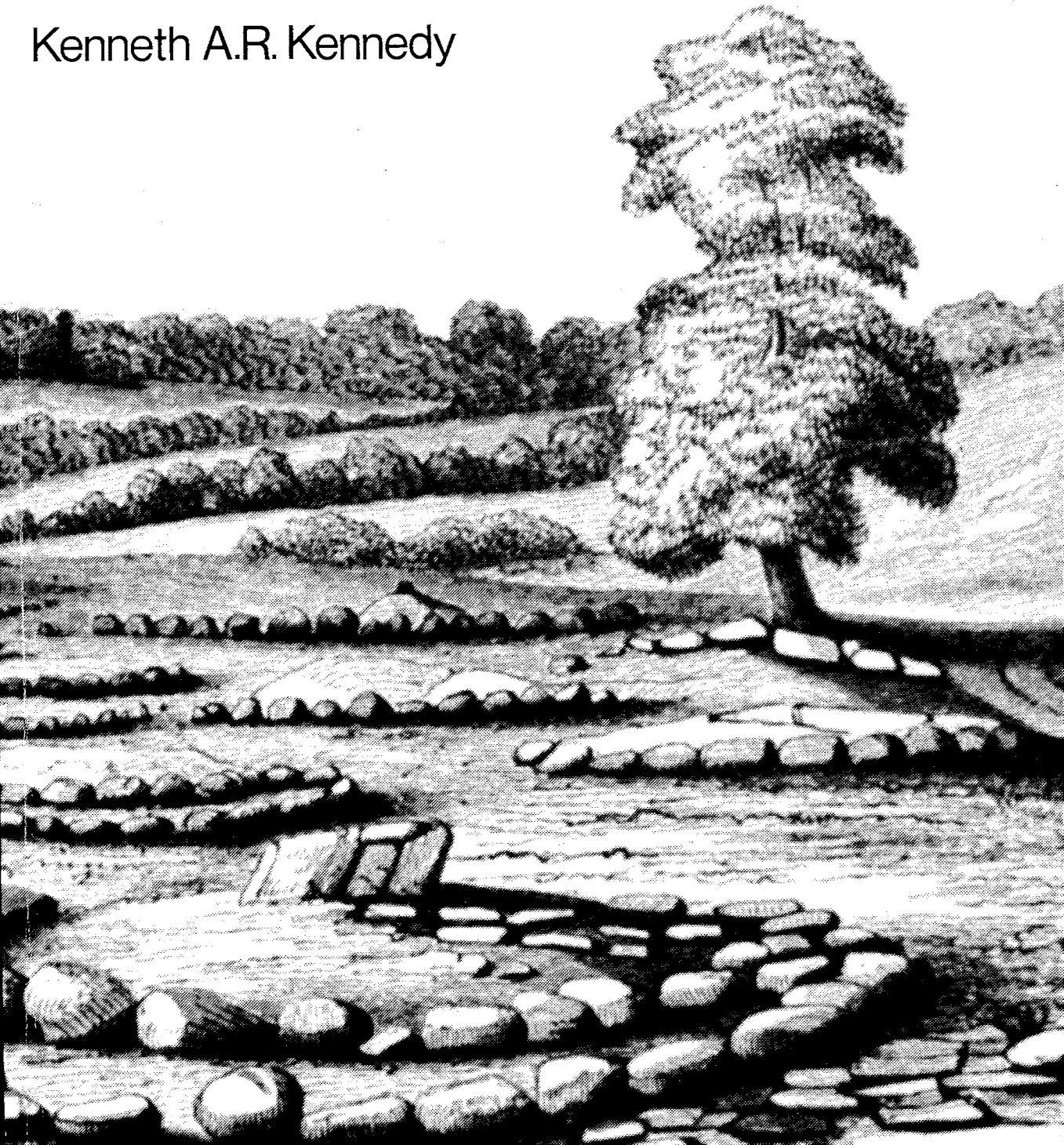


The physical anthropology of the megalith-builders of South India and Sri Lanka

Kenneth A.R. Kennedy



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Kenneth A.R. Kennedy

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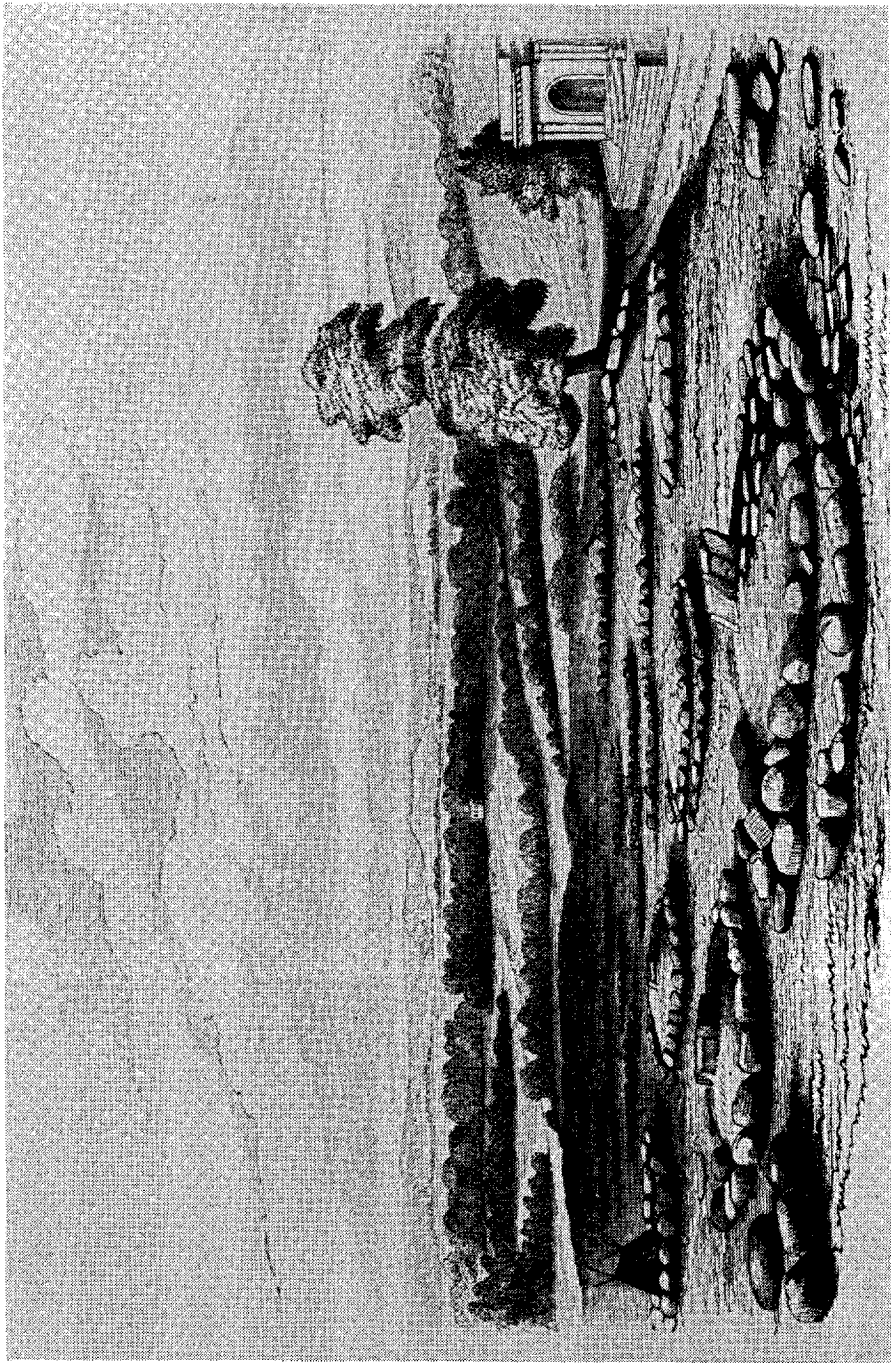


Figure 1: Cairn Cemetery at Jewurge. From Taylor (1873: 337, Plate I).

P R E F A C E

This is a summary of present knowledge concerning the physical anthropology and palaeodemography of populations associated with Iron Age archaeological sites in peninsular India and Sri Lanka. Hypotheses about the racial origins and population movements of the builders of the crudely hewn megalithic structures erected in South Asia have been put forward by historians, archaeologists and antiquarians, linguists and scholars of classical Indian texts. However, these questions about the megalith-builders are solvable in a more direct way from the study of the skeletal remains. The results of a recent anatomical study of the human skeletons from megalithic burial sites are compared with the interpretations which other writers have proposed on the basis of historical, archaeological and linguistic investigations.

The physical anthropology of megalithic man in South Asia is a facet of a broad research interest which encompasses the physical anthropology of populations of other prehistoric periods (Ehrhardt and Kennedy 1965; Karve-Corvinus and Kennedy 1964; Kennedy 1965a, b, c, d, 1966, 1969, 1972a, b, c, d, in press a and b, n.d.a. and b; Kennedy and Malhotra 1966; Rajaguru and Kennedy 1964). This research effort has been sponsored by the National Science Foundation (Grant Numbers GS-3109, GS-2212, GS-30117), the Smithsonian Institution, and the Faculty Research Grants Committee of Cornell University (Grant Number G45-2400). Appreciation is expressed to these institutions as well as to the many colleagues who have made it possible for me to examine the prehistoric skeletal remains maintained under their curatorship. With respect to specimens studied in connection with the present paper, thanks are offered to K.P. Oakley of the British Museum (Natural History), London, to J. Millot of the Musée de l'Homme, Paris, to H.D. Sankalia of the Deccan College Postgraduate and Research Institute, Poona, to M.A.W. Khan of the

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THE ARCHAEOLOGICAL BACKGROUND

The majority of archaeologists familiar with the pre-history of the South Asia have assumed the existence of a more or less unified culture complex called the *Indian Iron Age*, which immediately preceded the dawn of the early historic era in this part of the world. In peninsular India and Sri Lanka, iron sometimes occurs in direct association with megaliths, hence the term Iron Age has been used interchangeably with archaeological labels referring to the construction of stone monuments, *viz.* megalithic period, megalithism and even megalithic civilisation. Ancient sites with iron artifacts and megaliths are concentrated in the geographical area south of latitude 18, the region of geological accumulations of granite and gneissic rock, although this association has been reported from as far north as Khandesh and Nagpur in Maharashtra. N.R. Banerjee (1965b: 40-75) would include the cairn burials of Baluchistan and of the area round Karachi in Pakistan as an interesting link in the chain of evolution of megalithic structures in South Asia. But apart from a few isolated occurrences, their focus lies south of the Vindhyan range of hills, particularly in the watersheds of the Godavari and Krishna rivers and along the Eastern and Western Ghats. The island of Sri Lanka marks the southernmost boundary of this distribution of iron and megaliths. Within this immense region, other cultural remains occur in sufficiently high frequency along with iron and megaliths to be recognised as characteristics of the same cultural period. These include red ceramic ware fashioned into distinctive styles of shallow tray-bowls, waterpots and ring-stands. There is a pronounced decrease of lithic artifacts, as compared with frequencies of stone tools found in pre-iron-using sites of peninsular India. Stylistically different forms of bells and ornaments of copper and bronze appear along with a wide variety of horse furniture and assemblages of agricultural implements. Of the latter artifacts, some were related to the

practice of tank irrigation, others to the harvesting of wild grasses and domesticated plants watered by monsoon rains. A broad spectrum of similar tools and weapons of iron is found in a number of megalithic sites, a phenomenon that suggests to the Allchins (1968: 277) the existence of a cohesive group of iron-workers whose influence ranged across the lands of the megalith-builders.

Iron makes its earliest appearance in India during the first millenium B.C. Knowledge of a procedure for smelting the economical metal from ore developed in western Asia around 1800 B.C., by which time the Indus Valley civilisation of northwestern India had attained its zenith. By this date Lothal and other bronze-using communities to the south and east of the Indus Valley were entering a Late Harappan cultural phase. Western Asia did not enter the full Iron Age until 1000 B.C., iron beginning to replace bronze at Sialk in Iran a little before this time. The favoured metal reached Baluchistan after 1000 B.C., being found in cairn cemeteries and with a ceramic fabric related to Londo ware from southern Baluchistan. In northern Baluchistan iron occurs in the sites of Buthara and Barama, but there it is less frequent and has been dated as late as the eighth and fifth centuries B.C. Meanwhile, between 1050 and 450 B.C., iron had diffused in association with Painted Grey ware over the portions of North India defined by Sind and the Punjab and northern Rajasthan eastwards across the watershed of the Ganges and Indus to the Ganges-Jamuna Doab, an area that closely corresponds to the pattern of distribution of the Late Harappan culture of North India. At the sites of Atranjikhera, Alamgirpur, Ahichchhatra and Hastinapura, which lie on both sides of the Ganges, there is a marked decrease of lithic blade tools and an increase in frequencies of iron arrowheads, barbed and leaf-shaped points, spear heads and axes. Copper continued to be used, but the economic superiority of iron is reflected in its greater abundance and its apparent suitability for the manufacture of a wide range of tools, weapons and ornaments. By the time of the Buddha's preaching,

iron had become associated with a new ceramic called Northern Black Polished ware which replaced the Painted Grey ware in the area from the lower Ganges to the Punjab. The region to the east of the confluence of the Ganges and Jamuna did not acquire iron and Northern Black Polished ware until after 500 B.C., this part of the subcontinent having a distinctive red and black ware, a lithic blade industry and copper as the only metal known during the first half of the first millenium B.C. With the cultural unification of Gangetic India after 500 B.C., this part of the subcontinent entered the historic period which is marked by the presence of coinage, brick-walled cities, writing (by 300 B.C.), and the diffusion of Achaemenid culture with the conquests of Cyrus and the spread of the doctrines of Gautama and Mahavira during the expansion of the Mauryan Empire.

By 700 B.C. knowledge of iron had spread from the central Ganges area to chalcolithic settlements across the southern borders of Painted Grey ware distribution. Along with copper and iron these people manufactured the black-and-red ceramic which gradually replaced the Jorwe and other chalcolithic pottery fabrics, although some ceramic styles continued to survive in various adjacent regions. At the sites of Brahmagiri, Maski, Hallur, Sanganakallu and Piklihal in Mysore are found evidences of a true Iron Age culture of black-and-red pottery, a buff and red ware akin to Jorwe, stone axes, pit burials with stone floors, and iron objects. Iron may have reached peninsular India by a western route through Kathiawar and Maharashtra since at Hallur its appearance has been dated as early as 1020 to 950 B.C. This early phase of the peninsular Indian Iron Age was succeeded by a period when stone axes began to disappear and iron occurred in greater frequency along with copper, bronze and gold. Radiocarbon dates for the ferriferous site of Takalghat in eastern Maharashtra are 555 B.C. and 597 B.C., but Deo (1970, 1972) has suggested that earlier occupations may extend back for one or more centuries before this time. He has noted the existence

of some Iron Age cultural features in the Jorwe phase of the chalcolithic of Bahal and Tekwada in Khandesh, northern Maharashtra, which he attributes to colonisation from areas to the south.

The epoch of the elaborate megalithic burial complex saw the deposition of the remains of the deceased in graveyards rather than in house floors, as the custom had been in chalcolithic communities. Secondary burial and cremation were the usual methods of disposing of the dead. Structures which have been labelled megalithic are variable: urns and sarcophagi, cist and pit circle graves, rock-cut chambers, cairns or tumuli, and stone alignments. Even where large stones are absent in a burial context, as is the case in some of the urn fields, the site might still be called megalithic by some authors (certainly a broad interpretation of the term!). It is not uncommon to find in megalithic burials a secondary interment associated with black-and-red pottery and artifacts of iron with occasional pieces of bronze, copper and gold. Even stone implements may be present in low frequency in these deposits. This cultural complex came to a close in peninsular India around 50 A.D. with the importation of Roman trade wares. Arikamedu was an important coastal emporium during this period of European contact. The ceramic of this time is called Andhra or russet-coated ware, accompanying which are pots with a rouletted pattern on the inside of the base. In Sri Lanka the Iron Age was flourishing by the third century B.C., but cultural affinities with South India are unclear, as little work has been carried out on the island. References to megalithic burials have been found in classical Tamil literature of South India, thus documenting the persistence of this custom well into the historic period (Srinivasan 1946).

Against this classical definition of the Iron Age or megalithic culture complex of South Asia some prehistorians have raised objections. A century ago, Breeks (1873) claimed that he could not establish any obvious connection between the stone circles occupying

the high and bare ridges of the Nilgiri Hills and the dolmens erected on the lower slopes, the former being sepulchral in purpose while the latter were not. Writing about this same period, Walhouse (1877) observed that some of the South Indian megaliths were purely commemorative in function, as is their significance among those contemporary tribal peoples who erect monuments to honor their dead. More recently, Leshnik (1968 n.d.) has revived these arguments, and he concludes that the megalithic dolmens and other surface monuments are not related in any necessary way to the types of burial custom he defines as practised by Iron Age communities. Indeed, Leshnik has suggested that the surface monuments may be the vestiges of a separate cultural tradition of nomadic horsemen whose iron sickles were used for harvesting wild grasses rather than cultivated and irrigated plants and whose black-and-red pottery represents a cultural borrowing from the chalcolithic peasant agriculturalists whose territory they invaded. He does not question, however, that an overlap of Iron Age burial customs and the practice of megalith building occurred in some regions, i.e. in Andhra Pradesh (personal communication from Leshnik).

