



OXFORD JOURNALS
OXFORD UNIVERSITY PRESS

Biometrika Trust

Observations on the Occipital Bone in a Series of Egyptian Skulls, with Especial Reference to the Persistence of the Synchondrosis Condyllo-Squamosa (Zaaier; Synchondrosis Intraoccipitalis Posterior, B N A.)

Author(s): H. Dorothy Smith

Source: *Biometrika*, Vol. 8, No. 3/4 (Jan., 1912), pp. 257-266

Published by: Oxford University Press on behalf of Biometrika Trust

Stable URL: <http://www.jstor.org/stable/2331581>

Accessed: 22-02-2016 18:26 UTC

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Biometrika Trust and *Oxford University Press* are collaborating with JSTOR to digitize, preserve and extend access to *Biometrika*.

<http://www.jstor.org>

A STUDY OF PYGMY CRANIA, BASED ON SKULLS FOUND IN EGYPT.

By H. DOROTHY SMITH, B.Sc. Crewdson-Benington Student
in Craniology.

AMONG the Egyptian crania of the Third Dynasty now being measured under the supervision of Professor Karl Pearson, at University College, London—it was found that nine adult specimens were remarkable for their small size. These crania present marked feminine characters, and have been sexed definitely as female in all cases except one (E 487) which, though exceedingly small, shows certain variations from the more usual form, and is more heavily developed than the others, being thus more open to question as to sex.

In Plates VII—XI will be seen this cranium in various aspects. Plate VII shows the profile, with some general projection of the glabella, beyond which the line rises and slopes somewhat markedly to the bregma. There is some slight post-coronal depression, beyond which there is a further slight rise towards the mid-sagittal area. Beyond this the line curves first gently downwards towards the lambda, where there is an aggregate of ossicles, and then descends almost vertically and finally curves in to the under surface of the skull. The orbits are less finely cut than is usual among these small crania, and the occipital region is somewhat more rugged, while the mastoid processes, though small, are somewhat clumsy, and the left process projects rather further than the right. Besides the ossicles of the lambda, there are two epipteric bones (16 and 14 mm. long) on the left, and one (10 mm. long) on the right, and small ossicles in the lambdoid suture. The sutures are somewhat simple. Both zygomatic arches, and the left orbit, and the nasal bones have been damaged and only three teeth remain in position. These are the first molar on the right side, and the first and second molars on the left side, which show considerable signs of wear, but there is no evidence of wisdom teeth. There is no sign of any ossification of the coronal, sagittal or lambdoid sutures, but the spheno-occipital synchondrosis is obliterated, and the cranium is evidently that of a fully grown individual.

Cranium E 506 (Plates XII—XVI) shows the more usual formation. Here the profile shows an 'infantile' forehead rising vertically from the nasion. The line then curves backwards, and runs almost horizontally, with a slight indication of post-coronal depression, to a point in the mid-sagittal area. Beyond this it curves down to the lambda, and shows some occipital projection before curving in towards the base of the skull. The orbits and zygomatic arches are extremely lightly developed, but the mastoid processes are of fairly large size. The cranium shows metopism with an accompanying breadth of forehead, but there is a tendency towards the obliteration of all sutures. There are some very small ossicles in the lambdoid suture. None of the teeth have been preserved, but the alveolar margin is in good condition, and shows the sockets of the full complement of permanent teeth, including the wisdom teeth. This is the only specimen to which it has been possible to fit a mandible, and the mandible in this case shows a somewhat low and sloping ramus, a shallow sigmoid notch, and slight mental prominence. The three lower molar teeth on each side have been preserved.

Plate XVII shows the above two crania in comparison with a typical adult male and female of normal size in the collection, the male being placed below the female in the plate.

The other crania of small size under consideration show a formation more closely resembling E 506; and, of these, E 21 shows considerable absorption of the hinder portions of the alveolar margin, but appears to have had the wisdom teeth in position. The forehead here is however not vertical, as in the case of E 506, but slopes backwards somewhat from the nasion.

E 420 shows no wisdom teeth, but the other molars in position are considerably ground down, and the sphenoid and occipital bones are united. This cranium is also metopic.

