

Anthropology. — *Contributions to the Anthropology of the Near East.*
III. *Phoenician and Palmyrene Skulls.* By C. U. ARIËNS KAPPERS.

(Communicated at the meeting of January 31, 1931).

My researches concerning the anthropology of the Semitic races in the Near East were greatly favored by the possibility of studying a number of Phoenician skulls, one from Byblos (Djebail) and fifteen from Sidon (Saida), two Palmyrene skulls and two Hebrew skulls of Solomon's time, found at Megiddo. Of the latter I shall speak again in my next paper.

I am much indebted to the conservator of the National Museum at Beirut, the Ameer M. CHEHAB, for allowing me to measure and photograph the Phoenician skulls and to the representatives of Mr. P. L. O. GUY, of the Oriental Institute of Chicago, excavating Megiddo, for being allowed to see and measure the ancient skulls of Megiddo.

I also want to express my thanks to Father BERGY of the Université St. Joseph at Beirut for his permission to measure and photograph the ancient Semitic skull he found in a riverbed in the Beka, the valley between the Lebanon and Anti-Lebanon.

In addition I measured the heads of 107 males of more or less nomadic Arab tribes, Beduins of the North-Syrian desert from the surroundings of Palmyra, Aleppo, Selemiye (north west desert), several from Deir-el-zore (north east desert), whom I met near Aleppo, and some Hauran Beduins (Beni-Darra). To the same group belong some Arabs of the Hedjaz and Nedjd and some from Bahrein (in the Persian gulf).

As a closely related group I measured the heads of 117 Egyptian Arabs. Also 139 Palestinian Arabs were measured, but I shall discuss the latter in my next paper.

Most Phoenician skulls hitherto described came from Africa, and from European sites round the Mediterranean. Although their Phoenician (Punic) origin in most cases could be stated with certainty by the fact that they were found in Phoenician colonies and in Phoenician tombs or at least amongst Phoenician remains, they do not belong to the oldest period as the great Phoenician transmarine settlements (chiefly from Tyre) only commenced after the 9th century B.C.

DE QUATREFAGES and HAMY¹⁾ described twelve Punic skulls from Utica near Carthage with an average index for the males of 74.86, for the females of 73.37. It is very likely that the lower female index is incidental,

¹⁾ DE QUATREFAGES et HAMY. *Crania ethnica. Les crânes des races humaines*, Paris, 1882, Quoted from BERTHOLON and CHANTRE, the original not being at my disposal.

the female index being usually higher than the male, especially with the Arabic Semites (see below).

So BERTHOLON¹⁾, who examined two probably female skulls from Bulla Regia and Carthage found an average index of 77.8 (one of 77.5 and one of 78.07). BERTHOLON and CHANTRE²⁾ who examined 68 male and 49 female crania from Carthage found an average male index of 74.98, an average female index of 75.85 thus showing that also here the female index is higher.

It is an interesting fact that of the crania mentioned by BERTHOLON and CHANTRE, belonging to the 6th to 3rd century B.C., those of the 3rd century are far more dolichocephalic than the others, suggesting that especially amongst the latter there are many admixture with African (Sudanese or Berber) blood, as is also stated by BERTHOLON and CHANTRE themselves, who (l.c. p. 277) believe that "les Carthaginois regardés comme phéniciens ont 77 comme indice cephalique" (males and females together apparently). The average index in the population of Carthage was apparently lowered by dolichocephalic mixtures.

The paper describing Phoenician skulls found in France by MARICHARD and PRUNER BEY³⁾ was not at my disposal.

So the two Phoenician skulls found in Sardegna and described by MANTEGAZZA and ZANNETTI⁴⁾ had a higher index (76.97 for the presumed female, and 78.02 for the presumed young male⁵⁾).

Phoenician skulls from Phoenicia itself hitherto have been only described by CHANTRE⁶⁾, who examined crania collected by HAMDY BEY at Sidon (now Saida). These skulls dated from the Vth to IVth century. They are now at the Museum in Constantinople. Six skulls were found by HAMDY BEY. The skull of the Sidonian king TABNITH had an index of 77.12, a female skull (perhaps of his wife) 84.23. Three more male skulls found in Phoenician

1) "Sexe probable féminin" see BERTHOLON: Deux crânes phéniciens trouvés en Tunisie. *l'Anthropologie*, Paris, 1890, p. 314.

2) BERTHOLON et CHANTRE. *Recherches anthropologiques dans la Berberie orientale*, Lyon, 1913, (see also BERTHOLON: Documents anthropologiques sur les Phéniciens. *Bull. de la Soc. d'Anthrop. de Lyon*, 1892, Tome XI, p. 179; the same: Identités des caractères des Basques et des Phéniciens. *Bull. de la Soc. d'Anthrop. de Paris*, 1896.

3) MARICHARD et PRUNER BEY. *Les Carthaginois en France*. Montpellier, 1870.

4) MANTEGAZZA e ZANNETTI. Note antropologica sulla Sardegna. *Archivio per l'Antrop. e l'Etnol.*, Tomo VI, 1876, p. 17. These authors refer to a third skull found on Sardegna and described by NICOLUCCI. I was not able to obtain NICOLUCCI's paper (*Un antico cranio renvenuto in Sardegna*, Torino, 1863), but it seems to me that the skull figured by MANTEGAZZA and ZANNETTI as a Sardinian skull may be just as well Phoenician.

