

ThaiLife



Thai Gems and Jewellery

INTRODUCTION

For centuries Thailand's mineral rich soils have been yielding a seemingly never ending supply of high quality precious and semi-precious gemstones such as rubies, sapphires, zircons and red garnets. Thai craftsmen have taken these stones and, with expert precision, have turned them into the finest jewellery and art objects. Evidence of this can be seen in temples, museums and galleries as well as market places and shops throughout the country.

The skilled workmanship of Thai craftsmen and designers has been widely recognised abroad and for many years gem merchants from all over the world have been sending their rough stones to Thailand for cutting, recutting and polishing. Traders have been fascinated by the variety of gems and jewellery in the gem markets of Bangkok and lovers of fine jewellery have been commissioning the country's designers to create for them the jewellery of their dreams.

To facilitate trading at every level the government has provided a host of services, introduced attractive tax concessions and supported fairs and exhibitions. Through the combined efforts of the government and the private sector, Thailand has today become one of the world's major gem centres.

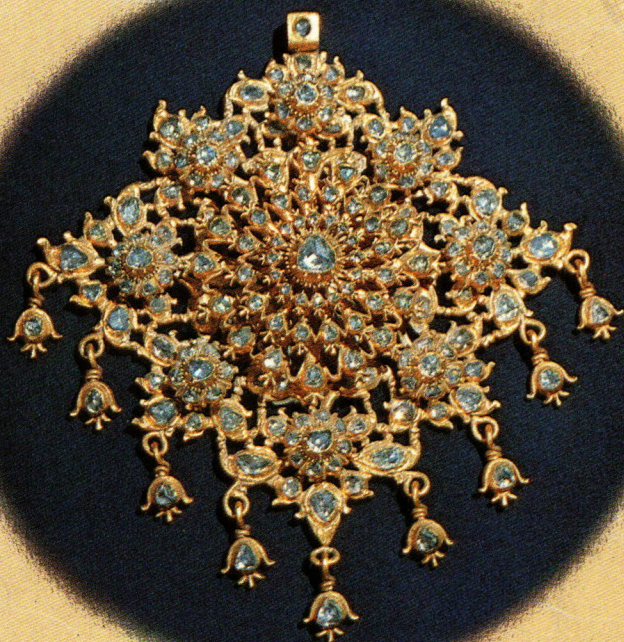
With an awareness of the growing interest in Thai gems and jewellery, and in recognition of the importance of this growing industry, the National Identity Board has produced this book. It is hoped that, through its pages, the reader will be able to learn more about the treasure that is to be found not only beneath the soils of Thailand, but also in the markets throughout the country. Indeed, it would not be surprising for jewellery lovers to learn that much of the exquisite gems and jewellery found in other world markets have come from Thailand, created and cut by the highly skilled Thai craftsmen.



1 THAILAND'S PRICELESS HERITAGE



THE SOURCES OF THAI GEMS 36



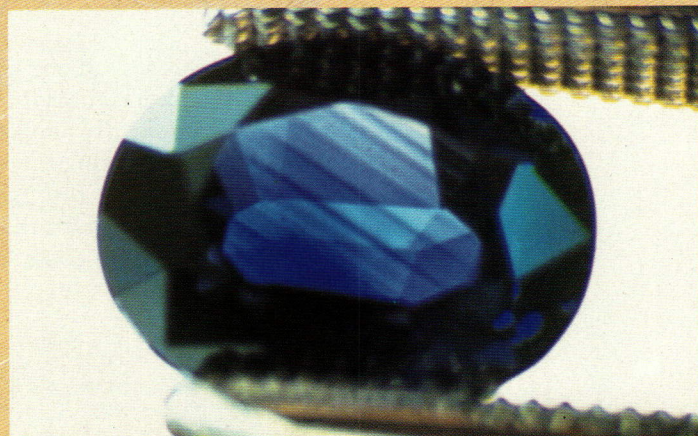
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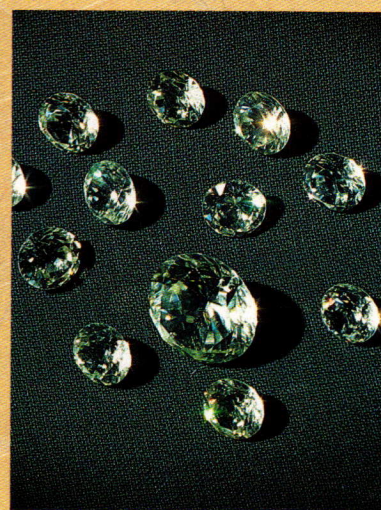
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Chakri Throne Hall and Dusit Throne Hall



THAILAND'S PRICELESS HERITAGE

The use of precious metals and gems in creating artifacts and adornments has long been known amongst the Thais. Art treasures and religious objects dating from the Dvaravadi, Srivichai and Lopburi periods have been discovered in a number of places and are treasured alongside the fine works of art produced during the Sukhothai, Ayutthaya and the Rattanakosin eras. Such art treasures, created for religious purposes and for use by the royal households, have been meticulously crafted by the skilled hands of craftsmen trained in a tradition passed down through the ages.

Recognizing the importance of preserving this cultural heritage, Her Majesty the Queen has established a special project which aims at reviving ancient traditions and training craftsmen in various branches of the arts. Through this royal initiative an awareness has been instilled in the population of the different treasures belonging to the nation. This awareness has nurtured a pride which ensures that these national treasures will be preserved as an inheritance for generations to come.



Dusit Throne Hall

Over 200 years ago, in the year 2325 B.E. (1782 A.D.), Phra Bat Somdet Phra Phutta Yot Fa Chula Loka Maha Raj (King Rama I) was, by general consensus of palace officials, ministers and the populace, asked to ascend the throne and rule over the Kingdom of Siam. The new king ordered that the capital of the Kingdom be moved from Thonburi to Bangkok

and that the Royal Palace and Wat Phra Sri Rattana Satsadaram be constructed after the design of Wat Phra Sri Sanphet in the earlier Kingdom of Ayutthaya. The order proclaimed that buildings inside the palace grounds be erected at corresponding intervals. Palace buildings were thus erected to harmonize with the Somdet Throne Hall, and the Dusit Throne

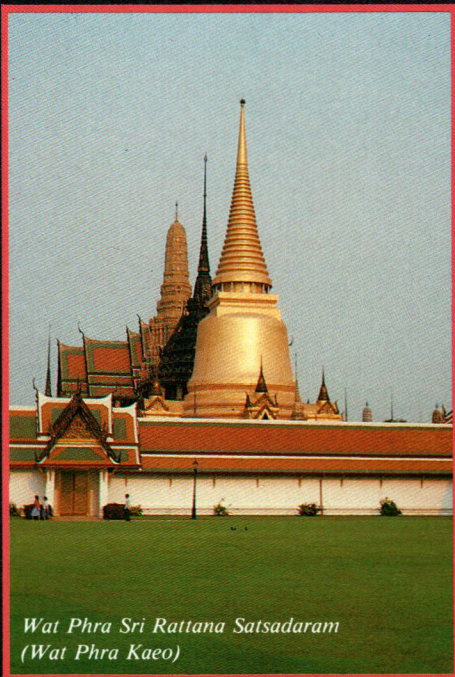
Dusit Throne Hall and Chakri Throne Hall



Hall with the Suriya Amarin Throne Hall. The Chakri Throne Hall was built later during the reign of King Rama V to match the Sanphet Palace Throne Hall. Dating from the time of King Rama I, and throughout each successive reign, new constructions, restorations and repairs have been made to the Grand Palace and all the buildings inside the 61-acre area.

Wat Phra Sri Rattana Satsadaram (Wat Phra Kaeo), is located on the eastern side of the outer grounds of the Royal Compound, surrounded by a gallery. No monks reside in this Royal Temple. It is used for Royal sponsored ordinations, royal merit making ceremonies as well as the

Oath-taking ceremony. Phra Phuttha Maha Mani Rattana Patimakon (The Emerald Buddha) is enshrined in the Ubosoth (Ceremonial Hall) of the Temple. It is an exquisite example of gem craftsmanship and is considered the object of highest veneration for all Thai Buddhists.



*Wat Phra Sri Rattana Satsadaram
(Wat Phra Kaeo)*



Wat Phra Sri Rattana Satsadaram (Wat Phra Kaeo)



The Emerald Buddha in the seasonal costume for winter

Phra Phutta Maha Mani Rattana Patimakon is styled in the attitude of meditation. It is emerald green in colour, hence the name. The lap of the Emerald Buddha is 48.3 cm. wide and the height, including the base and the rays emanating from the top of the head, is 66 cm. It is installed on a carved wooden "busabok", a raised gilt throne, embedded with precious

gems of various colours, made by craftsmen during the reign of King Rama I. A ceremony was held to celebrate the installation of the Emerald Buddha. The grand event took place on a Monday, the 14th day of the waning moon of the 4th lunar month in the year of the dragon, corresponding to the 22nd of March 1784 A.D.



Chakri Throne Hall



Great importance is given to the changing of the Emerald Buddha's seasonal costumes and the ceremony is performed by His Majesty the King. In the event that His Majesty is engaged in some other royal activity, the duty is assigned to a male member of the Royal Family. The ceremony for changing the seasonal costume is held on the following dates :

The seasonal costume for winter, a jewel-fringed rectangular wrap of gold-mesh which is worn draped around both shoulders over the rainy season attire with the head-piece of gold studded with diamonds, is changed to the seasonal costume for summer in March.

The seasonal costume for summer, comprising a bejewelled crown, armlets, bracelets, a breast pendant, and other typical items of royal attire all made of enameled gold and embedded with a variety of precious and semi-precious stones, is changed to the seasonal costume for the rainy season in July.

The seasonal costume for the rainy season, which is a monk's robe of embossed gold with a headpiece and flame finial of enameled gold studded with sapphires, is changed to the seasonal costume for winter in November.

The seasonal costume for summer and the seasonal costume for the rainy season were made at the Royal Command of King Rama I.

Later, during the reign of King Rama III, a seasonal costume for winter was ordered made so that the seasonal changes could be completed.



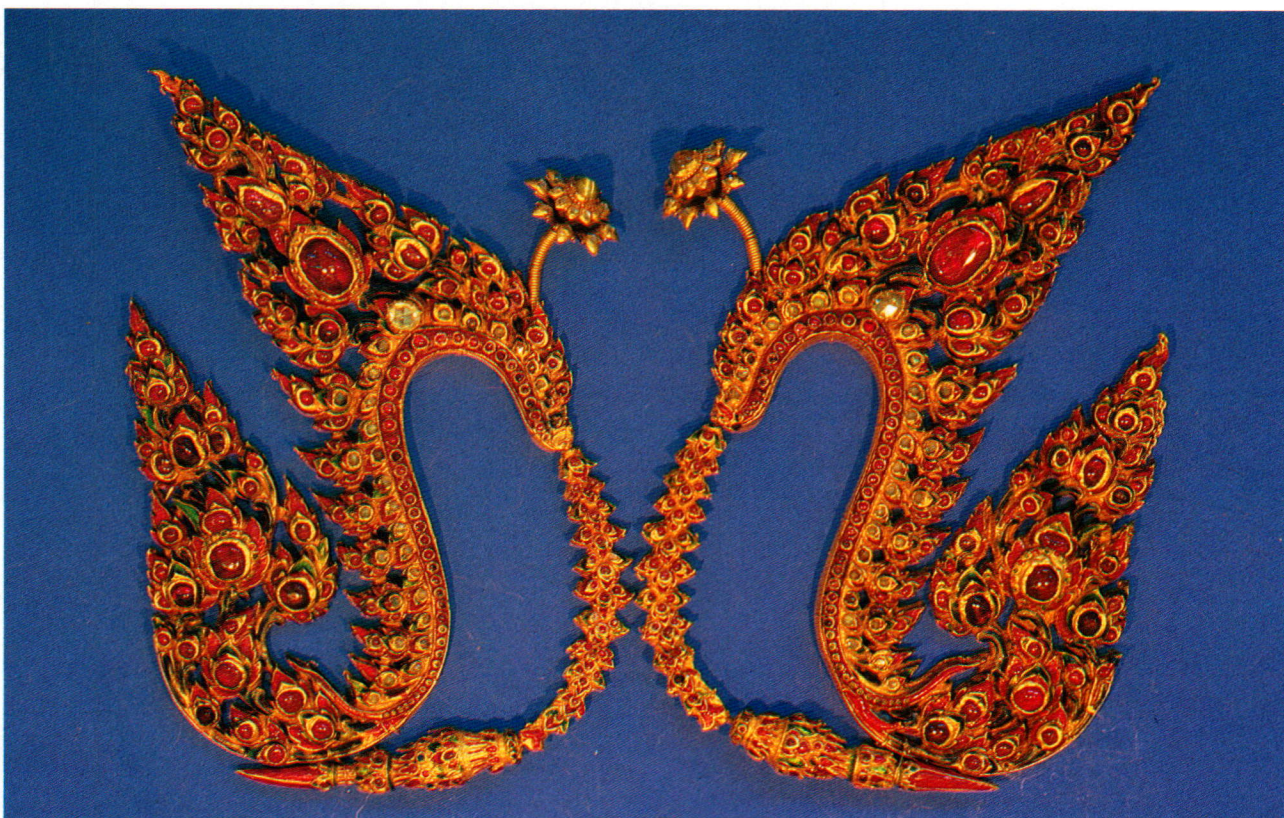
Palace building

The Seasonal Costume for Summer

The seasonal costume for summer, crafted from gold, and encrusted with diamonds and precious gems of various colours, comprises the following :



Mongkut. The crown, or multi-tiered conical diadem terminating in a tapering spire, is crafted of gold embellished with enamel and set with diamonds and rubies. (The lower part of the crown which sits on the head has a border across the front.) The top of the spire is embedded with a large diamond in like manner as the Great Crown of Victory of the Thai Kings.



Phra Kan Chiak. The two gold ear pieces attached to each side of the crown are embellished with enamel and set with diamonds, rubies and gems of various colours.



Chalong Phra So Thap Phra Ongsa. This necklace is crafted of gold embellished with Rachawadi enamelling and set with yellow sapphires, rubies, emeralds, moonstones and other gems of various colours.



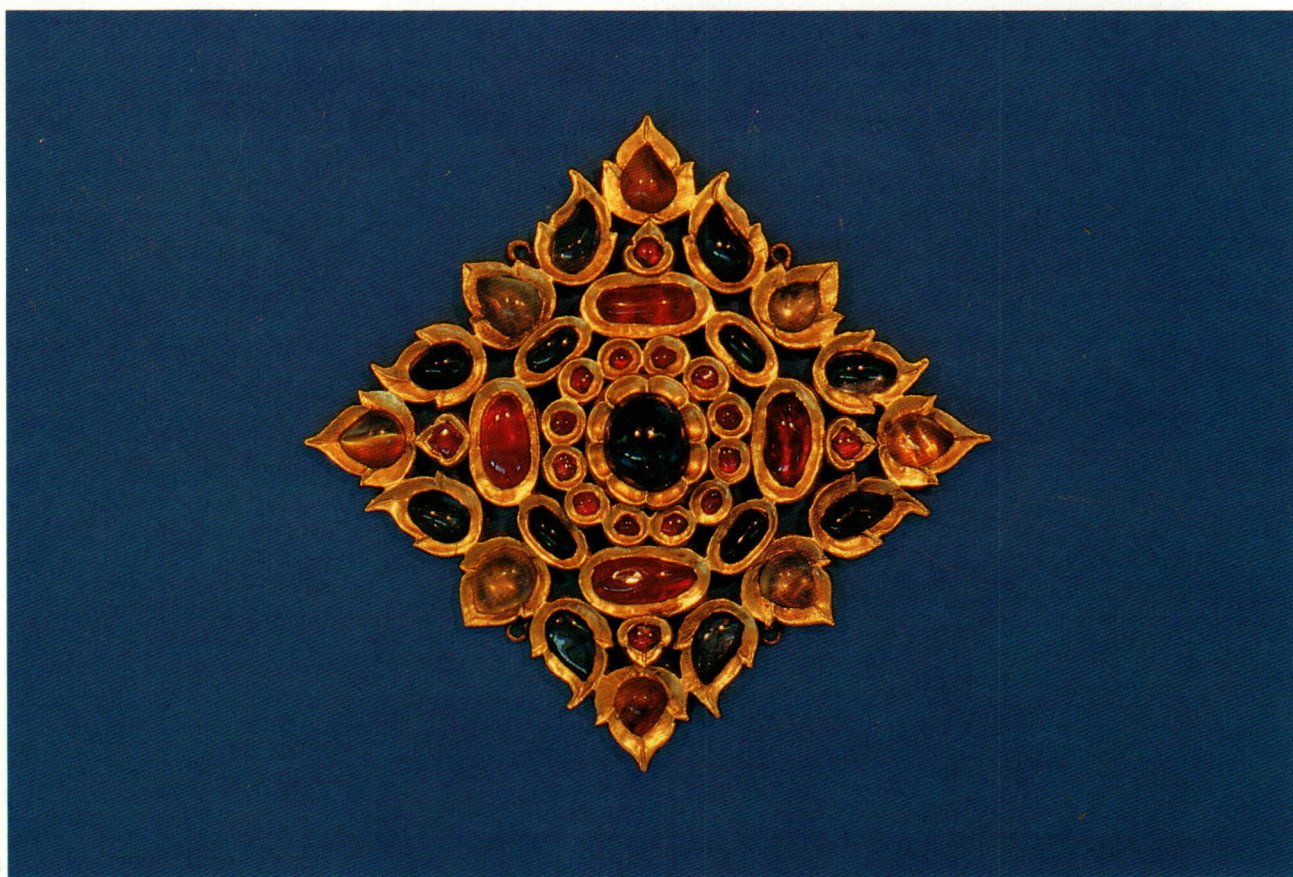
Phai Phra Kon. The right and left wristlets, which are half-section only, are crafted of gold encrusted with moonstones and various coloured gems.



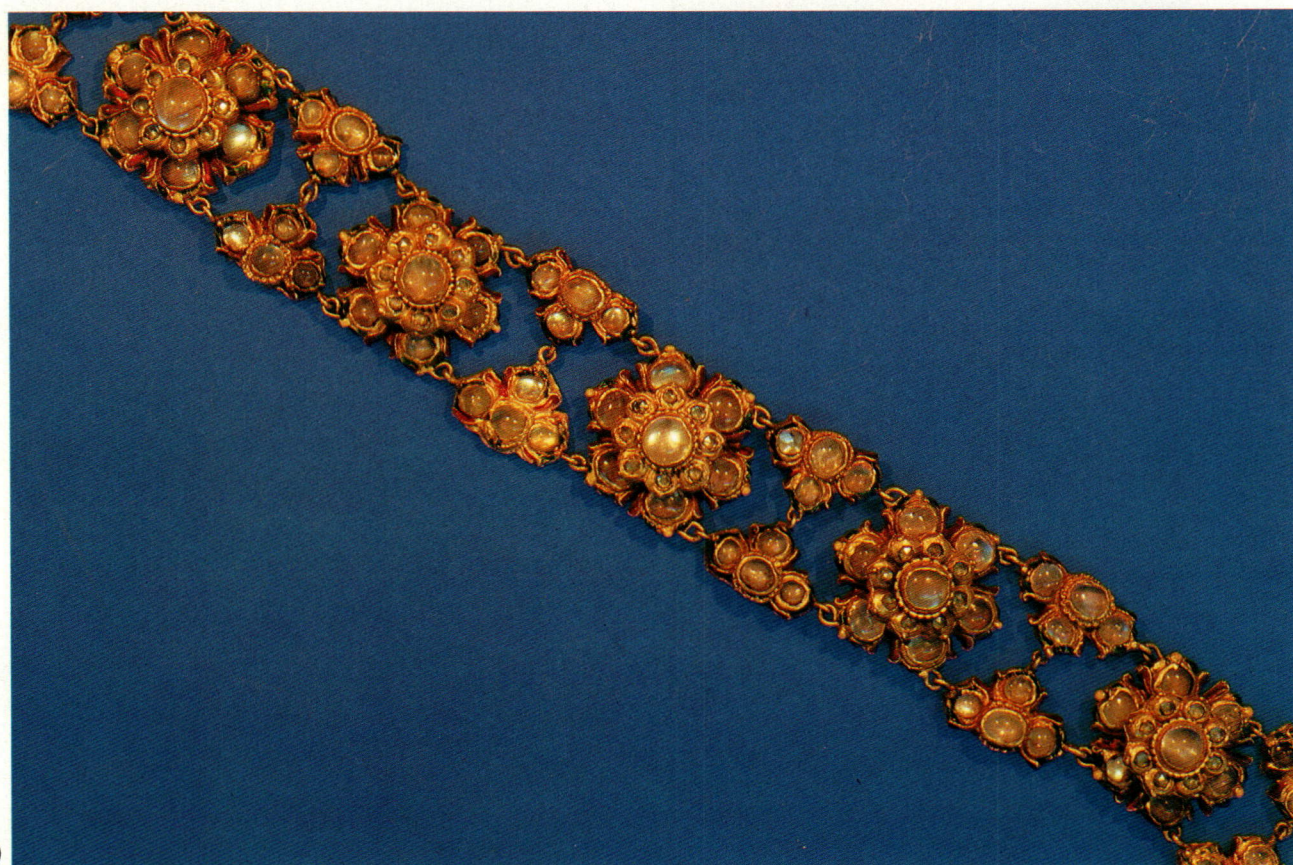
Thap Suang. Chest piece crafted of gold embellished with enamel and set with seventy six rubies of various sizes. It is attached to gold bodychains (Sangwan) encrusted with zircons and yellow sapphires.



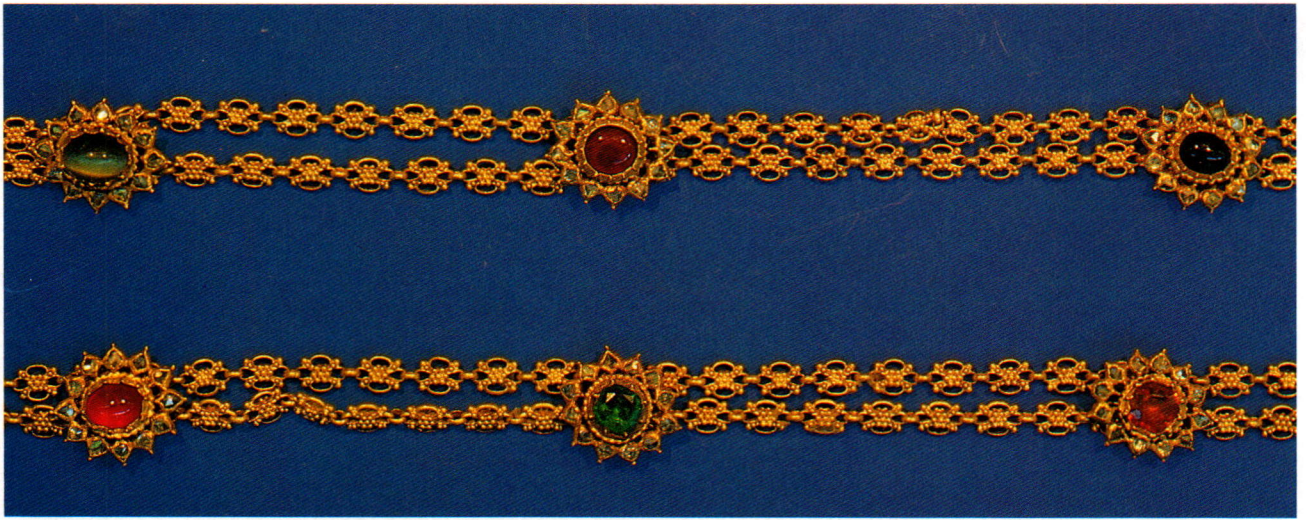
Thap Khang. Two side pendants are crafted of gold encrusted with diamonds and rubies. Both pieces have connecting gold body chains set with zircons and yellow sapphires.



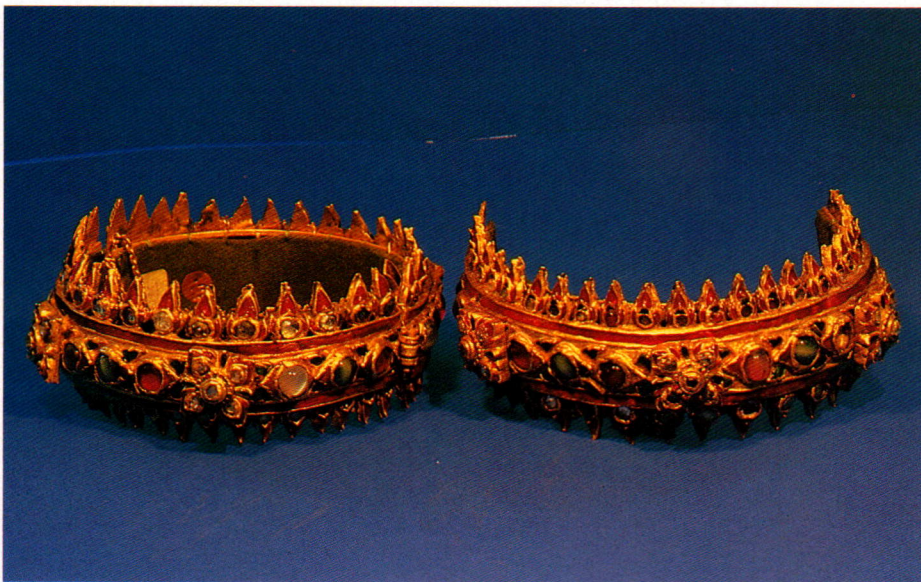
Thap Lang. The rear pendant is crafted of gold encrusted with spinels, cat's eyes, moonstones and rubies. Gold body chains connected to the pendant are set with zircons and yellow sapphires.



Phra Sangwan. The Gold Body Chain worn over one shoulder encrusted with moonstones.