E 579 shows the three upper molar teeth in position on the left side, on the right the second and third molars are wanting, and their sockets are somewhat absorbed. This cranium is rather larger than the others under consideration, and shows somewhat marked supraorbital ridges, and postcoronal depression.

E 666. Here five teeth are present, viz. the two bicuspid and the three molars of the right side; and in association with the wisdom tooth is an accessory molar. The teeth are wanting on the left side.

E 862 shows no wisdom teeth, and the other teeth present show no great signs of wear, but the spheno-occipital synchondrosis is obliterated, and the cranium appears to be that of a young adult. There is an epipteric bone (26 mm. long) on the left side.

E 869 shows the sockets of both upper wisdom teeth. Slight supra-orbital ridges are present, and also a slight metopic crest, and postbregmatic eminence.

E 919 also shows the sockets of both upper wisdom teeth, and though remarkably small has somewhat heavier mastoid processes than is usual among these small specimens.

In addition to the above it has been possible through the kindness of Dr Derry to procure measurements and photographs of two small specimens of other periods.

Plates XVIII and XIX show a specimen of the Wood-Jones collection (*L 2/63*). This is a small female with a wisdom tooth erupted, but not yet quite in position in the mandible. This skull was taken from a cemetery of Christian period, on the Island of Hesa, to the south of the Asswan dam.

Plates XX and XXI show the skull of a small female (*L 98/90 B*) which has had the wisdom teeth in position. This was found by Dr Derry in a grave of Ptolemaic-Roman period at Dakka (70 kilometres south of Asswan on the left bank of the Nile), and, of this specimen, the pelvis has also fortunately been preserved. Plates XXII—XXIV show the pelvic bones in comparison with those of a female of normal size. It will be seen to be very much smaller than the latter, thus indicating a marked degree of correspondence between size of the skull and the probable size of the body.

A table of the series of measurements which it is customary to take in the Biometric Laboratory is given on p. 265, and in this table are included the measurements taken on the above crania, in the order of their notice above, and also, for purposes of comparison, as many of the corresponding measurements on Akka skulls, and Andamanese as were given by the late Sir W. H. Flower in his paper ("Description of Two Skeletons of Akkas, a Pygmy race from Central Africa," *Journal of the Anthropological Institute*, Vol. xviii. 1888). The measurements of a typical female of normal size from the collection of third dynasty specimens are also given. It was hoped that the measurements taken on living Akkas by Prof. Elliot Smith ("Notes on African Pygmies," *Lancet*, Aug. 12, 1905), might also have been included, but, on investigation, it was found that the methods by which these were taken are hardly comparable, and certain of these measurements as printed appeared to be obviously in error. Unfortunately also the condition of the skulls lent by Dr Derry did not admit of the estimation of their capacity by the method of measurement with mustard seed, and E919 was also too fragile for this.

It will be seen from the indices that the third dynasty specimens do not show prognathism, being for the most part orthognathous while two specimens are mesognathous. The specimen procured by Dr Derry at Dakka shows a very high degree of prognathism while the Hesa specimen is mesognathous. The Akka specimens have both been estimated as prognathous, but the Andamanese are mesognathous.

Similarly the majority of the third dynasty specimens fall into the mesaticephalic group, only one small, metopic, specimen, and the specimen of normal size being brachycephalic, while both the Dakka and Hesa specimens are brachycephalic. The male Akka is dolichocephalic, and the female is mesaticephalic, while the Andamanese are brachycephalic. With regard to the orbital index there is less



Pygmy Cranium, E 487. About Life Size. *Norma lateralis.*



Pygmy Cranium, E 487. About Life Size. *Norma facialis.*



Pygmy Cranium, E 487. About Life Size. *Norma basalis.*



Pygmy Cranium, E 487. About Life Size. *Norma verticalis*.



Pygmy Cranium, E 487. About Life Size. *Norma occipitalis*.