In addition to these questions as to whether certain prehistoric megalithic monuments are related to the same cultural complex as the burials and their associated iron artifacts, and whether their purposes were sepulchral or commemorative, are problems of the ethnic affinities of extinct and contemporary populations of megalith-builders. Here the significance of accurate dating of the megaliths, where they are in apparent association with burials or where this association is uncertain, becomes a critical issue in resolving these dilemmas. In the present work no assumption is made that all of the skeletal remains available for anatomical study are representative of a single Iron Age or megalithic culture complex. Future archaeological research may make it necessary to organise the data analysed here in a different way. Until such time as new light can

be thrown upon these matters, it seems reasonable to consider the inhabitants of peninsular India and Sri Lanka within the traditional framework of an Iron Age culture complex in which the erection of megalithic structures was a common practice.

The custom of raising megaliths to the dead continues in parts of India to the present day. As early as 1868 it had been reported at the meetings of the British Association for the Advancement of Science that the Khasia hill tribe of northeastern Bengal was constructing funerary monuments like those found in prehistoric sites in Europe as well as during an earlier period in India (Taylor 1869: 172). Diverse styles in either wood or stone uprights have been reported among tribal groups such as the Hos (Dalton 1872; Das and Chatterjee 1927; Majumdar 1950), the Bondos (Elwin 1950), the Saora (Elwin 1955), and in some communities in Assam which have entirely replaced stone with wooden structures. I observed the erection of stone menhirs by the Chota Maria of Chanda District, eastern Maharashtra, in 1972. These structures are more frequently commemorative than sepulchral in significance. Recently Ghosh (1969) has reported the persistence of megalithic practices in Bihar in areas of Singhbhum and Ranchi Districts where prehistoric structures are also present, his study concentrating upon the funeral customs of the Hos as these relate to the sociological significance of their megaliths. This is one of several anthropological efforts to reconstruct the original significance of prehistoric megalithism from the study of living populations retaining this funerary practice. Banerjee (1965b: 51-5) has also discussed this matter. The geographical separation of some contemporary megalith-builders from loci of ancient building concentration in peninsular India as well as the fact of disassociation of modern upright stones with cemeteries, given a few exceptions, are factors which led Wheeler (1959: 150-3) to see the prehistoric and modern practices as unconnected. Fürer-Haimendorf (1950) would derive northeastern Indian megalithic practices from Southeast Asia and

Oceania, regions where they have a much greater antiquity than in India. Given the distribution of megalithic structures throughout much of the Eurasian landmass, a separation of prehistoric from present-day structures identified by this term may be challenged, however.

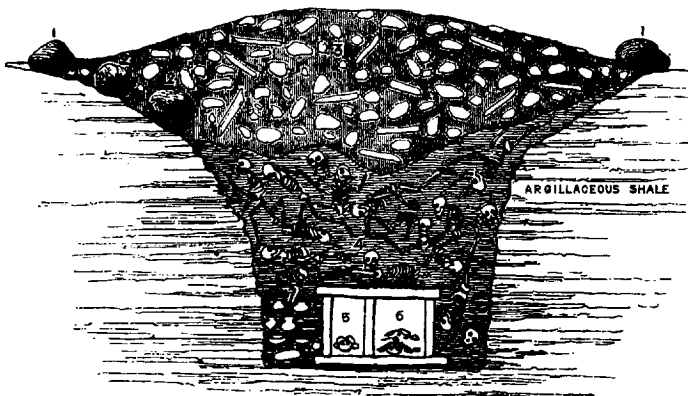
THE SKELETAL RECORD

Interest in the megalithic monuments, which remain even today an impressive feature of the Indian landscape, was initiated in the early part of the nineteenth century. British civil servants, whose duties in the Middle East precluded their direct participation in the development of European prehistoric studies, became aware of the antiquities existing in their own colonial backyards. The resemblance of the crude orthostats and clinostats of South Asia to the familiar illustrations of the monuments of Stonehenge, Avebury and Carnac led these officers and travellers to speculate about the ancient people who constructed them. An early recorded excavation of a megalithic burial site is attributed to the efforts of Babington (1823) of the Bombay Civil Service who read a paper at a meeting of the Literary Society of Bombay in 1820 concerning his investigations near Paddiangaddy, Cannanore District, Kerala. In the vicinity of massive stone monuments whose appearance he likened to giant mushrooms, Babington recognised in 1819 the association of megaliths and subterranean cists with depositories for the dead. He attempted a rough classification of different types of burial structures he had seen, and some of these he illustrated. The poor condition of preservation of the human skeletal remains did not allow a description of the prehistoric builders themselves.

The megalithic structures of the Nilgiris were first described in 1826 by Hough who, under the *nom de plume* of Philanthropus, reported to the editor of

the *Bengal Hurkaru*, Calcutta, the finding of 'a gold coin about the size of a sovereign [from a] barrow on the Nilgiri Hills' (Philanthropus 1829: 82). The coin could not be dated with certainty, although it probably belonged to the Roman Byzantine coinage of late empire times; hence its significance for establishing a chronological datum for the funerary monuments of the Nilgiris was questionable. A Captain Harkness made a tour of the Nilgiris in 1831. Some of the cairns he opened were illustrated in his published account. Captain H. Congreve of the Madras Artillery wrote in 1847 of his examination of Nilgiri megaliths, and he offered some theories concerning their origins (Taylor 1869: 158-62).

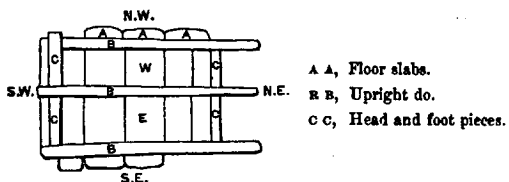
The first anatomical description of megalithic skeletal material may be attributed to Colonel P. Meadows Taylor (1851, 1853) who explored a number of Iron Age sites in the principality of Shorapur, an independent native state for which he was Political Superintendent. Near the village of Jewurgi, which is situated in Andola taluk three miles south of the Bhima, Taylor opened over two hundred and sixty cairns containing human skeletal remains (Figure 1). Estimates were made of each specimen's sex and age at time of death, and particular anatomical features of the skulls and long bones were noted. Most of the skeletons discussed in his report had suffered disintegration immediately after being exposed by the excavator, but a sketch was made of one of the skulls (Figures 2 and 3). This specimen and many others that were removed from Jewurgi and adjacent sites are now lost, including several specimens forwarded by Taylor to the Museum of the Asiatic Society in Bombay. Excited by the discovery of dismembered skeletons and of skulls with which no postcranial bones could be associated, the Colonel, at the meeting of the Ethnological Society of London in March of 1869, put forth the thesis that he had exposed the vestiges of human sacrifice (Taylor 1869, 1870, 1873). This interpretation would not be acceptable to modern archaeologists familiar with the signs of secondary burial, but Taylor's



SECTION OF CAIRN E, JEWURGI, FIG. I.

- 1 1, Circle stones.
- 2 2, Stones leading to cist.
- 3, Stones, shale, and earth.
- 4 4, Space filled with grey earth and confused skeletons.
- 5, Interior of cist; one skeleton complete.
- 6, Interior of cist; two skeletons, with one skull.
- 7, Jars and urns, whole and broken.

REFERENCES.



- A A, Floor slabs.
- B B, Upright do.
- C C, Head and foot pieces.

Figure 2: Section of a cairn at Jewurge.
From Taylor (1873: 343, Fig. I).

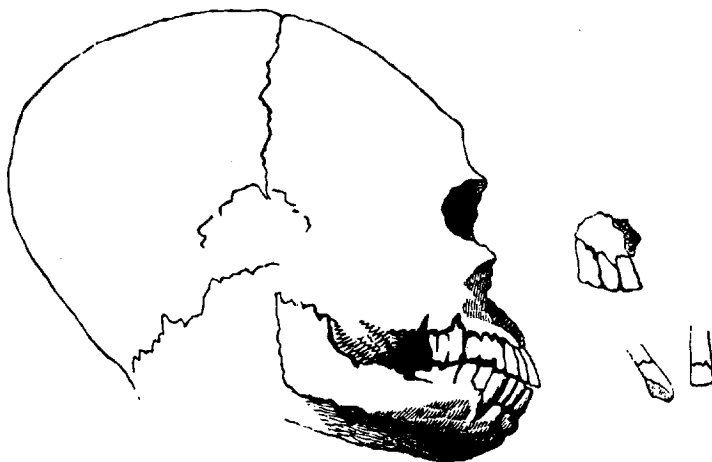


Figure 3: Skull removed from a cairn at Jewurge.
From Taylor (1873: 344, Fig. II).

suggestion of human sacrifice, and in particular 'virgin sacrifice', lent an aura of romance to what otherwise might be deemed a rather dry subject. The evidences of violent death, or for that matter of virginity of the deceased, were by no means obvious!

Of much greater significance was Taylor's support of Babington's thesis that the megaliths were prehistoric cemetery monuments of some antiquity and not vestiges of Hindu or Jain temples, primitive houses, graves of recently fallen warriors, or burial structures of a mysterious dwarf folk as some antiquarians of the mid-nineteenth century had maintained; these theories hung on for some time into the present century (Taylor 1847). Influenced by the writings of Congreve (1844, 1847, 1861), Taylor came to conceive of the existence of a megalithic culture complex defined by the associations of burials and megalithic monuments with the black-and-red ceramic ware and with iron. A parallel association of cairn burials with iron was made in North India by A.C. Carlleyle (1878, 1906) during his tour of Rajputana in 1871 as assistant to the Director General of Archaeology in India. Carlleyle's find of an iron arrowhead among scattered stones of old cairns on a hillside near Vesalpur was the first iron artifact associated with a cairn complex, this discovery being entered by J. Anderson in the *Catalogue of the Indian Museum*, Calcutta, for that year. In the following year appeared J. Fergusson's (1872) *Rude Stone Monuments in All Countries*, a handsomely illustrated volume which stimulated the interest of European scholars who found the means to journey to India to pursue prehistoric researches in the shadows of cromlechs, dolmens, menhirs and related megalithic monuments, the names of which were borrowed from antiquarian writings about European sites. Breeks (1873), Commissioner of the Nilgiris, opened some fifty graves in his territory in 1871 and 1872 for the purpose of supplying the Madras Government Museum with artifacts. He did not salvage any human skeletal material. Breeks' report has importance in broadening the archaeological record of the Iron Age

in South India.

The years 1873 to 1876 brought the second of three expeditions conducted by A.F. Jäger for the purpose of collecting art and ethnographic specimens for the Königliche Museum für Völkerkunde in Berlin. During this period, between 1859 and 1861, and later between 1890 and 1893, Jäger brought the first significant collection of Indian sculpture to Europe, the pieces being chiefly of the Gandhara tradition. Combining these collection trips with ethnographic studies and anthropometric observations of regional populations, Jäger carried out his archaeological excavations in Tinnevelly and Coimbatore. The details of his work are reported in the volumes of the *Berliner Zeitschrift für Anthropologie, Ethnologie und Urgeschichte* for the years 1873 to 1876 and 1877, and in an account prepared by Grünwedel (1914). The result of the excavation at the Iron Age urn field of Aditanallur near the Tamraparni delta, Tinnevelly District, in 1876 was the recovery of two lots of archaeological and osteological material, which found their way to Berlin. These were the first human remains from this prehistoric period in India to be brought to Europe for study, but their anatomical analysis was not undertaken until 1966. Today this interesting collection is housed at the Museum für indische Kunst, Berlin. An Indian anthropologist, the late B.S. Guha of the Anthropological Survey of India, Calcutta, appears to have seen these human remains from Aditanallur during a visit to Berlin in 1930, but his impressions are not recorded except for a personal letter to a Mr Gravelly who was then the Superintendent of the Madras Government Museum (Archives of the Archaeology Section, Madras Government Museum). When I studied this collection in 1966 (Kennedy n.d.a.), it consisted of two lots of osteological material of which one assemblage contained the fragmentary remains of more than one individual skeleton. All of the bones were of a reddish colour which was a property they had acquired from the hue of the soil in which they had been interred. The other lot of

materials contained the remains of more than one individual preserved in a single block of soil that had been lifted directly from the site. This also contained bits of shell and pottery. The catalogue note indicated that the block of material had been extracted from a large urn. Little can be learned from this collection until the human remains have been cleared from the soil matrix, but a superficial examination of a flexed specimen suggests that it may have been an adult male.

The site of Aditanallur was visited in the winter of 1903-4 by another European collector, L. Lapique (1905) of the Muséum d'Histoire Naturelle, Paris. This visit was prompted by the determination to find evidence to support the thesis of the French anthropologists J.L.A. de Quatrefages de Briau and E.T.J. Hamy that traces of a primitive racial substratum were discernible in certain contemporary Indian populations. This racial element was thought to be Negroid, hence Lapique's particular concern with the dark-pigmented tribal groups of the Nilgiri Hills and Cochin among which he took anthropometric measurements. It was in this context that Lapique procured from Aditanallur a skull with physical features of hyperdolichocrany, chamaecrany, platyrrhiny, facial prognathism and small size, biological characters he regarded as typical of the sought-for primitive racial element of the subcontinent. In 1966 I examined this specimen at the Musée de l'Homme, Paris, where it had been deposited after its transfer from the Muséum d'Histoire Naturelle to which it had been donated by its discoverer in 1909 (Kennedy n.d.a). The specimen consists of a cranium with mandible and dentition which are in a fair condition of preservation. These are the remains of a middle-aged adult female. It was studied also by Guha forty years ago, but no record of observations was preserved from that time.

This disconcerting attention by foreign prehistorians to the urn fields of Aditanallur moved the colonial officers of the Archaeology Department

in Madras to organise an excavation of the site under the direction of A. Rea (1902-3a, b, 1915) who had been working there since 1889. Recognising the importance of this large site, which covers an area of some 114 acres in parts of the village of Aditanallur and lies partly in Karungulun and Kalvi to the south of the Tamraparni river, Rea continued excavating here until 1904. His work, along with a series of excavations done at nearby Perumbair from 1904 to 1908, formed the core of one of the most impressive collections of Iron Age artifacts assembled in South India. At the turn of the century there had been extensive damage to the site due to the clearance of mounds for the conversion of land for agricultural purposes and to the removal of sepulchral stones in quarrying operations for use in road construction. Rea collected the skeletal remains of fourteen individuals he found in flexed position in the urns, several of these specimens having been placed there as secondary burials. Some of the crania of this series were examined by E. Thurston (1909), of the Madras Government Museum, who compared the anthropometric values of cranial length, cranial breadth and cranial length-breadth indices of six specimens with anthropometric values obtained from the study of Tamil and other South Indian crania. Thurston's efforts are of interest in being one of the early attempts to place prehistoric skeletal remains into the framework of racial types Risley (1903) had devised for the natives of the sub-continent in the *Census of 1901*. In 1915 two skulls of the Aditanallur series (Specimens 13 and 14, which are both adult females) were sent to Grafton Elliot Smith at Manchester University. They were exhibited at the meeting of the British Association for the Advancement of Science on August 31 of that year. In being transported to the University of London in 1919, these specimens suffered considerable damage. The anthropometric report that had been promised the Madras Government Museum was not forthcoming beyond a few statements made by Smith in his collection of published essays, *Evolution of Man* (Smith 1927), and some manuscript

notes prepared by his assistant, J. Beattie, who left England for West Africa and thence to Canada before a formal report could be published. In January 1927 the two skulls were returned to India. By this time the remainder of the collection had been forwarded to Calcutta from Madras in order that Guha might begin his long overdue study. Although Guha appears to have started work on the entire series, by the time of his death in 1962 his notes remained unpublished. Today there exists some uncertainty as to the preservation of Guha's notes. The only traces of his analysis of the series appear in the report for the *Census of 1931* (Guha 1935), in an abstract of a paper he read at the Fourteenth Indian Science Congress in the *Proceedings* of that session (Guha 1927), and in a short note by P. Mitra (1927) in the book *Prehistoric India* wherein the Aditanallur skulls are assigned to a Vedda racial type.

Meanwhile, however, Smith had instructed another of his assistants, Solly Zuckerman, to write a report of those two Aditanallur skulls which had been in Smith's charge for some twelve years. Since the actual specimens had been returned to India before Zuckerman began his study in 1929, the report was based upon photographs of the skulls, casts that had been made of them, and notes Smith himself had retained, the written observations of Beattie being unavailable to Zuckerman at that time. The report which appeared the following year (Zuckerman 1930) was published by the Madras Government Museum. Today it is difficult to appreciate the profound importance accorded this study of two skulls, a report which shaped opinion for many years concerning the physical anthropology of megalithic man not only at Aditanallur but also for the entire subcontinent. At the time these two skulls were the subject of the only anatomical description of prehistoric man in this part of the world, aside from the cursory descriptions left by Taylor and some later prehistorians whose efforts are noted below. When Zuckerman compared some phenotypic characters of one of the Aditanallur skulls to Upper Pleistocene skulls of the European

fossil record, he was following the venerable practice of deriving the racial origins of South Asians from elements outside the subcontinent. In 1946 the complete Aditanallur series was transferred to the Department of Anthropology, Anthropological Survey of India, Calcutta, from the Zoological Survey of India. A decade later B.K. Chatterjee and P. Gupta (1963) of the Anthropological Survey of India, Calcutta, prepared their description of the series, which was eventually published in 1963. Of the fourteen specimens in their series, they identified eight as males, five as females and one of undetermined sex. All specimens are those of adults.