Phra Sangwan Thong Kham Dok Chik Sai Khu. A gold chain worn over one shoulder linked together in a pattern of 12 flowers, each set with diamonds, rubies, emeralds, yellow sapphires, blue sapphires, red garnets, cat's eyes and moonstones.



Ton Phra Kon Buang Khwa. The right armlets are crafted of gold embellished with enamel and set with 17 gems consisting of yellow sapphires, cat's eyes and moonstones. The pointed upper parts of the armlets are set with zircons with the main floral design set with diamonds.

Ton Phra Kon Buang Sai. The left armlets are crafted of gold embellished with enamel and set with 11 gems consisting of moonstones, garnets and cat's eyes. The pointed upper parts are set with zircons and the main floral design is set with diamonds.



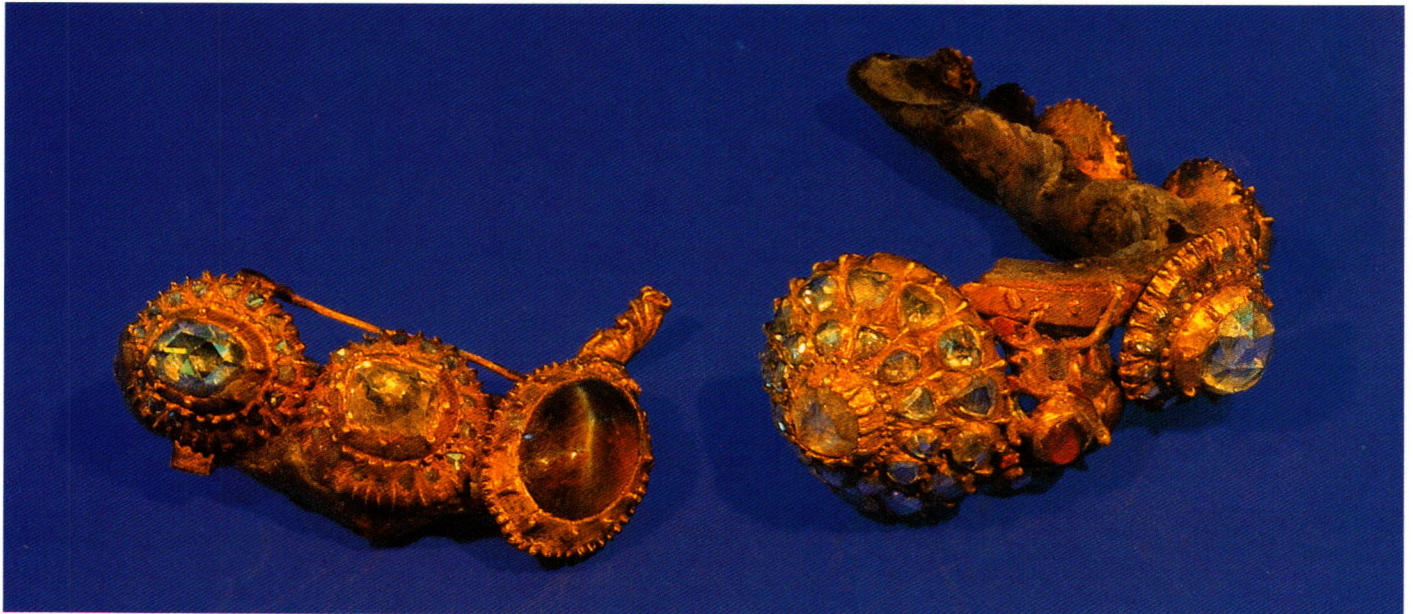
Krong Choeng. The half sectioned anklets are crafted of gold embellished with enamel and set with moonstones and garnets.



Rat Phra Ong. The half sectioned belt placed in the front of the image is crafted of gold encrusted with various sized spinels and gems of different colours.



Choeng Sanap Plao Sai Lae Khwa. The left and right knee adornments are half sectioned and are crafted of gold encrusted with moonstones and gems of different colours.



Phra Dham Marong. This ring, which has no band, is in fact connecting five rings crafted of gold and set with diamonds.

Phra Dham Marong Thong Kham Hua Mondop. This mondop designed ring is crafted of gold and set with two tiers of banded diamonds. The pinnacle is set with a diamond while the band is set with precious gems.

Phra Dham Marong. This ring is crafted of gold and set with spinels. The band is set with zircons.

Phra Dham Marong. There are two rings in this set both of which are crafted of gold and set with diamonds. They do not have a band.

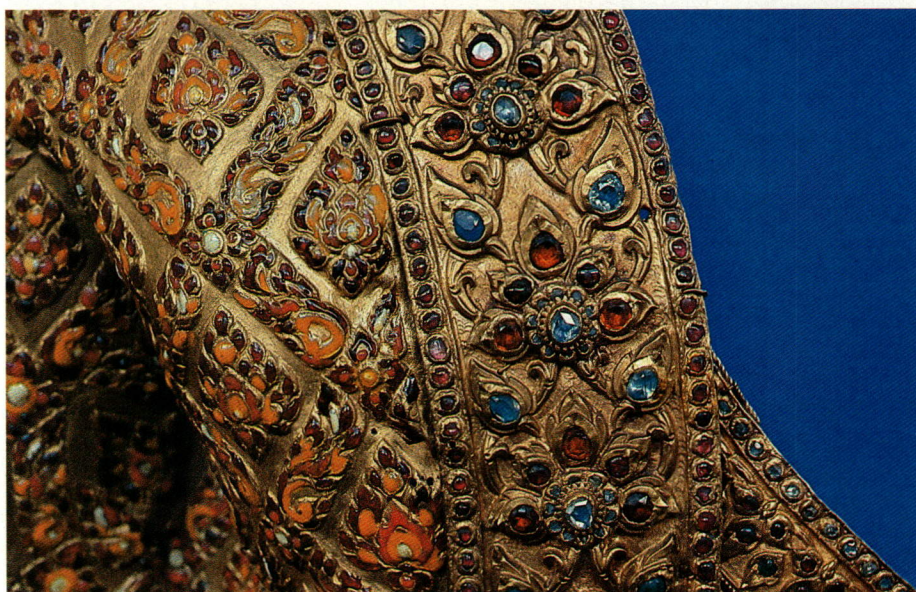
The Seasonal Costume for the Rainy Season

The costume for the rainy season, crafted of gold sheeting embossed with “phum khaobin” (design), is worn draped across the left shoulder and comprises the following :



“Phra Sok” The head covering for the Rain Season

Phra Sok. The head covering which is crafted of gold embellished with dark blue enamel. The lower part, which represents the Buddha’s hair, is set with spinels. The rays which extend from the top of the head covering are embellished with dark blue and red enamel and set with four blue coloured gems. A diamond is set at the pinnacle of the uppermost ray.



“Phra Sangkhadi” the shoulder cloth, crafted of gold embellished with enamel and patterned with a floral design and set with twenty diamonds at the centre of the twenty designs



Phra Sangkhadi. The shoulder cloth is crafted of gold embellished with enamel and patterned with a floral design. The centre of each of the twenty floral designs is set with a diamond. The shoulder cloth overlaps the robe which is crafted of gold embellished with enamel and embossed with a floral design.



"The robe" crafted of gold embellished with enamel and embossed with a floral design.

"Sabong" the lower part of the robe is crafted in two pieces, both of gold and embellished with enamel.



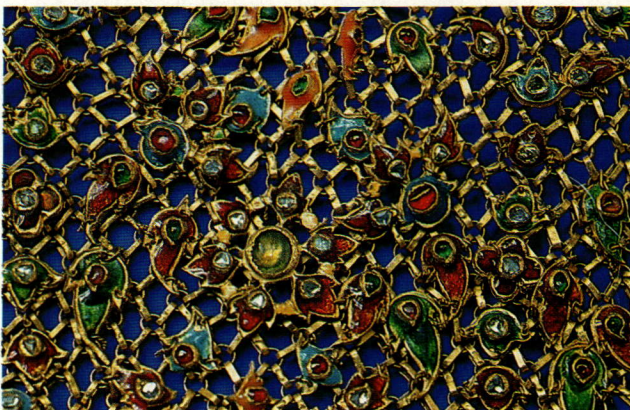
Sabong. The lower part of the robe is crafted in two pieces, both of gold and embellished with enamel. It is patterned with a floral design with the edges of the lower garment encrusted with gems of various colours.

The Seasonal Costume for the Winter Season

The costume for the winter season, which wraps around the body, is crafted of gold embellished with enamel and encrusted with diamonds and gems of various colours and comprises the following :

Phra Sok. The head covering is crafted of gold and set with diamonds. The rays emanating from the top are of gold embellished with red and green enamel. There are four diamonds set in the rays and another at the pinnacle.

"The shawl" crafted of gold embellished with enamel, 12.5" wide and 42" long



Phra Song Khlum. The shawl is crafted of gold embellished with enamel. It is 12.5 inches wide and 42 inches long. The centre panel of the shawl is patterned with flowers, the petals of which are embellished with red enamel while the centre of the flowers is set with gems. There are also two buttons set with diamonds and four gold chains, each 3 inches

long, used for tying the edges of the robes. The right and left hand borders of the robes are set with gems of various colours.

In addition to religious artifacts, a wide variety of treasures for use by royalty and the nobility have also been created by the meticulous hands of skilled craftsmen. The creation of

such treasures is based on ancient custom and tradition and they can be divided into Royal Regalia and Decorations bestowed by Royal Command on members of the nobility and government officials. These objects, some of which include gem encrusted gold pieces, comprise symbols of style and title which include decorations, utensils and adornments.

Phra Maha Pichai Mongkut - The Great Crown of Victory

The Great Crown of Victory is worn by each successive king of Thailand. It was crafted by artisans during the reign of King Rama I for

use in coronation ceremonies. The crown is made of gold embellished with red, green and sky blue Rachawadi enamelling. It weighs 7.3 kilograms

and stands 66 centimetres tall. At the pinnacle of the cone-shaped crown is a large diamond which has been given the name "Maha Vichai Mani".

Phra Saeng Khan Chai Sri - The Sword of Victory

The blade is crafted in the ancient Khmer style. Figures of Phra Narai (Vishnu and the Garuda), depicted near the hilt on both sides, have been

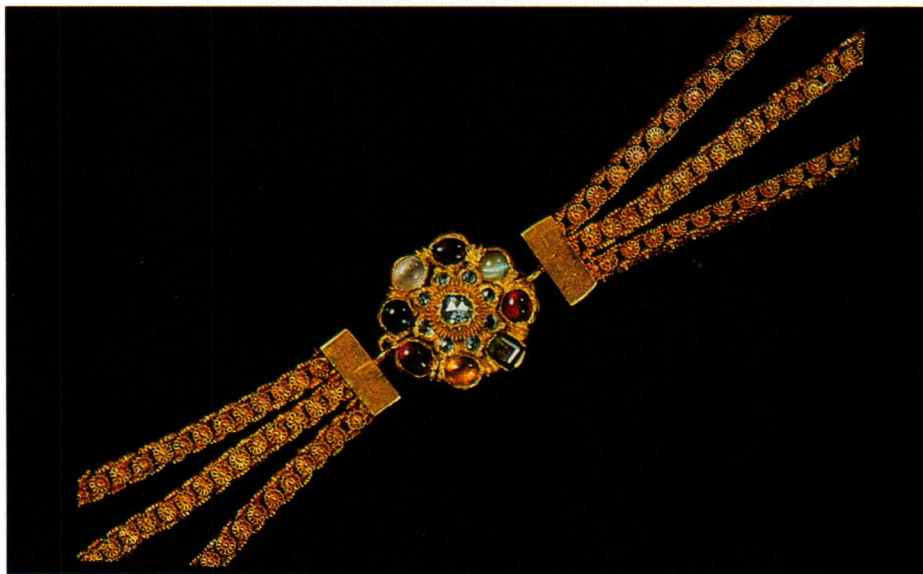
chased with gold inlay. They are believed to have been done under the Royal Command of King Rama I. The King also ordered that a new hilt and

scabbard be crafted of enamelled gold encrusted with precious stones.

Phra Chada Ha Yod - The Five Pinnaced Crown

This crown is also known as the Phra Chada Maha Kathin. It is crafted of gold embellished with enamel and encrusted with diamonds. It weighs 3 kilograms and is worn by the king during important ceremonies such as when His Majesty proceeds on some occasions to offer Kathin robes to monks.

Phra Sangwan Phra Nop - The Bejewelled Body Chain



The fine bejewelled body chain consists of three strands of gold, each measuring 124 centimetres in length. It has a central floral pattern of gold set with nine gems. This body chain was crafted during the Ayutthaya period and is worn by the king during coronation ceremonies.

Phra Sangwan Phra Nop.

Phra Sangwan Nopharat - Body Chain of Nine Jewels



The Phra Sangwan Nopharat, or the body chain of Nine Jewels, was crafted during the reign of King Rama I and consists of two strands of gold each measuring 176 centimetres in length. There is a floral design of 36 flowers encrusted with alternating coloured gems comprising diamond, ruby, emerald, yellow sapphire, garnet, spinel, moonstone, cat's eye and zircon. It is used by the king in coronation ceremonies and other important functions when full Royal Regalia is worn.

Phra Sangwan Nopharat.

Phra Saeng Dap Fak Thong Kliang - The Gold Scabbard Sword

This sword is considered of prime importance by the Kingdom as it was crafted by the royal hand of King Rama I. The original scabbard was made of wood embellished with black lacquer. It became the custom for Thai kings to present the sword to their hier designate changing the

colour of the scabbard from black to red. At the time of the King's demise, when the Crown Prince ascended the throne, the colour of the scabbard would be changed back to black. Later, during the reign of King Rama V, a Royal Command was issued declaring that it was seen fit that a

scabbard of gold encrusted with diamonds be made. The sword was then given the name "Phra Saeng Dap Fak Thong Kliang" and a Royal Command was issued that the sword be placed among venerated objects brought out at the time of major royal ceremonies.

Thap Suang of Rattanakosin Period.



GEMS IN HISTORY



Pendant - Ayutthaya Period.

Precious metals and minerals used for jewellery and ornamentation in Thailand include gold, diamonds, gemstones and coloured stones. In addition to tools, bronzeware and earthenware utensils unearthed during excavations at archaeological sites in Thailand, discoveries have also been made of items of ornaments made from clay, stone and glass, as well as from different types of metals. Scientific examination has shown that these items date back to the time of the Neolithic Age. Examples can be seen in stone beads discovered at Ban Kao, Muang District, Kanchanaburi, and glass and stone beads discovered at Ban Chiang, Nong Han District, Udon Thani, which date back 4,000-2,000 years before history.



Bracelet - Early Ayutthaya Period.



Gold bracelet with gems and pearls.

Glass and stone beads dating back about 1,700-2,000 years have also been discovered extensively in the southern part of Thailand while stone beads from the Dvaravadi period, aged about 1,200 years, have been discovered in Suphanburi in central Thailand.

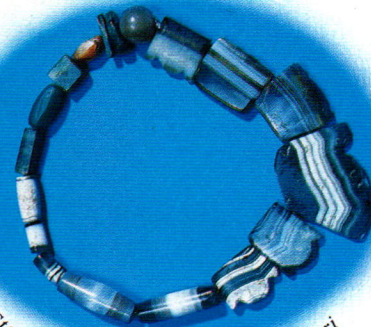
The glass beads discovered, with evidence of having passed through the fusion process, have been found in yellow, red, and blue colours. Natural stone beads are made of stones or varieties of the quartz family such as agate and carnelian, some of which are regarded as semi-precious stones.



Stone carnelian beads from Suphanburi



Stone agate beads from Suphanburi



Stone agate beads from Kanchanaburi



The Golden Buddha of Sukhothai in Wat Tri Mit Withayaram Worawiharn

The stone inscription from the Sukhothai period states : “Whoever wishes to trade in gold, let him so trade”, which clearly implies an abundance of gold during that time, particularly in Chiang Mai, Chiang Rai, Lamphun, Lampang, Phrae, Sawankhalok and Sukhothai.

Gold has been used in the making of Buddha images because of its dazzling beauty and high value which reflects the deep faith in Buddhism shared by Buddhist worshippers.

Though many images have been lost through history, several still remain today. Perhaps the most famous of all is the gold Buddha image cast during the Sukhothai era and now enshrined in Wat Tri Mit in Bangkok. Apart from being cherished and revered by all Buddhists, this image is also a popular attraction among visitors to Bangkok.



Enamelled Gold Water-Bowl



Gold Betel-Nut Set



Ancient dispatches tell of valuable items available during the Ayutthaya period which include "ambergis, fragrant woods, ivory, cardamon, pepper, gold, coloured stones, gold nuggets, gold sand, precious stones of different types and lead".

During the Ayutthaya period gold and precious stones were used for decorations to distinguish rank. For example, "Phra Sangwan Nopharat" -- the Sash of Nine Gems - was worn by kings in coronation ceremonies. This tradition has been carried on to the present day.



Historical records also tell of gold and gem mining in the Kingdom of Ayutthaya during King Narai the Great's reign. At that time diplomatic relations were established between the Kingdom and the Court of France, followed by trade and exchange of ambassadors. The first French ambassador to Thailand arrived in 1685 when a contract was drawn up to monopolize trade in tin from Phuket in southern Thailand. Reference to gold was made in a letter from King Narai to Father Tachard, appointed to accompany the Thai diplomatic mission to France. Among the many subjects of negotiation covered in the letter was Item 9, stating :

Badge and Star of the Order of Nine Gems from reign of King Rama IV (1st Set)

Badge, Star and Ring of the Order of Nine Gems from reign of King Rama V to present.



“The various mines are most important for the benefit to the Kingdom of Siam and allied countries. Doubtless, the mines not only abound in gold, but are easy to mine. Some areas have already yielded so much gold that we have been able to ship 46 caskets of gold to France. These test mines are of great importance in determining the amount of profit to be gained should mining be carried out in them. You shall request His Majesty the King of France to graciously send to Siam the top experts in gold mine operations.”

In 1747, during the reign of King Borom Kot, it was recorded in the chronicles that gold had been discovered at Tambol Bang Saphan, Kui Buri District, Prachuab Khiri

Khan. A royal decree was issued that panning operations were to be performed from the twelfth lunar month of 1749 to the end of the fifth lunar month of 1750. Slightly more than 90 chang (1 chang = 600 grams) of gold were recovered. A proclamation was issued that the gold was to be used to plate the shrine to the sacred footprint of the Lord Buddha (Mondop Phra Phuttha Baht), in Saraburi.

Official records of the Rattanakosin period, which began in 1782, make further mention of gold in addition to the Sash of Nine Gems mentioned earlier. In “Journal Of an Embassy”, John Crawford, a British envoy in the Kingdom of Siam during the reign of King Rama II (1882),

records : “The only gems which are ascertained to be minerals of Siam, are the sapphire, the Oriental ruby, and the Oriental topaz. These are all found in the hills of Chan-ta-bun (Chanthaburi Province)--”. During the reign of King Rama IV, with less gold mining, it became necessary to import it. The use of gold was mentioned in the annals of Somdej Krom Phraya Damrong Rachanuphap that “in 1860 A.D., the year of the monkey, the construction of a mint was completed. Siamese coins were minted, bearing on one side the Phra Maha Mongkut Seal with the multitiered Umbrella of State on either side signifying the Reign of the Monarch, and a white elephant in a disc, signifying the Nation on the other. The coins



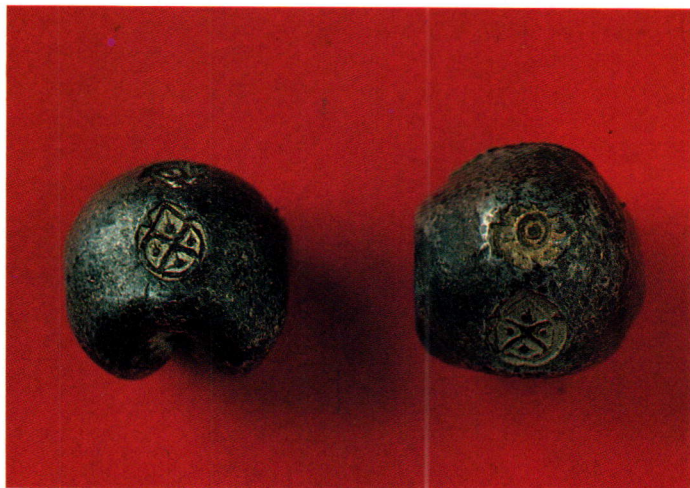
Native Gold from Bang Saphan, Prachuab Khiri Khan.

were of four denominations - 1 baht, a half baht, 1 saleung and 10 saleung (equivalent to one Chinese Tamleung).” The first three coins mentioned were of silver while the last was of gold. Later in 1863, His Majesty the King ordered that gold coins of three sizes be minted for use in exchange, bearing the same impressions as the silver coins.

The largest of these was known as “Tasa”. Ten Tasa was equal to one chang, thus each piece was equal to eight baht (equivalent to the value of the English pound at that time). The middle-sized coin, called Pisa was valued at 4 baht. The smallest coin (which was the gold coin minted earlier), known as “Phad Duang”,

was valued at ten salueng, which was equal to the Chinese Tamleung.

Siamese gold coins gradually disappeared because people began to hoard them like gold bars or use them in making jewellery and adornments. Gold coins were considered too valuable to be used as a means of exchange.



Silver Bullet Money



Gold Bullet Money



Gold Met Kanoon (Jackfruit seed Shape)



Tasa



Phad duang



Pisa

The annals of Somdej Krom Phraya Damrong Rachanuphap tell of the administration of the city during that time. The annals also recorded how taxes were levied on certain commodities such as opium, liquor and tin. The mining of gold was reportedly conducted by the government itself at the Pa Bo Ron mine in Kabinburi by recruiting people from nearby areas to work in the mines. This practice also existed in Prachinburi. Mining operations were supervised by a foreign engineer. A machine shop was constructed to ease the work load. The operation was not successful, however, due to many problems, such as, the supervising officers and the suffering experienced by the recruits. Although Somdej Chao Phraya Borom Maha Sri Suriyawong was assigned to solve these problems the workers were still weakened, and mining in the area had to be suspended.

From that time onwards and up until the reign of King Chula Chom Klao (King Rama V) the number of traders travelling to Thailand rose. Efforts were made to seek natural resources, such as teak and minerals. An Italian national, Angelo Luzzatti, requested permission to mine for gold in the vicinity of Prachuab Khiri Khan. On his return to Europe he announced there that Thailand was rich with high-quality gold, and so foreigners of many different nationalities came to Thailand to request permission to mine for gold. It was mentioned in the annals of the Ministry of Agriculture, prior to the establishment of the Royal Department of Mines and Geology (1891 A.D.), that permits were issued for gold and gem mining by the Minister to the provinces of Narathiwat, Prachuab Khiri Khan, Rayong, Yala, Tak, Prachinburi, and Chanthaburi.

Due to external political problems and domestic problems related to the mining industry, King Chula Chom Klao proclaimed in 1891 A.D. that the Royal Department of Mines and Geology be established under the administration of the Ministry of Agriculture to handle matters related to mineral resources. There were, at that time, no laws governing the administration of mines. This Department was charged with the responsibilities of inspecting matters related to metallic minerals and other elements including mining concessions and contracts for minerals and geology in the Kingdom of Siam.

From 1889 to the time of the establishment of the Royal Department of Mines and Geology, permissions were given with some revocations and additions for people to prospect for gold and precious stones. In 1897 laws on mining were promulgated, with some changes and modifications made before being promulgated again in 1901 under the title "Mining Act B.E. 2444" to be applicable for announced areas. An announcement was gazetted in 1902 that this law was to be applied for the mining of gold and precious stones in eight regions and three provinces. The regions included Prachinburi while the provinces included Chanthaburi and Trat.

Official archives of the Royal Department of Mines and Geology (Dispatches of the Ministry of Agriculture and Commerce No. 6.7/5 in the reign of King Rama V), concerning the discovery of ruby deposits (29 May 1903) in Trat Province, showed that it was reported by Somdej Krom Phraya Damrong Rachanuphap to King Chula Chom Klao that "Rubies have been discovered in Tambol Khlong Aeng Nok in Trat and are presently being mined by forty to fifty people. The area along Khlong Aeng where the rubies have been discovered is about 50 sen (2,000 metres) long". Following this report an announcement was made on 30 May 1903 levying a 5-baht fee for each permit to mine for gems at Tambol Khlong Aeng in Trat, and on 10 December 1903, for each permit to mine for gems in Chanthaburi. The Mining Act B.E. 2444 concerning mining was later amended and the name changed to the Mining Law of



Native Gold in Calc-Silicate



Gold Fusion Furnace at Kabinburi (King Rama V Reign)

1918 (B.E. 2461) during the reign of King Mongkut Klao (King Rama VI), to be effective from 14 February 1918. In 1921 a further announcement was gazetted that this law would also be applicable for diamonds and gemstones.

Little prospecting for and trading in diamonds and gems was carried out before 1857, due to inconvenient means of communication. For example, to reach Chanthaburi, one had to travel by either horse or elephant; to travel to the north, by rowing a boat. Travel became easier with the introduction of steam boats and trains. With the advent of international air travel, Bangkok became, from 1908 onwards, an important regional centre for trade in diamonds and gems.

Apart from domestic mining of precious stones for commercial purposes, gems were also imported to Thailand, especially from neighbouring countries. These include the famed rubies from Burma and the blue sapphires from the Pailin mines in Kampuchea, only a short distance from the provinces of Chanthaburi and Trat.

There were many routes by which gemstones found their way to Bangkok. In the north, entry was made through the province of Mae Hong Son, which borders with Burma. From there gems were sent to Chiang Mai and then on to Bangkok. In the south, entry was made through the province of Ranong (at Victoria Point), and then on eastward to Bangkok. In the east, they entered Thailand through the province of Trat. Most gems entering the country were rubies of various qualities. Clear red and blue sapphires were usually high-priced; the value increasing even more if the stone contained a star. There were also many less valuable stones of lower quality with unclear and varying shades of colour. Gems also entered Bangkok by way of boats coming from Sri Lanka and southern India; most of these gems were of different colours and were classified as semi-precious stones. Blue sapphires from Kampuchea were brought in by way of Aranyaprathet while zircon from Pailin District in Kampuchea entered through Chanthaburi. Blue sapphires are quite well known and are called by some as "blue diamonds".



