

NEW ARCHEOLOGICAL DISCOVERIES IN KANCHANABURI

By

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The story of van Heekeren's three stones is well known to Palcolithic archeologists, and ranks high in the annals of prehistoric studies in Asia. H.R. van Heekeren had just been appointed Prehistorian for the Archeological Survey of the Netherlands East Indies when the Second World War broke out, and in 1943 he found himself working as a prisoner of war on the railroad which the Japanese were building from Bangkok to Moulmein. The railroad ran west from the city of Kanchanaburi up the valley of the Kwae Noi River towards Three Pagodas Pass. The valley of the Kwae Noi, or Saiyok, as it is sometimes called, is strewn with a layer of river pebbles which in most areas is buried under silt, but in some spots has been exposed. Just to the east of the small village of Ban Kao, which is located 152 kilometers from Bangkok, the railroad passed through one of these exposed pebble fields, and here van Heekeren discovered dozens of Palaeolithic artifacts lying about. As an archeologist he recognized their importance, and he managed to pick up six specimens and make extensive observations about the site. He was able to keep three of the artifacts, and when the war was over, these were published as the first Palaeolithic artifacts known from Thailand,

It was this story which set off three weeks of archeological exploration in Kanchanaburi Province during October and November of 1955, in an attempt to find the promising Palaeolithic area which van Heekeren had described. Not only was this accomplished, but also important discoveries of Neolithic and Bronze Age materials were made in the area.

The first expedition lasted one week, and the members were Nai Chin You-di, Chief of the National Museum in Bangkok; Nai Charoen Phanudhi, also of the National Museum, and the author, a Sheldon Traveling Fellow of Harvard University.

The second expedition, lasting two weeks, consisted of Nai Charoen Phanudhi, the author, and at various times: Princess Chumbhot; Princes Samaebhag Sonakul; Prince Subhadradis Diskul, Assistant Curator of the National Museum; Nai Dhanit Yupho, Director-General of the Fine Arts Department; Nai Jalamu Jalanugraha, of the National Museum, Professor Frank Williston, Fulbright Director in Bangkok; Mr. Cecil Sanford, Cultural Affairs Officer of the United States Information Service, Bangkok; Mr. Donald Rochlen, United States Press Attache, Bangkok; Miss Kay Larson, photo-journalist; and Nai Somsak Ratanakul, Nai Thamanoon Atagara, Nai Pra-yong Mayakarn, Nai Mani Chitphakdi, Nangsao Sunan Buranakhet, Nangsao Bangurn Uthaisilp, and Nangsao Ratsiri Ratanathadakul, all students of Silpakorn University.

Before describing the finds, we must briefly sketch in the background. "Palaeolithic" is the term used by archaeologists to describe the earliest known cultures of mankind. These cultures are represented by extremely crude tools made by an early form of man, and existed throughout the Old World during the Pleistocene, or Ice Age. Palaeolithic man was a hunter and gatherer, living on wild animals and plants.

The tools which van Heekeren had reported from the Ban Kao area were "choppers," the most primitive type of tool known. During this early part of the Palaeolithic, man must have had an intelligence just above that of a chimpanzee of today. But he had learned that if he wanted to chop down a tree or cut open an animal, he could use tool to do the work better than his bare hands. His first tools must have been stones which he simply picked up and used. Slowly, however, he realized that by chipping away a few flakes, he could make a stone much sharper than those which occurred in nature, and would have a better tool. This was the beginning of technology.

The archeologist is faced with the great problem of trying to pin down the exact point in time and space where this technology began. The crudest artifacts can look surprisingly like stones broken by the forces of nature. However, these stones may be distinguished

by their lack of the usual indications of human workmanship. True artifacts, on the other hand, usually bear certain definite marks caused by purposeful chipping. But most important, artifacts, unlike terrafacts, conform in some degree to a standard pattern. While naturally fractured stones do not. Throughout Southeast Asia great quantities of these artifacts have been found, and certain definite patterns have been distinguished.

The earliest type is the "chopper." This is usually made on a river pebble by flaking in one direction, which produces a single-face tool, or *unifacé*. Similar to the chopper, but more advanced, is the "chopping tool," also a pebble tool, but flaked on both faces. These chopping tools are the first *bifacés*, and gradually develop into the carefully chipped "handaxe." By the time of the Neolithic Period, when men were living in villages and farming, axes were made by chipping and then grinding and polishing, which produced an even better edge than had simple chipping.