Following Jägor's collecting in Madras State, other human skeletal remains were reported from the Mysore area to the west. In his description of stone circles found at several places near the fortified rock site of Sanvankurga near Bangalore, B.R. Branfill (1881) noted the discovery of a number of human skeletons. After opening a tomb, Branfill appears to have left the collection of the bones to inexperienced workmen, and of the four pounds of fragmented material he boasts were brought to him for examination only bits of a single skull could be salvaged for mending. The reconstruction was inspected by some medical personnel at Bangalore who concluded that little of interest could be said concerning its significance, but with their assistance Branfill attempted a quantitative and qualitative analysis. This remains the only record of the specimens, which were subsequently lost. Branfill's efforts were unique for the reason that he noted the condition of dental wear of one specimen and sought an explanation for this variable in dietary customs. This appears to have been a specimen of advanced age at time of death with a small, low and narrow cranial vault. The cause of death may have been related to trauma since healing of a large fracture across the occipital and right parietal bones was incomplete.

Excited by the theories of the German

anthropologist Adolf Bastian concerning the racial identity of the megalith builders of Bangalore, Bain (1890) explored many Iron Age monuments in the Mysore area. In a tomb containing iron swords and gold ornaments, he came upon a skeleton whose skull he described quantitatively in inch units, concluding that it belonged to an individual in his early fourth decade at time of death. Postcranial bones were noted, but left undescribed, perhaps because of the fragility of the skeleton, which appears to have disintegrated shortly after the time of its discovery. Bain observed that these were not the bones of a pygmy but of a man of average stature, a conclusion reached by Boswell (1872) who had opened sepulchral tumuli and stone circles in the Krishna District several years before and identified the human remains as belonging to ancient Scythians.

In 1924 appeared the report of E.H. Hunt (1924) who had excavated some twenty-four burials from the Iron Age site of Raigir near the village of that name between the Mauli Ali hills in Andhra Pradesh. The collection was transported four years later to the British Museum (Natural History), London, where it remained unstudied until 1961 (Kennedy 1965d) by which time only fragments of six calvariae could be accounted for. The fate of the remaining skeletons from Raigir is unknown, and a precise identification of the six calvariae with those specimens reported by Hunt is not possible, although references to the complete series had been made by Mitra (1923, 1927), Buxton and Rice (1931), and Guha (1935). Hunt (1916) was motivated to excavate the stone circles of Raigir in order to discover the racial type of prehistoric men who had constructed the megaliths, a race he hypothesised was dolichocranic and of short stature. Since the skeletal series was not described in his time, the study of the Aditanallur specimens appearing in 1930 constituted for many anthropologists answers to the queries of the biological nature of megalithic man. The 1961 study was not oriented around this issue but rather focused upon a metrical and morphological analysis of the six calvariae, a

biochemical analysis of bone samples with respect to palaeoserology, and radiometric assay of uranium for dating purposes. The radiometric study indicates that with the possible exception of one specimen the series represents a relatively contemporaneous population, the burials all taking place within a narrow period of time.

At the urging of W.P. Pycraft who wished to add osteological specimens from South Asia to the collections of the British Museum (Natural History), two skulls were presented in 1927 by E.F.O. Murray (1940). The year before they had been found buried in the vicinity of a brick tower amidst the ruins of Ruamgarh (Roamgarh) near Sideswar in western Dhalbhum District of Chota Nagpur, Bihar. Some question exists as to the possible association of the skulls with the brick structure, but a Mr G.N. Das, who was at this time studying megalithic and other early Indian burial customs, wrote from Deccan College, Poona, to F.C. Fraser, Keeper of Zoology of the British Museum (Natural History), implying their assignment to a megalithic culture complex (Catalogue and Archives of the Sub-Department of Anthropology, British Museum (Natural History)). In 1935 Guha examined the two skulls, but his observations are limited to archaeological considerations about the site and do not include anatomical data (Guha 1935). An anthropometric analysis was undertaken by Miss M.E. Armit of Cambridge who went to London to study the specimens in 1951, and in 1964 a morphological analysis was carried out by the present author (Kennedy n.d.a). A full report of the Ruamgarh series has yet to be published, save for some comments by Murray (1940) and myself (Kennedy 1965d). The skulls appear to be those of males who died in their fourth decade. One of the two specimens exhibits some striking anomalies of the squamous temporal region.

In Ranchi District, which abuts the western border of Dhalbhum District, M.S.K. Basu discovered three skulls taken from megalithic graves on the



Figure 4: Cranium of specimen 1927-7-27-1
from Ruamgarh.

banks of the Harma river not far from the city of Ranchi. The results of Basu's study were reported by Mitra (1936) at the meeting of the International Congress of Anthropology and Prehistoric Archaeology held in Brussels in 1935. Mitra compared the pronounced dolichocrany and particular nasal morphology of these adult skulls, of which one was a female and the other two males, with the Iron Age series of two skulls from Aditanallur. This was the first comparative study of megalithic skeletal specimens to utilise the data presented in Zuckerman's report of 1930.

Between 1950 and 1955 a number of megalithic cists were opened in Chingleput District in Madras State of which one at the site of Sanur (Salur) yielded an abundance of human bones including two dolicho-cranic skulls, a male and a female (Banerjee 1956; Banerjee and Soundara Rajan 1959; Bose 1959). A brief anthropometric description of the skulls was provided by N.K. Bose, Director of the Department of Anthropology, Anthropological Survey of India, Calcutta. Detailed notes of the condition of preservation of osseous fragments found with the skulls in adjacent cists were also included in this report.

The appearance in 1960 of a report of the megalithic skeletons from Brahmagiri, another site in Mysore state, marked a dramatic shift in the anthropological interpretations of Iron Age man in South Asia. Brahmagiri is a granite outcrop rising six hundred feet above the plain in Chitaldrug District. Its slopes contain remnants of ancient occupation, while the lowlands are dotted with megalithic structures, mainly burial cists. Here once flourished the Mauryan town of Isila. It marks one of the southernmost loci of an Asokan stone engraved edict which is dated to c. 258 B.C. (Sirkar 1955). Under the supervision of Wheeler (1947-8), then Director General of the Archaeological Survey of India, in collaboration with the Archaeological Department of Mysore, the excavation of ten megalithic

structures and a number of urn burials was under way by 1947. A chronological sequence of three cultural horizons was revealed: a Stone Axe culture of neolithic association, followed by the Iron Age megalithic complex over which were imposed traces of early historic Andhra culture. The megalithic black-and-red pottery was discovered here in direct association with Roman Arretine ware. At Arikamedu and Sengamedu this kind of association also occurs and has been dated with the help of coins found in the site. These coins were minted in the reigns of Tiberius and Augustus during the first century A.D. This was the first time the dating of a megalithic site had been possible on the basis of reliable evidence. Wheeler claimed that the megalith-builders had arrived as an abrupt intrusion upon the older established Stone Axe people. However, these data were relevant only to Brahmagiri and its environs and were not necessarily applicable to megalithic sites elsewhere in South Asia, as Wheeler has been prepared to admit (personal communication). Skeletal remains from both the Stone Axe and megalithic horizons were transported to the Department of Anthropology, Anthropological Survey of India, Calcutta. In 1959 these were examined by S.S. Sarkar (1960) of the Department of Anthropology, University of Calcutta. Of the twenty skeletal specimens present in the Brahmagiri series, Sarkar described twelve, particular attention being accorded six adult skulls of which four were identified as male, one as female and the last of undetermined sex. (I have examined this series and favour the identification of all of the specimens as adult males).

The Brahmagiri megalithic series was the most complete and well preserved collection to be described before the published study by Chatterjee and Gupta in 1963 of the specimens from Aditanallur. Sarkar's work superseded in importance Zuckerman's influential study of the two skulls from Aditanallur, which had shaped interpretation of the physical anthropology of the megalith-builders for the

preceding thirty years. The very fact that an absolute date could be assigned to the cultural complex from Brahmagiri dispelled some of the mystery surrounding the antiquity of megalithic man, a problem which had led Rea (1902-3b: 113) to lament that the sepulchres of Aditanallur might be ascribed an antiquity of anywhere from four hundred to four thousand years. Even as recently as 1956 another anthropologist was able to write:

The problem of who the megalith-builders were has for long engaged the attention of scholars, but except for the study of the skeletal remains from the urn-burials of Adichanallur, attributed by Zuckerman to the Dravidian stock, the skeletal remains from megalithic tombs elsewhere have not hitherto been seriously studied, owing primarily to the damaged conditions in which they were found. The skeletal remains from the megaliths at Brahmagiri and Sanur are in a not better condition to allow any fruitful study. Thus in the absence of any other reliable skeletal data, the theory of Zuckerman still holds the ground. (Banerjee 1956: 32 and footnote 2)

Two years after the publication of Sarkar's study appeared a brief anthropometric description by Gupta and Dutta (1962) of six crania from Yeleswaram. Three of the skulls are male and three female, all being adults. Yeleswaram is a megalithic site near the present village of that name on the banks of the Krishna river in Nalgonda District, Andhra Pradesh. Under the supervision of S. Sreenivasachar, initial excavations had been undertaken in 1955 and 1956, then resumed during the several field sessions from 1960 to 1962 under the guidance of M.A.W. Khan (1963), Director of the Archaeology Department, Hyderabad. Superimposed upon the megalithic levels were cultural deposits and skeletal remains associated with the historic period. Four types of burial were found in the course of excavating the megalithic complex: dolmenoid cists, cists with port-holes, cairn circles

and urn burials. Fractional as well as complete burials were encountered. This osteological collection, which is now on display at the Yeleswaram Pavilion of the Department of Archaeology, Hyderabad, is larger than the selected series described by Gupta and Dutta. The other specimens from Yeleswaram as well as those from other megalithic sites excavated by Khan in Andhra Pradesh have yet to be examined and described. Those seen by me in 1972 were taken from Veerabyina kunta in Nalgonda District, excavated in 1959, from Pochampad in Nizamabad District, excavated from 1964 to 1966, and from Tenner in Krishna District, excavated from 1970 to 1971.

Similar in a number of metrical and morphological characteristics to the Yeleswaram specimens is a skull from a megalithic cemetery in the Nagarjunakonda valley of Palnad taluk, Guntur District, Andhra Pradesh. In the course of four seasons of field work between 1956 and 1960, a team from the Anthropological Survey of India, Calcutta, with the assistance of Gupta, Basu and Dutta (1970) excavated the megalithic site as well as a neolithic cemetery some 150 metres to the south-east of it. Although nineteen individual skeletal specimens were unearthed from the megalithic deposits, only a single adult male specimen was anatomically described in any detail, the remainder of the specimens being very poorly preserved. Descriptions of the archaeological features of the site, which appeared in *Indian Archaeology - a Review* for 1957-8 and 1959-60 and in the skeletal report of 1970, indicate that both human and bovid remains were deposited in pit-circle and cist-circle graves. Primary and secondary as well as single and multiple burials were encountered by the archaeologists. This series was studied at the laboratories of the Anthropological Survey of India, Calcutta, where it is presently stored. Apart from noting some of the similarities of the male cranial specimen from the megalithic site to crania from Yeleswaram and its differences from neolithic crania from the adjacent prehistoric site at Nagarjunakonda, the describers

of both series refrained from theoretical speculation concerning the racial affinities of the specimens.

A recent anthropometric study of human remains associated with iron concerns a single specimen from Rajasthan. It was found in the cultural levels of a site that had artifactual and osteological material of Late Stone Age and chalcolithic phases as well. The site of Bagor is situated on the large sand dune on the left bank of the Kothari river, a tributary of the Banas about twenty-five kilometres west of Bhilwara town in the district of the same name. For three seasons between 1968 and 1970 Bagor was excavated by its discoverer, V.N. Misra, with the co-operation of his own institution, the Department of Archaeology, Deccan College, Poona, and the Department of Archaeology, Rajasthan. Part of this work was shared by L.S. Leshnik (1968) of the South Asia Institute of the University of Heidelberg. Misra (1970) has observed that while three cultural horizons are represented at the site, the entire deposition belongs to a continuous occupation for which clear stratigraphic divisions of cultural change over time are non-existent. Of the five human skeletal specimens and many fragments of uncertain association that Misra removed from the site, only one skeleton is associated with the ferrous-bearing and final phase of Bagor. The description of this skeleton is included in a forthcoming comprehensive report of the site by Misra and Kennedy. A human mandible found in the same site by Leshnik has not yet been described; nor are its affinities to the cultural levels of the site firmly established (personal communication from Leshnik). Megalithic structures do not appear in association with the ancient Bagoreans. There is a strong possibility that iron was obtained through trade in this region, which is peripheral to the centres of megalithic culture flourishing to the south on the peninsula of the subcontinent.

Five human skeletons, two males and three females, were found by Deo (1972) at a megalithic

site of stone circles at Mahuzhare near Nagpur. These have been studied recently at Nagpur University by V.V. Rao (personal communication from Deo). A published report of this examination is anticipated. Important anatomical analysis has not been carried out as yet on the megalithic skeletal material from the Palne Hills (Anglade and Newton 1928) and from the Gajendragad area in Mysore (Sundara MS I).

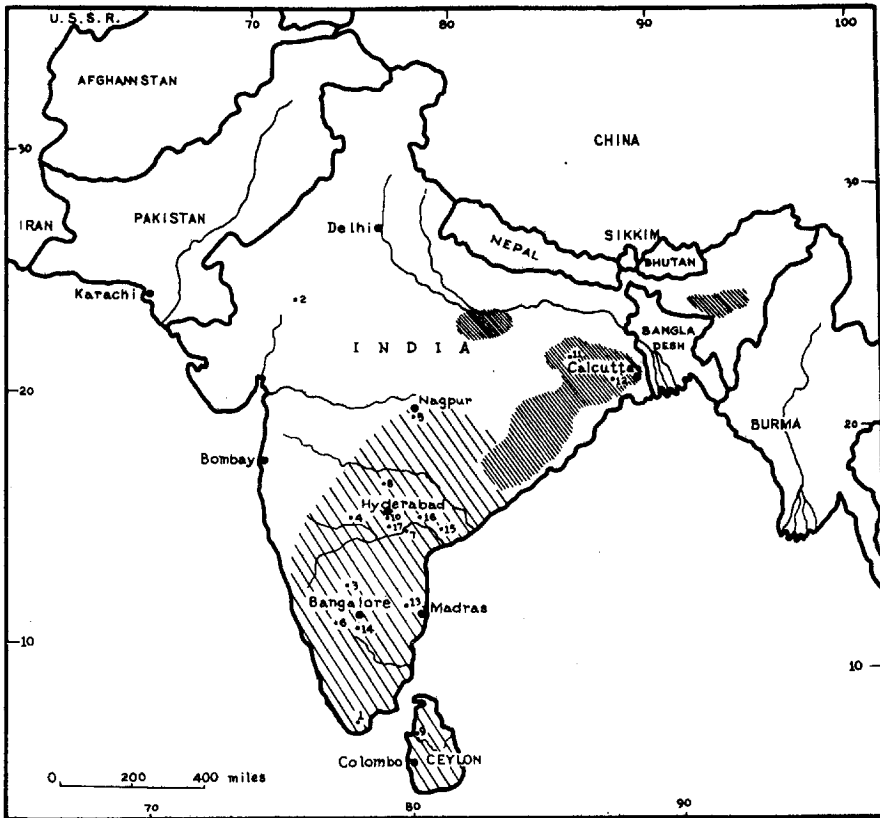
The island of Sri Lanka has received little attention with respect to early iron-using inhabitants, although considerable archaeological work has been carried out in the earlier Late Stone Age (Bandarawellian) and later historic cultural deposits. Separated by shallow seas to a distance of only twenty miles from the southern tip of the Indian mainland, Sri Lanka is geologically a continuation of the Deccan Plateau. The island maintained close cultural affinities with the Late Stone Age cultures of the mainland, a situation that appears to have persisted into the Iron Age. Megalithic monuments and stone circles have been reported from different parts of the island - Anaradhapura, Pediyacampola, and Katiraveli. The first scientific expedition to study a megalithic site took place in 1956 and 1957 under the direction of R. DeSilva, present Archaeological Commissioner of the Archaeological Department, Colombo, at the site of Pomparippu which is situated on the western border of the Wilpatu game sanctuary near the Kala Oya. The prehistorian A.M. Hocart had noted the presence of stone circles at Pomparippu some forty years earlier. The large urns buried beneath these circles yielded calcined and fractional human remains in direct association with beads, small pots, massive funerary urns, faunal remains and objects of copper and iron, an assemblage that is strikingly similar to the megalithic urn complex at Aditanallur (Godakumbura 1968: 132-3). Excavation was resumed at Pomparippu in the summer of 1970 under the aegis of the Archaeological Department of Ceylon and with the participation of B. Bronsen, V. Begley and myself. Additional human skeletons were recovered and are,

along with some of the specimens covered in 1956 and 1957, currently being described at the biological anthropology laboratories of Cornell University, Ithaca, New York (Kennedy n.d.b.). A preliminary study of the 1956-7 lot of skeletal specimens had been undertaken by F.L.W. Jayawardena of the Medical Faculty of the University of Ceylon, Colombo, but his report was never published (personal communication from Jayawardena). It is possible that the extended human burial he had described from Tirukketeswaram in Mannar, which had been found in 1950 by S. Shanuganathan, Conservation Assistant to the former Archaeological Commissioner, was from a late Iron Age deposit rather than from the early historic ruins of that locality (Chanmugan and Jayawardena 1954). The antiquity of Sri Lanka's Iron Age has not yet been determined, but in view of the similarities of Pomparippu burials and the artifactual record to the archaeological situation at Aditanallur, a focal date of third century B.C. seems reasonable (Senaratna 1969). Continuation of the work of Begley (1967) and of the Archaeological Department of Sri Lanka on megalithic sites of the Jaffna Peninsula may throw more light on this subject.



