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Australian Paleoanthropology

Pre-Nineteenth-Century Ideas on Aboriginal Origins and Variation

Given that the first European ships to reach Australia came via the west coast of Africa and the Cape of Good Hope, it is hardly surprising that subsequent reports of the Australian Aborigines compared them with the dark-skinned and broad-nosed Africans with whom they had a superficial physical and cultural resemblance (cf. Jobson 1623; Purchas 1625; Dampier 1697). The inferred connection between the native inhabitants of Australia and Africa became a recurring theme in the nineteenth-century literature (cf. Curr 1886–1888), but in the short term this comparison was criticized by Captain James Cook (1728–1779) and the naturalist Joseph Banks (1743–1820). Cook thought that the Aborigines he had encountered in New South Wales con-

trasted not only with the Africans but also with their contemporaries in both Asia and elsewhere in the Pacific (cf. Wharton 1893). Similarly, Banks, who had served as botanist on the voyage of the *Endeavour* (1768–1771), believed the Aborigines he had encountered in the vicinity of Port Jackson “were blacker than any we have seen on the voyage tho’ by no means negroes, . . . ; the hair of their heads was bushy and thick by no means woolly like that of a negro. . . .” (Beaglehole 1962). Later, the British hydrographer Matthew Flinders (1774–1814) (1814), and the French mariner François Péron (1775–1810) (1807) confirmed this and served to distinguish the Aborigines of New South Wales from the indigenous inhabitants of Africa and New Guinea.

This distinction, however, was somewhat clouded by the apparently Negroid appearance of the Tasmanians. In 1772 Nicholas Marion-Dufresne, the French commander of the *Mascarin* and the *Marquis de Castries*, recorded the first European contact with a Tasmanian Aboriginal. In his unpublished journal, Marion-Dufresne recorded that the hair of this individual was woolly and separated into shreds like the “Mozambique Coffres,” although the skin, after the removal of charcoal pigment, was reddish-brown rather than black. Soon thereafter, Cook, during his third voyage in 1776, confirmed the existence of this woolly haired race (Beaglehole 1962:785). From this Cook was able to draw a clear distinction between the cultural and physical attributes of the inhabitants of Tasmania and the Aborigines from more northerly parts of the Australian coastline. As a consequence, prior to George Bass’ (d. 1812) discovery and navigation of Bass Strait in 1797 (Dunmore 1992), it appeared that there were at least two distinct groups of people inhabiting the continent. After 1797 the apparent dichotomy between the Aborigines of Tasmania and those of the Australian mainland presented less of a problem, and theories were advanced in explanation of this distinction (cf. Labillardière 1800; Huxley 1870; Topinard 1872).