5) The sex determination seems very doubtful. It might be just as well the reverse. This would give a young male index of 76.97 and an adult female index of 78.02, being the same as with my skulls.

6) CHANTRE. Crânes de la nécropole de Sidon. *Bull. de la Soc. d'Anthrop. de Lyon* 1894, Tome 13, p. 12. — The scattered skulls HAMDY BEY found at Saida (ind. 82.5) probably are no ancient Phoenician skulls. Also to day an index of 82.5 is not so rare at Saida.

sarcophagi had an index of 76.75; 76.96 and 77.26. Finally a beautiful Greek sarcophagus (the so called sarcophagus of Alexander) contained a male skull of 86.11. As at that time the Greek and other peoples were quite influential on the coast, I am inclined to believe that the latter skull was not Phoenician nor the female skull. This would give a male Phoenician skull index = 77.02.

My own researches on Phoenician skulls from Phoenicia concerned one male skull from Byblos (Djebail), found in a Phoenician tomb of the 13th century B.C. and 15 skulls from a necropolis at Sidon (Saida) dating from the 5th—4th century B.C.

The skulls from Sidon were collected by the late American missionary Mr. FORD. After his death the collection was presented to the National Museum at Beirut where I was allowed to measure and photograph them in June 1930, shortly after their arrival.

The oldest skull — the one from Byblos — a male skull — is reproduced on Plate I. Its measurements and indices are as follows :

| Name | length | width | height | l. w. i. | w. h. i. | l. h. i. |
|--------------------------|--------|-------|--------|----------|----------|----------|
| Phoen. 13th cent. Byblos | 19.2 | 14.6 | 12.2 | 76.04 | 83.56 | 63.5 |

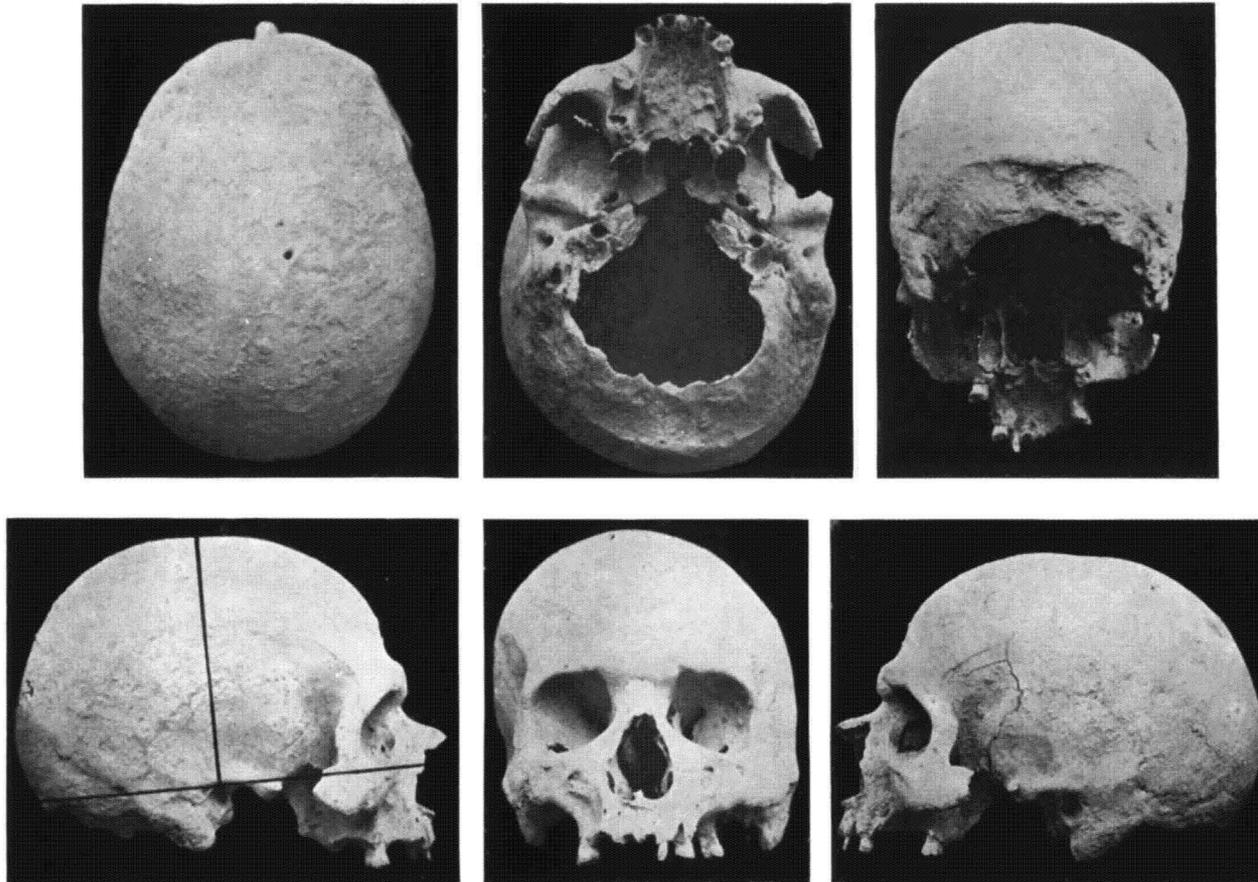
Further characteristics of this slightly platycephalic skull are : "occiput en chignon" (a racial peculiarity to be observed even in some Phoenician statuettes), the relation of the postauricular length of the skull to the total skull length being 0.49; aquiline nose (also to be observed in Phoenician statuettes and with the sculptures of the wailing women on Phoenician tombs), nasal index 50.6, rectangular orbits, well developed supraorbital ridges, protruding specially laterally. The development of the jugae is not as strong as might seem on first sight, the minimum frontal width being small (the min. front. width-jugular index is 76.2).

