the COUNTRIES *and* PEOPLES *of the* EAST

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THE ORIGIN OF AUSTRALIANS IN THE LIGHT OF NEW DISCOVERIES*

The origin of the indigenous population of Australia is a fascinating and exceedingly complex ethnogenetical problem. Ever since 1606, when Willem Janz and his crew set their foot on the continent, many a scientist has been trying to unravel the enigma of this out-of-the-world race strikingly unlike the surrounding peoples both anthropologically and culturally. Numerous hypotheses, sometimes conspicuously conflicting, have been thrown up during the past 365 years to explain away the phenomenon. But it is only in our day, with advances in physical anthropology and archaeology and new methods and fields of research, such as the radiocarbon method, glottochronology, and the use of blood grouping and other heredity factors, that it has become possible to put the study of the origin and history of the Australian aborigines on a rigorously scientific foundation.

As with any other people, the study of the ethnogenesis of Australians involves integrated investigations and diverse evidences of anthropology, archaeology, ethnography and linguistics, with different groups of sources reciprocally controlling and supplementing each other. This obviously exceeds the scope of a small article like this. The purpose here is to show what the new discoveries, above all in the fields of anthropology and archaeology where spectacular achievements have been scored in recent years, are likely to offer for the solution of the ethnogenesis of Australians.

Anthropologically, the aborigines of Australia hold a special place among the other racial groups. Features of different races are found merged in their anthropological character. To a certain extent they are thought by many anthropologists to present, more than any other modern race, a generic, protomorphic anthropological type related to the earliest, archaic forms of modern man, Neoanthropos. Apparently, they are one of the oldest forms of Neoanthropos survived in a relative isolation.

It is now well established that the first man to inhabit Australia was Neoanthropos, because no traces of Archaeoanthropos or Palaeoanthropos have been found on the continent. The Australian race, as is shown by the evidence of palaeoanthropology, principally took shape outside Australia.

The area of origin of modern man as early as the beginning of the Late Palaeolithic ranged from Western Europe to Southeast Asia. As far as the evidence of modern science goes, and above all the evidence of

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the radiocarbon method, the Late Palaeolithic began and hence developed Neoanthropos appeared, about 40,000 years ago.

One of the self-sustained centres of human evolution, according to the polycentric theory of modern man's origin, was in Southeast Asia, where the direct ancestral line went from Pithecanthropus through Javanthropus (Ngandong Man) to Wadjak Man and from this latter to modern Australians. The most distinguished champions of this theory are A. Keith, C. S. Coon, and F. Weidenreich. However, there is reason to believe that the line broke off at Javanthropus and that Wadjak Man is of different origin.

The Soviet anthropologist Ya. Ya. Roginsky has proved that no specific similarity between Pithecanthropus and Australoids exists and that there are no parallels between the local forms of Archaeoanthropos and Palaeoanthropos, on the one hand, and the modern races living in the same or adjacent areas, on the other.[1] Another Soviet anthropologist, M. I. Uryson, calls in question, on the strength of relevant evidence, the possibility of the origin of modern man "from such a morphologically specialized form as Ngandong Man."[2] The Ngandong Man, to use P. Teilhard de Chardin's words, is a dwindling scion. Together with some specialized Neanderthaloids, he makes up "the group of accomplished forms."[3] The principal line of man's evolution is elsewhere.

The theory of the genetic affinity of Australians and Neanderthaloids also seems groundless. The study of a number of skeletons of Australian aborigines has led the Polish anthropologist E. Kruczkiewicz to conclude, as Soviet anthropologists V. V. Bunak and Ya. Ya. Roginsky do, that no specific morphologic affinity between the Australian and Neanderthal skeletons exists. On the contrary, the Australian skeletons show many details strikingly dissimilar from those of the Neanderthal skeletons.[4]

In 1958, a human skull was discovered by T. Harrisson in the Great Cave at Niah, northern Kalimantan. The Niah skull is undoubtedly that of a man of the modern type. Many of its features (as the broad nose, the low nose-bridge, prognathism, etc.) make it related to ancient and modern Australoids. The absolute age of the locality, as measured by radiocarbon dating, is 41,500 ± 1000 years B. P.[5] Consequently, the Niah man was a contemporary of the earliest Neoanthropos of Europe. This means that the zone of hominization included Southeast Asia, or at any rate a part of it. The Niah man is an obvious representative of the Late Palaeolithic ancestor of the Australo-Negroids of Australia and Oceania.

This finding is another confirmation that the Ngandong Man can hardly have been ancestral to Australoids. The chronological interval between Javanthropus man and Niah man must have been relatively small. Javanthropus men probably lived not earlier than 50,000 or 60,000 years ago, in the early Würm. It is doubtful that a period of 10,000-20,000 years was enough for this highly archaic and specialized Neanderthaloid form to have developed into such fully sapiens Australoids as we find at Niah and Wadjak. Apparently, the ancestors of the Proto-Australoids of Southeast Asia are to be sought among some more advanced Neanderthaloids of the Asian mainland, such as the Neanderthaloids of Mt. Carmel, Palestine, from which the Skhul Cave skull V showing well-pronounced proto-Australoid features is derived. Therefore, it is possible to suggest as a working hypothesis that at the turn of the Middle and Late Palaeolithic advanced Neanderthaloids gradually dispersed from west to east in the territory of Asia as the process of further hominization gained more ground. It must not be accidental that the stone industry discovered in the culture stratum in which the skull of the Niah man has

been found is near in type to the Soanian industry of North-Western India.