Pygmy Cranium, E 506. About Life Size. *Norma lateralis.*



Pygmy Cranium, E 506. About Life Size. *Norma frontalis.*



Pygmy Cranium, E 506. About Life Size. *Norma basalis.*



Pygmy Cranium, E 506. About Life Size. *Norma verticalis.*



Pygmy Cranium, E 506. About Life Size. *Norma occipitalis*.



Pygmy Crania, E 506 (above) and E 487 (below), placed longside normal female and male Egyptian Crania. About half Life Size.



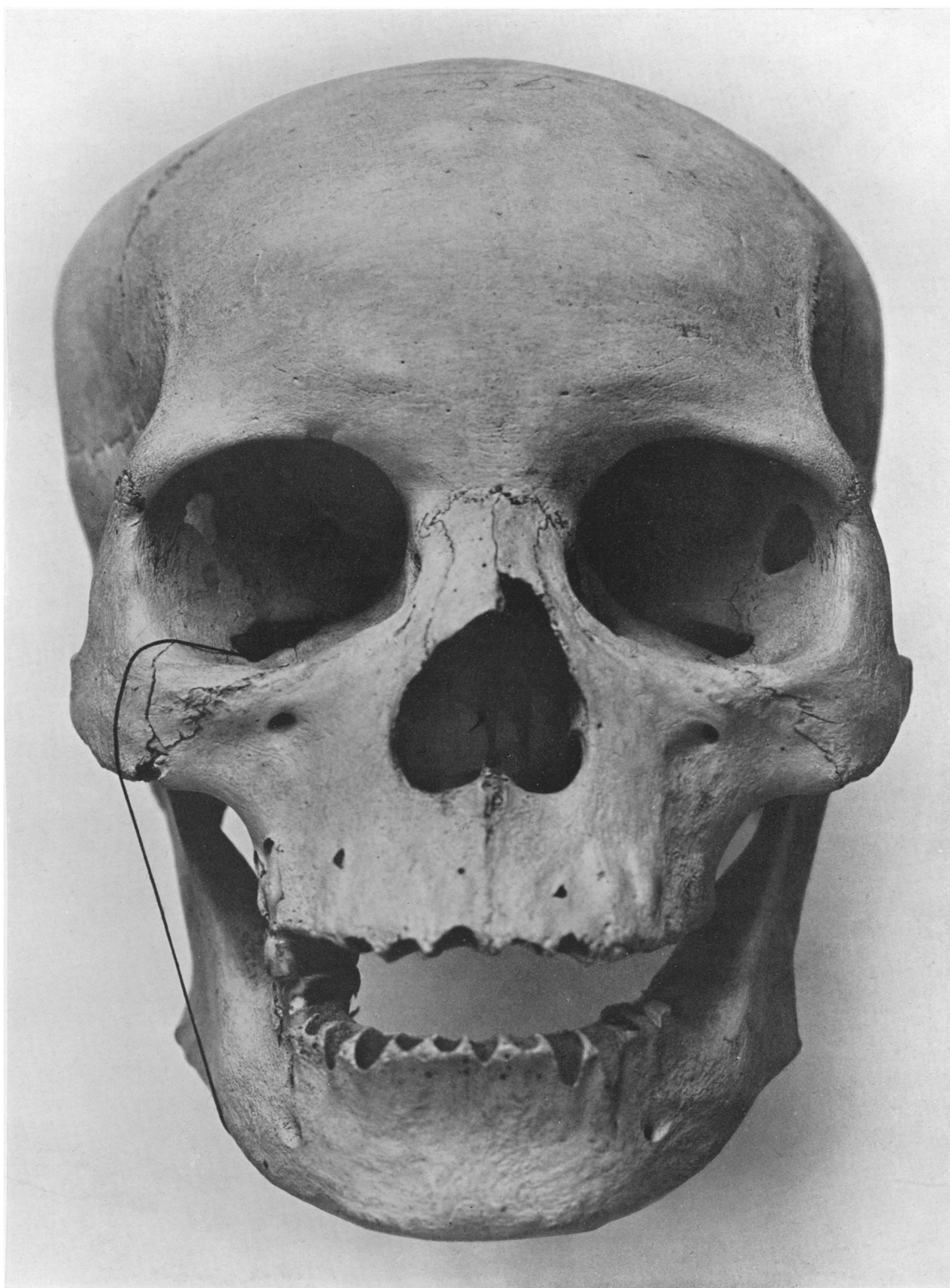
Pygmy Cranium, L 2/63, from Hesa. About Life Size. *Norma lateralis.*



