

# HOW FAR THE PREHISTORIC SKELETAL REMAINS EXCAVATED FROM VARIOUS SITES HELP TO DETERMINE THE BASIC COMMON ORIGIN OF THE INDO-EUROPEAN RACES

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The discovery of human remains from various pre- and proto-historic sites of India, viz. Harappa, Mohenjo-daro, Lothal, etc., have thrown much light on the evidence of the main components of racial strains present among the ancient people of India. The oldest human skeletal remains so far discovered in India were from Bayana (1) near Agra, Sialkot in Punjab and Nal (2) in Beluchistan apart from the Indus Valley region. Bayana, Sialkot and Nal crania were all long-headed, having affinity with the Mediterranean type. Sewell and Guha (3) assigned them to a branch of the Mediterranean race but the low vault of Bayana crania was attributed basically to the Mediterranean with possibility of intermixture.

Other skeletal remains which had been unearthed from a microlithic site in Northern Gujrat, viz. Langhnaz (4), were attributed to basically Mediterranean or Proto-Mediterranean with Hamitic, Vedoid or Proto-Australoid characteristic. Crania excavated from Maski (5) exhibited two racial strains, one Mediterranean and the other the Armenoid branch of Western Alpine. The skeletal remains from the megalithic site of Brahmagiri (6) are said to be a branch of autochthonous Australoid type, probably of the Scytho-Iranian stock, which is quite questionable. The skeletons from Piklihal (7) were ascribed to the ancestors of a major element of the present mixed Dravidian inhabitants of the Deccan and Southern India.

The present study is based mainly on the skeletal remains excavated from different prehistoric sites, particularly from Harappa, Mohenjo-daro, Chanhudaro, apart from post-Harappan skulls of Lothal which were attributed to the third millennium B. C. The analysis of the different metrical measurements and indices of crania and long bones revealed that the Indus Valley people possessed the following physical characters.

The living stature of the people varied from very tall to short i.e. 1837 mm to 1519 mm in male and from medium to short i.e. 1636 mm to 1463 mm in female. The average height of the people was 1674.84 in male and 1545.61 in female. They were basically long-headed but the presence of medium headed and hyperdolichocranial type were also frequent among them. But the presence of a broad-headed type was comparatively rare. The majority of the people possessed either medium or broad flat nose having average nasal index 51.97 and 49.60 in male and female respectively. The incidence of long fine nose and very broad nose, i.e. hyperplatyrrhine, was also noticed among them. The predominating character of superior facial index was

mesen but the percentages of lepten and euryen were also equally high. Among them the mesoconchic type of orbit was dominant but the presence of chamaeconchic in male and hypsiconchic in female was more prevalent. The majority of the people possessed mesognathous\* type of facial protrusion whereas orthognathous type was evenly distributed among both sexes. The occurrence of hyperprognathism and hyperorthognathism was relatively higher in male than in female. The majority of cranial capacity was euencephal\* among both male (1301—1450 ccm) and female (1151—1300 ccm) while the incidence of oligencephal and aristencephal among both male (1451-x ccm) and female (1301-x ccm) was equally high (8).

The analysis of distinctive morphological features as well as metrical characters of crania excavated from different sites revealed that the Indus Valley people were not a homogeneous type but were composed of mixovariant-groups.

1. A large-headed rugged dolichocranial type akin to Proto-Nordic type of Tepe Hissar III of early Iran, (9) Indo-Aryan of Kappars, (10) Caspian type of Dixon (11) and post-Harappan skull of Lothal, (12) with comparatively close affinity to the present-day people of the Punjab, Beluchistan and Afghanistan. The type was characterized by very tall stature, large long head with high cranial vault, strong brow ridges, relatively long face and broad nose possessing heavy muscular features. A comparatively less rugged dolichocranial type associated with well-arched contour, narrow vault, receding forehead, relatively long narrow face with well marked chin and lepto to chamaerrhin nose (vide Plate I).

2. A smooth dolichocranial type akin to Proto-Mediterranean or Mediterranean type of Near East and Middle East and particularly of the ancient inhabitants all over western Asia. The type was also related to the Proto-Mediterranean type of Chanhudaro (13), Mediterranean type of Mohenjo-daro (14) and post-Harappan skull of Lothal (15). Such type was widely distributed throughout Western Asia, Northern India particularly, extending from Gangetic basin as far as Bengal. The characteristic features of this type were long or medium head, associated with moderately high vault, well-arched contour with protruding occiput (occiput en chignon) appearing to be smooth and gracile in outlook. The forehead was relatively vertical, brow ridges were moderately developed, the nose was comparatively short, lepto to mesorrhine and the orbits were relatively small, squarish in shape (vide Plate II).

3. Another interesting type — Alpino-Armenoid

akin to Alpine, Armenoid of Alishar Hüyük of early Iran, (16) Alpine type of Altai Telengete (17) and broad-headed type of Mohenjo-daro and of Lothal. The type was characterized by broad or medium headed (sub-brachycranial) relatively broad face, round chin and globular cranial vault. The forehead was relatively high, supraorbital ridges were moderately marked while the occiput was comparatively flat (plano-occiput). The character of nose was relatively short and flat varied from leptorhine in type while the orbits were round and high (vide Plate III).