The calvarium found by R. B. Fox at the Tabon Cave, Palawan Island, Philippines, also dates from the Late Palaeolithic. The absolute age of this finding is 30,500 ± 1100 B. P.[6] Belonging to a Neoanthropos man, the calvarium shows certain Australoid features. Both the Niah skull and the Palawan calvarium indicate that proto-Australoid Neoanthropos men inhabited the present-day island part of Southeast Asia 30,000-40,000 years ago. The Kalimantan and Palawan Islands were part of the mainland in the Pleistocene.

It is in that time that the Neoanthropos men of which the two mineralized skulls discovered by E. Dubois near Wadjak in the last century seem to have inhabited the island of Java. The geological age of the Wadjak men has not been established, but they must have lived in the Last Glacial Period, as did the Niah and Palawan men. Dubois, and more recently F. Weidenreich, noted the Australoid character of these skulls, which F. Weidenreich related to the Keilor fossil skull found in Australia.[7]

At the end of the Pleistocene and in the Late Palaeolithic, then, the present-day island part of Southeast Asia was inhabited by proto-Australoids, the obvious ancestors of the modern aborigines of Australia who have immigrated from the Asian mainland.

For the many millennia that followed, in the Mesolithic and Neolithic, Southeast Asia remained a region inhabited mainly by Australo-Negroids as they developed morphologically from the ancient Late Palaeolithic proto-Australoid forms and underwent ever increasing racial differentiation.[8]

Proto-Australoids were the earliest population of this quarter of the world, including Australia, and it is only in the course of time that this ancient matrix gave rise to different local variants of the Australo-Negroids of Southeast Asia and Oceania. All of them branched off from the common proto-Australoid stock during the past 30,000 or 40,000 years, many of them appearing where they still live. But long before that, probably as early as the Pleistocene age, Proto-Australoids came to settle in Australia and as time went on they developed in an environment shut off from the rest of the world, thereby making possible the relative preservation of many of the peculiarities of their olden anthropological progenitor.

The most important palaeoanthropological finds uncovered in Australia — the Talgai, Cohuna, Keilor and Mossgiel fossil skulls, the Kow Swamp skeletons (found in 1962) and the Green Gully fossil skull (found in 1965), as well as skeletal fragments from Tartanga and Devon Downs — different as they may be, show much in common between each other and with the modern Australian race. This fact disproves the opinion of some scholars who maintain that Negroid-Tasmanoids preceded Australoids as earliest man on the continent of Australia. Thus, for example, N. B. Tindale, of Australia, related the Tartanga skulls to the skulls of the Tasmanians in his attempt to prove that they are of Tasmanian type. However, both the cranial shape of the skull and the smaller size of the third molar, compared with the first and second,— i. e. precisely those features of the Tartanga skulls which Tindale considers Tasmanian — are in fact more typical of Australians than of Tasmanians. These and some other features as well make the Tartangan skulls very much related to the other fossil skulls found in Australia.[9] The Australian fossil skulls as a whole are to be regarded as an index of the mor-

phological development of proto-Australoids and the formation of the present-day Australian race. The palaeoanthropology of Australia — and the verdict of palaeoanthropology I believe is final in this case — furnishes no faithful evidence whatever as regards the earliest Tasmanian matrix.

In order of morphological development and relation to the living Australian race, the Australoids of Australia can be arranged as follows: Talgai-Cohuna-Kow Swamp-Mossgiel-Tartanga and Devon Downs-Keilor and Green Gully.

Their dating is as follows:

The radiocarbon investigation of the fossil shells found in the deposits immediately adjacent to the Talgai skull has shown that the age of the skull is on the order of 6,450 ± 230 to 11,980 ± 155 years B. P. The age of the locality is thus estimated to be approximately 10,000 years.[10]

The Cohuna skull is probably as old or possibly even older, as is shown by chemical analysis.[11]

The age of the Kow Swamp skeletons is approximately 9,000 B. P. (personal communication of N. W. G. Macintosh).

The Mossgiel skull is minimum 6,010 years old.[12]

The analysis of the radioactive carbon found in the shells from layer C that the Tartangan men used as food has dated the skulls as 6,030 ± ± 120 B. P. The skulls from layers D and E may tentatively be dated as from 5,700 to 4,700 B. P.[13] The Cape Martin site, characterized by the same archaeological culture, is 8,700 ± 120 B. P.[14]

The Devon Downs skeletal fragments, as is indicated by the accompanying artifacts, date from the periods known in Australian archaeology as the Mudukian and the Murundian. The average of the Mudukian period of the Fromm's Landing site, situated near the Devon Downs and Tartanga sites is 3,756 ± 85 B. P.[15]

The Keilor skull, according to the latest data, is within the range of 15,000 ± 1,500 to 18.000 ± 500 B. P. The first date, as has been estimated by the radiocarbon technique, is that of the fireplace occurring at nearly the same level as the skull and the second date is that of the fireplace approximately 170 cm. below.[16]

The age of the Green Gully skull is approximately 8,155 ± 130 B. P.[17]

The chronological relationships of the Australian palaeoanthropological materials are thus found different from their morphological relationships. The Keilor skull, morphologically the most developed of all, nevertheless turns out to be the oldest, whereas the Talgai man, morphologically the most primitive, lived several thousand years later.

What were the historical and genetical relationships between these types of proto-Australoids, different morphologically as they were?