Jewellery with rubies not native to Thailand.



Rubies in these pieces of jewellery belong to other countries

Following political changes in Thailand in 1932, the Minister of Agriculture, on 25 September 1935, by virtue of the Mining Act of 1918, promulgated laws concerning permits for mining gems in Muang District, Kanchanaburi, as this area was regarded as one of the country's most important gem mining areas.

As gem trading in Bangkok steadily expanded, so did gem pitting and panning within the country, under the Mining Act of B.E. 2461 (1918). A new Mineral Act B.E. 2510, promulgated in the year 1967, replaced the Act 1918 as of 1 January 1968, and is still in force today.

GEMS AND

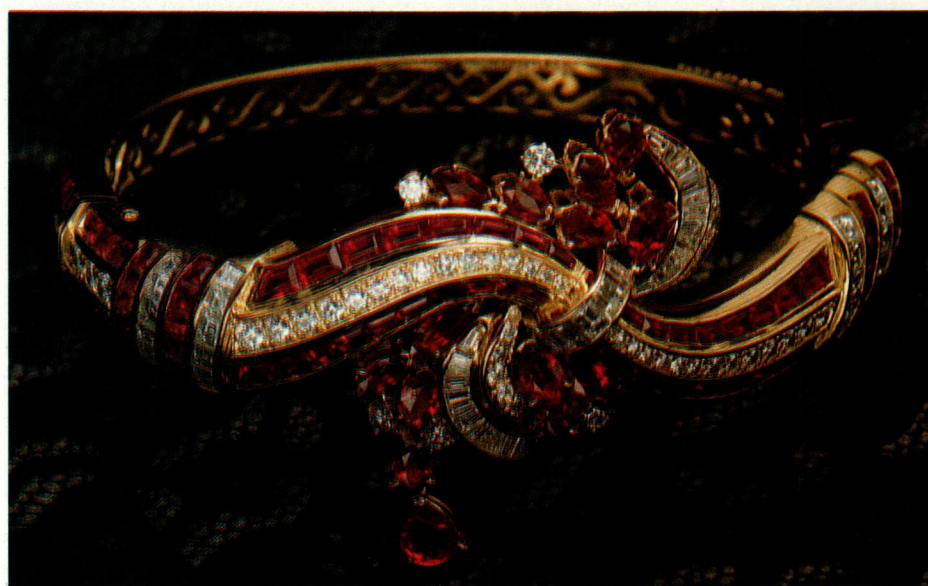


The value of gems varies according to the type of gem, its quality, rarity and its popularity at a given time. Gems are accessible to any member of society, rich or poor. There are three main ways in which gems can be used. First, as body adornments or to show rank and honour. Second, as a form of property to display one's wealth. Third, depending on one's superstitious beliefs, to bring blessings and good fortune, to ward off evil, and even to cure certain illnesses or diseases.



THEIR USES





Since ancient times people have used gems for decorative purposes. Apart from being used in their natural state, gems are also cut and polished to make them brilliant and more attractive. Such beautiful gems are worn on suitable occasions. Examples of this use of gems can be seen at social functions, official receptions, gala dinners and parties, where guests like to decorate themselves to show their official or social status. Some people like to wear them in their daily life as family heirlooms. This kind of display of wealth and status is more convenient than showing off one's stately home or mansion, for the latter cannot be carried around and do not have the flash and sparkle as a gemstone.

Gems and jewellery can be used as property in many ways. They may be priceless family heirlooms. Their owners may use them as a means of ensuring care and attention by family and relatives in old age. They may be given as gifts or rewards for services rendered or in times of trouble. They



may be used as tokens of love, as souvenirs, as engagement gifts or as presents on birthdays or other occasions.

Gems and jewellery are very precious items whose value may increase as time passes. This is because their beauty ensures their demand and, being natural materials, they become more and more difficult to find with each passing day.

A top quality ruby, for example, was valued at 26,000 baht per carat in the year 1977. By the year 1980 the value had increased to 80,000 baht per carat. The rarity of a gem causes its value to increase at an almost unbelievable rate. High quality rubies and sapphires compare very favourably to diamonds, both in value and in price. For example, it would take only a matter of days to find a 100%

perfect diamond, whereas to acquire a 90% perfect large-sized ruby it would take months or even years.

Being valuable items, gemstones and jewellery also have a variety of other uses. They can always be converted to money and used as a means of exchange in times of war or natural disaster. They can be easily carried on the body when travelling and can be used to buy food or even new houses during times of hardship.

Folklore and Gems

Superstitions about gems have been common in Thailand since the days of the Ayutthaya Period and are still believed by some nowadays. One of the most common superstitions about gems is the belief that nine different coloured gems are a blessing. One ancient representation of this belief was the sash of Nine Gems, a royal decoration used to hold the reigning monarch's sword. It is believed that this sash will bring victory to the wearer in battle. The sash is also worn by a king as a decoration of rank at the time of his coronation. Details of this sash appear in another chapter.

Since days long past, Thais have used the nine auspicious gems to bring blessings and good fortune. These are diamond, ruby, emerald, topaz or yellow sapphire, garnet, blue sapphire, pearl or moonstone, zircon and cat's eye (crysoberyl).

These nine gems are considered the best of all gemstones and display the most beautiful colours. It is believed that they can bring blessings to the owner or wearer and can protect him or her from all types of danger. They are said to bring good fortune and generally make one's life more comfortable. They can protect against harm from weapons, enemies, poisonous animals and insects and can even protect against fire. Besides, they can bring success in business and agriculture, give charm to the wearer and attract followers. When these nine great jewels are combined, they give the owner power and influence. These nine auspicious gems are found in popular use everywhere, and are also mentioned in literature.

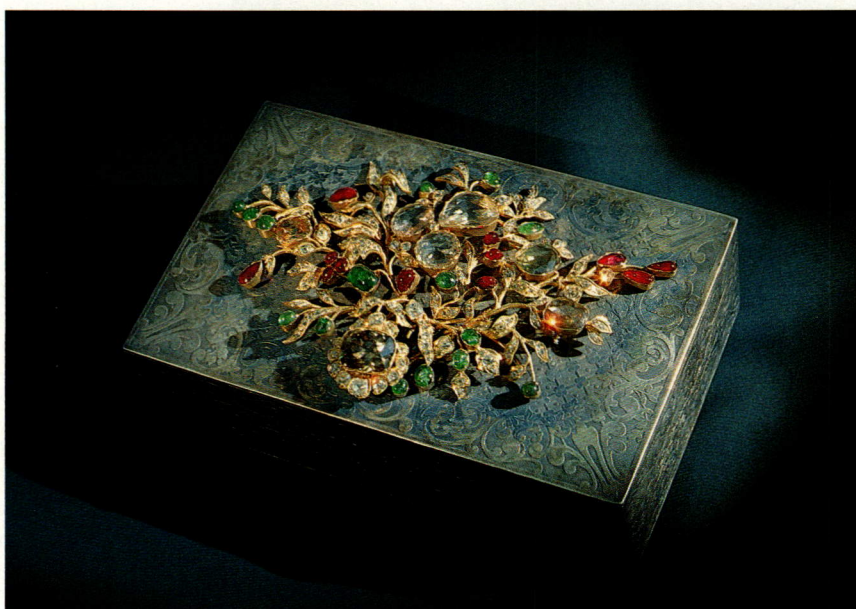




Gold Betel-Nut Box



Gold Betel-Nut Box



Silver Cigarette Box

Apart from the use of these nine gems in making jewellery such as pendants, rings, bracelets and belts, they are used in the Royal Household to decorate utensils such as areca nut containers. They are quite often wrapped in a piece of white cloth or tri-coloured cloth of red, yellow and blue, and buried beneath the central pillar of a house, as a means of bringing blessings on the house. Whereas the wealthy use a diamond to represent the white gem, the less wealthy use a white zircon.

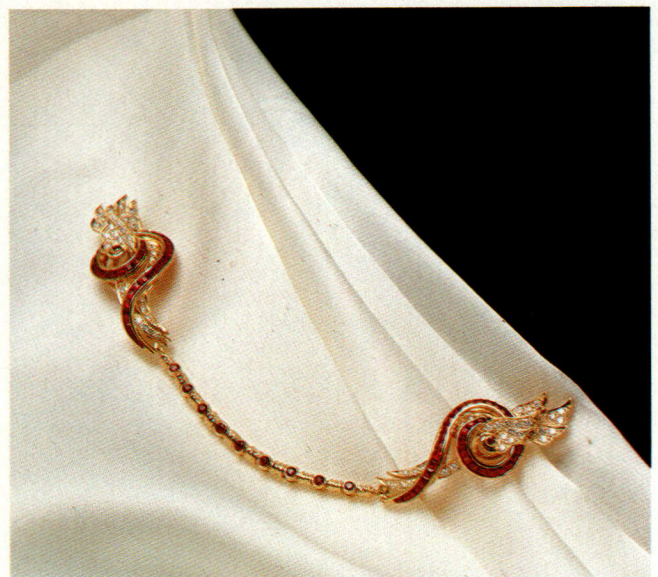


The nine auspicious gems do not have to be used together and are quite often used separately as birthstones, depending on the day or month of the wearer's birth. One born in

April, for example, should wear a diamond, while one born in July should wear a ruby. If the wearer is born on a Monday then the appropriate gem is a pearl.



Ruby ring birthstone for July





There are numerous beliefs about the power of gemstones. They are used by some people to ward off misfortune at the time of a solar or lunar eclipse. It is believed that they can lessen, or totally eliminate, the bad luck which accompanies a solar or lunar eclipse. The position of the planets in relation to the moon or the sun at the time of an eclipse must first be determined by astrological means, however, and the gem relating to that planet be chosen. After the gem is selected, it must be worn on the body for the next six months for full benefits. Gems and their relationship to the planets and days of the week are as follows :

Sun	- Sunday	- red gemstones such as ruby or pink diamond
Moon	- Monday	- White/yellow/milky white gemstones such as pearl or white ruby
Mars	- Tuesday	- coral or deep red gemstones such as garnet
Mercury	- Wednesday	- green gemstones such as emerald
Jupiter	- Thursday	- yellow gemstones such as yellow sapphire
Venus	- Friday	- rainbow coloured stone such as diamond
Saturn	- Saturday	- black stones such as black star sapphire or black spinel
Rahu		- bluish white coloured stones such as sapphire

(Thai folklore says that an eclipse is caused by a demon grabbing hold of the sun or moon. This demon is called Rahu.)

Neptune - a gemstone which has a chatoyant effect such as cat's eye

There are other gemstones believed to abate the adverse effects of eclipses in general, whether they coincide with one's personal planet signs or not. Two gems favoured more than others are tektite and ruby which have a speckled or patchy colour.

Tektite is believed to have come from beyond our universe and is therefore said to have been formed rightfully to avert natural disaster involving the stars. It is therefore, used in making jewellery and for wearing on the body to protect against the possible bad effects of an eclipse. Speckled or patchy coloured rubies are believed to have been formed during the time of a solar or lunar eclipse and can, therefore, also be used to ward off the misfortunes believed to accompany an eclipse. It is further believed that one who possesses a star ruby will never encounter poverty and will tend to have more money than can be spent.

Gemstones which are used to bring good fortune should be of a reasonably large size, the larger the better. They should be thick and very convex in shape, transparent or translucent, and flawless, with no inclusions or dark spots on the inside. If the gem is to be worn as a means of warding off bad luck, then some part of it should be in contact with the wearer. In this way the force or the power will be stronger. This belief is further strengthened by the fact that gemstones are natural minerals, so when they are touched by the rays of the sun, the rays reflect off the gem and come into contact with the wearer. The wearer thus receives the healing properties of the rays combined with the force of the gem.

When gems are used for healing, they are mostly used in the form of granules, uncut and unpolished. These granules are then ground with three other ingredients. Even today, for example, pearls are used in preparing medicines according to Chinese prescriptions.

It can thus be seen that gems really do have a great variety of uses, some readily proven to be real, and others believed as folklore among different people. It is to science that humanity must look for further answers concerning other potential uses of gems.



Ruby from Chanthaburi



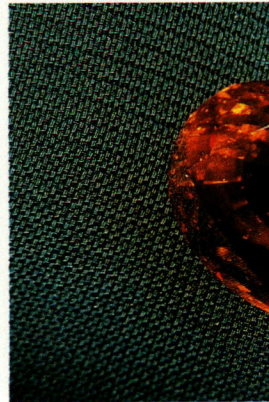
THE SOURCES OF THAI



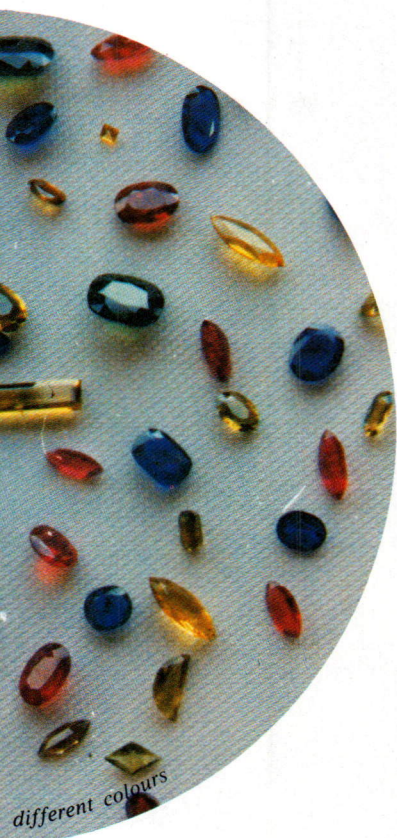
Ruby from Trat



Sapphire from Kanchanaburi



Yellow Sapphire from



Yellow sapphire from Chanthaburi

GEMS

The principal gemstones found in this country are ruby, sapphire, garnet and zircon. Of these the Thai ruby and the Thai sapphire are the best known and constitute a major source of gems sold in foreign markets. Almost all precious corundum of various colours (red, blue, green and yellow) are found in abundance in the eastern and west-central regions of Thailand. Both rubies and sapphires have been found in Chanthaburi and Trat in the east, while sapphires have been found in Kanchanaburi in the west-central

region. Most of the ruby and sapphire deposits are found in eluvial or alluvial placer and residual soils associated with alkaline basalt flows.

Sapphires have also been found in Phrae and Sukhothai in the northern region, as well as in Si Sa Ket and Ubon Ratchathani in the northeastern part of the country. Supplies in these locations, however, are not as abundant as in Chanthaburi, Trat and Kanchanaburi. There have also been some undetailed findings in Chiang Rai and Phetchabun. In the following sections, general information on some of the known gem deposits, especially those of ruby and sapphire, is given.



Chanthaburi



Zircons (loose) from Chanthaburi



Garnets (loose) from Chanthaburi

Ruby and Sapphire

General

Both rubies and sapphires are of the same mineral species, corundum, which is an oxide of aluminium (Al_2O_3). It generally contains 52.91% aluminium and 47.09% oxygen. Corundum crystallizes in the hexagonal system and is characterised by its great hardness ($H=9$) which is second only to that

of diamonds. It generally has a high lustre, a high specific gravity (3.99-4.08), and basal parting. Corundum is found in various colours ranging from pink, red, blue, green, and yellow or various shades of these colours to colourless. Red corundum is known as ruby, all other gem corundum that has colours other than red is sapphire.



Corundum Crystal from Chanthaburi



Loose Sapphires in different colours



Different coloured sapphires from Ban Bang Kacha

- | | | |
|-----------|---|-----------------------------|
| Front row | ● | - Blue sapphire 2 K. |
| | ● | - Yellow sapphire 3 K. |
| Back row | ● | - Green sapphire 12 K. |
| | ● | - Yellow star sapphire 7 K. |
| | ● | - Black star sapphire 31 K. |



First step cut yellow sapphires in various shapes and sizes from Ban Bang Kacha.

Precious corundum from Chanthaburi and Trat was previously known amongst both Thais and foreigners as "Chanthabun gems". Chanthabun is the old name of Chanthaburi Province. The name "Pailin" is also given to blue sapphires from Chanthaburi and Trat as it is considered that they closely resemble the famous blue sapphires from



Sapphires from Ban Bang Kacha

- | | |
|---|----------------------|
| ● | Blue sapphire 2 K. |
| ● | Green sapphire 12 K. |
| ● | Yellow sapphire 3 K. |



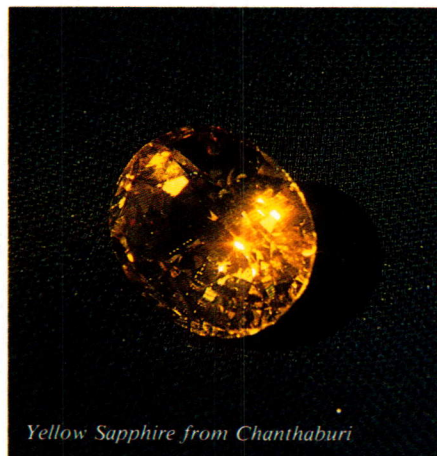
The yellow sapphire varieties called “Bhussarakham” or “Luang (yellow) Chanthabun” were originally thought to be yellow topaz, which does not belong to the corundum family. Even though it was later found out that the yellow gemstones found in Chanthaburi were gem corundum, the original name, “Bhussarakham”, has been retained (Bhussarakham means yellow topaz). Thai yellow sapphires,

the colour of Thai whiskey, are the most popular and fetch the highest price. Yellow sapphires with a tinge of green are known as “Bhus Nam Taeng”. Other varieties are star sapphires. They are almost black in colour. These are normally cabochoned to produce the optical phenomenon known as asterism or the “star effect” or “Phloi Star” in Thai. “Phloi” means “gem”.



Yellow sapphires from Ban Bang Kacha (first step cut and finished)

Pailin District in Kamphuchea. In addition to the name of sapphires in Thai, the green varieties are called “Khiew Song” and “Khiew Morakot” (emerald green). “Khiew” means green and “Morakot” means emerald. In Chanthaburi, sapphires which have a blue top-view colour and a green or greenish-blue side-view colour are known amongst the locals as “Khiew Song”. Those which are of light apple green or similar to emerald green colour are known as “Khiew Morakot”.



Yellow Sapphire from Chanthaburi



Jewellery and Rough Corundum

Rubies are known as “Thab Thim” or “Phloi Daeng” in Chanthaburi and Trat. “Phloi Daeng” means “red gems”. There are also other gemstones which belong to other families but are found in association with rubies and sapphires. Their chemical composition and physical properties differ from those of gems of the corundum family. These include zircons, known as “Pae Thai”, red garnets, known as “Ko Main”, black pyroxenes, known as “Nil Sian”, and black spinels known as “Nil-Ta-Ko”

*Blue star sapphire
from Ban Bang Kacha
18.5 K. (Ring)*



The Chanthaburi-Trat Gem Deposits

The most significant ruby-sapphire concentration associated with basalt in Thailand is the famous Chanthaburi-Trat gem deposits. About 90% of the total ruby and sapphire production comes from Chanthaburi and Trat. Good quality rubies from here are well known on the markets as Siam rubies. In 1982 it was estimated that seventy per cent of the world's high quality rubies come from Thailand.



Black spinels



Loose rubies



Ruby Jewellery (Necklace, Earrings)



Ruby Jewellery (Ring)

In this gem field, there are three distinctive geographic zones characterised by the colour of the gems found : the blue, green, yellow sapphires zone, the blue, green sapphires and rubies zone, and the rubies zone. The first zone is located in the western part of Chanthaburi. The second or middle zone is situated between Chanthaburi and Trat and the third zone is in Trat, close to the Kamphuchean border.

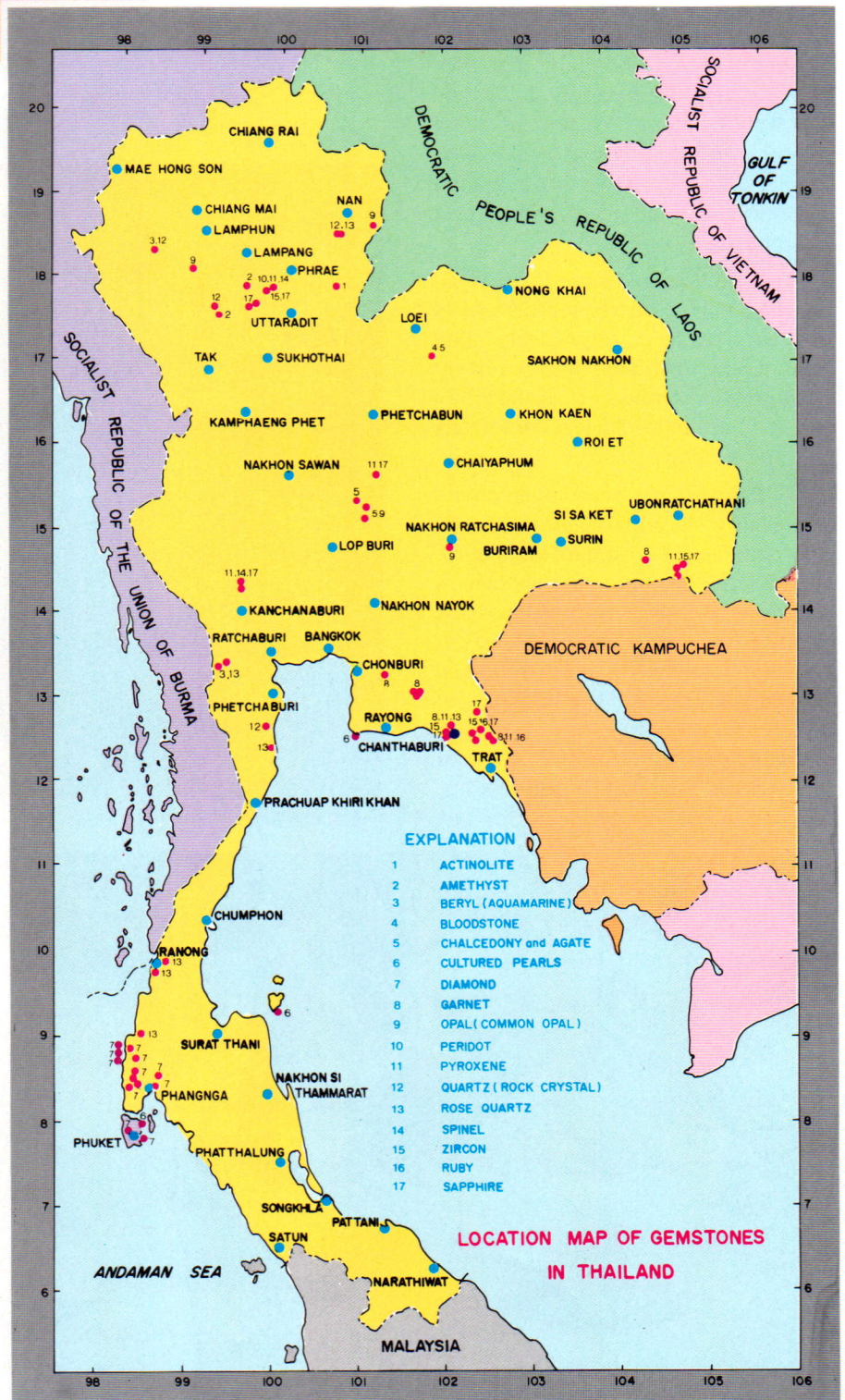


Star Sapphires from Ban Bang Kacha
Front row

- - Yellow star sapphire 10.5 K.
- - Yellow star sapphire 7 K.
- - Blue star sapphire 18.5 K.
- - Black star sapphire 31 K.
- - Black star sapphire 7 K.



Ruby Jewellery Set



1. The First Zone or the Western Region of Chanthaburi.

This zone is one of the oldest and best-known sapphire deposits in Thailand. It is located approximately six kilometres to the west of Chanthaburi. The gem deposits are situated around Khao Wua, Khao Phloi Waen and in the area of Ban Bang Kacha. It is believed that gem mining has been carried out in that region for over 100 years. It is said that in the early days there was no need to search for gems as they were so abundant that they could virtually be picked up as one was walking along. At present, these deposits are no longer as active as in the past. There are two or three small mines with a few pit miners still working in some areas.

Khao Wua and Khao Phloi Waen are small hills 85 metres and 129 metres above the sea level, respectively. Ban Bang Kacha is situated approximately 3 kilometres southeast of Khao Phloi Waen. The land surface is completely flat and swampy.

The area has been covered with quaternary basalt of an area of approximately 3×7 square kilometres. Sapphires are found at relatively shallow depths in deeply weathered basaltic rocks. In some places, such as at Ban Bang Kacha, they are found in the alluvial gravels. The thickness of pay dirt (or Kra Sa) varies from place to place, depending on the nature of bed rocks and the slope of the deposits. In general the average depth of pay

dirt is about 1-6 metres and its thickness varies from 30 centimetres to 1 metre.

Sapphires are found in various colours such as blue, green, and yellow or a combination of these colours. Star sapphire, red garnet, zircon, and black pyroxene are also found. In comparison with all other sapphires, the yellow variety is the rarest and constitutes only approximately ten per cent of all the sapphires mined.

