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A Medico-Anthropological Study of the Skeleton and a Plastic Reconstruction of the Skull of Tsar Samuil

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In the investigation of the "St. Achilles" basilica ruins on the St. Achilles Island in The Small Prespa Lake (1965-1975) carried out by prof. N. Mutsopulos in the third sarcophagus (Grave B.1) an intact skeleton of an adult man was found. The burial is primary. The skeleton belongs to a male individual (about 70 years of age) identified by prof. Mutsopulos as that of Tsar Samuil.

Bone wounds were established on the bones of the left fore-arm and the skull. The sizes of the broken fore-arm bones and the skull characterize a male individual of short stature and a small head. The latter is confirmed by the performed reconstruction of the head after the skull was completed at the beginning of 2008.

Taking into account all the anthropological and historical data the thesis of prof. Mutsopulos that the buried man is the Bulgarian Tsar Samuil is most convincingly confirmed.

Key words: Tsar Samuil, skull, head reconstruction.

Prof. Mutsopulos investigated the ruins of the "St. Achilles" church on the island in the Small Prespa Lake bearing the same name for the period 1965-1975 [9]. Four sarcophagi were discovered in the middle of the southern nave of the wooden-roofed basilica. A skeleton of an adult male was found untouched in the third sarcophagus (Grave B.1).

The cranium was lying on an erected head-prop and on the left arm were found remains of a chain-mail woven with very fine gold threads. A valuable silk fabric decorated with parrots placed in circles was located on the pelvis and the silk threads were also interwoven with gold lines. The entire skeleton and cranium were of an intense red colour.

In the inspection procedure it was established that there were traces of a poorly healed wound on the fore-arm bones of the left arm. Prof. Mutsopulos concluded that skeleton belonged to a male wounded in battle who was later hampered in the correct caring of his wound. Based on the above-mentioned data in 1965-1966 he identified the skeleton from the grave B.1 with the one of Tsar Samuil. This hypothesis of his gave rise to a significant amount of interest. The fracturing of the left fore-arm bones is attributed to the wounding of Tsar Samuil in the battle at the

river of Sperchei and their poor and incomplete healing to the difficult and lengthy relocation to Prespa.

The age of the buried one determined after the skeleton by Aris Pylyanos and Peter Boev is about 70 years [1, 2, 3, 13].

In 2007 Bozhidar Dimitrov, director of the National History Museum, presented to me a plaster copy of Tsar Samuil's cranium and plastic copies of the left fore-arm bones — ulna and radius of the skeleton from sarcophagus B.1. The idea was for me to carry out a plastic anthropological reconstruction of the head after the plaster cast copy of the skull (a copy of Tsar Samuil's skull sent by prof. Mutsopulos in Bulgaria in 1987 via the consul general of Bulgaria in Thessaloniki Mr. Ilia Petrov.

The reconstruction of the head after the skull of Tsar Samuil was completed at the beginning of 2008 and on March 20th it was presented to the scientific community in the National Anthropological Museum at BAS [5, 4, 8]. During the period of work on the image of Tsar Samuil amounting to half a year I had the opportunity to get acquainted in detail with the skull and the two left fore-arm bone copies, which were given to me.

I have to note that I have not seen (except in photograph) the bone remains from grave B.1 and never had the opportunity to conduct medico-biological and anthropological investigations on them.

In his monograph "The St. Achilles basilica in Prespa — a historical monument — a sanctuary", published VION, Plovdiv, 2007) prof. N. Mutsopulos noted that the study on the hurt bones (ulna and radius) was performed in the Laboratory of Descriptive Anatomy at the Medical Faculty at the "Aristotle's University" in Thessaloniki by prof. Marius Polizoni (report 10.12.1983) [9]. He wrote in his report and was quoted by prof. Mutsopulos that "In the Laboratory of Descriptive Anatomy a left radius and a left ulna from a human skeleton have been delivered displaying the following typical features (fig. 1). Radius: The radial bone is with an unhealed fracture. The ulna: Almost right in the middle of the bone there is a fracture coalesced at an angle of 135°. Taking into account the form of coalescence of the bone the fracture seems to have occurred at least a year prior to the death of the person".

The cranium bearing the initials St.Ach.Grave B M65 (fig. 2) belongs to a male of approximately 70 years of age. It has been dated by the archaeologist who has found it the 10^{th}-11^{th} century. The diameter of the skull indicates an individual shorter than the average height*.