The hypothesis that genetically related but morphologically different groups of proto-Australoids, some more advanced, like the Keilor man, some less, like the Talgai, Cohuna and Kow Swamp men, inhabited Australia in the Late Pleistocene period seems the most probable of all in the light of recent evidence. Both groups descended from different stocks of the proto-Australoid population of Southeast Asia. The population of Australia at that time, small as it was, seems to have been scattered in tiny self-sustained groups, and local variants of proto-Australoids may thus have well survived and co-existed for a long time. The available evidence of the Mossgiel skull indicates that the Talgai-Cohuna anthropological type possibly persisted long in certain regions, although not without some changes.

Proto-Australoid groups of the Keilor type, anthropologically related

to the Wadjak and Niah men, were also among the first to inhabit Australia. Proto-Australoids of the Talgai-Cohuna type, who were more primitive, came simultaneously or somewhat later. As early as the Mesolithic, groups of Australoids showing relatively archaic morphological features were still in existence at the outskirts of Southeast Asia. This is attested by the calvarium found in 1929 on the northern coast of New Guinea, near Aitape. The age of the skull, as dated by the radiocarbon method in 1965, is on the order of 4,400 ± 85 to 5,070 ± 140 years B. P.[18] Marginality and relative aloofness combined to make this more backward type of Australoids persist at the outskirts of Southeast Asia.

In Australia, Palaeo-Australians kept developing physically with the result that they lost some of the features of the proto-Australoid type and gradually formed into the present-day Australian anthropological type.

The evidence of absolute chronology relating to the palaeoanthropological materials shows that Australia was inhabited as early as the Pleistocene, which was made possible by the continental bridges between Southeast Asia and Australia in the Last Glacial period. These masses of land were channeled in places, but the channels were probably narrow enough for Late Palaeolithic man to cross by means of his primitive navigation. An unbalance between population growth and natural resources seems to have been one of the primary factors forcing man to seek new territories.

Since man first appeared in Australia (about 30,000 years ago, according to the data of absolute chronology, which I shall discuss below) the following events have occurred in the history of the continent:

From 27,000 to 20,000 years B. P.: the last maximum of the Würmian glaciation.

From 10,000 to 8,000 years B. P.: the close of the Last Glacial period. By that time Australia had been inhabited by man on the whole, including also the central areas of the continent, the physical environment of which was more favourable than it is in the present day. At the very end of that period or the beginning of the next New Guinea and Tasmania separated from Australia. The fact that the two big islands and Australia formed a whole in the Pleistocene contributed to the inhabitation of Australia by way of New Guinea and the inhabitation of Tasmania by way of Australia. Apart from making his way through New Guinea, man could enter the continent elsewhere on the northern and north-western coasts.

From 7,000 to 4,000 years B. P.: the thermal maximum period and the formation of deserts in Central Australia. The physical and climatical environment of the interior of Australia sharply changed for the worse and many species of animals, including gigantic marsupials, disappeared.

From 3,500 to 3,000 years B. P.: the Minor Glacial period involving new advances of cold and regression of the sea. A drier and warmer period followed and has lasted to this day.

New achievements in all the fields of the science of the Earth and new methods of research have made possible all these evidences, and now we know under what physical and geographical conditions man first inhabited and cultivated Australia and under what circumstances the indigenous population of Australia developed during the earliest periods of history.

Concerning the origin of Australians two major trends are being advocated both in the past and at present. One tends to regard Australians as a race of mixed origin and the other as a homogeneous race. The American anthropologist J. B. Birdsell is the most distinguished

champion of the first trend and the anthropologists of Adelaide University, headed by A. A. Abbie, represent the second.

The evidence of anthropology and the latest advances in genetics confirm the truth of the second trend, as do the substantial anthropological works of W. W. Howells,[19] G. W. Morant,[20] A. Hrdlička[21] and others. The total evidence thus shows that there are no sufficient grounds to suppose that Australia was inhabited by racially different components. The anthropologists of Adelaide University who carried out a comprehensive and versatile anthropological examination of the continent in a meridian direction from south to north have come to the same conclusion. In addition to this, subsequent investigations have left no doubt that the aborigines of Australia are anthropologically homogeneous.[22]

The results of serological research have offered a massive argument in favour of the homogeneity theory. The unique combination of blood groups observable in Australia[23] is typical of the peoples descending from one or a few minority population groups who migrated from a relatively limited region and thenceforth lived in a relative isolation for a long time.[24] If Australians had mixed with a population of different racial origin and showing different combination of blood groups this would have changed the whole picture and desrupted the unique combination of blood groups peculiar to the Australian race.

On the other hand, the investigation of blood groups and other heredity factors of the Australian aborigines and other peoples of the world shows that a new vital method, namely the genetics of human populations, has been added to the classical methods of ethnogenetic research in the past few decades and that without this method no study of ethnogenetical problems is conceivable.

Once again, the evidence of anthropology points to the racial homogeneity of the aborigines and proves in complete accord with the conclusions derived from the investigations of palaeoanthropological materials: Australia was first inhabited by proto-Australoids as two genetically related but morphologically different types, namely the Keilor type, comparatively more advanced, and the Talgai-Cohuna type, more primitive.

To a certain extent, though by no means wholly, the differences between the two types became blurred in the course of subsequent development and as a result of crossbreeding. On the other hand, as Australians made deeper inroads into the continent and dispersed over geographically isolated regions, new local differences arose within the genetically single Australian race. Certain evidences, in particular the latest investigations of the Japanese anthropologist B. Yamaguchi,[25] indicate that the morphological differences, as represented in the two aforementioned principal types of palaeo-Australian skulls belonging to a population cognate genetically but different in morphological development, are still traceable to a certain extent in the present day.

