THE STORY OF HORNBILL IVORY

The strange substance called "hornbill ivory" was formerly an important commodity in Asiatic trade, and it was extensively carved, especially in China and the East Indies. Carvings in it were always highly valued and they have now become exceedingly rare. Thus we are very fortunate in having a fine example in the University Museum (see *Figure 1*).

There are at least sixty varieties of Hornbill birds in the Eastern Hemisphere, but only one of these bears the "ivory," a hard, carvable substance which is almost as dense as elephant ivory. This is contained in a solid casque or *epithema* at the front of the head above the beak. (The casques of several other species of Hornbill are far more imposing, but they are hollow or filled with spongy tissue.) The single exception is the Helmeted Hornbill, *Rhinoplax vigil.*

The Helmeted Hornbill is without doubt the most extraordinary member of a remarkable family. It is not only one of the largest birds in the jungles of Southeast Asia, but it is certainly the ugliest, in spite of the highly complimentary portrait of it shown in *Figure 2*. Even a devoted ornithologist has described it as "a perfect nightmare of a bird." Measuring nearly five feet from the end of its beak to the tip of its tail, it has coarse plumage, primarily of a dirty reddish black, except for a white stomach and white bands on its tail. It has no feathers at all on most of its neck and back. And as the bases of its flight feathers are left bare, it makes a terrific noise when flying which has been compared to the sound of an approaching train. Furthermore, its two excessively long tail feathers moult alternately, so that only one is presentable at a time.

A fruit-eating bird, it spends its life in the highest trees and hence is seldom seen. However it is often heard, for its call, a series of repeated, gradually accelerating *toks* ending in a burst of insane laughter, can be heard for nearly a mile. Due to the difficulty in observing this bird, almost nothing is known of its nesting habits. But presumably it behaves like its other hornbill relatives; which means that the male shuts up his

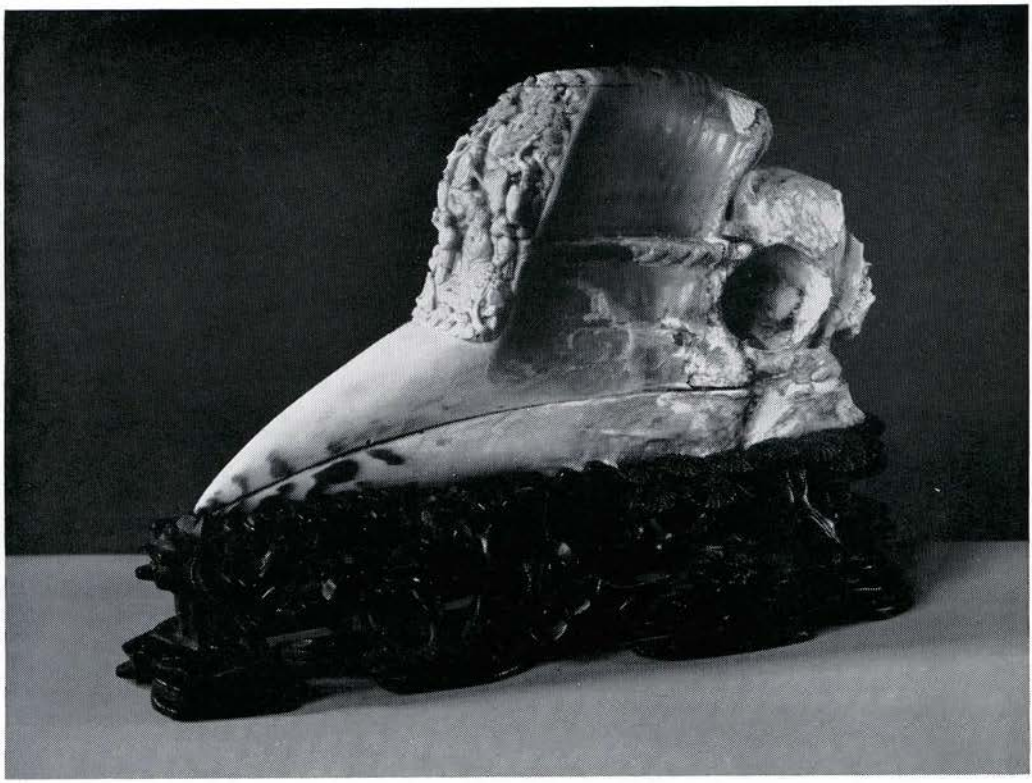


Figure 1. Carved skull of the Helmeted Hornbill. University Museum.

mate in a hollow tree, plastering up the entrance to keep her a prisoner until the young ones are hatched and able to fend for themselves; meanwhile he comes at intervals to feed mother and young with packages of partially digested fruits served up in the cast-off lining of his gizzard.