The first expedition, then, left Bangkok with a general idea of where these earliest tools of man were to be found. After we arrived at Ban Kao, we began asking the villagers if they knew of gravel areas near the railroad. On the first day we were taken to an area near the stream called Hoi Maeng Rak, where we met for the first time the gravels of the Kwae Noi, with which we were to become so familiar. There, on the level floor of the wide terrace ten meters above the river, among the thin stand of low trees and grass, were literally tons of pebbles. They ranged in longest dimension from fifteen centimeters down. These pebbles were mostly quartzite, and so quite different from the limestone of the hills which now rise to either side of the valley floor. They were rounded and smoothened, and must have been carried down fast streams, where they had been shaped by rubbing on sand and beating against each other.

But despite the huge quantities of pebbles, we did not find a single artifact. During Palaeolithic times, the Kwae Noi and its tributary streams were moving back and forth across the valley floor, churning up the surface, eroding and depositing, then eroding again.

and depositing on an old eroded surface. This is going on even now, of course, and it is only a coincidence when a gravel area which was exposed and available for Palaeolithic man's tool-making is also exposed and available for 20th century man's archeology. This first area which we visited had obviously suffered no such coincidence.

The next day we went to Tam Phra, or "Priest's Cave," situated in a low hill northeast of Ban Kao. It was a small cave, and according to local tradition it had been used as a hermitage by a Buddhist monk some 200 years ago. Across the mouth were the remains of a brick wall, presumably built by the monk. (It was this wall which was later pictured in a Bangkok newspaper as the wall of a million-year-old city.) The mouth of the cave was about four meters above the floor of the valley, in the face of a limestone cliff. In front of the mouth was a small talus slope and there, among the dirt and fragments of limestone washed down from the cliff, we found smooth river pebbles, obviously up from the valley floor.

Soon we had found a total of eight artifacts lying on the talus slope and inside the cave. Some of these were merely stones which had been used as hammers and showed evidences of pecking at one end. These, of course, could have been used by Palaeolithic man or they could have been used equally well by the Buddhist monk. Others of the collection, however, were the single-face choppers for which we had been searching, similar in their crude appearance and general workmanship to artifacts found in Palaeolithic sites from Java to India.

After visiting the cave, we went to two gravel areas along the railroad tracks east of the Ban Kao station. This must have been the location in which van Heekeren made his finds, although we didn't realize it then, for as chance would have it, we missed the richest spots. However, we did find seven more choppers among the pebbles of the thinly-forested terrace. Like the ones from Tam Phra, these were flaked on only one face. Some were flaked along an edge, producing an axe-like tool; others were flaked on two adjacent sides to a point, making a sort of pick.

The next day we returned to Tam Phra with four workers, and dug two small test pits on the talus slope. Two pebble fragments which might have been artifacts were found at a depth of 13mm below the surface. Beneath this, however, there were no river pebbles at all, and at a depth of just over one meter the pits were stopped by large chunks of limestone fallen from the cliff. All the artifacts at Tam Phra had occurred either on the surface of the talus slope or just below it. This would suggest that by the time when Palaeolithic man was living in the area, the talus slope had already been formed, and that since then, deposit and erosion have been about equal.

When we returned from the cave that afternoon we found an old man, Nai Phark Luang-Daeng, waiting for us by the side of a path. He had heard that there was a foreigner in the village looking for old things, and he had brought a bundle of artifacts. He said that his father, Nai Bang-Daeng, had found a site where there were many polished stone axes and potsherds. The location of the site had been kept a secret in the family, he said, but he would tell us. So on the third day we took temporary leave of the Palaeolithic, and following Nai Bang's son, Nai Yuang, we went to the fabled site, west of Ban Kao, near Hoi Maeng Rak. Unlike most rumors of spectacular archaeological finds, this one proved to be true. The Bang Site, as we have called it, appears to have been a Neolithic village site covering more than an acre. It had been buried under earth and forest, but more recently a series of small intermittent streams into Hoi Maeng Rak have cut deep channels into the site. In the sides of these channels we could trace the lines of baked-clay walls, and everywhere we found the remains of Neolithic habitation: potsherds; polished stone axes; two stones used for polishing, one coarse-grained, one fine-grained; animal bones; fragments of polished stone rings, probably used as bracelets; and a potsherd which had been rounded to a small disk and may have been used in a game like checkers.

