PREHISTORICAL RESEARCHES IN SIAM

by

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While the Prehistory of the French possessions in Indo-China and of the British part of the Malay Peninsula has been carefully investigated, the enormous kingdom of Siam, comprising 518,000 square kilometers, situated between the two above mentioned countries, has, as far as prehistory is concerned, been left practically unknown. Only a certain number of polished neolithic axe-heads, discovered by chance, have been collected; but never has a real scientific search for such objects been made. In 1926 *I. H. N. Evans* (9) has described and pictured five neolithic axe-heads found near Chong in the Siamese part of the Malay Peninsula. Later on in 1931, the same author (12) described five other stone-axes and two large stone-pounders, discovered in a tin-mine of the Surat District. They are again reproduced in a publication of *A. Kerr* and *E. Seidenfaden* (21). These authors mention that polished axe-heads have been found in the northern, eastern and southern parts of Siam, but never in the great central plain. The absence of such discoveries in Central Siam is certainly due to the fact that the Menam river covers every year during the rainy season the entire plain with mud, exactly like the Nile in lower Egypt.

In the exceedingly rich and beautifully arranged National-Museum of Bangkok, which the city owes to the great wisdom and never failing energy of His Royal Highness *Prince Damrong*, a certain number of neolithic axe-heads are shown. Many of them have been found in the district of Luang Prabang already outside of the confines of Siam; others come from the country around Petjaburi, and quite a number from the Siamese part of the Malay Peninsula. Another collection of neolithic axe-heads is in the possession of *Mr. R. Havmøller* in Bangkok. In the two collections one is rather surprised to find only very few so-called shoulder-axes besides quite a number of axes of ordinary shape. In the Museum for instance there are only three small shoulder-axes which have been found in to-day Siam in the vicinity of Petjaburi. In the southern part of

the Malay Peninsula this form is completely unknown, whereas in Indo-China shoulder-axes have been collected by thousands (H. Mansuy, 26, p. 6). There can be no doubt that the shoulder-axe has been brought to Siam from the North-East.

Prehistorical fragments of Pottery of the province of Surat have been described by *Evans* (13), also rock-paintings of unknown age discovered in eastern Siam by *Kerr* (18). This is about all we know up to date concerning the Prehistory of Siam.

From a paper of *Kerr* and *Seidenfaden* (21, p. 80) I quote the following passage: "So far no palaeolithic implements have been found within the confines of present day Siam. However, as no systematic research work has hitherto been undertaken, there may be lying a rich harvest, only awaiting discovery, especially in the caves which abound in the limestone hills in western and northern Siam."

A geological map of Siam has not yet been made. This fact can easily be understood when one considers that about 70% of the surface of the kingdom is still forest-clad land (*Kerr*, 19, p. 35). From a prehistorical point of view the limestone formation containing caves is naturally of primary interest. The limestone formation furnishes one of the most striking features of Siamese landscape. Their outcrops extend intermittently from the southern border of the kingdom in the Malay Peninsula at least as far north as Chiengrai, forming steep hills or small indented chains of moderate height, rising like islands from the surrounding plain. A typical example of such a limestone hill is figured in an article of *Kerr* (20, p. 14). This limestone is a very hard and often crystallized rock of a light or deep blue colour and of Permo-carboniferous age, to be judged from the few fossils hitherto collected (*Kerr*, 20, *Garrett*, 15). Just as important for the Prehistorian is the abundance of intrusive rocks, Basalt, Rhyolithe, Greenstones and so on contained in the Siamese mountains.

The caves which abound in the limestone hills are not seldom quite beautiful, forming enormous domes adorned with mighty stalactites. Others are only like narrow passages, and still others are

simply shelters with overhanging rocks. The Prehistorian meets in Siam for his research work with the very great difficulty that all the caves promising good results have been transformed into buddhistic sanctuaries. They usually contain only one enormous statue of the great teacher. Others however are richly decorated and contain a number of images and altars for offerings. Many of these sanctuaries have a floor made of stone-slabs or of cement. Quite frequently a brick-wall with a door closes the cave from the outside. Needless to say that in these sanctuaries it is absolutely forbidden to undertake any research work. Other caves serve as dwellings for hermits. If one does not want to hurt the religious feeling of the people, the caves, where a research could be undertaken, are the most unfavorable objects. In French Indo-China, also a buddhistic country, this difficulty apparently does not exist. Miss *Colani*, who made numberless excavations in Tonkin-caves, mentions only two cases when she was forced to abstain from digging on account of the religious feelings of the people being hurt.

My first task was to look for caves where digging was possible. My companion and nephew *Rod. Iselin* and myself went first to Chiengmai in the northern part of the kingdom, distant from Bangkok about 750 km. The city of Chiengmai, situated in the wide and fertile valley of the Meping, lies at an altitude of approximately 300 m. With the great number of its temples and temple-ruins it makes the impression of a buddhistic Rome. A cave was mentioned to us in a hill not far from the village of Chom Tong, 58 km to the South of Chiengmai. The cave is approached from the top of the hill. It works straight downward into the mountain. Mighty curtains of stalactites and enormous pillars of stalagmites give to the place a most picturesque appearance, and in the dark background reposes a beautiful bronze statue of Buddha. As the floor of the cave was wet and covered with earth washed down through the opening by heavy rains, digging would have meant a long and difficult undertaking; furthermore the presence of a venerated statue of Buddha made of this place a shrine sacred to the people. However I believe that a careful research would have met

with success, because at the foot of this hill, on the bank of a small river I found a "coup de poing" which most likely had been lost by an old cave-dweller.

From Chiengmai we went to Chiengrai, situated near the boundary of the French district of Luang Prabang. This city lies on the right bank of the Mekok river, a tributary to the Mekong, and is at an altitude of approximately 380 m. In a westerly direction high mountain ranges appear with, in the foreground, isolated limestone hills. One of these hills called Doi Tam Pra, with its famous cave, aroused principally our interest. This dome-shaped and forest-clad hill lies at a distance of 4 to 5 km. to the West of Chiengrai on the left shore of the Mekok. It can be reached either by boat in one hour and a half, or more agreeably by motorcar over a bridge practicable during the dry season. At the base of the hill the limestone-rocks form many caves and rock-shelters. In one of these shelters we made a ditch 2 metres deep without the least success. The yellow soil mixed with fragments of limestone contained not a single trace of human workmanship.

The cave called Tam Pra,—Tam being the Siamese word for cave—consists as a matter of fact of two caves. The principal cave forms a very big, deep and high dome-like room. It communicates

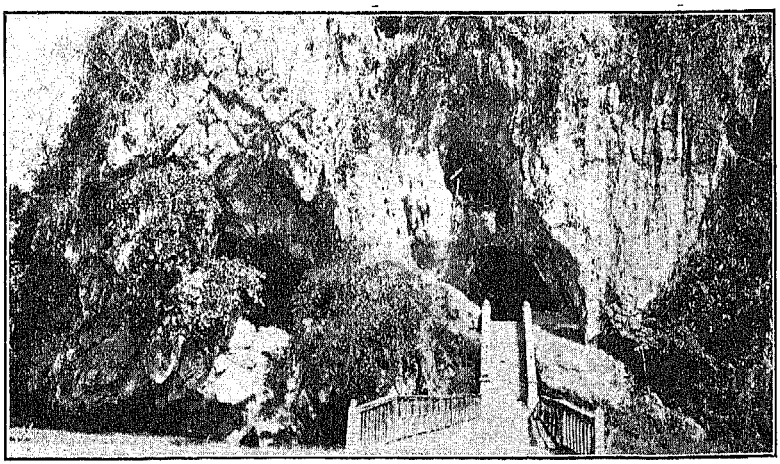


Fig. 1
The double cave Tam Pra.

