

III. NEOLITHIC

INTRODUCTION.

During the period 1800—1850 Neolithic stone tools began to be collected in the Museum of the Royal Batavia Society, Djakarta.¹³⁵ The first recorded publication of these stone tools is G. E. Rumphius in 1705 who shared the popular belief that they were thunderbolts.¹³⁶ Subsequent publications include E. Swaving and W. Vrolik 1850,¹³⁷ C. Leemans 1852, A. W. Kinder de Kamerq 1868, J. J. van Limborg Brouwer 1872 and C. H. Pleyte 1887.¹³⁸ Some of these early publications include descriptions and illustrations. A paper on the Stone Age of Celebes was published by A. B. Meyer and O. Richter¹³⁹ in 1902. More recently general syntheses of the Stone Age of Indonesia and its relations with South East Asia have been published by R. Heine Geldern¹⁴⁰ and P. V. van Stein Callenfels. In the absence of a clear stratigraphy these surveys are based on the distribution of well-known types of stone tools, and on comparative linguistic evidence. Excavations have subsequently been carried out by van Heekeren in Java, and by van Stein Callenfels, A. A. Cense and van Heekeren in Celebes.

¹³⁵ v. d. Hoop; '41, 20—165.

¹³⁶ Rumphius; 1705.

¹³⁷ Vrolik; 1850, 99—102.

¹³⁸ Leemans; 1852, 106—18. Limborg Brouwer; 1872, 67—88. Pleyte; 1887, 35—46.

¹³⁹ Meyer und Richter; '02, 72—91.

¹⁴⁰ Heine Geldern; '26, 51—53; '28, 809—43; '33, 543—619. '36, 32—36. '45, 136—42. Van Stein Callenfels; '26, 174—80.

Robert Heine Geldern, in spite of the limited knowledge of the neolithic period in Indonesia and the absence of nearly all stratigraphical data, made several attempts to get a broad survey of the structure of the various neolithic civilizations and their distributions, as well as to the epochs in which migrations took place. He based his study on comparative linguistics and used the deductive method based mainly on the geographical distribution of the stone tools and comparison with similar tools from Asia.

One of the merits of van Stein Callenfels (who passed away in 1938), is the foundation of a prehistoric section in the Djakarta Museum.

1. EXCAVATIONS.

1. Java.

A Neolithic dwelling site was excavated by the present writer at Kendeng Lembu, East Java in 1941. This site was discovered by W. van Wijland and J. Buurman in 1936. Agricultural work on the estates Kendeng Lembu and Pagger Gunung, lying south of Glenmore and between Djember and Banjuwangi, had revealed traces of Neolithic occupation. Many Neolithic workshops and settlements are believed to exist on these estates. The excavation which took place shortly before the outbreak of the war was never finished, and the finds and field notes were destroyed during the Japanese occupation. However, the main results have been recollected by the author, and are of sufficient importance to deserve publication.

The stratigraphy of the site was clearly discernible. An upper layer 50 cm. thick contained Majapahit pottery (1300—1600 A.D.) and Chinese coins of the Kèpeng type, while a lower layer 30 cm. thick contained a Neolithic habitation deposit.

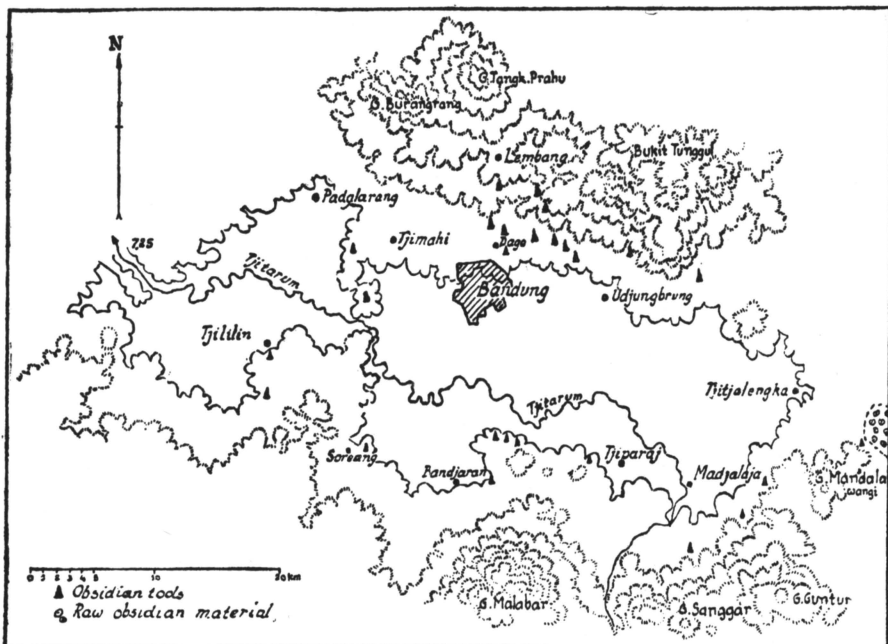


Fig. 21. Prehistoric sites with obsidian flakes and blades round a vanished lake near Bandung.

The main classes of Artifact recovered from this deposit were Quadrangular Adzes, and undecorated Neolithic potsherds.¹⁴¹ All the stone tools were made of grey-blue shale. They were found in all stages of manufacture showing that this was a workshop site. Other implements included a cylindrical grinding stone with eight facets, two stone saws, and long heavy stone flakes with one cutting-edge, probably to be classified as knives.

Large quantities of undecorated pottery were found. Some of these were restored by Buurman. They appeared to be simple hand-made vessels, with a marked carination and rolled rims.

2. Celebes.

Sikendeng.

In 1933 a trial excavation was made by A. A. Cense at Sikendeng where an Amaravati Bronze Bhudda had previously been found. This site is on the right bank of the Karama River, West Central Celebes. During this excavation a few Quadrangular Adzes and many potsherds were discovered. Subsequent excavations by van Stein Callenfels at the same site resulted in the collection of a large quantity of Quadrangular Adzes and undecorated potsherds.¹⁴²

Kalumpang.

A further Neolithic settlement site was revealed during road making at Kalumpang, 93 km. up-stream on the Karama River. The site was first excavated by van Stein Callenfels in 1933¹⁴³ and subsequently by van Heekeren in 1949.¹⁴⁴

The site is on a flat-topped hill (Kamasi Hill) approximately 14 metres above the river-level. The implements were recovered without stratification below the humus. On typological considerations, I have divided these into three classes.

Group 1. *Shouldered and side-hafted Adzes or Axes.*

Most of the specimens are manufactured from chert or slate. All specimens are flaked pebble-tools and are considered to have Hoabinhian

¹⁴¹ The thousands of potsherds might be taken as indications to the existence of a neolithic settlement.

¹⁴² Van Heekeren; '51a, 35. Van Stein Callenfels; '51, 6.