The base of the skull is damaged so that the exact relations of the foramen magnum cannot be controled. As, however, the occipital condyles are preserved the distance between them and the inion may be estimated and confirms the large occipital development. Palato-alveolar (Gaumen) index 90.

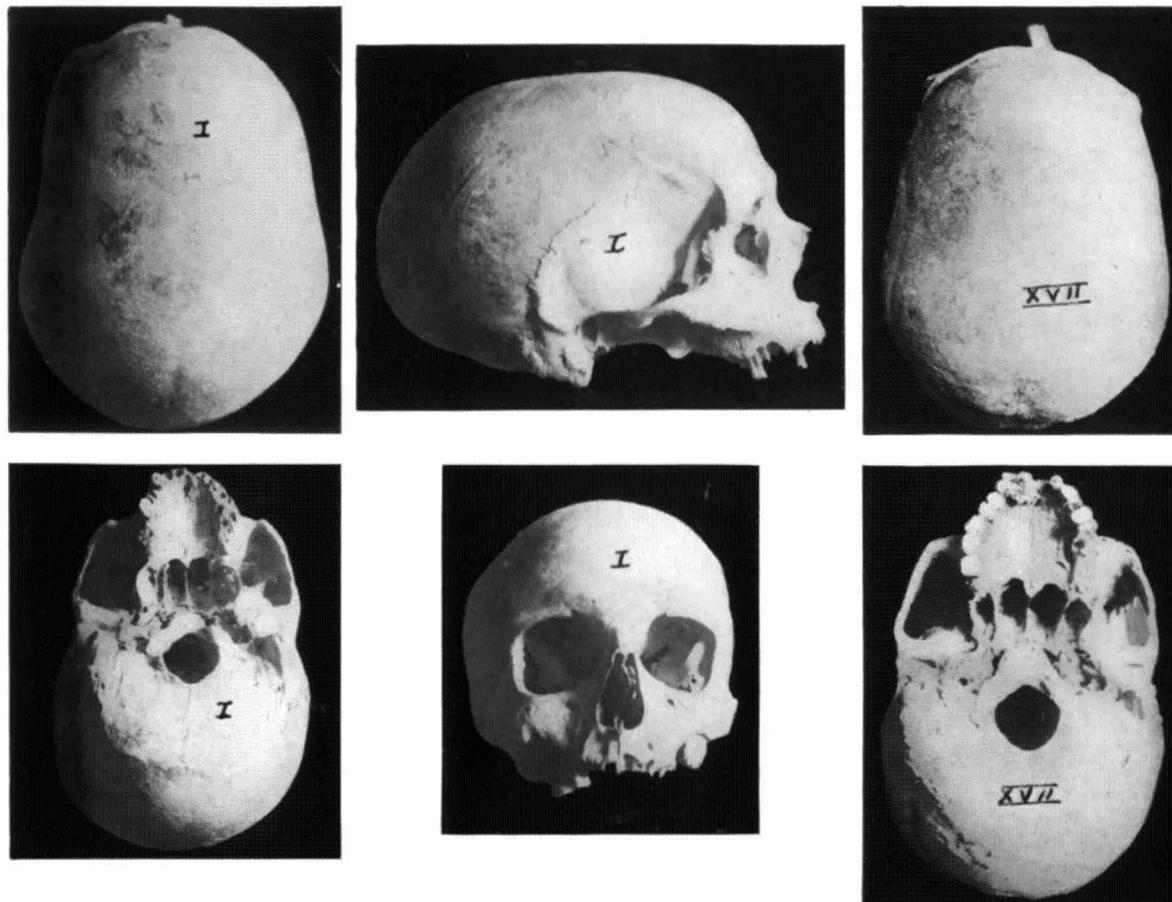
We probably have to take this as a good example of a typical male Phoenician skull, a supposition confirmed by studying the Phoenician skulls from Sidon (Saida).

Of the 22 sarcophagi collected at Saida by Mr. FORD and sent to Beirut, seven belonged to males, 15 to females. Of the 15 female sarcophagi three were either empty or the calvarium was so damaged that no measurements could be taken. Four other sarcophagi contained skulls of an index 86.7 (N^o. III); 84.7 (N^o. VII ♀); 85.2 (N^o. XI), and again 84.7 (N^o. XIV) 1).

1) The Roman figures between brackets indicate the cipher I put on the skulls.



Phoenician skull from a sarcophagus at Byblos (Djebail), 13th cent B.C.



Phoenician skulls from sarcophagi at Sidon.