The theory of Birdsell and Tindale that curly-haired Negroids were the earliest population of Australia remains unsupported, although it has attracted many adherents in the West. As to the opinion of many Soviet anthropologists who maintain that the Australoid type is more archaic than any living racial type of mankind and was the earliest, primeval type of the indigenous population of Southeast Asia, Australia and Oceania, the latest evidence entirely confirms it.

The present-day native population of Australia indeed shows a certain anthropological differentiation or variation, and this has prompted some anthropologists to look for different races in the genesis of Austra-

lians. Indeed, the aborigenes of North and South Australia display certain different anthropological features, but we shall take it for granted if we remember that Australians inhabit a vast continent, that the aborigines of the North and the South developed during many thousand years without being mixed, and that non-Australian elements (Papuan-Melanesian and Indonesian) could penetrate into the north of the continent, relatively isolated from the surrounding world as it was. Thus, the aborigines of North Australia are on the average higher in stature than the aborigines of South Australia, have darker skin, their tertiary hair covering is less developed, their head is a trifle less in length and breadth, and wavy haired persons occur more often. But all Australians are dolichocephalic, nearly all have well pronounced brow-ridges, prognathism and a very broad nose.

Some very small local groups of anthropological types can be recognized among Australians. They include the Barrinean type of Queensland, which shows the predominance of curly or wavy hair, a relatively low stature and a certain overall gracility as its main distinctive features.

Yet, the differences between the groups and from the rest of the native population of Australia are not so great as to suggest their different racial origin. The local variants within the Australian race, fairly homogeneous as a whole, took shape mainly in Australia itself in the course or as a result of the dispersion of Australians over vast areas varying widely in physical environment, so that many ethnic groups, including the Queensland group, became wholly or largely isolated from the surrounding population. As numerous investigations show, nearly all local differences found in Australians can entirely be accounted for by the prolonged mutual isolation of ethnic groups of the genetically single people. The geographical environment have also played a part in the formation of some regional anthropological features.

The later appearance of non-Australian racial elements (Indonesian, Papuan and Melanesian) chiefly in the north of the continent, had no appreciable effect on the anthropological character of Australians, although they have contributed to some of the anthropological traits of part of the North-Australian population.

The oldest peculiarities of the Australian anthropological character have survived to the present day (or existed until recently) in the South, the South-East and to a certain extent in the West. They include relatively darker skin, generally wavy or straight, sometimes light hair, well developed tertiary hair covering on the body and on the face (in males), well pronounced brow-ridges, a very broad nose with a low bridge, large teeth, prognathism, dolichocephaly, a high frequency of blood group A and factor N, the lack of group B and some other features.

A certain uniformity of the combination of blood groups in the aborigines of Australia indicates that the common features of the genotype of the aborigines had formed before the continent was inhabited and that local variants arose afterwards. These are especially typical of some isolates, such as the aborigines of the Wellesley Islands and the Western Desert, as well as of the Barrineans of northern Queensland. The anthropological peculiarity of all the groups separated from a common stock in the past has been conditioned by their geographical and biological isolation which stimulated the action of the genetic drift, i. e. such a change in the concentration of genes that is controlled not by selection but by random (stochastic) processes.

Interracial differentiation, which must presumably have occurred in the population of the Australian continent, should have involved the

population of Tasmania, an island which has been isolated from the mainland for several thousand years in a much greater degree. Apparently, the peculiar Tasmanian anthropological type took shape as a result of genetico-automatic processes at work within a small group of Palaeo-Australians who had found themselves in Tasmania as early as the Pleistocene and afterwards persisted in age-long isolation.

The latest evidence of anthropology and genetics thus indicates that Australia was first inhabited by an anthropologically homogeneous proto-Australian population belonging to one of the archaic forms of Neoanthropos and that in face of the generally accepted opinion no any more ancient and racially different population preceded it.

Archaeology also offers some highly important material for the reconstruction of the history of Australians, and the evidence of archaeology becomes expecially significant where written records are lacking.

It is not till the late 1920s that systematic archaeological research was undertaken in Australia, but some massive advances have since been made in this field. There have been more and more discoveries, forcing us to revise much of what once seemed the latest frontier of science.

For many years the development of Australian archaeology was stunned because of the widely accepted conviction of Australian scientists that the aborigines of Australia are uncapable of development, that the history of Australia did not begin until the dawn of colonization, and that the archaeologist is getting nowhere in that country. Research during the past three decades has shown the fallacy of this conviction. It has been irrefutably proved that the culture of Australians took many thousand years to evolve, that the Australians knew a full cycle of development from the Palaeolithic to the Early Neolithic, that is to say, the same cycle as all other people have passed, some earlier, some, like Australians, later than others. There are certain objective historical and geographical factors to account for such incongruity in social and cultural development, and this by no means indicates that one people is more capable of development than another.

With the results of archaeological research summarized in Australia during the past few years, it is now possible to divide the history of Australian aborigines from their settlement to the European colonization into several periods, with approximate chronological bounds for each period. Although the stratigraphic sites are still very few, we nevertheless are able to arrange the archaeological culture of Australia in some chronological sequence. Radiocarbon research, on the other hand, makes it possible to mark certain absolute milestones in this sequence of cultural phases.