TABLE I: Frequencies of Megalithic Skeletal Series for which Anatomical Descriptions Exist

Site Name	Males	Females	Sub-Adults	Adults of Uncertain Sex	Total
Aditanallur	8	5		3	16
Brahmagiri	4	1	1		6
Mysore				1	1
Nagarjunakonda	12	5	2		19
Pomparippu				1	1
Raigir	3	2	1		6
Ranchi	2	1			3
Ruamgarh	2				2
Sanur	1	1			2
Savankurga				1	1
Yeleswaram	3	3			6
Total	35	18	4	6	63

Since the time of Babington's excavations in Malabar, qualified prehistorians as well as amateurs have opened hundreds of megalithic burial chambers using sound techniques or dynamite, depending upon individual talents and objectives. The great percentage of published accounts refers to descriptive studies of the styles and distributions of megalithic monuments and ceramic fabrics, iron and other artifacts found in association with burial and habitation deposits. Although skeletal remains have been removed from megalithic sites for over a century and a quarter, the tally of specimens surviving today in osteological collections and about which some anatomical data exist is fewer than seventy (Table I and Figure 4). Most of these specimens are restricted to cranial portions alone. A brief summary of the skeletal record of major Iron Age sites has been prepared by E.C. Büchi (1968), bringing up to date the resumé prepared by Guha (1935) for the 1931 Census, that first attempt to include the skeletal record in a study of the physical anthropology of modern man in India. A useful bibliography of megalithic archaeological studies has been prepared by K.S. Ramachandran (1961, 1962-1963), while studies of particular facets of the megalithic culture complex may be found in the writings of Banerjee (1957, 1965a, b), Krishnaswami (1949), Srinivasan (1958-1959), Wheeler (1947-1948) and Srinivasan and Banerjee (1953). The place of the Iron Age within the broader framework of Indian prehistory is described by the Allchins (1968), Gordon (1960), Subbarao (1958) and Wheeler (1959).



IRON AGE SITES WITH HUMAN SKELETAL REMAINS ABOUT WHICH SOME ANATOMICAL DATA EXIST

- KEY :  EXTENT OF PREHISTORIC MEGALITHS
 EXTENT OF CONTEMPORARY MEGALITHS
 ● MODERN URBAN CENTERS

1. ADITANALLUR; 2. BAGOR; 3. BRAHMAGIRI; 4. JEWURGI;
 5. MAHUZHARE; 6. MYSORE; 7. NAGARJUNAKONDA; 8. POCHAMPAD;
 9. POMPARIPPU; 10. RAIGIR; 11. RANCHI; 12. RUAMGARH; 13. SANUR;
 14. SAVANKURGA; 15. TENNER; 16. VEERABYINA KUNTA; 17. YELESWARAM.

FIGURE 5: Map

THEORIES OF THE RACIAL AND CULTURAL ORIGINS OF THE MEGALITH-BUILDERS

Neither the paucity of human skeletal remains nor the limited attention given to their anatomical analysis has inhibited the formulation of theories concerning the biological history and racial composition of the people who were the authors of South Asia's megalithic culture complex. These concepts may be classified in the following way:

- I. Megalithism originated in peninsular India as an independent culture complex of:
 - A. the Buddhists, Jains or Hindus
 - B. the prehistoric ancestors of living tribal peoples
 - C. the prehistoric ancestors of living Dravidian-speakers, including tribal peoples
 - D. an extinct people of unknown race and language
 - E. an unspecified people of a known racial type.
- II. Megalithism was imported to peninsular India from outside owing to an acculturation of:
 - A. Dravidian-speaking indigenes by Dravidian-speaking invaders *without* modification of race or language
 - B. Dravidian-speaking indigenes by non-Dravidian speaking invaders *without* modification of race or language, *i.e.* by
 1. Celtic, Scythian, or Druidical or other invaders of Eurasian origins
 2. Aryo-Dravidian invaders
 - C. non-Dravidian-speaking indigenes by Dravidian-speaking invaders *with* modification of race or language, *i.e.* by
 1. unspecified invaders of a

- known racial type
2. Indus Valley (Harappan) invaders
 3. sea-borne invaders of uncertain origin
 4. western and/or central Asiatic invaders arriving by land or sea.

The notion that megalithic structures had been raised as tombs by Jains persecuted and slain by Brahmins at some time in the past was put forward by the Revd. W. Taylor (1847) in an unpublished paper written in 1836. This effort was initiated after he had translated some Tamil texts wherein mention was made of old stone tombs or houses. The author of one of these translated accounts was an anonymous Tamil scholar who considered the traditional native explanations of megaliths to be devoid of historical validity. But Taylor felt that the native manuscripts contributed some clues towards resolving the problem of the origins of megalithism, even though he too rejected the veracity of their speculative nature. Some ten explanations of megaliths are discussed in the Tamil account he examined, a more detailed account of the legends of which was presented by Taylor in his *Analysis of the Mackenzie Manuscripts*:

1. Megaliths were stone asylums built by Brahmins in a mythical period when a shower of fire destroyed all but a few survivors who had remained hidden in the houses.
2. Before the deluge of the Yaga period of Hindu mythology, the megaliths were occupied by a race of pygmies who possessed great strength.
3. Megaliths were the ancient abodes of the mythical five Pandavas while they were wandering from place to place to escape the persecution of Duryokhana, as described in the *Mahabharata*.
4. The goddesses called *Nila-mucari* were worshipped at these sites by ancient Hindus.
5. A wild hunting people built the megaliths as

houses to shelter their wives and children from the predation of beasts, their refuges later being occupied by other hunters and their families.

6. Tailed men during the reign of Rama lived in these megaliths until their race was destroyed in the Yaga deluge.
7. Megaliths were the abodes of mythical Rackshas.
8. Megaliths were the burial places of elderly people who, in an earlier time, diminished in size as they aged, being put eventually in these tomb-houses by their normal-size offspring fearful for their elder's safety.
9. Megaliths contained the treasure guarded by the ghost of a man who had been buried alive at the time the cache was deposited, a custom of some ancient people.
10. Megaliths were the tombs of ancient rulers.

Taylor's rejection of these stories and his support of the theory that megaliths were constructed by Jains was based upon the assumption that the structures were too elaborate to have been built for the reception of the bodies of ordinary people among the Hindus. However, he did not rule out entirely the possibility that the stone structures could have been of Hindu origin, hypothesizing that if they indeed had been built by the ancestors of Hindus, then they must have been the work of those particular groups who suffered from Moghul invasions within the geographical region to the south of the Krishna at the dawn of the fourteenth century A.D. Or perhaps these tombs belonged to a predatory horde led by the Mysore chief Campana-udiyar, c. 1374 A.D. Taylor was doubtful of the truth of a thesis, current at the time he was writing, that the megaliths were built by European Druids preaching a form of Buddhism, for the reason that the Druids of European accounts practised human sacrifice while the present-day Brahmins and their ancestors did not. J.F. Kearns (1859), a clergyman who opened urns in Tinnevelly District, also favoured a Buddhist origin for megaliths, although he was puzzled by their resemblance to

prehistoric monuments in Ireland.

The logic of these and related arguments about the megalith-builders, many of which appeared in the volumes of *The Indian Antiquary* during the final third of the nineteenth century, may escape the contemporary reader of anthropological theory. However, the attribution of the stone monuments to the ancestors of particular ethno-religious groups living today still finds the support of some native writers in South Asia. Their major authority is Fergusson's (1872) comprehensive account of stone monuments around the world. Through his study of ancient Indian architecture, Fergusson arrived at the conclusion that megalithic structures of the peninsular part of the subcontinent could not be earlier than the third century B.C. since the practice of building with stone did not begin before then in the Aryan country of North India. Indeed, he preferred to date the southern megaliths to a time five to ten centuries after that date, deriving the stone menhirs and circles from the stupas and railings of Buddhist temples. Megaliths erected by living tribal people were regarded as direct architectural survivals of prehistoric megaliths put up only a few centuries ago as a result of Buddhist missionisation.

It is a short step from the claim that the megaliths were erected by the ancestors of civilised people to the notion that their origins lie with the progenitors of the tribal primitives. Arguments in favour of a greater antiquity for megalithism were thereby enhanced for the reason that tribal peoples have not left textual documentation of any major events of their past. M.J. Walhouse (1875) attributed the builders of the megaliths of Coimbatore District to the Kurumbas - a group of 'Shepherd kings' whose existence was originally hypothesised by Elliot (1869) in a paper read before the International Prehistoric Congress at Norwich in 1868. This tribe was supposedly destroyed by the Chola kings of Tanjore between the sixth and seventh centuries A.D. In a later paper, Elliot (1886) dated the earliest megaliths

to two thousand years ago. Yet Walhouse did not associate these authors of the megaliths with the more ancient people who had fashioned the stone tools found on the surfaces of many sites in peninsular India, artifacts that are essentially absent from megalithic deposits. He regarded the present-day tribe called Kurumbas, living in the Nilgiri Hills, as well as other tribal groups of the Gonds, Kols, and Irulars, to be the lineal descendents of the Coimbatore megalithic people. A few years after the appearance of Fergusson's book on stone monuments Walhouse (1878:44) was converted to the thesis that the megalithism prevalent in India was intimately associated with the practice of erecting ancient stone monuments in other parts of the world:

Mr. James Fergusson...insists forcibly on the unprogressive character of savage tribes, even after long contact with the white man. They are everywhere dying out, and in all the civilized parts of Europe have long been exterminated by the progressive Aryan races, who have usurped their places. The stone implements they used, and the megalithic monuments they raised, remained, and are today objects of deep interest to their civilized successors, as the only clues to conjecturing their habits and history. As Mr. Fergusson remarks, it is infinitely more philosophical to reason from the known backwards: and if tribes should be discovered living in primeval wildernesses, where they may well have existed from unknown ages unchanged in habits, aloof from higher races, and if moreover amongst them monuments should be in use much resembling the vestiges of what must have been (built by) similar tribes in Europe, all such monuments and ceremonies and usages connected with them must have a strong interest, as possibly throwing a faint light on the usages of prehistoric Europe...

These opinions were reaffirmed by his reading of E.T.

Dalton's (1872) *Descriptive Ethnology of Bengal* in which the persistence of a megalithic tradition among some tribes in eastern India is discussed as evidence of primitive conservatism of cultural institutions over the course of many centuries.

Writing at this same period and holding assumptions similar to those of Walhouse, Garstin (1876: 157-60) identified the stone structures of Davanur on the Coramandel coast with a tribe mentioned in a native text, the *Sthala Parana* of Tirukovilur. This is the dwarf tribe called the Valikhilya, represented today by the jungle people of Trincomalai. It is interesting to note that Garstin introduced linguistic data to support his thesis of affinity of contemporary tribals to the prehistoric megalith-builders.

Early efforts to demonstrate that the megalithic people were the prehistoric ancestors of living Dravidian-speakers were seldom based on linguistic data. For example, Phillips (1873: 226, 228) claimed that the ancient people who buried their dead in tumuli in Salem District were identifiable as pre-Aryans, the invading Indo-European-speakers favouring the practice of burning their dead and burying the ashes but without the custom of erecting stone monuments. When Aryan influences were felt among the megalithic indigenes, the custom of tumuli burial came to an end. Phillips concluded that contemporary Dravidian-speakers are the modern descendants of these early folk whose remains are found in the tumuli graves. To support his argument he added the observation that the bones found in the tombs belonged to men of ordinary stature and that the people must have physically resembled the present inhabitants of the country. These were not the remains of pygmies or ancestors of some primitive race of uncertain origin. This conclusion was echoed by Caldwell (1877: 280; 1899: 292), who had noted the contents of megalithic graves in Tinnevely and Matura Districts as well as in Travancore. From a study of contemporary funerary customs, the antiquarian W. Crooke (1899) had demonstrated that inhumation practices

antedated cremation in South India, hence the customs of the megalithic people gave way to Hindu rites as the indigenous Dravidians, both tribal and civilised, became acculturated by Aryan invaders. Noting the scarcity of megalithic structures in the regions north of the Vindhyha Hills, the centre of traditional Hindu culture, Crooke (1905) concluded that the megalith-builders could not be related to the Aryans but rather were the ancestors of the Dravidian-speaking tribal peoples living today. He observed, too, that unlike the extinct megalith tradition of Europe, megalithic practices had continued in South Asia from prehistoric to modern times. Psychic unity rather than cultural diffusion from Europe was the explanation Crooke favoured to attempting to account for the similarities of European and South Asian megalithic structures. More recently, Das (1957) has attributed the Nilgiri circles and barrows to the cultural antecedents of the Todas, a tribal group he claimed had abandoned megalithic burial in favour of cremation practices.

By the time of the appearance of Risley's (1915) racial typology, the *People of India*, which was based upon his anthropological analysis of the Census of 1901, it was generally held by anthropologists that Dravidian-speakers were both lineal descendents of the earliest inhabitants of the country and the authors of the megalithic cultural complex. When Smith (1927: 130) described the racial types of the two skulls from Aditanallur as Proto-Australoid and Armenoid Mediterranean respectively, he recognised a persistence of these phenotypic patterns in the present Dravidian-speaking populations of the subcontinent. The tendency to ascribe the megaliths to an unidentifiable and mysterious race of unknown language, which had characterised the perplexities of anthropologists writing in the mid-nineteenth century, was revived in the twentieth century by the theories of R.B. Dixon (1923: 257). The Harvard anthropologist ascribed the human remains from Aditanallur to a primal racial substratum of South Asia, namely a hybridisation of Proto-Australoid and

Proto-Negroid racial stocks. He believed that during the first millenium B.C. these indigenous people of peninsular India were overpowered by invading Palae-Alpine people who introduced the Dravidian tongues, leaving in their wake as they moved southward the Brahui Dravidian-speakers of Baluchistan. Later these Palae-Alpines were absorbed by the Indo-European-speaking Aryans coming from the north, themselves a blend of Caspian and Mediterranean racial stocks related to the Medes and Persians.

The alternative set of theories, which maintained that the megalithic cultural complex had been imported from centres of origin outside the subcontinent, has an historical development as venerable as the set of hypotheses already discussed. The acculturation of Dravidian-speaking indigenes by non-Dravidian-speaking invaders who did not markedly influence the composition of the autochthonous races and languages was a thesis initially presented by Congreve (1844: 49-50; 1847: 77-80, 86-7; 1861: 205, 212) a few years before the Revd. Taylor had published in 1847 his theory of the origins of megalithism. Congreve held that the stone monuments were constructed by a Celtic Scythian race inhabiting India before the arrival of the Hindus. Indeed, this earlier race constituted the descendants of the Biblical Japhet, the name of whose son Gomer was preserved in the philological declension of 'Gomerians-Cimmereans-Cimbri-Celts'! He regarded the megalithic monuments to be seen in the Nilgiri Hills, in Karnatac and in Madras as the Druidical altars, sepulchres and cemetery fields put there by Celtic Scythian missionaries, the same people who had built the Druidical monuments of prehistoric Europe. Congreve wrote that he had discovered among the Todas of the Nilgiris the survivors of this race, his evidence for this presumed affinity resting upon a similarity of some features of Toda and Scythian funerary rites. However, Congreve did not assign other tribal peoples of peninsular India to this racial element, although he recognised that their ancestors may have been the proselytised recipients of Druidical doctrines and customs of burial. This view corresponded closely

with the theories of the Druidical origins of megalithism formulated by Newbold (1851), an antiquarian and soldier who excavated burial cists in North Arcot. He related the stone structures to those found in northern Europe, Circassia and Tartary, but not to Jain or Buddhist temples of southern Asia.

During the latter half of the nineteenth century, the majority of supporters of theories of a non-Indian origin of megalithism favored the view that the races and languages of the pre-megalithitized autochthones had been modified to a considerable degree by the invading practitioners of the new faith and an attendant material culture. The most prolific writer of this viewpoint was P.M. Taylor whose early studies of megalithic architecture and burial remains of the Deccan have been noted above. He, too, ascribed the sites he excavated to the race of Celtic Scythians who spread the teachings of Druidism to the subcontinent just as their European kin had missionised England, Brittany, Denmark, Russia and Circassia, leaving monumental stone structures along their paths of religious conquest. But Taylor, unlike Congreve, whose works he had read, did not generate arguments based exclusively upon the comparative study of architectural similarities of European and Indian megalithic structures and apparent affinities of funerary rites. Rather, the Colonel faced the linguistic issue of comparing the distribution of Dravidian speech with the boundaries defined by megalithic sites, an exercise that led him to conclude that '...if the Dravidian languages be Turanian, no prehistoric remains that I am aware of have been met with in India beyond their present existing boundaries' (Taylor 1869: 174). 'Turanian', as this term was understood and used by Taylor, refers to the linguistic precursors of the present-day Dravidian-speakers of South Asia.

While Taylor's earlier thinking (1853: 420-7) was rather dogmatic on the point that the megalith-builders were linguistically related to present-day speakers of Dravidian, his later writings are more open to entertaining other linguistic insights

into the problem of the megalithic identity, - for example his suggestion that these Druidical invaders might have been Aryans or Scytho-Aryans, who had reached the Deccan via the valley of the Saraswati, the pathway of Brahmin movement into Maharashtra (1869: 174, 177). For these reasons, this author is difficult to place in the classification of hypotheses presented here. In any case, Taylor did not attribute the development of the megalithic cultural complex to the ancestors of living tribal peoples whom, he claimed, have no traces of those funerary practices he had come to recognise as associated with megalithic graves. This is an odd statement in the light of his other observations about the Khasias of northeastern India who constructed funerary monuments he was prompt to label as Druidical in origin (Taylor 1869: 172).