These skulls (see also HAMDY BEY's collection) apparently were either not Phoenician or had a type that cannot be considered as typical for the race (further one of them — N^o. III — was artificially compressed in the parietal region on both sides). Leaving these skulls out of consideration the remaining male skulls had the following measurements and indices.

| Males | length | width | height | l. w. i. | w. h. i. | l. h. i. |
|-------------------------------|--------|-------|--------|----------|----------|----------|
| No. I | 20.0 | 15.0 | 12.3 | 75.00 | 82.00 | 61.50 |
| No. II | 19.1 | 14.4 | 12.2 | 75.40 | 84.70 | 63.87 |
| No. V ¹⁾ | 18.5 | 13.7 | 11.6 | 74.05 | 84.67 | 62.70 |
| No. VI | 19.2 | 14.7 | 12.0 | 76.56 | 81.63 | 62.50 |
| No. XIII | 19.15 | 15.1 | 12.4 | 78.85 | 82.12 | 64.75 |
| No. XII | 19.8 | 14.9 | 11.5 | 75.25 | 77.20 | 58.10 |
| No. XV. | 19.0 | 14.7 | 11.3 | 77.37 | 76.87 | 59.47 |
| Average | 19.25 | 14.65 | 11.96 | 76.07 | 81.31 | 61.84 |

The female measurements and indices were as follows :

| Females | length | width | height | l. w. i. | w. h. i. | l. h. i. |
|---------------------|--------|-------|--------|----------|----------|----------|
| No. IV | 18.6 | 14.5 | 11.5 | 77.96 | 79.30 | 61.80 |
| No. VIII | 16.9 | 13.4 | 11.2 | 79.29 | 83.60 | 66.30 |
| No. IX | 18.7 | 14.0 | 11.2 | 74.87 | 80.0 | 60.0 |
| No. X | 17.9 | 14.1 | 11.5 | 78.77 | 81.56 | 64.25 |
| No. XVI | 17.8 | 14.3 | 11.8 | 80.34 | 82.52 | 66.30 |
| No. XVII | 18.9 | 14.5 | 11.7 | 76.72 | 80.69 | 61.90 |
| No. XVIII | 17.4 | 13.8 | 11.9 | 79.31 | 86.23 | 67.24 |
| No. XIX | 17.7 | 14.0 | 11.3 | 79.10 | 80.71 | 63.84 |
| Average | 17.99 | 14.07 | 11.51 | 78.29 | 81.83 | 63.95 |

From this it appears that the indices of the male Sidonian skulls agree very well with those of the Byblos skull, while — as is usual with mesocephalic races — the female index (corresponding with the female index found by MANTEGAZZA and ZANNETTI) is higher, the sexual difference being 2.22 in favor of the female. Taking into consideration also the four male Sidonian skulls described by CHANTRE and my Byblos skull

1) This probably was a young individual.

the male index is 76.4, giving a sexual difference of 1.89. The similarity of the Sidon skulls with the Byblos skull appears also from the other indices I took (see also plate II and III).

| Names | min. front. jug. ind. | nasal ind. | pal. alv. ind. | post. auric. ind. |
|----------|-----------------------|------------|----------------|-------------------|
| Byblos ♂ | 76.2 | 50.6 | 90 | 49 |
| Sidon ♂ | 79.2 | 49.8 | 93 | 51 |

In addition to these skulls I have been able to measure and photograph two skulls or parts of skulls present in the Museum at Palmyra (oasis Thadmor).

Palmyrene skulls have been studied before by C. CARTER BLAKE¹⁾ who examined the human remains derived from Palmyra in 1872 by Captain BURTON. These remains belonged to eight individuals. Of five of them only pieces of calvaria were found. Of three others (N^{os} 2, 3 and 4 of the BURTON collection) N^o. 2 and 3 had characteristics that forcibly reminded BURTON and BLAKE of the Phenician skull figured on Plate II of MARICHARDS and PRUNER BEYS paper (l.c. supra). Their measurements and indices were as follows :

| BURTON's skulls | length | width | height | l. w. i. | w. h. i. | l. h. i. |
|--|--------|-------|--------|----------|----------|----------|
| Palm. N ^o . 2 . . . | 20.8 | 14.6 | 12.4 | 70.2 | 84.9 | 59 |
| Palm. N ^o . 3 ²⁾ . . . | 17.1 | 13.1 | 11.1 | 76.61 | 84.7 | 64 |

In 1875 BUSK³⁾ described three other skulls collected at Palmyra by Mr. COTESWORTH :