¹⁴³ Van Stein Callenfels; '50, 49—53. '51, 82—97.

¹⁴⁴ Van Heekeren; '51a, 26—48.

affinities. The shouldered axes show no trace of polishing and are only worked on one flaked surface. The side-hafted axes have a polished cutting-edge and a lenticular cross-section. They are made with a crude lateral shoulder or lug where the butt meets the blade. This feature was presumably used in attaching a wooden haft. A violin-shaped adze without or with little polished surface is probably related to the crude shouldered axes. (Pl. 47).

Group 2. *Quadrangular Adzes.*

These tools are quite numerous at the site, and differ in workmanship and raw material from the axes of group I. They are made of grey-blue shale, and range from $8\frac{1}{2} \times 5$ cm. to 2.2×0.9 cm. in size.

Stone rings of various sizes, a stone bark-cloth beater, together with polished spear-heads of slate were also found at this site; they should be associated with this group, though stone bark-cloth beaters of the type found are still in use in this region.

Group 3. *Specimens assigned to the Early Metal Age.*

This group includes small stone knives with polished cutting-edges, and polished tanged arrow-heads. These implements should be assigned to a later horizon of influences, since comparable specimens are known from Early Metal settlements in Cambodia. (Pl. 37, 38).

95 % of the pottery from this site is undecorated and this as well as the simple ornamented potsherds may be assigned to the Neolithic. The highly decorated pottery which makes up the remainder of the collection is from a later horizon. The decoration on this pottery with rectangular figures, squares, spirals, circlets and rosettes resembles those from the upper layers from the Samrong Sen collection in Cambodia.

Fragmentary human remains were found on the site; the fauna included a small wild pig (*Sus celebensis*) and a domesticated variety (*Sus vittatus*) which is not native to Celebes.

Dating.

It has been stated before that all finds were made in the shallow surface layer (from 11 to 63 cm.) of the hill. This layer consists of a drab, compact clay composed of volcanic material and mixed with marl. It contains augite in various conditions of weathering. This layer gave therefore the impression of being very young geologically. According to W. F. van Beers, who analyzed the soil samples, it could not be older

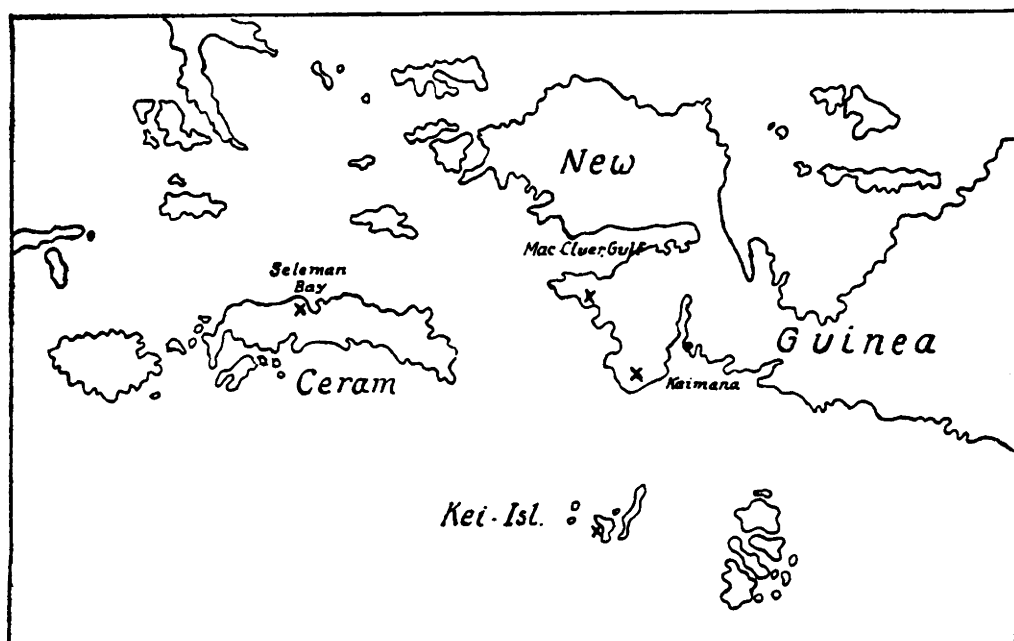


Fig. 22. x Rock-painting sites in East Indonesia and New Guinea.

than one thousand years at the most. In this instance we may speak of a serious retardation mainly caused by isolation of the Kalumpang Peoples.

2. NEOLITHIC SURFACE FINDS.

Sumatra :

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|-----------|--|
| Westcoast | — A few large and small Quadrangular Adzes; Pick Adzes made of agate and black fine-grained volcanic rock. |
| Benkulen | — A few Quadrangular Adzes and Pick Adzes; among them one of a long and narrow type. The tools are made of agate and fine-grained basalt. (Pl. 36). |
| Palembang | — A fair number of Quadrangular Adzes and Pick Adzes. A neolithic workshop near Bungamas between Lahat and Tebingtingih. The implements are made of red brown, grey or brown rock and lustrous chalcedony. |

- Lampongs — Numerous well-shaped Quadrangular Adzes, many of which made of semi-precious stone like chalcedony, jasper and silicified limestone. Collected by E. H. S. Schlegtendahl and now on display at the Djakarta Museum.
- Assam — Two Round Axes with oval cross-sections and more or less rounded necks.
- J a v a :
- Bantam — Numerous Quadrangular Adzes made of agate, jasper, silicified limestone; Pick Adzes and some armrings of chalcedony.
- Djakarta and Tangerang — Numerous Quadrangular Adzes and Pick Adzes, made of chalcedony, agate, jasper and black fine-grained basalt; a fair number of armrings of chalcedony. Grinding stones with smooth surfaces and prismatic sections. Unfinished adzes made of chalcedony, agate and volcanic rock.
- Bogor — Many Quadrangular Adzes, Pick Adzes, unfinished adzes. Armrings and polishing stones from neolithic workshops at Pasir Guda Estate.¹⁴⁵
- Tjibadak — A stone bark-cloth beater made of a light-grey stone: 127 x 46 x 63 cm. Quadrangular Adzes made of silicified limestone and chalcedony.
- Cheribon — Numerous Quadrangular Adzes, Pick Adzes and half-finished adzes, stone armrings, a cylindrical grinding stone with facets, 159 mm. length. Most of the tools are made of chalcedony and jasper.
- Priangan — Numerous Quadrangular Adzes and Pick Adzes, one of them measuring 430 x 91 x 30 mm; rings of chalcedony and jasper and unfinished rings, found near Tasikmalaja by C. Franssen.¹⁴⁶
- Pekalongan — A few Quadrangular Adzes and Pick Adzes; stone rings of chalcedony.
- Banjumas — A few Quadrangular Adzes and Pick Adzes and grinding stones. Workshops in the Karangbolang mountains near Karanganjar.

