five teeth were lost ante mortem. Caries superficialis are observed in 3 of the available teeth. The palatal part of the first upper premolar is destroyed by carious process, bringing complications also in the tooth underlying tissues. A granulomatous lesion is observed, it is buccally open. A large cystous lesion, open buccally and palatally is observed in the first upper right molar. A carious defect, affecting the enamel and part of the dentine is observed in the neck of the first lower right molar. As a result of inflammatory resorption the edges of the alveolar processes of jaws have been destroyed and tooth roots are exposed up to 1/3 of their length.

The cranium belongs to a rough Nordic type and could be referred to the same racial type as the cranium of burial No. 1. Here we have also observed flattening of the face in its middle part, by which the cranium approximated the Cro-magnon race, differing, however, from it by the large facial height.

#### BURIAL No. 3

Skeleton of a mature woman (about 40 years of age). Bones of the extremities are medium solid, the relief being poorly expressed. The height was about medium. Only the cranial roof and part of the jaws have been restored. The neurocranium is of medium dimensions, the superciliary relief is medium expressed, ellipsoide in shape (Table 2). The occiput is roof-shaped, slightly swollen, with a poorly expressed relief. The forehead is wide, slightly inclined backwards. The maxillary is of medium dimensions and smooth

relief. The chin is rounded, slightly protruding. Twenty six teeth of the dentition are preserved. Six teeth were lost ante mortem. Carious lesions are observed in 13 teeth, 8 caries superficialis and 3 caries profunda. In two teeth the carious process has brought about the destruction of the whole tooth crown. A cystous lesion is observed periapically in the first upper left premolar. Dentition is coated with tartar.

TABLE 2. *Dimensions and indices of the female crania from the Aeneolithic necropolis at the town of Targovishte*

No according to Martin	Dimensions and indices	Graves No.	
		5	9
1.	Cranial length	—	188
8.	Cranial width	147	143
9.	The smallest cranial width	103	—
11.	Ear width	—	115
12.	Occipital width	—	108
20.	Height from porion	—	121
38.	Volume according to Pearson	—	1,516
8 : 1	Cranial index	—	76.06
20 : 1	Length-height index	—	64.34
20 : 8	Height-width index	—	84.61
9 : 8	Cross frontoparietal index	70.07	—

The upper right molars are coated particularly thickly, where the loss of antagonists led to the failure of masticatory function of that part of dentition. Inflammatory changes are seen in the alveolar edge of jaws. The interdental bone processes have vanished.

One is impressed by the small cranial height, by which the cranium differs from those of burials No. 1 and No. 2. It differs from them by the gracilization of the forehead bone. According to the construction

of the neurocranium, the cranium approximates to the Protomediterranide race, while the parts preserved from the face and maxillary are rather gracilized and correspond better to the Mediterranean race. It concerns a transient form to the Mediterranean race.

#### BURIAL No. 4

Small individual fragments are preserved only from the cranium and long bones, showing that the skeleton belonged to a grown-up individual. The exact age and sex cannot be determined. Together with the fragments described above there were also found milk-teeth and nuclei of permanent teeth from a child's skeleton, being entirely destroyed by different soil effects. Five teeth of the milk dentition are preserved, namely the lower molars and the second upper right molar. The masticatory surface of teeth is abraded, a greater part of the enamel of the tubercles is worn out and the occlusal surfaces are of polished dentine (abrasio II—III degree according to Zubov, 1968). Nuclei of the left upper central incisor, the left upper canine tooth and the left upper first premolar are also preserved. The incisor and the canine tooth have well formed crowns and with rudiments of the root part of teeth. In the premolar two thirds of the crown part of the tooth have been formed. The scope of dental attrition and development of the nuclei of permanent teeth show that the child died at about the age of five (Homo, 1979).