2. The Second Zone or the Area Between Chanthaburi and Trat

This zone takes in every gem deposit within the perimetres of Khlung District in Chanthaburi including the gem fields at Ban Welu, Ban Sai Khao, Ban Ta Kian, Ban Tok Si, Ban Si Siat, Ban Tok Phrom, Ban Ang Et, Ban Khlung, Ban Nong Pla Lai, Noen Chang, Ban Sak Lao, Ban So To, Huai Saphan Hin, Ban Saeng Daeng, Ban Saeng Som and Ban Khao Noi. Another part of these gem fields falls within the precincts of Khao Saming District in Trat, which includes the gem fields at Ban-I-Rem, Ban Na Ta



Rough green sapphires from Chanthaburi



Sieving for gems at Ban Bang Kacha

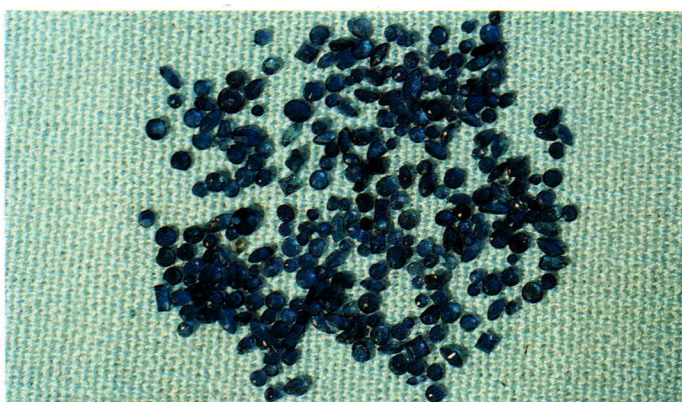


Rough garnets from Chanthaburi

Mi, Nong Bon Noi, Khong Phaya, and Ban Na Wong etc. Gemstones found in this zone are rubies and blue and green sapphires. They are generally found in basaltic soil and in stream gravels.



Loose sapphires (coarse grain)



Loose sapphires (fine grain)



Rough blue sapphires from Chanthaburi

The proportion of rubies and sapphires varies according to locations. For example, almost 100 per cent of gems mined in the vicinity of Nong Bon Noi, Khong Phaya, and Ban Na Wong are rubies. Almost all of the gems found in Ban Bo-I-Rem are blue and green sapphires. In other gem fields, rubies and sapphires are found in varying quantities.



Rough blue sapphires from Ban Bo-I-Rem



Rough zircons from Chanthaburi

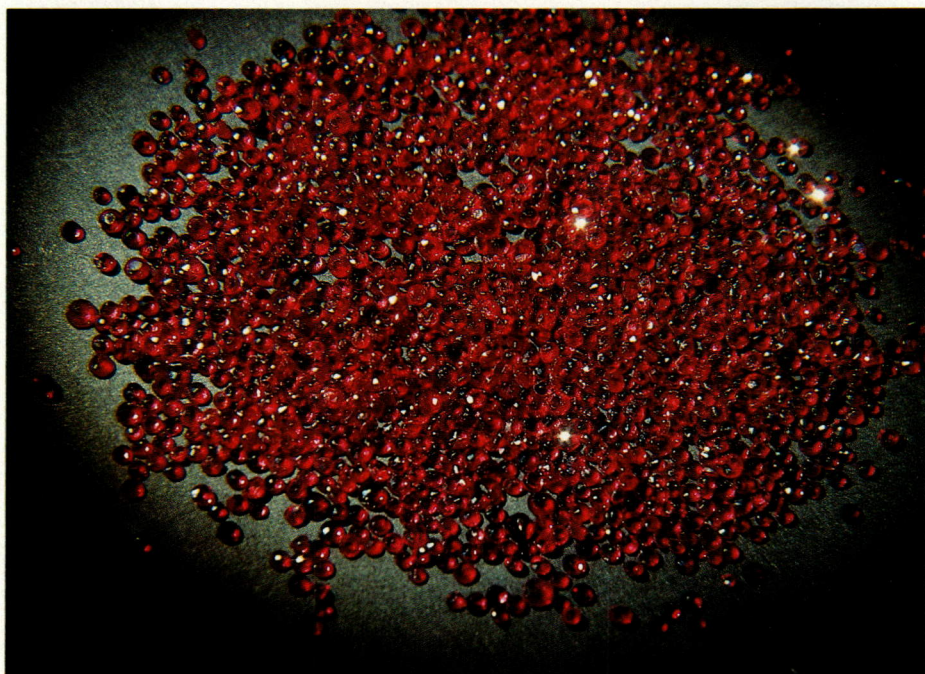
Sapphires generally have various shades of blue-green. Yellow sapphires are found only in small quantity. Good quality rubies come from several sources at Ban Welu and Ban Tok Phrom. In these deposits pink, pinkish-red, orange-red and some reddish-purple rubies are generally found whereas although some fine coloured rubies are also found at Ban Na Wong, the rubies found are mainly purplish red.

Zircon, ilmenite and magnetite are the common coarsely crystallised minerals associated with corundum deposits. Zircon is most commonly found to a great extent at Ban Welu, Ban Sai Khao, Ban Tok Phrom, Ban Klang, and Ban Nong Pla Lai.

3. The Third Zone or the Area in Trat

In Trat, rubies are found in Nong Bon and Bo Rai areas of Bo Rai District. The Nong Bon area, 40 kilometres east of Chanthaburi, includes the gem deposits at Ban Sua Dao, Ban Nong Bon, Noen Tak Daet, Pik Ka and Khao Khat. The other area, Bo Rai, approximately 35 kilometres north-northwest of Trat or 14 kilometres southeast of Ban Nong Bon includes Ban Ta Bat, Ban Pa-a, Ban Mun Dan, Ban Tak Waeng, Ban Ta Ngam, Ban Noen Chali, Ban Sa Yai, Ban Wau Kai and Ban Non Si.

Rubies are found in the residual basaltic soil and alluvial gravels or in the streams developed in the nearby basaltic terrains. Rubies from the Bo Rai area often display pinkish-red, rose-red and intense-red as the dominant colours and generally contain fractures known as "Lai Thai". It is considered that the colour of red corundum from the Bo Rai area is finer than that of other corundum found in other areas. The Nong Bon rubies generally have a purplish-red or a reddish-purple colour.



Loose rubies (fine grain)



Rough rubies from Nong Bon



The Kanchanaburi Gem Deposits

The Kanchanaburi gem deposit is located in Bo Phloi District, about 25 kilometres north of Kanchanaburi. It used to be one of the principal sources of precious corundum. At present, the gem business in Kanchanaburi has diminished as a result of the paucity of gem discovery and only a few local

residents can still be found digging for gems today. Sapphire deposits occur scattered in red basaltic soil and in alluvial placer near the basaltic outcrop.

Blue sapphires are the most important gems found in Kanchanaburi from where good-quality blue sapphires

derived in the past. It is stated that the colour of blue sapphires from Kanchanaburi is more beautiful and more brilliant than those from Chanthaburi, or Pailin in Kampuchea, but the colour is not even throughout the entire gemstone. Sapphires are found in varying shades of blue ranging from pale to dark blue. Stones with a fine blue sheen are now rare. Sanidine, black spinel and black pyroxene are found in association with sapphires in alluvium and also are embedded in basalt.

In 1978, a new sapphire deposit was found at Ban Chong Dan, approximately 6 kilometres by road to the north of Bo Phloi. Sapphires occurring in alluvium are probably derived from basalt which has completely eroded away.



Nil Sian

Phrae and Sukhothai Gem Deposits

The first sapphire deposit in Phrae was discovered at **Ban Bo Khaeo**, Denchai District, so named because of the richness of the gem-bearing streams in this area. Although the deposit has long been known, the Phrae gem field has only been mined intermittently and there has been only small production.

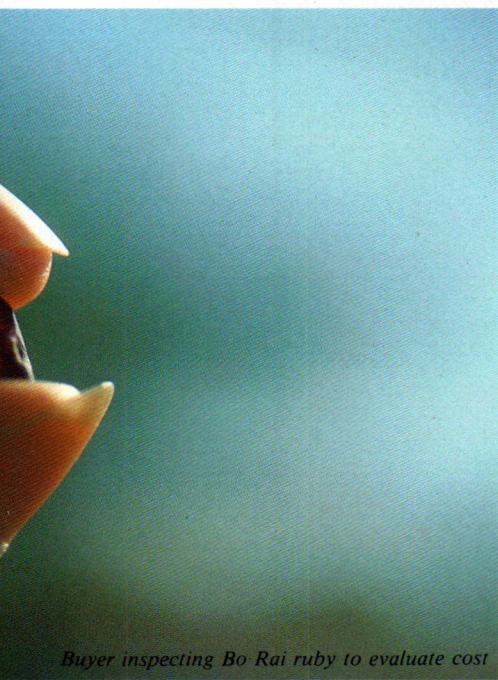
All of the deposits being exploited in Phrae are of recent alluvium in the streams which flow through basaltic rocks such as at Huai Si-Siat, Huai Wao Daeng, Huai E Toe, Huai Mae Khanung and Huai Mae Sung. Sapphires

are found associated with black spinel, sanidine, magnetite, aluminous augite, olivine, and zircon. The average grain size of sapphire is about 3-5 millimetres and never more than 1 centimetre in diameter. Some crystals are of fair quality, but they usually contain flaws. Phrae sapphires generally have a milky colouration, though some fine light-blue crystals have been discovered. At Sukhothai, sapphires are found in the area of Ban Huai Po - Ban Satho in Si Satchanalai District, situated approximately 25 kilometres southwest of the Phrae sapphire deposits.

Ubon-Ratchathani - Si Sa Ket Gem Deposits

Ubon-Ratchathani and Si Sa Ket are situated in the southeast quadrant of the Khorat Plateau, near the border between Thailand and Kampuchea. Sapphires are found at Huai Ta Ak and Plan Thung Yao, in Kantharaluk sub-province, Si Sa Ket, at Ban None Yang, Ban Kok Sa-ard and Ban Ta Koi, in Nam Yuen sub-province, Ubon Ratchathani. The deposits have been mined intermittently.

Gem deposits are recovered from the alluvial gravels along the banks of the stream and in laterite (e.g. at Plan Thung Yao area). The main working area is Ban Ta Koi where sapphires are usually found beneath loose sand overburden which is about 1.5 to 2 metres thick. The gem found consists of at least 80 per cent zircons, blue and green sapphires and accessory minerals such as garnet, magnetite, clinopyroxene, ilmenite, black spinel and olivine.



Buyer inspecting Bo Rai ruby to evaluate cost

Other Gemstones

Deposits of other gemstones in Thailand are shown on the map in figure 1. Although occurrences in most areas are not commercially viable or suitable for the gem markets some stones, such as red garnet and zircon found in association with gem corundum in Chanthaburi and Trat which are of sufficient quantity and quality, can be bought individually by those interested. Other stones such as rock

crystal, agate, chalcedony, sardonyx, common opal, sanidine, black spinel and pyroxene, are used only for the domestic gem markets. Actinolite, bloodstone, rose quartz, pale green beryl and greenish blue beryl (aquamarine) are suitable only for mineral collection.

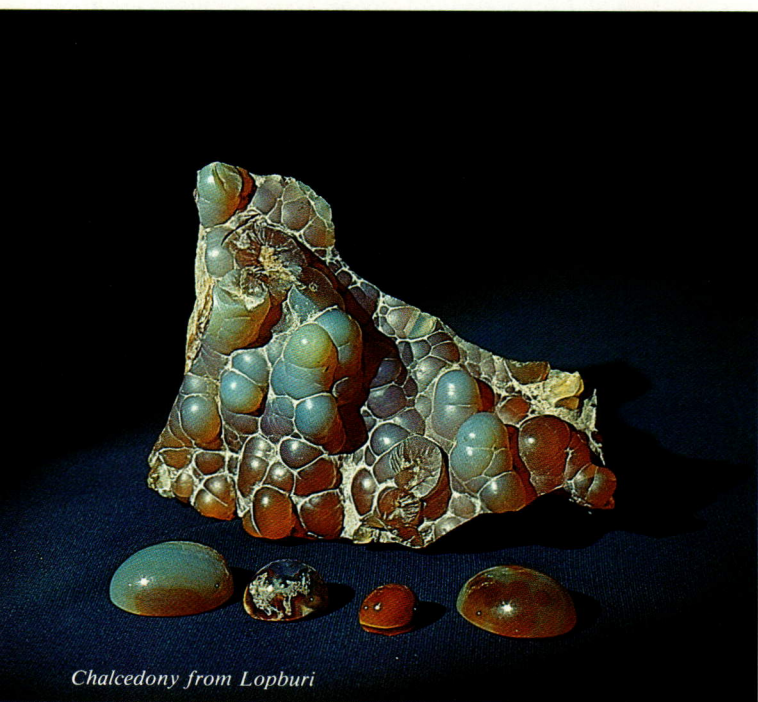
Although diamonds are not being mined in Thailand, small deposits



Amethyst from Lampang



Agate from Lopburi



Chalcedony from Lopburi



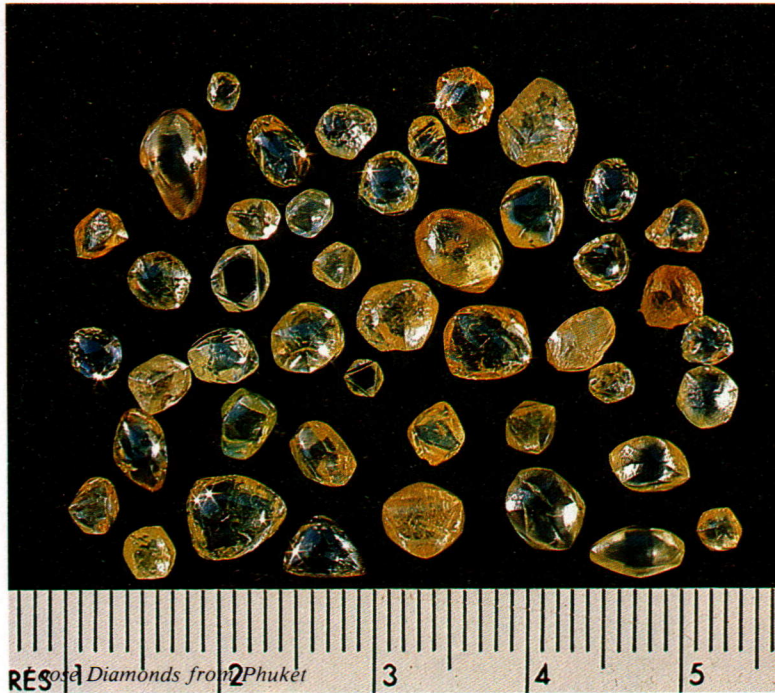
Carnelian from Lopburi

have been found in tin mining areas in Phuket and Phangnga where some good quality diamonds have been recovered as by-products of placer tin mining. Diamonds have also been found in the offshore area of Ao Kham, to the southeast of Phuket Island. Within the last 12 years, diamonds have often been found associated with tin near-shore and in the areas from Ban Bang Sak to Ban

Thung Tuk, Takua Pa District. It has been reported that diamonds can also be found in offshore areas as far as six kilometres from the shoreline. The source of diamonds is not definitely known. Thus far, no kimberlite, a typical source of diamonds, has been found in Thailand. The origin of diamonds still requires further investigation.



Common Opal from Lopburi



Diamonds from Phuket



Beryl (aquamarine) from Uthai Thani



Tie pin and loose diamonds from Phuket

Pearls are another type of gemstone found in Thailand. Natural pearls have been found in the waters around Phuket Island and Ranong in the southern part of Thailand, but not in abundance, however. To increase the quantities available to meet market demands, pearl farming was introduced in Thailand in the year 1961. The first farm was set up near Phayam Island in Ranong. It was later moved to Yao Yai Island in Phangnga and then again to Na Kha Noi Island in Phuket. There is one other farm on Raed Island in Chonburi and another on Mat Sum Island in Surat Thani. Blister pearls are another type of pearl cultured in Thailand and farms culturing these pearls can be found on Na Kha Yai and Rang Ik Islands in Phuket.



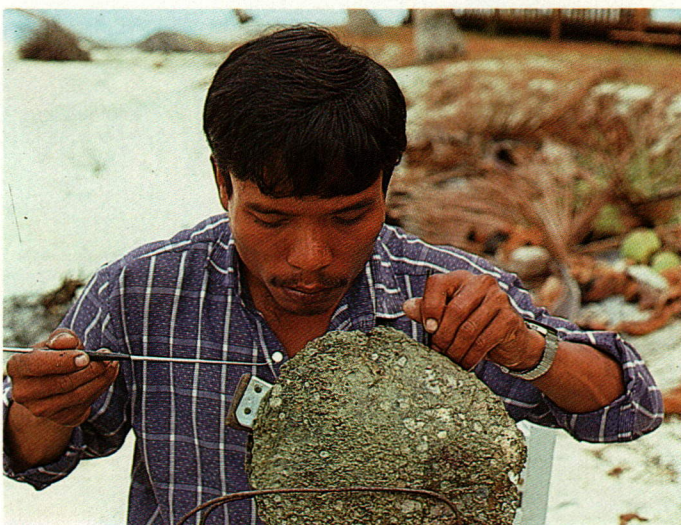
1 Boat used by local workers when diving for pearl oysters during harvesting.



4 Workers scrape residual such as barnacles, crabs and seaweed from the shell of the mollusc before stacking them in the processing hut



5 Mollusc after cleaning



7 Thai worker implanting nucleus in the mollusc



8 After the nucleus has been implanted the mollusc is returned to the raft



2 Pearl oysters being send for weighing



3 Cultured pearl molluscs are removed from the raft so the nucleus can be implanted.



6 Molluscs being prepared for implanting of nucleus.



6 Molluscs being prepared for implanting of nucleus.



8 After the nucleus has been implanted the mollusc is returned to the raft



9 Rafts for culturing pearl molluscs at Madsum Island near Samui Island.



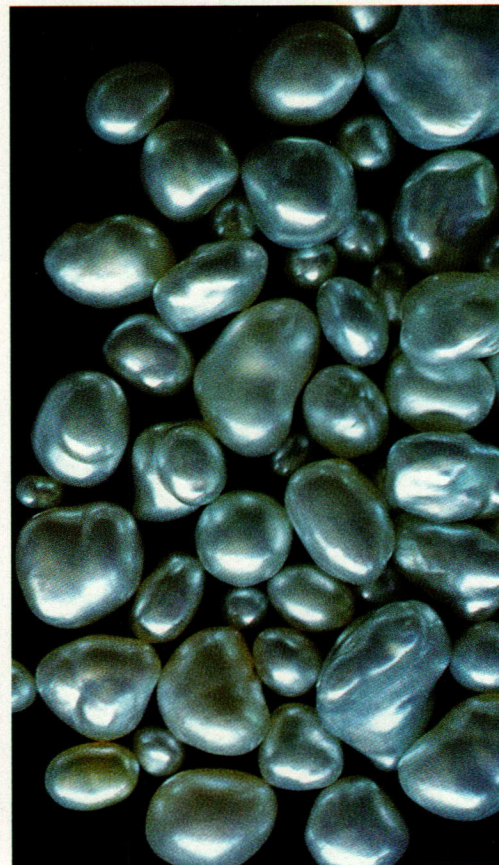
10 Thai worker opening the mollusc to remove the pearl. Surgical instruments are used for this purpose and for implanting the nucleus.



11 Pearl in a mollusc.



13 Cultured and natural seedless pearls



13 Cultured and natural seedless pearls



12 Largest pearl ever discovered. 3 cm. in diameter.



14 Pearl molluscs.

The continuing search for minerals often leads to the discovery of unexpected deposits of precious and semi-precious gemstones. This encourages further exploration and as

long as the search goes on and deposits continue to be unearthed, Thailand will continue to be one of the leading gem suppliers to world markets.

Most of the early work in Thai gem fields was done entirely by hand. Even to this day where the terrain is difficult much work is still being done manually.

The pits are dug to the depth of the gem-bearing gravel layer (paydirt). The width of these pits are about 1 metre and vary in depth from 2 to 10 metres depending on the nature of the paydirt at each locality. Some pits are only a few metres apart and are strengthened with planks or bamboo sticks to prevent the walls from collapsing.

Simple tools used in mining include shovels, spades, buckets and sieves. The screens or sieves are made of perforated sheets of steel. It is the practice of some workers to stick a sharp, long steel rod into the ground in order to measure the depth of the pit to the bed rock. If the pits are too deep and ground water leaks into the pits, a water pump and hand windlass are used.

At Khao Phloi Waen in Chanthaburi, and Bo Phloi in Kanchanaburi, a long bamboo pole with a bucket attached to one end is used to hoist up the gem dirt. In some pits the workers extend a short horizontal tunnel at the bottom of the pit so that the gem-bearing layer can be followed. Such a tunnel, however, is very hazardous and also leads to the problem of invading another's pit.



GEM MINING & MARKET



Gem-bearing gravels were dug up and piled around the pit



Workers used a screen or sieve to find



Some used a knife to hack into the pile. Gems were found by the knife striking the substance.

Excavated material is placed in the sieve so that the gravel, sand and clay is washed off. Larger pebbles are picked out by hand and discarded so that rubies and sapphires can be more easily seen. Sometimes knives are stuck into the piles of gravel. If gems are present there is the sound of the knife striking something metallic or hard. This method can be used only by those very experienced in sapphire and ruby separation.

Primitive mining at Bo Phloi, Kanchanaburi. A long bamboo pole with a bucket attached to the end was used to hoist the gem dirt up.

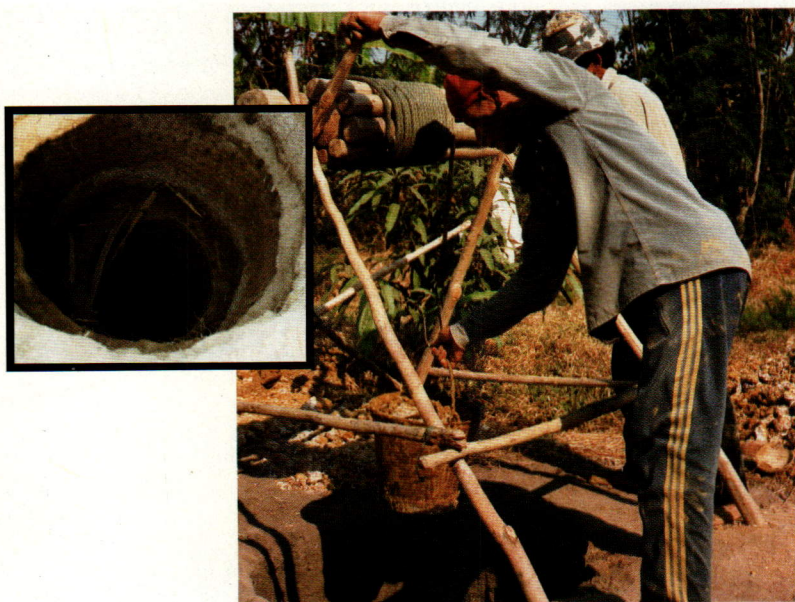


Gem pits in Bo Phloi. The pits are strengthened with bamboo to avoid caving in. Hand windlass was used instead of a long bamboo pole.



The width of the pit is about 1 metre in Diameter

Gem-bearing gravels in the pit are brought up in a tub





Over the past decade machines have gradually replaced the manual mining method. Most of the mining methods used involve the same principles as those used in alluvial tin mining in the southern part of Thailand with some adaptations to recover corundum. Some more up-to-date mines use a common device called a jig (or "yag" by the Thai miners) to separate the gem obtained during operations. The material remaining on the sieve or punched plate of the jig is sifted by hand.

Sapphire mine at Bo Phloi, Kanchanaburi. Concentration of the sapphire-bearing gravel on the screens. Sand and clay are washed off by a water cannon.



The first attempt at mechanised mining was made at Ban Bo Na Wong in Trat. Mechanised mining is presently practised at several locations in the Chanthaburi-Trat gem fields, such as in the Bo Wen, Tok Phrom, Bo Khlang, Nong Pla Lai, Nong Bon and Bo Ra areas.

Sapphire pits in residual basaltic soil, Bo Phloi, Kanchanaburi. Note the basalt outcrop in the background.



Selecting sapphire at Bo Phloi area, Kanchanaburi. The worker is protected from the sun by a thatched roof.

Small gem mining operations are generally carried out by teams of workers or prospectors. Gem-bearing material consisting of stream alluvium and weathered basaltic rocks is worked partly by hand and partly by bulldozer. For the simplest operations, the gravel is shovelled from the bed of a stream, or from the bank, and placed directly in the gem-saving device. Alternately, the material is washed down and concentrated in narrow ground sluices and wooden sluice boxes within or near the bed of the streams. Large boulders are rolled aside or stacked.

In some deposits where the work is carried out at a high elevation (about 100 metres above the ground) water is supplied to the mine by means of small aquaducts and pipelines. At Khao Khad, north of Nong Bon, for example, water is conveyed from sources in Khlong Aeng and its tributaries.

Ruby mining at Nong Bon, Trat province.

The ruby-bearing gravel is sucked up by a gravel pump and transported by a pipe into a trommel and then washed over a series of jigs in which the heavy fraction (including ruby) is retained.

In the case of relatively large scale mining operations, miners have their own individual methods for removing paydirt. At several localities, the overburden is removed by bulldozer and/or excavator and then the gem-bearing material is loaded into trucks and taken to a palong to concentrate gem corundum. The gem bearing material may be dumped at a convenient site and the sand and clay washed off by means of high pressure water cannons, or it may be concentrated in narrow ground sluices.

Monitors at work in a ruby mine at Nong Bon. Monitors cut into the mine face breaking up the ruby-bearing material with jets of water. A bulldozer is seen at work on the horizon assisting in removing the basaltic soil. Gem-bearing material has been washed down through concrete palongs. The jigs over which the water, sand, and gravel flow are clearly visible at the end of the palongs. Ruby and associated heavy materials sink to the bottom of the jig screens.





Some mines use bulldozers to remove basaltic soil, such as at the Su Dao deposit at Nong Bon, before washing with monitors or high pressure water cannons. The material is transported by water into a series of concrete palongs and passed into jigs at the end of the palongs.

Back hoes dump weathered basalts into the rotary tromel to separate coarse gravels from sand and gem.



Jigs are used to wash soil or clay out of sand and gem.



Other mines may employ the use of a back-hoe to remove the gem bearing material before passing through a grizzly made from a series of parallel steel bars in order to remove the larger pieces of rock. The remaining material is then sucked up by a gravel pump and transported by a pipe onto a palong. The corundum concentrate is then collected in a jig which has been set up near the end section of the palong.