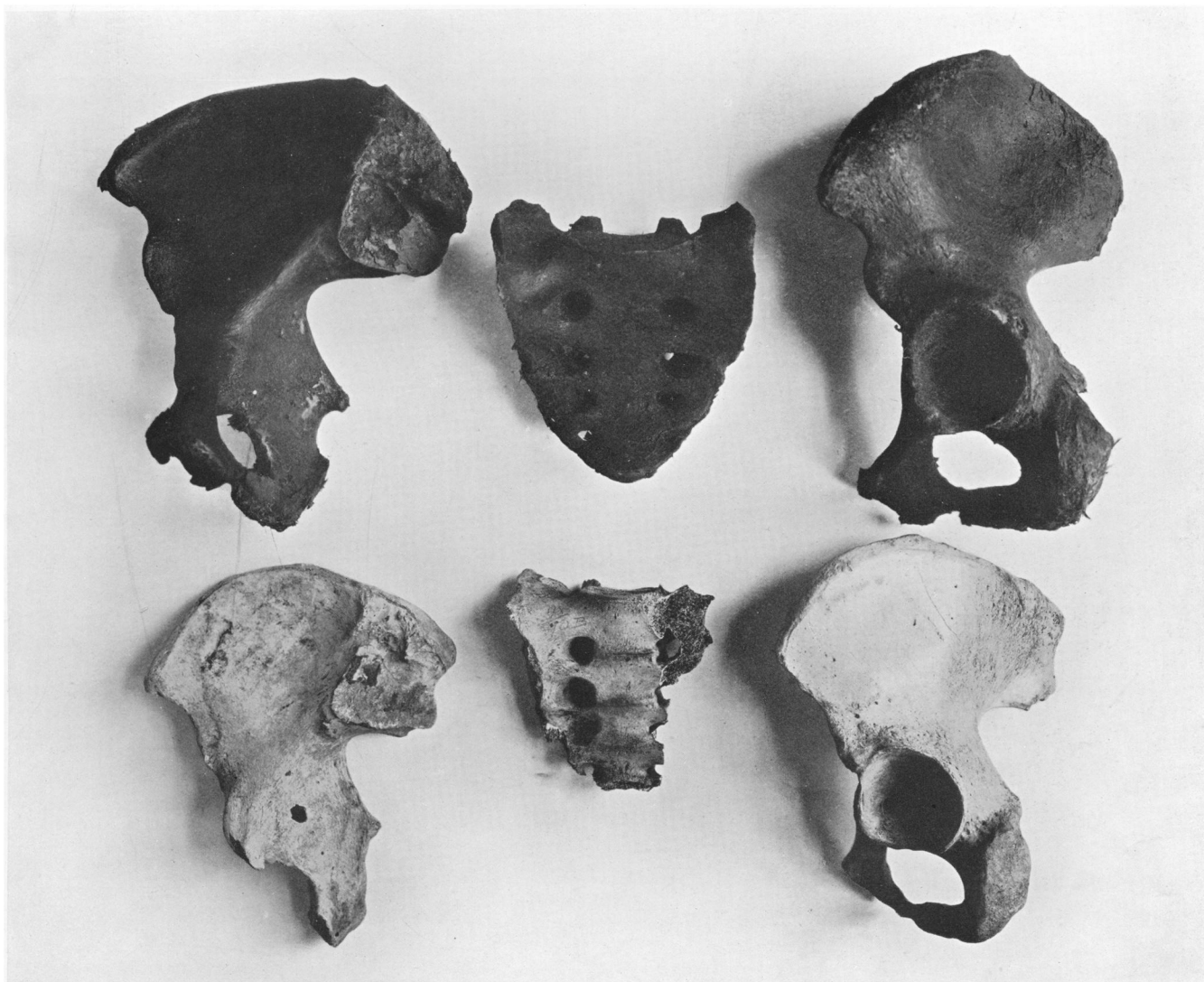
Pygmy Cranium, L 2/63, from Hesa. About Life Size. *Norma facialis*.