inside with a second and smaller cave. Both caves have separate openings to the outside-world, about 4 metres above the level of a small pond. The picture, Fig. 1, taken by *R. Iselin*, shows the two openings of that double cave. To the right is the entrance to the principal room, and to the left that to the smaller cave. A wooden bridge and a stair-case of cement make the access to the main cave very easy. In the interior of the big room a wooden temple has been erected, protecting a gigantic image of Buddha. In front of it is an altar with a great number of small images made of stone, bronze, wood or clay. They are all offerings and placed at the feet of the principal statue. Siamese people are frequently visiting the place, praying before the images, lighting small candles and depositing offerings. The smaller cave on the contrary contained no object of worship; there is only a small old temple made of bricks and falling all to pieces. It was obvious that digging in the sanctuary, that is in the main cave, was out of question, but we hoped that an attempt in the smaller cave would not meet with too many great difficulties. We asked therefore the Governor of Chiengrai, His Excellency *Phya Rajades Damrong*, for the permission to make a search in this part of the cave. He received us very kindly and explained to us he would be interested himself in such an investigation, but unfortunately he was not in a position to give us such a permission without referring first to His Royal Highness Prince *Damrong* in Bangkok. He as Head of the Archaeological service of Siam was the only one to grant our wish. Prince *Damrong* gave by telegram his consent under the condition that the Governor should go with us. In this manner matters were arranged.

Near the entrance of the cave a longitudinal ditch 2 metres long and 1 m. broad was cut out. The profile was a most simple one. A superficial layer, about 20 cm. deep, was formed by sand mixed with fragments of bricks. Then followed a layer of about 80 cm, consisting of earth coloured gray by ashes. In the upper part of this layer some sherds of plain and cord-marked pottery were found, a little deeper a certain number of crude implements of palaeolithic character, made from Rhyolithe and other eruptive rocks, also some

round pebbles having been used as hammer-stones, some lumps of red ochre and some broken bones of mammals. Beneath this gray deposit the earth became yellow, frequently mixed with fragments of limestone, but without any sign of human workmanship. The rocky ground of the cave had been reached at the depth of 1.60 m. A second ditch, perpendicular to the first one, made the following day, gave the same poor results. There can be no doubt that the real place inhabited by prehistoric men is the great cave which we could not touch for reasons mentioned before.

After this first test in the North of Siam we decided to try our luck in the South of the kingdom in the neighbourhood of Rajburi. We had been told that this region was particularly rich in caves. The little town of Rajburi lies at a distance of 115 km. to the South-West of Bangkok. Thanks to arrangements made by the Secretary of the Interior in Bangkok, the Mayor of the place *Phya Ram Radja Pakdi*, put at our disposal a charming little house floating on the fine Meklong River. To the West of Rajburi a great many limestone-hills rise abruptly from the surrounding plain. Our friendly landlord brought us personally in a motorcar to a big cave, called Khao Tam, situated at the foot of a rocky hill about 18 km. in a southwesterly direction from Rajburi. The cave is a highly vaulted room, containing an image of Buddha; it is closed up by a wall with a door, and has its floor covered by a pavement of stones. A priest is taking care of this sanctuary. For prehistorical research this cave may have been most interesting and promising, but being a sanctuary, the question of digging was not even raised. Undoubtedly this cave has been inhabited by prehistoric men, for in a corner of it, where the pavement was missing, we found by digging with the hammer a round pebble of yellow quartzite showing marks of usage.

On the following morning we travelled on horseback, guided by an officer of the Government, in a north-westerly direction to an isolated chain of limestone-hills. In a small valley a cave was shown to us, Tam Rusi, unfortuately also a sanctuary, with stair-case, cement floor, images of Buddha and old inscriptions on the rocks. Further

on in the valley a steep path leads to another cave about 70 m. above the bottom of the valley, Tam Fa To. It is a long and narrow corridor with an image of Buddha in the dark background, only lightened by a small door in the brick-wall which closes the entrance. A little digging outside of the wall procured nothing of interest. A small rock-shelter near by promised better results. This shelter, however, had not been left undisturbed, fragments of bricks being mixed with the superficial layers. Pieces of pottery plain or cord-marked were found until a depth of about 50 cm.; in the deeper layers we found a great deal of lumps of ochre red and yellow, some pieces of limestone showing decidedly palaeolithic forms, a few bones of mammals, some marine-shells and a great number of land-shells (Cyclophorus) intact or intentionally broken, but not a single piece of eruptive-rock could be discovered. As a whole a very poor result!—

Much more successful proved to be another enterprise in the vicinity of Lopburi, well known by its ruins in the style of the Khmer. Here also the Government provided us with a swimming bungalow on a branch of the Menam-river. The Governor of the district, His Excellency *Phya Bejrapibal*, kindly informed us that in a limestone-hill near the village of Ban Mee were some caves easy to reach. Ban Mee is the fourth station of the railroad north of Lopburi, at 161 km. north of Bangkok. H. R. H. *Prince Damrong* was again asked by telegraph kindly to give us permission for a research in this country.

About 1 km. South-West of Ban Mee rises an isolated limestone-hill, called Smam Cheng. A great quarry of limestone has been started on the side of this hill. A road practicable for motor-cars leads to the quarry and further on into a small valley with temples and hermitages. The first cave which the district-officer showed us, was again as usual a sanctuary with a floor of stone-slabs. Further on there was another cave falling abruptly into the rock, about 8 metres deep, called Tam Kradam by our guide. Fig. 2 shows the entrance of the grotto taken from the bottom. A hermit had established himself in this cave, building for himself a kind of wooden scaffold. The bottom of the cave was covered with big

planks supported by small pillars of cement rising from the flat bottom of the grotto. Two niches in the background had fortunately been left uncovered, permitting a search.

The soil of this part of the cave to the depth of 1 metre and more was literally filled with numberless shells of Cyclophorus, intact or intentionally broken. The use of ochre was clearly shown by the red colouring of some of the stones; but the most welcome discovery was the fact that I found here quite a number of implements of decidedly palaeolithic character made of Rhyolithe, Greenstones and other eruptive rocks. Flakes and shapeless pieces of these rocks, without or almost without trace of workmanship, were plentiful in the deposit, bones of mammals very scarce. Like all the implements found in the other places, not a single one showed the slightest trace of polishing. Fragments of pottery were only found on the surface.

Fig. 2
The entrance of
Tam Kradam.

We visited still another cave in the same valley, Tam Kang Kao, its steep access being facilitated by 138 steps. The floor of this cave was thickly covered by a layer of excrements of bats, exploited by Guano-seekers. The horrible smell and the bats flying around our heads hindered any serious effort in this place.

The relation of my researches has clearly shown that they can only be considered as an essay to elucidate the Prehistory of Siam. Not a single cave has been explored systematically and in totality. Such work must be done by people residing in the country.

Nevertheless, as my results in the North as well as in the South of the kingdom agree with each other, I dare hope that this accord may be considered as a proof of their correctness. Siam once thoroughly explored will certainly prove to be one of the countries richest in prehistorical remains. I am led to believe that scarcely a single habitable cave will be found which does not contain remains of prehistorical men.

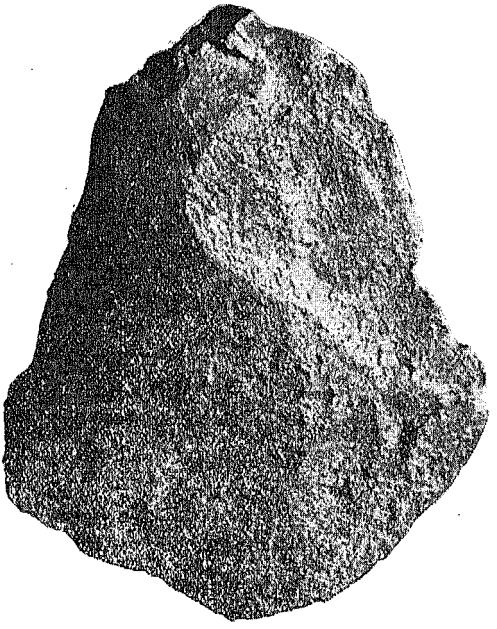


Fig. 3 a.