Nineteenth-Century Views

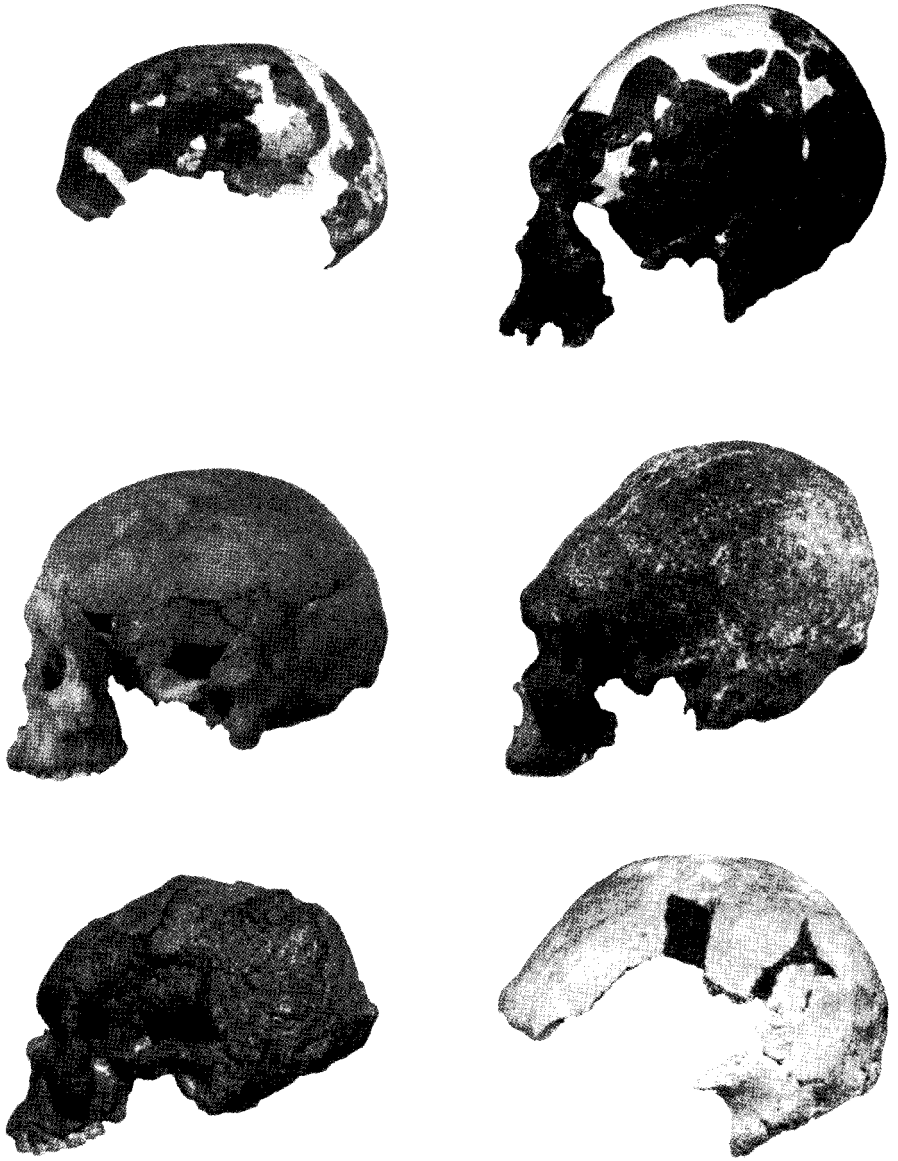
The first decades of the nineteenth century witnessed a dramatic increase in the exploration of the Australian continent in association with the establishment of large-scale European settlements. Written accounts of expeditions around the coast, and into the interior, appeared in rapid succession, and the major-

ity of these contained either detailed or anecdotal references to the Australian Aborigines. For Europeans interested in the broad field of anthropology and human variation, but who had not visited Australia themselves, this literature must have presented them with a somewhat confusing picture. Leaving aside the question of the Tasmanians, a wide variety of physical types had been reported from the mainland itself. As hair color and form were considered to have racial significance, confusion arose when terms like “frizzled,” an occasional analogue for woolly, were used to describe the hair of some mainland Aborigines. And this confusion was undoubtedly heightened by earlier references to the Australians having hair like the African Negroes (cf. Dampier 1697). Similarly, descriptions of skin color were equally confusing, and there were even rumors of “an almost white race” (Stokes 1846:73). Sharp distinctions, though not usually based on actual observation, also frequented the general anthropological literature, with divisions drawn between the coast and inland tribes. Initially, this simply reflected the limited exploration of the hinterland combined with the distinctions drawn by the Aborigines themselves. However, these regional distinctions continued long after apparent personal contact with groups inhabiting the interior of the continent.

Following in the wake of Charles Darwin’s (1809–1882) evolutionary synthesis of 1859, an emerging theme in the still nascent science of paleoanthropology was the question of the location of the homeland of the genus *Homo*. Resulting from this concern was a general assumption that the Australian Aboriginal had originated outside the continent. Depending upon how the variation within living Australians was interpreted, Australia was generally viewed as being colonized by either a single, or multiple founder populations with an origin somewhere in the Old World.