Another peculiar facet of Taylor's anthropology is his total neglect of any anatomical comparative analysis of the skeletal specimens he and other antiquarians had collected. Although he did provide some simple *in situ* measurements and a few morphological observations of skeletons seen at Jewurgi, his preoccupation with the skeletal record lay with the questions of human sacrifice and the relative social positions held by the deceased during life (Taylor 1851: 185-92: 1853: 398-418: 1869: 165-8: 1873: 330-47). One tends to regard his attention to the skeletal record as distinctive because he included it at all in his writings and in his lectures at the Bombay Branch of the Asiatic Society in 1852, at the Royal Irish Academy fifteen years later, at the Royal Anthropological Institute of Great Britain and Ireland in 1865, and at the Ethnological Society of London in 1869 - all important sessions that brought the problems of India's prehistory to the attention of European antiquarians. But Taylor seems never to have referred the study of his skeletal finds to anatomists who would have been in a position to say something about the physical affinities of the megalith-builders from a study of comparative craniology. Osteological collections in India and Europe were available at the period in which

he was writing, and racial analysis of skulls had become fashionable as early as the 1830s. Taylor's raciology of British Druids, Celts and Scythians was based entirely upon the existence of assumed cultural affinities. Even his puzzlement that his *in situ* length measurements of skeletons indicated a race of short-statured people rather like some pygmy folk did not move him towards obtaining a more definitive comparative anatomical approach to questions that emerged from his archaeological and linguistic theorizing. His inference that one of the specimens from a Jewurgi cairn was Negrito and his remarks on the great thickness of the skull bones, their consistent dolichocrany and the massiveness of the teeth provided the descriptive account that still stands as the single most detailed reference to the megalithic skeletal record before the appearance of Zuckerman's report of two skulls from Aditanallur some sixty years later.

The belief that the megalith-builders were of European origin was favoured by Vanstavern (1875) and it persists today among some archaeologists unable to comprehend the value and significance of an anatomical analysis of actual Scythian and Indian skeletal remains. A variant of this line of thought is that the authors of the megaliths were a hybrid people of Dravidian and Aryan racial stocks whose amalgamation, physical and cultural as well as linguistic, had occurred outside India, *viz.* in Iran (Sirkar 1955). There are implications in this theory that the pre-Aryan people of the Indus Valley civilisation of northwestern India were Dravidian-speakers and that, by the time the Indo-Dravidians had reached the peninsula of the subcontinent, a common tongue, indicated by the present Sanskritisation of Dravidian tongues, had already evolved. Linguistically this theory is without foundation.

By the middle of the present century there had occurred two major changes in the historical development of megalithic studies. Firstly, the question of physical, cultural and linguistic origins of the

megalith-builders came to be dealt with increasingly by professionally trained anthropologists within the specialised fields of prehistoric archaeology and physical anthropology, thus bringing to a close the period of quasi-scientific contributions made by classically oriented antiquarians and exponents of literary exegesis and philology. Secondly, those theories of megalithism discussed here gave way by 1950 to a point of view that came to be shared by a majority of scholars. This was that the megalithic cultural complex had been imported to peninsular India from outside by Dravidian-speaking acculturators who imposed their language and certain racial traits upon the non-Dravidian-speaking aborigines. Anthropologists writing in the 1930s offered elaborations of this theory, which appear to be transitional in some respects between the notions of the nineteenth century and twentieth century regarding the roots of megalithism. Of these, Zuckerman's report of the two skulls from Aditanallur was the first one of any consequence.

Zuckerman (1930) offered a craniological analysis firmly established upon anatomical data, his interpretations developing quite independently of archaeological and linguistic considerations. However, like Smith (1927) and some other older scholars, Zuckerman did not hesitate to derive the racial origins of the population of Aditanallur from regions beyond the borders of the subcontinent. For one skull specimen he defined an Australian, or Australoid, racial type, while for the other he considered that its physical type was Mediterranean, a decision certainly influenced by his teacher's earlier identification of this specimen with the fossil female remains from the Grimaldi site in Monaco. Smith had typed this specimen as belonging to the Armenoid branch of European races, in particular of the Alpine stock, which he regarded as one of the components of racial mixture he ascribed to the Dravidians of South Asia. Maritime Armenoid was another term Smith applied to this specimen. While the Grimaldi specimen is illustrated in Zuckerman's report, the younger writer did not embrace Smith's interpretations, which are noted merely by a

short quotation. After studying the anatomical data of Turner's (1901, 1906, 1913) craniology of the people of the Empire of India, Zuckerman concluded that there was no craniological justification for dividing the contemporary populations of the Deccan into subgroups of different racial stocks: all should be called Dravidian. But Zuckerman did not rule out the possibility of an Australoid element in the Indian population, representing a racial substratum of antiquity, yet considerably diluted by subsequent hybridisation of invading Dravidian peoples. In taking this position, he upheld Huxley's view (1865, 1869, 1870) that an Australian-Dravidian physical relationship was existent in the composition of India's populations. This idea had been further developed by Keane (1908, 1920), Haddon (1924), and a number of other anthropologists who came to think of a Pre-Dravidian racial stock comprised of Australians, Veddas of Ceylon, and the Sakai of Malaya among major tribal groups. The criteria of the Pre-Dravidian type consisted of dolichocrany, platyrrhiny, short stature, coarse and wavy hair, and darkly pigmented skins (Keane 1920: 422). Smith (1927: 130, 136) preferred the term Proto-Australoid for this racial type. To Zuckerman the presence of a Dravidian skull in the Aditanallur series suggested hybridisation of the autochthones with invading peoples from the north at a period of time before the burial of the two skulls he had examined; thus the Aditanallur remains could not be earlier than the coming of the Dravidians. But beyond specifying the nature of this racial type, he did not attempt a more precise identification of the parent races. He accepted the commonly held view of this time that primitive man had come to Australia via Asia along a migration route from India, Sri Lanka and Southeast Asia. He also held that a similar phenotypic pattern exists in these areas today, the type called Pre-Dravidian. Like the surviving Australian aborigines, the Australoid inhabitants of Aditanallur were anatomically primitive, yet not as primitive as members of the extinct Talgai race whose existence became known through the discovery of the famous

fossil skull at Talgai, Australia. Zuckerman concluded that the Talgai people were the common ancestors of the ancient Pre-Dravidians of India, Sri Lanka, Southeast Asia and Australia.

In their later study of the complete Aditanallur series of fourteen skulls, including the two examined by Smith and Zuckerman, Chatterjee and Gupta did not see fit to modify the conclusions offered in the earlier report. They state that their analysis:

...reveals that this dolichocranic series of skulls shows resemblance with Veddid or Australoid and Mediterranean types in many characters. Some skulls show affinity in some of the characters with either of the types, and as such do not warrant being classed wholly in one group. The Aditanallur series, therefore, is not a homogeneous one, rather a medley of characters of two physical types. From a broad perspective, it would be better to assign those to a race having Veddid-Australoid and Mediterranean strains, which also contribute towards the formation of the Dravidian speakers. (Chatterjee and Gupta 1963: 36)

These authors had decided that three of the skulls revealed Veddid-Australoid affinities, the remainder possessing a closer resemblance of the Mediterranean type, apart from the one skull identified as Armenoid by Smith and the so-called Australoid specimen of Zuckerman's. This later study is an historical curiosity in its perpetuation of the ideas about racial typology, which are no longer supported by physical anthropologists. Their analysis of the series from Aditanallur does not add any new information to Zuckerman's report of thirty-two years earlier, beyond some anthropometric data of hitherto unreported specimens.

Another feature emerging from the studies of the Aditanallur series from the time of Lapicque's writing to the appearance of the Zuckerman monograph was the

uncritical support of the widely-held view that the basic biological substratum in India was characterised by the presence of dolichocrany. This was the key diagnostic character of that primeval race Huxley had hypothesised for India and Australia. Hunt's (1924) excavation at Raigir challenged the tenet that the megalith-builders were racially all of a uniform dolichocranic stock, for among the skulls Hunt recovered were some with mesocranic and brachycranial indices. Three of the skulls found by Taylor at Jewurgi had cranial length-breadth indices of 75, 76 and 90, but their presence in a collection that was supposedly representative of a dolichocranic population was treated as evidence that the broader-headed individuals were physically distinct from the megalith-builders themselves, that is, the broad-headed individuals were the sacrificial victims from that doomed race the invading megalithic people subjected and eventually replaced. To account for this seeming intrusion of an unfamiliar biological character into the megalithic scene, Buxton and Rice (1931: 93), in their comparative analysis of skulls from Kish in ancient Sumar, concluded that a broad-headed race had physically influenced the basic dolichocranic stock of Mesopotamia and India as a consequence of extensive but archaeologically unrecorded population migrations. This invasion must have taken place at an early date since the Raigir skulls already show the results of racial mixture. Implied here is the belief that megalithism in India was affected by, if not introduced by, the broad-headed people whom the authors typed as Armenoid. Mitra's (1936) surmise that the megalithic skulls from Ranchi are hyperdolichocranic, as are a few specimens from Aditanallur, was explained by him as an indication that the aborigines of the country may well have been the artificers of the megalithic structures. He felt that they must have been of a uniform physical type which was later modified by mixture with the brachycranial peoples bringing the arts of urban civilisation to the subcontinent. Mitra associated the aborigines with other prehistoric populations outside India, namely those represented in the fossil hominid record from Wadjak, Talgai, Boskop

and Dong Thuoc.

Writing at this same time, Guha regarded the first appearance of iron in North India as an Aryan innovation, its existence in the peninsula being post-Vedic in date and not an independent development there. This anthropologist's broad familiarity with the skeletal remains from most of the prehistoric sites in South Asia, and particularly his anthropometric analysis of the skeletal specimens from Mohenjodaro, which he classified into three racial groups- Proto-Australoid (later changed to Caucasian), Mediterranean and Armenoid - provided important complementary data to his anthropometric study of living South Asian populations. From these data he formed the basis of his racial classification of the peoples of India (Guha 1935, 1944). The intricacies of this typological scheme need not concern us here, but with respect to the question of identifying the megalith-builders it appears that Guha allied them with a racial strain represented by the Cro-Magnon-like Combe Capelle fossil specimen from the French Upper Pleistocene site, whose physical characters are dolichocrany, hypsicrany, euryprosopy and platyrrhiny. Entering peninsular India from the north as early as neolithic times, these invaders displaced an autochthonous Pre-Dravidian population (preferably called Nisadic by Guha in place of the more familiar terms of Pre-Dravidian, Proto-Australoi, or Veddoid). The earlier people either fled to relict areas or perished as the sacrificial victims of the megalith-builders. The supposed Negrito specimen found by Taylor at Jewurgi was regarded by Guha as a representative of these oppressed pre-megalithic autochthones of the Deccan. But by the time these changes had taken place, the Combe Capelle race had already hybridised to a considerable degree with the Mediterranean race that formed the biological basis of the Indus Valley civilisation in northwestern India. Guha saw the present-day light-skinned inhabitants of the subcontinent, especially those fairer people of North India and members of the higher castes, as the living representatives of this racial blend. A third racial

ingredient present in parts of modern India was identified as Armenoid. Guha took the position that the first appearance of the Armenoid type in the subcontinent was a demographic event that was synchronised with the advent of the Dravidian-speaking Aryans. This broad-headed Armenoid element appeared in low frequency in the skeletal remains he had examined from Mohenjo-daro and Harappa. It was not, Guha was quick to assure his readers, a Mongolian strain or in any way derived from an eastern Asiatic homeland. The Armenoid features appear most often today in Bengal as well as in portions of western and southwestern India, according to Guha. The coming of the Armenoid population into peninsular India is late, however, the first appearance of these people occurring as specific physical features discernible in low frequencies among the skeletal specimens from Aditanallur and Raigir. In this way, Guha hoped to preserve the venerable tenet of the persistence of a dolichocranic racial type as a substratum for the megalith-builders of peninsular India, yet to explain at the same time the existence of brachycrany which was held to be a North Indian biological feature arriving much later to the southland.

Approaching the question of the origin of megalithism within an archaeological frame of reference, Wheeler, the excavator of Brahmagiri, concluded that the advent of the megalith-builders in peninsular India involved an abrupt invasion of iron-using hordes upon the less sophisticated neolithic-chalcolithic population whose culture was reflected in the Stone Axe levels of the site. This catastrophic event may have coincided with the erection at Brahmagiri of Asoka's edicts, which Wheeler decided were not addressed to the illiterate Stone Axe people but to the Prakrit-reading colonies of the Mauryan empire, who had extended their political influence to Mysore by the third century B.C.

...it is here postulated that about 300 B.C. certain cultural elements, with iron as their major component, were infiltrating southwards into a variety of Chalcolithic communities,

when their progress was suddenly stimulated and given a new political coherence by the southerly extension of the Mauryan empire from its homeland in the northern plains. Between the invading complex and the crude Chalcolithic cultures upon which it impinged there was no organic transition, save where the advancing iron outpaced its own N.B.P. [Northern Black Polished] Ware and absorbed the makers of the Black-and-red Ware farther south. For the most part, the invader passed over the invaded like the tide over the sand. It was a case of cultural conquest, nothing less. (Wheeler 1959: 167)

But when Wheeler faced the question of what had been the impetus for the building of the megalithic monuments, he could not provide an answer. He did not regard the contemporary custom of megalith-building in northeastern India as allied to the megalithic structures of the Iron Age. On the linguistic aspect of the problem, Wheeler did not question that the Dravidian tongues must have been spoken by the megalith-builders, but he hesitated to form conclusions about the place of origin of these languages beyond remarking that the distribution of this linguistic family curiously coincides with the site maps of megalithic monuments. The biological affinities of the builders were not discussed in his writings about Brahmagiri.

Father H. Heras (1937, 1938), who was intrigued by the archaeological evidence of high culture in the Indus Valley, was more confident than Wheeler that he could correlate the racial and linguistic identification of megalithic man to the geographical distribution of the monuments. In his writings of the thirties, Heras said that the megalith-builders of peninsular India were of the Mediterranean racial stock since both the people of this physical type and the distribution pattern of an uninterrupted chain of dolmens and other megalithic structures extended from Sri Lanka and India to Mesopotamia, across the maritime areas of the Near East to Greece and central and

western Europe, with outlying extensions in England and North Africa. Heras regarded the term Dravidian as simply a name applicable to the Indian representatives of the Mediterranean race, who, in this part of the world today, as in the Iron Age, speak Dravidian languages. He attributed the origins of megalithism in peninsular India to the Indus Valley civilisation, the ancient people of Mohenjo-daro and Harappa being biologically Mediterranean and linguistically Dravidian. However, Heras did not envisage this process of acculturation in terms of the dramatic and abrupt events of intruding new peoples and novel cultural institutions, as Wheeler was to conceive matters some years later. Rather, a gradual diffusion of cultural influence was implied in the priest's writings. It is interesting to note; however, that neither megalithic structures nor their cultural associations, such as iron and particular ceramic wares, appear in the Indus Valley sites. Furthermore, a period of over one thousand years separates the Bronze Age civilisation of northern India from the appearance of the megalithic culture complex in the Deccan. As to the racial identification of the people of the Indus Valley with the megalith-builders, Heras did not look to the skeletal record or comparative anatomical analysis but depended instead upon his understanding of the archaeological and linguistic data.