The workers collect fine grain materials after passing through the jig, to the mine plant for hand selection.

Another method is to strip the deeply weathered basalts, or gem dirt, with an excavator or a back hoe and dump it into a rotary trommel so that the coarse gravel fractions can be separated from the sand and gem and then washed into the jig. Corundum is collected everyday and taken to the mine plant for hand selection. Of the different mining techniques in current usage, this type is said to entail the lowest production costs.

Gem washing at Ban Tak Waeng, Bo Rai district, Kratie province : The gem washers put their sieves in the water, washing and sorting for gem.



Hand sorting of the jig concentrates : After the gem-bearing material has been separated through the jigs, some miners bring all the concentrates back to the mining camp where they search for gem under electric light.



Gem Markets

Rough gemstones may be sold at the mines, at the gem markets of the districts or in Chanthaburi and Bangkok. There are two kinds of sales. One is selling per piece in the case where the stones are of good quality, and another is selling by bulk or wholesale with a composite mixture of high and low quality stones.

Gems Market at Bo Rai starts early in the morning till 10 a.m. everyday





Gems Market at Bo Rai start early in the morning till 10 a.m. everyday



Gems market at Rong Si Mahaloi, 8 kilometres west of Chanthaburi : The stones are being displayed to the gem dealers.



Gems market at Nong Bon, Bo Rai district : Groups of curious prospectors flock around the tables.

There are three well-known gem markets (or Talat Nat Phloi) in the outskirts of Chanthaburi at Rong Si Mahaloi, at Nong Bon, and at Hu Thung in Trat. The first gem market is 8.5 kilometres by road (highway no.3146) to the west of Chanthaburi. It is located in the area of gem deposits at Khao Phloi Waen. It is the first gem market established in this gem mining region. Nong Bon and Hu Thung gem markets are situated in the vicinity of Nong Bon deposit and Bo Rai District in Trat. These gem markets can be easily reached by Sukhumvit Road (highway no.3) through Ban Saen Tung, approximately 42 kilometres from Chanthaburi, then going further north on the road for another 36 kilometres to Nong Bon. At 27 kilometres north of Ban Saen Tung, there is a branching road for another 8 kilometres to Bo Rai. Visitors should be there well before 10 a.m. after which time the markets are closed.



Gems market at Bo Pai, Trat, in the Siam Ruby Fair held from 10-12 Jan. 1987



The important gem market in Chanthaburi town is located on Sri Chan Road, in the area around the junction of this road and Kra Chang Lane where there are hundreds of stalls and jewellery shops. It is interesting to note that at least 50 per cent of rubies come from Trat, but gem trading is more widespread and flourishing in Chanthaburi where more



Buyer inspecting ruby to evaluate cost

than 200 lapidaries are in operation. This is probably because nearly all gem merchants come from Chanthaburi and also because gem cutting and polishing and all other gem business transactions are conducted in Chanthaburi. For lovers of gems and jewellery it would be worthwhile to visit the original sources and markets at Trat and Chanthaburi.



Buyer inspecting ruby to evaluate cost



Jewellery shops in the Siam Ruby Fair



EXPORT OF GEMSTONES AND JEWELLERY

VALUE : MILLION BAHT

	1982	1983	1984	1985	1986 (JAN-NOV)
GEMSTONES EXPORTS	4,650.18	6,205.86	6,130.06	6,350.20	7,322.8
Rubies	2,088.7	2,762.3	2,596.0	2,599.5	2,986.7
Blue sapphires	1,839.9	2,465.1	2,233.1	2,498.0	2,817.3
Diamonds	259.1	405.5	624.7	621.3	879.2
Others	462.5	572.9	676.2	631.4	639.6
JEWELLERY	588.33	1,030.59	1,254.51	2,168.34	4,452.3
Gold	365.6	675.3	932.9	1,691.6	3,257.6
Silver	211.8	288.6	315.8	444.8	1,128.2
Others	10.9	63.8	5.1	31.9	66.5
Total	5,238.5	7,233.5	7,384.8	8,518.5	11,775.1

GEMS AND JEWELLERY EXPORTS TO MAJOR MARKETS

	1983	1984	1985	1986 (JAN-NOV)
US	1,617.1	1,964.4	2,736.4	4,292.2
Japan	1,717.0	1,164.8	1,375.0	1,991.0
Hong Kong	965.7	1,209.1	1,231.1	1,237.7
Switzerland	1,071.9	557.8	825.8	1,036.2
West Germany	398.5	390.2	329.2	504.0
Others	2,429.0	2,088.5	2,022.0	2,748.3
Total	7,233.5	7,374.8	8,518.5	11,809.4

SOURCE : CUSTOMS DEPARTMENT

NOTE : NOT INCLUDING PEARLS AND SYNTHETIC STONES

Gem identification is a complicated and difficult process which requires a basic knowledge of mineralogy or adequate experience in handling gems. The process of identification becomes even

more difficult if the stone to be studied has already been cut and polished. This is not so with uncut stones as in such cases it is easier to see the crystal form and to perform tests for hardness and other physical properties etc. In order to help the buyer feel more confident when shopping for gems and to reduce the chances of deception, some criteria for making a simple gem appraisal without the use of major gemological instruments are given. It should be mentioned, however, that these criteria given are only general guidelines. They must be applied with discretion and they are not absolutely reliable. To assure the quality of the gem, gems or jewellery shopping should be done at established and reputable jewellers, particularly ones which are awarded with a certificate or a form of guarantee or those recommended by the Tourism Authority of Thailand. Although the prices at such places may be a little higher, reliability and quality are assured.

There are certain visible qualities such as beauty of colour, brilliancy, fire and lucidity which gemstones should possess. The first noticeable thing in gemstones which may help classify them into different groups is colour. It is not unusual for a particular type of gem to come in a variety of colours and even though the colour may vary only a little, it can be a very important factor which determines the value of the stone, particularly in the case of the more precious stones such as rubies. Colour thus plays an important part in determining the value, the type of gem and the family from which it comes. Here we shall only refer to rubies, sapphires, garnets and zircons, which are the more

important Thai gems for sale in gem markets in Thailand.

Both ruby and sapphire are minerals of the corundum family. Red corundum is called ruby. Other gem corundum having a colour other than red is known as sapphire. Thai rubies are found in various shades of red ranging from an intense red to a light red, orange-red, pinkish-red, and pink. Each shading of red has a purplish tinge blended in. The degree of the blend varies according to location. In other words, it depends on the nature of occurrence of minerals in the deposits. For example, Thai rubies from Nong Bon, Trat have a more purplish tinge than those from Bo Welu and Bo Rai in Chanthaburi and Trat respectively.

There are many minerals which are red in colour, for instance, rubies, garnets, and spinels. Garnets and spinels are another type of gemstone sometimes fraudulently sold as rubies. However, their red colour is not exactly the same. The red of the garnet is generally darker than the ruby red. The colours of garnets are more between brownish red and blood red. Only very few Thai garnets are of a colour similar to the red of the rubies. Thai garnets are found only in brownish red. Pinkish-red garnets which are available for sale in the Bangkok markets are in fact rhodolites from Africa.

Apart from the difference in colour, there is also a difference in the degree of hardness between ruby and garnet. Garnets are softer and more brittle than rubies. They are not sharply faceted and tend to chip and wear more easily. The degree of brilliancy is also less than that of rubies.

Pink and red spinels, also known as ruby spinels, are generally from Burma. Spinel is normally softer and lighter in colour than rubies. They fluoresce when placed beneath the short wave ultra-violet light while Thai rubies do not. Colour examina-

SOME CRITERIA FOR THAI

tion by the naked eye alone is extremely difficult and, in addition, the use of gemological instruments such as a refractometer and a spectroscope is required. Hand lens or microscopes are generally used in looking for different types of inclusions inside the stones. Inclusions found in rubies and spinels differ in that spinels in general, unlike rubies, do not have silk lines.

Spinel found in Thailand does not come in red and pink but is found only in black. It is known by the name "nil-ta-ko" and is sometimes cut and sold at a low price. This stone is also carved and used together with black pyroxene in various ways for decorative purposes.

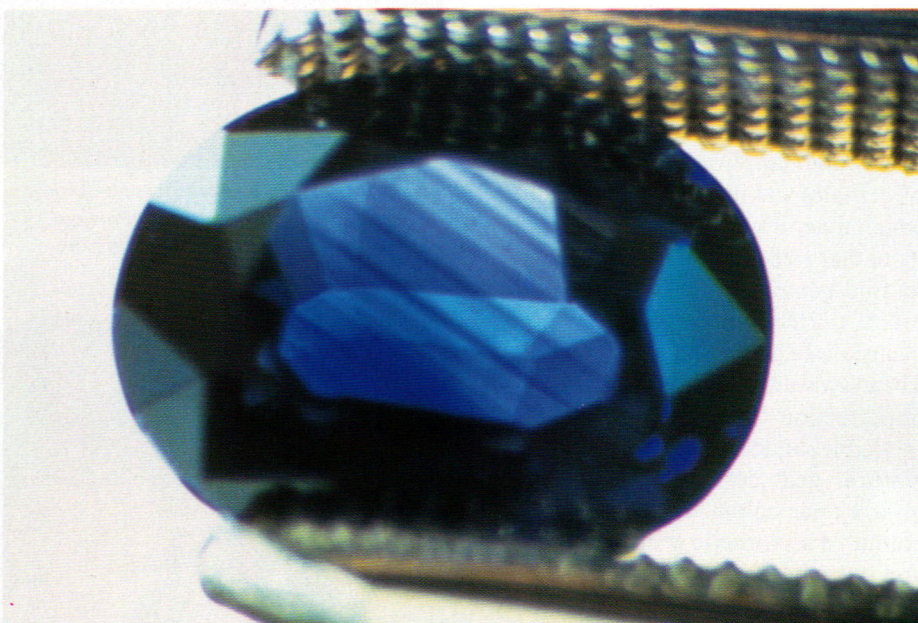
One simplest, though not conclusive, test to help identify corundum, is the test for dichroism or the two-colour effect. Corundum is a double-refractive mineral, which means there are changes in the depth of colour when the stone is viewed from different angles. By this means, ruby can be distinguished from garnet and spinel of a similar colour, as garnet and spinel are single-refractive minerals and therefore show no trace of dichroism. They show an even colour from every angle. Dichroism can be clearly observed with the aid of a dichroscope.

Thai sapphires are found in three colours only : blue, green and yellow. There are very few sapphires in purple, like amethyst or alexandrite. There are translucent as well as opaque sapphires which are encaboched giving star effects known as star sapphires. The star normally has six rays, intersecting at the angles of 60°. These are found in two types: blackstar sapphire and golden-star sapphire, the latter being the more valuable. Milky white or pale bluish grey sapphires, with or without a star, are also available for sale in the Bangkok markets, but it is more likely that they come from Burma as they are not found in Thailand. These are known as "white-star sapphires".

Thai blue sapphires vary, with regard to colour, from pale blue to dark or inky blue, with green shading on the inside. However, fine quality blue sapphires have also been found. Green sapphires are generally found with a range of colours varying from pale green, through yellowish-green, greenish-yellow and bottle green. Green sapphires which are available in markets everywhere come from Thailand and Australia and it is rather difficult to tell the difference. It is generally agreed, however, that green sapphires from Thailand have more brilliancy and are brighter and clearer in colour than those from Australia. It is also well known amongst Thai gem cutters that green sapphires from Thailand are slightly harder than those from Australia, but the buyer will not be able to recognise this unless a careful test for hardness is carried out.

The yellow sapphires found in Thailand comprise one of the various yellow gemstones which have been mistakenly recognised as yellow topaz. Up to the present, there have been no gem topaz found in Thailand. The yellow gemstone referred to is actually

of the sapphire family and the most popular colour found is similar to the colour of Thai whisky. Some Thai yellow sapphires also have a green shading but this shading is not even throughout the entire gem. Colour zoning is occasionally found in these gemstones. Some stones show no shading of green whatsoever, but they come in the high price category.



Colour zoning in a blue sapphire from Ban Tok Phrom, Khlung District, Chanthaburi Province. Viewed through the table, with a pocket lens, one would see this colour zoning. Stone measures 8.0×6.0×4.0 mm (1.94 carat).

GEM IDENTIFICATION

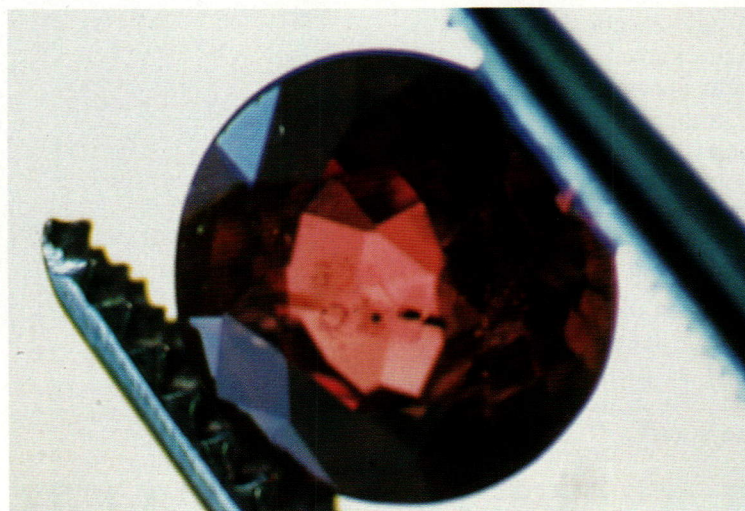
Heat treated yellow sapphires developed from the Sri Lankan stones are also available for sale in the Bangkok markets. These stones are generally of brownish or orange-yellow and are now known as golden or yellow sapphires. It is also possible to find stones which are similar in colour to that of Thai yellow sapphires and for this reason it is necessary to examine them under a microscope for inclusions. The difference between the yellow sapphires from Thailand those from Sri Lanka is clearly recognisable by those who are familiar with them. Special care must therefore be taken when buying the Thai yellow sapphires which are more popular than the heat-treated yellow sapphires from Sri Lanka and are generally more expensive.

Gem zircon found in Thailand is mostly reddish-brown in colour and fairly clear. Stones which have undergone heat treatment appear in clear light blue or yellow. It is very difficult to heat-treat Thai zircons. When heated, they do not turn the same blue as Kampuchean zircons which are more colourful.

At present a number of synthetic stones can be found on the gem markets. It is very difficult to examine synthetic rubies and sapphires without the aid of gemological instruments. A loupe which magnifies the stone to ten times its actual size may be used. It is rare to find genuine natural stones which are of perfect colour and are free of inclusions (e.g. liquid and tiny crystals). There is always likely to be some type of imperfection concealed within but it is visible under a magnifying glass. Natural gem corundum often show an irregular colour distribution. The colour of a synthetic gem is more even and has a beauty which does not look natural. Synthetic stones generally contain spherical or elongated gas bubbles. However, it should be mentioned here that inclusions have been observed in some synthetic rubies which closely correspond to those found in natural rubies. Careful identification of the detailed characteristics of inclusions together with all other properties are then required.

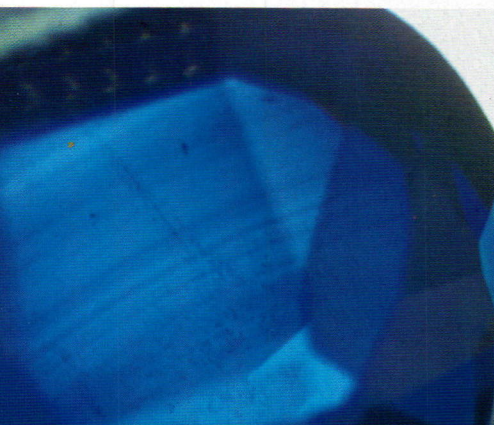


Liquid inclusion in pale blue sapphire from Bo Phloi District, Kanchanaburi Province. Viewed through the culet. Magnified 20x.

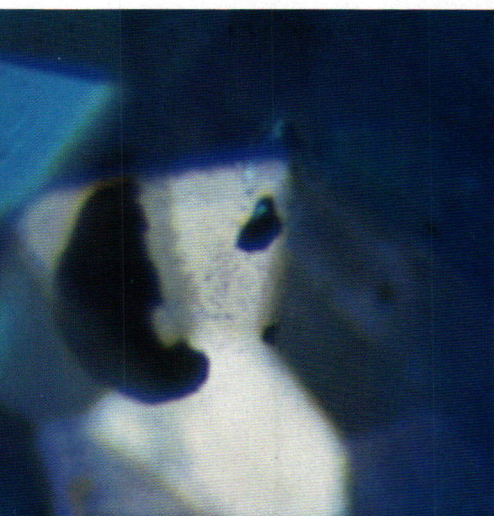


Inclusions in Nong Bon ruby, Trat. Viewed through the table. Stone measure 5 mm. in diameter.

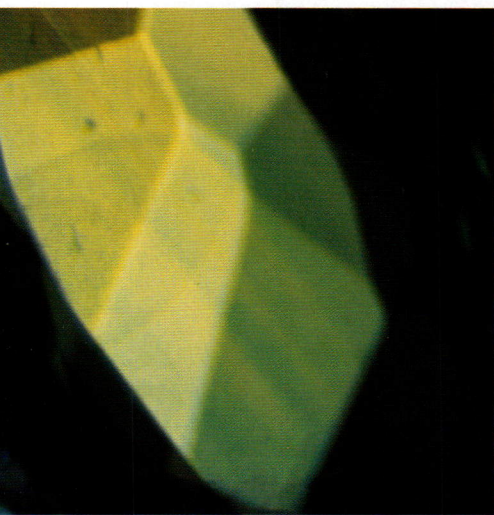
Another way of examining doubtful stones is by looking for **growth lines** or **striae** inside the stone. Growth lines aid in separating natural



Curved growth lines in synthetic blue sapphire. Stone is approximately 11 mm long.



Natural blue sapphire from Chanthaburi showing unidentified opaque minerals and liquid inclusions. Viewed through the table, Magnified 15x.



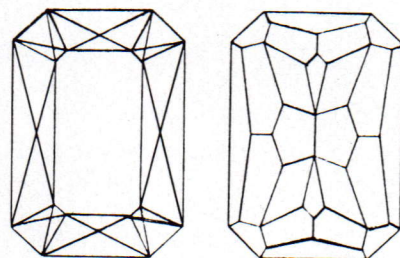
Liquid inclusions ("fingerprint" pattern) and straight colour-bands in natural yellowish green sapphire from Ban Bang Kacha, Chanthaburi Province. Magnified approximately 15x.

gem corundum from synthetic stones because the growth lines in synthetic stones are curved. In synthetic rubies, curved striae are sometimes difficult to detect with the naked eye because they are closely spaced and resemble the grooves seen on a gramophone record.

Natural sapphires generally exhibit a colour banding or zoning which may alternate between colourless or light and dark colour bands. Such bands in natural sapphires are straight and can frequently be seen intersecting at angles of 120° running parallel to the outer lines of a hexagonal crystal. Zoning or striae in natural sapphires is more easily detected than curved bands in synthetic sapphires. Colour zoning visible to the naked eye in natural gems is considered a flaw and decreases the value of the stone. There are natural sapphires, however, which do not display any of the above mentioned characteristics.

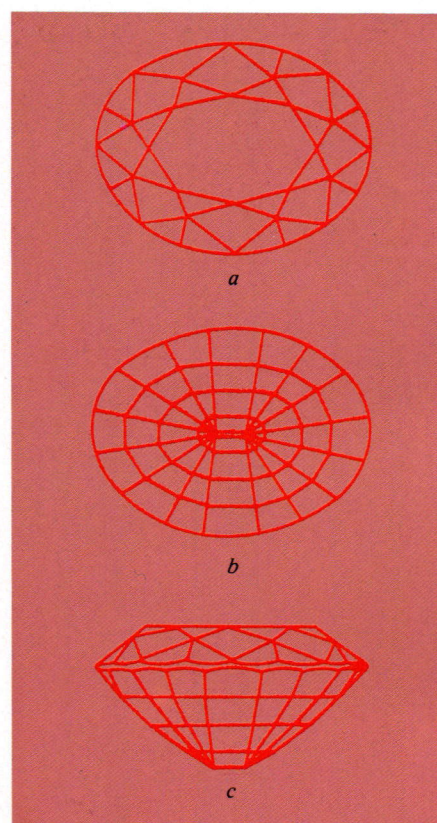
In addition to the methods mentioned above there are many other techniques which may be applied when examining genuine and synthetic gemstones. These methods cannot always be relied on, however, but are alternate approaches. One way is to look at the cracks (or-'fire-marks') which may appear between the facets of stones in doubt. If the cracks appear at facet junctions, then it is likely that the stone is synthetic. These cracks appear as a result of the heat which occurs at the time of polishing. Another way is to examine whether the stones have overlapping facets. Gem stones with overlapping facets tend to be synthetic, whereas stones with keen facets are usually genuine. The cutting style of ruby or sapphire may also be taken into consideration. The common style of cutting Thai rubies and sapphires is the mixed cut which consists of a brilliant cut top with a step cut base and a general outline of oval and circular shape. There are many other styles of cutting, but stones which are cut in the scissor style can generally be considered synthetic. Genuine stones are not usually cut in this style as it may decrease their quality and value. However, in some cases where the

synthetic stones are carefully manufactured, these aforementioned criteria alone can prove insufficient. Other characteristics need to be taken into account.



Scissors cut

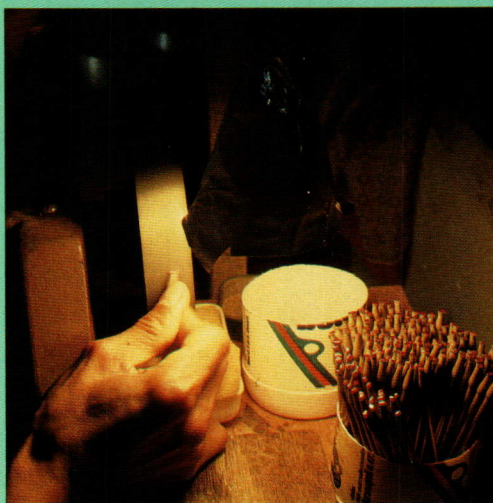
Picture drawn by Mr. R.Hansawek.



After Liddicoat Jr. and Copeland, 1974

Common cutting style of Thai rubies and sapphires. Oval shape, brilliant cut top (a) and step cut base (b). C. Side view.

One more point to be noted is that there are very few rubies and sapphires, particularly yellow sapphires, of more than five carats in weight which are perfect in colour and free from fault or imperfections. If they are genuine, their price will be very high. Therefore, when buying a large stone offered at a low price, it should be carefully examined to ensure that it is not a synthetic stone or a stone of a family other than corundum.



Sorting



CUTTING & POLISHING



The cutting and polishing of gems as a tradition has been practised in Thailand for well over two centuries now with the art being handed down from one generation to another. Over the years cutters have perfected their skill to the degree that they today rate amongst the best in the world. So widely acclaimed are they that gem dealers from countries all over the world send their gems to Thailand for cutting and polishing. They know that through the skilled hands of Thai gem cutters they will receive top quality precision work.

From a handful of cutters some centuries ago, the number of gem cutters practising this profession in Thailand has now risen to over 800,000. They can be found in both large cities and small country villages carrying on their profession in a variety of places ranging from small household-scale workshops capable of producing small amounts for the local market to large business house factories able to produce millions of carats per year both for the local market and for export. Several large companies producing gems for export have received investment promotion privileges from the Board of Investment while others in the planning stage are expected to commence operation in the very near future.

The art of cutting and polishing gemstones, as with the designing of jewellery, requires a special skill which can only be developed through years of patient practice under the watchful guiding eyes of masters in the profession. Several different gem cutting and polishing methods can be applied though they share some similarities. The process involved at each different stage is explained below in more detail.

The Techniques of Coloured Stones Cutting

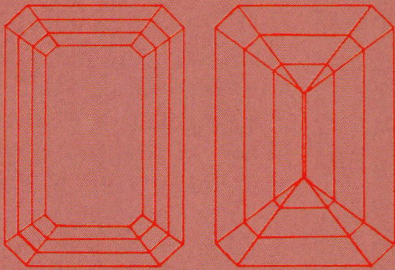
As the quality of gemstones differs from place to place it is necessary to determine the source of the gem and its country of origin before cutting and polishing begins. The clarity, colour and other defected natures of the gemstone must also be examined to see if it needs to pass through the heating process. The reason for this is that the heating process helps to enhance the beauty of some gems, bringing up the colour, making them more attractive than if they had not undergone the process. It also increases the value of the stone. Gemstones which do not need to be passed through the heating process can be sent directly for cutting and polishing.

Once the gemstone has passed through the heating process, the following points must be taken into consideration.

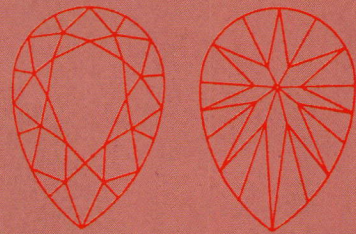
1. Colour, flaw and transparency: these points are very important when deciding on how the surface of the gemstone is to be cut and polished. The gemstone should be cut in such a way that it possesses maximum beauty, cleanliness and transparency.

2. Shape : the shape into which the gemstone is to be cut must be decided upon. It can be either heart-shaped, tear shape, square, oval or cabochon.