The first detailed consideration of the Australian Aboriginal to emerge after 1859 was that of Thomas Henry Huxley (1825–1895) (1870), who had visited Australia on the voyage of the *Rattlesnake* (1846–1850). From his studies, Huxley concluded that the indigenous population of the Australian mainland could be distinguished by a common set of physical characteristics. These included stature and limb proportions, skin color and hair, plus specific dental and cranial characteristics. Although stressing that the

Fig. 1. Australian fossil hominids. Top left: Lake Mungo 1; top right: Kow Swamp 5; middle left: Keilor; middle right: Coobool Creek 65; lower left: Talgai; lower right: Willandra Lakes 50.



Australians were "one of the best marked of all the types or principal forms of mankind" (Huxley 1870:404), he also drew attention to their general similarity with some hill tribes in Hindustan. In concluding this review, Huxley turned his attention to the question of the origins of the Australian Aborigine, noting "the remarkable circumstance" that "none of the Australoid type has been found in any of the islands of the Malay archipelago" (1870:405). More than a century later, this "remarkable circumstance" remains an area of conflict and confusion for most paleoanthropologists. In this same study, Huxley also confirmed the earlier descriptions of Cook and Flinders, declaring the Tasmanians to be

a race apart from the mainland population. He described them as a special modification of the Negroid type, namely, the Negritos (1870:406). These Negritos, Huxley said, could be distinguished from the African Negro by the conformation of their skulls, which show a "remarkable approximation" to the Australoid type with great brow ridges and the cranium having a pentagonal cross section when viewed from behind. Although his description of the Negritos is puzzlingly vague, it appears that they share with African Negroes woolly hair, depressed nasal bones, and a dark skin. Similar people are also described from the Andaman Islands, New Guinea, the Torres Strait Islands, and New Caledonia.

TABLE 1. Dates for the earliest archeological sites, and positively dated skeletal remains from Australia

<i>Archaeological site</i>	<i>Years BP</i>	<i>Dating Method</i>
Malakunanja II	50.0 ky	Thermoluminescence
Upper Swan	39.5 ky	¹⁴ C on charcoal
Mandu Mandu Creek	34.2 ky	¹⁴ C on charcoal
Sandy Creek	31.9 ky	¹⁴ C on charcoal
Lake Mungo	31.1 ky	¹⁴ C on shell
ORS7	30.8 ky	¹⁴ C on charcoal
Nunamira Cave	30.4 ky	¹⁴ C on charcoal
Bone Cave	29.0 ky	¹⁴ C on charcoal
Lake Mungo I	24.7 ky	¹⁴ C on bone collagen
Coobool Creek 65	14.3 ky	U/T on bone
Kow Swamp 5	13.0 ky	¹⁴ C on shell
Kow Swamp	9.5 ky	¹⁴ C bone apatite
Keilor	12.0 ky	¹⁴ C on bone collagen
Nacurrie	11.4 ky	AMS on bone collagen
Roonka 89	6.91 ky	¹⁴ C on bone collagen

Taken from Brown 1989; Bowler 1992; Morwood & L'Oste, in press.

After a detailed comparison of Australian and Tasmanian crania, combined with a survey of travelers' accounts of skin color, hair form, and stature, Paul Topinard (1830–1911) supported Huxley's description of the Tasmanians as Negritos. However, he differed from Huxley in considering the mainland population to be of mixed race: The modern population resulted from the hybridization of a tall, robust, dolichocephalic, chocolate-colored, and straight-haired race with a race of smaller stature, black skin, and woolly hair, along with several other distinguishing features in the cranial skeleton (Topinard 1872:324–326). Undoubtedly, this vision of a mixed racial group was a direct result of his reliance on inaccurate reports of woolly haired and black-skinned people inhabiting isolated parts of the mainland.