But with all its other peculiarities, the most unique thing about *Rhinoplax vigil* is its casque or "helmet." Not present on the very young birds, this gradually grows upward from the base of the beak, over the front of the skull. The bones of the skull behind it are cleverly formed so as to brace the casque and give it a maximum of striking power, while

cushioning the brain against the shock of impact. One blow of the bird's beak, backed by this natural hammer on the end of the supple neck, would probably be fatal to a man if it struck him on the head—which may be one reason why our zoos do not exhibit the Helmeted Hornbill. Just why nature has gone to all these pains is still unknown. No one has ever observed any use for this reinforced casque, and the suggestions that have been offered sound very fanciful.

The solid ivory-like substance which forms the bulk of the casque is covered at the top and sides—but not in front—by a strong and gleaming sheath of brilliant red, which also overlaps the skull proper. It is the colour of this sheath, together with the hardness and density of the inner mass, that have made the casque so highly prized for carvings, quite apart from the rarity of the substance. When the bird grows old, a corrugated, horizontal line appears on the sides of the red portion and the whole outer surface becomes rather crinkled, as indicated in *Figure 14*. After death, the red layer often tends to split away from the rest, especially under conditions of excessive dryness, and it gradually loses colour. However, these changes can be avoided or at least minimized, by special treatment, as many of the Chinese carvings demonstrate.

The Chinese, who developed the use of hornbill ivory to such a high degree, were apparently quite late in discovering this substance and learning its possibilities. Probably this was because the native home of the Helmeted Hornbill is considerably south of China. Its range extends from Tenasserim in Lower Burma, and Southern Siam, down the Malay Peninsula to Macassar, and out on the islands of Borneo and Sumatra. Not until the Ming Dynasty (1368-1644) does it definitely figure in the Chinese records, and make its appearance among the imports in the lists of "tribute" from foreign nations, although a few pieces might possibly have reached China before that.

The Ming writers called this material *ho-ting*, writing it with the character for "crane" and the one for "head or crest." Apparently this expression originated as a Chinese attempt to reproduce the similar-sounding Malay word *gading*, meaning "ivory." For Malay was the *lingua franca* of the South Seas trade, and the peoples of Southern Asia used this term to refer to the substance from the Hornbill, as well as to elephant tusks. (In the former case, the Malayans usually qualified it with

the word *Enggang*, meaning a large hornbill, thus producing the compound expression *Enggang gading*, but the language is greatly simplified when used in trade.)

The name *ho-ting* was probably adopted by Malay-speaking Chinese traders who had close contacts with the Indies. But the Chinese literati, who at first seem to have known only the outer red sheathing of the casque, were inclined to consider the characters as descriptive rather than phonetic, as if they thought the expression really meant "crane crest." Sometimes they even added a word to call it "crane's crest red" (*ho-ting hung*). It might be assumed that this concept arose through associating the bright red colour on the outside of the casque with the crimson patch of feathers atop the head of the common Manchurian crane. However, the explanation is apparently not so obvious, for Ts'ao Chao, a Ming scholar of the early fifteenth century, accounts for the name very differently. He wrote, "*Ho-ting* comes from the Southern Barbarians. In the Great Ocean there is a fish, in the middle of whose head (*ting*) there is a skullbone (red) like blood; it is called the crane fish (*ho yü*)."

Later, when it became definitely known in China that *ho-ting* was the product of a bird, various writers of the Later Ming and the Ch'ing Dynasty (1644-1912) arbitrarily identified the bird from which it came with a fowl called the *Meng-t'ung* or "King of Yüeh Bird." The latter had been mentioned since at least the fifth century in Chinese accounts of Indo-China and other lands to the south (quoted in more modern works such as the *T'u-shu chi-ch'eng*); but the descriptions of it show conclusively that these other names must have referred to one or more of the other species of Hornbill, and certainly not to *Rhinoplax vigil*. They mention that the Meng-t'ung's beak was very long, hooked at the end, and capable of holding two pints of liquid, which feature caused the people of the south to use them for drinking vessels. This could only refer to one of the other species of Hornbill that have hollow beaks and casques, such as the Rhinoceros Hornbill or the giant Homrai Hornbill, *Dichoceros bicornis*, which is still found in Indo-China and in the southernmost districts of China proper. In fact, what is probably the earliest account of the Meng-t'ung very specifically describes the Homrai Hornbill, saying, "Its beak is over a foot long, yellow, white, and black in colour, lustrous as lacquer."