¹⁴⁵ Franssen; '41b, 531—44.

¹⁴⁶ Franssen; '41a, 132—39.

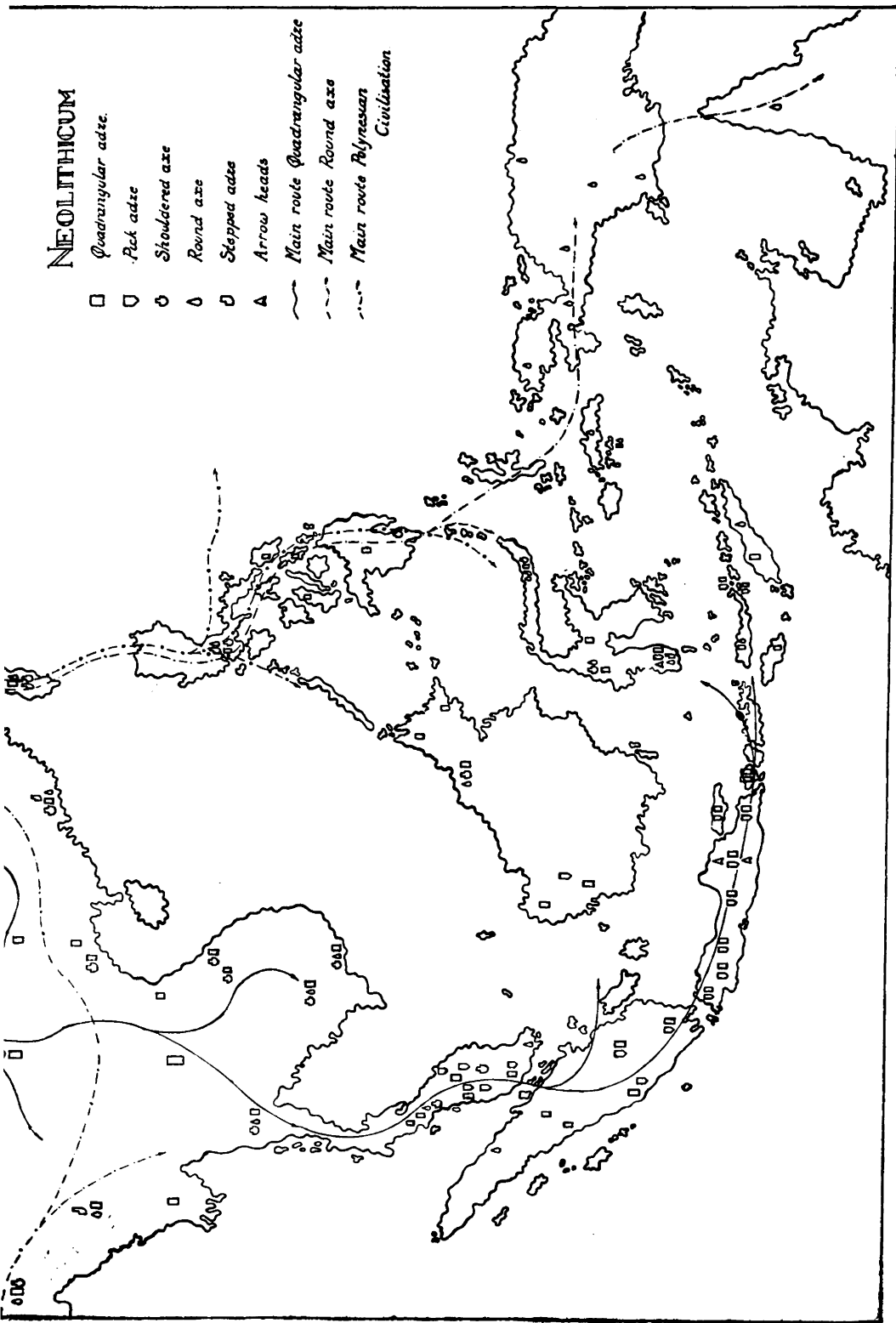


Fig. 23. Neolithic migration routes.

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|------------|---|---|
| Semarang | — | Quadrangular Adzes and two Pick Adzes of semi-precious stone. |
| Kedu | — | Many Quadrangular Adzes and a few Pick Adzes. |
| Jogjakarta | — | Numerous Quadrangular Adzes, a few Pick Adzes, rings made of limestone. Polishing stone, 130 mm. in length. |
| Surakarta | — | Numerous finished and unfinished Quadrangular Adzes, concave-based (winged), bifacially chipped arrow-heads, generally made of silicified limestone. Most of the tools from Wonogiri and Punung. <i>No Pick Adzes.</i> |
| Madiun | — | Numerous Quadrangular Adzes and stone arrow-heads. Most of these from the workshops of Punung. (More than hundred workshops are known from Punung). One bracelet of chalcedony. <i>No Pick Adzes.</i> |
| Surabaya | — | A few Quadrangular Adzes made of volcanic rock and chalcedony. A few Pick Adzes. |
| Madura | — | A few Quadrangular Adzes made of basalt. |
| Malang | — | A fair number of Quadrangular Adzes and Pick Adzes and a few Proto-neoliths. The tools are made of chalcedony and black basalt. |
| Besuki | — | Numerous Quadrangular Adzes and Pick Adzes and unfinished adzes. Long gouges with circular cross-section. Small and slender gouges with tapering sides from the butt to the distal ends; uncommonly small chisels; roof-shaped adzes. Most of the tools are made of black or grey and green rock. Workshops and dwelling sites at Kendeng Lembu Estate, Glenmore. |
| Bali | — | Numerous Quadrangular Adzes and Pick Adzes of the Besuki type, some adzes with lentoid cross-sections. Large and small gouges with semi-circular cross-sections. Polishing stone with facets, 104 x 36 x 17 mm. |
| Lombok | — | None. |
| Sumbawa | — | None. |
| Flores | — | A few Quadrangular Adzes and a few Round Axes with oval cross-sections. |
| Adonare | — | A few Quadrangular Adzes. |