The scope of this paper does not permit us to go beyond the answer to the question what new discoveries in the field of archaeology are offering to the solution of the origin of Australians and their culture. Leaving alone the subsequent history of Australians we shall discuss only the earliest Australian archaeological cultures as associated with the cultures of Southeast Asia.

The Australian archaeological cultures in the earliest period still considerably reflect the impact of the Palaeolithic and Mesolithic cultures of South and Southeast Asia, the earliest population of which was in genetic and cultural relation with the early population of Australia. Part of these ancient cultural traditions, above all Pre-Mesolithic, the Paleo-Australians brought with them, and part of it made its way to them through direct cultural contacts which persisted up to the beginning of the Holocene.

The earliest cultural traditions of South and Southeast Asia are in some degree or other found in all the cultures of the early period: the Kartan and Capertee cultures (choppers and horsehoof cores, Karta tools and Clactonian flakes), the Gambieran culture (bifacial chopping tools and Chellean handaxes), in the Koonalda Cave and in the terraces of the Keilor river system (protohandaxes and Acheulian handaxes, choppers and chopping tools, Clactonian and Levalloisian flakes), in the Mt. Moffatt culture and in the stone industry of Tasmania.

Remnants of the later, Mesolithic cultures of Southeast Asia are also represented in the Karta, Capertee, Mt. Moffatt and Clarence cultures: sumatraliths, arapia unifaces, and other tools typical of the Hoabinhian and typogically related cultures of Southeast Asia.

For all manifest advances in technology, such as improved workmanship and a wider range of implements one of the leading industrial forms from the Early Palaeolithic to the close of the Mesolithic all over Southeast Asia were unifaces, most often pebbles, as well as chopping tools finished on both sides, such as being still in evidence among the aborigines of Australia to this day. It is only in the Late Mesolithic and the Early Neolithic (in the Bacsonian and analogous cultures of Southeast Asia) that ground-edge axes gradually replaced the above-mentioned tools. The same was the case in Australia, but here the process stopped short of its full development.

The connection of the earliest Australian cultures with the Palaeolithic and Early Mesolithic cultures of Southeast Asia and India appears established. The latter could affect the cultures of Palaeo-Australians because of Australia being relatively open in the Pleistocene to influence from Asia. As to the Late-Mesolithic and Neolithic cultures of Southeast Asia, already in the Holocene, their impact on the culture of Australia does not appear certain in many cases. Stone grinding techniques, for example, could evolve independently in Australia.

The explanation of the peculiar culture of Australians already in the early period of their history is to be sought in the fact that a vast range of cultural traditions, from Early Paleolithic to Mesolithic, combined to influence it through cultures, ages and distances, directly or indirectly, in some measure or other, with the ultimate result that we find a peculiar combination of Palaeolithic and Mesolithic features in each local archaeological culture of Australia.

Two industrial traditions were co-existent in Southeast and South Asia through many thousand years, which Palaeo-Australians transferred into Australia at a later date. One is characterized by unifaces (choppers, and later sumatraliths, etc.) and the other by bifaces (chopping tools and handaxes). The authors of some local cultures were able to make the best of both. This is true of many Palaeolithic sites in India, from Soan to Madras, the Patjitanian culture of Java, and Early Palaeolithic site at Mt. Do, North Vietnam.[26]

The peculiarity of the stone industries of Southeast Asia is above all due to the presence of the earliest original cradles of human culture in this region and the adjacent areas of South and East Asia. In Australia, such factors as marginality and, beginning with the Holocene, isolation, came into play. In addition to catastrophic changes in the physical environment and the small population, all this has contributed to the cultural backwardness of Australia.

The major types of tools and techniques typical of the earliest archaeological cultures of Australia are derived from the Palaeolithic cultures of Southeast Asia and are related, thereby, to the adjacent areas, in the

same way as the anthropological character of proto-Australians made Palaeo-Australians related to the Late Palaeolithic population of Southeast and South Asia. Because technological traditions are stable and the Later Palaeolithic and to a certain extent Mesolithic industries of Southeast and South Asia are typologically related to the Early Palaeolithic culture of this region we have every reason to regard the latter cultures as one of the sources of chronologically much later Australian archaeological cultures.

New Guinea is of special interest in the study of the earliest past of Australians as an island which stood in the way of their migration from Southeast Asia into Australia. The Pre-Neolithic industry discovered in the 1960s at Kiowa and Yuku in the interior mountain areas of Eastern New Guinea is found to be of the same nature as the industry of the earliest archaeological cultures of East Australia. The oldest radiocarbon date for the Kosipe site (Papua) is 26,000 years B. P.[27] The early cultural phase of the Central Highlands of Eastern New Guinea being related typologically to the earliest cultures of East Australia, it is possible to suppose that the populations of these areas were in cultural and possibly genetical relation. This is all the more probable because we can trace such relations to as early as the Pleistocene when Australia and New Guinea formed a whole. No wonder that we find cultures that may very well be regarded as the forerunners of the earliest Australian cultures also in Indonesia, an ancient path of migration of proto-Austalians from Southeast Asia into Australia. One is the Patjitanian culture of Java with its massive Clactonian flakes, Levalloisian flakes and blades, handaxes, protohandaxes, choppers, and chopping tools.[28] Implements of all these types are represented in one proportion or another in many of the earliest cultures of Australia.