It is to be hoped that in the near future a full-scale archaeological expedition will excavate this site. It is especially important, since it seems to be the first large Neolithic site to be discovered in Thailand. The polished axes of the Neolithic have been found throughout the country, but never before has there been a chance to discover how Neolithic man actually lived.

The day after the Bang Site, we returned to pebbles. Following reports of large fields to the west, we walked along the railroad line from Ban Kao to Tha Ki Len, the next stop on the line. Altogether that day, we walked nearly 20 kilometers, but the only artifact which we found was lying on the railroad bed 50 meters from the Ban Kao station. The actual ballast, or gravel, in which the tracks lie is a grey stone which has been freshly broken and hauled from the southern part of the province. But the bank on which the tracks run is made of earth and river gravels scooped up from either side of the line. Sometimes, of course, Palaeolithic sites were dug up and turned into railroad beds, and this would explain the occurrence of a Palaeolithic tool in a 20th century roadbed.

Just east of the Tha Ki Len station, another railbed turns off the main line and heads southeast and then west. It once carried a spur line to an extensive gravel hill, which must have furnished gravels for a large part of the main railroad. The exposed gravels cover an area of nearly one square kilometer, and the center of this area is furrowed by the diggings of 13 years ago. It seemed to be an ideal place for Palaeolithic finds. Around the edge of the area, we could examine the gravels of the original surface, while towards the center they were exposed to as much as two meters in depth. Despite all this promise, we found no artifacts. And although on the second expedition we returned to this area for parts of three more days, we found a total of only seven artifacts there. It is potentially a valuable area for pebble-using Palaeolithic man, but it would appear that during his time it was generally covered, and has been exposed only since then.

Later that afternoon we visited Muang Sinkha, a modern walled city of the Lopburi Period, situated some two kilometers to the South of Tha Ki Len. Muang Sinkha has never been excavated, and for the most part it is only a series of suggestive mounds hidden in the tropical forest. Near the center of the city, the unornamented laterite walls and tower of a temple rise clear of the earth. We cast a few appreciative glances on this feeble but impressive evidence of Khmer art, and returned to our pebble fields.

On the fifth day we closed down our expedition and took the train from Ban Kao, heading back to Bangkok. On the train, however, we heard the first of the rumors about the Big Skull. The Legend of the Big Skull is a recurring motif among Thai village people. Our skull had been seen in a cave called Tam Song Phi Nong, Tam Pratum, or Tam Hob, located in a hill northeast of the railroad, 153 kilometers from Bangkok. It was not there when we arrived, of course, for this seems to be one of the essential features of the story.

The Large Skull had been reported before in this Journal, and it might be well to expand on it. In many caves of western Thailand, large skulls have been seen by villagers, who assert that the skulls are definitely human, but much larger than normal. On questioning, we found one man who said that the skull which he had seen had a receding forehead, a projecting mouth, and a heavy jaw. There is an element of plausibility in these stories, however, because the Lower Palaeolithic choppers which we were finding in that area had probably been made by a man similar to Java Man or Peking Man, and these men have large skulls, with receding foreheads, projecting mouths, and heavy jaws. It is not improbable that one of these men might have been buried in a cave, and his skull fossilized and preserved in stone, as it were, for hundreds of thousands of years.

No skulls of early man have ever been reported from Thailand, however. The Large Skulls in question may be those of a tiger, or even a wild ox. Or, if they are human, they may have been burned by a pious Buddhist monk.

After visiting the empty cave, we thought for a second time that we had finished our explorations of the Kwae Noi valley. We were living at Wang Pho, at the end of the rail line, and that evening as we headed towards the market place, we were stopped by another man who had heard about the expedition. He worked in the sawmill of the Panakit Co., Ltd. near Wang Pho, and during the construction of the sawmill this last year, a large amount of soil had been removed from a bank high above the Kwae Noi. Buried between one and two meters from the surface many pots, polished stone axes, and bronze tools had been found. Some of the pots contained axes, others contained skulls.