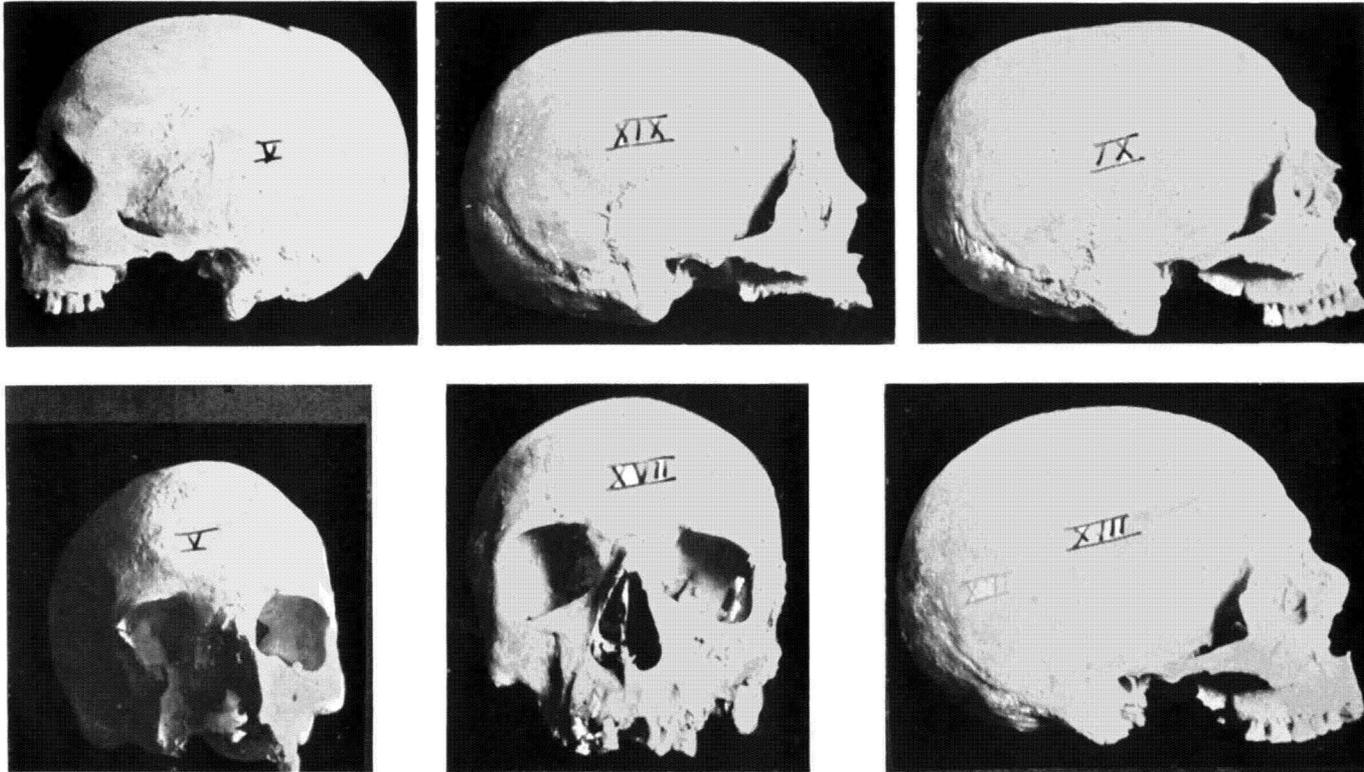
| Cotesworth's skulls | length | width | height | l. w. i. | w. h. i. | l. h. i. |
|----------------------------------|--------|--------|----------------------|----------|----------------------|--------------------|
| Palm. N ^o . I . . . | 6.9 i. | 5.4 i. | 5.2 i. ⁴⁾ | 78.26 | (96.3) ⁴⁾ | (75) ⁴⁾ |
| Palm. N ^o . II . . . | 7.6 i. | 5.6 i. | 5.7 i. | 73.68 | (98.2) | (75) |
| Palm. N ^o . III . . . | 7.6 i. | 5.4 i. | 5.5 i. | 71.05 | (102.0) | (72) |
| Average l. w. i. . . | | | | 73.96 | | |

¹⁾ C. C. BLAKE. Notes on human remains from Palmyra. Journ. of the Anthrop. Instit. of Gr. Brit. and Irel. Vol. I, 1872, p. 312.

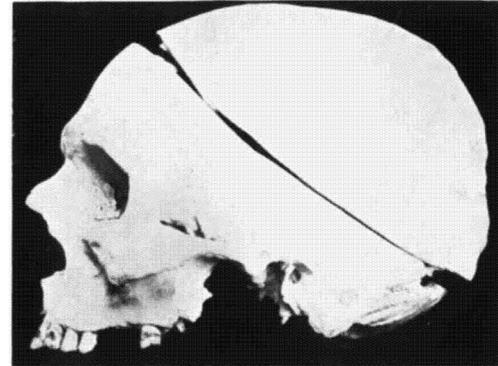
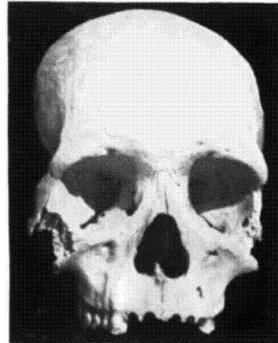
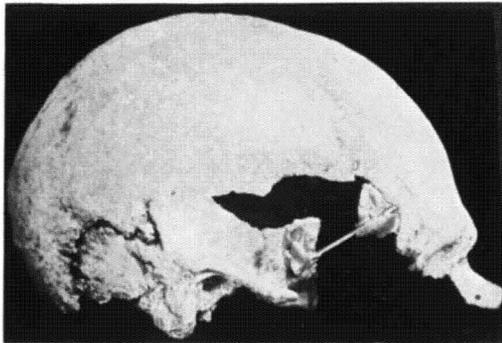
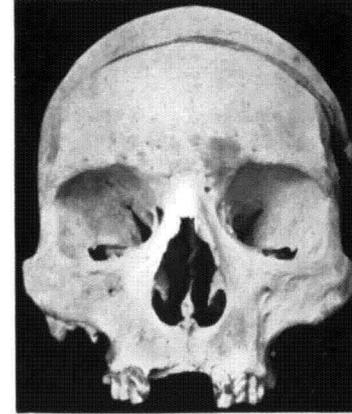
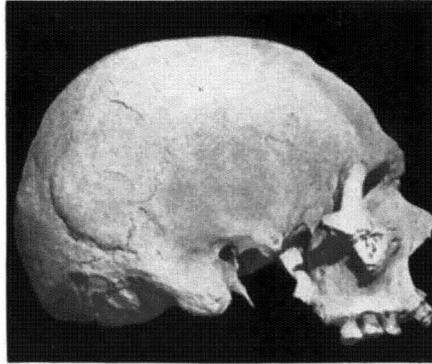
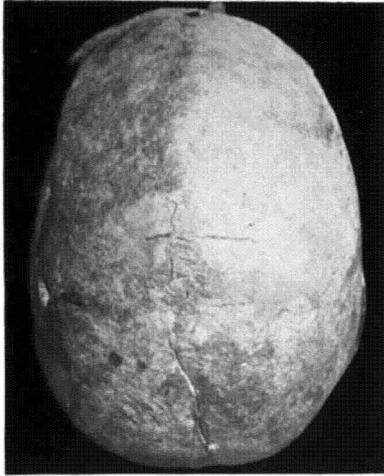
²⁾ This skull is reproduced in SELIGMAN's paper (l.c. infra).