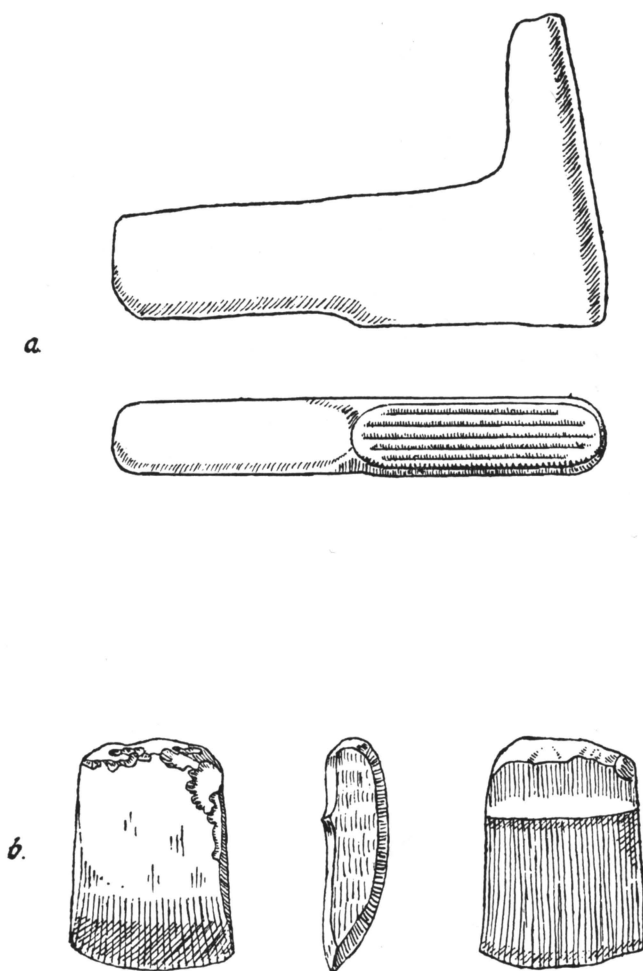


Fig. 24.

a. Neolithic „horned” Bark-Cloth Beater, West Borneo.

b. Neolithic Stepped Adze, Minahassa, North Celebes.

Leti	— A few Round Axes.
Tanimbar	— A few Round Axes.
Moluccas	— Some Quadrangular Adzes; uncommonly small chisels. Roof-shaped adzes and a few Round Axes.
Solor	— A few Quadrangular Adzes.
Borneo	— A few Quadrangular Adzes, one Pick Adze in the western part; one horned bark-cloth beater (Fig. 24a) (of the so-called Philippine type) at Ampah,

- South and Eastern district;¹⁴⁷ one Round Axe with oval cross-section and pointed neck from Pontianak (189 x 52 x 30 mm.); a few roof-shaped adzes.
- Celebes — Many Quadrangular Adzes, a few Pick Adzes, three Stepped Adzes from Tondano and one item from the southwest part, one Stepped Adze from the Minahassa; One Round Axe from the Minahassa, one highly polished Round Axe made of glossy black volcanic rock, blunt-pointed butt-end and oval cross-section (154 x 57 x 23 mm.), Sario River, Manado; one Round Axe from Pangkadjene and one Round Axe from Bulukumba. *Minango Sipakko* (Karama River) discovered in 1949 by van Heekeren: Unstratified river bank site; eleven stone axes with oval cross-sections, made of chert; one horned bark-cloth beater of the Philippine type; associated with polished red ware, pottery with rectilinear incised decoration and stamped circle decoration.
- Sangir Island — One Quadrangular Adze made of black volcanic rock (83 x 41 x 14 mm.). South part of the island. Found by Dr Blankhart. One highly polished Round Axe made of dark-green rock (75 x 45 x 22 mm.). Traces of hammer-dressing visible. Dumahang. Found by Dr Blankhart.
- Talaud Island — One Round Axe with pointed butt-end and bi-levelled cutting-edge; made of *Tridacna* shell (105 x 54 x 29 mm.); oval cross-section. Ennawira, south part of the island. Found by Dr Blankhart.
- One Round Axe with pointed butt-end and bi-levelled cutting-edge and oval cross-section; made of *Tridacna* shell (84 x 40 x 20 mm.) Rainis. Found by Dr Blankhart.
- One Quadrangular Adze made of poor basalt, dull-grey (111 x 45 x 21 mm.) Rainis. Found by Dr Blankhart.

¹⁴⁷ V. d. Hoop; '35, 468—70.

One fragment of a Pick Adze with semi-circular cross-section, made of dark-brown volcanic rock (73 x 56 x 33 mm.) Rainis. Found by Dr Blankhart.

One Quadrangular Adze, made of glossy black volcanic rock. (64 x 41 x 19 mm.) Rainis. Found by Dr Blankhart.

One oval adze with sharp sides; uni-levelled cutting-edge, made of light-brown volcanic rock (102 x 48 x 24 mm.) Essang. Found by Dr Blankhart.

3. NEOLITHIC TRADITIONS IN INDONESIA.

In many places in the Archipelago pottery is still hand-made. A. C. Kruyt¹⁴⁸ relates that among the Western Toradjas in Central Celebes the technique of shaping pottery is very little known. The raw clay is fetched and planted in the ground where it is believed to grow on its own accord. There exist several regulations and prohibitions pertaining to the making of pots. For instance, it is not allowed to praise the women who are exclusively in charge of the work, because it is believed that the pots will break during the baking. The clay is kept in a cool place and covered with fresh banana leaves. The next day, small portions of clay are pounded on a flat stone with a round stone, sprinkled with water every now and then, and cleaned and kneaded into balls. The ball of clay is then moulded into the form of a pot or bowl by the thumb and the other fingers, the thumb pressing the wall outward from within, the fingers modelling the pot into shape at the outside. The pot is then finished by keeping a round, flat stone against the inside and by beating with a wooden bat till the clay has gained the same thickness everywhere. During the process the pot is turned over and over again. Finally the edge of the mouth is curved outwards with the fingers so as to obtain a turned down rim or neck.

Evidently, the neolithic peoples of Indonesia made their clothes from beaten bark (stone bark-cloth beaters have been found in Neolithic sites), and this procedure still flourishes in the most remote districts, for instance in Central Celebes. Kruyt¹⁴⁹ has collected important information concerning this industry among the Toradja tribes. It appears that not

¹⁴⁸ Kruyt; '38, 439—45.

¹⁴⁹ Kruyt; '01, 139—91. Kennedy; '34, 229—43.

all kinds of trees produce the proper bark, but only some wild-growing species (*Trema amboinensis*, *Artocarpus blumei*, *Antiaris Toxicaria*, *Sloetia minahassae*, *Ficus mulberry*, *Ficus sp.*, *Urostigma sp.*), whilst one species, the papermulberry *Broussonnetia papyrifera*, is especially cultivated because it produces a suitable, white bark. The tree is ringed and the bark stripped off. The hard outer surface is removed and the inner-bark then folded and sometimes cooked, wrapped up in palm leaves and fermented for one to three days till the fibres are soft enough to be easily beaten. The stripes are usually half a metre long by ten centimetres wide and are laid upon each other to be felted together. The beating is done with wooden or stone beaters on a wooden board. The stone beater is a rectangular piece of stone, especially of serpentine, provided with grooves on both faces. Encircling the object is a wide groove to fit the springy rattan string by which the tool is hafted to a rattan grip. When the bark has been crushed sufficiently, the pieces (fuya = tapa) are wind-dried on slats and afterwards treated with the juice of the ula fruit (*Strychnos ligustrina*). The dried fuya is hard, but after having been folded, it is beaten to flexibility with clubs. Sometimes ornamental designs are beaten into the fuya with wooden or stone stamps. All the work pertaining to the manufacture of bark-cloth is done by women.