4. Another type was a low-headed hyper-dolichoto dolichocranial and mesocranial type akin to Vedoid or Australoid primitive features of the present-day aboriginal people, viz. low retreating forehead, prominent supra-orbital ridges, relatively broad flat nose depressed at the root and associated with low and short orbit (vide Plate IV).

The ancient people of the Indus Valley were basically long-headed akin to Proto-Mediterranean or Mediterranean type. Keen interest is attached to the presence of the Proto-Nordic people among the Harappans. Such a type of people was supposed to have close affinity with the so-called Indo-European or Indo-Aryan speaking people who were inferred to have entered India at the close of the third or beginning of the second millennium B. C. Apart from this the close resemblance of morphological features, particularly of the Proto-Nordic finer type of Harappa with those of Aralo-Caspian crania of Tepe Hissar III of early Iran suggests an infiltration of the steppe folk of Central Asia or Southern Russia into the Indus Valley. The presence of broad-headed Alpino-Armenoid people had played a minor part in the racial composition of the Indus Valley people. This type of people might be regarded as later infiltration. Most probably they entered India in the north-west from Asia Minor, Iranian and Pamir Plateau. The presence of certain primitive features as noticed among the low-headed type and high variability of nasal characters in certain Harappan crania may be inferred from an intermixture that had taken place between higher & lower type of people.

About the origin and movement of the Indo-European or Indo-Aryan speaking people several attempts were made to formulate different theories on the basis of their languages, cultures and the excavated skeletal remains. It is commonly believed that in the plain of west Central Asia north of the plateau and east of the Caspian grasslands drained by the Oxus and Jaxartes (18), the great nomadic culture associated with Indo-Aryan speaking people in the oldest traditional times had their origin. From this centre invasions and migrations started in several directions at the close of the third or beginning of the second millennium B. C. One of those racial movements was of so-called Aryan ancestors who entered India probably about 1400 B. C. Another theory holds that the common Indo-European stock was supposed to be located in the Ural-Altai region. Leaving their original home some tribes migrated towards the south-east and settled in the region around Balkh (Vahlika). Later, during further migration, the peaceful tribes among them moved

to the south-east and settled down in what is called "Iran-Aryana" or the land of the Aryans, while the more powerfully built people as represented among the rugged type of Harappan crania had probably advanced towards "Sapta-Sindhu" in the Indus Valley. They appear to be the immediate ancestors of the early Vedic people. Another hypothesis was put forth by Myres and Harold Peake, developed by Childe (19), that the Indo-European speaking people were evolved among the earliest agriculturists of the South Russian steppes and the lands eastwards of the Caspian Sea. They were supposed to be closely associated with a composite racial type which was called the ancestral Nordic (20).

About the migration of the Indo-Europeans Herzfeld (21) postulated a theory that in the second millennium B. C. the nomadic pastoral Indo-European tribes began to enter the plateau in a succession of waves. Some of them pressed on in an easterly direction into the Indus Valley, while others went into Western Asia and a third one later on settled in Iran, which was coming to be known as "Ariana". Breasted (22) also opined that in the third millennium B. C. somewhere along the Asiatic stretches of the grass land north of the Caspian there lived a group of nomads known as Indo-Europeans. Some of their descendants shifted southwards along the east shore of the Caspian and ultimately entered India, while the other group pushing south-west reached Babylon and the rest drifted westwards along the north side of the Black Sea. According to Ujfalvy (23) the Baltis together with the Dardous were the purest representatives of those Aryans who originated from the Aral-Caspian region, passed the narrows of the Hindu Koosh and settled in the Valley of the lower Indus and the Ganges.

In the light of modern discoveries and studies the skeletal remains antedating the arrival of the so-called Iranian speaking immigrants coming from Luristan (24) in Western Iran represents the pre-Aryan period. Five crania, three males & two females dating from about 2000—1100 B. C. were all variant types of the Mediterranean race, Cappadocian Afghan tendency. An early copper age skull from Beluchistan (25) was also of the same type. A similar occurrence of a long-headed 'Proto-Nordic' type akin to 'Indo-Aryan' of Kappers was also represented by the eneolithic skulls unearthed at Tepe Hissar near Damghan in Iran. A study of those crania recovered by E. F. Schmidt (26) revealed that the Mediterranean was the basic type throughout the periods I—III. Late in period II and throughout period III occurred a long-headed Proto-Nordic type similar to the Nordic type of Northern Europe. Krogman asserted that the non-Mediterranean long-headed type found at Damghan represented a distinct Aralo-Caspian or steppe type which may have entered into the racial composition of the present-day North Europeans. Kappers (27) concluded that the race of the Damghan people was closely related to the Neolithic long-headed people of Central Europe, the Kurgan people of Central Russia as well as to the Punjabis of the present time. Other series of long-headed crania, contemporaneous with the Tepe Hissar, were also found

at Shah Tepe near Astrabad and at Sialk (Table 2) near Kashan, south of Teheran. Arne (28) stated that the crania at Shah Tepe were dolicho- and meso-cranic, while the majority of the human skulls at Sialk were brachycranic a shape previously unknown on the Plateau. In Hissarlik III Schliemann (29) discovered three skulls, two males and one female. The female skull was assigned as round-headed Alpine by Peake. (30) But the male skulls were regarded by him as possible rugged muscular Nordic. Cranial materials excavated in Layer B at Hanai Tepe\* were probably contemporaneous with Hissarlik III. Of the thirteen skulls found in Layer A, seven were long-headed and six were medium headed. At Anau (Tables 3, 4) in Turkestan Pummelly (31) found one adult skull in North Kurgan which Kappers considered as one of the same type as Tepe Hissar. Sewell and Guha (32) stated that the Anau race seemed to belong to the Mediterranean and Caspian race.