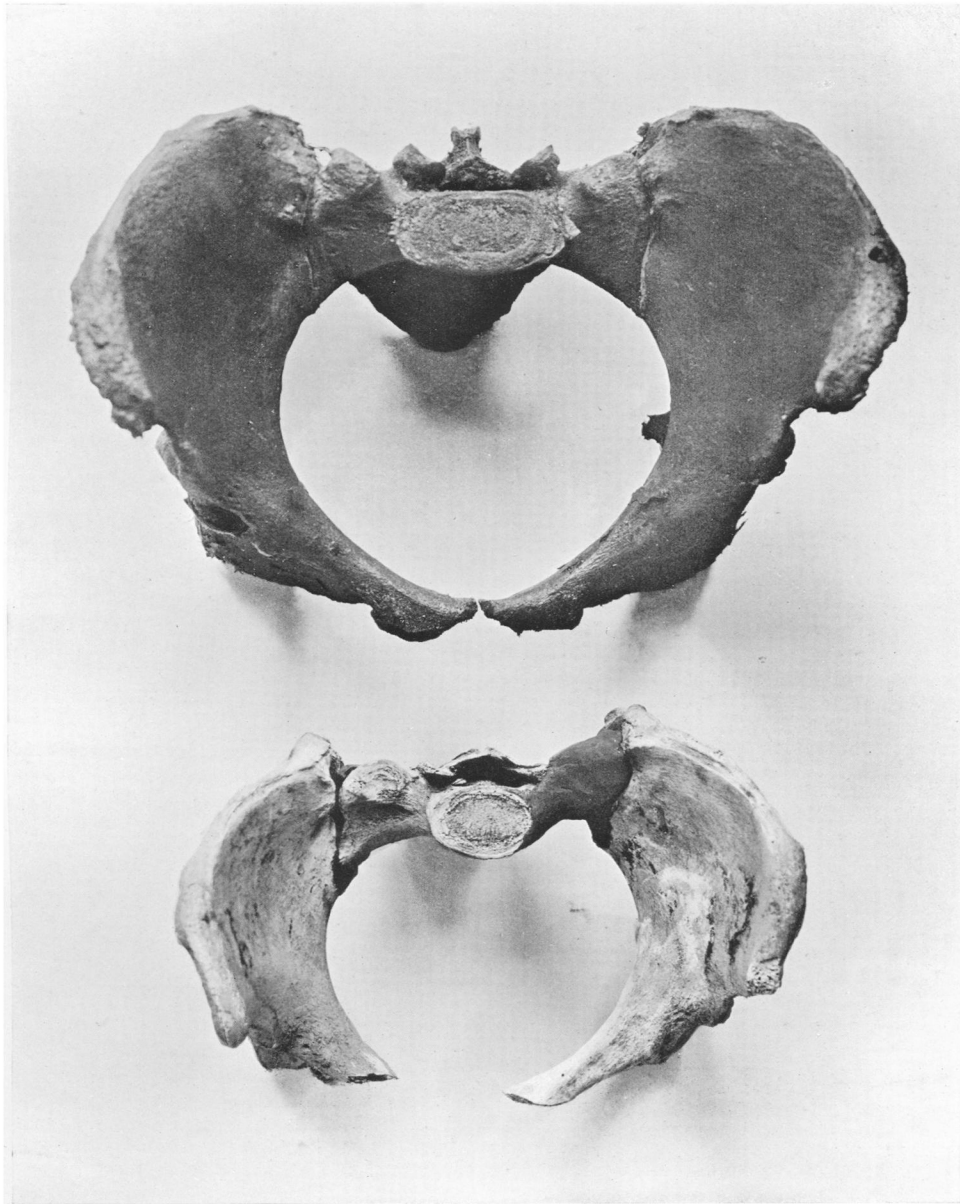
Pygmy Cranium, L 98/90 B, from Dakka. About Life Size. *Norma lateralis*.