Twentieth-Century Developments

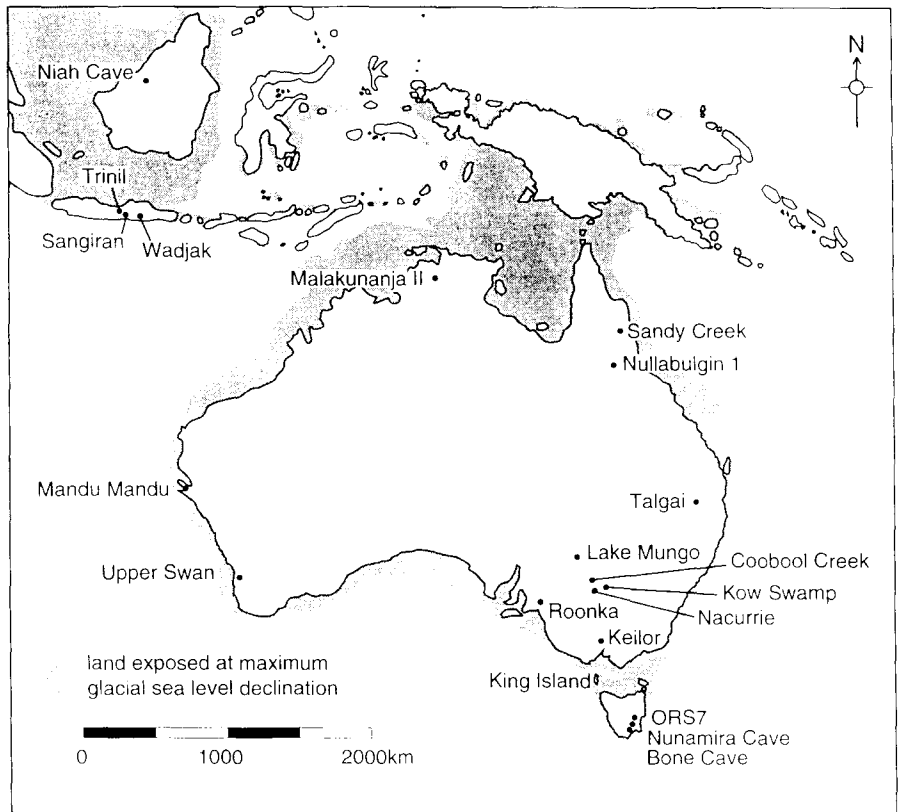
The perceptive German anatomist Hermann Klaatsch (1863–1916) was one of the first to emphasize the effect that isolation probably had on the individuality of the Tasmanians (cf. Klaatsch 1908:150). More recent research on the frequency and distribution of nonmetric traits and skeletal morphology has added considerable support to Klaatsch's interpretation that the Tasmanians are simply an extension

of the southeastern mainland Aboriginal population. While they certainly could be distinguished from their mainland counterparts, the extent to which they differed has been overemphasized in some research (cf. Birdsell 1967) and is actually less than would be predicted by the extent of their isolation (Pardoe 1991). Importantly, the morphology of skeletal material excavated from King Island in Bass Strait (dated to ca. 14.5 ky BP) falls within the range of recent southeastern Australian Aborigines. As such, it is no longer necessary to construct elaborate scenarios of boatloads of Negrito Melanesians sailing directly down the eastern coast of Australia to settle Tasmania.

However, when the first fossil evidence of Australia's occupation in the Pleistocene, namely, the Talgai skull, was described in 1918 by Stewart A. Smith, it was interpreted in terms of succeeding waves of morphologically distinct immigrants. Smith (1918) attempted to establish the antiquity of the Talgai skull through comparison with European fossils, like Piltown, of presumed Pleistocene age. While stressing that the vault and facial skeleton were of "undoubtedly Australian type," he thought that the palate and canine teeth displayed "ape-like" traits. At the same time, Talgai's relevance to the settlement of Australia was established through comparison with Australian and Tasmanian crania. Subsequent studies of Talgai, however, indicated that Smith had misinterpreted the morphology of the distorted palate, and while the canines are large, they closely approximate the established terminal Pleistocene Australian male mean in size. Talgai has not been directly dated, but the soil horizon from which it may have originated has been dated to ca. 11.6 ky BP. Although historically important, the fact that Talgai was a crushed and distorted specimen, as well as of questionable provenance, has meant that it has had only a marginal role in the subsequent quest for Australian origins.