The zygomatic width as well as the small forehead reveals a person with a small face. The height of the nose root is rather big and the nose itself is strongly protruding. The relief of the whole cranium is very even. The orbital cavities are rather big. These features would suffice for the classification of the skull as an Europoid one belonging to the Aegean or the Aegeocaucasian type in the broadest sense of this notion. The photographs of the bone objects are from prof. Mutsopulos's monograph.

The left ulna is with a formed bone callus located in the middle of the bone. The amassment of bone tissue is predominantly found on the front surface of the broad angle open to the front. The hind surface of the callus displays a narrow (2-3 mm) rough portion with discernible traces of granulation. The length of both coalesced fragments calculated by us is 20.5 cm.

* This is corroborated also by the juxtaposition of the fore-arm bones of the left arm from the grave B.1 with an analogous portion on the fore-arm of a normal skeleton (fig. 135 from the monograph of prof. N. Mutsopulos).

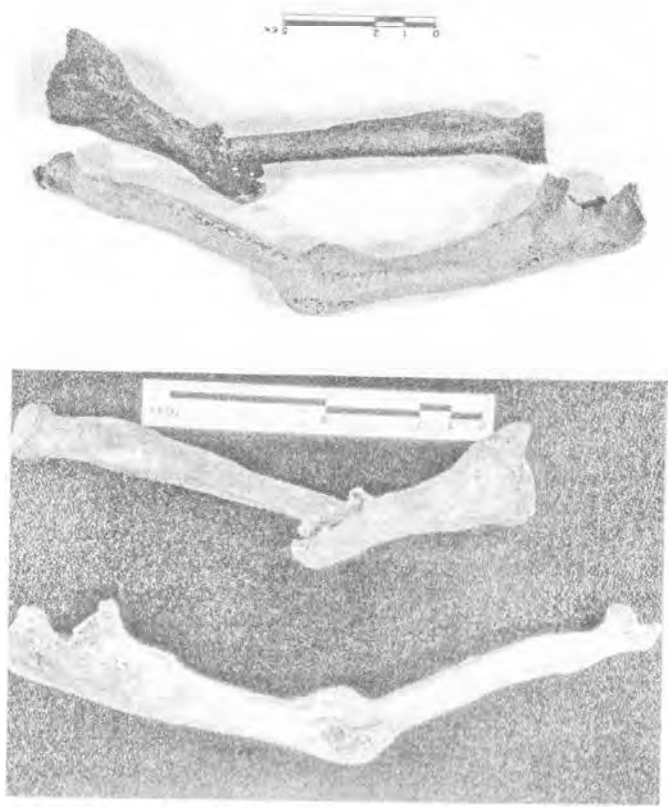

Fig. 1. Left ulna and left radius, Grave B.1, "St. Achilles" basilica

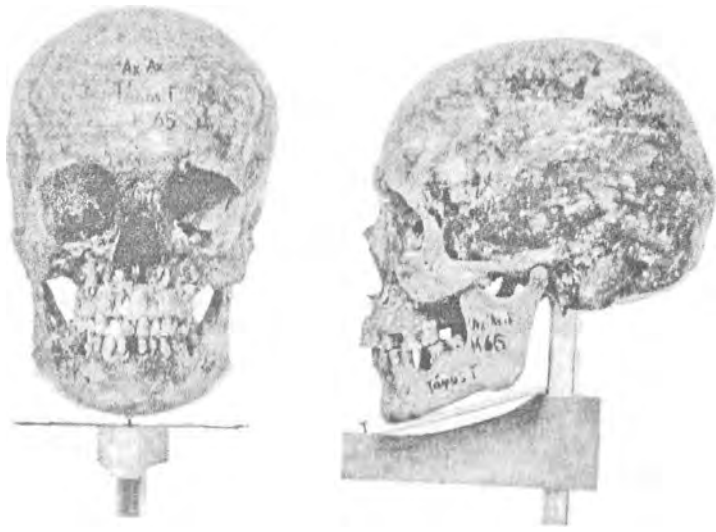

Fig. 2. The skull from Grave B.1, "St. Achilles" basilica

The left radius is with an uncoalesced fracture (fig. 3). The break is between the medium and lower third of the bone. The fronto-lateral surface of the shorter distal fragment is with a bony cavity of sizes of roughly 20/14 cm which is confined from below and medially by a bony callus. Its medical surface from the end of the cavity to the medial edge displays a furrow of 18 mm with a width from 2 to 5 mm, of an uneven bottom as well as short (2-3 mm) bone protrusions. According to the length of both fragments measured by us the probable length of the bone is 17.8 cm.