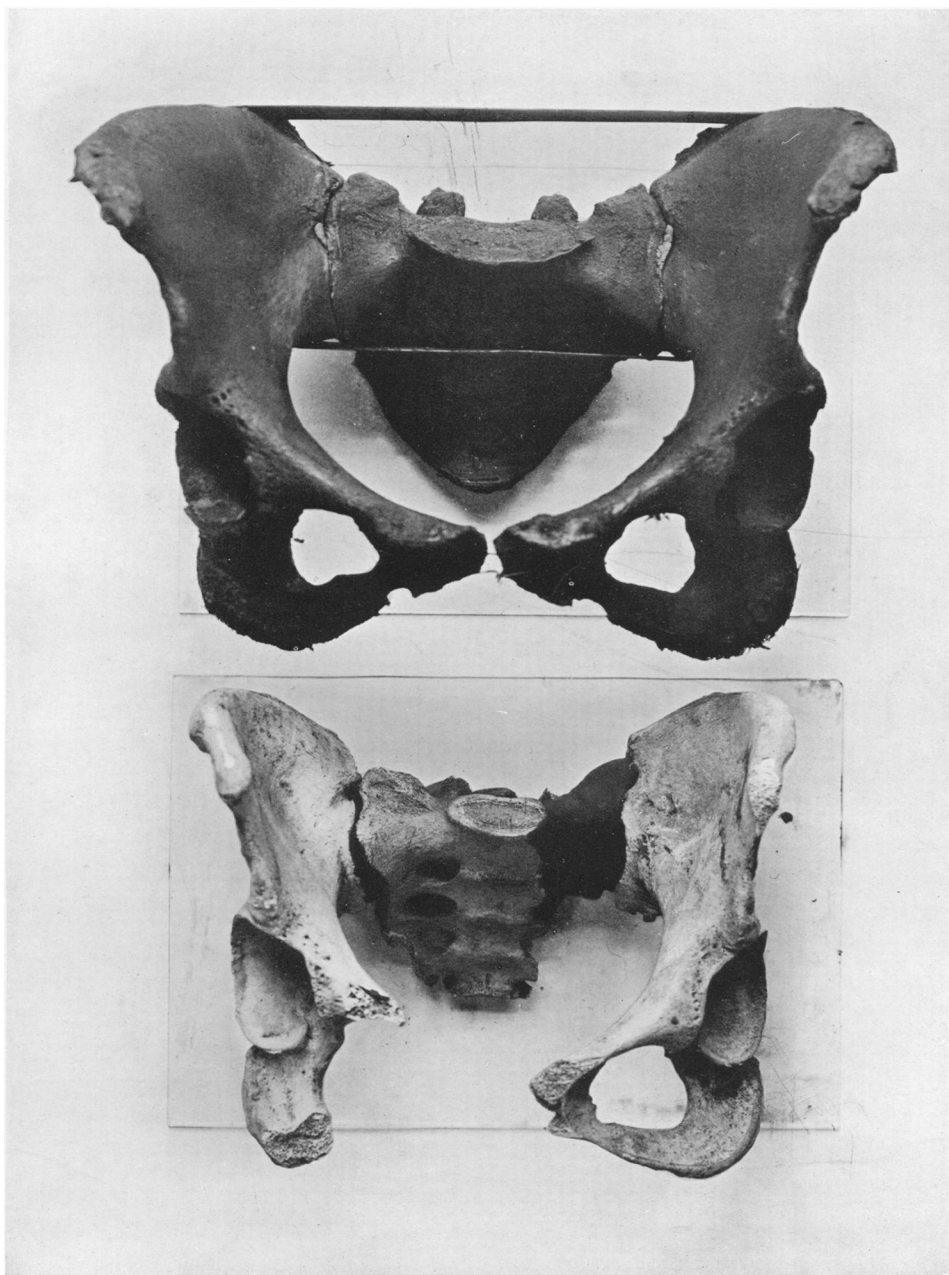
Pygmy Cranium, L 98/90 B, from Dakka. About Life Size. *Norma facialis*.