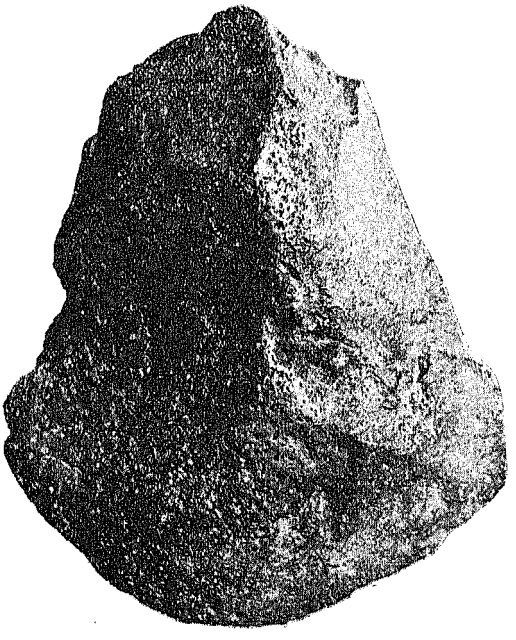


Fig. 3 b.
Coup de poing 3/4 nat. size.

Description of the collected implements.

1) Coup de poing from *Chom Tong*, fig. 3 a. and b. This implement is a roughly chipped pebble of Ryolithe of an irregularly pear-shaped form, 12.7 cm long with a greatest breadth of 10.5 and a greatest thickness of 4.5. One of the two faces, a, has been pretty well flattened by several coarse chips, the other side, b, highly vaulted

is covered by the natural red crust of the pebble. Towards the point some chips have exposed the green heart of the stone. The edge of the instrument is sharpened all around. This rude implement compares with the clumsy and primitive coups de poing, discovered by Miss *M. Colani* (3, p. 10) in the oldest Hoabinhian culture of Tonkin (example, 3, Pl. I, fig. 17).

Fig. 4
Implement made of Diabase
3/4 nat. size.

2) Finds at *Tam Pra* near Chiengrai.

The Fig. 4. shows an implement made from a light green pebble of fine-grained Diabase. The pebble has been intentionally broken. One of the two faces is, as a result of the fraction, completely flat and forms with the other one, which is vaulted and covered by the natural smooth crust of the pebble, a sharp and cutting edge, showing some small indents, marks of use. On the thick side of the pebble, opposite to the sharp border, a long chip has been removed, giving an excellent hold for the index. Length 10 cm. greatest breadth 5.5, greatest thickness 3. cm. This piece represents the most simple method of the appropriation of a natural pebble to an implement.

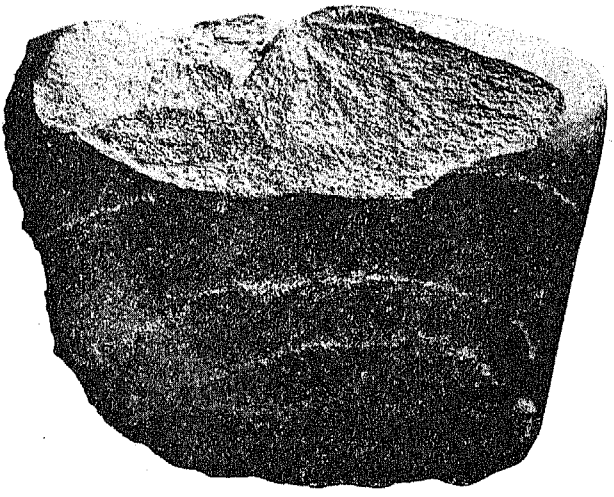


Fig. 5 a
Intrument made from Slate
3/4 nat. size.

Similar instruments made from pebbles by removing some coarse chips have been described by *Colani*, out of the archaic Hoabinhian (Example, 3, Pl. I, fig. 5).

The rude implement of Fig. 5 a and b has been worked out from a big pebble of green Slate. The pebble has been broken so as to form a flat and thin, approximately quadrangular plate. One of the large faces of the plate, a, shows the smooth surface of the pebble. On its superior border a flat chip has been taken off, probably in order to procure a hold for the hand. The other face, b, completely flat, is formed by the fraction of the pebble. Its interior border has been roughly and obliquely chipped to a cutting edge. Length 8.5 cm, greatest breadth 10.5, thickness 1.5 to 1.8 cm. This implement reminds one of the so-called "haches courtes" discovered by *Colani* (6) in the palaeolithic station at Lang Kay, Tonkin.

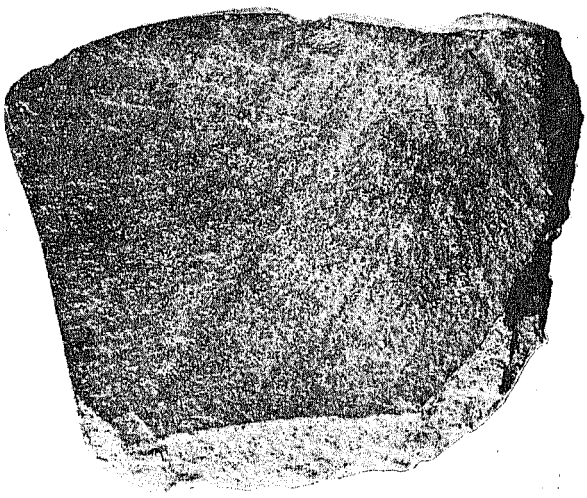


Fig. 5 b
Instrument made from Slate
3/4 nat. size.

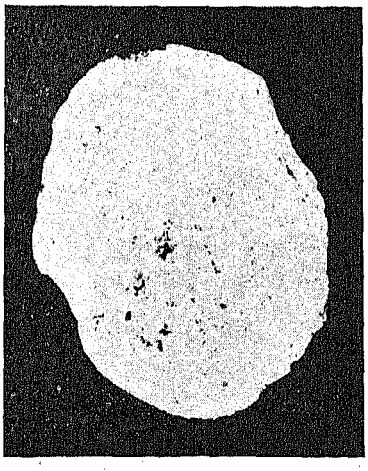


Fig. 6
disk of chert 2/3 nat. size.

The Fig. 6 represents a small

disk of white chert, simply a piece of a broken round pebble; one of its sides is plane, the other rounded. Some small indents of the border seem to be marks of use. Length 6.5 cm., breadth 5, thickness in the middle 2 cm.

A flat and thin pebble, Fig. 7, has served for grinding ochre as is shown by some red and yellow spots. Length 13.5 cm. greatest breadth 7.5, thickness 1 to 2 cm.

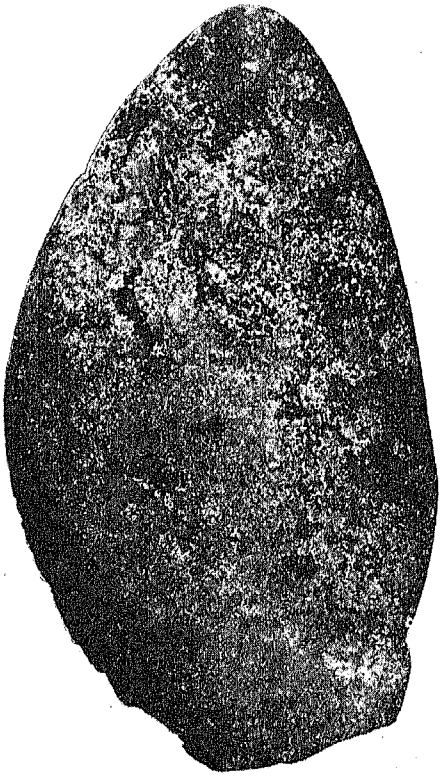


Fig. 7
Plate for grinding ochre
2/3 nat. size.