³⁾ BUSK. Notes on some skulls from Palmyra, presented to the institute by the late Mr. COTESWORTH. Journ. of the Anthrop. Instit. Vol. IV, 1875, p. 366.

⁴⁾ I do not know how this height was measured, the height indices being so different from mine.



Phoenician skulls from sarcophagi at Sidon.



Skull of Father Bergy.

Palmyrene skull.

Recent Arab Semitic skull.

The average l.w.i. of the BURTON and the COTESWORTH skulls is 73.96 (74). Later some more skulls were sent by Captain BURTON to the Anthropological Institute in London but OWEN says practically nothing about them in his report¹⁾ on this subject, except that they resemble Egyptian skulls, he described.

The Palmyrene skulls I studied in Palmyra were not complete. Of one, according to its size, a male one, only the right lateral half was complete, of the other one only the frontal part was well preserved (c.f. Plate IV).

According to the custodian both were found in the Palmyrene tomb towers²⁾, wellknown to visitors of this place and dating from the 2nd and 3^d century A.D. — Here I give the measurements and indices of the sagittomedially halved skull comparing them with the male Byblos and the average of the male Sidon Phoenician skulls :

| Name | length | width | height | l. w. i. | w. h. i. | l. h. i. |
|-------------------|--------|-------|--------|----------|----------|----------|
| Byblos | 19.2 | 14.6 | 12.2 | 76.04 | 83.56 | 63.5 |
| Sidon | 19.25 | 14.65 | 11.96 | 76.07 | 81.31 | 61.84 |
| Palmyra | 19.1 | 14.6 | 11.8 | 76.40 | 80.82 | 61.78 |

The relation of the postauricular length to the total length of my Palmyra skull was 0.52 (0.47 in BURTONS skull N^o. 2). In the other, frontal half, the nasal index was 50.0 (in BURTONS N^o. 2 : 47.0), the minimum fronto-jugular index was 80 in my skull (72 in BURTONS N^o. 2) Comparing these data with those of my Phoenician skulls we find :

| Name | min. front. jug. ind. | nasal ind. | palat. index | post. aur. length i. |
|---------------|-----------------------|------------|--------------|----------------------|
| Byblos . . . | 76.2 | 50.6 | 90 | 49 |
| Sidon . . . | 79.2 | 49.8 | 93 | 51 |
| Palmyra . . . | 80.0 | 50.0 | ? | 52 |

We see that these indices as well as the l.w.i., the w.h.i. and l.h.i. of the Byblos, Sidon and Palmyra skulls resemble each other very much. Other points of resemblance are platycephaly³⁾ "occiput en chignon", rectangular orbits, distinct supraorbital ridges and high palate.

¹⁾ OWEN. Observation on the collection of skulls sent by Capt. BURTON in Sept. 1878. Journ. of the Anthrop. Instit. of Gr. Britain and Irel. Vol. VIII, 1879, p. 323.

²⁾ For a description of these tomb-towers see COTESWORTH. Journ. of the Anthrop. Instit. of Gr. Brit. and Irel. Vol. IV, 1875, p. 364. One of them shows the year 414 written in Greek and Aramean, i.e. about 102 A.D. (COTESWORTH).

³⁾ The platycephaly referred to in this paper is the platycephaly as seen in the sagittal aspect (cf. Plates I, II, III).

Taking everything together there can be no doubt concerning the close relationship of the Phenician population B.C. with the Palmyrene Arameans (the inscriptions on the tombs in Palmyra are mostly in Aramean), at the beginning of the Christian era.

Before dealing with the question of the present representatives of this race I want to say a few words concerning two other old skulls, one found by Father BERGY of the Université St. Joseph at Beirut in a riverbed of the Beká (the valley between the Lebanon and Antilebanon). Unhappily this skull was badly damaged on its voyage from France where Father BERGY sent it for Mr. BOULES opinion about it. After its restoration by Father BERGY it had an index of about 70, slight supraorbital ridges and a pronounced aquiline nose. Its postauricular-total length index is 47.1, the minimum front jugular index somewhat less than 81. Although its frontbones are slightly more receding, I quite agree with Father BERGY (and so did Mr. BOULE) that this is a protosemitic skull.

It certainly belongs to the same type of people as mentioned above. The other skull to be mentioned here is a Nabathean (southern Sinaitic) skull described by BUSK¹⁾. Its indices are l.w.i. 72, w.h.i. 81.8, l.h.i. 60.0. Its min. front jugular index 82.6, nasal index 50, postauricular length index also 50. So also this skull bears all the characteristics mentioned above.

Referring for the Megiddo skulls to my next paper, I now come to the question : who are the present representatives of this race ?

In order to remain in the same field of information I shall first give the measurements and indices of a recent skull present in the anatomical Institute of the American University of Beirut. Unhappily its origin is unknown but it bears most characteristics of the skulls just described. It possibly originates from one of the Hauran Arabs frequently working in Beirut.