On the basis of comparative study of the cranial indices Kappers (33) remarked that the Central European long-headed (Neolithic) together with Central Russian (71.0 cranial index) people and the early metal age Aral-Caspian belonged to the same race that apparently inhabited the European and North West Asiatic plains for many ages and following the large river beds, after a temporary stay in Anatolia & Mesopotamia, concentrated in the Punjab, there being assigned the name Indo-European or Indo-Aryan long heads. On this basis he further postulated that during 3000—2000 B. C. two races occurred in the Aral-Caspian steppes, dolichocephalic Caspians or Indo-Aryans may be the earliest and the mesocephalic group, probably the Scytho-Iranians, may have come later. The Caspian people who were present in ancient Indo-Aryan stock have their present representatives still among the Turkmenians, the Baltis and the Punjabs. The dolichocephalic group occurring in the Turkmenian steppes was more numerous and was supposed to have entered Indus Valley about the middle of second millennium B. C.

In the light of recent discoveries and researches that have been done in eastern Ukraine and in the basin of the Dnieper, Don and Donets Rivers and in the Crimea beyond the Caspian Sea the fact emerged that the pre-Aryan developments had continued in this area throughout Mesolithic, early Neolithic Neolithic and Chalcolithic period. The physical features of the prehistoric people of this region showed them to be the descendants of the East European Upper Paleolithic Cromagnon type which was known as "North Pontic Neolithic and Chalcolithic culture" dating from the middle of the third millennium B. C. In this connection Dr. Gimbutas (34) in her *Indo-European Archeological Problem* had pointed out that during the fourth and early third mille-

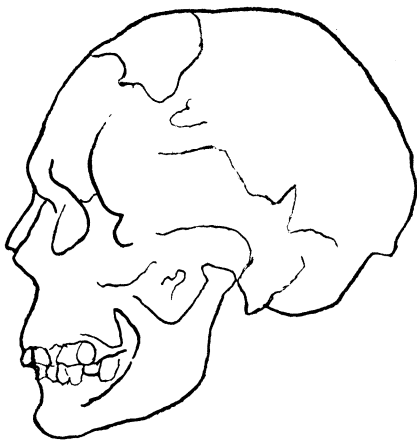
nium the people who lived in the lower Volga-area around the Sea of Aral in Uzbekistan and Khakhistan as far as the Altai mountain (the "Eurasian Kurgan culture") were predominantly long-headed, tall statured and more gracile, with considerably narrower face than the massive North Pontic Cromagnon type. Physically these Kurgan people were more or less akin to the early stratum of Indo-European speaking people. The division of the Indo-Iranian people had occurred as late as 1200 B. C. when one section of the Aryans moved finally to India while the other eventually settled in Iran. It was also asserted that the Aryans came from south of the Sea of Aral up the Syr-Daria River around the 15<sup>th</sup> to 14<sup>th</sup> century, the date which corresponds with that of the destruction of the walled cities of the Pre-Aryan Indus Civilisation.

On the basis of investigations of several types of copper and bronze objects from the Indus plain Robert Heine-Geldern (35) indicates that it was more likely that the ancient cities of the Indus region were destroyed by the Aryans but the date occasionally ascribed, the 15<sup>th</sup> century B. C., is little more than a guess, not supported by archeological evidence. This also indicates that at the time of the Mitanni kingdom the bulk of the Aryan ancestors lived somewhere in the general area of Trans-Caucasia, Armenia and North-Western Iran. Probably under the impact of the Phrygian and Armenian invasion they moved eastwards around of after 1200 B. C. Traces of this movement have been found in Northern Iran (Tepe Hissar) and in the Turkoman steppe (Tureng steppe). From the presence of a long-headed rugged & finer type at Harappa may be inferred the advent of so-called Indo-Aryan or Aryan speaking people.

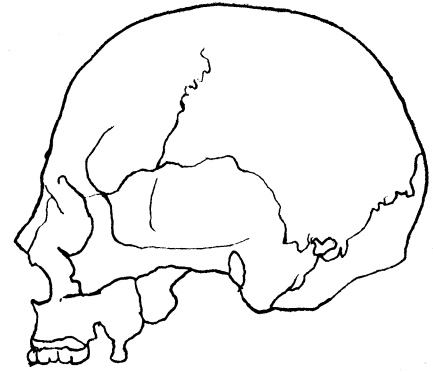
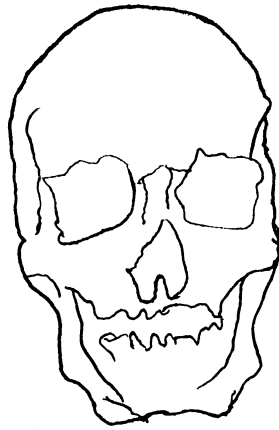
In tracing out the basic common origin of the Indo-European or Indo-Aryan people it is also certain that the type was closely related to the Kurgan or Russian steppe folk found principally north of the Caucasus and on the steppes between Volga and Dnieper river. The type was also closely related to the North European Nordic type as represented from skeletal remains at Tepe Hissar and rugged & finer type of Harappa. They were described as Proto-Nordic, "Proto-Aryan" by Myres and Peake, (36) Indo-European or Indo-Aryan by Kappers (37). The Neolithic long-headed people of Central Europe, the early Bronze Age Aral-Caspian and the Neolithic Central Russian Kurgan people are said to have been derived from a common stock — a racial type akin to Indo-European who occupied Eastern Europe and north-west Asiatic plains. The forefathers of the undivided Indo-European or Indo-Iranian were supposed to have lived somewhere in the vast area of Trans-Caucasia. At about 2500—2000 B. C. the migration had started westwards into Syria and eastwards into India.