The height calculated after the Trotter-Gleser formula is 150.61 cm [6, 7, 10].

The comparison of the bone wounds on the radius and ulna indicates to the direction of the stroke from the front to the back, from above to below and from the outside to the inside. The more strongly damaged bone — the radius (of an outer location) has suffered the greater damage of the stroke. This is made possible in a probable state of the fore-arm with a palm towards the sagittal line (to the face) and the stroke has been dealt from the front to the back [11, 12, 14].

The most probable situation of the left arm (weapon free) is raised above, stretched in front of the attacker standing before the victim.

The assumption for such a position is also supported by the lesions on the left upper half of the skull: the left temporal area and the left zygomatical arch and

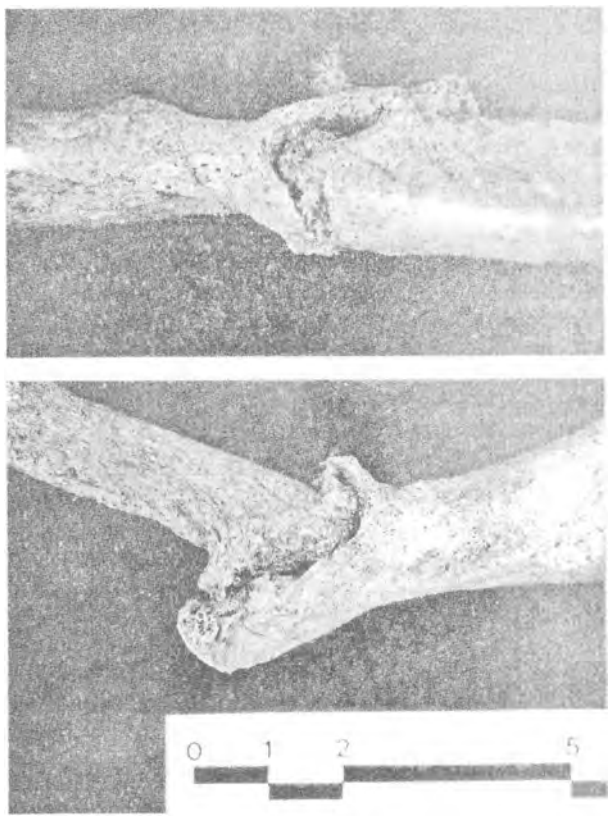

Fig. 3. The left radius — uncoalesced fracture

bone, the outer edge of the orbita. The left temporal pit in its upper third to 2 cm behind the orbital edge is of a rough surface of concave and convex (2-3 mm) character with indentations and protrusions (2-3 mm).

The left cheek-bone arch is indented (a healed fracture without displacement) at the point of binding the two excrescences forming it. The left cheek-bone is jutting out and compared with the right one it is of a more convex surface and a marked furrow-like indenture of the bone suture which connects it to the left maxilla. As a result the canine pit (fossa canina) on the left is more shallow [4, 5, 8].

The reconstruction of the action in the process of the traumatic injuries on the bones of Tsar Samuil would ontline the following picture:

The attacker is in front and a little to the right from the Tsar. He is right-handed — in his right hand is the weapon that has caused the injury. It is of the type of "a hard object with a non-cutting edge". As he lifts it for the head of the Tsar, Tsar Samuil, as anybody would do, stretches his left arm to the front at the height of the lower forehead with a palm turned towards the face. The direction of the blow is oblique — from the front to the back which is confirmed by the localization of the fractures of the two bones. Also, this time with a lesser force the weapon (picket, spear, etc) inflicts damage with its front end to the cheek bone area, the zygomatic arch and cheek-bone itself which has led to lesions in the soft tissues in these areas and the development of osteomyelitis in the unhealed radius indicates to an open wound. Explicit proofs in the identification of Tsar Samuil such as a grave inscription, location of the burial site, description of his looks are missing. The proofs provided for the identification of the bone remains from the sarcophagus (grave B.1) as ones belonging to Tsar Samuil are as follows:

— The "St. Achilles" basilica had been built by Tsar Samuil after his conquest of Larissa and his return from his march to the Southern Hellenic lands (984-986). There are no data suggesting that another nobleman could be buried there (after the Byzantine author M. Ataliates). The find of remains from a gold-woven chain-mail on the left hand and the valuable silk fabric woven with golden threads and decorated with parrots being placed on the pelvis.

— The traumatic injuries on the left fore-arm bones and the skull show that the buried man (at a mature age) is wounded in the battle and was deprived of the chance for a proper medical treatment [6, 10].