Of greater consequence was the discovery of human skeletal material during sand-mining operations near Keilor (see Fig. 1), on the Maribyrnong River, near Melbourne in 1940. Unlike Talgai, the geological context of the Keilor skeleton was known and the cranial vault was free of distortion. Preliminary descriptions of the cranium were made by Wunderly (1943), with Adam (1943) describing the teeth and palate. Wunderly (1943:61) concluded that Keilor combined Australoid and Tasmanoid characteristics in about equal proportions, which indicated to him that the

Fig. 2. Map showing location of major hominid sites in Australasia.



Australians had a biracial origin, with the original population being Negritos. The claim for extreme antiquity (cf. Mahony 1943) and Wunderly's description of the cranium received considerable criticism (e.g., Jones 1944; Weidenreich 1945). In reality, Keilor's morphology fits in well with recent research indicating that the Tasmanians were an extension of the southeastern mainland population. More recent research has compared Keilor to a range of terminal Pleistocene and recent Australian Aboriginal crania, with conflicting results.

Although Talgai and Keilor increased the interest and speculation about the antiquity of Australian origins, it was not until the period 1968–1972 that human skeletal materials radiocarbon dated to the terminal Pleistocene were recovered in Australia. Alan Thorne's excavations of an Aboriginal cemetery at Kow Swamp, in northern Victoria (see Fig. 1), recovered the partial skeletal remains of more than twenty-two individuals (cf. Thorne 1969; Thorne & Macumber 1972). These were subsequently dated to between 13.0 and 9.0 ky BP (see Table 1). Thorne's descriptions of the crania emphasized their evolutionary relationships to populations within, and outside, Australia and, to a lesser

degree, diachronic change since the Pleistocene. The Kow Swamp skeletons were described as those of a relatively large and robust people who maintained a variety of early archaic *Homo sapiens* characteristics in their fronto-facial skeletons (Thorne & Macumber 1972). In particular, it was argued that the Kow Swamp frontal bones preserved "an almost unmodified eastern *erectus* form, specifically that of Javan pithecanthropines" (Thorne & Macumber 1972:319). It was later argued that the flattened frontal bones at Kow Swamp, and nearby sites of Coobool Creek and Nacurrie, in association with great cranial height, indicated that the crania had been artificially deformed rather than the persistence of an archaic morphotype. Nevertheless, it is clear that the skeletons from these central Murray River sites can be distinguished from their mid-Holocene counterparts by their greater skeletal and dental mass and general robusticity (cf. Brown 1987).

In 1968 the geomorphologist Jim Bowler, working at Lake Mungo in southwestern New South Wales, discovered what, to date, is the oldest securely dated human burial in Australia. The Lake Mungo 1 cremation dated to approximately 24.0 ky BP (Bowler, Thorne, & Polach 1972). Reconstruction and

description of Lake Mungo 1 was undertaken by Thorne—though, to date, only limited information has been published (cf. Brown 1987). Later, in 1974, a second burial was discovered, Lake Mungo 3, not far from the first. This extended burial has been argued to be as old as 30.0 ky BP based on its stratigraphic relationship with Lake Mungo 1. Unlike some of the crania from Kow Swamp, the vault of Lake Mungo 1 is not large and robust, and it is without the frontal flattening evident in Kow Swamp 1, 5, and 7. While it has been argued that the Kow Swamp series retained archaic features connecting it with Indonesian *Homo erectus* (Thorne & Macumber 1972), these attributes are not present in Lake Mungo 1 and 3. Thorne (1977) has endeavored to explain this dichotomy through reference to two distinct Pleistocene populations, namely, a robust group (i.e., Kow Swamp and Cohuna) and a gracile group (Lake Mungo 1, Lake Mungo 3, and Keilor), which are presumed to have had different points of origin on the Asian mainland. This retreat to the nineteenth-century dual-population model has fueled a continuing debate (cf. Brown 1987).