#### BURIAL No. 5

Skeleton of an adult woman (35—40 years of age). The long bones are solid, the relief being medium expressed. The bones are unmeasurable, but by the fragments preserved one may assume that the height was about medium. The cranial roof could be restored as well as part of the left orbit and parts of the maxillary. Bones of the cranium are solid, the relief being poorly expressed. The neurocranium is medium long and wide. The occiput is rounded. The occipital process bulges out slightly (category 0,5). The forehead is very wide, slightly inclined backwards, with a smooth superciliary relief, eurymetop. The orbit is medium wide and medium high. Cribra orbitalia are seen on the orbital walls, most probably due to haemolytic anemia. The maxillary parts preserved are medium solid, with a smooth relief. Twenty two teeth of the dentition have been preserved. Carious damages are seen in 5 of the available teeth, namely in the first upper right molar — caries profunda, in the upper right premolars — caries media, in the second upper left premolar — caries superficialis and in the second lower left molar — caries profunda. Pathological changes are observed in the alveolar processes of the lower frontal teeth.

No exact racial diagnostics can be made on the basis of the preserved cranial parts, but still it is obvious that it refers to the Mediterranean race that began to gracilize. The neurocranium is of greater

height than the cranium of burial No. 3, but Protomediterranide features have been preserved in the configuration of the forehead bone, being strongly inclined backwards, though gracilized in the lower part.

#### BURIAL No. 6

A child's skeleton out of which different fragments of the frontal, parietal and occipital bones, of the jaws, ribs and lower extremities have been preserved. The bones are gracilized. Fourteen teeth of the milk-teeth dentition have been preserved. The dental attrition and forming of permanent teeth nuclei show that the child died at the age of four or four-and-a-half years.

#### BURIAL No. 7

A child's skeleton of which only fragments of the cranium and part of the thoracic vertebrae are preserved. The bones are very gracilized. By the nuclei of permanent teeth preserved we judge that the child's age is about five.

#### BURIAL No. 8

Skeleton of a mature woman (about 50 years of age), of which only parts of the extremities bones are preserved. They are gracilized, with a smooth relief. Judging by preserved the long bones fragments, one can assume that the height was about medium. Small parts of the frontal, parietal and occipital bones of the cranium and the jaws are preserved. The cranial bones are gracilized, the relief being poorly expressed. Twenty teeth of the dentition are available. Carious surface damages are seen in 4 of them. The alveolar processes are pathologically changed too. The alveolar edges in most teeth have vanished and the tooth roots are exposed up to 2/3 of their length. No racial diagnostics can be provided.

#### BURIAL No. 9

Skeleton of a young woman (18—20 years of age). The long bones are gracilized, with a smooth relief. The cranial roof and part of the maxillary have been restored. The cranial bones are gracilized, with a smooth superciliary and occipital relief. The neurocranium is very long, wide and very high, mesocran, hypsicran, metriocran, pentagonoide in shape. The forehead is slightly inclined backwards. The occiput is rounded. The preserved maxillary part is gracilized, with a rounded, slightly protruding chin. Twenty four teeth of the dentition are preserved. Surface carious damages are observed in three of them. The cranium approximates to those of burials No. 3 and No. 5. It refers to a rather advanced gracilization of the Mediterranean racial type.



Skeleton of a mature man (over 50 years of age). Only parts of the long bones and cervical vertebrae are preserved, where spondylous changes are seen. The extremities bones are solid, the relief being strongly expressed. The height is above medium. The cranial roof, part of the facial section and the maxillary could be restored (Fig. 5). The neurocranium is long, and medium-wide, mesocran, pentagonoide in shape. The forehead is narrow, inclined backwards, with an expressed superficial relief, stenometop. The occiput is rounded, with a strongly expressed relief — torus occipitalis. The face is medium wide. The maxillary is solid, of great length and width, with an expressed relief. The chin is square, protruding. Only the left

molar has been preserved in the maxillary and it shows a deep carious damage. The other teeth were lost ante mortem shortly before death, as changes on the alveolar processes of the jaw show. As the whole facial section is missing we are unable to make exact racial diagnostics, but the frontal bone, cheek-bones and maxillary give us reason to maintain that remains belonged to robust Mediterranean racial type.