PLATE I

PROTO-NORDIC TYPE



Harappa  
Proto-Nordic Finer type



Tepe Hissar



Harappa  
Proto-Nordic Rugged type

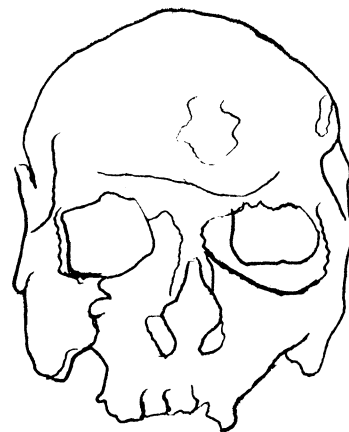
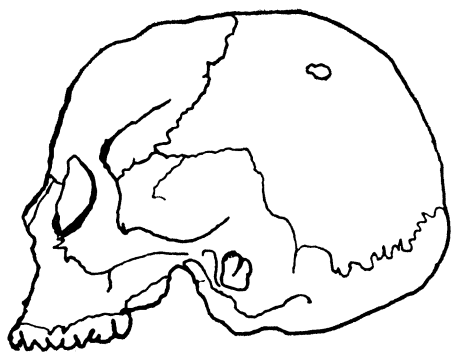
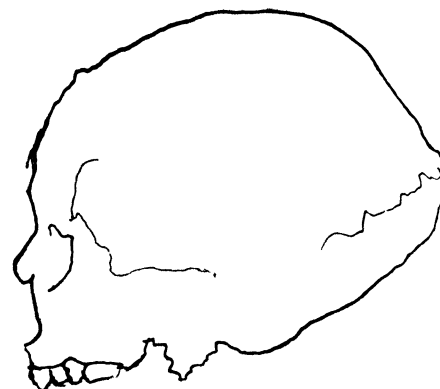
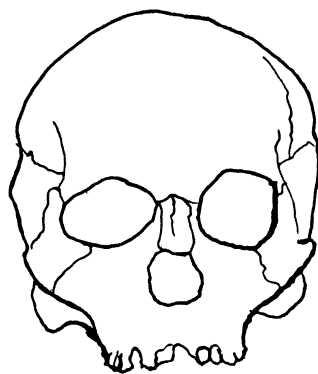


PLATE II

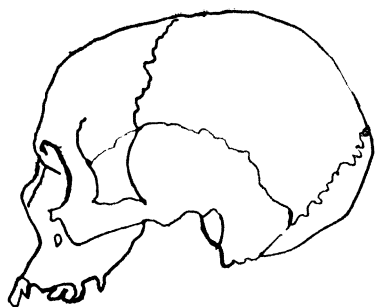
PROTO-MEDITERRANEAN TYPE



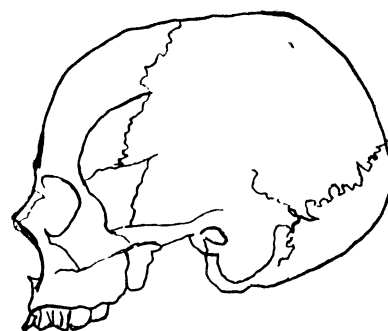
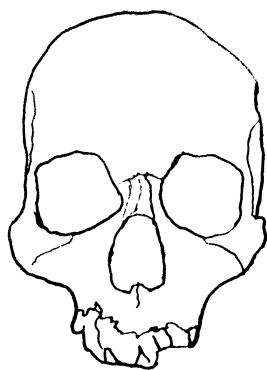
Harappa