Although Franz Weidenreich (1873–1948) is often given the credit, it was Klaatsch (1908) who first argued for a regional evolutionary sequence linking the Indonesian *Pithecanthropus* with more recent Australians. Weidenreich (1943) extended Klaatsch's model, particularly with a specific comparison of Keilor with Wadjak 1 from central Java (Weidenreich 1945). Keilor and Wadjak were described as being as similar as twins, with the implication of an ancestor-descendant relationship between the two. For Weidenreich, gene flow could have been operating only in one direction, into Australia. Therefore, as he considered Wadjak 1 to be of Pleistocene age, and as the claims for an early date for Keilor were unproven, Wadjak 1 represented one of the Asian ancestors of later Australians. Subsequent reconstruction and cleaning of Wadjak 1, however, has reduced its resemblance to Keilor and other Australian crania. Furthermore, from the evidence available it appears that Wadjak 1 is both morphologically inconsistent with, and chronologically too young to be of direct relevance to, Australia's founder population.

The only example of *Homo sapiens* from Southeast Asia that may be old enough to be associated with the first migration of people to Australia is the deep skull from Niah Cave

in Borneo. Unfortunately, this cranium has not been directly dated. In Southeast Asia, the only other hominid skeletal materials that may be of relevance, albeit indirectly, to the eventual colonization of Australia, are those from the *Homo erectus* localities of central Java. None of the *Homo erectus* materials have been directly dated, and the majority appear to be secondary depositions, with age estimates ranging from approximately 900–700 ky BP at Sangiran to 200 ky BP at Ngandong.

Since the 1940s, there have been a number of researchers who have supported an evolutionary sequence linking Indonesian *H. erectus* with later Australians (e.g., Coon 1962). Critiques of the most recent cases made by Thorne & Wolpoff (1981) have pointed out that the majority of their regional traits are inappropriate. More importantly, Thorne & Wolpoff (1981) were selective in their choice of the Australian crania that they used to test their regional model. The morphology of crania like those from Keilor and Lake Mungo does not support their hypothesis (Brown 1992).

Since 1967 there has been a dramatic expansion in the number of Australian archaeological sites dated to the late Pleistocene (see Table 1 and Fig. 1), the contents of these sites have shed little light on the geographic origins of Australia's founding human population. Late Pleistocene stone tool assemblages can as readily be linked to the European or African Paleolithic as any particular part of Asia. More might be expected of rock art as this is clearly the most individualistic, and widespread, surviving aspect of Australian prehistory. However, not only have the Asian antecedents of Australian rock art not been identified, but Australian art may in fact be an indigenous development, predating anything in Asia. The available Pleistocene skeletal materials from Asia and Australia are not of much help either. Over the last decade, there has been a rapid increase in the number of archaeological sites in Australia and Tasmania that have been radiocarbon dated to more than 30.0 ky BP (Bowler 1992) (see Table 1). The earliest, widely accepted evidence for human occupation in Australia is ca. 39.0 ky BP for charcoal associated with stone artifacts from the Upper Swan in Western Australia. More recently it has been argued that human occupation in Australia may predate 50.0 ky BP (Roberts, Jones, & Smith 1990). However, some concern has been expressed over the extent of the discrepancy between the radiocarbon and thermoluminescence dates, and

stratigraphic association of the artifacts. A date of ca. 50.0 ky BP would correspond with a period of major glacial sea-level declination, which, although it would not have enabled people to walk to Australia from Southeast Asia, would have dramatically decreased the amount of ocean that needed to be crossed (see Fig. 2). Whether the original homeland of Australia's seafaring colonists was in mainland or island Asia remains unknown. The fossil skeletal materials so far recovered from both sides of the Wallace Line do not provide convincing evidence of either an Asian origin for Australia's founder population, or an evolutionary continuity in this region. Thus, the question of origins and antiquity of Australia's human settlement will be answered only by future research in the Asian region, particularly in archeological sites predating Australia's colonization.