A stone industry of the Mousterian-Levalloisian kind was discovered in 1953 just off the northern coasts of Australia, in Timor Island.[29] As a certain evidence of man's earliest settlement on the island, this possibly suggests one of the ways by which the Levalloisian traditions uncovered in South Australia at the Koonalda Cave excavations and in the terraces of the Keilor river system could gain admittance into Australia.

The excavations at the Great Cave at Niah, northern Kalimantan, are very important for our understanding of the earliest past of Southeast Asia and Australia. The skull of a proto-Australoid found at that site has been dated by the radiocarbon method to be approximately as old (from 40,000 to 30,000 B.C.) as the Soanian flakes, pebble choppers, and large Clactonian flakes uncovered in the same cave. Choppers and flakes of the Soanian type are strikingly alike the implements of the Soanian industry of Northwest India. At the same time, they, together with the Clactonian flakes, are typologically related to some of the earliest industries of Australia, whose human inhabitation began about 30,000 years ago.

Flakes of the Soanian type are stratigraphically at one level with the Niah skull, choppers and large Clactonian flakes being somewhat higher and approximately of the same date as the supposed beginning of man's settlement in Australia. By the radiocarbon method the lower limits of the Palaeolithic industry of the Great Cave of Niah are dated as $39,600 \pm 1000$ B. P., $37,500 \pm 1,600$ B. P. and $32,630 \pm 700$ B. P., and the upper limits as $19,570 \pm 190$ B. P.[30]

The Hoabinhian culture of Southeast Asia carries on and develops the Palaeolithic traditions which were widely spread during the Mesolithic

over the territory of Vietnam and other countries of the mainland of Southeast Asia and Indonesia, as well as in the south of China, in Japan, the Philippine Islands and the Soviet Far East. Many scientists as diverse as C. Fürer-Haimendorf, N. B. Tindale, F. D. McCarthy and others have repeatedly investigated the relation of the Hoabinhian Mesolithic industries with the earliest cultures of Australia, and therefore I should like to discuss another group of cultures which has so far been neglected as one of the possible sources of the early archaeological cultures of Australia.

The reference is to India and her Palaeolithic cultures, beginning with the sites centred around the Soan River valley, the northern Punjab. The industry of these sites is essentially related to the Anjatian cultures of Burma, the Palaeolithic cultures of Thailand, the Tampanian culture of Malacca, the Patjitanian culture of Java and the earliest cultural phases of the Great Cave of Niah. These ancient cultures are found to echo at a later date in the earliest archaeological cultures of Australia. The forefathers of Australians crossed these countries at the end of the Middle and the beginning of the Late Palaeolithic periods as they gradually expanded their residence area, and their culture has retained some of the ancient cultural traditions of their forerunners.

The early and late Soanian cultures of Northwest India are characterised by handaxes of the Abbevillian-Acheulian type, pebble choppers and chopping tools, and Clactonian flakes. In the Peninsula of Indostan also an industry of the Soanian type is found to have been widely, though far from uniformly, distributed.[31]

A Palaeolithic industry of a type unknown before was discovered in many areas of India in the 1940-1950s, including for the most part, side and concave scrapers, sometimes combined with point, and other flake and blade tools. The culture became known as Nevasian. Stratigraphically, it was found younger than the Early Palaeolithic industries of India but older than the Mesolithic cultures with microliths.[32]

In many respects the Nevasian industry resembles the Kenniff Cave industry in Queensland (the Mt. Moffatt culture) and to a certain extent the Tasmanian industry as well. Taking into consideration the genetic relations of Australians with the peoples of South Asia we may very well regard the Nevasian industry also as one of the possible sources of the earliest archaeological cultures of Australia.

Recent archaeological research in Ceylon has led to the discovery of the so-called Ratnapurian industry, apparently of the Pleistocene age. It is related very much to the early-Soanian culture of India, and in addition to choppers and chopping tools a small quantity of handaxes of the Abbevillian-Acheulian type as well as implements made by a Levalloisian technique has also been found here.[33] Incidentally, the fact that the indigenous population of Ceylon are the Veddas, a people anthropologically cognate with Australians is noteworthy in this connection.

To sum up, the sources of the earliest archaeological cultures of Australia go as far back as the Palaeolithic and Mesolithic cultures of South and Southeast Asia. In the Late Palaeolithic period, Australians still retained certain Early Palaeolithic traditions when they came to settle in Australia.

Another evidence of it is the Gambieran culture of South Australia characterized by handaxes of the Chellean type, sites in the Arundel terrace of the Keilor river system and in the Koonalda Cave, by protohandaxes of the Patjitanian kind and Acheulian handaxes of the Madrass type located in the same Keilor system. The same is attested by sites

characterised by Clactonian flakes and choppers and chopping tools of the Soanian and Patjitanian types, such as the sites of the Kartan and Capertee cultures, the stone industry of Tasmania, and the sites of the Keilor river system and the Koonalda Cave. The industry of these sites dates from the Palaeolithic industries of Southeast and South Asia, ranging from Java to Soan.

But, although man's settlement in Australia occurred as early as the Late Palaeolithic, immediate contacts between Australia and Southeast Asia persisted up to the beginning of the Holocene, a time when the Hoabinhian and related Mesolithic cultures flourished. The sites attesting the influence of the Hoabinhian cultures occur, for the most part, in East and South Australia. They include, above all else, the Kartan sites discovered in Kangaroo Island, in South Australia, on the northern coast of New South Wales, on the slopes of the Great Dividing Range, in eastern Queensland, in Tasmania and elsewhere.