Pelvis of Pygmy, L 98/90 B (below), from Dakka, compared with that of normal female (above). Bones apart.



Superior View of Pelvis of Pygmy, L 98/90 B (below), from Dakka, and of normal female (above).



Frontal View of Pelvis of Pygmy, L 98/90 B (below), from Dakka, and of normal female (above).

	E 487	E 506	E 21	E 420	E 579	E 666	E 862	E 869	E 919	E 921 Female of normal size	Speci- men from Hesa	Speci- men from Dakka	Akkas		Andamanese	
													♂	♀	♂	♀
Flowers' ophryo-occipital length ...	166	163·5	165	166	167	165	166	167·5	164	172	160	159	168	163	167·4	160·8
Length (glabella-occipital) ...	167	163	167	167	169	165	167	168	166	173	160	158·5	—	—	—	—
Length (German horizontal) ...	166	163	168·2	166·5	168·5	164·5	167	167·5	167	173·5	160	160	—	—	—	—
Greatest horizontal breadth ...	130	131	129	128	131	126	126·8	127	131	140·5	129	130	125	127	135·8	133·2
Least breadth of forehead ...	88·8	90	89·1	95	89	92·2	85	87	87·3	87	94	86·7	82	86	—	—
Height of skull (basi-bregmatic) ...	120	123	126	122	131	120	127·5	126·8	125	126	129	119	—	124	—	125·3
Auricular height ...	106·8	102	106	104	105	100	102	106	110	111	105	107	—	—	—	—
Length of base (basion to nasion) ...	93	92	98	86	100	86·2	92	96	90	95	89·5	92·5	92	92	94·6	90·3
Horizontal circumference ...	470	469	472·7	476	481	473	468	470	475	499	462	460	468	462	481	462
Sagittal circumference ...	336	340	333	355	337	344	333	340	348	364	342	328·5	—	—	—	—
Nasion to bregma ...	117	117	111	120·5	118	117	107	115	119	123	117	119·5	—	—	—	—
Bregma to lambda ...	99	118	119	125·5	121	125	118	118	116	116	123	109	—	—	—	—
Lambda to opisthion, with steel tape...	120	105	103·5	108	97·5	102	108	107	114	125	101·5	100	—	—	—	—
Lambda to opisthion, callipers ...	99·8	91	87·7	92·5	84·8	89	91·5	91·5	98	105	88·5	87·6	—	—	—	—
Cross circumference of skull...	288	282	286·5	283	284	276	277	287	299	312	286	293	—	—	—	—
Upper face height (nasion to alveolar point) ...	63·5	60	66·3	65	64·2	66·8	64·2	66·2	62·8	67·6	59·2	68	72	72	—	—
Face breadth ...	<i>d</i>	85	90·8	96	89·2	91·5	82	85	88·2	89·6	89	90 ?	ophryon to alveolar point		—	—
Zygomatic breadth ...	<i>d</i>	116	118·8	116·7	120·3	110·5	112	115·3	114	119·3	119·8	118 ?	—	—	—	—
Nasal height ...	48·2	44(45·3)	49·2	46·5	49	48	48	47	45	46·3	41·6	42	41	38	—	—
Nasal breadth ...	23	23	25	22·7	24·6	25	20·5	23	23	21	22	24·5	26	21	—	—
Breadth of Left orbit ...	<i>d</i>	36·5	39	36·5	38·8	<i>d</i>	36·3	41	37	38·2	38·2	38	35	35	—	—
Breadth of Right orbit...	37·5	37	39·2	37·5	40·2	<i>d</i>	36	39·3	37	38·8	37	37	—	—	—	—
Height of Left orbit ...	<i>d</i>	30	36	29	33·5	34·2	32	33·2	33	33	33·6	32	29	29	—	—
Height of Right orbit ...	30	29	35·7	29	32·3	34·2	32	32·3	31·5	30·3	30·5	31·5	—	—	—	—
Length of palate ...	44	43·3	47·8	46·3	44·8	44·5	40	49·6	49·5	45·2	48	53 ?	—	—	—	—
Breadth of palate ...	33·5	35	35·4	36	40	39·2	36	33·2	33·8	37·5	38·7	37·2	—	—	—	—
Palate length excluding alveolar point	40	40	46	43·5	43·2	42	39	46·2	45	42	45·7	48 ?	—	—	—	—
Profile angle ...	93°	87°·5	83°	82°	83°	79°	81°	82°	85°	87°	75°	78°	—	—	—	—
Profile length ...	84	84·5	92·9	88	93·2	85·2	83·7	92·8	88	91	90·9	104·5	100	96	—	—
Length of Foramen Magnum ...	33·8	33·5	35	33·5	36	32·8	39·3	33·8	32	33·8	31·2	26·5	—	28	—	—
Breadth of Foramen Magnum	26	31	30·5	31	29·8	30·3	31·8	29	27	28·8	26·2	22·3	—	—	—	—
Capacity ...	1065	1200	1120	1154	1135	1130	1112·6	1072·5	<i>d</i>	1299·3	—	—	1102	1072	1244	1128
Length-breadth index ...	77·8	80·3	77·2	76·6	77·5	76·3	75·9	75·6	78·9	80·9	80·6	81·2	74·4	77·9	81·1	82·8
Gnathic index ...	90·3	91·8	94·8	102·3	93·2	98·8	90·9	96·6	97·7	95·8	101·5	112·8	108·7	104·3	101·1	101·1
Orbital index ...	80·0	78·3	92·3	79·4	86·8	<i>d</i>	88·1	80·9	89·1	86·3	87·9	84·2	82·9	82·9	90·4	91·4
Nasal index ...	47·7	52·2	50·8	48·8	50·2	52·0	42·7	49	51·1	45·3	52·9	58·3	63·4	55·3	mesorrhine	
Weight in grams ...	435·2	308·6	371·3	400·9	458·7	383·75	389·1	416·4	392·2	—	—	—	—	—	—	—