Peter Brown

See also Asian Paleoanthropology; Huxley, Thomas Henry; Java; Klaatsch, Hermann; Talgai; Topinard, Paul; Wallace, Alfred Russel; Weidenreich, Franz

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Australopithecines

Australopithecus is a genus of fossil hominids found in southern and eastern Africa whose composite groups date from the Lower Pliocene on through to early Pleistocene times. Several members of this heterogenous genus are considered to be ancestral forms to the modern human lineage.

The history of australopithecine research begins in 1924, when a cranium of what was initially thought to have been a fossil baboon was discovered at the Buxton limestone quarry located 10 km southwest of Taung, Bophuthatswana, in the northern Cape Province of the Union of South Africa (now the Republic of South Africa). The Taung skull, still embedded in a lump of limestone breccia, was subsequently delivered to Raymond A. Dart (1893–1988), then professor of anatomy at the University of the Witwatersrand in Johannesburg. On disengaging the Taung skull from its matrix, Dart discovered that the cranium belonged not to a baboon, but rather to a creature that morphologically stood on the hominid-hominoid boundary. With the exception of the Piltdown skull, which was subsequently shown to be forgery (cf. Weiner, Oakley, & Clark 1953), the Taung specimen displayed an unprecedented blend of pongid and hominid traits—though as Dart subsequently reported in his description of the specimen, published in *Nature* the following year (February 1925), it was decidedly

more “humanoid” than “pithecoïd.” Convinced of the specimen's evolutionary significance, Dart assigned the Taung specimen to a new genus and species he called *Australopithecus africanus*. Dart vividly records this historic episode in his autobiography (1959). Not unexpectedly, Dart's communication was controversial. There were, however, a number of reasons why Dart's contemporaries questioned his interpretation. Not counting the Piltdown impediment and the fact that many investigators of the period favored Asia rather than Africa as the cradle and nursery of the human genus, the first problem with Dart's fossil was that it was a juvenile specimen, estimated by modern human standards as being about six years of age because the six-year molar was present in the jaw along with a set of otherwise deciduous teeth. Since the young of related species share a number of characteristics, many scientists claimed that this was merely a fossilized ape skull. Second, recalling that this was the first recorded find of an australopithecine, there was no standard for comparison. No one at that time had any idea what this early stage of human evolution might look like. In 1925 the most primitive forms of human ancestors known at that time (not counting the now infamous Piltdown skull) were the European Neandertals, a subspecies of modern human referred to as *Homo sapiens neanderthalensis*, and *Pithecanthropus erectus* from Java, which is now known as *Homo erectus*. Neither hominid form was as “primitive looking” as the Taung skull.

One individual who responded favorably to the news of Dart's find was Robert Broom (1866–1951), a medical doctor and paleontologist especially interested in mammal-like reptiles. Having visited Dart's laboratory in 1925 in order to see the new fossil, Broom not only concurred with Dart's evaluation, but also became an energetic advocate of australopithecines. In 1934, after Broom had retired for seven years from medical practice, he was offered a position at the Transvaal Museum, Pretoria, in the Department of Palaeontology and Physical Anthropology, which provided him with an opportunity to devote himself to human paleontology. Two years later, in 1936, he found a skull of an adult *Australopithecus* that confirmed the validity of Dart's Taung fossil. His invitation to come and to bring the fossil with him to America in 1937, to an international symposium on “Early Man,” held at the Academy of Natural Sciences in Philadelphia, marked the beginning of the recognition by scientists of the role of the