The makers of the Kartan culture came to South Australia and Kangaroo Island as early as the Pleistocene period when the island formed a part of the mainland. Some of them, as evidenced from the distribution of the sites with traces of this culture, moved south, to the west of the Great Dividing Range, down the rivers draining the range and flowing south-westward, and some moved along the eastern coast of Australia. Several groups settled in Tasmania. Gradually the Kartan culture spread far and wide eastward and south-eastward.[34]

The large extent of the Kartan culture leads us to surmise that its makers were not single ethnically but comprised diverse, self-sustained ethnic groups having only common similar forms of culture. As with the Hoanbinhian and typologically related cultures of Southeast Asia we have here apparently a group of related cultures, or what Soviet ethnographers call a historical-ethnographical province in the remote past, that is, a residence area of peoples sharing common origin or subsequent common economic and cultural development.

The Capertee culture, conspicuously different from the Kartan culture in the character of stone implements, became common chiefly in eastern New South Wales, but its makers seem to have dispersed both to the west and to the east of the Great Dividing Range.[35]

The industry of flakes and blades peculiar to the Capertee culture is also common in Tasmania. The presence of Clactonian flakes and choppers makes the two cultures very much related. Hence we can infer that besides the Mt. Moffatt culture, the principal source of the stone industry of Tasmanians was the Capertee culture. Another, somewhat secondary source was the Kartan culture.

Peculiar as it was, the industry of the Capertee culture contains nevertheless a certain amount of implements typical of the Kartan culture, located, for the most part, in the middle strata of the Capertee culture. The Kartan culture seems to gravitate principally toward the interior of the continent and the Capertee culture toward the eastern coastline areas. It is possible that the Capertee culture is associated with the population of the Keilor anthropological type and the Kartan culture with the Talgai-Cohunian population who are morphologically more primitive and possibly somewhat later chronologically, a fact which seems to account for the too late appearance of implements typical of the Kartan culture in the Capertee strata.

The earliest absolute date for the Capertee culture is $11,600 \pm 400$ B. P. and one of the latest is $3,623 \pm 69$ B. P.[36] The major sites of the Kartan culture have not been dated by the radiocarbon method, but the

finding of implements typical of this culture in the Capertee strata indicates its relative antiquity.

As a whole the Capertee industry showing very archaic peculiarities on the one hand and certain Mesolithic features on the other may be held to be an intermediary between the Middle and Late Palaeolithic. The Kartan culture, which is evidently of much later age, has conspicuously more Mesolithic peculiarities, though much of the Palaeolithic is still in evidence in it. The Hoabinhian Mesolithic traditions of Southeast Asia undoubtedly had a strong bearing upon the Kartan culture. The Capertee culture they affected less. This is probably because the dispersion of the makers of the Kartan culture somewhat delayed and the Capertee culture is relatively much older.

The sites of the Mt. Moffatt culture occur in southern Queensland, in the mountains of the Great Dividing Range, to the north of the Capertee culture sites, and along the ways by which Australians spread from north to south, that is along the eastern coastline of Australia and along the system of the Darling, Murray and their tributaries. Typologically, the Mt. Moffatt culture, largely characterised by flake tools, is related to the Capertee culture. The makers of the two cultures must have been groups of Palaeo-Australians related both culturally and ethnically who gradually dispersed southward along the Great Dividing Range.

The serrated retouch, which occurs in relatively developed forms in the Capertee culture, is still rather primitive and inconspicuous in the Mt. Moffatt culture. Radiocarbon dating confirms that the Mt. Moffatt culture is by far older than the Capertee culture: the earliest date for the Mt. Moffatt culture is 16,130 ± 140 B. P. and one of the latest dates is 9,300 ± 200 B. P. However, the Mt. Moffatt culture continued to develop for several thousand years thereafter.[37]

We find two consequent stages of dispersion and development of one and the same ethnic wave in the Mt. Moffatt and Capertee cultures.

At the same time, the presence of implements of the arapia type makes the Mt. Moffatt culture nearer to the Kartan culture. Yet on the whole the Kartan culture, which seems to have been superimposed upon the relatively older Mt. Moffatt and Capertee cultures, left no appreciable trace in either. The Mt. Moffatt culture, however, has an overall character much related to the stone industry of the Tasmanian population. This is another confirmation that the ethnic wave, such as we find in the Mt. Moffatt and Capertee sites, was the principal source of the stone industry of Tasmania, whereas the common, remote source of both cultures may have been the Nevasian culture of India. Geographically and, possibly, chronologically it is a far cry from the Early-Australian archaeological cultures, but, as in the case of other cultures of South and Southeast Asia, its traditions survived in a population whose ancestors lived in those areas in the remote past and who for a long time still maintained cultural relations with those areas.

It is hardly possible to agree with D. J. Mulvaney's view that the Mt. Moffatt culture is of Middle Palaeolithic age. As in the case with the Capertee culture, I would describe it as an intermediary between the Middle and Late Palaeolithic periods. As in the case with the Capertee culture also, it is essential to emphasize the striking peculiarity of this industry conspicuously noted for its archaic features. Apparently, here we have another instance when the faraway, peripheral position of the continents of Sunda and Sahul (of the Glacial Period) and later of Australia played a part in the perpetuation of earliest cultural phenomena.