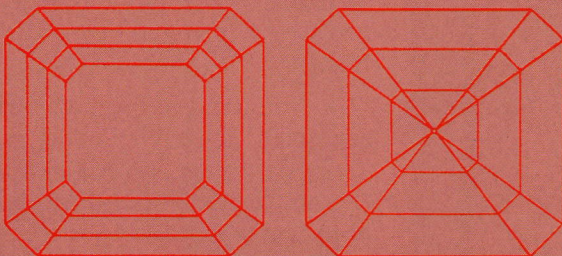
Shapers & Styles of Cutting



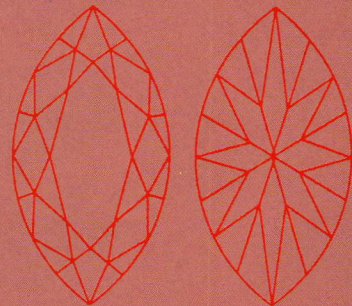
Emerald cut



Pear-shaped cut



Square emerald cut



Marquise cut

After Liddicoat Jr. and Copeland, 1974

3. Demands : market demands should be examined and fashion trends studied.

4. Size and weight : it should be decided whether the gemstone is to be cut into smaller stones or into a particular shape. This depends on the size and weight of the stone. A bigger stone is more valuable than a smaller stone so every effort should be made to cut it in such a way that the finished stone retains as much of its original weight as possible.

After all the above points have been taken into consideration, cutting can commence. There are three steps in gem cutting, each related to the other.

1. Girding : This is also known as selecting and marking the surface prior to cutting. Every angle of the gem must be expertly examined to determine how it will be cut and faceted. It must be decided as to which side of the gem will carry the face.

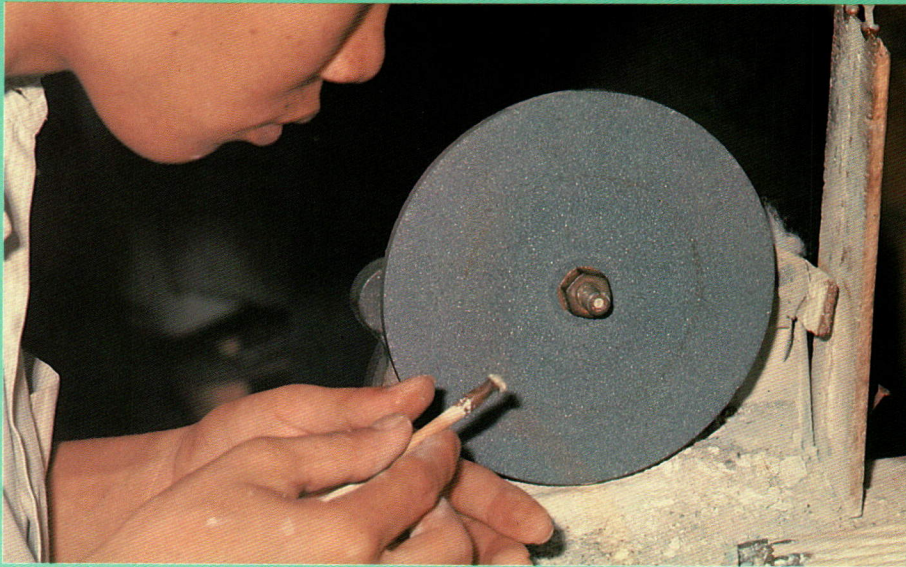


First step

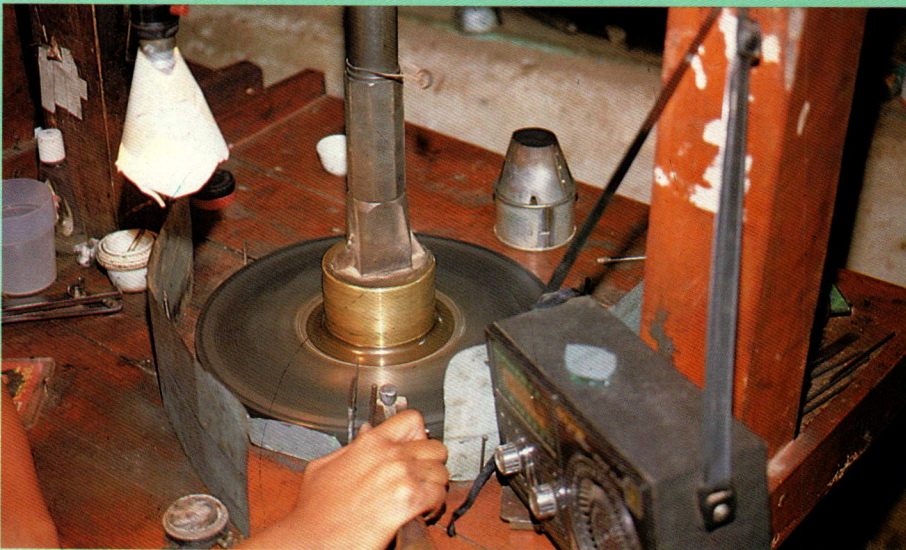
This is done to ensure maximum beauty, colour and clarity. Once the face has been selected lines are drawn on the stone. The gem is then girded

on a grinding stone. The surface of the grinding stone has the characteristics of diamond dust mixed with bronze so that it is sharp and capable of cutting

the gem roughly into the desired shape. If the face is not chosen correctly the finished gem will lose some of its colour, and its clarity and brilliancy will decrease. The value of the gem will also be less than it should be. Correct selection, however, will ensure that maximum weight and light refraction are retained.



Second step



Third step



Rough coloured stones

2. Bruting : At this stage, also known as shaping or styling, the gem is cut into a particular shape. This is done with the assistance of a cutting stone similar in style to a grinding stone, but sharper and finer. The cutting stone will help to give a neat, clean appearance to the stone, even though it has not yet been faceted.

3. Polishing : This is the final stage in gem cutting. Stones which have already passed through the girding and bruting processes are placed in a "dop" to be faceted. A good cutting disc must be strong, preferably made from high quality steel.



Different grades, sizes and shapes of cut rubies

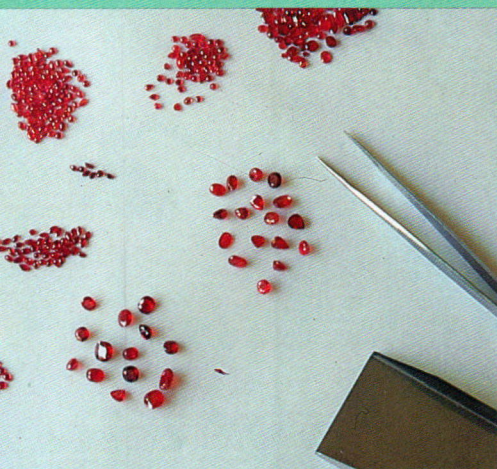


Loose coloured stones

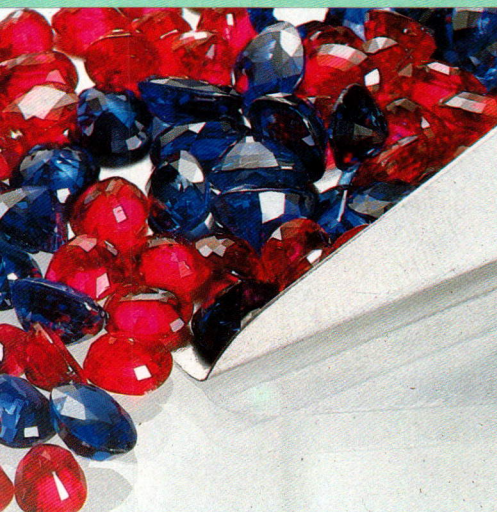
Faceting the gem is done with the naked eye and requires a skill and precision which comes with the many years of experience through which each craftsman has passed. If the gemstone has a fracture, or cloudy colour, it should not be faceted but should instead be sent for bruting and finishing before being cabochoned and polished. In accordance with current fashion trends the finished gem, after cutting, will have at least 73 facets, 33 of which are always above the girdle. If the gem is very thick then the number of facets increases, particularly below the girdle. A gemstone which has been correctly passed through the heating process prior to cutting will not return to its original colour. The practice of heating gemstones has been carried out in Thailand for so long that the expertise of Thai craftsmen in this field is gaining as much recognition abroad as their skill in cutting and polishing coloured stones.



Rubies cut in different shapes



Loose coloured stones



Loose coloured stones

The Techniques of Diamond Cutting

Rough diamonds come in many shapes and sizes and in a variety of colours such as pink, blue, yellow, brown, green and even black. The whiter the diamond, the rarer and more expensive it is. Most gem diamonds are tinged with a touch of warm body colour, green, brown or yellow.

After the diamonds have been sorted according to shape, size and quality, the cutter decides into which shape the rough should be cut and how best to remove the maximum inclusions while retaining as much of the original carat weight as possible. The guidelines for cutting are drawn on the stone in Indian ink. The first division is made either by sawing or by cleaving. Diamond crystals can be divided easily by splitting them along the cleavage direction or "grain".

In general diamonds can be cut in any direction even against the grain. The blade of the saw cuts cleanly along the Indian ink marking. The modern method of sawing diamonds was invented in America. The saw is a disc of phosphor-bronze a few inches in diameter and as thin as a sheet of paper. Impregnated with diamond powder, it rotates at a speed of 5,000 revolutions per minute continually impregnating itself with fresh diamond dust from the stone it is cutting.

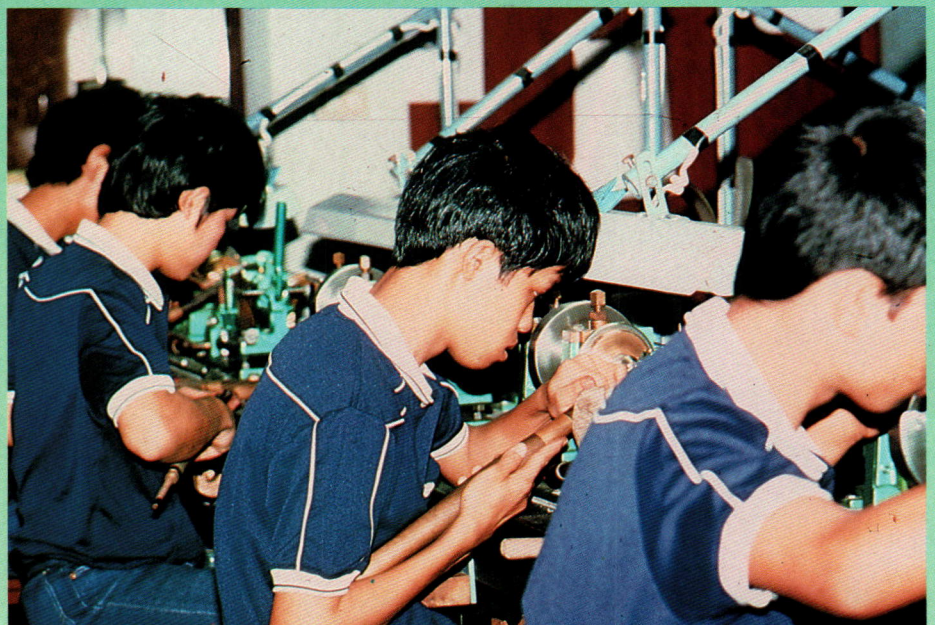
To cleave the diamond, a small notch is applied to the stone to be cleaved by using the edge of another diamond. The cleaver places a blade in the notch and gives it a sharp tap, where upon the diamond splits in two along the cleavage plane. Cleaving demands a great deal of skill as carelessness can result in the stone being shattered into many tiny pieces.

After the diamond has been split by the preliminary sawing or cleaving operation the diamond is then girdled or rounded out at the widest part. The final step in cutting a diamond is grinding to form facets which catch the light and make the diamond sparkle.

Rounding or girdling a diamond in order to remove the corners is done by bruting or rubbing one diamond

against another. One diamond is cemented with shellac into a holder which fits on a revolving shaft. The other is cemented to the end of a long rod which the bruter grips under his right arm. As the shaft turns, the diamonds are brought together grinding each other into 2 round shapes. Polishing or faceting a diamond is done on a flat wheel like a record player. This disc is made of porous iron, about one-inch thick. Diamond powder and oil are worked into its surface. The plate spins at 2,500

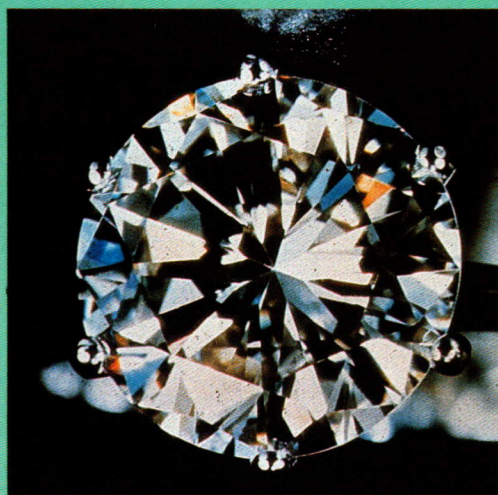
revolutions per minute while the diamond is held against it, very much like the stylus holder on a record player. The diamond is mounted in a dop or holder. It must be inserted at right angles so that the surface can be faceted. Most diamonds, regardless of the shape, have 58 facets, 33 above the girdle and 25 below. Each is ground individually, and each is at a precise angle to its neighbour. The round shape, however, is the most brilliant of all diamond shapes and is frequently referred to as the "brilliant cut".



Bruting



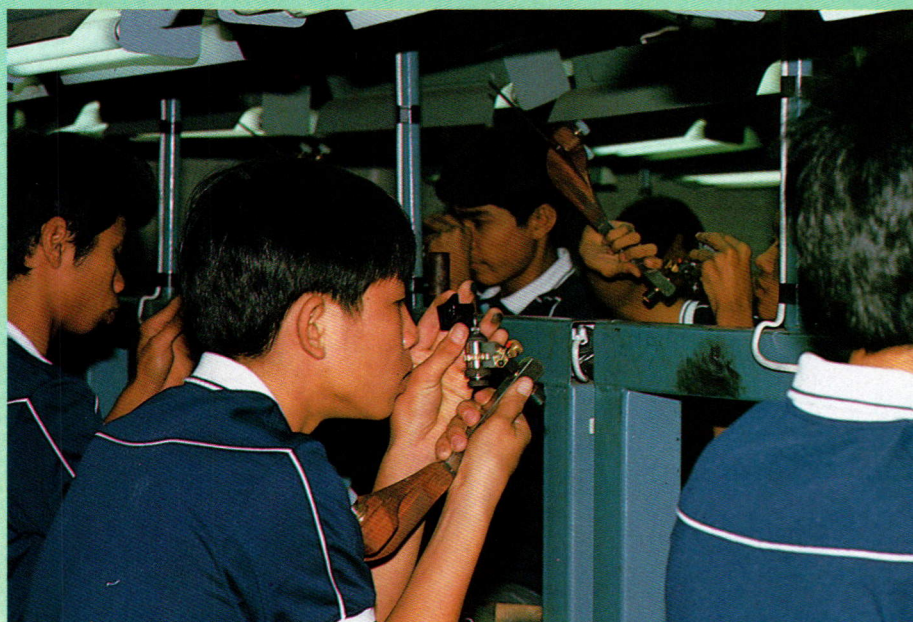
Polishing



Diamond ring



Polishing (Faceting)



Polishing (Faceting)

When a diamond is properly cut and the proportions of the stone are precise, the light enters the diamond from the top, bounces across the bottom facets and returns to the eye in a shower of blazing colour. Cutting and polishing can reduce the weight of a rough diamond by more than fifty percent, but the finished gems are worth more than twice as much as the original rough. The cost of a diamond depends upon four characteristics known as the 4 "Cs": cut, colour, clarity, and carat weight. Clarity refers to the absence or presence of inclusions in the diamond and the unit weight of diamond is the carat.

The appeal of diamonds is widespread as an appropriate gift for any and every occasion in every price range. Furthermore, diamonds are frequently featured as tasteful accessories for both men and women.

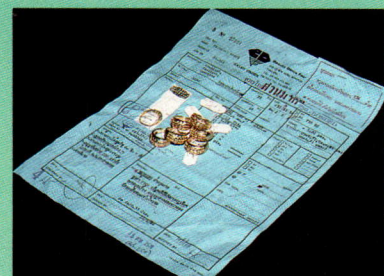
Apart from cutting and polishing, the gem industry in Thailand is at present receiving wide recognition with an excellent reputation for skill in producing exquisite jewellery artistically designed on a universal theme and capable of bringing pleasure to people of every nationality, regardless of cultural aesthetics or personal tastes. These factors, combined with low labour and material costs as well as attractive tax concessions, for both import and export, have turned Thailand into a haven for lovers of fine jewellery.

Despite the abundance of fine jewellery available in Thailand the process of jewellery making is a long and complicated affair. Once the finished stone has been obtained, the designer makes a sketch of the proposed design on a piece of paper and applies the appropriate colours so that it bears the closest possible semblance to the actual colour of the gem. Using the sketch as a model, a mould is made so as to give the setting its perspective. If the designer and the model maker are not the same person they have to work closely together. The model is then passed on to the craftsman who assembles the different components of the jewellery. The chosen gem is carefully placed in the setting. The jewellery is then polished to give it lustre and to enhance its beauty. Finally, before being sent for sale or export, the finished item of jewellery is passed through strict quality control.

To ensure that the buyer receives the best possible service available the Department of Commercial Relations and the Export Service Centre, in conjunction with the Gem and Jewellery Manufacturers' Association of Thailand, have prepared a list of accredited jewellers and manufacturers.



Design



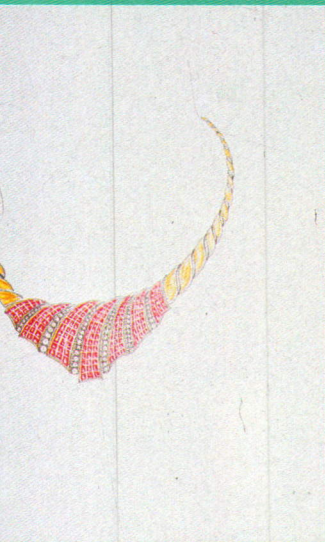
Order



Polishing the Jewellery



Jewellery



Design



Molding



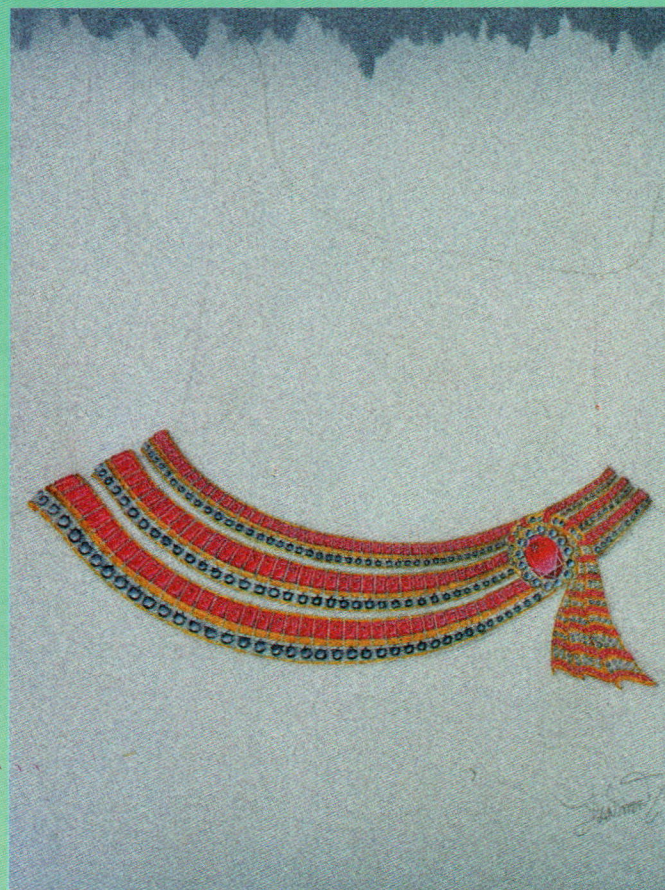
Setting



Gems being placed in the setting



Checking



Drawing



Jewellery



Drawing

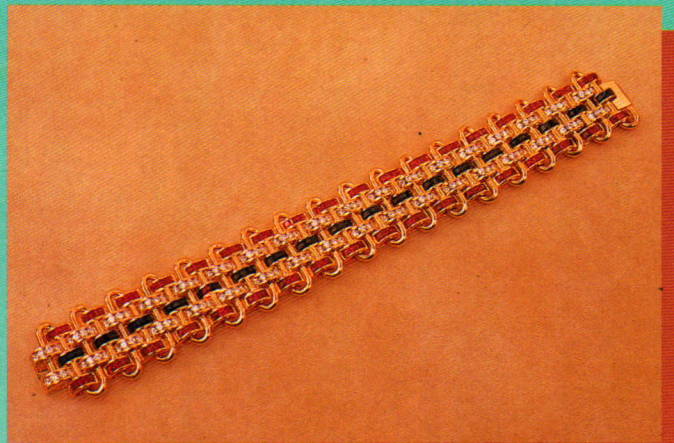


Finished Jewellery



Finished Jewellery





De Beers

1986 Diamond-International Awards



DIAMONDS-INTERNATIONAL AWARDS 1986

Terawan Techapongvorachai

Thailand

Necklace

Diamonds set in yellow gold form waves of fire in this stunning necklace, designed with rock crystal quartz and black onyx. Created by Terawan Techapongvorachai, a Thai jewelry designer, the necklace won international acclaim in the 1986 Diamonds-International Awards competition. Both round and square cut diamonds were used in this unique piece, now touring 15 countries with the complete 1986 collection.

DESIGNER DIAMONDS~ THAILAND

TERAWAN TECHAPONGVORACHAI



The award scheme was established by De Beers 25 years ago and has since become a principle event in the diamond industry's calendar, and is held every two years. Its aim is to encourage originality in what is largely a conservative industry and as a result, the winning entries display the sort of risks you'd be unlikely to see behind the plate glass or the average jewellery store.

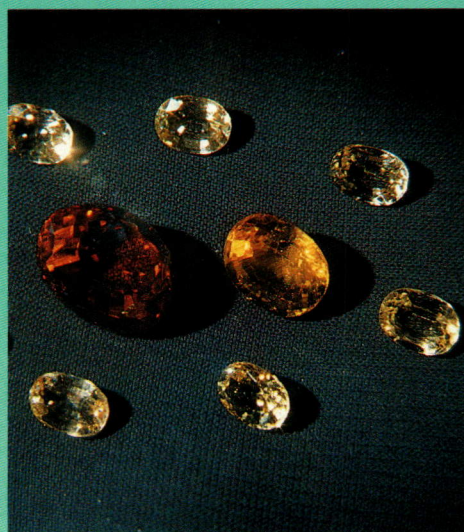
In Terawan's case, rows of tiny diamonds curved round the onyx base, echoing the curved engraving and bringing the retail value to an approximate US \$ 15,000. Her sponsor was Beauty Gems Factory Co. Ltd. In an industry where the dazzle of the raw materials is sufficient unto itself, just what is it that makes one arrangement of stones better than the next? In the Diamond-International awards the official criteria for selection are: originality, creative use of diamonds, fashion sense and dramatic input. The judging followed a two-tier procedure; panels were set up in New York, London and Tokyo, where 100 designs from each region were shortlisted and sent on for final selection in London. Thirteen nations were represented by the 30 winners.

In Bangkok, tastes in jewellery tend toward the traditional. "I've seen way-out designs in other countries" said Terawan, "but it will take time for them to be appreciated here. Tastes are conservative, but things are beginning to change. I think maybe I can help to introduce some new ideas."



Terawan Techapongvorachai started out as a fine arts major at the University of Southern California ten years ago. At that time, she never thought that she'd become involved in the Thai jewellery business; she certainly didn't imagine that one day she'd stand in the flash lights of a top Milan hotel, receiving an award for her designs in diamonds. At the De Beers-sponsored Diamond-International Awards, held this year (1986) at the Hotel Principe di Savoia, Milan, a glittering army of jewellers, industrialists and fashion press were gathered together to view the pick of the world's diamond-design talent. For the first time since those awards began in 1954, Thailand was one of the thirty winners, selected from over a thousand entries worldwide.

POLICY ON IMPORT & EXPORT OF GEMS



As the gemstone and jewellery industry receives the support and promotion of the Royal Thai Government, every assistance is rendered in helping to remove obstacles and overcome problems

which may have an adverse effect on the import and export of such items. To assist in this regard, the Royal Thai Government has promulgated the following laws:

17th December, 1971 : Foreign tourists, immigrants, travellers and temporary visitors are permitted to take with them out of the country, gemstones, diamonds, gold and platinum settings of unlimited value in order that the export of the aforementioned items may proceed with ease.

2nd September, 1977 : To further support the gem cutting industry, the

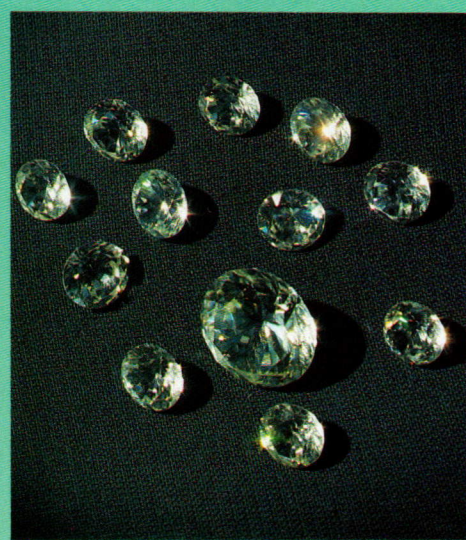
government has exempted the collection of import duty and sales tax on uncut diamonds and other gemstones.

9th December, 1980 : To further support the export of jewellery the government has exempted the collection of import duty and sales tax on cut diamonds and other gemstones.

13th October, 1981 : To enable locally manufactured jewellery to compete more successfully on foreign markets the government has abolished the collection of the 3.30% municipal and business tax on export jewellery items.

21st March, 1985 : The Department of Export Promotion of The Ministry of Commerce submitted a proposal to the Export Development Board that measures be laid down allowing the import of pure gold for use as a raw material in the manufacture of jewellery settings. This matter is at present under the consideration of the





Ministry of Finance. The drafting of a regulation is in progress and an announcement is expected to be made in the near future.

Through the support and promotion given by the government, the export of gemstones and jewellery has experienced a steady annual growth making it now the country's sixth major export item after rice, cassava, textiles and clothing, rubber and corn.