Figure 2. Idealized portrait of the Helmeted Hornbill. From Elliot's *Monograph of the Bucerotidae.*

Figure 3. A Chinese misconception of the bird that gave *ho-ting*. From the *T'u-shu chi-ch'eng*.

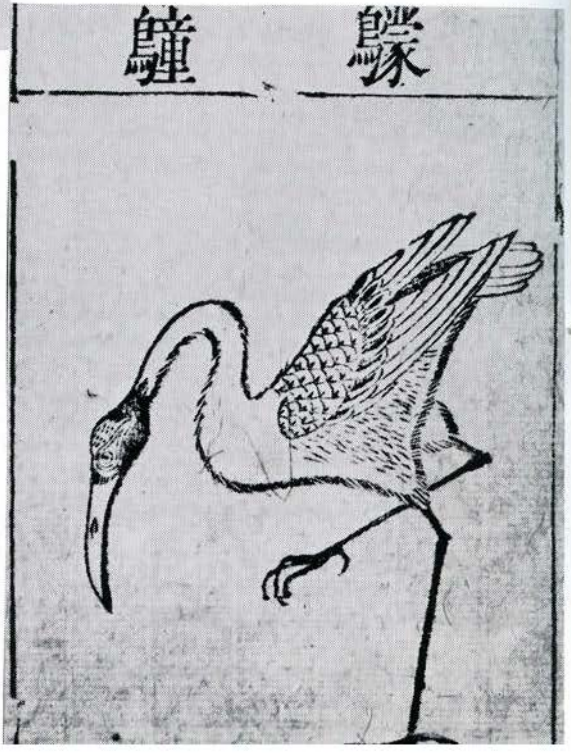


Figure 4. Another misconception of the bird that gave *ho-ting*. From the *Pên-ts'ao kang-mu*.

The later Chinese writers never made any real distinction between the Meng-t'ung, the Ho-ting bird, and the *Hsiang-tiao* or "Elephant eagle," a late term which was loosely applied to hornbills in general. Although they did finally admit in their encyclopaedias that *ho-ting* was unsuitable for making cups, this merely implied doubts about the old tradition regarding the use of the Meng-t'ung's beak for drinking vessels, without questioning the fancied identity between the Meng-t'ung and the Ho-ting bird. Meanwhile the tendency of the scholars and writers to translate *ho-ting* literally continued on, as we can see from the crane-like renderings of this bird in the Chinese books on Natural History (see *Figures 3 and 4*). In fact, a sixteenth century book, the *Hua i k'ao*,, even calls it a "Sea Crane," (*Hai-ho*), going on to describe the bird, and the trade in its "crest," as follows:

"The Sea Crane is large, with a long neck, and wings and feet over five feet long. It is stated that this swallows common birds just as it eats fish and eels. . . . There are traders who deal in its crest. (The bird) resembles a pelican, but has a sharp beak. The male is large, and the female slightly smaller. In the daytime it pecks up food in the ocean, and at night it roosts in rugged valleys. The Barbarians of the Islands (in the East Indies) prepare small spears and give them to apes. Then, on moonlight nights (the monkeys) hide themselves at the cranes' usual nesting places, and picking out the big ones they pierce them. By morning they obtain five or six heads. The Island Barbarians then cut out the crests and sell them to traders aboard sea-going junks. When they are brought to Fukien and Kwangtung, their price is equal to gold and jade."

This tale of bird-hunting apes sounds as fantastic as the comparison between the Helmeted Hornbill and a pelican, but we shall see that it probably had a remote basis in fact.

The first mention of *ho-ting* in Chinese records dates from the year 1371, when Mahommed Shah, the King of Northern Borneo, sent some pieces to the Ming Court, along with other "tribute" gifts. The official Ming history, which records this event, also mentions *ho-ting* as being received in tribute from Banjermasin in the south of Borneo, as well as from Malacca and Bengal. (Since the Helmeted Hornbill does not live in India, this last reference probably just means that Bengali merchants picked up the substance as they came around to China by sea, along the

coasts of Tenasserim and the lower Malay Peninsula.) In addition, the Ming Dynastic Statutes record the receipt of *ho-ting* from Java; while the contemporary geographical works of that period describe it as being a product of Siam, the Pahang region of Malaya, and Sumatra as well. Throughout the Ming, and in the succeeding dynasty of the Ch'ing, for more than half a millennium, China continued to be supplied with hornbill ivory from these same sources—either through tribute shipments or by more direct dealings with the "Island Barbarians."