It certainly is an Arabic Semitic (not a Lebanese) skull. I give its measurements and indices together with those of the Sinai Arab skull of the Royal College of Surgeons N^o. 624, mentioned in SELIGMANS²⁾ excellent paper on the physical characters of the Arabs.

| Names | length | width | height | l. w. i. | w. h. i. | l. h. i. |
|----------------------|--------|-------|--------------------|----------|----------|----------|
| Rec. Sem. | 18.4 | 13.5 | 11.4 | 73.4 | 84.4 | 62 |
| R. C. S. 624 | 18.2 | 13.4 | 13.4 ³⁾ | 73.6 | — | — |

¹⁾ BUSK. Description a Nabathean skull. Journ. of the Anthrop. Instit. of Gr. Brit. and Irel. Vol. VIII, 1879, p. 321.

²⁾ SELIGMAN. Journ. of the Anthrop. Instit. of Gr. Brit. and Irel., Vol. 47, 1917, p. 234.

³⁾ While my height measures of the skull were taken in the Frankfurt horizontal perpendicular on the upper edge of the meatus auditorius externus I suppose that SELIGMAN's height measure was taken in a different way and that his height indices and mine are not comparable (see also footnote 4 on the preceding page).

Some other indices of my recent skull are :

| Name | min. front. jug. i. | nasal ind. | palatal. ind. | postauric. length i. |
|---------------|---------------------|------------|---------------|----------------------|
| Recent semite | 78 | 48.1 | ? | 43 |

All these indices agree quite well with the Phoenico-Palmyrene indices mentioned above. Only the postauricular length index is slightly smaller (the same postauricular length index, however, occurs with the Midian Arab skull, R. C. S. N^o. 623 figured by SELIGMAN l.c. Plate IX).

Also the skulls of Beduins from Tripolis studied by MOCHI¹⁾ and GIOVANOZZIS second group, the Taura Arabs²⁾, show a similar form and indices. So I can confirm SELIGMAN'S statement that the Adnan Arabs, the Beduin tribes of North Arabia (including the Syrian desert) are the living relatives of the bearers of those Palmyrene skulls and I may add to it that their older representatives were the Phoenicians. As not so many head measurements and indices of Syrian and Egyptian Adnan Arabs are given in literature I finish with giving those of 107 Beduin and 117 Egyptian Arab males.

| Names | length | width | height | l. w. i. | w. h. i. | l. h. i. |
|----------------------|--------|-------|--------------------|----------|--------------------|--------------------|
| Syrian Beduins . . . | 18.71 | 14.38 | 12.7 ²⁾ | 76.85 | 88.3 ²⁾ | 67.9 ³⁾ |
| Egypt. Arabs . . . | 19.04 | 14.45 | 13.0 ²⁾ | 75.89 | 90.1 ²⁾ | 68.4 ³⁾ |

With the probability calculation the index of 101 Beduins of the Syrian desert is 77.2 (± 0.97), with a variations spread (σ) of 3.24.

Considering the fact that the l.w.i. index on the head — according to R. MARTIN⁴⁾ — is about one higher than on the skull (76, see above) makes the resemblance of the Beduin indices with the Phoenician male index still more striking.

Personally I measured no Beduin women but it would be interesting to know if also here as with the Phoenicians (and with the Samaritans, see my next paper) the female index is also about two higher than the male.

¹⁾ MOCHI. Presentazione di crani d'indigeni di Tripolis. Archivio per l'Antrop. e l'Etnol., Tomo 42, 1912, p. 381. *The same* : Sull'antropologia degli Arabi. Ibidem Tomo 37, 1907, p. 411, see specially his Tav. VIII and X.

²⁾ GIOVANOZZI. Cranii arabi del museo antropologico di Firenze. Arch. per l'Antrop. e l'Etnol. Tomo 34, 1904, p. 343, (especially skull 4353, p. 352).

³⁾ That all the figures concerning the height of the head measured on the living are higher than those on the skull is due to the fact that the tragion (incisura auricularis anterior) lies lower than the upper edge of the meatus audit. extern. used in my skull measurements.

⁴⁾ R. MARTIN. Lehrbuch der Anthropologie, p. 198.

That with the Arabs of Egypt this index is lower ¹⁾ may be due to some admixtures with African tribes (Sudanese or Berbers, see above).

In fig. I the crossed curve shows the indices of my Beduins of Syria, the dotted curve all the Byblos, Sidonian and Palmyrene indices hitherto