The Point, Fig. 8, made from limestone, seems to me to be of a too regular shape to be considered of a purely natural origin. Probably a stone of

Fig. 8 a

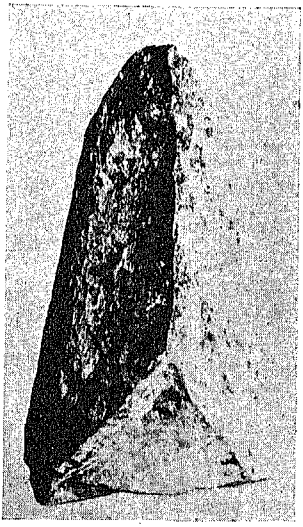


Fig 8 b
Point of limestone
2/3 nat. size.

approximately triangular shape has been used for making this implement. The profile forms a triangle with three completely flat sides. On the lower edge of the sharp middle-brim a triangular piece has been cut off, probably for procuring a hold for the fingers or for a handle. Length 8 cm. greatest breadth 4.5, thickness at the base of the brim 2.6 cm. The use of limestone as a material for implements is not surprising, the crystallized limestone being of great hardness.

The deposit contained also a certain number of heavy round pebbles, having served for hammering or beating. Grip-marks cannot be noticed on these stones. The hammer-stone of the Fig. 9, of a yellow Quartzite, has a smooth surface except on the places where hammering had produced a roughened appearance.

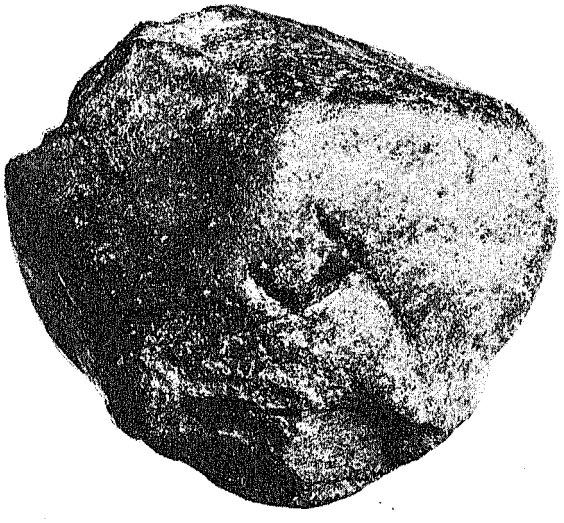


Fig. 9
Hammer-stone of Quartzite
2/3 nat. size.

Implements made of bones were very scarce. Of an indubitable workmanship is only the small Point of the Fig. 10, 3.7 cm. long. Its base has been cut in the shape of a semi-circle; the rest is very much damaged by humidity.

There are still to be mentioned as contents of the deposit lumps of ochre, a certain number of broken bones of deer and a vertebra of a crocodile. Shells were very scarce. I shall refer later to the fragments of pottery found in the upper part of the layer.

Fig. 10
Point of bone
nat. size.

3) Objects from *Tam Kradam* near Lopburi.

Fig. 11 represents a very crude implement made from a block of Rhyolithe. The base is perfectly plain without any trace of workmanship; it is of an oval shape with some angles corresponding to the broad chips taken off from the upper surface of the block, 11.5 cm. long with a maximal breadth of 8 cm. The implement has the shape of a pentagonal pyramid, formed by large lateral chips, leaving between them on the top a long, flat and pentagonal piece of the original surface. The anterior roughly worked point has unfortunately been damaged by the hoe. The greatest thickness of this clumsy tool measures 6.5 cm.

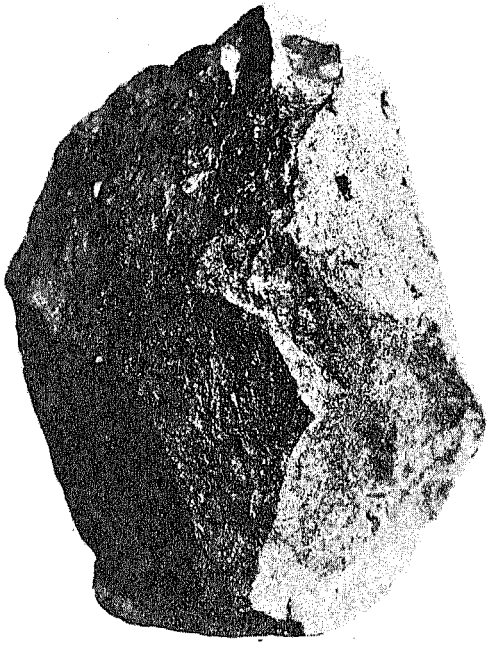


Fig. 11
Implement of Rhyolithe
2/3 nat. size.

A similar piece, Fig. 12, also made of Rhyolithe, has a base of a long triangular form, pointed anteriorly. Its shape is also that of a pentagonal pyramid with a pentagonal piece of the original surface left on the top between the lateral chips. The anterior point presents some small chippings. Length 13.3 cm. greatest breadth 7.5, greatest thickness 6 cm.

To the same kind of implements made of Rhyolithe belongs also the piece of Fig. 13 with a flat triangular base and a flat field on the top bordered by big chips. An anterior point with a middle-brim has been worked in an unhandy manner. Length 10,5 cm. greatest breadth 9, thickness 4.5 cm.

I am utterly unable to express a definite opinion about the mode of use of these crude implements. They may have served as scrapers, but more likely as arms or primitive coups de poing.

Colani (3) mentions amongst the clumsiest implements of the oldest Hoabinhian socalled Percuteurs or arms for throwing, which may correspond to the ones described by me. They have also the shape of big pyramids with a flat base and large chips on the sides, bordering on the top a piece of the natural surface of the block; their thickness surpasses often 5 cm. (Examples *Colani*, 3, Pl. IV, Fig. 8, VII, Fig. 15, VIII, Fig. 9.)

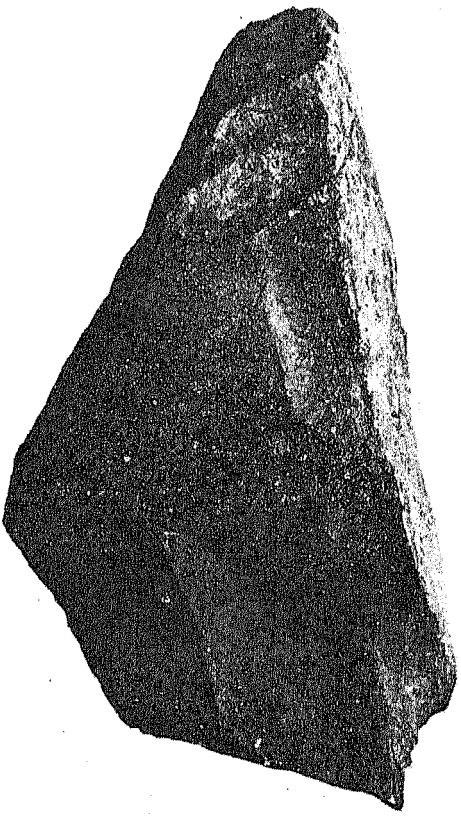


Fig. 12
Implement of Rhyolithe
3/4 nat. size.