Near the smaller tributaries of the Koro and Pakawari Rivers, there occur banks of serpentine which produce the material for the beaters. The stone is quarried on the spot and is either traded in its crude form or completely finished for use. When finished, the beaters are cooked with buffalo beef or pork to ensure their strength. The method for fuya preparation was probably also employed during Neolithic times throughout Indonesia. The excavations of the Neolithic site at Kalumpang yielded a stone bark-cloth beater which matches in detail the bark-cloth beaters still used at present.

4. NEOLITHIC TOOLS.

Polished and flaked stone tools and ornaments ascribed to the Neolithic in Indonesia may be divided into three classes and referred to three different culture complexes. This classification is summarised below and the geographical distribution of the different tool types in Indonesia, and in South East Asia is briefly described in each case.

1. The Quadrangular Adze Culture.

The majority of the Neolithic cutting tools in Indonesia may be

classified as Quadrangular Adzes (Pl. 34), and certain other classes of tools such as stone rings or quoits (Pl. 41) and bark-cloth beaters also (in most cases) may be regarded as belonging to the same culture complex. The geographical distribution of the Quadrangular Adze Culture is limited to Indonesia, the Malay Peninsula, Siam, Indo-China and parts of South China; and the presence of these tools in Indonesia should be ascribed to a wave of migration from the Asian continent between the second and first millennium B.C. Certain specialized types were developed in Indonesia, some of which were in use in historic times and may still belong to the native culture in the remoter parts of Indonesia. The Quadrangular Adze has the widest distribution of any Indonesian Neolithic implement. The distribution of these tools and of the specialized varieties described below suggests that Western Indonesia was the primary area of immigration. The typical Quadrangular Adze is square or oblong in shape and has a single levelled cutting-edge; its cross-section is either rectangular, square, quadrangular or an equilateral trapeze. The tool is blocked out by flaking, and then highly polished. Many specimens suggest that a small stone saw and coarse-grained sand were also used to cut out the tool.

The most common specialized tool developed in the Quadrangular Adze Culture is the Pick Adze. (Pl. 35). This tool is probably related to the Beaked Adze of the Malay Peninsula, and has a wide distribution in Western Indonesia. The typical Pick Adze has a flat lower surface and a longitudinal or pentagonal cross-section. The tools are highly polished on all surfaces. Pick Adzes and other Quadrangular Adzes in South Sumatra and West Java are frequently made of semi-precious stones such as translucent serpentine, agate, and chalcedony. The use of these semi-precious stones, and the uncommon size of some specimens which show no traces of use, suggest that they may not have been intended for use as implements. Many specimens from Central and South Sumatra, and a few West Javanese specimens are characterised by lateral sides tapering from the butt to form a narrow cutting-edge (Pl. 36). A specialized East Javanese Pick Adze is made from a lustrous fine-grained basalt. This variant is characterized by a semi-circular cross-section, and generally has a cutting-edge faceted from both sides of the upper face (Pl. 35c).

In the Surakarta and Madiun Residences the Pick Adze does not occur. The silicified limestone of these regions, though used for making adzes and arrow-heads, may have been found unsuitable for this specialized tool type.

Other tool varieties found in Indonesia are indicated below with their provincial areas of distribution.

a. Shield-shaped Adze.

This tool has a convex upper surface and a concave lower surface. Its distribution is confined to Malaya, Java, Sumatra and Bali.

b. Stepped Adze (Fig. 24b).

Tweedie¹⁵⁰ describes this tool as follows "Stepped Adze: in which the thickness of the tool is abruptly diminished along a line near (and parallel) to the butt, forming a butt which presumably facilitated hafting". The distribution in Indonesia is confined to Celebes, a few specimens being found in Central and North Celebes and one specimen in South Celebes. These tools are part of the Stone Age equipment in the Philippines and East Polynesia.

c. Shouldered Adze.

Two varieties of this tool are now distinguished: a crude shouldered adze with Hoabinhian affinities, and the highly polished shouldered adze of the Indo-Chinese Neolithic also known from Northern Annam in Proto-Historic times.

Only the former variety is found in Indonesian collections.

The Indonesian shouldered adze is a pebble tool and is only worked on the upper surface. The butt-end of the implements is flaked to form a crude tang, and no or little polishing is used in the process of manufacture. One variant of this implement is the laterally tanged adze. These not or little polished shouldered adzes are also known to occur in Tonkin, Southern China, Taiwan, Botel Tobago, the Philippines and Japan. A highly polished form is known in Eastern Polynesia.

d. Bracelets of stone and shell.

A number of stone bracelets of different types have been found in Indonesia. Two examples deserve mention. At Krai (Surakarta, Java) shell bracelets were recovered by G. H. R. von Koenigswald in association with Quadrangular Adzes (Pl. 42) and shell beads. Chalcedony and jasper rings and bracelets were collected by Franssen¹⁵¹ near Tasikmalaja, West Java, and though it has been suggested that these specimens may belong to the Proto-Historic period, this has not yet been determined.

¹⁵⁰ Tweedie; '53, 69—73.

¹⁵¹ Franssen; '41a, 132—39.

Shell bracelets are still made by the Ifago and Igorot of Northern Luzon. Beyer has recorded the process of manufacture as follows: "holes (are) bored through the very hard *Tridacna* shell with drills made of a rather soft wood, the actual cutting of the shell being done by the fine sand which was constantly poured around the point of the drill. These wooden drills were of the common 'pump-drill' type in which the drill is operated by a cross-bar with cords and has a fly-wheel in the centre, turning first one way and then the other as the cross-bar is pulled down. Among the Moros and other peoples in Mindanao and Sulu, drill-points of wood, bone and metal have also been in use".¹⁵²

e. Roof-shaped adzes. (Pl. 40).

These tools have sharply sloping sides and arched upper surfaces. Some specimens are found with narrow necks.

f. Miniature chisels.

g. Elongated gouges. (Pl. 39).

These tools have semi-circular or triangular cross-sections. Some varieties are equipped with narrow cutting surfaces to which the sides converge.

All these types are found in the Besuki area (East Java) and in Bali. Roof-shaped adzes and miniature chisels also occur in Northern Borneo, the Moluccas, Ceram and Tanimbar. The typology of these implements suggests that they form part of the Quadrangular Adze Complex in Indonesia. Miniature chisels are well-known from Neolithic associations in the Malay Peninsula. However, roof-shaped adzes and cylindrical gouges also form part of the equipment of the East Polynesian Stone Age presumably of a more recent date, and the associations of these tools in Indonesia must be regarded as uncertain.