As it turned out, this was another well-founded rumor. He showed us a pot which he later donated to the National Museum. The pot was globular with an unpainted grey surface, and about 15 centimeters in diameter. Inside were two axes. One was a straight-sided polished celt, and the other a fine socketed bronze axe. The presence of the polished stone and the metal in the same pot suggests that the site is an important one. One can imagine that the axes were part of a ceremonial burial, perhaps accompanying a pot with a skull. A more scientific excavation of the remaining bank will show whether the period was a late Neolithic time, when there were already a few metal tools, perhaps traded in from other groups; or, more likely, a bronze age, when polished stone axes were still valuable as religious objects or antiquities. In support of the later period, chunks of slag lead were found on the same level as the pots in the walls of the old excavation. This site we called the Sawmill Site.

The second expedition did much the same as the first. More caves were investigated, but at none did we find Palaeolithic artifacts. These caves, for the benefit of future parties, were: Tam Kra Sae, close to the railroad between Ai Hid and Wang Pho, where the Kwae Noi swings against a steep limestone cliff and the rails are carried on a long bridge; Tam Khao Noi, on a hill near the small village of Nong Plue, between Tha Ki Len and Ai Hid; Tam Phi, some 30 kilometers up the Kwae Noi from Wang Pho; Tam Kaenchan, beside the railroad some five kilometers beyond Wang Pho; and Tam India, just northeast of the Ai Hid station.

As mentioned above, the gravel hill near Tha Ki Len was more thoroughly worked over, and seven artifacts were found there. Also, the rail line from Ai Hid to Tha Ki Len was walked. But it soon became clear that if van Heekeren's artifacts were to be found, we must look east of Ban Kao. On the second week of the expedition, we started covering the ground to either side of the tracks to the east of the Ban Kao station. The week before, we had found three choppers in a small gravel field southeast of the Ban Kao station, between the railroad and the hills, but now, one and one-half kilometers east of Ban Kao, we found what must be van Heekeren's area.

There, a bamboo jungle meets a forest of thin scrub trees which are standing on slightly higher ground. Among the scrub trees, there are large quantities of pebbles, and on the first day there, we found some 40 Palaeolithic choppers at a distance of between 100 and 200 meters south of the tracks. Nearly all of the artifacts were found close to the border of the bamboo, and hardly any were found towards the center of the pebble field. Our second visit to the area yielded another 28 artifacts.

Among the artifacts which we found in this Ban Kao area, there were many pebble tools similar to those which we had already discovered elsewhere in the valley. There was also a more advanced type of chopper. On it, flakes had been removed all the way around the edge of the pebble instead of on a single edge or at a point. This advance in flaking may signify a tremendous advance in knowledge. That is, one can easily use a single-edged tool with the hand, but it would be most painful to do heavy cutting with the bare hand against a sharp edge. Now some of these new types had a small spot of cortex left at the butt end, but on others even the butt was sharp. Therefore, it may well be that some of these advanced choppers were hafted to a handle of some sort, making use of the principle of the lever.

Another and somewhat unexpected type of tool was discovered. The choppers themselves are large cores from which flakes have been removed and are generally thought of as representing the earliest flaking techniques. But in the Ban Kao we found four artifacts which were made on the flakes, and not the