Allied forms, but more carefully executed, are figured by *Stein Callenfels* and *Evans* (36) under the designation of Sumatra types, that is to say of implements chipped on one side only and having the original surface of the pebble left on the other one. Particularly the piece of their Fig. 7 on Pl. LXIV shows a marked resemblance to the Siamese implements. It comes from the Gua Kerbau cave in the district of Perak and seems to represent a more highly developed form of the clumsy Siamese tools. The authors (p. 154) consider implements of this kind to belong to the series of coups de poing. In the mesolithic culture of the "Tumbian" of the Congo region rough stone implements of a similar type are also

found (*Menghin*, 32).

A thick pick-like Point is shown in Fig. 14. It is made of Rhyolithe and very much weather-worn, so that the chipping has been rendered indistinct. Length 9.7 cm. breadth and thickness at the base 5 respectively, 3.5 cm. The base is of an irregularly rectangular shape, whilst the point forms a regular triangle, two sides of which are smooth, the third one rough, the whole lower side of the implement having been left unworked. It is probable that a natural piece of stone of a more or less triangular form has been used to make this implement. Similar points or picks with thick base and triangular point are also found in the Prechellean and Chellean cultures, and also in the Tumbian of the Congo region implements of this type occur. *Colani* describes repeatedly from the archaic Hoabinhian old-fashioned points roughly shaped by some chips out of a natural point-like piece of stone (Example, 3, Pl. IV, Fig. 6, heavy point, 13.5 cm. long).

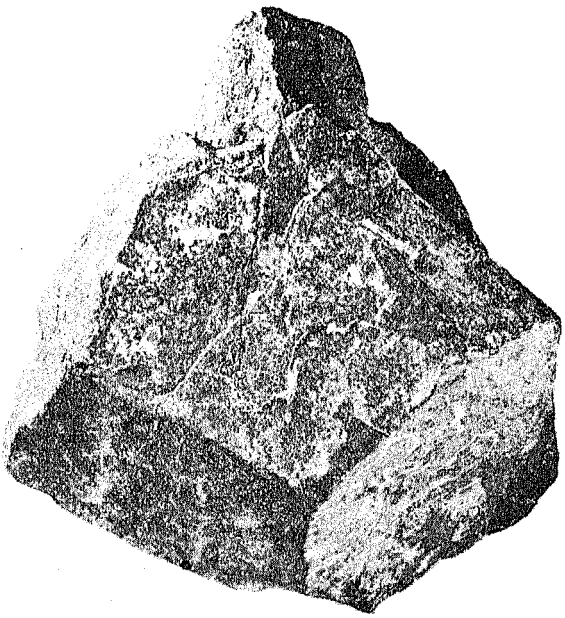


Fig. 13
Implement of Rhyolithe
3/4 nat. size.

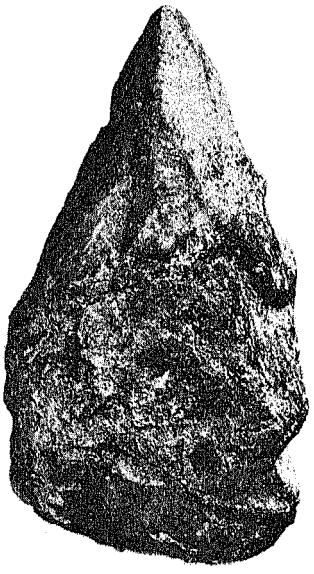


Fig. 14
Pick or Point of Rhyolithe
3/4 nat. size.

The Fig. 15 represents a Point in the shape of a leaf, made from a flake or Rhyolithe, 9.5 cm. long with a greatest breadth of 4.7 and a thickness at the base of 1.8 cm. at the point of 0.2 cm. The lower side of the implement has been left totally unworked, while from the upper part many chips have been removed. The left border shows towards the point an unhandy chipping, producing, an indented aspect. The point is very sharp and the base finishes also with a point, made by a lateral chip. The implement reminds one of a very rude Mousterian point. *Menghin* (33, p. 215) says that points of the shape of laurel-leaves are characteristic for almost all the cultures with coups de poing of the young Palaeolithic.

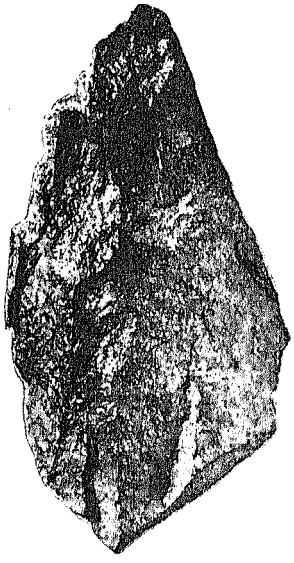


Fig. 15
Leaf-like Point of Rhyolithe
3/4 nat. size.

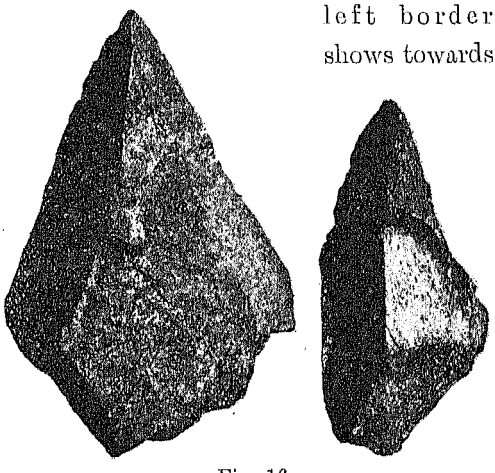


Fig. 16
Points of Rhyolithe 3/4 nat. size.

In the cave-deposit there were also found several points, being simply sharp-edged flakes of Rhyolithe without any trace of later

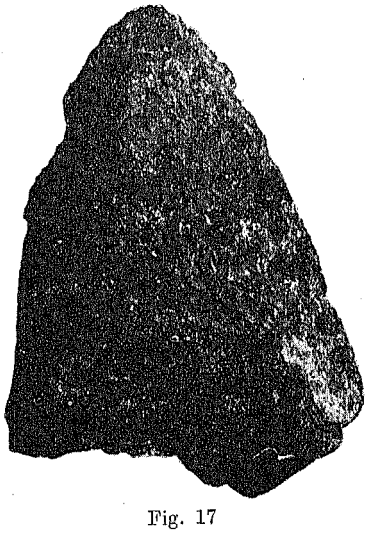
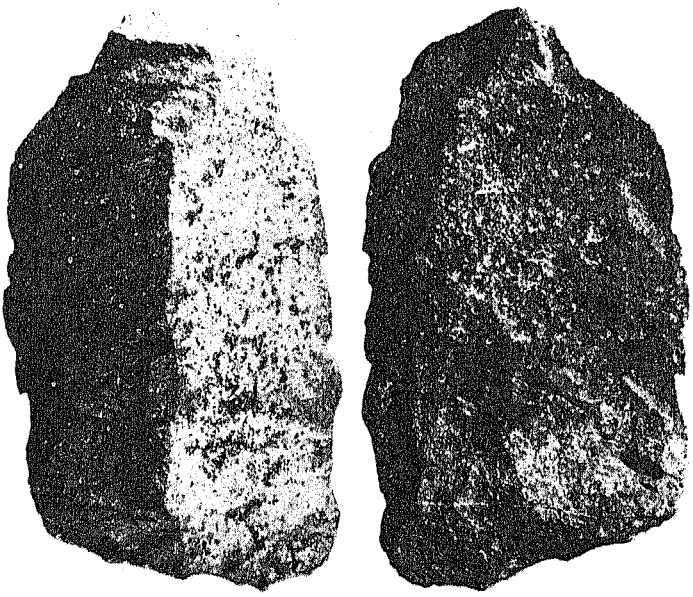


Fig. 17
Point of limestone
3/4 nat. size.

workmanship. Sometimes some chips have been removed in order to improve the point or to furnish a hold for the hand. Two of these points, 7.5 and 6 cm. long, are represented in Fig. 16; a very crude point made from limestone in Fig. 17.