No direct racial evidence concerning the authors of the Quadrangular Adze Culture was thus far obtained, but it has been suggested by Heine Geldern¹⁵³ that it is connected with the migration of the fair-skinned and wavy-haired Austronesians or Malay-Polynesians into the Archipelago; the distribution of the Quadrangular Adze Culture seems approximately to coincide with that of the Austronesian languages. Owing to its enormous dispersion the influences of this culture

¹⁵² Otley Beyer; '48, 88.

¹⁵³ Heine Geldern; '45, 136.

are noticeable not only throughout Indonesia, but also so far as Madagascar in the West and Easter Island in the East.

Heine Geldern's suggestion has been accepted a.o. by v. d. Hoop, van Stein Callenfels and van Naerssen. It seems to me, however, rather speculative to identify culture waves or migrations with the spread of a language. Heine Geldern's suggestion badly needs archaeological confirmation. He also attributed 'an older' megalithic complex to the Quadrangular Adze Culture on the basis of its geographical distribution. The megaliths in question comprise stone-paved roads, stone terraces, walls, stone spirit seats, menhirs, circles, pyramids, monumental ancestral images, all of which can be traced throughout the area from Assam to Eastern Polynesia. The megaliths were erected as memorials for sacrificial ceremonies or in behalf of the dead. The occurrence of Neolithic megaliths of this kind in Eastern Polynesia may be considered as testimony for this statement, but on the other hand no Neolithic megalithic remains have as yet been encountered in Indonesia and Indo-China.

It has been suggested that the dog and pig were kept partly for consumption and partly for sacrificial purposes; teeth of dogs and pigs in association with Quadrangular Adzes were found in South China, Cambodia and Central Celebes. There is no evidence as yet concerning the use of cattle or buffalo in Neolithic times. The fowl (*Gallus gallus gallus*) was probably imported in a semi-domesticated form in Indonesia by way of the Philippines in Late Neolithic times.¹⁵⁴

There are some indications that the authors of the Quadrangular Adze Culture, prior to their arrival in Indonesia, knew how to cultivate rice; a Neolithic site in China yielded the special forms of reaping knives, probably used in harvesting rice, and corresponding in shape with the modern iron knives in South East Asia. Some Neolithic potsherds found in a Neolithic site in South China showed impressions of rice (*Oryza sativa*).¹⁵⁵

2. The Round Axes.

The Round Axe (Pl. 43) is characterised by a lenticular, oval or round cross-section, a bi-levelled curved cutting-edge and a more or less pointed or rounded neck. First roughly flaked into shape, this tool is generally smoothed down by hammer-dressing and then polished. There are also specimens which are simply finished by hammerdressing. Accor-

¹⁵⁴ Stresemann; '39, 312—425.

¹⁵⁵ Edman, '29, 363—65.

ding to MacCarthy,¹⁵⁶ the distribution of the former types is more limited than that of the latter.

The first Round Axe with a pointed butt was recorded from North Celebes at Sonder by the late Major Waworuntu. In the northern part of Borneo, too, several Round Axes have been found. For the rest, oval and Round Axes occur throughout Celebes. Museums in Indonesia and in foreign countries display Round Axes from the Moluccas, Leti, Tanimbar and Flores, and also some examples from the Eastcoast of Sumatra. Recently Dr D. M. Blankhart reported three Round Axes from Sangir Island and two examples from Talaud Island, two of which were made from *Tridacna* shell. Dr Blankhart's discovery has taken place in an area so far unexplored and is, therefore, of prime importance. The Round Axes from Manado, Talaud and Sangir are indistinguishable from those of New Guinea, where similar axes are still manufactured and used.

The widespread occurrence of Round Axes in Japan ¹⁵⁷ is well-known and the artifacts also occur in the Philippines. Judging by the nature of their distribution on the Asiatic Continent and in Indonesia, both van Stein Callenfels and Heine Geldern assumed that the Round Axe Culture did not enter Indonesia directly from India and Malaya, but, what is more probable, from Japan. F. Speiser ¹⁵⁸ states that the representatives of this culture were Neo-Melanesians and in this connection the *Buka* are mentioned who introduced the plank-boat and the so-called coiled pottery, but it seems that the conclusions are based on imperfect information. For the time being, we are not certain at all who were the authors of the Round Axe Culture, the pattern of which is quite unknown.

3. Stone Arrow-heads.

The occurrence of Neolithic arrow-heads in Central Java and South Celebes is rather curious. The implements under discussion are triangular projectile stone points with concave (winged) or in some instances convex base (Pl. 44, 23, j, k, l, m, n). Nearly all artifacts from Java are

¹⁵⁶ MacCarthy; '40, 40—43.

¹⁵⁷ Groot; '51.

¹⁵⁸ Speiser; '38, 463—80.

The *Buka* are of medium stature, intensely black and having a beak-like nose; their lips are not so thick as those of the Palae-Melanesians. According to Speiser they introduced the Round Axe in New Guinea and at a later date in the Melanesian islands where they still live on *Buka*, *Nisan*, *Bougainville*, *New Ireland* and the northern part of the *Solomons*.

made of silicified limestone and betray a far-advanced technique. The majority are chipped on both surfaces. Their measurements vary considerably, but most implements are about six centimetres in length. Small examples of one and a half centimetres length or less, are decidedly rare. It is supposed that they were employed for bird hunting. Of the whole of these arrow-heads I have seen on Java, only one piece had barbed sides. This item is in Houbolt's collection in Bandung. Stone arrow-heads have been found in Java in the Sampung Cave near Ponorogo and in other caves near Bodjonegoro and Tuban and numerous pieces were collected in the neolithic workshops round Punung in Central Java, but they are entirely absent in the most western and eastern part in Java.

The upper layers of the Toale caves in Southern Celebes yielded many such stone arrow-heads; in the same stratum also potsherds occurred. In shape and workmanship they differ in several respects considerably from those found in Java. They are smaller and flatter, and generally chipped on one face only. Moreover, the sides are frequently barbed. (Pl. 45). Since no such implements have been encountered on the Asiatic continent, but on the other hand they are frequent in Japan and the Philippines, we may take it that these arrow-heads were introduced by way of the last mentioned islands, as has been already suggested both by van Stein Callenfels and Heine Geldern.¹⁵⁹

¹⁵⁹ Heine Geldern; '45, 136.