# BURIAL No. 11

Skeleton of an adult man (about 25 years of age). The fragments preserved from the long bones are solid, with an expressed relief. Most probably the height has been about medium. Only separate parts of the frontal and occipital bones and of the jaws

TABLE 3. Stomatological status of crania from the Aeneolithic Necropolis

Total number of dentitions	Available teeth	Teeth lost ante mortem	Teeth lost post mortem	Tartar	Tooth abrasion	Alveolar atrophy	Superficial caries	Medium profound caries	Profound caries	Roots	Carious teeth	Dentitions with carious teeth	Granulomatous lesions	Cystous lesions	Ideal amount of teeth	Caries intensity	Caries frequency	Index of cariosity	Archaeological dental index
8	161	33	62	1.25	2.75	3.56	17	3	6	2	28	7	5	3	256	17.39	87.50	15.22	72.20

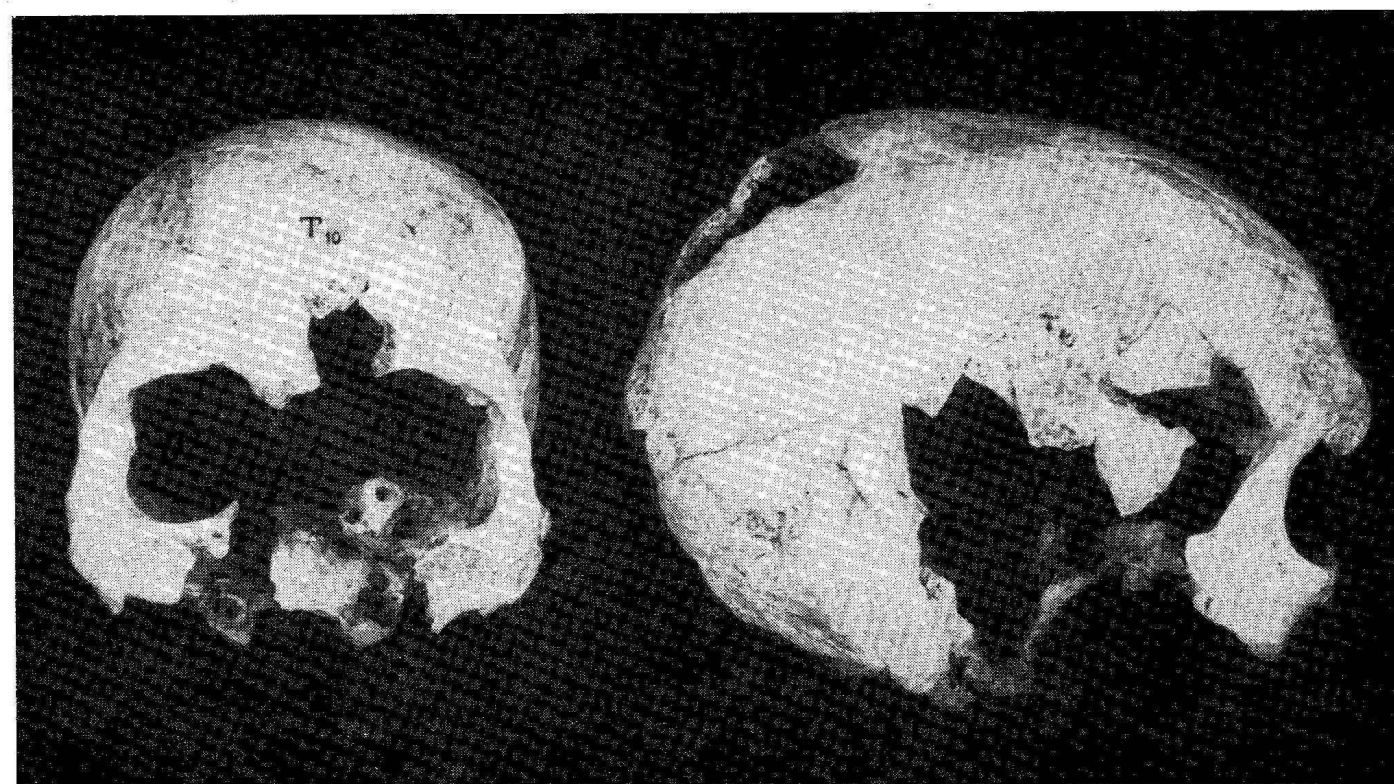


FIGURE 5. Male cranium in maurus, a robust Mediterranean Racial Type.

have been preserved from the cranium. The relief of the occipital bone — torus occipitalis is strongly expressed. The maxillary is solid, the relief being medium expressed. Twenty four teeth of the dentition have been preserved. No exact racial diagnostics could be provided. However, it is evident that it concerns a robust racial type. By analogy with the cranial of burial No. 1 and No. 2 it might be assumed that the skull belongs to the Nordic race.

On analyzing the changes caused by disease along the bones from the Aeneolithic necropolis, one is particularly impressed by the varied pathological picture of the dental-maxillary apparatus. Out of the eight dentitions studied in the grown-up individuals, seven proved to be affected with caries. The caries frequency is 87,50 and the caries intensity — 17,39. These indices are considerably higher than the results obtained by Boev and Maslinkov (1959) in their investigation about cariosity in the territory of present-day Bulgaria during the Aeneolithicum. Their data from 66 crania studied are: caries frequency — 30.30 and caries intensity — 5,70, the percentage of carious teeth comprising also the teeth lost ante mortem, whose loss is considered as a result of a carious process. With the studied population from Targovishte, the carious lesions are mainly superficial (caries superficialis). However, the fact that profound caries are twice as frequent as the medium deep, as well as the presence of a great number of its later consequences (roots, granulomas, cysts) shows the rapid progress of the carious process, i.e. reduced resistance of the hard dental tissues