The Fig. 18 a and b show a kind of scraper made from a block of Rhyolithe, 9.8 cm. long, 5.5 broad and 3.7 thick. The upper side, a, is roof-shaped with a sharp middle-brim,



a Fig. 18 b

Scraper made of Rhyolithe
3/4 nat. size.

the declivity of the right side having been left unworked and covered by the natural crust of the block, while the left one has undergone chipping. The two lateral borders of the implement are indented by use. The lower surface, b, is simply formed by the fraction of the block, and is clumsily and obliquely worked on one of its borders. Primitive scrapers of varied forms are frequently met with in the Tonkin-caves.

Another implement of the same type, Fig. 19, made also from a block of Rhyolithe, is of a much bigger size, 15.5 cm. long, 9 broad and 5 to 5.5 cm. thick. It has not been quite finished, the lower side presenting great irregularities. The upper side, roof-shaped with a middle-brim has, exactly like the piece in Fig. 18, the right declivity

left unworked and covered by the crust of the block, and the left one roughly chipped.

The little instrument of the Fig. 20, made of a piece of dark limestone, is remarkable for the fact that it has been besmeared on four places with a red colour, probably ochre. It has a length of 5.5 cm. at its base a breadth of 3.3 and a thickness of 1.7 cm. Near the point some fine chippings contrast by their dark colour from the gray and decomposed surface of the implement.

There are still to be

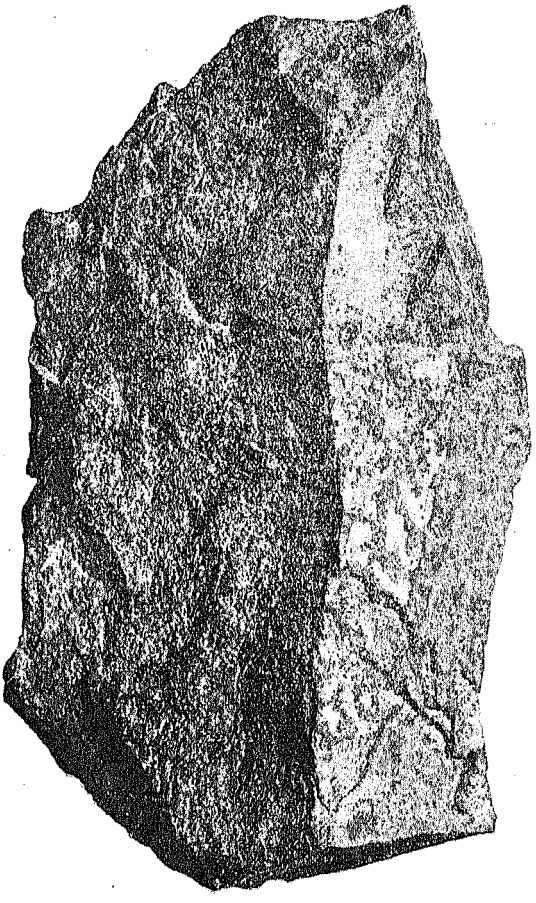


Fig. 19
Scraper made of Rhyolithe 3/4 nat. size.

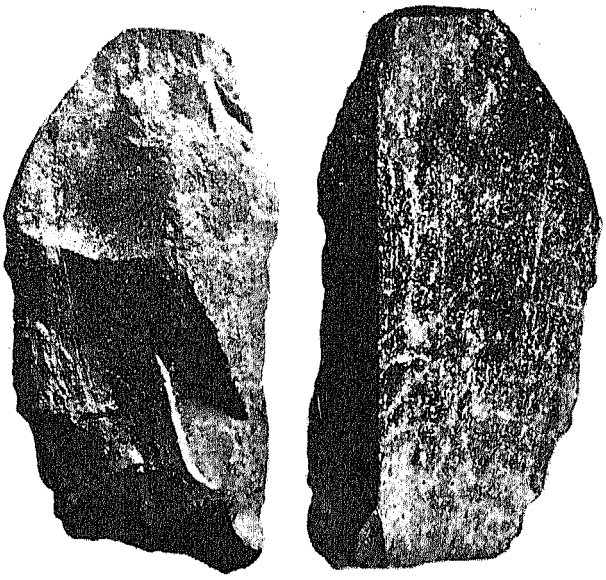
Fig. 20
Implement made of limestone, 3/4 nat. size.

mentioned, as contents of the deposit, many flakes from rocks foreign to the limestone-caves, showing no or almost no traces of workmanship, and further traces of ochre. The chief part of the food of the cave-dwellers consisted undoubtedly of mollusks. The whole deposit was crowded with innumerable shells of terrestrial mollusks (Cyclophoridae), most of them intentionally broken Very rarely shells of a great

Nanina were mixed with the others. As for the bones of mammals, only a piece of the mandible of a young pig has been found. Some fragments of modern pottery were lying on the surface.

4) Objects from the rock-shelter near *Rajburi*.

Samples of rocks foreign to the limestone shelter were completely lacking. It may be that eruptive rocks are rare in this vicinity. Instead of such eruptive rocks limestone has been used for making tools. An implement undoubtedly executed in limestone is the knife shown in Fig. 21, a and b; it has a length of 9 cm. a breadth of 3.7 to 5 and a greatest thickness of 3 cm. One of the two sides, a is slightly vaulted and shows different marks of chipping; the other one, b, presents a sharp and longitudinal brim. The steep declivity on the left of the brim has probably served as a hold for a finger; the right one, which is broader and slightly concave, finishes with an edge showing marks of use. The two ends of the implement are traversely trunked by chips.



a Fig. 21 b
Knife made of limestone
3/4 nat. size.

Human workmanship may appear a little doubtful on the thick point or pick of the Fig. 22, consisting of a very much weather-worn piece of limestone. Nevertheless the resemblance with the point made of Rhyolithe and represented in Fig. 14 is striking. The profile of the point is quadrangular, that of the thick base more irre-

gular. Some chips removed from the base seem to give an easier grip of the implement. Length 10.5 cm., breadth and thickness of the base 6 and 4.5 cm. respectively.

A very crude scraper made of limestone corresponds in its shape to the scrapers of Rhyolithe, represented in the Fig. 18 and 19. The deposit contained also many lumps of red and yellow ochre, some broken bones of mammals and an abundance of shells of Cyclophoridae. Marine shells of Arca indicate that the sea is not very far off (about 50 km). In the superficial layers fragments of pottery were found.

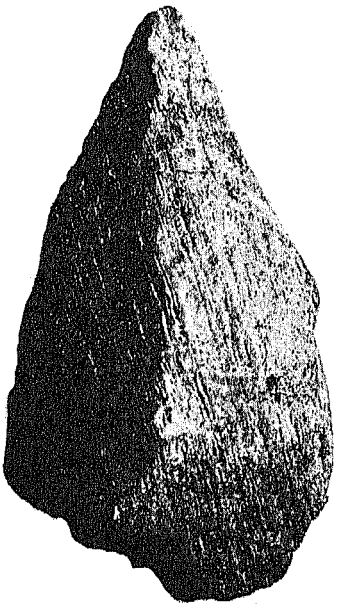


Fig. 22
Point of limestone 3/4 nat. size.