Lothal



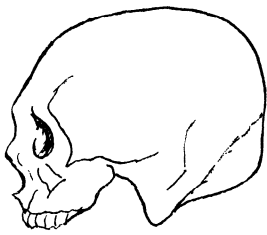
Harappa



Tepe Hissar

PLATE III

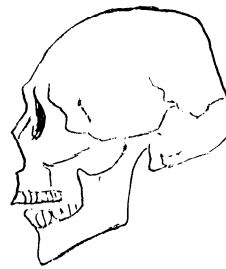
ALPINO-ARMENOID TYPE



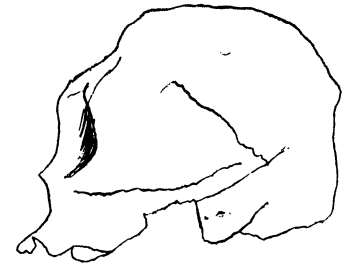
Lateral



Frontal

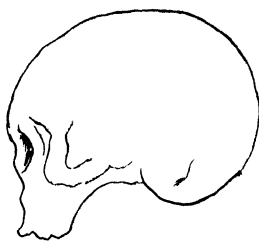


Alishar



Altai Telengete

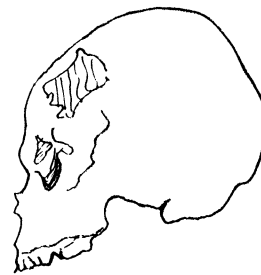
Harappa



Lateral



Frontal

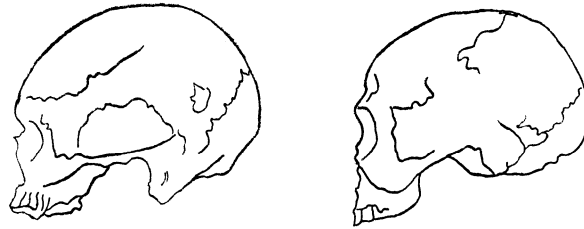


Lothal Post-Harappan

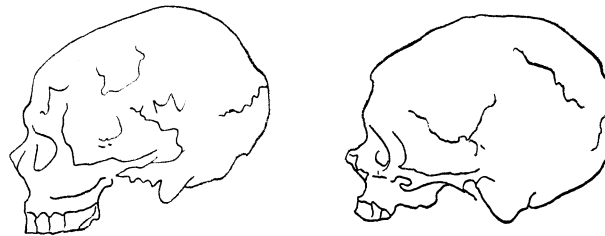
Harappa

PLATE IV

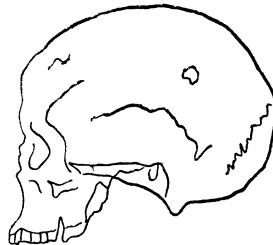
LOW-HEADED DOLICHO-MESOCRANIAL TYPE  
AKIN TO VEDDOID OR AUSTRALOID



Harappa



Harappa



COMPARATIVE TABLE 1 SHOWS THE MEAN VALUES OF PRE-HISTORIC AND PROTO-HISTORIC CRANIA OF INDIA AND OTHER COUNTRIES, PARTICULARLY COMPARED WITH THOSE OF ADULT MALE AND FEMALE LOthal CRANIA

	Lothal Male	Lothal Female	Harappa Male (38)	Harappa Female (34)	Mahenjodaro. (14)	Byana Male (4)	Sialkot Female (4)	Chanu- Daro. (1)	Maski. (4)	Nal. Male. (1)	Taxilla. (3)	Aditta- nagar. (8)
Max. cranial length	179.67	180.00	183.97	177.64	181.81	178	180	178.0	186.0	188.50	189.3?	185.86
Max. cranial breadth	144.00	148.33	134.78	129.89	127.6	127	128	126.5	137.0	132.0?	142.7	130.56
Max. cranial height	120.50	109.00	113.58	105.00	116.16	108	119	108.0	—	120.0	130.0	117.33
Basion bregma height	—	—	132.38	127.05	133.0	130	140	123.0	—	146.00	—	133.50
Max. frontal breadth	98.67	99.50	95.70	92.50	89.84	90	98	97.0	94.0	93.0	96.0	95.0
Max. bizygomatic breadth	—	131.00	131.31	118.69	120.5	136	—	124.00	—	120.00	100.0	126.0
Bigonial breadth	—	—	89.10	81.20	—	—	—	—	—	—	100.7	—
Superior facial height	68.33	62.50	68.40	65.58	64.96	—	—	61.0	59.0	72.0	73.5	61.0
Total facial height	115.00	110.00	—	—	109.1	—	—	—	—	—	—	—
Orbital height	32.29	33.75	34.67	33.64	32.67	—	—	32.5	42.0	33.00	—	33.75
Orbital breadth	42.25	36.62	41.14	38.51	37.36	—	—	43.0	43.0	40.00	—	41.00
Orbital index	76.16	88.00	82.78	86.13	87.63	—	—	75.58	97.67	82.50	—	—
Nasal height	47.00	45.00	51.14	48.32	46.43	—	—	48.5	46.0	49.0	55.0	51.90
Nasal breadth	26.00	25.00	26.34	24.04	22.0	—	—	25.0	21.0	23.0	24.0	25.50
Nasal index	57.44	55.58	51.97	49.60	49.00	—	—	51.55	45.65	46.94	43.73?	49.48
Horizontal cranial circumf.	540.50	525.25	523.67	498.86	491.0	—	—	492.0	—	528?	530.5	—
Cranio-facial index	—	90.50	98.27	92.73	—	—	—	98.02	—	—	52.82	98.41
Cranial capacity (in cc)	1573.68	1600.17	1388.96	1232.08	—	1250.5	1360.0	—	—	1449.2	1552.12?	—
Cranial index	78.36	78.95	73.09	73.31	70.54	71.30	71.07	71.65	73.56	70.02	75.36?	69.90
Length-height index	74.37	69.16	71.84	72.17	73.75	73.60	77.78	69.10	—	77.45	61.88?	70.87
Breadth-height index	—	89.66	99.38	98.75	104.48	—	—	97.23	—	110.6	82.38?	102.82
Length-auricular ht. index	65.33	58.01	61.96	59.16	63.52	60.67	66.11	—	—	63.66	—	—
Superior facial index	—	52.59	52.93	55.40	53.21	—	—	49.03	—	60.00	—	47.00