In the battle at the river Sperchei Tsar Samuil and his son Gavrail-Radomir (the Byzantine authors Scylitzes and Kebrin state that Gavrail-Radomir has been superior in strength and body-build to his father Samuil but not intellectually) have been seriously wounded and have marched for a long time to Prespa (a distance roughly amounting to 350-400 km) over an undulating cross-country terrain. This fact most possibly is the reason for the lack of therapy which has led to the described condition of both left fore-arm bones. With his left hand Tsar Samuil has been half crippled [6, 10, 11]. The fracture of the left zygomatic arch having squeezed the temporal muscle (most probably injured) has eventually accounted for the limited movement of the mandible (the opening of the mouth) with all consequences arising from that fact.

What is the summing up that can be drawn from this short presentation?

The burial in the third sarcophagus (B.1) is primary, i.e. after the laying of the dead body the latter has not been moved, shifted, and no action has ever been undertaken with regard to it.

The skeleton belongs to an individual of the male sex of about 70 years of age with a height of about 155 cm (after the data of prof. Mutsopulos). There are remains of a gold-woven fabric on it. Skeletal wounds are found on the bones of the

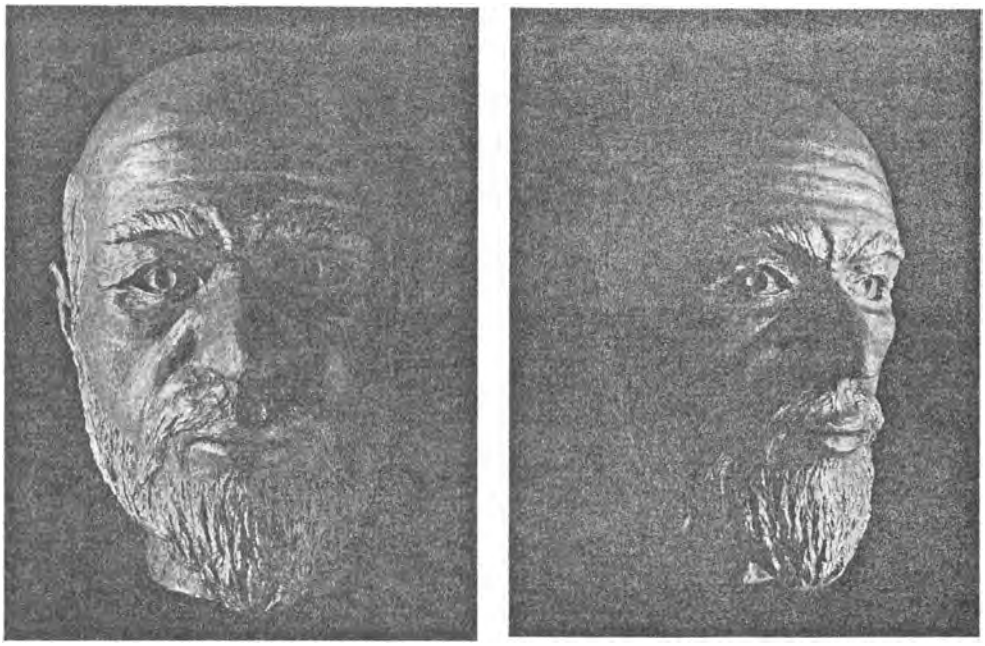

Fig. 4 and Fig. 5. The plastic reconstruction of the head after the skull of Tsar Samuil — full-face and semi-profile view

left fore-arm and the skull. The radius is with an unhealed fracture resulting from traumatic osteomyelitis.

The formation of a callus on the ulna implies a period of a year following its fracture. The small sizes of the broken fore-arm bones (probably also the ones of the rest of the bones of the skeleton) and those of the skull indicate to a male individual of a small stature and small head [6, 7, 10]. The latter is confirmed by the reconstruction of the head made after the skull [5]. Taking into account all this, the wounding of Tsar Samuil in the battle at the river Sperchei, his long and difficult journey to Prespa and the ensuring ailment as well as the anthropological study of the skull and the reconstruction of the soft tissues of the head, support the thesis of prof. Mutsopulos that the buried one in the third sarcophagus (grave B.1) in the "St. Achilles" basilica on the island by the same name in the Little Prespa lake is the Bulgarian Tsar Samuil (figs 4, 5).

If made possible, an additional study on the remains from grave B.1 kept by prof. Mutsopulos would elucidate certain details about the skeleton such as age, height, body-build, strength and anthropological type.

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