It is true that tools of the Mt. Moffatt culture, as of the Capertee culture, were chipped, for the most part, from disc-shaped nodules, a practice common to the Middle Palaeolithic, and not from prismatic nodules, as was in the Late Palaeolithic. Still, I do not think this criterion *per se* sufficient for a general evaluation of an industry: an industry's subject-matter, typology, character of retouch and other features should also be taken into account. The aforesaid cultures in this respect are rather of the Late Palaeolithic age. The peculiar character of these cultures reflects the peculiarity of the Australian Palaeolithic as a whole, its unique status amid the Palaeolithic cultures of other parts of the world.

The Clarence culture discovered in northern New South Wales is typologically the nearest relative of the Kartan culture, possibly as a specific local variety of it. It is apparently associated with groups of the makers of this culture who spread along the eastern coast of Australia, leaving some traces in the more southern Capertee culture. The stone industry of the Clarence culture is on the whole of early Mesolithic nature, analogous to the character of the early phases of the Hoabinhian industries of Indochina and Malacca. In certain respects it appears even more archaic than the Capertee culture, which is due, as in the preceding cases, to certain archaic peculiarities that left their stamp on this culture. One of the earliest dates for the Clarence culture is 6,445 ± 75 B. P. and the latest date 3,230 ± 100 B. P. In other words, the general character of the stone industry and the data of absolute chronology show that the makers of the Clarence culture were groups of Palaeo-Australians responsible for a wide spread of Mesolithic Hoabinhian cultural traditions over East Australia. On the other hand, the sites of the Clarence valley show the industrial forms and traditions to be specially stable.[38]

The Gambieran culture, the southernmost and one of the most archaic of the early period, holds a special place. It is characterised, for the most part, by bifacial implements such as crude chopping tools and handaxes of the Chellean type as well as flake and blade tools suggesting the early Palaeolithic Patjitanian industry of Java. Many of the flake tools, on the other hand, appear similar to the analogous Tasmanian implements. The Gambieran culture may also have been one of the sources of the stone industry of Tasmania. But the latter shows no bifacial tools as its character.[39]

Gambieran implements have been found at the surface and their geological age has not been established. However, archaeological investigations elsewhere in South Australia recently brought the discovery of an analogous industry, indicating to a certain extent that the Gambieran culture is very old. It does not appear now as unique as it appeared before. Related apparently to one of the earliest groups of Palaeo-Australians — and for this reason it has left no trace in the other cultures of the early period we have just discussed — it has left a certain trace in the terraces of the Keilor river system where Late-Acheulian handaxes of the Madrass type have been found. In the same terraces, it is to be noted, was discovered a proto-Australian's skull having an absolute age of approximately 18,000 years B. P.

The Patjitanian traditions of Java have also found a reflection in the same sites, as in the culture strata of the Koonalda Cave, like choppers and chopping tools and protohandaxes of the Patjitanian type have been uncovered here.

Also, we find here implements made by a Levalloisian technique which may have penetrated into the south of Australia from Indonesia, namely from Timor Island where an industry of the Mousterian-Levalloi-

sian type has been discovered. Was it a way by which the handaxe industry also spread from India, via Indochina and Java?

Furthermore, a concentration of the earliest peculiarities of the Australian anthropological character is interwoven with the earliest industrial traditions here, in the southernmost end of Australia: in the Koonalda Cave, in the Keilor area, in the Gambieran culture sites and at certain Kartan culture settlements. There is nothing unnatural in this, because South Australia with man's inhabitation at a very early date was much farther away from the rest of the world than any other part of the continent in the Late Pleistocene period. Therefore we can reconstruct also the earliest anthropological type of Australians and some of the peculiarities of their culture.

Absolute chronology confirms the antiquity of the Koonalda Cave site. Indeed, the radiocarbon data for this cave have proved one of the oldest, so far as the archaeological monuments of Australia are concerned: 21,200 ± 700 B. P.[40]

The nearest approach to this figure is the date for the site at Menindee Lake, New South Wales, 26,300 ± 1500 B. P., the date for the Keilor area 31,600 ± 1100/1300 B. P. and 24,000 ± 3,300/5,700 B. P.; the date for Oenpelli, Arnhem Land Peninsula, 24,800 ± 1600 B. P. and 22,900 ± ± 1000 B. P. The site and human cremation at Lake Mungo, New South Wales, dated from 25,000 to 32,000 B. P. is the oldest archaeological site discovered so far in Australia. All this indicates that man's settlement in Australia began about thirty thousand years ago.[41]

Describing the stone industry of the Kenniff Cave, D. J. Mulvaney recognizes two major cultural phases in it: a phase of stone tools not attached to a handle as an earlier and more primitive phase and a phase of tools attached to a handle, as a more advanced phase. He seems to be inclined to extend this principle to the other archaeological cultures. I would not do this, bacause stone tools with handles could exist in other cultures of the early periods as well as in the Late and possibly in the Middle Palaeolithic period. The finding of points and laurel-leaf bifaces of the Koonalda Cave dating from the early period, over 13,000 years old, is an evidence in favour of this suggestion. Tools of this kind were probably affixed to a handle or pole and served as a spearhead or a cutting instrument. The edge ground axes from Oenpelli prove that the polishing of stone implements was already known to the Australians approximately 25,000 years ago.

Numerous facts show that the culture of Australian aborigines has as its main feature the survival of certain very archaic phenomena in their life up to the beginning of the colonization and in places even later. The stability of cultural traditions is one of the most typical features of the Australian culture as arising from isolation, a very low density of population, unfavourable physical environment that followed in the wake of the Maximum Thermal Period and the formation of deserts in Central Australia. Nevertheless, the Australian culture, which is several thousand years old, has continued to develop and improve all the time.

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