# Ancient Textiles in Thailand

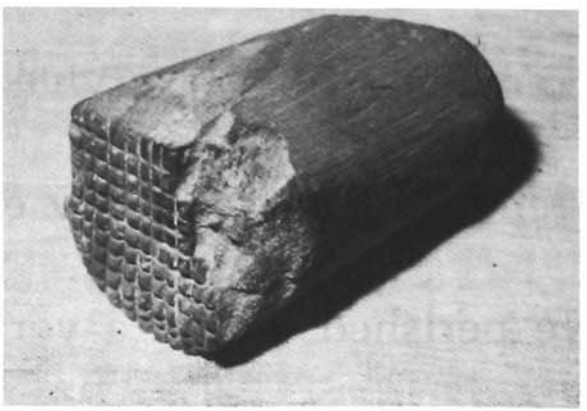
BY CHIRAPORN ARANYANAK

The date in which spinning and weaving were invented lines too far into prehistory for any early remains to have survived. The materials being organic, all early clothing would have perished within a very short period of their manufacture. The climate in Thailand is too moist and warm to suit their preservation. Only some small hardy fragments of textiles have survived this difficult passage.

It is generally believed that people in the earliest Palaeolithic Age in Thailand did not know how to weave. They might have covered their bodies with animal skins, grasses, leaves and the barks of certain trees. Several rock paintings dated 3000 - 4000 B.C. show that these people did not go naked. They covered their bodies from waist down with small pieces of unknown fabric.

Archaeological excavations in Thailand yield some interesting finds indicating the existence of textile related cord technology evolving in the Stone Age. It is widely assumed that ropes, mats and baskets preceeded textiles. The local Stone Age people knew how to make rope from strands of animal or plant fiber. They knew that by twisting them together, their strength and flexibility increased. At the earliest age they might have utilized grasses, reeds, twigs and coarse fibers from local plants. And at a later date they must have discovered softer fibers more suitable for fabric weaving.

Various excavation sites in Thailand have yielded an abundance of cord-marked pottery. A number of prehistoric earthenware and potsherd pieces were carefully examined to study the cord-impressions intentionally produced on them as a form of pottery decoration. By twisting the cords, spirals were created. The raw material was rolled between the fingers, between the palms of the hands, or between the fingers and the thigh or the cheek. The spiral added strength and elasticity to the cords. The cord could have been wound around a type of beater, or was pressed directly on to the surface of the pot.



STONE BARK BEATER FROM SOUTHERN THAILAND

These cord-marked impressions on pottery have given us valuable information concerning the direction of twisting, dimension, and type of raw material. The latter is actually difficult to identify but occasionally the exact species of reeds and grasses have been identified.

The earliest cord-marked pottery were those found in "Spirit Cave" in Maehongson Province, dated around the 6th millennium. The earliest evidence of basketry to date comes from Ban Chiang. A basket-impressed pot which dates back to 3000 - 2300 years was found. Significantly the form of interlacing in two directional plaits is closely related to the weaving technique.

We do know that bark cloth was widely used since the Neolithic Age. Archaeological excavations throughout the country have yielded finds attesting to the existence of this type of fabric making. Stone bark beaters appear at this time. Eight stone bark beaters were discovered in central, northeastern, and southern Thailand. Most of these were undatable surface finds. Two were excavated from a cave site in Surat Thani Province dating back to 3,500 - 4,000 years.

Bark cloth was made by soaking the inner bark of suitable trees in water and beating the strips with a special wooden or a stone mallet-like implement. Bark cloth continues to be produced by traditional methods in several islands in the Pacific. The ancient Chinese also used bark cloth prepared from paper-mulberry. It is probable that the paper-making process originated from the bark cloth beating process.

All stone bark beaters discovered in Thailand are physically similar to those found in Malaysia, Indonesia

and in the Pacific regions. It is possible that wooden bark beaters were also used, although none have been discovered.

Pottery spindle-whorls appear in Neolithic settlements by at least 2000 BC. These finds indicate a developed textile technology by this time. The spindle-whorl is the oldest and one of the most efficient devices for the production of yarns. The Neolithic people invented it to spin yarn. In order to strengthen the yarn it has to be twisted, that is, spun, and the harder the twist, the stronger the thread.

The hand-spindle, which consists of a rod and a whorl, is a simple instrument for spinning and twisting yarn. The whorl can be made of stone, ceramic, wood, shell or other materials which are heavier than the rod. It serves as a fly-wheel to keep the rod rotating so as to twist the thread material already shaped by the hands of the spinner. To work well the hand-spindle needs a symmetrical whorl and vertical perforations at the exact centre. The size, shape and weight of a spindle-whorl and length of the spindlep-rod affect the fineness and strength of the fibers being spun into yarn. There is also a relationship between the weight of the whorl, frequency of rotation and working efficiency. These primitive people knew that small whorls are used for very fine yarns, while heavier whorls are used for doubling yarns into thread.