Two kinds of hornbill ivory are mentioned in the Ming accounts as coming from Macassar; plain *ho-ting*, and golden matrix (*chin mo*) *ho-ting*. Probably this distinction marked the difference between the red sheathing material by itself, and the entire casque consisting of the sheath with the yellow ivory core. We also find the precise value of the substance listed in the official regulations of the Ming Dynasty, which set the value of a single piece of *ho-ting* at a thousand cash, the same amount given for half an ounce of precious coral beads, or a fifth of an ounce of rare seed pearls. This definitely shows us that the hornbill ivory must have been worth far more than true elephant ivory at that time; for the latter was valued at five hundred cash per pound, while it would have taken a great many pieces of *ho-ting* to make a pound, especially if the term was sometimes applied to the red sheathing alone.

Ts'ao Chao, the fifteenth century Ming author who ascribed *ho-ting* to a fish, provides some useful information by telling how it was utilized in his time. He says that it was used to make ornamental facings for official belts, and in addition was "backed with tortoise shell" to make combs. Quite possibly this "tortoise shell backing" was merely the lighter-coloured interior of the hornbill casque, since the *ho-ting* which this author mistook for a fish's skull-bone must have been only the thin red sheathing material, and he obviously did not know it as a composite substance.

Wang Tso, another Ming writer, who edited Ts'ao's chief work after the latter's death, offered some additional comments. He remarked that he himself had recently visited the official residence of a prominent statesman, and had seen the latter's belt of *ho-ting hung*. Whereupon its owner had given him the following information: "This is true *ho-ting* from overseas. They cut the *ho-ting* into pieces and fit these together to make a belt. On the surface of this material are fine wavy lines; ex-

amples without the lines are counterfeit." Thus we can see that the value of hornbill ivory in Ming times inevitably led people to try to fake it, just as some Chinese have imitated jade and elephant ivory down through the centuries.

Wang Tso concluded his remarks by saying that he had also seen *ho-ting* on which the sides were red but the top was not (a fairly accurate description of a whole casque in cross section), and that since *ho-ting* came in large pieces, three of these were enough to make the plaques or facings for a single belt. From these remarks we can reasonably infer that the complete casques must have been less common, and that the *ho-ting* of fifteenth century Chinese commerce was more usually the red sheath, probably steamed and pressed, to form flat sheets, in the way that tortoise shell was handled. If so, it would seem that the artisans of that time were probably already acquainted with the process of pre-treating hornbill ivory which was so expertly used in the following dynasty.

The Ming belts referred to in the above passages were large hoops of stiffened leather that extended far out beyond the robes, and were used more for ostentatious ornament and the designation of rank (by the substances employed on the decorative plaques) than for the usual, more practical purposes. When the Ming Dynasty was succeeded by the Ch'ing in 1644, the style of costume changed completely. The Manchu conquerors from beyond the Great Wall brought in their own type of belts: tight, narrow, functional ones of colored cloth or silk, which had no room for ornamental facings, and depended on buckles for decoration and for designating the rank of the wearer.

Probably the most typical Chinese carvings in hornbill ivory from the Ch'ing period were two-piece rectangular buckles, with a projecting button on the back of each piece to fit into slits at each end of the belt. These consist of both the red and the yellow substances from the hornbill casque, with the former as a surface layer. The decorative pattern has been carved into the red, which is cut away entirely in places to emphasize the main designs. In addition, the whole surface layer has been undercut horizontally—except for a few connecting posts to hold the two layers together—in order to give the red an effect of translucence. Both the red and the yellow layers are more tightly joined than they would be on the natural casque, and they have a strangely uniform

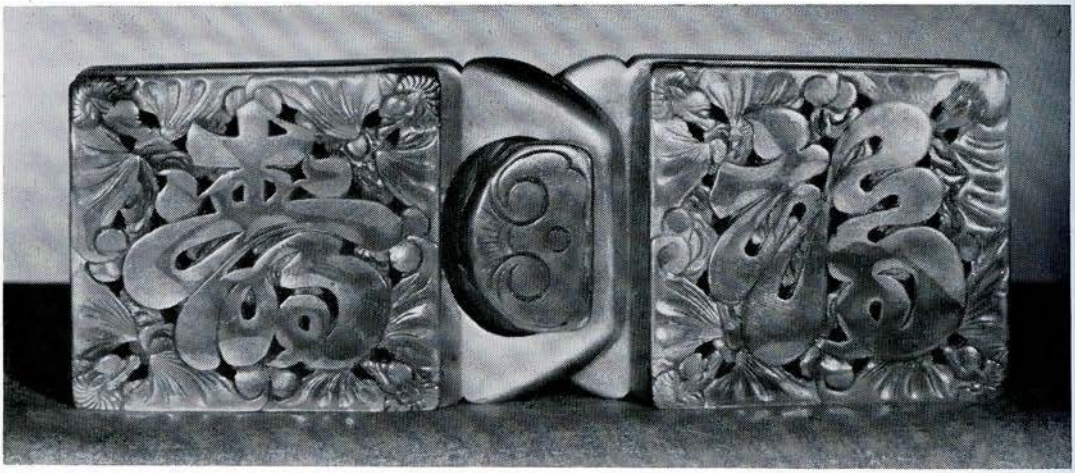


Figure 5. Unusual hornbill buckle, American Museum of Natural History.