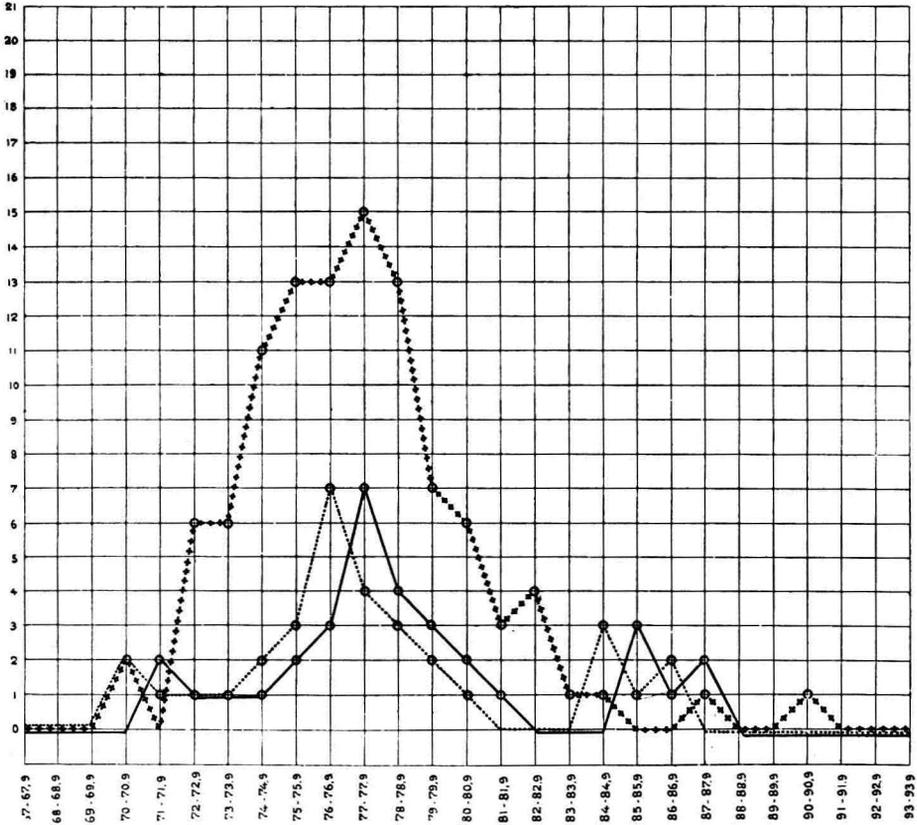


Fig. 1.

Crossed curve = Syrian Beduins; dotted curve = Phoenician skulls from Phoenicia (Sidon and Byblos), and Palmyrene skulls; continuous curve = the head indices corresponding to the latter (pure Phoenician: 77—77.9).

available. Parallel to the latter but one figure more to the right runs the curve, indicating the head indices of the bearers of these skulls (these indices being one figure higher than the skull index). From the latter it appears that its highest elevation coincides exactly with the Beduin top.

In fig. 2 I plotted the head indices of my 117 Egyptian Arabs, to which I added the indices of all the Carthaginian skulls described by BERTHOLON and CHANTRE, again adding the one point higher head curve of those

¹⁾ As quoted in my second contribution CHANTRE (*Recherches anthropologiques en Egypte*, p. 196), found still somewhat lower indices with the Aulad Ali of the Delta (average 75.37) and with the Arabs round Lake Menzaleh (74.48). — In the Fayum district the indices are still lower (72.82).

Carthaginians. Of the latter curve a large part runs parallel to my African Arab curve. In addition it shows, however, another high top, corresponding exactly with the Syrian Beduin or real Phoenician top (77—77.9).

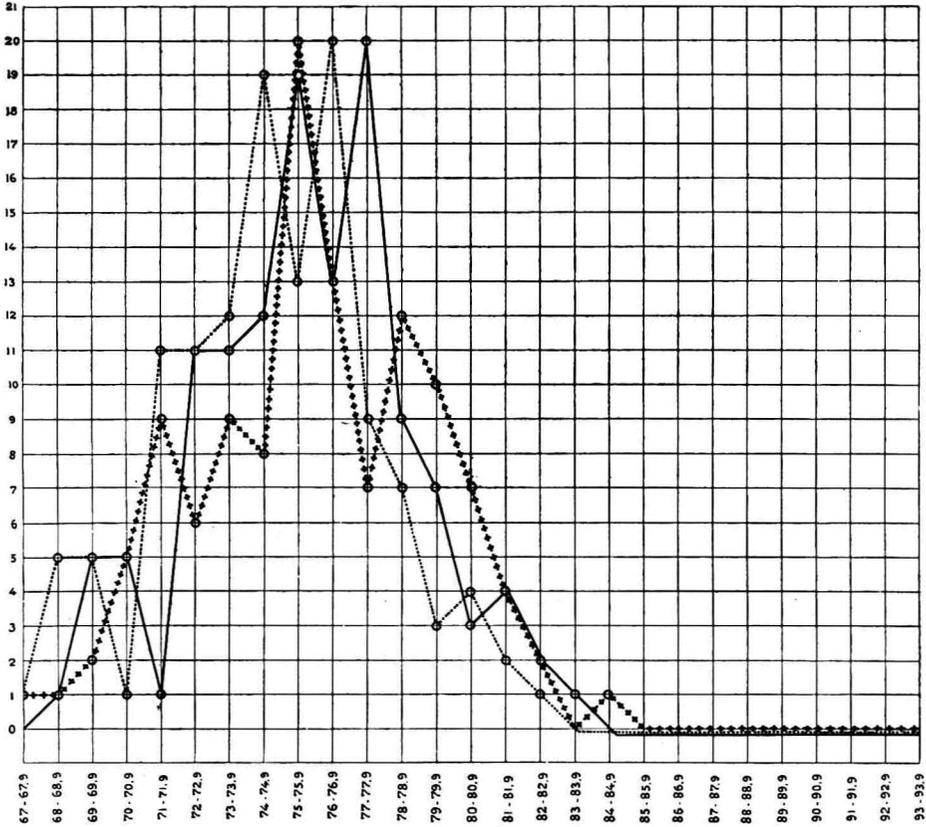


Fig. 2.

Crossed curve = African (Egyptian) Arabs; dotted curve = Carthaginian skulls described by BERTHOLON and CHANTRE; continuous curve = the head indices corresponding to the latter (note the pure Phoenician top at 77—77.9).