Table 2. Comparative mean values of the different cranial, facial, nasal and orbital measurements and their indices of pre- and proto-historic crania of Near East people particularly compared with those of adult male and female Harappa crania

Character	Shah Tepe II—III (c. 3000— 2000 B.C.)	Hissar III (c. 3000 B.C. Proto-Nordic)	Hissar III (Mediterranean.)	Egypt Pre-dynastic Naqada (c. 3200 B.C.)	Egypt Badari (c. 4000 B.C.)	Sakkara (1st Dynasty) (c. 3000 B.C.)	Sedment 9th Dynasty (c. 2400)	Kerma 12th, 13th Dynasty (Male)	Kerma. (Female)
Max. cranial length	188.57 (7)	191.67 (39)	186.25 (51)	185.13 (129)	182.5 (81)	186.9 (44)	181.9 (40)	185.2 (138)	177.2 (114)
Max. cranial breadth	139.43 (7)	135.95 (39)	133.12 (51)	134.87 (139)	131.6 (81)	138.7 (43)	138.3 (40)	133.6 (136)	129.8 (112)
Auricular ht.	117.0 (4)	117.25 (36)	114.46 (48)	115.59 (140)	115.7 (41)	114.8 (27)	115.3 (39)	110.7 (125)	107.4 (91)
Basion bregma ht.	—	138.49 (37)	132.93 (42)	134.21 (134)	134.1 (77)	135.4 (32)	137.4 (38)	133.4 (93)	127.8 (88)
Horizontal cranial circumf.	530.50 (2)	523.50 (2)	510.62 (50)	511.02 (118)	500.0 (80)	518.8 (29)	511.7 (40)	510.2 (133)	488.9 (107)
Sagittal arc.	370.33 (3)	385.85 (39)	375.29 (49)	373.02 (119)	371.3 (78)	—	373.8 (36)	374.7 (133)	360.3 (105)
Transverse arc.	—	312.39 (38)	302.61 (49)	303.76 (105)	302.0 (34)	—	314.9 (39)	305.0 (123)	291.8 (89)
Nasion basion line	—	104.81 (37)	100.67 (42)	99.34 (109)	95.0 (33)	96.5 (35)	96.0 (37)	—	—
Cranial index	73.93 (7)	70.85 (39)	71.65 (51)	72.99 (39)	72.1 (81)	74.2 (39)	76.1 (40)	72.2 (133)	73.3 (112)
Length height index	—	72.16 (37)	71.79 (42)	72.50	73.7 (77)	72.8 (30)	75.5 (38)	72.4 (91)	72.4 (88)
Breadth height index	—	101.81 (37)	99.64 (42)	99.51	98.2 (77)	97.0	99.4	99.0 (98)	98.45 (77)
Minimum frontal br.	95.67 (6)	97.21 (37)	94.51 (51)	91.06 (140)	91.1 (81)	96.5 (36)	92.6 (40)	92.8 (139)	89.2 (111)
Maximum bizygomatic br.	123. (4)	130.03 (35)	124.95 (43)	125.63 (83)	123.6 (61)	127.8 (44)	127.2 (29)	127.5 (83)	118.9 (52)
Bigonial br.	—	100.72 (32)	95.00 (35)	—	88.8 (32)	—	92.0 (32)	—	—
Superior facial ht.	70. (4)	71.21 (39)	69.14 (49)	67.59 (85)	67.1 (34)	71.9 (30)	71.5 (38)	51.3 (32)	50.7 (22)
Superior facial index	—	54.79 (34)	54.94 (42)	53.80	54.29	56.3	56.2	—	—
Zygomatico-frontal index	—	74.76	75.64	72.48	73.70	75.5	72.8	72.7 (104)	72.2 (79)
Fronto-parietal index	68.00	71.72 (39)	71.06 (50)	67.52	69.22	69.6	67.0	—	—
Cranio-facial index	—	95.69 (35)	94.43 (43)	93.15	93.15	92.1	92.1	92.0	—
Facial angle	83.0 (4)	86.78 (36)	86.43 (40)	99.17	84.0 (33)	—	—	81.8 (88)	81.8 (50)
Nasal height	49 (4)	51.21 (39)	50.50 (48)	48.94 (91)	48.4 (34)	51.2 (29)	51.4 (38)	50.0 (1-5)	47.1 (90)
Nasal breadth	23 (4)	25.51 (39)	24.82 (44)	25.12 (86)	24.8 (76)	25.4 (30)	24.5 (39)	25.8 (114)	25.0 (89)
Nasal index	—	49.87 (39)	49.41 (44)	51.08 (77)	51.6 (24)	49.5 (29)	47.7	51.6 (111)	53.2 (85)
Orbital height	31. (4)	32.15 (39)	32.16 (49)	32.67 (80)	32.0 (34)	32.5 (26)	33.3 (40)	32.7 (103)	32.5 (85)
Orbital breadth	37 (4)	40.51 (39)	38.90 (41)	39.10 (76)	38.4 (33)	38.9 (26)	39.7 (35)	41.5 (105)	39.7 (86)
Interorbital br.	23 (4)	22.46 (35)	20.26 (38)	—	22.4 (32)	—	21.2 (32)	—	—
Orbital index	—	79.36	82.67	82.32 (76)	83.3 (33)	83.6 (26)	84.1 (35)	78.6 (113)	81.6 (84)