The linguistic thesis articulated a century ago by Taylor (1853: 420-7: 1869: 174) that the distribution of prehistoric megalith structures coincides with the area presently occupied by speakers of Dravidian languages has been revived by von Furer-Haimendorf (1950, 1953, 1955). The Austrian scholar added that the bearers of megalithism were speakers of Proto-Dravidian who came to India by a sea route, a conclusion also reached by Childe (1948). This theory developed in the course of von Furer-Haimendorf's presidential address to the Anthropology and Archaeology Section of the Thirty-seventh Indian Science Congress held in Poona in 1950, his ideas

being further advanced two years later at the Fourth Session of the International Congress of Anthropological and Ethnological Sciences in Vienna. In an earlier paper of 1945, he had already said that the Dravidian-speakers of central and southern India were culturally unrelated to the megalith-builders of the northeastern portion of the subcontinent (von Fürer-Haimendorf 1945). Wheeler's discovery in 1947 of neolithic-chalcolithic Stone Age, Iron Age megalithic, and historic occupations at Brahmagiri provided the impetus for this thesis, which assumes that the megalithic cultural complex came to peninsular India by 300 B.C. as a sudden intrusion of culture-bearers upon the primitive non-Dravidian-speaking indigenes whose descendants are the primitive tribal peoples now living in relict hill and jungle tracts. Von Fürer-Haimendorf considered the megalithic people to be well established in their conquered lands by the time the edicts of Asoka had been erected, presumably for their guidance and enlightenment. As to the ultimate place of origin of the invading megalith-builders, he looked no further than to some of the Eurasiatic centres of high culture and assumed a maritime landing and subsequent migration route along India's western shoreline between 700 and 400 B.C. The presence of Iron Age stone cist burials near Karachi in Pakistan suggested to this author that here rested the evidence for the early establishment of a coastal colony. A strong cultural affinity with populations in the Mediterranean basin on the basis of similarity of styles of megalithic architecture in both regions was an important part of this hypothesis of origins, although von Fürer-Haimendorf rejected any suggestion that the current megalithic practices of some tribal groups in northeastern India are related to the prehistoric practice of erecting megaliths in Eurasia and peninsular India, as noted above. He thought that it was chiefly the Mon-Khmer (Austro-Asiatic) speakers of Southeast Asia who introduced the megalithic cultural complex into this region. He made these statements for the reason that the earlier megalithic activities occurred at a time when the Gangetic region

was already acculturated by Aryan-speaking peoples. The only region of overlap of Aryan and Dravidian speakers was along the course of the Godavari where a belt of primitive Veddoid tribal populations, some of whom spoke dialects of Munda, effectively isolated speakers of the two dominant languages of the subcontinent whose racial pattern was Mediterranean, the physical racial type held in common. Nor did von Fürer-Haimendorf agree with the view that Dravidian was once spoken throughout the subcontinent in earlier times, a claim finding some support amongst his colleagues because the Dravidian dialect of Brahui is spoken today in Baluchistan. Von Fürer-Haimendorf considered Brahui to be a Dravidian enclave in a area remote from the centre of Dravidian speech in peninsular India, perhaps the survival of a colony whose contacts with the Dravidians who settled in the south were maintained primarily by sea. Later this colony became engulfed by Aryan-speakers, who already constituted the major linguistic element in North India. He failed to see anything in the character of the Indus Valley civilisation to suggest cultural affinities with Dravidian culture, as Heras and others have claimed. This effort to explain the origins of megalithic activity in peninsular India is based essentially upon a linguistic argument, and von Fürer-Haimendorf counters his critics by asking:

While we have no direct evidence as to the language spoken by this megalithic people, circumstantial evidence would seem to point to the conclusion that it must have been Dravidian. For there are only two possibilities; either the earlier stone-axe people, shifting-cultivators of very primitive material equipment, were the original Dravidian speakers, or the intruding megalith-builders with their developed iron-industry, brought the Dravidian languages and imposed them ultimately on the whole of Southern India. It is highly improbable that the speech of the more primitive neolithic population, whose culture was superseded by a more advanced population, could have persisted, while that of

the populous and dynamic megalith-builders disappeared without leaving a trace. In other words, if the megalith-builders did *not* speak Dravidian languages, what languages did they speak? The interval between the time of their expansion over the Deccan and the early historic times is so brief that the complete disappearance of the language of so large and advanced a population is beyond the realm of probability. Indeed the coincidence between the distribution of megalithic tombs of South India and the Dravidian languages speaks clearly for the correlation: Iron-age megalith-builders-Dravidian speakers. (von Fürer-Haimendorf 1955: 163)

Critics of von Fürer-Haimendorf's thesis have been quick to observe its similarities to venerable claims that the important elements of India's races, languages and cultural patterns were derived from presumed centres of high civilisation beyond her borders. If a neolithic culture survived in peninsular India until c. 300 B.C. when the megalith-builders with their 'entirely new culture and style of living' arrived by sea from some distant western shore, it must be asked how this massive sea-borne invasion was effectively accomplished in so brief a period of time without benefit of the knowledge of monsoon navigation. The utilisation of monsoon winds was unknown to mariners until the century preceding the dawn of the Christian era when the sea route to India from the west was first employed due to the discovery by Hippalus of the trends of the monsoons (Wheeler 1954: 126-30). However, contact between Near Eastern lands and India by coastal sea routes cannot be excluded from consideration. Moreover, if the neolithic Stone Age folk spoke a language which has not survived in any form today, although elements of their race and culture have continued in diluted form among aboriginal tribes, then how could this Dravidianisation have taken place so rapidly to the extent that the majority of primitive tribes of South India speak dialects of Dravidian languages today? Even admitting that these tribal people may

retain some vestiges of a non-Dravidian tongue or are speakers of Munda, a stock of the Austro-Asiatic language family, the causes for such dramatic linguistic change cannot be accounted for adequately by von Fürer-Haimendorf's thesis. If the Dravidian languages were imported to India by megalith-builders or others, where are the vestiges of Proto-Dravidian speakers outside the subcontinent today? Von Fürer-Haimendorf himself has observed that attempts to link Dravidian languages with Uralo-Altaiic, Elamite or other language families of Asia are unconvincing. Finally, scholars of classical Dravidian literary texts have objected to the short duration of advanced cultural influence this ethnologist allows for peninsular India given the presumed antiquity of Tamil literature. In this sphere we may concur with von Fürer-Haimendorf that claims of a long literary tradition for Tamil have been grossly exaggerated, as has also been the case with regard to the Aryan literature of North India. As Subbarao (1958) noted, the problem inherent in many of these criticisms is not the question of whether the megalith-builders spoke Dravidian languages (which they probably did given the relatively short period between the florescence of megalithic culture and the dawn of the historic period), but rather of whether the megalith-builders were responsible for the *introduction* of these languages into India.

In favouring the thesis of a sea-borne importation of the Dravidian languages, megaliths, iron and distinctive ceramic wares of this cultural complex to the shores of western India, von Fürer-Haimendorf was seeking a solution to problems raised by Gordon (1950: 67) who had claimed that iron made its appearance earlier in South India than it did in the north, where he thought it was absent until about 250 B.C. More recent dating of the Iron Age sites in India had made this claim obsolete, iron now being recognised as first appearing in Baluchistan and northwestern India after 1000 B.C. Gordon also favoured the idea of a connection by sea through the

mariners whose ships sailed between the Indian coast and southern Arabia during the first half of the first millenium B.C., and through this contact a cultural affinity with the megalith-builders of the Mediterranean basin might have been established. This presumed connection was limited, however, to the exchange of funerary lore. Iron was considered to be a material whose economic value was early recognised by the inhabitants of peninsular India who later introduced it to North India. As to the origins of Dravidian speech, Gordon was silent, but he said that its appearance was sudden and not a gradual cultural development of the pre-megalithic aborigines whose cultural horizon at Brahmagiri reveals none of the elaborate cultural elements of the 'Dravidian Complex'. In his later writings, Gordon (1960) observed that the Asokan edicts at Brahmagiri and elsewhere in the south should not be regarded as evidence that the megalith-builders were well incorporated into the affairs of empire flourishing in the north: rather these southern lands marked the uncivilised frontier then beyond effective government control. With the collapse of the Mauryan empire, the people of the 'Dravidian Complex' moved northwards where, as the early Cholas, Cherlas and Pandyas, they encountered the Andhra kings, thus bridging the period of the megalithic cultural complex and the early historic period.

The Viennese anthropologist Heine-Geldern (1936, 1956, 1959, 1964), whose major writings have dealt with the megalithic practices of prehistoric and contemporary peoples of Southeast Asia, derived all megalithic stone monuments of the Old World from the Mediterranean basin, finding the earliest forms in Palestine and Jordan. After 2000 B.C., waves of megalith-builders reached Southeast Asia by way of a route leading through central Asia and China. Heine-Geldern suggested that a sense of missionisation may have provided the impetus for this diffusion of megalithism, although he was guarded in claiming that there was a megalithic religion *per se*. India received the institution of megalithism from two waves

of settlers. A northeastern group of neolithic people speaking dialects of Malayo-Polynesian (Austronesian), who are identified in the archaeological record by their quadrangular adzes, later interbred with another neolithic population speaking Mon-Khmer (Austro-Asiatic) languages, who are characterised by their manufacture of shouldered adzes. This was the racial mixture ancestral to the present-day tribes of northeastern India who continue the practice of building megaliths. The second, and independent, wave of megalithic influence came to India from a western stream of wanderers who brought Dravidian speech to the non-Dravidian-speaking neolithic peoples living in the Deccan. In this part of India, megalithic practices failed to survive to the present day. Heine-Geldern did not favour the thesis of a sea route for the culture-bearers of South Asian megalithism, either in the northeast or in the central and western portions of the subcontinent. This diffusion of megalithic practices occurred before the migration of the Aryan tribes from western Asia to India along a central Asiatic pathway, but Heine-Geldern recognised some racial affinities between the 'Copper-Hoard' people of the Gangetic watershed and the early bringers of megalithism to the adjacent regions.

These contributions of von Fürer-Haimendorf, Gordon and Heine-Geldern are reminiscent in several respects of the hyperdiffusionist theories of Perry (1923, 1924) and Smith (1923, 1933). To these diffusionists, ancient Egypt was the cradle of man's most important cultural institutions, of which some diffused widely while others were more limited in their geographical distribution. Perry and Smith assigned the presence of megalithic structures in various parts of the world to the evolution of the Egyptian mastaba tomb. India acquired the concept of megalithic architecture through the influence of a sea-borne people who entered the Deccan about the middle of the third millenium. These invaders were in search of deposits of gold and copper. In the course of occupying the lands of the food-gathering

and hunting Pre-Dravidian aborigines and establishing irrigation systems for their food-producing economy, they discovered iron. The culture-bearers immediately began smelting the new metal and learned to work it into useful implements, a cultural invention that interestingly enough was not attributed to Egypt, which was still in the Bronze Age. Indeed, Perry claimed that iron had diffused from the megalithic people of India to western Asia, where it was the material of Damascus swords, and eastwards across mainland Southeast Asia to the Celebes whose natives 'learned the craft from wonderful strangers who built the megalithic monuments, and therefore belonged to the archaic civilisation' (Perry 1926: 91-2). A variant of this diffusionist doctrine was the claim put forward by G. Slater, a popular writer who also said that the source of Dravidian culture was Egyptian, having been imported by a people coming by sea or by overland routes whose priests laid the cornerstone of the megalithic civilisation of peninsular India. This civilisation had already attained its zenith by the time the culturally inferior Aryans were entering North India. Although the Dravidians were possible sailors, they never acquired the supremacy of the seas enjoyed by the Egyptians once the latter had navigated the Red Sea and reached the mysterious land of Punt (southern Arabia). Slater was interested that Smith had not only noted the similarity of Indian boats to those of the ancient Egyptians, but had also stated that one of the Iron Age skulls from Aditanallur '...was quite indistinguishable from the early Egyptian type. The other (skull), though not so typical, comes well within the range of this type' (Slater 1924: 81). These diffusionist explanations are mentioned here as curious attempts to understand the origins of the megalithic cultural complex in India; they were never valued for their scientific merit by serious students of the problem.

During the past decade, investigators of the South Asian megalithic culture complex have tended to favour a view that its major features were

introduced by Dravidian-speaking culture-bearers from western Asia. Their movements by land into the subcontinent left in the linguistic and racial characters of the aboriginal groups changes that were eventually acculturated into the new life way. Allchin (1960: 134-41) has said that the description of the human skeletal remains from the neolithic site of Piklihal demonstrates the persistence of a physical type from this pre-megalithic period to the present day, as observed in the physical features of the contemporary tribal peoples of the Deccan. His conclusions are based upon the results of A.A. Ayer's anthropometric analysis of the two cranial specimens from Piklihal. Their race, which Allchin considered closely allied to Guha's Paleo-Mediterranean strain, to the racial elements found in Iran and Turkistan and to the Keltiminar people of central Asia (Tolstov 1955-6), belonged to the same Dravidian linguistic stock that had spread over the Iranian plateau and central Asia in pre-Bronze Age times, bringing to India and her neolithic cultures Dravidian languages and a biological replacement of the Pre-Dravidian, or Veddoid, race. Allchin felt that the Dravidian languages were widespread in Iran before they were brought by these western Asiatic pastoralists to India, his source for this opinion being the linguist Caldwell, who had attempted to relate Dravidian to Finno-Ugrian. The Cambridge archaeologist did not deny the possibility that the builders of the Indus Valley civilisation were Dravidian-speakers too. When iron arrived in India from the Iranian plateau, the metal rapidly replaced the lithic technology of the neolithic peoples, but the areas of habitation remained the same. There was no disruption in language or race. These ideas were modified in 1968 when, writing with B. Allchin, he claimed that some of the megalithic graves of peninsular India are reminiscent of those found in Iran, the Caucasus and central Asia, and could have been introduced as a cultural innovation by Indo-European-speaking immigrants. Other megalithic structures appeared to the Allchins to be developments of the indigenous

neolithic-chalcolithic burial customs of the south. Another stream of influence may have come from the Near East and coastal Arabia where again stylistic similarities of pottery sarcophagi and rock-cut graves occur. During the first millenium B.C., India may have received some of her megalithic traditions by sea. However, the Allchins caution (1968: 229-32) against rigid acceptance of any or all of these possibilities until such time as individual graves in India and beyond are accurately dated. These authors have relied in large part upon Guha's racial typology of the subcontinent, but a strict correlation of physical type with Dravidian languages and the archaeological record is not an essential component of their hypotheses of megalithic origins.

In one of his last papers before his death, Subbarao (1962) wrote that the megalithic cult was introduced into South India by a people who had already come in contact with Iron Age communities in North India. He did not favour a maritime movement. Accompanying iron and megaliths were Dravidian languages and black-and-red pottery as a part of that culture complex, which moved along the main route of diffusion from north to south. Subbarao was one of several Indian prehistorians who were very specific in their identification of particular racial types of western Asiatic origin with the arrival of the megalithic culture complex to South Asia. More recently, Banerjee (1965a, b) has derived the origins of this complex from Baluchistan where cairn burials and the presence of the Dravidian-speaking isolate of Brahui people point to a much wider geographical distribution of megalithic cultural elements around the period of 800 B.C. In North India, the Dravidians mixed with these Aryan-speakers, whose oral traditions are preserved in the Vedic hymns. Banerjee said that this association is justified by the existence of Dravidian loan words in the *Rigveda*. From the Aryans the Dravidians learned the use of iron, a metal that Banerjee thought was acquired by the Aryans from Iran before their arrival in India. However, he did not

rule out the possibility that the Dravidians learned about iron from the cairn-burial people of Baluchistan. Also identified as a cultural borrowing from the Aryans is the Painted Grey ware which appears as early as 1100 B.C. at Hastinapura. By 700 B.C. the Dravidian-speaking contingent left the Gangetic centre of Aryan high culture and moved to the southern lands of the peninsula where they encountered the neolithic peasant agriculturalists. These indigenes were not speakers of Dravidian tongues. Unlike the Aryans of Armenoid racial stock and the migrating Dravidians whose physical affinities were with the brachycranial people of Iran, as observed from the presence of the broad-headed characters of skeletal remains from Sialk-VI, these neolithic people were of Australoid descent. Dolichocrany is the hallmark of this strain according to Banerjee. The construction of megalithic monuments evolved out of an earlier burial custom of the Australoid neolithic people of the peninsula once iron had gained a firm hold there. Thus Banerjee did not support the commonly held belief that the megalithic burial complex was an original feature of the South Indian Iron Age, although later it became an integral part of burial practices in this part of Asia. If megalithic monuments did not originate as an independent phenomenon in the peninsula, Banerjee argued that they must have existed until 700 B.C. in a non-iron-using phase, a claim he was not prepared to support with reference to the archaeological record, however. The ultimate confinement of the Dravidians to the peninsula he attributed to the relative superiority of Aryan arms. The Aryans held land in North India which they were unwilling to surrender to the descendants of the original Dravidian occupants.

Turning lastly to the recent theories of Indian physical anthropologists who have examined limited series of human skeletal remains from megalithic sites, namely skeletons from Brahmagiri and Yeleswaram, one encounters biological arguments that have been used to support the archaeological and linguistic hypotheses of a western Asiatic origin for South Indian megalithism. Sarkar's (1960) study of the Brahmagiri skeletons was influenced

by his understanding of the conclusions reached by Kappers (1934), the anthropometrist who studied the Iranian series of human remains from Tepe Hessar. Kappers had assigned specimens associated with later levels at the site to the Scytho-Iranian racial stock, their typical cranial length-breadth index being identified as falling between 77 and 79. The migrations of Scytho-Iranians from the region of the Ukraine was dated to a period between the second and third millennia B.C., the present population of Iran showing a high incidence of this index, as do the Kurds and the Aderbeidjani people as well. However, Kappers considered the northern Iranians as belonging to a different racial stock called Caucasian, which is typified by a mean brachycranial index of 83. In contrast to these meso-brachycranial peoples there were those of the Indo-Aryan stock, whose dolichocranial index of 71 placed them well apart from the Scytho-Iranians and Caucasians. Sarkar noted that dolichocrany is also a characteristic feature of the aboriginal racial element in India which he preferred to call Indo-Caspian rather than Proto-Australoid, Australoid, or Veddoid, for the reason that these narrow-headed peoples may appear as the base of the racial composition of the Bronze Age inhabitants of the Indus Valley (Sarkar 1964). Closely allied to the Scytho-Iranian and Caucasian racial elements were the medieval Kurgan skulls from the Ukraine and the Caucasus whose index values are highest in the meso-brachycranial categories, although narrow heads occur in 26 per cent of Russian Kurgans of Twer, Merjanen, Bolgary and Nowgorod. Using this reference to Iranian and central Russian craniometry, Sarkar felt that he had determined on physical grounds alone the ultimate origins of meso-brachycranial among the iron-using people of Brahmagiri, and by extension among the inhabitants of other megalithic sites in peninsular India. His study of H. Vallois's (1939) description of the Iranian skulls from Sialk provided him with a more direct ancestral line leading to Brahmagiri, for here at level VI of Sialk brachycranial was the predominant cranial form. Sarkar did not allow the existence of three dolichocranial skulls out of the seven specimens from Brahmagiri for

which cranial length-breadth indices were calculated to dissuade him from his thesis: rather he assigned these specimens to the autochthonous Australoid element, the primary one in the peninsula before the arrival of the megalithic people. He referred to the discovery by P.M. Taylor of the long-headed and prognathic skull from Jewurgi as well as Hunt's recovery of mesolithic skulls from Raigir with indices of 75 and 76 as further evidence that an Australoid strain underlay the Scytho-Iranian one.

Sarkar's conclusions were applied by Gupta and Dutta (1962) in their study of the six skulls from the Yeleswaram series, three of which are brachycranial. A supporting note to their Scytho-Iranian affinities was added by Khan (1963), one of the excavators in charge of work at the site. However, my examination of a number of unreported specimens whose cranial indices fall well within the ranges of dolichocrany and low mesocrany for the Yeleswaram series suggests that a clearer picture of this collection will emerge when a wider sample of crania is studied.