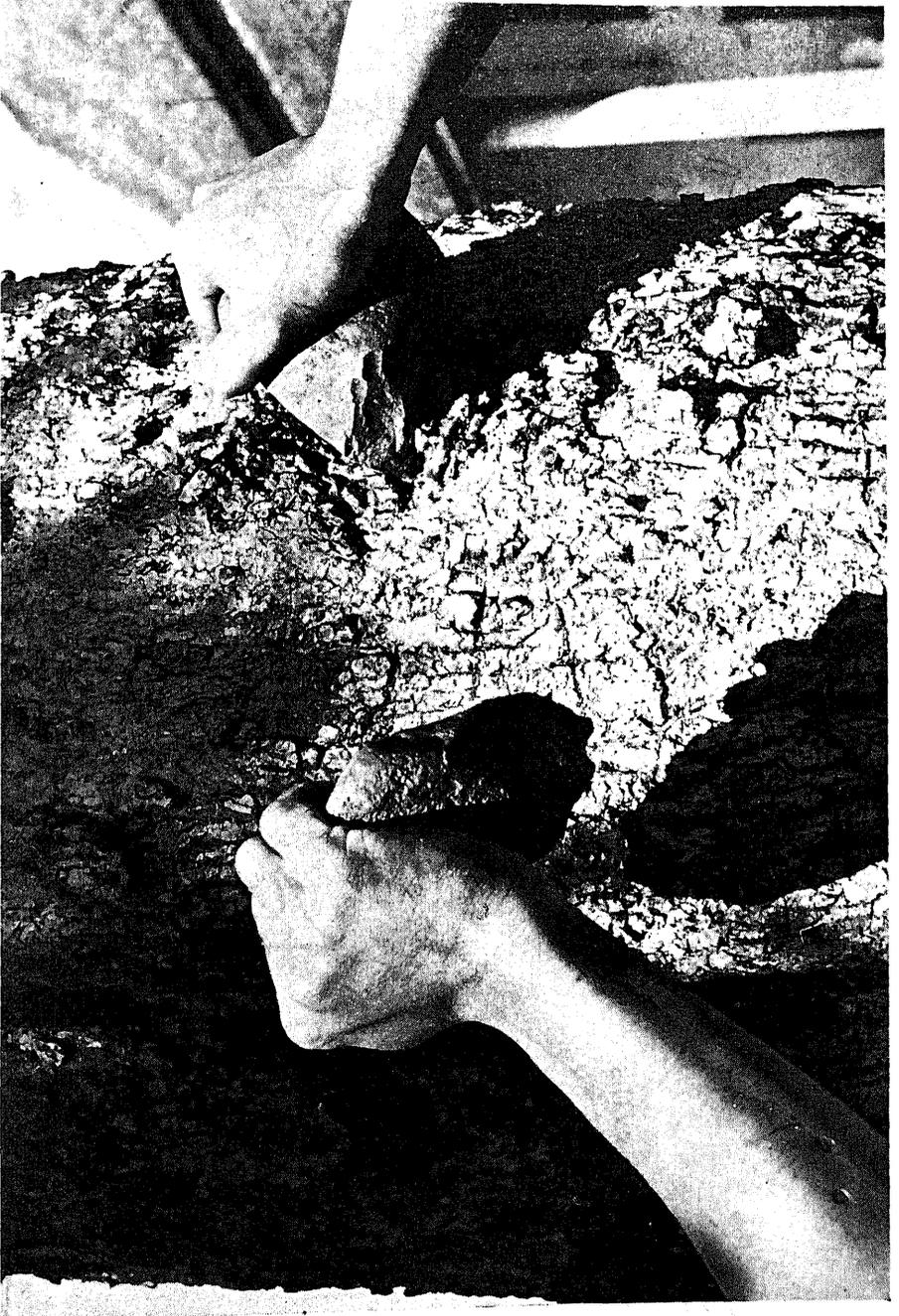
cores. Three of these were in the rich locality east of Ban Kao. Thus, there are suggestions of the existence of a flake tool technique in addition to the core tool technique.

The date for these tools is a matter of extreme interest. However, we shall have to await a geological study of the valley. We can say, however, that they are Lower Palaeolithic because of their close similarities to well-established sequences in India, Burma, China, Malaya, and Java. This would place them somewhere between 500,000 and 1,000,000 years ago.