Table 4 shows the comparative mean values of the different cranial, facial, nasal and orbital measurements and their indices of pre- and proto-historic crania of Near East and Far East crania particularly compared with those of adult male & female Harappa crania

	Ha- rappa Male (38)	Ha- rappa Female (34)	Palestine Megiddo Chalco- lithic (C. 3300 B.C.)	Palestine Megiddo Bronze Age (C. 2600— 1200 B.C.)	Palmyra (2nd & 3rd Century B.C.)	Crete (C. 3000— 1500 B.C.)	E. Cyprus Bronze Age (C. 2800— 1100 B.C.) Lapithos Melia Enkomi	Greece Neolithic Early Helladic (C. 3200— 2000 B.C.)	N. E. Balkan Chalcolithic Bulgaria— Bessarabia (C. 2500— 1700 B.C.)	Armenia Sevan (C. 1000— 600 B.C.)	Ukraine Bronze Age (C. 1600— 800 B.C.)	Yabrud (C. 1.00— 300 B.C.)
Maximum cranial length	183.97	177.64	190.50 (6)	186.00 (5)	186.5 (6)	186.4 (64)	176.45 (51)	185.1 (22)	182.23 (43)	189.7 (24)	191.1 (11)	180.6 (6)
Maximum cranial breadth	134.78	129.89	135.17 (6)	143.00 (5)	138.1 (6)	136.8 (50)	142.70 (53)	139.6 (24)	138.50 (14)	137.8 (24)	141.4 (11)	135.5 (6)
Auricular height	113.58	105.00			124.3 (6)	118.9 (25)	117.45 (33)	117.0 (19)	120.00 (2)			130.6 (6)
Basion bregma height	132.38	127.05	132. (1)	139.75 (4)		130.2 (20)	136.72 (39)	135.7 (10)	134.55 (11)	131.7 (24)	140.5 (8)	
Horizontal cranial circumference	523.67	498.86			515.9 (21)	515.9 (21)	510.87 (38)	514.7 (22)	520.88 (9)	528.8 (24)		
Sagittal arc.	372.71	353.04					368.23 (37)					
Transverse arc.	302.97	289.40					325.53 (37)					
Cranial index	73.09	73.31	71.02 (6)	76.89 (5)	73.6 (6)	73.4	80.97 (51)	75.8 (23)	75.81 (13)	72.8 (24)	74.0 (11)	74.8 (6)
Length-height index	71.84	72.17		74.78 (4)	66.2 (6)	69.9	78.14 (39)	73.5 (10)	73.58 (11)	69.9 (24)	73.52	72.3 (6)
Breadth-height index	99.38	98.75		97.63 (4)		95.18	95.57 (39)	97.8 (10)	98.11 (11)	95.8	99.36	
Cranial capacity	1388.96	1232.08										
Minimum frontal br. Maximum	95.70	92.50	97.25 (4)	99.80 (5)			97.72 (46)	96.3 (21)	96.31 (13)	99.2 (24)		
Bi-zygomatic br.	131.31	118.69	132.0 (4)	139.33 (3)	123.3 (3)	122.5	129.54 (22)	128.2 (10)	127.96 (12)	130.4 (16)	134.5 (10)	
Bigonial breadth	89.00	81.20					97.50 (8)	93.7 (10)				
Superior facial ht.	68.40	65.58		69.00 (3)	71.0 (3)	65.0 (13)	67.48 (33)	70.2 (10)	66.60 (10)	70.7 (20)	68.6 (11)	67.0 (5)
Superior frontal index	52.93	55.40		49.51 (3)	57.5 (3)	53.1	52.45 (22)	52.05	52.05	55.5 (13)	51.00	
Zygomatico-frontal index	73.07	75.55	72.46 (4)	71.62 (3)			75.44	75.11	75.11	76.07		
Fronto-parietal index	71.00	71.21	97.06 (1)	69.84 (5)			64.97 (46)	69.2 (21)	69.86 (13)	71.99		
Cranio-facial index	74.37	66.81	71.94	97.86 (3)			90.78	91.7 (10)	92.39	94.64	95.12	
Facial angle	84.00	81.75					94.50 (20)					
Nasal height	51.14	48.32		50.17 (3)	50.2 (4)	48.9 (13)	49.97 (36)	50.2 (10)	48.81 (11)	52.5 (23)		49.0 (5)
Nasal breadth	26.34	24.04		25.57 (3)	23.5 (4)	24.2 (10)	24.08 (35)	24.0 (10)	23.72 (11)	23.7 (22)		23.5 (5)
Nasal index	51.87	49.60		51.61 (3)	46.9 (4)	49.4	48.29 (34)	48.0 (10)	48.69 (11)	45.5 (22)	50.4 (12)	48.1 (5)
Orbital height	34.67	33.54		33.00 (3)	32.0 (4)	31.7 (22)	32.42 (36)	32.67 (9)	31.27 (11)	33.2 (23)		
Orbital breadth	41.14	38.51		38.33 (3)	37.5 (4)	39.5 (35)	39.28 (8)	38.8 (8)	38.75 (12)	40.2 (23)		
Inter-orbital breadth	19.41	18.88					25.50 (36)	22.1 (15)	23.89 (9)	82.5 (23)		
Orbital index	82.78	86.13		84.99	85.3 (3)	80.2	82.64 (35)	83.1 (7)	80.70 (11)		80.6 (12)	