Pottery. A certain number of sherds of pottery of an old aspect, plain or decorated, have been collected in the cave Tam Pra and in the rock-shelter near Rajburi. The material used to make the pottery in one and the same locality is sometimes coarse and mixed with grains, sometimes pure and grainless. *Evans* (14, p. 57), for instance, met with the same state of things in the neolithic station of Nyong in the Malay Peninsula.

In the first place I draw the attention to a fragment of pottery found in the Rajburi-shelter, because its decoration is different from all the others I collected. The surface of this sherd, Fig. 23 a, is divided by elevated horizontal and vertical bars into small sunken squares. Exactly the same pattern has been described by *Stein Callenfels* and *Evans* (36, Pl. LXX, Fig. 8) from a fragment found in the Gua Kerbau-cave in the Perak district. The two authors are of the opinion that these squares may have been produced by pressing a stamp into the soft clay, and that this pattern may be an imitation of basket-work. This explanation may possibly be the right one, as

it is difficult indeed to imagine that a pattern of this kind could have originated by moulding a pot in a basket or other tress-work. On the other hand the fragment, Fig. 23 b, found in Tam Pra, presents beneath a plain and slightly concave border a pattern undoubtedly

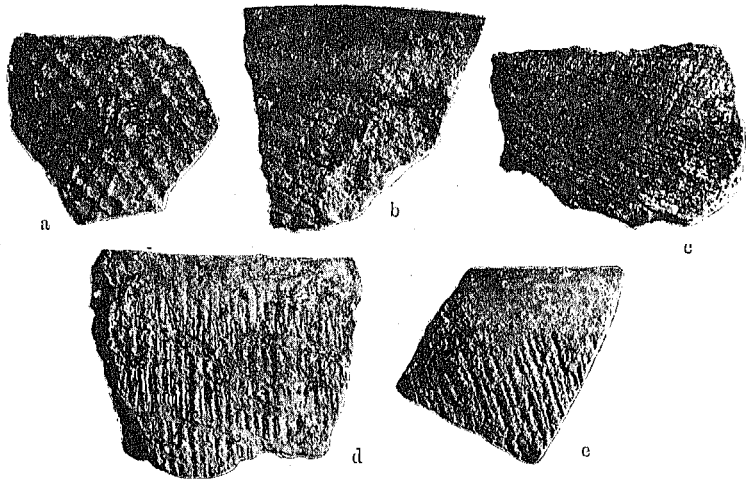


Fig. 23
Fragments of Pottery:—
a from Rajburi, b-e from Tam Pra,
nat. size.

resulting from an impression of tress-work, furrows which by crossing each other include elevated squares. A similar crossing of furrows, though less distinct, can also be observed on the fragment of Fig. 23 c. Samples of this kind of pottery, called by the French "Poterie au Panier", by the English "Cord-marked Pottery", are frequently represented in the publications concerning the Prehistory of south-eastern Asia.

The fragment Fig. 23 d, shows no crossed lines, but simply a system of more or less fine and paralled bars and furrows. Patterns of this kind are certainly not resulting from an impression of tress-work, but seem to have been executed with a comb or a stiff brush, or simply with stalks of grasses or pointed sticks. It was perhaps with the idea to give to this pattern a certain aspect of basket-work that some double lines irregularly and obliquely crossing the system

of parallel furrows have been supplementarily traced. A pattern of parallel furrows and bars is also to be seen on the sherd of Fig. 23 e.

Evans (10, p. 177), is of the opinion that patterns of this kind may have been made by the potter by pressing cords, one next to the other, into the soft clay. Such a proceeding would demand an extraordinary expense of labour and seems to me not probable at all, as the same pattern could be obtained much easier by one of the means mentioned above. Patterns of this kind should therefore not be called cord-marked.

As for the Age of the Pottery, the French investigators of the Indo-Chinese Prehistory are inclined to ascribe pottery only to the young and fully developed neolithic period (see for instance *Mansuy*, 26, p. 16 and 33). When in Tonkin-caves with deposits containing Bacsonian or Hoabinhian cultures fragments of pottery have been found, their position near the surface has been especially noticed or a disturbance of the layers was supposed. The Prehistorians of the Malay Peninsula are not quite of the same opinion. After the results obtained by *Stein Callenfels* and *Evans* in the Gua Kerbau-cave (36, p. 158), cord-marked as well as plain Pottery belong already undoubtedly to the palaeo-protoneolithic culture, but only to its last period (young Bacsonian). Not one fragment of cord-marked ware has been found in the deeper layers, but only some plain fragments of which the authors suppose that they may have slipped down through holes made by burrowing animals.

Evans (11, p. 21), says that in the caves of the Malay Peninsula Pottery, much of which is cord-marked, appears definitely associated with the palaeo-protoneolithic culture, as well as with the fully developed neolithic period, whilst in Indo-China Pottery has only been ascribed to this later culture. I think that *Stein-Callenfels* and *Evans* are right in ascribing Pottery already to the palaeo-protoneolithic period. In this culture, as will be shown later, implements only chipped are found together with pebbles being polished on one of their ends only. This innovation is generally believed to be produced by the contact of palaeolithic men with a neolithic culture. If this view is correct, it seems quite natural that pottery should appear

at the same time as the knowledge of polishing implements.

Cord-marked Pottery is, as *Evans* (13, p. 208) says, not confined to the palaeo-protoneolithic and the neolithic cultures, but is still found at much later dates. Indeed *Fromaget* has observed that still to-day cord-marked ware is made in the Laos district (*Patte*, 35, p. 17).

As for the fragments collected in the superficial layers of the Siamese caves, I believe that they may quite well belong to the palaeo-protoneolithic culture, as no neolithic stone-implements have been found associated with them.

General Considerations. The stone-implements discovered in the three Siamese caves and described above, present a purely palaeolithic character. Not the least trace of polishing is to be found on them. They are without exception very coarsely and primitively chipped. Their form is only approximately comparable with the skilfully executed implements of the classic Palaeolithic cultures of Europe. One is even frequently tempted to look for their relation with Prechellean cultures. By a few coarse chips, perfectly natural stones have been transformed into primitive implements, using as little labour as possible. The "Siamian", as I shall provisionally call it, is a palaeolithic culture of the most primitive nature. It is a culture of hunters and collectors of food without the possession of any domestic animals and without the knowledge of agriculture.

For a comparison of the Siamian let us turn our eyes first of all to Indo-China, where in a great many caves of Tonkinese limestone-massifs, Bac-Son and others, very careful explorations have been undertaken by *H. Mansuy* and Miss *M. Colani*. The most ancient Bacsonian culture of Keo Phay and other caves is described by the two authors (28, p. 41) as follows: "Dans les couches les plus anciennes du Bacsonien, se rencontrent, en juxtaposition, des instruments du style paléolithique primitif, rappellant les pièces caractéristiques du Pleistocène européen, avec des haches de travail rudimentaire, la plupart faites d'un galet non retouché, parfois au contour naturel repris par retouches plus ou moins étendues, toutes ayant reçu le polissage à l'une des extrémités seulement." This culture is

designed as " Néolithique inférieur ", by others as " Mésolithique ".

In a publication of *Mansuy* of the same year 1925 (26, p. 38), we find the following passage: " L'outillage paléolithique de physionomie chelléo-moustérienne, découvert dans certains dépôts de cavernes du Bac-Son, en association avec un matériel néolithique fruste, fait pressentir en Indochine, l'existence de gisements ne renfermant exclusivement que les produits de l'industrie du Paléolithique des premiers temps."

This prediction was very soon realized. In the year 1926, Miss *Colani* announced the discovery of a pure palaeolithic culture without a juxtaposition of polished implements in the Tonkinese province of Hoa-Binh, and later in the district of Ninh-Binh. Her well and richly illustrated publications give a very clear idea of this archaic Hoabinhian culture (*Colani*, 1–6).