Summarising Olivier's (1961) anthropometric study of living Tamils and the immunological studies of Bird, Ikin, Mourant and Lehmann (1962), the American anthropologist Coon (1965) has concluded quite independently of the anthropometric data of the skeletal record that the bringers of iron to peninsular India were Dravidian-speakers who had come in successive migration waves from a homeland to the north of the present boundaries of Dravidian speech. Coon assigned these early iron-using people to a racial sub-type of the Mediterranean-Caucasoid stock closely allied to the mesolithic Natufians of Palestine. The variability of cranial form among the living Tamils testifies to regional and social changes that emerged during the period of settlement in South India, while the immunological data, in particular the abnormal haemoglobin studies, demonstrates their biological distinctiveness from the autochthonous neolithic peoples whose descendants are the living tribal folk speaking dialects of Dravidian or Austro-Asiatic. Coon did not

accept the notion of an affinity existing between either of these language families and the Finno-Ugrian or Elamite stocks.

This review of major theories concerning the physical origins of the megalith-builders of South Asia is useful in discerning some assumptions and themes prevailing in the literature on this subject. For example, it is immediately apparent that the value of an analysis of anatomical data from megalithic burial sites has been given secondary place in preference to data for physical origins based upon archaeological and linguistic considerations, not to mention theories derived from fanciful speculations along the fringes of scientific endeavour. Indeed, the focal interest of many nineteenth writers on the ceremonial institutions surrounding the megalithic structures, and the preoccupation of twentieth century writers with the language spoken by their builders, have eclipsed the legitimate questions concerning the biological nature of the prehistoric people themselves. The physically oriented efforts, of which the most influential are Zuckerman's study of the two skulls from Aditanallur, Guha's summary of skeletal specimens described for the Indian census, and Sarkar's report of six crania from Brahmagiri, have been profoundly shaped by concepts about racial anthropology and population dynamics in South Asia current at the time these works were published. All the other anatomical studies of megalithic man, with one or two notable exceptions, have been patterned according to the conclusions reached by these three writers insofar as methods of analysis and decisions about biological origins and affinities were concerned.

So long as the dating of megalithic monuments and their cultural associations remained uncertain, a profound antiquity of several millennia was sometimes assigned to them. This precept reinforced the notion that the contemporary jungle people of the subcontinent must be the lineal descendants of the mysterious prehistoric people. As light came to be shed on problems of dating megaliths, beginning with Wheeler's dating of

Brahmagiri in 1947, it became more usual to ascribe the elements of the culture complex to foreign invaders arriving at a period nearer to the time of recorded history. These culture-bearers of megalithism were derived from Eurasian lands peripheral to the subcontinent. The popularity of diffusionist theory in ethnology goes far to account for the theories devised to explain racial origins in terms of movements of people as well as dispersion of institutions and ideas. It should be emphasised in this connection that the problems of Indian prehistory and physical anthropology frequently reflected larger issues of particular interest to anthropologists involved in ethnological problems in geographical regions far removed from the subcontinent.

Both early and more recent writings on this topic have perpetuated the assumption that the megalith-builders were essentially members of a single racial stock. From this it was seen as a logical correlate that certain physical characteristics observable in skeletal remains from different megalithic sites should be held in common. These physical sorting criteria would serve to define racial origins and affinities with populations both within and outside India. Even a single physical trait, such as the arithmetic ratio of the cranial length-breadth index, was regarded as sufficient evidence for the identification of a presumed racial affinity between skeletal series with identical or close indicial means. Thus Taylor and Hunt described the megalithic people as typically dolichocranic, but Sarkar considered brachycrany to be the megalithic cranial norm. Where the evidence did not fit the theory, as was often the case, variation from an assumed norm was attributed to the influence of 'divergent ethnic characters' or hybridisation with races whose head forms or other physical characters departed from the typical phenotypic trait. Not infrequently deviation of skeletal features from an assumed norm was simply ignored, a sin too commonly practiced to justify pointing the finger of blame at individual perpetrators.

Some theories of the racial origins of the megalith-builders have dissolved under the heat of nationalistic sensitivity. The case for a pygmy or Negroid racial element in some of the megalithic skeletal series has been claimed since the time of Taylor's description of a skull from Jewurgi. In current anthropological circles in some South Asian countries this notion is clearly unacceptable. However, the decline in popularity of this idea cannot be ascribed to the results of any recent anatomical study specific to this matter. I count myself among those anthropologists who hold that this notion is spurious. But I do so on the basis of having examined the osteological record as well as having reviewed the historical documentation of how the theory of Negrito and Negro racial elements came to be assumed as a presence in South Asia. This is not the avenue of approach taken by most of the vigorous critics of this racial concept. Some physical anthropologists whose area of research is outside the South Asian field but who cannot be charged with nationalistic sympathies continue to support the notion of a Negrito-Negro racial element as evident in the subcontinent (Coon 1965).

It is obvious that in defining the physical characteristics of the megalith-builders most authors, European as well as Asian, have uncritically applied the labels of racial typology fashionable at the time of their writing. Where hybridisation of two races was suspected, racial types were added like cooking condiments to the curry of 'mixed races' and 'pure stocks'. Yet little or no attention has been given to the precise meanings and historical developments of these racial terminologies, which were originally employed to describe phenotypic patterns of populations existing outside South Asia. For over a decade physical anthropologists have added their voices to the statements made by other biological scientists, particularly by researchers in the allied fields of systematics and population genetics, that racial typology is scientifically unsound and that the race concept itself, be it applied to sunflowers, bears or

man, is obsolete. Yet these outmoded labels persist among the writings of many students of Indian prehistory and they continue to be used in biological reports about megalithic man. Their current usage as typological labels is a perpetuation of nineteenth century and early twentieth century practices wherein the concept of race as a natural entity is inherent. The survival of some of the anthropological racial nomenclature with reference to phenotypic patterns in a purely descriptive, non-typological context continues to be a reputable practice in physical anthropology, but the subtlety of this distinction is frequently overlooked or misunderstood.

A rephrasing of some venerable but important questions about the physical nature and population dynamics of megalith-builders is now justified in the light of modern biological thought in the realm of human genetics and demography. The increase in size of the megalithic skeletal record also warrants a new look at old problems. Much that has been written on the subject of the biological nature of megalithic man continues to have scientific merit, but myriad assumptions of doubtful value have penetrated this subject to such an extent that the non-specialist is left in a state of confusion. Questions about the biology and origins of megalithic man are reasonable and important ones to ask, but attempts to find answers outside of a study of the skeletal evidence itself are doomed to prolong the frustration which has been experienced for so long by serious students of this subject.

SOME GENERAL CONCLUSIONS FROM ANATOMICAL ANALYSIS OF SKELETAL REMAINS

Granted the relatively small size of collections of human skeletons from South Asian megalithic sites and the fact that the majority of specimens are

represented by crania alone, of which a calotte or calva may be all that has been preserved, it is feasible nevertheless to make some broad generalisations about the physical anthropology of these prehistoric people from material available for anatomical analysis. Increases in series size as a result of more excavations and the use of better and different methods of anatomical research are advantageous aspects of future work, but such prospects should not inhibit the genesis of new interpretations based upon the study of current data.

The problem of sample size is important to clarify, for one often hears the warning that a meaningful analysis of human skeletal material is impossible unless the series is sufficiently large to merit a significant statistical study. Large skeletal collections are infrequent in the prehistoric archaeological record, and beyond an antiquity greater than a few thousand years do not occur at all. The human palaeontologist working with Pleistocene fossil hominid material handles not the osteological representations of extinct populations in their entirety but rather the vestiges of a few individuals. In South Asia the only ancient skeletal series of any size comes from the cemeteries of Harappa. Certainly with these specimens a meaningful statistical study would be a valuable undertaking. But when the anthropologist must be reconciled to work with small numbers of specimens, he approaches his task in much the same way that the palaeontologist of fossil man analyses date of individual organisms. Biologists in both of these fields recognise the importance of studying limited numbers of specimens, a single specimen, a tooth or a part of a bone.

The examination of all available skeletal series (as well as a study of published descriptions of specimens now lost) leads to the conclusion that variability of physical characteristics is a conspicuous feature of the biological nature of the megalith-builders. The mapping of particular phenotypic characters across the geographical areas in

which skeletal material has been found illustrates this fact. Table 2 itemises ten anthropometric measurements, eight indices and one estimation of cranial capacity for the crania of the specimens from twelve megalithic sites. A casual inspection of this summary of data reveals immediately the broad range of physical features present in specimens representative of megalithic populations extending from Bihar to Sri Lanka and across the east-west axis of peninsular India.*

* As few of the describers of these skeletal series have defined their methodological procedures, no attempt is made in Table 2 to refer specific anthropometric landmarks or measurements to particular authorities. For this reason, exact comparisons of anthropometric measurements and indicial values for a given physical character are impossible and only approximate similarities and differences can be noted. This word of caution should be considered in the examination of anthropometric comparative tables for other prehistoric skeletal series described in the literature of South Asian physical anthropology.

TABLE 2: Measurements (in CMS.) and Indices of Crania

Site Name & Specimen No. with Sex	Glabella-Opistocranium Length	Bieuryonic Breadth	Basion-Bregma Height	Auricular Height	Maximum Circumference	Bifrontotemporale Breadth	Bizygomatic Breadth	Masion-Prosthion Height	Nasal Height	Nasal Breadth
<i>Aditanallur</i> (Chatterjee & Gupta 1963)										
Male: 3	193	128.5		117.5		102.5	111.5		52	27
4	189	131		119						
5	186	133	131			90	110			
6		136	132							
7	186	126	130	115.3		93	112	60	51	24
9	171	135					111			
10	181	131				94				
11	195	134	141			90	115			
Female: 2	191	125	130			92	114			
8	174.5		122							
12	185	129				95	109			
13	170	135		116.5		94	114	62	45	
14	183	124	128	112		90	128		50	27
<i>Brahmagiri</i> (Sarkar 1960)										
Male: 1A	179	140		103.5	505	100		67	51	27
1B	182	152		111.5	527	101.5		64	48	30
1C	184.5	146	138	117.5	515	100		57	47.5	29
1F	187	151		116.5						
Female: 1E	204	131		112		75	89	51	46	17
<i>Mysore</i> (Bain 1890)										
Sex Uncertain	190.5	157								
<i>Nagarjunakonda</i> (Gupta, Basu & Dutta 1970)										
Male: Meg. 1-A	173	152	135		520	100			51	28
<i>Pomparippu</i> (Kennedy n.d.b. after Jayawardena)										
Sex Uncertain	169	130	123	115		96	124	62	43.8	23

Site Name & Specimen No. with Sex	Glabella-Opistocranium Length	Bieuryonic Breadth	Basion-Bregma Height	Auricular Height	Maximum Circumference	Bifrontotemporale Breadth	Bizygomatic Breadth	Nasion-Prosthion Height	Nasal Height	Nasal Breadth
<i>Raigir</i> (Kennedy 1965d)										
Male: 117	195	124				96				
119	185	140			520	99				
Female: 116	160					94				
118	165					91				
120	178	140								
121	189	138			543					
<i>Ranchi</i> (Mitra 1936)										
Male: B	188	135	134							
C	186	127	130							
Female: A	185	125	134							
<i>Ruanggarh</i> (Kennedy n.d.a. after Armit)										
Male: 1927:7:27:1	178	128	122.5	112.0	494	91.5		67.5	50.1	27.9
1927:7:27:2	177	129.5	128	107.5	491	92	130.5	64.0	51.4	24.9
<i>Samur</i> (Bose 1959)										
Male: B	205	143								
Female: A	197	122								
<i>Savankurga</i> (Branfill 1881)										
Sex Uncertain	185.4	135.9								
<i>Yeleswaram</i> (Gupta & Dutta 1962)										
Male: Meg. 1-7	175	141	134	118	499	91			46	26
Meg. 111-1	186	152				103				
Meg. 111-2	165	147			505	96.5				
Female: Meg. 1-12	169	130		111	482.5	92				22.5
Meg. 111-4	173	128								

Site Name & Specimen No. with Sex	Cranial Length-Breadth Index	Cranial Length-Bregmatic Height Index	Cranial Breadth-Bregmatic Height Index	Cranial Length-Auricular Height Index	Cranial Breadth-Auricular Height Index	Zygo-Frontal Index	Upper Facial Index	Nasal Index	Cranial Capacity (cc.) (Previously published data)	Cranial Capacity (cc.) (Auricular Height)	Cranial Capacity (cc.) (Basion-Bregma Height)
<i>Aditanallur</i> (Chatterjee & Gupta 1963)											
Male: 3	66.58			60.88	91.43			51.92	1423	1418	
4	69.31			62.96	90.83				1434	1434	
5	71.50	70.43	98.49			81.81			1386		1386
6			97.05								
7	67.74	69.89	103.17	61.99	91.50	83.03	53.57	47.05	1347	1345	1335
9	73.09										
10	72.37										
11	68.71	72.30	105.22			78.26			1504		1504
Female: 2	65.44	68.06	104.00			80.70			1296		1296
8		69.91									
12	69.72					87.15					
13	79.41	68.47			86.29	82.45	54.38		1299	1299	
14	67.80	69.94	103.22	61.20	90.32	70.31		54.00	1268	1249	1265
<i>Brahmagiri</i> (Sarkar 1960)											
Male: 1A	78.21			57.82	73.93			52.94	1306	1306	
1B	83.52			61.26	73.36			62.50	1485	1485	
1C	79.13	74.80	94.52	63.69	80.48			61.05	1516	1514	1513
1F	80.75			62.30	77.15				1560	1560	
Female: 1E	64.22			54.90	85.50	84.27	68.00		1310	1418	
<i>Mysore</i> (Bain 1890) Sex Uncertain											
	82.41										
<i>Nagarjunakonda</i> (Gupta, Basu & Dutta 1970)											
Male: Meg. 1-A	87.86	78.03	88.82					54.00	1476		1468
<i>Pomparippu</i> (Kennedy n.d.b. after Jayawardena) Sex Uncertain											
	76.92	72.78	94.61	68.04	88.46	77.42	50.00	50.20	1243/1234	1243	1233

Site Name & Specimen No. with Sex	Cranial Length-Breadth Index	Cranial Length-Bregmatic Height Index	Cranial Breadth-Bregmatic Height Index	Cranial Length-Auricular Height Index	Cranial Breadth-Auricular Height Index	Zygo-Frontal Index	Upper Facial Index	Nasal Index	Cranial Capacity (cc.) (Previously published data)	Cranial Capacity (cc.) (Auricular Height)	Cranial Capacity (cc.) (Basion-Bregma Height)
<i>Raigir</i>											
(Kennedy 1965d)											
Male: 117	61.54										
119	75.67										
Female: 116											
118											
120	78.65										
121	73.01										
<i>Ranchi</i>											
(Mitra 1936)											
Male: B	71.80	71.27	99.25						1426		1429
C	68.27	69.89	102.36						1331		1341
Female: A											
	67.56	72.43	107.20						1295		1295
<i>Ruamgarth</i>											
(Kennedy n.d.a. after Armit)											
Male: 1927:7:27:1	71.90	68.82	95.70	62.92	87.50			55.70	1170	1290	1267
1927:7:27:2	73.16	72.31	98.84	60.73	83.01	70.49		48.4	1295	1258	1305
<i>Samur</i>											
Bose 1959)											
Male: B	69.75										
Female: A											
	61.92										
<i>Savankurga</i>											
Branfill 1881)											
Sex Uncertain	73.30										
<i>Yeleswaram</i>											
(Gupta & Dutta 1962)											
Male: Meg. 1-7	80.57	76.57	95.04	67.43	83.69			56.52	1422	1422	1404
Meg. 111-1	81.72										
Meg. 111-2	89.09										
Female: Meg. 1-12											
Meg. 111-4	76.92			65.68	85.38				1210	1210	
	74.00										

It is important to emphasise that this conclusion is based upon the study of *multiple variables* constituting the physical nature of these megalithic series. Earlier studies concentrated upon the comparative values of a single variable, the cranial length-breadth index, although other metrically and morphologically described variables were dutifully recorded in the published reports. Resulting from this selectivity was the classification of specimens according to cranial types held to be representative of natural populational divisions, that is dolichocranic, mesocranic and brachycranial races. The prestige accorded the cranial length-breadth index by physical anthropologists of the nineteenth and first half of the twentieth centuries must be explained by a number of factors significant in the historical development of this discipline, a story that does not concern us here. Students of the skeletal record of megalithic man in South Asia have been following an essentially universal *modus operandi* of an earlier anthropological methodology, and they differ from present-day practitioners working with other series in other parts of the world by reason of retaining obsolete interpretations of the significance of the cranial length-breadth index as a key to racial identification. The poor state of preservation of some megalithic osteological series may account for this overemphasis, since measurements and indices of other cranial features were often impossible to describe.

The cranial length-breadth index is no longer considered by western physical anthropologists to constitute an especially significant or superior biological variable of human populations. It is not a diagnostic key to racial identification. The mensural components of cranial length and breadth include the sizes of all of the bones of the vault, values not discretely apparent in the two measurements of length and breadth related to one another as a ratio by the index. Two cranial specimens with the same gross length and breadth measurements and indices may possess different values for the proportions of the frontal, parietal and occipital bones. Analogous

considerations must be kept in mind in the analysis of all anthropometric data, whether metrically or morphologically expressed. However, single measurements and their relationships as indices have provided physical anthropologists with simple qualitative descriptions of specific variations which are significant provided they are divorced from the older misconceptions that these data serve as sorting criteria for the typological classifications of series or populations into races. This misuse of anthropometric data has been abandoned in physical anthropology, the measurements and indices now being properly recognised for what they are - quantitative descriptions of simple or complex anatomical variables.