The import and export of gemstones and jewellery now proceeds with greater ease thanks to the generous tax concessions approved by the government. It is no longer necessary to fill out numerous forms and pass through various custom's regulations procedures when exporting these items, as can be the case with other products. When exporting, all the exporter has to do is simply prepare invoices detailing the type, quantity and value of the

goods to be exported so that the Bank of Thailand can issue the necessary currency exchange forms. A similar procedure is required when importing gemstones and jewellery. If the value of the imported items is more than 20,000 baht, the importer merely has to take the appropriate invoices to the Bank of Thailand and a currency form will be issued. This will enable the importer to bring the goods into the country.

There is no export tax on jewellery items and all the exporter has to do is prepare the necessary documentation for customs clearance, currency exchange and import tax exemption request in the country of the importer. In the event that the country of the importer has special import tax arrangements with Thailand (Generalized System of Preferences-G.S.P.) then the same procedure is followed when

exporting gems. However, as Thailand has as import tax policy, the importer, in addition to following the correct procedure for customs clearance, must also pay import tax.

Tourists intending to take gems and jewellery, which they have brought in Thailand, out of the country, must prepare a declaration, in writing, stating that the article (s) is/are personal property. If the quantity to be taken out of the country is sufficiently large, however, then the purchaser should prepare evidence of purchase by requesting an invoice from the seller so that customs can be notified and duty exempted. This will also be of benefit to the purchaser as the documentation mentioned can be presented to the customs officials in the country of the purchaser upon re-entry.



MANUFACTURERS AND RETAILERS



the right store to purchase from. Buyers should, therefore, look for shops which carry the Tourist Introductory sign of the Tourism Authority of Thailand. This sign shows a picture of a vendor sitting beside her baskets and the symbol of the Tourism Authority of Thailand. The words "Recommended by the Tourism Authority of Thailand" are printed along all four sides of the sign.

If the buyer is confronted with any problems, or doubts the authenticity of the gem or jewellery item being purchased, further information and assistance can be obtained from:

*The Gem and Jewellers Association
of Thailand*
277/1-2 Rama I Road
Rong Muang, Pathumwan
Bangkok, 10500.
Tel: 214 2644-4

As gemstones are mined in almost every part of Thailand, gem traders can be found all throughout the country. Gems and ready made items of jewellery are popular items of purchase for both local and foreign tourists, so to cater for the demand, retail outlets have been established in all tourist spots.

Most manufacturers, retailers and exporters of gems and jewellery items are, however, located in Bangkok. This may cause some confusion for the buyer when it comes to choosing

The colour and quality of gems can vary greatly and it is sometimes necessary for even experienced gem merchants to perform tests on gems to certify that they are genuine and to enable them to give a guarantee of quality. Therefore, if the owner or buyer of a gem has any reason to doubt that it is genuine and wishes to have it examined for verification, this can be done by taking it to the Asian Institute of Gemological Science (AIGS). This institute is highly renowned and recognized by gem merchants world wide. In addition to training gemologists the Asian Institute of Gemological Science also examines and appreciates

gems. Certificates of guarantee are issued to verify the authenticity of the gem and its appraisal. Interested persons can contact the institute at the following address:

Asian Institute of Gemological Science (AIGS)
4th Floor Rama Jewellery Building
987 Silom Road
Bangkok, 10500
Tel: 236 8870, 233 8382, 235 1254

Business personnel wishing to export gems and jewellery from Thailand or wishing to contact manufacturers and exporters with an established and reliable reputation, can obtain names and addresses from:

Manufacturers/Exporters of Jewelry and Gemstones

ESC-710000-1-005

1. **A.I.M. (Thailand) - Super Market of Gems Division**
987 Silom Rd., 2nd Floor,
Rama Jewelry Bldg.,
Bangrak, Bangkok 10500
Tel: 2338388-9
Cable: AIMGROUP
Telex: 87971 AIMTHAI TH
Attn: Mr. Supachai Chieng-Ngarm
Products: Gemstones, Jewelry

ESC-711200-3-002

2. **Annable Co., Ltd.**
26/48 Chitlom Rd., Ploenchit,
Pathumwan, Bangkok 10500
Tel: 250-1700-2
Cable: -
Telex: 20829 SIMRAT TH
Attn: Mr. Kritsana Siraprasiri
Products: Gold and Silver Jewelry

ESC-711200-2-002

3. **Anny's Factory Ltd., Part.**
367/1-2 Phayanak Lane,
Phayathai Rd., Bangkok 10400
Tel: 2154739, 2157209,
2158771
Cable: ANNY BANGKOK
Telex: 20961 ANNYFAC TH
Attn: Ms. Kullapranee Chansukree
Products: Gold & Silver Jewelry

Export Service Division
Department of Export Promotion
22/77 Rachadapisek Road
Bang Khen, Bangkok, 10900
Tel: 511 5066-77

All names listed by the Export Service Division of the Department of Export Promotion have satisfied standards of knowledge of export procedure, manufacturing, reliability, of trust in both government and private sectors, and have a recognized reputation in the gem and jewellery industry. People contacting this division can thus be confident that they are dealing with reliable manufacturers and exporters.

ESC-710200-1-003

4. **Aquarius Gems L.P.**
6/6-7 Decho Rd., Surawongse,
Bangrak, Bangkok 10500
Tel: 2336706-8
Cable: AQUARIUS
Telex: 20171 AQUARIUS TH
Attn: Mr. Vichai Verasaksri
Products: All kinds of Gemstones

ESC-711200-3-007

5. **Art Srinee L.P.**
33 Soi Tan-Ta-One, Surawongse Rd.,
Bangrak, Bangkok 10500
Tel: 2335031, 2338018
Cable: -
Telex: 87288 SAKODUN TH
Attn: Mrs. Boonsri Dunwatanachit
Products: Jewelry & Gemstone

ESC-710200-1-006

6. **Asahi Gems Co., Ltd.**
324/5-6 Surawong Rd., Bangrak
Bangkok 10500
Tel: 2338640, 2342845, 2354723
Telex: -
Cable: -
Attn: Mr. Thavorn Jiracharoensuwan
Product: Precious & Semi-precious stones

ESC-710000-1-002

7. **Beauty Gems Factory Co., Ltd.**
1240-1242 Charoenkrung Rd.,
Bangrak, Bangkok 10500
Tel: 2349865, 2342812
2340365, 2331294-5
2357403-4, 2338433
Cable: BEAUTY GEMS BKK
Telex: 82365 BEAUTYG TH
Attn: Ms. Orapan Phongvilai
Ms. Yupin Laithirapong
Products: Jewelry and Gemstones

ESC-711200-1-003

8. **Boon Jewelry Ltd., Part.**
898 Rama 4 Rd., Bangrak
Bangkok 10500
Tel: 2340179, 2341879
Cable: BOONJEWELS BKK
Telex: BOONS TH 82026
Attn: Ms. Naruemon Boonmahanak
Products: Stone Set Jewelry

ESC-711200-3-003

9. **Benetone Co., Ltd.**
16/23-24 Sukhumvit Rd.,
Soi 19, Bangkok 10110
Tel: 2532857-8, 2492501 (Factory)
Cable: BENETONE BKK
Telex: 87326 BENETON TH
Attn: Mr. Rajpol Narula
Products: Gold & Silver Jewelry

ESC-711200-3-017

10. **Caprich L.P.**
80 Surawongse Rd., Beside
Sheraton Hotel, Bangrak,
Bangkok 10500
Tel: 2331043, 2335160 Ext. 228
Cable: -
Telex: 811678 SHER BKK
Attn: Mr. Nipon Nampeti
Products: Jewelry

ESC-711200-2-003

11. **C.G. International Ltd., Part.**
198/19-20 Silom Rd., Bangrak,
Bangkok 10500
Tel: 2335970, 2336381
Cable: -
Telex: 84204 CAMEL TH
Attn: Mr. Somchai Ratana-opas
Products: Gold and Silver Jewelry

ESC-711200-1-004**12. Charoensuk Factory Co., Ltd.**

94-96 Surawongse Rd., Bangrak,
Bangkok 10500
Tel: 2354990, 2357430-1
Cable: -
Telex: TH 84839 ROENSUK
Attn: Mrs. Chanut Sriprapatsorn
Mr. Prasong Chonggratanakul
Products: Stone Set Jewelry

ESC-711200-3-008**13. C.M.S. Co., Ltd.**

President Hotel, Front Arcade,
Room 2, Sukhumvit Rd.,
Bangkok 10110
Tel: 2515032, 2513000
Cable: -
Telex: 81194 TH
Attn: Mr. Suree Chaisanguntham
Products: Gold and Silver Jewelry

ESC-711200-3-004**14. C.P. Lee Trading Ltd., Part**

50/10 Eakmai Rd., Phrakamong,
Bangkok 10110
Tel: 3912424, 3910191
Cable: LEETRADE BKK
Telex: -
Attn: Mr. Chaiyut Phanyajamorn
Products: Gold and Silver Jewelry
Imitation Jewelry,
Garments

ESC-710200-3-005**15. C. Siamese Gems Co., Ltd.**

318-320 Mahaesak Rd., Soi 1,
Bangrak, Bangkok 10500
Tel: 2342735-6, 2338358
Cable: "SIA BANGKOK"
Telex: 87202 CTINT TH ATTN: C.
SIAMESE GEMS
Attn: Mr. Sophon Wongjindavast
Products: Gemstones

ESC-711200-3-015**16. Empress Intertrade Co., Ltd.**

166/1 Sukhumvit Rd., Soi 8
Phrakamong, Bangkok 10110
Tel: 2530596, 2530039, 2530040
Cable: -
Telex: -
Attn: Ms. Maneerat Euchukanonchai
Products: Gold and Silver Jewelry

ESC-711200-3-009**17. Essex International Co., Ltd.**

131-133 Surawongse Rd., Bangrak
Bangkok 10500
Tel: -
Cable: -
Telex: -
Attn: Mr. Siri Subphon
Products: Gold Jewelry

ESC-710000-3-004**18. Gem Plaza L.P.**

144-146 Mahaesak Rd., Bangrak
Bangkok 10500
Tel: 2331890, 2338500, 2342500
Cable: GEMPLAZA BKK
Telex: 82414 GITYEX TH
Attn: Mr. Sommart Bhuvanattrai
Products: Gemstone, Jewelry

ESC-710200-1-002**19. General Diamond Cutting Works Ltd.**

719-719/2 Silom Rd.,
Bangrak, Bangkok 10500
Tel: 2338112-4, 234-2018-9
Cable: SHIANGHENG BKK
Telex: 84174 SH BKK TH
Attn: Ms. Pranee Assarasakorn
Products: Cut and Polished
Diamonds

ESC-710200-3-006**20. Indian-Pacific Trading**

84/2-5 Pattanakarn 3 Rd.,
Bangkapi, Bangkok 10240
Tel: 3782169
Cable: -
Telex: 72380 INDOPAC TH
Attn: Mr. Phothon
Products: Gemstones

ESC-710000-3-002**21. Jimmy Jewelry L.P.**

12/1 Surasak Rd., Bangrak,
Bangkok 10500
Tel: 2344475-6
Cable: -
Telex: -
Attn: Mr. Smmuay Sapkasem
Products: Ruby, Sapphire and
Gold Jewelry

ESC-711200-3-011**22. John Allan Limited**

248/13-14 Narai Arcade, Silom Rd.,
Bangrak, Bangkok 10500
Tel: 2342452, 2334948,
2349540, 2359761
Cable: JALLAN
Telex: 20855 JALLAN TH
Attn: Ms. Earth Saiswang,
Mr. John Rae
Products: Gold and Platinum
Jewelry

ESC-711200-3-016**23. K.T.S. Associate L.P.**

51/557 Ladprao Rd., Klongchan 2,
Bangkapi, Bangkok 10240
Tel: 3781782
Cable: -
Telex: 82027 FIRSTHT TH
ATTN: K.T.S.
(Tel. 3781782)
Attn: Mr. Thatri Sinutok
Products: Gold and Silver Jewelry

ESC-711200-3-013**24. Kuang Charoen Ltd., Part.**

184 Ban Moh Rd., Bangkok 10200
Tel: 2214711, 2226691
Cable: -
Telex: 21265 KCE TH
Attn: Mr. Teeraphat Ongkosit
Products: Gold & Silver Jewelry,
Titanium Jewelry,
Imitation Jewelry,

ESC-711200-3-001**25. Kukrija L.P.**

52/17 Silom Condominium, 6th
Floor, Soi Saladaeng 2,
Silom, Bangrak, Bangkok 10500
Tel: 2333129, 2357409
Cable: "KUKREJA"
Telex: BANGINS TH 87333
Attn: Ms. Vannee Trithipayapong
Products: Silver & Gold Jewelry

ESC-710000-2-003**26. Lambert International Co., Ltd.**

807-809 Silom Rd., 4th Floor,
Bangrak, Bangkok 10500
Tel: 2351345, 2351346
Cable: LAMBERT BKK
Telex: GLICKMAN NARITEL TH 81175
Attn: Mr. David M. Glickman
Products: Gemstones, Gem Cutting,
Gold & Silver Jewelry

ESC-711200-2-001

- 27. Linsons Jewelry L.P.**
 316/3 Silom Rd., Bangrak,
 Bangkok 10500
 Tel: 2333557, 2346542, 2119307
 Cable: LINSON
 Telex: LINSON TH
 Attn: Mrs. Sunee Rinthanalert
 Products: Gold and Silver Jewelry

ESC-710000-1-007

- 28. Merlin and Delaunay Ltd.**
 292 Surawongse Rd., 6th Floor,
 Phithan Bldg., Bangrak,
 Bangkok 10500
 Tel: 2338937, 2330369
 Cable: MERLIN BKK
 Telex: 84578 MERLIN TH
 Attn: Mrs. Surang Kijomcheep
 Products: Jewelry and Gemstones,
 Brasswares

ESC-710200-1-007

- 29. Nakorn Gems L.P.**
 256-260 Mahaesak Rd., Soi 1
 Bangrak, Bangkok 10500
 Tel: 2345699, 2349561-2
 Cable: NAKORNGEMS BKK
 Attn: Mr. Somchai Jarugosol
 Products: Rubies, Sapphire and
 Semi-precious stones

ESC-711200-2-005

- 30. Nam Huad Shop**
 146/26 Visukasatra Rd., Bangkunprom
 Bangkok 10200
 Tel: 2824415
 Cable: NAMHUADSHO BKK 10200
 Telex: THC TH 82354 Ext 014
 Attn: Mr. Nathawuthi Jankijjapaibool
 Products: Gold and Silver Jewelry

ESC-711200-1-002

- 31. Napatatana Co., Ltd.**
 89 Vanich 1 Rd., Samphanthawongse
 Bangkok 10100
 Tel: 2215405, 2211256,
 2213039, 2212341
 Cable: NAPARATANA
 Telex: -
 Attn: Mr. Suthphanu Sintavanuchit
 Products: Stone Set Jewelry

ESC-710000-1-003

- 32. Oriental Lapidary Co., Ltd.**
 316 Silom Rd., Bangrak,
 Bangkok 10500
 Tel: 2346526-7, 2348684,
 2343880, 2342279
 Cable: CHIRAKITTI BKK
 Telex: 82113 TANG TH
 Attn: Mr. Narongsak Rojanasakool
 Products: Diamond, Precious &
 Semi-Precious Stones
 Jewelry

ESC-710200-2-001

- 33. Pinky Gems International Ltd.**
 52-54 Soi 3 Mahaesak Rd.,
 Suriwongse, Bangrak,
 Bangkok 10500
 Tel: 2335618-9
 Cable: PINKYGEM BANGKOK
 Telex: 20992 PINKY TH
 Attn: Mr. Piya Charoencharaskul
 Products: Ruby, Sapphires

ESC-710200-1-008

- 34. P. Ratanakorn**
 274-8 Mahaesak Soi 1, Bangrak
 Bangkok 10500
 Tel: 2340468-9, 2343274
 Cable: RATAKORN BKK
 Telex: RATKORN 84343 TH
 Attn: Mr. Vichai Anantaparakorn
 Products: Sapphires, Rubies,
 Yellow Sapphires

ESC-711200-1-005

- 35. Pranda Jewelry Co., Ltd.**
 333 Bangna-Trad Rd., K.M. 2.3
 Soi Rung Song, Bangna,
 Prakanong, Bangkok 10260
 Tel: 3938412-4, 3938780-2
 Cable: PRANDESIGN
 Telex: 82594 PDAI TH
 Attn: Mr. Preeda Tiasuwan
 Ms. Pranee Tiasuwan
 Products: Stone Set Gold and
 Silver Jewelry

ESC-710200-1-005

- 36. Premier Gems Trading Co., Ltd.**
 46-48 Mahaesak, Soi 3,
 Bangrak, Bangkok 10500
 Tel: 2331942, 2358082-3
 Cable: PREGEMS
 Telex: 20312 PREGEMS TH
 Attn: Ms. Vanthanee Inkatanuvatna
 Products: Sapphires, Rubies,
 Yellow Sapphires

ESC-711200-3-010

- 37. Premier Jewelry Manufacturing Co., Ltd.**
 66/1-3 Soi Pramote, Surawongse Rd.,
 Bangrak, Bangkok 10500
 Tel: 2352326-7, 2349940
 Cable: PREJRY BKK
 Telex: 21310 PJRY TH
 Attn: Ms. Suvaree Chaichanavitchakit
 Products: Stone Set Jewlery

ESC-711200-3-014

- 38. Royal Jewelry Export L.P.**
 975/13 Ploenchit Rd., Bangkok 10500
 Tel: 2522550, 2521218
 Cable: ROYALJEWEL
 Telex: 84284 GORD BKK TH
 Attn: Ms. K.W. Lakana
 Products: Gold and Silver Jewelry

ESC-710200-3-004

- 39. R.S. Gems Co., Ltd.**
 4/3 A Soi Pramote, Surawongse Rd.,
 Bangrak, Bangkok 10500
 Tel: 2343810
 Cable: -
 Telex: -
 Attn: Ms. Pornjindarat
 Products: Gemstones

ESC-710200-1-001

- 40. Shiang Heng Trading Co., Ltd.**
 719-719/2 Silom Rd., Bangrak
 Bangkok 10500
 Tel: 2338112-4, 2342081-9
 Cable: SHIANGHENG
 Telex: 84174 SHBKK TH
 Attn: Ms. Pranee Assarasakorn
 Products: Diamond and Gemstones

ESC-710200-3-001

- 41. Siam Gems Centre L.P.**
 292 Surawongse Rd., 5th Floor
 Phithan Bldg., Bangrak,
 Bangkok 10500
 Tel: 2343293
 Cable: GEMS CENT BKK
 Telex: 20621 GEMCENT TH
 Attn: Mr. Piyaphon Kriengprapakij
 Products: Ruby, Sapphires

ESC-710200-3-002**42. S.K. Gems Import-Export Co., Ltd.**

395-395/1 Silom Rd., Bangrak,
Bangkok 10500
Tel: 2338264-6
Cable: ESKEGEMS BKK
Telex: -
Attn: Mr. Thammasak Sangunpong
Products: Gemstones

ESC-710200-2-002**43. STD Gems Ltd., Part.**

314/3 Mahaesak Rd., 6th Floor,
Piya and Son Bldg., Bangrak,
Bangkok 10500
Tel: 2342451, 2331216
Cable: STDGEMS BKK
Telex: 84816 STDGEMS
Attn: Mr. Thongdee Prathanchaimongkol
Products: All kinds of Gemstones

ESC-710000-1-005**44. Swang Export Co., Ltd.**

(Swang Jewelry Co., Ltd.
K.M.P. Gems Import Export Co., Ltd.)
307-307/1 Surawong Rd., Bangrak
Bangkok 10500
Tel: 2333174, 2344010, 2331350-1
Cable: SAWANG BKK
Telex: 82420 SWANG TH
Attn: Mr. Komen or Mr. Morakot
Maneepairoj
Products: Ruby, Sapphires, Jewelry

ESC-710000-1-006**45. Thai Lapidary International Co., Ltd.**

277/1-2 Rama 1 Rd., Rongmuang
Patumwan, Bangkok 10500
Tel: 2142641-4
Cable: THAILAPID BKK
Telex: 84604 THAILAP TH
Attn: Mr. Chavalit Salwala
Products: Jewellery and Gemstones

ESC-711200-2-004**46. Thai Local Products L.P.**

70/168 Soi Saenankom 1,
Phaholyothin Rd., Bangkok 10230
Tel: 5791552
Cable: THALOCPRO
Telex: 82354 DEPCREL TH
ATTN: 025
Attn: Ms. Veeranut Klaijamnong
Products: Jewelry

ESC-710000-3-001**47. Thai Precious Gems L.P.**

G.P.O. Box 1563
463/47 Soi Watanasin, Bangkok
Tel: 2534632
Cable: BOONGEMS BKK
Telex: 82164 BVT TH
ATTN: TPG
Attn: Mr. Boongerd Yarcom
Ms. Daoruang Yarcom
Products: Gemstones & Jewelry

ESC-710000-2-001**48. Thienpo (Thailand) L.P.**

248/27-28 Silom Rd., Bangrak,
Bangkok 10500
Tel: 2357696, 2343508, 2341739
Cable: THIENPO
Telex: 87066 THIENPO TH
Attn: Ms. Kularb Chiewchannarong
Products: Gemstones and Stone Set
Jewelry

ESC-711200-1-001**49. Thompson's Jewelry Ltd., Part.**

6/30-31 Sukhumvit 3 (Nana Nua)
Bangkok 10110
Tel: 2530096-7, 2530481-3
Cable: THOMPSON BKK
Telex: 84427 THS TH
Attn: Mr. Komson Opassathavorn
Products: Stone Set white and
Yellow gold

ESC-710200-3-003**50. Vatana Gems Co., Ltd.**

287/21-22 Surawongse Rd., Bangrak
Bangkok 10500
Tel: 2345324
Cable: VAGESCO BKK
Telex: -
Attn: Mr. Thirawat Kanokkul
Products: Gemstones and Jewelry

ESC-710000-2-002**51. Verbena Jewelry Manufacture Ltd.**

1/3 Soi Attakavee 1, Sukhumvit 26
Bangkok 10110
Tel: 2580243-4
Cable: "ROSIT" BKK
Telex: 84671 VERBENA TH
Attn: Mr. Kirati Vitoovidhya,
Mr. Bancha Vitoovidhya
Products: Gold & Silver Jewelry
Bronze Metal Jewelry,
Ruby, Sapphires, Garnet,
Cubic Zirconia

ESC-711200-3-006**52. Venus Jewelry**

167/1-2 Vittayu Rd., Bangkok
Tel: 2513227, 2526468
Cable: VENUS THAI
Telex: 20038 EUROT TH
Attn: Ms. Orapen Sammongkol
Ms. Lakkana Palalikit
Products: Jewelry & Gemstones

ESC-711200-2-005**53. Vichit Sind Jewelry Manufacture Co., Ltd.**

88-89 Nares, Bangkok 10500
Tel: 2342295, 2356238
Cable: -
Telex: 87346 THAIGOLD TH
Attn: Mr. Chit Mahatchawarojana
Products: Stone Set Jewelry

ESC-710200-1-004**54. World Crystal Co., Ltd.**

23 Soi Yommaraj, Saladaeng, Silom
Bangrak, Bangkok 10500
Tel: 2358674, 2357201, 2356207
Cable: "WORLDCRYST" BKK
Telex: 20491 WOCO TH
Attn: Mr. Pornsert Srirathaikul
Products: All kinds of Gemstones

ESC-710000-1-001**55. World Jewel Trade Center Ltd.**

987 Silom Rd., 6th Fl., Rama Jewelry Bldg.,
Bangrak Bangkok 10500
Tel: 2334930-1, 2338388-9,
2352098, 2351254, 2333438
Cable: GEMMART BKK
Telex: 87971 AIMTHAI TH
Attn: Mr. Halpin Ho
Mrs. Chanida Chiaranand
Ms. Saranrat Ratana-ampai
Products: Diamond, Gemstones, Jewelry

ESC-711200-1-012**56. Worldwide Manufacturers Co., Ltd.**

(Mee Seng Gemcutters)
1282/2-3 Charoenkrung Rd, Bangrak
Bangkok 10500
Tel: 2337840, 2348898
Cable: -
Telex: 84243 MSG TH
Attn: Ms. Sriprae Techamathavorn
Products: Gold and Silver Jewelry