It is characterized by the fact that frequently natural stones, left unworked or slightly modified by a few chips, were used as implements. The big and heavy tools resemble mostly only approximately the forms of the European Palaeolithic. Chipping is restricted to one side of the implements, the other side being left unworked and covered by the natural crust of the pebble. *Colani* (3, p. 56) asserts that the implements of the oldest Hoabinhian belong to the clumsiest ever made by human hands. The material for the implements was furnished, as it is the case in Siam, chiefly by eruptive rocks. Lumps of ochre were frequent in the deposits. Bones of mammals were more or less richly represented in some of the caves, while in others they were wanting. A very important part of the diet of the cave-dwellers consisted of mollusks, chiefly Melanias, forming sometimes mighty layers in the deposits. In the Siamese caves Melanias were not found, but in abundance a species of Cyclophorus. Cyclophorides also occur frequently in the Tonkinese caves.

In describing the stone-implements found in the Siamese caves, I have already called attention to the numerous resemblances with those of the archaic Hoabinhian of *Colani*. I am therefore convinced that the Siamian belongs to the same group of palaeo-

lithic cultures.

In the Malay Peninsula the most important exploration ever undertaken is certainly the research in the Gua Kerbau-cave by *Stein Callenfels* and *Evans* (36). They both found, almost in the whole deposit of the rock-shelter, stone-implements simply chipped without any trace of polishing, Palaeoliths, as they call them, mixed with others, showing polishing at one of their ends only, Protoneoliths. The culture of Gua Kerbau compares exactly with the Bacsonian of *Mansuy*. This same culture having now been found as well in the South as in the East of today Siam, I am convinced that following research will discover it also in the kingdom itself.

Evans (11, p. 21–22) has said in 1930, that the most ancient culture found up to to-day in the Malay States, was the palaeo-protoneolithic, and that a pure Palaeolithic had still to be looked for. But *Evans* himself (7) had published in 1919 an article concerning a digging in a cave near Lenggong, Upper Perak, where in a deposit of bones and shells he had only found clumsy Palaeoliths, without any trace of polishing. He adds in 1922 (8, p. 48), that of all the multiple localities explored by him, the Lenggong-cave only had contained a culture without polished implements. The pure Palaeolithic, corresponding to the Siamian and the oldest Hoabinhian, can therefore be accepted as also existing in the Malay Peninsula.

Neither in Indo-China, nor in Siam or in the Malay Peninsula have traces of the Aurignacian, Solutrean, Magdalenian or Azilian cultures been discoverd. The Palaeolithic of this region passes, on the contrary, imperceptibly and without any separating layers to a primitive, and further to a well developed Neolithic culture.

The question has now to be discussed what age may be attributed to the Palaeolithic of south-eastern Asia. All the students of the Prehistory of this region are rightly unanimous in the opinion, that the term " Palaeolithic " should not at all mean a synchronism with the palaeolithic period of Europe, but only a similarity of the implements and the mode of their making. *Stein Callenfels* and *Evans* for instance (36, p.146), express themselves on this question as follows: " We consider that the term Palaeolithic should not be

employed as indicating a period of time, but a culture, in which the people, as far as regards using stone, only knew how to make chipped implements," and *Evans* (11, p.23) says: "Because a stone-implement, from Malaya or elsewhere, is of the same type as one from Europe, it does not by any means follow, that it is of the same age." *Heine-Geldern* also (16, p.47) accents in his paper on the stone-age of south-eastern Asia, that he employs the term "Palaeolithic" exclusively in the sense of a culture, and by no means in that of a determination of age.

A very high or pleistocene age of the cave-deposits of south-eastern Asia is already rendered very little probable by the fact, that in Australia certain tribes still to-day employ implements of palaeolithic and protoneolithic character. The nature of the cave-deposits also speaks against a very old age. The bones of mammals, which accompany in the Tonkin caves the palaeolithic culture, are, as *Colani* (3, p.69) suggests, hardly older than those of the more superficial layers, which she considers as being those of recent species. About the remnants of animals of the Bacsonian, *Mansuy* (26, p.35) says, that they seem to him to belong to species still existing in the country. Nevertheless it is not to be forgotten that the bones of mammals collected in the Tonkin and Malayan caves, have never been carefully compared by an expert Palaeontologist with those of recent forms. The few bones found by myself in the Siamese caves represent a much too small material as to be of any value in this question.

If, as it seems probable, the animals of the palaeolithic and protoneolithic layers are the same as those living actually in the country, it is of the greatest interest to note, that the races of men have completely changed. This fact proves to me without any doubt a not inconsiderable age of the cave-deposits.

In the layers containing a purely palaeolithic culture, determinable human remains have not yet been discovered, but they have repeatedly been found in the overlaying beds containing the oldest Bacsonian, called inferior Neolithic. *Mansuy* and *Colani* (28, p.42) consider as the most ancient human type a race with distinct

Melanesian and also Australian affinities, with strongly elongated skull and several primitive characteristics. They design this race as Proto-Melanesian. To this type belong the skulls of the Lang Cuom-station and the Dong Thuoc-cave (*Mansuy*, 25, p.25). *Huxley* (17, p.265), by examining fragments of skulls, found in a shell-mound of the Malay Peninsula, has already in 1863 noted their relation with the inhabitants of New Guinea and the Australians. It seems therefore certain that a Protomelanesian race has inhabited in the past a great part of the south-eastern Asiatic Continent.

In the cave of Pho-Binh-Gia in Tonkin skulls of Indonesian affinities make their appearance. *Verneau* (37, p.558–559) has accented their relation with certain hill-tribes of Indo-China, as well as with the Battaks, Gayos, Dayaks and so on of the Malayan islands. The Lang-Cuom cave contained, among a majority of Protomelanesian skulls, a small number of others with Indonesian characteristics. In spite of this mixture it is certainly permitted to suppose that the Indonesians represent a race which came later, and probably was already in possession of a neolithic culture. Undoubtedly of much later dates are the types with Mongolian features. To this race belong the actual and highly civilized inhabitants of Indo-China and Siam.

In the Malay Peninsula where human remains have been found in caves, no scientific study has been made so far. Some authors, as *Wray* (39 and 40) and *Evans* (8), are inclined to ascribe the contents of the caves to the ancestors of the Negritos or the Sakais. This supposition seems to me not plausible at all, as it is hardly believable that the Bacsonian culture of Gua Kerbau and other Malayan caves should represent the remains of another race than that, which left the quite analogous industry in the caves of Indo-China.

As to the palaeolithic population of Siam, there can hardly be any doubt that it belonged to the Protomelanesian stock. Its culture shows such a clear relation with that of the old Hoabinhians, which certainly can be attributed to this race.

Nowhere in Indo-China, Siam or the Peninsula have remains of the Homo neanderthalensis or allied forms ever been discovered.

All the skulls found till now in caves or shell-mounds belong without the slightest doubt to the type of Homo sapiens.

Trying to express in numbers the age of the prehistoric cultures of south-eastern Asis is of course an audacious attempt. *Menghin* (31, p.923) has ventured the opinion that the appearance of the oldest Bacsonian (Keo Phay) in Indo-China may have happened between 5000 and 4000 years before Christ. If this statement is correct, the pure Palaeolithic of Indo-China, Siam and the Malay States must precede this date. But such sort of valuations being always of an arbitrary character, I prefer to content myself by saying, that the Palaeolithic of south-eastern Asia is certainly of a post-glacial age and therefore relatively recent.

Many prehistorical problems of south-eastern Asia, and especially of Siam, are awaiting their final solution. My modest researches in the kingdom just mark a beginning, but they show, that by organized scientific research results of the greatest importance could be obtained. If my work should stimulate new investigations, I shall consider my task as accomplished.

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