5. REFERENCES AND SELECTED BIBLIOGRAPHY.

- Abdul-Azis, Engku
1932: Neoliths from Jehore. Journ. Mal. Branch RAS, 10.
- Andersson, J. G.
1923: An early Chinese culture. Bull. Geol. Surv. China, 5, 1—68.
1934: Children of the Yellow Earth. Studies in Pre-historic China. London.
- Arne, F. J.
1925: Painted stone age pottery from the Province of Honan. Palaeontologica Sinica DI.
- Beyer, H. Otley
1947: Outline Review of Philippine Archaeology by islands and provinces. The Philippine Journ. of Science, 77, 205—373.
1948: Philippine and East Asian Archaeology. Nat. research council of the Philippines. Manilla, 29, 1—130.
1951: A contribute to Van Stein Callenfels. Journ. of East Asiatic Studies. Manilla, 1, 1, 77—81.
1952: Notes on the Archaeological work of H. R. van Heekeren in Celebes and elsewhere (1937—1950). Journ. of East Asiatic Studies. Manilla, 1, 3, 1—17.
- Bylin, Margit
1932: Notes sur quelques objets néolithiques trouvés à Formosa. MFA.
- Carthy, F. D. Mac
1940: Comparison on the Prehistory of Australia with that of Indo China, the Malay Peninsula and the Neth. East Indies. Proc. 3rd Congr. of Pre-historians of the Far East.
1949: The prehistoric cultures of Australia. Austr. Med. Publ. Co. Ltd, 19, 305—319.
- Colani M.
1927: L'Age de la pierre dans la Province de Hoabinh (Tonkin). Mém. Serv. géol. Indo Chine, 30, 299—422.
1930: Recherches sur la Préhistoire Indo Chinois. Mém. Serv. géol. Indo Chine, 30, 299—422.
1932: Le Protonéolithe. Praehistorica Asiae orientalis, 93—95.
- Condominas, G.
1952: Le lithophone préhistorique de Ndut Lieng Krak. BEFEO, 45, 2, 359—393.
- Eberhard, W.
1950: A history of Chine. Berkeley and Los Angelos.

- Evans, I. H. N.
1913: On a collection of stone implements from the Tempassuk District British North Borneo. *Man*, 28, 25—26.
- 1928a: On a find of stone implements associated with pottery. *Journ. Fed. Malay St. Mus.*, 12, 5, 133—135.
- 1928b: Further notes on stone implements associated with pottery. *Journ. Fed. Malay St. Mus.* 12, 5, 143—144.
- 1929: Further notes on a find of stone implements with pottery. *Journ. Fed. Malay St. Mus.*, 12, 7, 175—176.
- 1930a: On a stone spear-head from Kelantan. *Journ. Fed. Malay St. Mus.*, 15, 1, 1—3.
- 1930b: Malayan types of stone implements in India, Burma and the Andamans. *Journ. Fed. Malay St. Mus.*, 15, 1, 9—11.
- 1931: A note on beaked stone adzes. *Journ. Fed. Malay St. Mus.*, 15, 2, 67—68.
- Edman, G. and
Söderberg, E.
1929: Auffindung von Reis in einer Tonscherbe aus einer etwa fünftausendjährigen Chinesische Siedlung. *Bull. Geol. Soc. China*, 8, 363—365.
- Finn, D. J.
1932: Archaeological finds on Lama Island near Hongkong. *Hongkong Naturalist*.
- Fischer, H. Th.
1937: Reispflücken und Reisschneiden in Indonesien. *IAFE*, 34, 83—104.
- 1939: Das Indonesische Reismesser ausserhalb Indonesiens. *Paideuma*, 1, 147—152.
- Franssen, C. J. H.
1941a: Over het voorkomen van prehistorische steenen ringen op Java. *Natuurw. Tijdschr. v. Nederl. Indië*, 101, 5, 132—139.
- 1941b: Prehistorische werktuigen uit de omgeving van Leuwiliang in de residentie Buitenzorg. *TBG*, 81, 531—544.
- Groot, G. J.
1951: The Prehistory of Japan. New York.
- Harrison, T.
1951: Note on some neolithic implements from Borneo. *Man*, 51, 21—23.
- Heanly, C. M.
1928: Hong Kong Celts. *Bull. Geol. Soc. of China*, 7, 3—4.
- Heanly, C. M.
and Shellshear
1932: A contribution to the Prehistory of Hongkong and the new Territories. *Praehistorica Asiae orientalis*, 63—76.
- Heekeren, H. R. van
1932: Gepolijste steenen bijlen in Besoeki. *Djawa*, 12, 203—206.
- 1951a: Rapport over de ontgraving te Kamasi, Kalumpang, West Central Celebes. *OV*, 1949, 26—48.

- 1951b: Penjelidikan Prehistori. Sekitar Penjelidikan Purbakala.
- 1951c: Korte Mededelingen. Getrapte dissel in Zuid Celebes. TBG, 84, 510.
- 1952: Note on H. Otley Beyer's "A Tribute to Van Stein Callenfels". *Journal of East Asiatic Studies*, 1, 3, 141.
- 1955: Prehistoric Life in Indonesia. Djakarta.
- Heine Geldern, R. Die Steinzeit Südostasiens. *Sitzungsberichte der Anthr. Ges. Wien*, 51—53.
- 1926/27
- 1928: Ein Beitrag zur Chronologie des Neolithikums in Südostasiens. *Festschr. P. W. Schmidt, Wien*, 809—843.
- 1931: Ausleger und Doppelboote im inneren Hinter-Indien. *Der Erdball*, 5, 373—380.
- 1932: Urheimat und früheste Wanderungen der Austronesier. *Anthropos*, 27, 543—619.
- 1936: Prehistoric research in Indonesia. *Ann. Bibl. Indian Arch.*, 9, 26—38.
- 1945: Prehistoric Research in the Netherlands Indies. *Science and scientists in the Netherlands Indies*, 129—167.
- 1946: Research on Southeast Asia: Problems and Suggestions. *American Anthropologist*, April, 149—175.
- Hoop, A. N. J. Th. Een neolithische boomschorsklopper uit Borneo. *TBG*, 75, 468—470.
- à Th. v. d.
- 1935:
- 1938: De Praehistorie; *Gesch. van Nederl. Indië*.
- 1941: *Catalogus der Praehistorische Verzameling. Batavia*.
- Hornell, J. The outrigger canoes of Indonesia. *Madras*.
- 1920:
- 1943: Outrigger devices: distribution and origin. *Journ. of the Polynesian Society*, 52, 1—100.
- Kennedy, Raymond Bark-Cloth in Indonesia. *Journ. of the Polynesian Society*, 43, 229—243.
- 1934:
- Kern, H. Taalkundige gegevens ter bepaling van het stamland der Maleisch-Polynesische volken. *Versl. en Med. Kon. Ned. Akad. van Wetensch. Amsterdam*, 6, 270—287.
- 1889:
- Koenigswald, G. H. R. von On the classification of some stone implements from Java and New Guinea. *Abstracts Eighth Pac. Science Congr. Manilla*, 531.
- 1953:
- Krom, N. J. De praehistorische archaeologie van Java en Sumatra. *Mensch en Maatschappij*, 2, 378—379.
- 1926:
- Kruijdt, A. C. Geklopte boomschors als kledingstof op Midden Celebes en hare geographische verspreiding in
- 1901:

- Indonesië. IAFE, 14, 139—191.
- 1938: De West Toradjas op Midden Celebes. 5 vol. Amsterdam.
- Leach, E. R. Stone implements from Botel Tobago Island.
- 1938: Man, 38, 161—163.
- Leemans, C. Over steenen wiggen op Java en eenige andere steenen voorwerpen op Borneo gevonden. Tijdschr. voor de Wis- en Natuurk. Wetensch., 5, 106—118.
- 1852:
- Lévy, Paul Recherches préhistoriques dans la Région de Mlu Prei. Hanoi.
- 1948:
- Limburg Brouwer, Steenen beitels in 't Museum van 't Bataviaasch Gen. TBG, 18, 67—88.
- J. J. v.
- 1872:
- Linehan, N. Some discoveries on the Tembeling. Journ. Mal. Branch RAS, 6, 66—77.
- 1928:
- Maas, A. Ein Steinbeil aus Kerintji. Zeitschr. f. Ethn., 46, 81—86.
- 1914:
- Linn, Huisiang A neolithic site in Wuping, Fukien. Proc. 3rd Congr. of Prehistorians of the Far East. Singapore, 133—141.
- 1940:
- Maglioni, R. Archaeological finds in Hoifung. Hong Kong Naturalist, 7, 208—244.
- 1938:
- 1940: Some aspects of South China Archaeological finds. Proc. 3rd Congr. of Prehistorians of the Far East. Singapore, 209—229.
- Mansuy, H. Contribution à l'étude de la Préhistoire de l'Indo Chine. Mém. Serv. Géol. Indo Chine, 13.
- et Colani, M.
- 1925:
- Mansuy, H. Stations néolithiques de Hong-Rao et de Khe-Tong, Annam. Bull. Serv. Géol. Indo Chine, 13.
- et Fromaget, L.
- 1924:
- Menghin, O. Zur Steinzeit Ostasiens. Festschr. P. W. Schmidt, Wien. 908—942.
- 1928:
- Meyer, A. B. Steinzeit in Celebes. Miszellen Abh. und Ber. Kön. Zool. und Anthr. Ethn. Mus. Dresden, 72—91.
- und Richter, O.
- 1902/03:
- Modigliani, E. L'isola delle donne. Viaggio, Engano. Milano.
- 1894:
- Munro, Neil G. Prehistoric Japan. Yokohama.
- 1914:
- Naerssen, F. H. v. De oudste cultuurstromen. In: Wat Indië ontving en schonk. Amsterdam, 7—55.
- 1946:
- Noone, H. D. Report on a new neolithic site in Ulu Kelantan. Journ. Fed. Malay St. Mus. 15, 4, 170—174.
- 1939:
- 1941: A proposed classification of Malayan polished stone implements. Journ. Fed. Malay St. Mus., 15, 4.

- Patte, E.
1923: Note sur la préhistorique Indochinois. Bull. Serv. Géol. Indo Chine, 12, 1.
1924: Le kjökkenmödding néolithique du Bau-Trou près Dong-Hoi. BEFEO, 24, 521—536.
- Pleyte, C. M.
1887: De praehistorische steenen wapenen en werktuigen uit den Oost Indischen Archipel, beschouwd uit een archaeologisch en ethnologisch oogpunt. Bijdr. TLV, 36, 586—604.
- Rivet, P.
1932: Les Océniens. Praehistorica Asiae orientalis. 35—46.
- Rumphius, G. E.
1705: D'Amboinsche Rariteitenkamer. Amsterdam.
- Saurin, E.
1938: Henri Mansuy (1857—1937). Proc. 3rd Congr. of Praehistorians of the Far East, Singapore, 313—316.
1952: Station néolithique avec outillage en silex à Nhommalat, Laos. BEFEO, 46, 297—303.
- Shellshear, C. M.
1932: A Contribution to the Prehistory of Hongkong and the New Territories. Praehistorica Asiae orientalis, 63—76.
- Skinner, H. D.
1940: Maori adzes, axes, chisels and gouges from the Muruhiku regions, New Zealand. Proc. 3rd Congr. of Prehistorians of the Far East, Singapore. 142—172.
- Speiser, F.
1938: Melanesian and Indonesian. Zeitsch. f. Ethn., 6, 463—480.
- Stein Callenfels,
P. V. van
1926: Bijdrage tot de Chronologie van het Neolithicum in Z.O. Azië. OV, 174—180.
1930: Problems of the stone-age in the Far East. Proc. of the Fourth Pac. Science Congr. Java, 1929, 3, 375—378.
1932a: Die Aufgaben der japanischen Prähistorie im Rahmen der internationalen Forschung. Zeitschr. f. Prähistorie, Shizengaku Zassi, 4, 119—136.
1932b: Some early migrations in the Far East. Man, 32, 283—84.
1934: Korte Gids voor de Praehistorische Verzameling.
1940: The round axe in the Archipelago. Proc. 3rd Congr. of Prehistorians of the Far East. Singapore, 131—132.
- 1950: Voorlopig verslag van Dr P. V. van Stein Callenfels over zijn Galoempang onderzoek. O.V., 1949, 49—53.
- 1951: Prehistoric sites on the Karama River, West Toradjaland, Central Celebes. Journ. of East Asiatic Studies. Manilla, 1, 82—97.

- Stresemann, E.
1939: Die Vögel von Celebes. *Journ. f. Ornithologie*, 87, 312—425.
- Swaving, C.
1850: Berigt en afteekening van eenige steenen wiggen en wapenen. *Natuurk. Tijdschr. voor Ned. Indië*, 1, 81—85.
- Torri, Ryozo
1932: Restes néolithiques de la Manchouria méridionale et de la Mongolie Orientale. *Praehistorica Asiae orientalis*.
- Tweedie, M. W. F.
1942: Prehistory in Malaya. *Journ. of the Royal Asiat. Soc.*, 1—13.
1949: The Malayan Neolithic. *The Polynesian Society. Wellington, New Zealand*, 58, 19—35.
1953: The Stone Age in Malaya. *Journ. Mal. Branch RAS*, 26, 2. Monograph 1, 1—90.
1955: Prehistoric Malaya. *Background to Malaya Series*, 6.
- Vrolik, W.
1850: Berigt over zes steenen wiggen op Java gevonden. *Tijdschr. voor de Wis- en Natuurk. Wetensch.* 3, 99—102.
- Williams-Hunt, P. D. R.
1951: Recent archaeological discoveries in Malaya. *Journ. Mal. Branch RAS*, 24, 1, 186—191.
- Winstedt, R. O.
1932: The prehistory of Malaya. *Journ. Mal. Branch RAS*, 15, 1, 181—190.
- Wray, E.
1903: The Malayan pottery of Perak. *Journ. Anthropol. Inst.* 33, 24.