Comparative Table 3 shows the mean values of the different cranial, facial, nasal and orbital measurements and their indices of the pre-and proto-historic-crania from Western Asia, particularly compared with those of adult male & female Harappa crania

Characters	Harappa Male (38)	Harappa Female (34)	Ur (c. 2000—1000 B.C.)		Al-Ubaid (c. 3200— 2800 B.C.) (Male) (8)	Kish (c. 3200— 2400 B. C.)	Alishar (c. 3000—2400 B.C.) Chalcolithic Copper Age			Anau (2)	Troy (c. 3000— 2200 B.C.) I—III Kum, Tepe, Babakoy.	Sialk I—IV (c. 4000— 2700 B.C.)
			Male (3)	Female (4)			Female (1)	Male (6)	Female (1)			
Maximum cranial length	183.97	177.64	193.67	184.75	192.8	187.83 (29)	179.0	182.0	177.0	185.0	191.3 (6)	196.00 (6)
Maximum cranial breadth	134.78	129.89	135.00	131.50	140.4	136.45 (29)	130.0	135.0	137.0	141.0	138.3 (6)	134.83 (6)
Auricular height	113.58	105.00	116.32	116.75	119.6	122.56 (16)	—	—	—	—	117.2 (5)	118.00 (6)
Basion bregma height	132.38	127.05	144.50	136.00	136.5	132.58? (12)	—	136.4	—	—	138.0 (3)	—
Nasion basion line	98.33	97.52	—	—	105.7	103.63 (18)	—	102.9	—	—	—	—
Horizontal cranial circumference	523.67	498.86	—	—	—	524.19 (16)	—	—	—	—	530.8 (5)	530.00 (5)
Sagittal arc.	372.71	353.04	—	—	—	373.00 (12)	—	—	—	—	393.0 (2)	—
Transverse arc.	302.97	289.40	—	—	—	300.83 (12)	—	—	—	—	314.0 (2)	—
Cranial index	73.09	73.31	69.80	71.25	72.67	72.86 (28)	72.6	74.2	77.4	76.21	72.5 (6)	—
Length-height index	71.84	72.17	72.62	72.70	70.80	70.59	—	74.94	—	—	71.6 (3)	68.78 (6)
Breadth-height index	99.38	98.75	105.48	103.03	97.43	97.16	—	100.3	—	—	100.9 (3)	—
Cranial capacity	1388.96	1232.08	1413.50	1272.00	1498.50	—	—	—	—	1378.1	—	—
Minimum frontal br.	95.70	92.50	97.67	93.00	97.0	94.96 (24)	84.0	81.3	93.5	—	95.7 (6)	94.83 (6)
Maximum bizygomatic br.	131.31	118.69	132.33	120.00	127.6	126.56 (9)	124.0	124.4	113.0	—	127.8? (5)	134.00 (6)
Bigonial breadth	89.00	81.20	96.50	94.00	98.6	—	—	—	—	—	100.0? (4)	93.40 (5)
Superior facial ht.	68.40	65.58	76.67	65.00	72.0	72.00 (5)	66.0	69.6	—	—	67.2 (4)	75.00 (6)
Superior facial index	52.93	55.40	57.98	54.16	56.43	55.31	53.2	56.0	—	—	53.4? (4)	55.38 (5)
Zygomatico-frontal index	73.07	75.55	73.80	77.5	79.02	75.03	75.8	73.5	82.7	—	74.9? (5)	70.77
Fronto-parietal index	71.00	74.21	—	—	—	—	—	—	—	—	69.2 (6)	70.27 (6)
Cranio-facial index	71.37	66.81	—	—	66.18	67.38	69.27	68.13	63.84	—	66.80	68.36
Facial angle	84.00	81.75	—	—	—	—	—	—	—	—	—	85.67 (3)
Nasal height	51.14	48.32	54.67	46.00	54.0	55.80 (5)	46.0	48.80	—	—	50.0 (4)	54.60 (5)
Nasal breadth	26.34	24.04	26.67	24.25	25.7	23.83 (6)	22.0	24.90	—	—	23.6 (4)	23.60 (5)
Nasal index	51.87	49.60	48.77	52.17	47.59	42.71	47.8	51.30	—	46.8	47.0 (4)	48.22 (5)
Orbital height	34.67	33.54	36.00	31.00	33.6	33.73 (13)	35.0	33.70	31.00	30.0	31.7 (3)	32.81
Orbital breadth	41.14	38.51	40.00	39.00	40.00	41.43 (12)	38.0	38.90	37.00	36.0	38.3 (3)	40.00
Inter-orbital breadth	49.41	48.88	—	—	—	—	—	—	—	—	24.0 (1)	20.25 (4)
Orbital index	82.78	86.43	90.00	79.48	84.00	81.41	92.1	87.10	83.80	83.30	81.9 (3)	82.02 (5)

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