of the population from the Aeneolithic settlement at Targovishte. Caries is localised most often in the points contact surfaces of molars and premolars. The carious process has rarely affected the frontal teeth. Almost all dentitions are coated with tartar, deposited both on the vestibular and lingual dental surfaces. The category of alveolar atrophy is 3,56 (recorded in categories up to 5) and in five of the dentitions we have reliable data about pathological changes of the jaws, such as vanishing of alveolar processes and forming of bone cavities.

In conclusion it may be said that the series from the Aeneolithic settlement at Targovishte is meso-dolichocran, with a clearly expressed sexual dimorphism. The male crania are solid, with large dimensions of the neurocranium. One is impressed by the rough relief of the points of attachment of the musculature of the occipital bone — presence of the so-called torus occipitalis, which practically does not occur today. In women the crania are medium-solid up to gracile, with a medium or slightly expressed relief.

Their cranial breadth is comparatively greater, leading to brachcephalization.

Bones of the extremities in male skeletons are solid, with a well expressed relief of the points of attachment of the musculature, while in females they are medium robust, even gracile, with a smooth relief. Height in both sexes has been about medium.

The racial-typological analysis shows that the series consists of two groups of crania. One group of crania (from burials No. 1, No. 2 and No. 11) are rough, from the Nordic race with some Cro-magnon features. The second group of crania (from burials No. 3, No. 5 and No. 10) are from the Protomediterranean-Mediterranean race, some of the crania being rather gracilized (for instance the cranium from burial No. 9). Obviously, the second group is of local origin. The first group of crania, though differing from the Neolithic crania from the Devetashka Cave, having more primitive features, are nevertheless closer in configuration to it than to the Protomediterranean racial type. Still the problem about genesis of the Nordic racial type in the Neolithicum and Aeneolithicum on our lands has not been elucidated. All the same it has to be assumed for the time being that it is not of local origin, but has been brought from the North in migration processes. The cranial findings from the late Aeneolithic necropolis at Goliamo Delchevo are also evidence in this respect.

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