The pottery spindle-whorls found in Thailand vary in shape and size. They comprise bead type, truncated cone type, round cone-shaped type, double trapezium type, trapezium type, disc type, lozenge type, as well as one with a bow-shaped rim.

POTTERY SPINDLE WHORLS

Some are decorated on the surface with simple incised patterns made of pottery clay. Their sizes and shapes are similar, especially spindle-whorls from the Neolithic sites, to those found in ancient China.

We have been fortunate enough to find textile fragments from pre-historic and historic sites although the climate has been very severe on their survival. Most were found on bronze tools and ornaments. Only a few specimens were found on iron tools or in the soil.

It is believed that after burial, textiles were placed in direct contact with metals in such manner as covering, or wrapping. Certain traces of fabric may survive when placed beside copper, silver or iron, which deposit corrosion by-products on the fabric. The corrosion by-products would have been absorbed by threads and then hardened. The surface structure of the fabric is preserved, although the actual fiber material is destroyed. For example copper salts from oxidized bronze objects have acted as disinfectants thus preserving a piece of fabric with which the object was originally associated.

In earlier excavations any such fragments had passed unnoticed. More recently it has been found that fragments neglected and near destruction can in fact be sufficiently salvaged to benefit research.

Approximately 1,500 bronze and iron artifacts from archaeological sites belonging to the Division of National Museums and from several private collectors were carefully examined. Magnifying lenses and a stereo-microscope were used to search for traces of textile fragments or fibers in a prelimary sweep.

Many prehistoric sites in the northeast of Thailand yielded an impressive number of textile finds. Unfortunately, most of these fabrics were found on illegally excavated objects which give no valuable information about their prehistoric context and dates. We can only surmise that those objects were produced during the Metal Age.

Major finds of textiles were located mostly in the northeast; the rest located in central Thailand. These sites include: Ban Chiang, Bang Phak Top, Ban Kut Kwang Soi, Ban Na Di, in Udon Thani Province; Ban Don Tan in Nakhon Panom Province; Ban Than Prasat in Nakhon Ratchasima Province; Ban Don Ta Phet in Kanchanaburi Province; the Khae and Tha Luang in Lopburi Province; Chom Bung in Ratchaburi Province; Khok Phanom Di in Chonburi Province; the "ceramic site" at Tak Province; and monumental sites at Sukhothai.

The remains of fabric impressions on most bronze objects show coarse and open weaving. Some objects exhibit signs of wrapping. Other objects, particularly weapons, appear to have been placed on or under fabric, as often only one face would have fabric impressions. Certain fabrics have also been found on the upper parts of vessels implying some sort of covering.

One hundred and forty-two remnants of textiles were retrieved from the search. These textile fibers were cataloged and extensively investigated further by physical and chemical methods. Investigations of textile fibers were made by using stereo microscope, biological microscope, polarizing microscope and electron microscope. Longitudinal sections as well as cross sections of the fibers were carefully prepared and examined. A series of microphotographs were taken of these specimens to compare with modern examples of textile fibers. Chemical tests with reagents and reference samples were used to identify the fibers. Detailed instrumental analyses using x-ray differential, differential thermal analyzer, and x-ray microanalyzer, were also employed.

TEXTILE FRAGMENTS FROM PREHISTORIC SITES IN NORTHEASTERN THAILAND

Studies showed that there was no evidence of dyeing material on most specimens with the exception of a few specimens from historic sites. Most prehistoric fabrics had coarse plain weaves with count vary from 10 x 6 to 14 x 12 threads per square centimetre. Historic fabrics mostly comprise a finer plain weave with count vary from 20 x 14 to 28 x 18 threads per square centimetre. Most are fine, evenly spun and openly woven. The textile fragments showed no characteristic or consistent use of warp and weft.

Of the 142 remnants of textiles, 96 could be identified. The rest were unidentifiable because the whole thread had been destroyed and replaced by corrosion products. Textile fibers unearthed from prehistoric sites in Thailand were identified as hemp, cotton, banana fiber and asbestos. The majority comprise hemp and cotton. Most textile fibers from historic sites comprise cotton. Only one specimen from the Portuguese cemetery (Ayutthaya period) was identified as silk.