Relevant to these qualifications concerning the interpretation of the cranial length-breadth index is the evolutionary phenomenon of brachycranialisation. Since terminal Pleistocene times a number of hominid populations underwent an evolutionary process whereby the cranial vault increased its biouronic dimension in relation to the length dimension, thus over a period of time increasing the incidence of mesocranic and brachycranial indices in populations with originally higher frequencies of dolichocrany. Almost all Pleistocene hominid fossil crania are dolichocranic. With the coming of recent times, many human populations retained the dolichocranic head form, although broad-headedness began to occur in low frequencies. Thus pre-Iron Age crania from the Mediterranean basin and parts of the Near East have indices that are 16.1 per cent dolichocranic, 28.1 per cent mesocranic, and 10.8 per cent brachycranial, while their palaeolithic forbears had indicial values which were almost uniformly within the range of dolichocrany. In central Europe the presence of broad-headed populations is represented by crania dated to the mesolithic period of early post-Pleistocene times. Central Europe has retained this feature of a high frequency of brachycraniality among members of its contemporary populations. The evolutionary significance of brachycranialisation and the factors effecting its geographical distribution over time are complex problems

and have been studied for over a century by physical anthropologists. Non-genetic pressures such as infant cradling practices, nutrition, pathological factors and other effects of the cultural and non-cultural environment may play a role in this process. M. Cappieri, who has studied craniological material from various prehistoric sites in Europe, the Near East and South Asia has stated (1969: 3):

...brachycephalization consists of an evolutive continual movement subsequent to the dolichocephals of the Palaeolithic and Neolithic, and is essentially the constant flexible settlement of the various cranial unities through the aggregate morpho-architectural forces which respond to the anatomical and functional factors in reciprocal adaptations: as such, it represents a phylogenetic evolution independent from any racial difference. I therefore reject the thesis which, particularly for Asia, has been propounded in many instances, namely that the Brachycephals formed a population of their own, with their own centres and that they had migrated in various directions during the Late Neolithic and Chalcolithic, and that there are two Brachycephalic Races, the Alpine and the Armenoid.

My own views are: (1) there is no evidence of brachycephalic populations in the period covered by my study (Asia before the Iron Age) which might have influenced the local fundamental dolichocephally; (2) there is no element proving migration of populations from one region to another in the period mentioned; and (3) the Alpines and Armenoids represent morphological or morpho-architectural aspects or developments of the brachycephalization and are not independent genetic unities, thus not at all Races of Sub-Races.

As I admit that the large form the skull represents an evolutionary effect, I incorporate this concept into the general dynamics of human evolution. The concept of evolution means both

development and expansion, and it is equivalent to the other concept of descent with modification. Evolution does not automatically imply a process of improvement, but merely a process of change and differentiation. It is obvious though that evolution is directed towards a higher stage of organization.

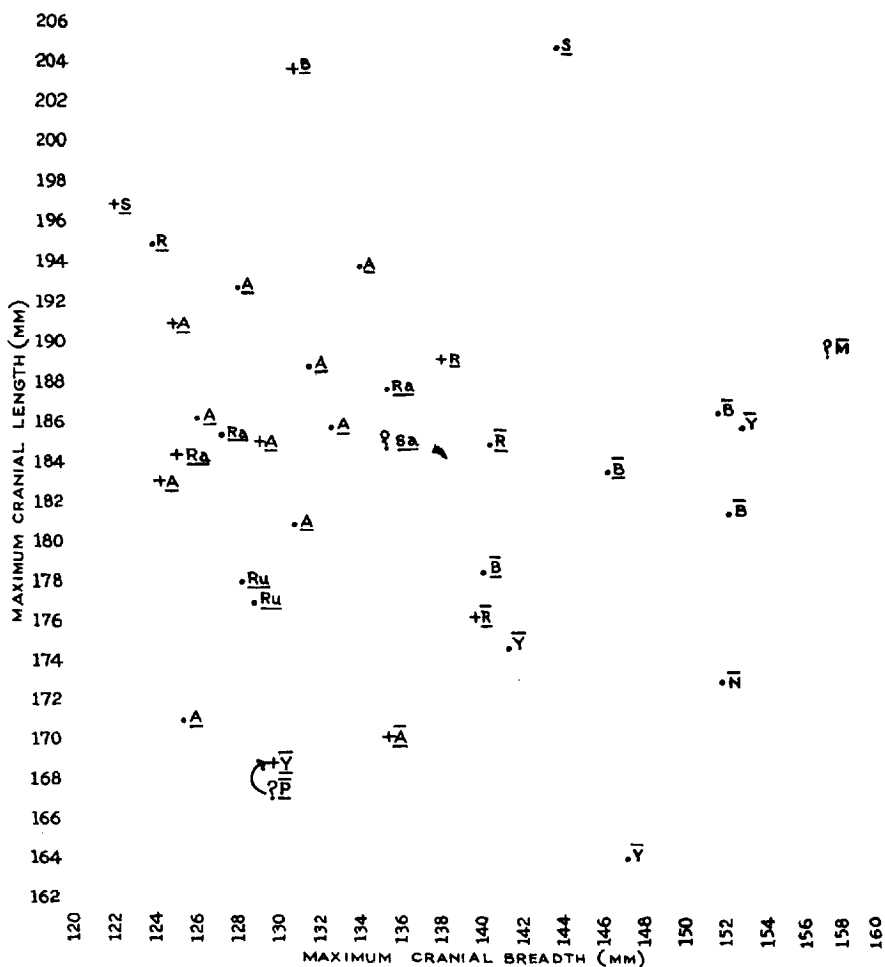
These statements are quite representative of current thinking about the dynamics of brachycranialisation, although Cappieri's typological approach to population variations would find criticism among the opponents of the classical concept of race.

The antiquity of brachycranialisation in South Asia becomes an important issue when examining Sarkar's claim that the presence of broad-headedness in the megalithic levels at Brahmagiri can be attributed to a sudden invasion of a unique race of culture-bearers who replaced the dolichocranic neolithic inhabitants of the region. Brachycrany is encountered in the skeletal record from Mohenjo-daro (Sewell and Guha 1931), Harappa (Chatterjee and Kumar 1963a; Gupta, Dutta and Basu 1962), and Lothal (Chatterjee and Kumar 1963b). Two adult crania from the neolithic-chalcolithic site of Piklihal are sub-mesocranic and sub-brachycranial respectively (Allchin 1960). In the chalcolithic deposits of Nevasa one specimen with a cranial length-breadth index of 75 is present (Kennedy and Malhotra 1966). These facts demonstrate the presence of a broad cranial element in the megalithic region and its border areas at a period of antiquity preceding the time of maturity of the megalithic cultural complex. Sarkar was aware that brachycrany was present in the populations of these pre-Iron Age cultures, but rather than consider the possibility that this feature may have evolved within the indigenous populations of the megalithic area as an effect of the brachycranialisation factor, he favoured the thesis that the original practitioners of megalithism must have arrived along a corridor of brachycrany from the Near East and Iran to South India. By accommodating the results of his anatomical analysis of the Brahmagiri crania to

Wheeler's hypothesis (which was based upon archaeological interpretations of the deposits at the site) that the megalithic cultural complex came to peninsular India as the result of an abrupt invasion of a new kind of people, Sarkar implied that the phenomenon of brachycrany also must have had a sudden introduction into this part of the subcontinent.

The study of the skeletal record from megalithic sites which is described in this paper does not lend support to Sarkar's thesis, nor is this conclusion deducible in any obvious way from examination of the anatomical data from Brahmagiri itself. A glance at the distribution of the cranial length-breadth index represented in Figure 6 shows that whereas the specimens from Aditanallur, Ruamgarh, Samur, Savankurga, Ranchi and Pomparippu cluster towards the dolichocranic sector of the scatter-diagram, the specimens from Brahmagiri, Nagarjunakonda, Mysore and Yeleswaram fall towards the brachycranic end. Raigir's indices are distributed across both sectors if Hunt's specimen with an index of 90 is included in the series. Hence the venerable assertion that a certain cranial length-breadth index is typical of megalithic crania cannot be supported any more than could a similar claim that some other anthropometric mean values are characteristic of the megalith-builders. Until absolute dates are available from each of these megalithic sites as well as from those sites which were occupied in pre-megalithic times, it is unsound to assume an aboriginal dolichocranic population being suddenly displaced by a broad-headed people arriving from centres of high culture outside the subcontinent. Rather it appears as a more obvious fact that a high degree of variability of cranial form is recognisable in megalithic populations, as when different series from widely separated geographical regions of the peninsula are compared. Analogous trait distributions appear when other phenotypic features are noted and compared.

Any scheme that would attribute a physical



KEY: A = ADITANALLUR; B = BRAHMAGIRI; M = MYSORE;
 N = NAGARJUNAKONDA; P = POMPARIPPU; R = RAIGIR; Ra = RANCHI;
 Ru = RUANGARH; S = SANUR; Sa = SAVANKURGA; Y = YELESWARAM;
 • = MALE; + = FEMALE; ? = ADULT OF UNCERTAIN SEX;
 LINE UNDER THE SITE SYMBOL = DOLICHOCRANY; LINE ABOVE
 THE SITE SYMBOL = BRACHYCRANY; LINES ABOVE AND BELOW
 THE SITE SYMBOL = MESOCRANY.

Figure 6: Comparative Cranial Indices
 a Megalithic series.

homogeneity to the megalith-builders on the presumption that all skeletal series from this cultural context shared key sorting criteria for a typological racial classification becomes inconceivable given the wide degree of variations of phenotypic characters described for other ancient South Asian skeletal series, for example specimens from Late Stone Age (mesolithic), neolithic, chalcolithic and Harappan sites (Kennedy 1965a, c, d, 1972b; Kennedy and Malhotra 1966). While it is true that Late Stone Age cranial specimens, which are the most ancient human osteological materials recovered thus far from South Asia, are almost uniformly dolichocranic, in other phenotypic characters of the cranial vault, face, basalar region, mandible and dentition and the myriad post-cranial features there is the same degree of broad intra-population and inter-population variation that is encountered in the later prehistoric series including those from the Iron Age of peninsular India.

Correlated with these lines of evidence refuting the notion that the megalith-builders were of a uniform phenotypic pattern characterised by the sharing of one or more physical features are those considerations of the skeletal record that reject the thesis of a catastrophic invasion of new people into peninsular India with the introduction of the megalithic cultural complex. Contemporary physical anthropologists are wary of announcements of sudden and dramatic invasions of culture-bearers upon unacculturated aboriginal populations, be these the maritime invaders of von Fürer-Haimendorf or the attackers of Brahmagiri envisaged by Wheeler. The replacement of one human population by another in a large geographical region is characteristically a gradual process and not a catastrophic event, given certain unusual cases, of course. As we have noted already, the skeletal record of the megalith-builders does not provide the slightest reason to accept the hypothesis of a sudden displacement of populations in connection with the beginnings of the megalithic cultural complex.

The existence today of a thriving megalithic

tradition among some of India's tribal people may or may not be indicative of a direct cultural affinity with the prehistoric practice of erecting large stones for funerary purposes. However, it is interesting to note the persistence of a very old cultural institution in this part of the world among populations which are quite varied in their frequencies of particular phenotypic characters over a wide geographical range reaching from Assam and Burma to Chota Nagpur and southwards to Andhra Pradesh. Since megalithism today is not confined to populations sharing similar phenotypic expressions of a set of physical characters, for what reasons should a commonality of biological traits or a line of common descent be assumed for the prehistoric megalith-builders? Diffusion of cultural institutions seldom involves the actual migration of hordes of people into a new area from a locus of cultural origin and development. Some forms of megalithic architecture were very widespread in Europe and Asia over the past four millennia, while evidence of some Eurasian horde of culture-bearers practicing megalithism is lacking (Figure 7).

Archaeological evidence also supports the thesis of a gradual development of the megalithic cultural complex and offers no indication of an abrupt invasion of new people into the peninsula of South Asia. As noted above, the southward diffusion of iron was relatively slow as it spread from the northwestern sectors of the subcontinent to Maharashtra over the course of several centuries. At some sites in North India iron has been found in association with a black-and-red ceramic ware as well as with the Painted Grey ware of the Gangetic chalcolithic. The existence of cairn burials in North India and among some of the living tribal peoples also renders doubtful the theory of a catastrophic introduction of these cultural elements. It is the configuration of cultural traits rather than their sudden appearance that typifies the megalithic cultural complex. The integrity of this way of life lay in its assemblage of particular elements already present in different parts of South Asia rather than its



Figure 7: Megaliths from Chanda District, Maharashtra, erected by present-day Maria Gonds.

possession of any unique cultural elements.

In turning to linguistic data with respect to these issues of abrupt population replacement, it is generally recognised by linguists of Dravidian studies that this thesis is not essential to explain the present distribution of the major language groups and dialects. Since the antiquity of these tongues cannot be established beyond the date of the Brahmi cave inscriptions, which were existing by the second century B.C., the ultimate origins of Dravidian speech remain unknown. The linguistic issue has become linked with the megalithic cultural complex through the writings of Slater and von Fürer-Haimendorf, the latter of whom has asked the important question, 'if the megalith-builders did not speak Dravidian tongues, what other language could they have spoken?' Since the era of megalith-builders in South Asia does not occur in remote antiquity but just before the dawn of the historic period, the establishment of Dravidian languages in this region coincides with the practices of megalithism. This seems both a safe and reasonable assumption. However, it is an issue that does not shed any light upon the nature of the physical anthropology of the prehistoric people, save in the context of palaeodemographic problems.

Finally, with regard to the matter of the physical affinities of these prehistoric people to the present-day inhabitants of South Asia, there is no doubt that there exists here a physical continuum of related phenotypic patterns from megalithic times to the present. The existence of variability of phenotypic patterns for the megalithic series has been demonstrated. The work of Olivier among Tamils and other Dravidian-speaking populations confirms the conclusions offered here that there is a similar sort of phenotypic heterogeneity from region to region and from caste to caste. Thus Olivier, whose results are confirmed by other physical anthropologists working with Tamils and neighbouring South Indian groups, finds that there is a tendency for brachycrany to occur among the Kannaras, while the Malayalis have indicial values

with a mean of 73. As observed already, similar kinds of differences for cranial and post-cranial characteristics are found among the megalithic skeletal series as well as among the living populations of the peninsula.

Those contemporary populations existing outside South Asia and sharing a high frequency of similar phenotypic characters with both the prehistoric and living peoples of the subcontinent occupy portions of Southeast Asia eastwards to Melanesia and Australia as well as parts of the Mediterranean basin and inland regions of the Near East. The existence of this situation finds its explanation in the presence of an actual physical affinity between these populations and Indian populations in the past, although the operation of evolutionary parallelisms responding to similar adaptive pressures must also be involved in some instances. In the earlier anthropological literature this indication of physical affinity between populations was epitomised in the expression of racial categories amongst which the terms Australoid and Mediterranean were commonly invoked as typological labels. While the evidences of physical affinity and parallelism are not doubted by contemporary physical anthropologists, the disappearance of the typological notion of race has led to a reconceptualisation of populations sharing like physical features in high frequency. The current term *phenotypic pattern* is not a substitute for the term race, but rather a purely descriptive frame of reference, which implies biological affinity for the population in question without assuming the existence of closed genetic systems or natural sub-specific entities. Such were the limitations of earlier studies of population genetics and human taxonomy. The biological history of events in population dynamics that led to the presence of two quite distinct phenotypic patterns in South Asia is as yet unknown, but the existence of both phenotypic patterns in Late Stone Age skeletal series indicates a considerable antiquity for the origins of those in the subcontinent. Different phenotypic patterns involving large populations living

in the Far East, sub-Saharan Africa, Europe beyond the Mediterranean basin, Polynesia or the New World are not apparent in South Asia's native populations. Claims of a Mongolian element in the peninsula have been based upon misinterpretations of a few isolated physical characteristics, amongst which mesocrany and brachycrany were often regarded as key sorting criteria for this designation. Of course Asiatic phenotypic patterns do occur in Assam and adjacent parts of eastern India and along the southern borders of the Himalayas.

In summary, this work has traced some general features of the physical anthropology of South Asia's megalithic people, those inhabitants of peninsular India and Sri Lanka living at the dawn of the historic period. In India some were the folk to whom the edicts of Asoka were addressed. They were the people who contributed to the rise of kingdoms and petty states after the decline of Mauryan influence. The nature of the skeletal record of megalithic man and a review of theories conceived to explain the origins of the megalithic cultural complex have been compared with the results of anatomical analysis of all available human skeletal remains from megalithic sites. Emerging from this study are the conclusions that the megalith-builders were phenotypically variable with respect to a broad spectrum of physical characteristics. They were not members of a single racial element or polytype, as has been assumed by scholars basing their conclusions upon archaeological or linguistic data or upon the study of limited series of skeletal remains from a single megalithic site. There is no evidence to support the thesis of a sudden introduction of biologically different people associated with the beginnings of the megalithic cultural complex; nor do the archaeological and linguistic data support a theory of catastrophism. The living peoples of peninsular India constitute a biological continuum with their megalithic antecedents, as represented by a broad range of phenotypic characteristics. Future study of megalithic man in South Asia must focus upon the

demographic issues of morbidity and mortality, fertility and fecundity, nutrition and disease, as these phenomena reflect biological adaptations of prehistoric populations to the changing pressures of cultural and non-cultural ecological settings. Physical distance techniques for the measurement of similarities and differences of skeletal populations can provide the anthropologist with data relevant to more refined analysis of the general conclusions offered in the present study.

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While this monograph was in process of publication, there have appeared two sources that will be of interest to the reader:

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Both sources deal primarily with the archaeological facets of the Megalithic Complex and only incidentally with the biological analysis of human skeletal remains.

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