uniformity among the third dynasty crania. The orbits of four of the small specimens are microsemic, those of two small specimens, and the specimen of normal size, are mesosemic; and, of the remaining small specimens, two have megasemic orbits, while the last is defective. Both the Dakka and Hesa specimens have mesosemic, while the Akkas have both microsemic, and the Andamanese have megasemic orbits.

The nasal indices indicate no platyrrhine in the third dynasty specimens under consideration. Two small specimens and the one of normal size are leptorrhine while the remainder are mesorrhine. The Hesa specimen is mesorrhine, and the Dakka specimen is markedly platyrrhine. Both Akkas also are platyrrhine while the Andamanese are stated to be mesorrhine. There is however in two of the small third dynasty specimens (E 21 and E 579) a marked rounding of the lower margin of the piriform aperture, which gives a somewhat negroid appearance, though for the most part the nasal bones are well formed, and somewhat prominent, and the root of the nose is not markedly broad.

The actual weight of the crania is also not without interest, and at the bottom of the table of measurements will be seen the weights of the small specimens of the third dynasty. In comparison with other crania, however, the weight of individual examples is of small value by reason of variations in preservation and defects; but the mean of the figures given above is 395.13, and this may be compared with the figure 491.15, which is the mean obtained from the weights of 36 adult female crania of normal size, of the same series, and showing the same general condition as regards preservation.

Thus, though closely resembling the Akkas in point of size, the characteristic features of the Negro races are not present in a marked degree in any of these small specimens, except in Dr Derry's specimen from Dakka. This also is the only specimen with which any other portion of the skeleton has been preserved, and, in this case there is marked correspondence between the size of the cranium and that of the pelvis. From what is known of the relation between size of cranium and stature, it is, however, not idle to suppose that the occurrence of adult individuals of small stature was fairly common in Egypt at the period of the third dynasty, although from the evidence afforded by these specimens it is not possible to assert that all such pygmies were of "Negrillo" race. The several forms of dwarfism were quite familiar to the Egyptians, and the possibility that these are cases of dwarfism of the "infantile type" is worthy of consideration. At the same time the fairly perfect character of the teeth rather favours ethnic dwarfism.