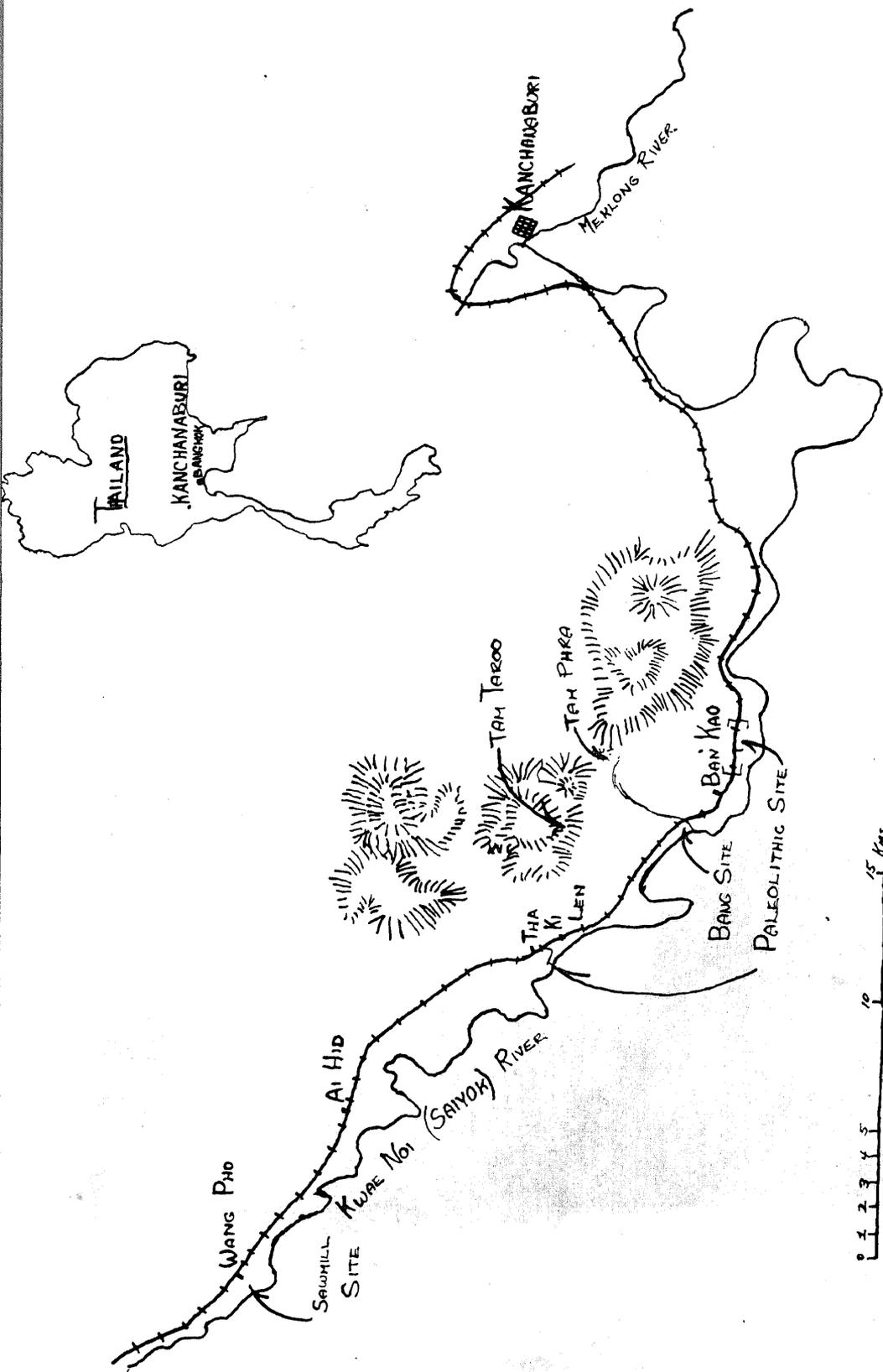
We have often been asked why these tools must be so old, why they could not have been made by some of the aboriginal groups which roamed Thailand within the last thousand years. These choppers represent a technology which is truly primitive, the first efforts of the creature who was becoming man. As time progressed, this creature, by long practice and considerable ingenuity, improved his tools and his methods. It is true that in recent times there have been fairly isolated groups which had no metal and were forced to rely on stone, bone and wood for their tool supply. But even for these groups, the choppers which we found would be extremely inefficient and obsolete compared with the better stone tools which they could make.

Then, of course, there is the fact that finds of similar tools in cave deposits and generally good geological association have been found. The dating of these tools has clearly established them as Palaeolithic, but they have never been found on a recent level. The idea that a primitive group would carry on the same inefficient tool techniques from Palaeolithic times to modern times completely unchanged and unimproved by the influences of its more advanced neighbors is most improbable.

Thus, more light has been thrown on this Lower Palaeolithic pebble chopper industry of Thailand, known as the Fingnoian. Its existence had been indicated by van Heekeren's finds, and the recent expeditions to Kanchanaburi have strengthened and expanded this knowledge. It is only the beginning, of course, and a much more thorough exploration must still be made of this important archeological area.



Man using pebble tool



Map of Region

1:200,000