Name of Firm	Name	Address	Telephone
1. Thai Lapidary International Co., Ltd.	Mr. Anant Salwala	277/1-2 Rama 1 Rd., Bangkok 10500 Thailand	214-2641-4
2. World Gems Ltd., Part.	Mr. Kittu Kijrungsrivibul	12/5-7 Surasak Rd., Silom, Bangkok Thailand	234-8414
3. Pornchai International Co., Ltd.	Mr. Pornchai Chuenchomlada	264-266 Maheasak Soi 1, Bangrak, Bangkok 10500, Thailand	234-2358
4. Thongkin Import & Export Ltd., Part.	Mrs. Chirapra Pongsiripat	352 Maheasak Soi 1, Bangrak, Bangkok 10500, Thailand	234-7784
5. World Jewels Trade Centre Co., Ltd.	Mr. U Kaung W.K. Ho	987 Silom Road, Bangrak, Bangkok Thailand	234-0781
6. Jame-India R.O.P.	Mr. A.M. U-soop	388 Maheasak Rd., Sida Bldg., Room 502, Bangkok 10500, Thailand	234-0781
7. Boonchan Gems Co., Ltd.	Mr. Boonchan Tunsuwansopon	136-138 Maheasak Rd., Bangkok 10500 Thailand	234-3713
8. Tok Kwang Jewelers LP.	Mr. Montree Bunjapamai	224-226 Silom Rd., Bangkok 10500 Thailand	233-0658
9. Mayura Gems Ltd., Part.	Mr. A.M. Pratel	311/9 Surawongse Rd., Sipraya, Bangkok 10500, Thailand	233-1515
10. Beauty Gems Ltd., Part.	Mr. Pornsak Sriorathaikul	1240-42 New Rd., Sipraya, Bangrak Bangkok 10500, Thailand	234-2812
11. Manee Panich Ltd., Part.	Mr. Yothin Piyajinda	296/9 Silom Rd., Bangkok 10500 Thailand	233-3647
12. C D S Gems Ltd.	Mr. A. Karim	388 Maheasak, Sida Bldg., Room 607 Bangkok 10500, Thailand	233-2374
13. S.P.S. Inter Continental Ltd., Part.	Mr. Prasert Anantachart	38/22 Soi Anumarnrajdhon, Dejo Rd., Surawongse, Bangkok 10500 Thailand	236-1603-5
14. Bangkok Sanguan Gems R.O.P.	Mr. Sanguan Riansrivilai	131-131/1 Pun Rd., Silom, Bangkok	233-2084
15. S.S. Agencies R.O.P.	Mr. Yakinder Sing	Wang Lee Bldg., Suite 1000, 297 Surawongse, Bangkok 10500, Thailand	234-8085-6
16. N.A. Gems Ltd., Part.	Mr. Somchai Jarugosol	256-260 Maheasak Rd., Soi 1 Bangrak, Bangkok 10500, Thailand	234-5699
17. Niphont Gems Co., Ltd.	Mr. Nipon Rattanasank	84-86 Maheasak Soi 3, Bangkok Thailand	233-9414
18. Rama Enterprise Ltd., Part.	Mr. Narinder S. Suluja	297 Wang Lee Bldg., Room 301, Surawongse, Bangkok 10500 Thailand	233-1826
19. Rich Gems Ltd., Part.	Mr. Somsuk Rojjanavit sakul	56 Maheasak Soi 3, Bangkok 10500 Thailand	252-0825

Name of Firm	Name	Address	Telephone
20. Maneethai Ltd., Part.	Mr. Amporn Kanjanavathang	334-338 Silom Rd., Bangkok 10500 Thailand	233-5566
21. Thai Native Gems Ltd.	Mr. Arun Gupta	P.O. Box 1375 Bangkok 10500 Thailand	233-8214
22. Petcharat Import Export Co., Ltd.	Mr. Prasan Tangkoonsoombat	228-230 Soi 2 Maheasak, Surawongse Bangkok, Thailand	233-6697
23. Finest Gems	Mrs. Ajoy Kumjailid	294/3 Silom Road, Bangrak, Bangkok Thailand	235-8681 234-6812
24. Po Rattanakorn	Mr. Wanchai Anantapakorn	274-278 Maheasak Rd., Bangrak Bangkok, Thailand	234-3274
25. See Mee Gems	Mrs. Jinda Srimaneeroongroj	198-200 Maheasak Soi 1, Bangkok Thailand	233-8650
26. Siamkarnploy Ltd., Part.	Mr. Sawad Sukhumthanakul	292 Surawongse Floor 5, Bangkok Thailand	234-3293
27. Niljindarat Ltd., Part.	Mr. Jirapong Nilrattanakul	293/3 Surawongse, Bangrak, Bangkok Thailand	234-3314
28. Rama Jewelry	Mr. Prapan Tanantamane	987 Silom Rd., Bangkok, Thailand	234-7524
29. A.A. Co., Ltd.	Mr. Yont Asvatanakul	104 Siam Centre, Rama 1, Pratumwon Bangkok, Thailand	251-7283
30. Unic Enterprise Co., Part.	Mr. Vinai Kadia	297 Surawongse, Wang Lee Bldg. Room 802-805, Bangkok, Thailand	234-1976
31. Booncharoern Gems	Mr. Boonchai Booncharoern	212-214 Maheasak 2, Surawongse, Bangrak, Bangkok 10500, Thailand	234-0852
32. Tony Gems Ltd., Part.	Mr. Chaiyan Tanguncharoernsiri	715-717 Silom Rd., Bangkok 10500 Thailand	234-0212
33. R.K. International Trading Ltd., Part.	Mr. Kowlat C Hotwane	48 Rachprasong Dept. Store, Bangkok Thailand	252-7502
34. S. Grand Gems LP.	Mr. Gul Tanwani	2nd Floor Bangkok Bazaar, 40-42 Rajprasong Rd., Bangkok, Thailand	253-9183
35. Senjuly Gems	Mr. Niyom Apiromruk	328 Silom Rd., Bangrak, Bangkok Thailand	233-6484
36. Pung Gems Co., Ltd.	Mr. Panya Prasobsuk-chockmanee	242-244 Maheasak Soi 2, Silom Bangkok, Thailand	233-8357
37. Rinyu Brothers Ltd., Part	Mr. Prayoon Rinthanalert	14/2-3 Tok Oriental, New Rd., Bangrak, Bangkok, Thailand	234-3434

Name of Firm	Name	Address	Telephone
38. Kiran Enterprises Ltd., Part.	Mr. Indejit S. Chawla	297 Surawongse, Wang Lee Bldg. Room 708 Bangkok 10500, Thailand	235-7127
39. Gem Trader Ltd., Part.	Mr. Aditthep Lertvivattrakul	316 Maheasak Centre, Silom Rd., Surawongse, Bangrak, Bangkok 10500 Thailand	234-3342
40. S.P. Co-Inter Trading	Mr. Kamol Anantachart	137/12 Pan Rd., Silom, Bangkok Thailand	233-8706
41. M. Rusa Co., Ltd.	Mr. Bimrash Cotharee	297 Surawongse, Wang Lee Bldg. Floor 7, Room 704, Bangkok Thailand	234-1977
42. S T D Gem Ltd., Part.	Mr. Thongdee Prathan- chaimongkol	314/3 Silom Bangrak Bangkok Thailand	234-2451
43. R-Sahee Gems Co., Ltd.	Mr. Boonchai Sae Lee	324/5-6 Surawongse Rd., Bangrak Bangkok, Thailand	233-8640
44. Michael Trade Ltd., Part	Mr. Surapol Srishoomsir	9/160 Soi 130, Ladprao Rd., Bangkok Bangkok 10230, Thailand	233-2054
45. B.S. Booncharoern	Mr. Bangharn Booncharoern	519/7 Soonvoraratana, Chan Rd., Sapan 4, Bangkok, Thailand	286-2958
46. Porncharoern Gems Ltd., Part.	Mr. Prayoon Porncharoern	519/8 Soonvoraratana, Chan Rd., Sapan 4, Bangkok, Thailand	286-4072
47. Gemstar Trading Co., Ltd.	Mr. Nilkesh Choksi	Wang Lee Bldg., Room 801, Surawong Bangrak, Bangkok, Thailand	235-1632
48. Samgo Lapidary Co., Ltd.	Mr. U-Nan Umram	45/2 Maheasak Rd., Surawongse, Bangkok, Thailand	233-1969
49. New Surain R.O.P.	Mr. Suraneda Patel	388 Sida Bldg. Room 707, Maheasak Bangrak, Bangkok, Thailand	235-9040
50. Prosper International Co., Ltd.	Mr. Charoen Toolcharoer	286 Surawongse, Sipraya, Bangkok Thailand	233-5548
51. V.S. Gems Co., Ltd.	Mr. Pradit Shaivises	5/14-17 Soi Santowerhouse, Vithayu Loompini, Pathoomwon, Bkk. Thailand	252-3198-9
52. —	Mr. Sanan Prasert	5/14-17 Soi Santowerhouse, Vithayu Loompini, Pathoomwon, Bkk. Thailand	252-3198-9
53. R. Fa Cia Co., Ltd.	Mr. Yea Hoo Da Up Bra Hum	326-330 Soi Maheasak, Silom Rd., Bangrak, Bangkok, Thailand	233-5466
54. Color Gems International Ltd., Part.	Mr. Aphichart Fufuengwanich	302 Soi Maheasak, Surawongse, Bangkok, Thailand	233-6425
55. Annela Gem Import Export Co., Ltd.	Mr. Kulum Mohummud Kasim	388 Sida Bldg., Room 501, Maheasak Bangrak, Thailand	234-6072

Name of Firm	Name	Address	Telephone
56. Gem Creation Co., Ltd.	Mr. Surin Lattaphanich	102/4-5 Pattanakarn Rd., Saunlaung Prakhanong, Bangkok, Thailand	322-1753
57. Geesons Ltd., Part.	Mr. Watan Hed Hingolani	297 Surawongse Rd., Room 706 Wang Lee Bldg. Bangkok, Thailand	235-2445
58. P.K. Factory Co., Ltd.	Mr. Pipatana Sheonghat pongse	60/2 Prashashern, Bangseo, Dusit Bangkok, Thailand	585-8523
59. Thavee Gems Trading	Mr. Thavee Kunkeaw	23-25 Maheasak Soi 3, Bangrak, Bangkok, Thailand	235-1988-9
60. Vip Jewelry Ltd., Part.	Mr. Vitaya Narathassajan	312/2 Silom Rd., Bangrak, Bangkok Thailand	234-6619
61. Tiffany Gems	Miss Prapassorn Suwannu prakorn	4-5 Indra Regent Hotel, Rajprarop Bangkok, Thailand	251-1111
62. World Cristle Co., Ltd.	Mr. Pornseart Srirathaikul	23 Soi Yommaraj, Saladeang Rd., Silom, Bangkok, Thailand	235-8674
63. Bangkok Assey Office	Mr. Pichet Phalanukul	1230-32 New Rd., Bangkok Thailand	234-3723
64. Golay Buchel (Thailand)	Mr. Phillip A Bachtold	297 Wang Lee Bldg., 9th Floor, Surawongse, Bangkok, Thailand	234-4848
65. Kashani Trading Co., Ltd.	Mr. E. Y. Kashani	50-52 Soi Trocadero, Surawongse Bangkok, Thailand	234-1236
66. Vatana Gems Co., Ltd.	Mr. Theeravat Kanokkul	287/21-22 Surawongse Rd., Bangkok Thailand	234-5324
67. Expo Gems	Mr. Chartri S.	296 Asia Hotel, Phayatai Rd., Bangkok, Thailand	215-0808 Ext. 7404
68. Garuda Jewelry Ltd., Part.	Mr. Pichet Chevapatrakul	182/2-3 Silom Rd., Near Narai Hotel Bangkok, Thailand	234-4330
69. Polly Gems Export Co., Ltd.	Miss Nualjan Tanguthaisak	140-142 Maheasak, Bangrak, Bangkok Thailand	234-1882-3
70. Zeeta Jewelry Ltd., Part	Mr. Shatshaval Durong phisitkul	316/8 Silom Bangrak Bangkok Thailand	233-3774
71. King Star Gem Ltd., Part.	Mr. Suphot Tangvittoonhum	170-172 Maheasak Silom BKK.	233-0492



Ruby ring

THE SPARKLE OF THAI GEMSTONES

Without fuss or fanfare, a sparkling revolution has been going on in some of the remotest corners of Thailand. From beneath the parched and arid soils of Kanchanaburi in the west and Chanthaburi in the east, a vast array of coloured gemstones worth millions of dollars are being extracted every year by a small army of workers.

These 'rough' stones are normally either sapphires of various hues or rubies, two of the most sought-after precious gems in the world today. But there are others : zircons, quartz, garnets and, occasionally, even fabulous diamonds.

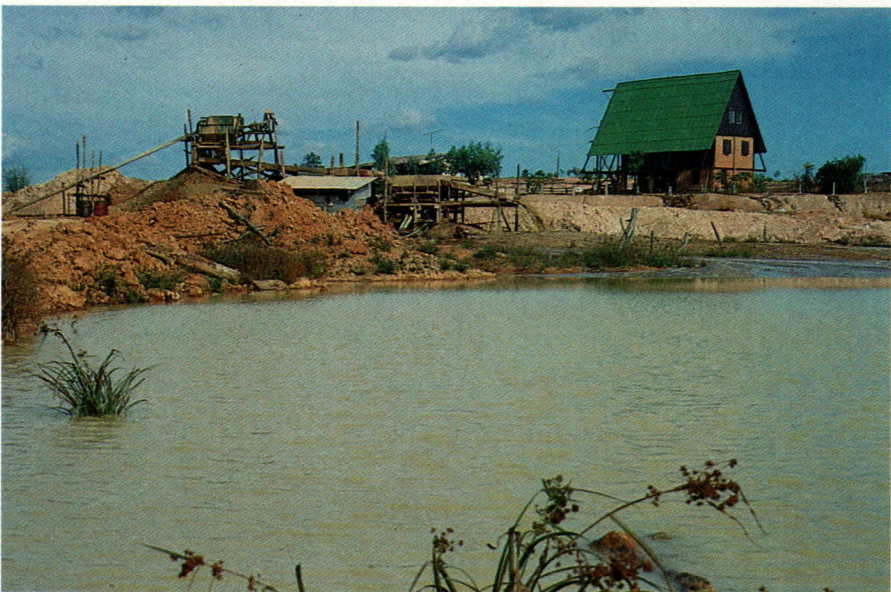
While the rest of Thailand busies itself with tending the rice paddies, worshipping in the temples and



Panning for gems at Nong Bon Noi, Trat



Gem mine at Nong Bon, Trat



Gem mine at Na Wong, Trat

entertaining tourists from overseas, this quiet revolution is becoming increasingly important in the country's financial accounts.

Miners with nothing more than a pick, a shovel and a steely determination are beaver away alongside modern companies using sophisticated equipment in a concerned effort to persuade the earth to part with its precious bounty.

There's no guarantee of success, of course. But Thailand hardly boasted a gems and jewellery industry 15 years ago and today it ranks as one of the country's most important foreign exchange earners. And some lucky ones have indeed struck it rich. Immensely rich.

Once the gem in its raw form has been successfully located, it is usually sold to a middleman who then arranges for it to be cut in one of the thousands of cutting factories dotted throughout Thailand. Here, under the watchful eye of a skilled cutter, the stones will be fashioned into a fabulous treasure that will eventually command a small fortune in the chic showrooms of gem dealers in Paris, Rome, New York or London.

But this is not just a one-way trail. While Thai miners labour over their diggings, thousands upon thousands of precious stones from every corner of the globe are pouring into Thailand; sapphires from Burma, Sri Lanka and Australia; rubies from Burma, Pakistan and the Africa continent; and diamonds from South Africa and Russia.

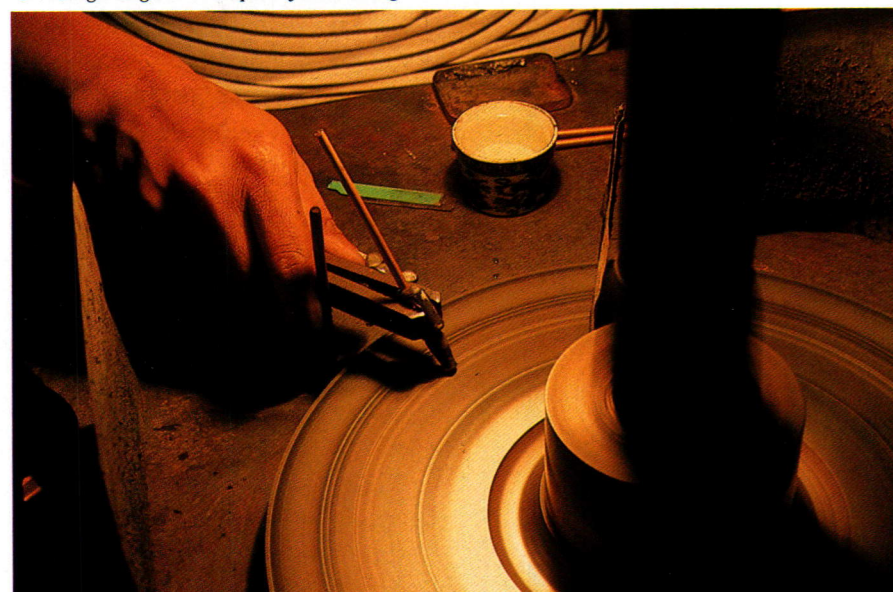
But Why? Thailand is certainly not wealthy enough to buy all these valuable stones, so why bring them here? The answer is that almost all these gems are not destined for the local market. They have been brought to Thailand in their raw form, to be cut by Thais whose expertise in this delicate trade is already widely recognised.



Gems market at Bo Rai, Trat



Grinding the gem to shape before cutting



Gem cutting

For those “in the know,” Thailand is now the world’s premier coloured gem cutting nation, having long surpassed West Germany’s Idar-Oberstein and other major centres in terms of both quantity and quality. In 1983, Thailand hosted an eight-week training course in gem cutting, officially known as the “Basic Gem Cutting Training Centre”. It was organised by the Regional Mineral Resource Development Centre-ESCAP from 6 June to 29 July. Participants came from countries in the region such as Bangladesh, Korea, Indonesia, Malaysia, Nepal, Pakistan, Philippines and Vietnam. But what has made Thailand’s rise so utterly irresistible is the fact that this country is also one of the world’s greatest sources of gemstones. For the first time, a major supplier is also a leading cutter.

Thailand’s ascent to become such an important gem centre is quite remarkable. From a single lapidary employing just 480 cutters in 1946, the industry today provides employment for as many as 800,000 Thais. This emergence from virtual obscurity has accelerated in recent years, with the cost of labour in other nations increasing dramatically and the supply of precious stones from traditional sources showing signs of depletion. In contrast, Thailand has not suffered from the ravages of inflation to the same extent as other countries, and has also continued discovering new sources of gemstones.

In 1986, more than US\$ 300 million worth of precious loose stones were exported from Thailand. This may represent just the tip of a large iceberg, since records of purchases by tourists and other casual visitors are not kept. Thailand, like several other enlightened nations, decided five years ago to ease the restrictions on the import and export of gems in a bid to cut out smuggling and also to promote this still-young industry. The results were effective and dramatic



Workers searching for gems from the pile of gem-bearing material



Jewellery designing



Jewellery setting

Thailand suddenly came from behind in the gems race and took over first place. Its gems and jewellery industry had come of age. Dealers from every nation rushed to Bangkok with either money or their raw gems-to buy or to have their stones cut by Thailand's army of cutters.

But perhaps the most significant event occurred in 1983 when a top-flight delegation from De Beers visited Bangkok to discuss investment possibilities in Thailand's cutting industry. De Beers, which controls some 80 per cent of the world's diamond supplies, clearly recognized Thailand's enormous expertise and future potential, and has investigated ways of expanding its interests in the country.

Thailand presently has 5 diamond-cutting factories employing some 1,200 cutters. Once De Beers reaches an agreement with a local company and provides a regular supply of raw diamonds, then Thailand will be all set to repeat the success it enjoyed with coloured stones.

Stories abound in Thailand about the discovery of diamonds in various remote provinces. Some are credible, others totally ludicrous. For instance, diamond fields have been discovered in Phangnga and Phuket in the southern region of the country.

Some diamonds have been picked up by people working in the tin-dredging industry in southern Thailand, notably off the island of Phuket. The black, monolithic boats that scoop up mud from the depths of the ocean frequently discover more than just tin, and diamonds are easy to spot amid the dark mass of sludge. But for the time being at least, diamonds have not been discovered in any commercial quantities in Thailand.

Despite the obvious interest of De Beers in the country's cutting industry, plus the encouragement given by the Thai government, it seems



that Thailand's real pre-eminence continues to lie in the cutting and setting of coloured stones.

Local cutters are usually apprenticed at the age of 12 or 13, fathers often passing on their skills to sons. Not only are sapphires and rubies cut, but the entire spectrum of gemstones are shaped into beautiful objects; opals, tanzanites, emeralds, citrines, agate, amethyst and spinels.

At the same time, Thai artists and designers are conjuring up some of the most exciting jewellery settings. There is a definite trend away from exporting loose stones and a move towards selling complete jewellery items overseas. With few exceptions, Thailand's jewellers still rely heavily on manual labour to produce settings. While most of the foreign companies have completely automated plants, Thai setters work largely by hand. For example, in the United States the **findings**, or links, for a bracelet are machine-cut from a tube of gold; in Thailand, these will be individually created by hand. Even gold-fasteners for ear-rings are produced by hand in Thailand, whereas in other jewellery centres these will almost certainly be 'stamped' from a continuous length of precious metal. The advantage of Thai manual labour over automated manufacture is in the individuality of the jewellery piece and the added strength of its setting. In addition, custom-made jewellery is still possible in Thailand, at a fraction of the price charged elsewhere.

In the past, people tended to shy away from Thai settings because of the unreliability of the precious metal content stamped on the outside. This problem has been largely overcome in recent times with all the leading jewellers guaranteeing the gold and silver used in the setting. Nowadays, 18 kr. actually means eighteen carats in weight. Moreover, increasing numbers of overseas buyers are

purchasing Thai-designed jewellery because it so closely follows the styles that happen to be popular in one country at any moment. This is because the Thais are shrewdly studying jewellery fashion; what may be popular in the Middle East is not necessarily going to sell well to Australians. Thus, what emerges from the cutting factories and design rooms of Thailand is the result of careful examination of worldwide fashion trends. And the cost is likely to be considerably less

because of the country's highly competitive labour rates.

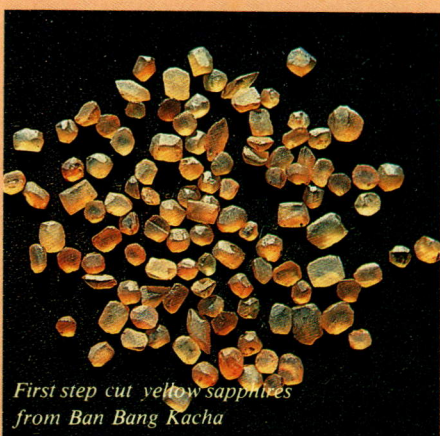
Against this background of gem mining, cutting and jewellery design, it's hardly surprising to discover that Thailand in general, and Bangkok in particular, are outstanding places to buy jewellery. Although much of the country's output goes overseas and those gems brought in for cutting are later re-exported, a good deal of quality stones and fine settings can be

found in the showcases of jewellery shops and boutiques throughout Thailand.

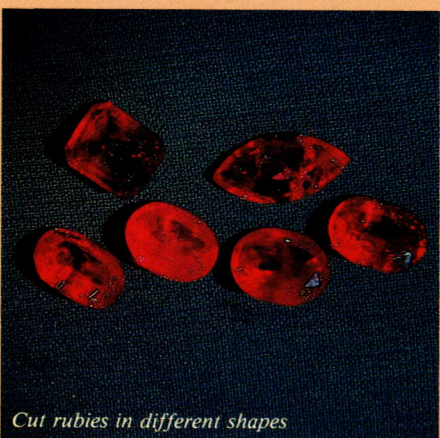
The growing importance of Thailand as a gem centre can also be seen by the fact that the country staged 2 exhibitions in 1983 and 1985, called the Bangkok Gems and Jewellery Fair. The Fair featured displays by many of Thailand's top cutters and jewellers as well as exhibits of locally mined stones.



Rough rubies from Trai



First step cut yellow sapphires from Ban Bang Kacha



Cut rubies in different shapes

STONES

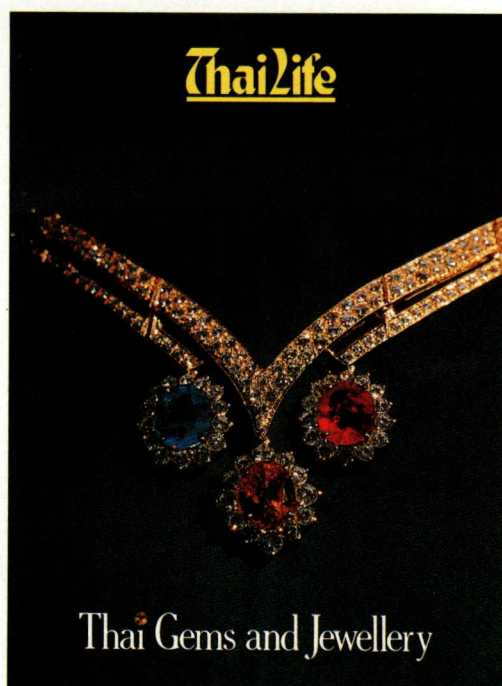
What is your birthstone? Here's a guide.

MONTH	STONE	MEANING
January	Garnet	Constancy, perseverance, good health
February	Amethyst	Sincerity, security, peace of mind
March	Aquamarine	Beauty, honesty, loyalty
April	Diamond	Purity, invincibility, good fortune
May	Emerald	Faith, courage, foresight
June	Moonstone (Pearl)	Tranquility, innocence, longevity
July	Ruby	Success, devotion, integrity
August	Peridot	Fame, dignity, protection
September	Sapphire	Love, mercy, victory
October	Opal	Hope, happiness, truth
November	Topaz	Fidelity, providence, good luck
December	Turquoise	Prosperity, piety, courage

STONE	COLOUR
Diamond	All colours
Ruby	Red
Sapphire	Blue, green, yellow, bluish-green, yellowish-green, pink, violet, orange, brown, colourless
Emerald	Green
Aquamarine	Blue, bluish-green
Opal	All colours
Topaz	Yellow, blue, green, pink, brown, colourless
Peridot	Yellowish-green, yellow, brown
Turquoise	Blue, bluish-green, green
Garnet	Red, pink, orange, green, violet, brown
Beryl	Green, bluish-green, yellow, pink, violet, colourless
Spinel	All colours
Moonstone	Colourless, blue, yellow
Zircon	Colourless, blue, red, orange, yellow, green, brown
Lapis Lazuli	Blue
Citrine	Yellow
Chrysoprase	Green
Jade	Green, blue, black, pink, yellow, violet, brown, white
Carnelian	Red/brown, orange
Amethyst	Violet

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This replica of the royal state barge, Suphanahongse, is an exquisite example of the artistic skills possessed by Thai jewellers. This work of art is crafted from one kilogram of pure gold and is adorned with 1,180 (113.70 carat) rubies, 1,067 (179.20 carat) blue sapphires, 447 (76.12 carat) yellow sapphires and 2,854 (45.03 carat) diamonds. It took 40 craftsmen 10 months to complete and has captured within it the beauty and uniqueness of traditional Thai art.