Hemp comes from the plant called *Cannabis sativa*, which is a member of the *Moraceae* family. Sometimes it is called true hemp. Records indicate that hemp fiber was used

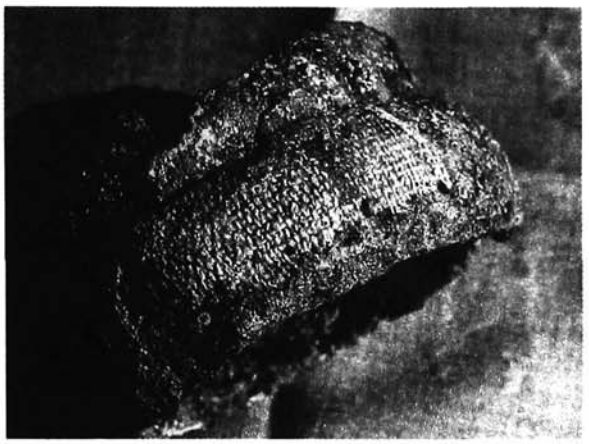
for rope and fabric making in China, Korea, Japan, Persia and other parts of the Near East since prehistoric times. It is still used by certain ethnic groups in southern China and northern Southeast Asia.

We can say that cotton also has been used for clothing in Thailand since prehistoric times. Several textile fragments from Ban Chiang and other prehistoric sites were identified as cotton. The cultivation of cotton plants might have come from India. Their use might have occurred later than hemp. As a spinning fiber, cotton is softer and finer than hemp and also easier to prepare and to dye. It is possible that hemp was superseded by cotton. Eventually, cotton became widely grown throughout Thailand for use in home-spinning. The traditional technology is still practised by some Thais and certain ethnic groups today. Most are woven at home for personal consumption.

There is no evidence to indicate that Thai cotton cloth was exported among other goods from Thailand. The quality of Thai cotton cloth was not as refined as the more colorful Indian cotton. Indian cottons were highly admired and desired.

The development of silk and sericulture in Thailand is difficult to reconstruct since there is neither textual evidence nor archaeological evidence to be found. We only know that sericulture has long been practiced in northern and northeastern Thailand.

If we compare silkworm strains we see a wide variation from region to region. Thai silkworms are similar to those raised in Laos, Cambodia, Vietnam and South China. They are quite distinct from the original Chinese strains which have white elongated cocoons. The Chinese silkworms produce two generations in one year; they are bivoltine. The silk produced is white and fine in texture. The silkworms raised in Thailand comprise various strains of mulberry silkworms or Bombyx mori. They come from the four sleep varieties and are polyvoltine, which reproduce several times annually. The cocoons are small and yellow. Their silk is soft and shiny, but coarser than the Chinese and Japanese varieties.



TEXTILE FRAGMENTS FROM PREHISTORIC SITES IN NORTHEASTERN THAILAND

The most common Indian strains have green cocoons. They are also polyvoltine. In Europe the commonly reared silkworms produce only one generation during the year; these are monovolatine. These regional variations are affected by climatic conditions. In tropical and sub-tropical climates where mulberry leaves are available all year round, bivoltine or polyvoltine silkworms are usual. In temperate or cold climates only two generations, spring and autumn silkworms, are raised since mulberry leaves do not grow in the cold.

Chinese records document that the silk technology of south China was also quite distinct from that of the north which was more advanced in quality and decoration. Imported Chinese silk and yarns came from the north. Fabrics produced from wild silkworms have also been used in northern China and India. These wild silkworms live on different kinds of oak trees. The fabric produced from these silkworm is generally termed "tussal". In Thailand wild silkworms are extremely rare.

TEXTILE FRAGMENTS FROM PREHISTORIC SITES IN NORTHEASTERN THAILAND

TEXTILE FRAGMENTS FROM PREHISTORIC SITES IN NORTHEASTERN THAILAND

Many of the traditional tools and containers used for sericulture and weaving by the local people, such as silkworm trays and baskets, hand driven silk reels and looms, are similar to those used in Laos and South China.

Silk fabrics woven by northeastern Thais have plain or figured weaving or resist dyeing. The dyed and woven textiles have common motifs. Mythical and real animals, birds, abstract floral and geometric forms are the most familiar designs. Metallic threads of gold and silver have also been used. These Thai silks are similar to Lao textiles. It is possible that the Thais learned some techniques from the Lao or Tai people. Still, the origin of their technique is still unclear.

The influx of highly-prized fabrics from China and India via the maritime trade route cut the production of local textiles, especially silk. The Thais particularly welcomed this change however since their Buddhist faith taught against the killing of all life; the silkworms having to be killed during the reeling process.

Cities increasingly favored cloth imported from China and India. These were admired by members of the royal family, court officials, the well-to-do, not least the traders. Ayutthaya and other cities along the Gulf of Thailand developed local markets for silk from China and varieties of cloth from India. Some local weavers in the south reveal that their elaborate weaving techniques today originated from the Chinese and Indian immigrants of the maritime trade route.

World War II further disrupted traditional practices. Fewer silk weavers held on to their age-old skills when the Thai government after the war, proclaimed a westernized dress code. Gradually traditionally worn silks lost their relevance.

Today, these once humble textile crafts have won newfound esteem. Revived and readily accepted by modern tastes and fashions Thai silk is successfully promoted worldwide. And the traditional weavers who have survived to this day still come from the same ethnic groups in the north and northeast of Thailand.