texture with a glistening luminous quality in both the red and the yellow which is not present in the natural substance. Just how this has been achieved is not entirely clear, but apparently it is the result of a process by which the raw material in the hornbill casque was specially treated in order to flatten it and provide broader pieces to work with. It also looks as though they first removed the red sheathing to smooth and straighten it, and then later welded it firmly to the flattened core material before the final step of carving. Possibly they did these things by the same methods that were employed in the ports of South China for treating horn and tortoise shell, since some of the old Chinese writers specifically said, "*Ho-ting* is like tortoise shell."

However it was accomplished, it would seem that the processes involved not only flattened the substance and imparted a translucence, but that they also condensed it to provide a greater structural strength and to counteract the natural tendency for the thin layers that composed the casque to separate under dry conditions. We can only infer this preliminary manipulation from the finished product, since no direct information about the techniques of treating hornbill ivory has been recorded. Any special methods used by Chinese craftsmen were always kept as closely guarded secrets, by the guilds involved, to forestall outside competition.

The most typical pattern on these two-part buckles is a pair of lions, with a *ju-i* jewel symbol carved on the hook which joins the two pieces, thus making a rather bad pun on *shih shih ju i*, "May everything turn out as you wish" (see *Figure 9*). Examples of this type are in the Chicago Natural History Museum, the Dayton Art Institute, and in the collections of Miss C. F. Bieber in Santa Fe, Ralph M. Chait of New York, and of the writer; but in spite of the similar decoration no two are quite alike, showing that they were individual productions and not mass produced.

Three other examples of Ch'ing rectangular buckles in our museums have the same form but very different decorations. One in the Chicago Museum of Natural History has the familiar group of the Eight Buddhist Symbols, four on each panel; while another in the American Museum of Natural History (illustrated in *Figure 5*) has the lucky characters for happiness and long life on the separate panels, each surrounded by four happiness bats in the corners. The third, in the Carnegie Museum, Pittsburgh, has two panels with assorted symbols of long life and happiness beautifully carved; but this was apparently worked wholly in the yellow core substance, and then given a few coats of red lacquer on the upper surface to produce the illusion of red sheathing. This coating has

Figure 6. Hornbill snuff bottle (both sides). Seattle Art Museum.

been so crudely applied that it fails to resemble true *ho-ting* red, and spoils the total effect; still it is interesting as showing another form of falsification resorted to when it was impossible to obtain the highly coveted substance in its complete form.

Lastly there was another form of Ch'ing buckle made of a single piece of hornbill ivory, in oval shape, with two buttons on the back to fit into the slits at the ends of the belt. On this type, the red surface was carved to show a coiled dragon writhing among clouds. This style seems to have been a late one. Examples can be seen in the American Museum of Natural History and in the collection of Walter Beck in New York City.

The custom of using combs made from *ho-ting* appears to have gone out with the fall of the Ming, possibly because the Manchus introduced the fashion of wearing the hair in a queue, which did not require much attention and reduced the importance of ornamental combs. But we find other practical objects from hornbill ivory made during the Ch'ing period, such as plume-holders for attaching the peacock-feather awards of merit to the Manchu court and official hats. One fine example of a plume-holder in the Bieber collection has the red outer surface at the top of the tube cut away, to leave against the lighter background a device formed of a bat, a jade chime-stone, and linked joy characters, to form a rebus meaning, "May you have happiness, good fortune, and marital bliss" (*Fu ch'ing shuang hsi*). This is a characteristic Later Ch'ing pun symbol often found on marriage gifts, so probably this plume-holder was made for a wedding present (see *Figure 10*).

Other Manchu plume-holders made of *ho-ting* have been left plain, with only a simple band of red down one side. However, this bright colour was in itself a symbol of joy and happiness in China; and that is undoubtedly one reason why the Chinese so prized things from hornbill beak, and were so careful to utilize its red outer surface, except when making things for foreigners who would not be expected fully to appreciate it.

Another characteristically Ch'ing product was the archer's thumb ring made of *ho-ting*. For centuries the Chinese had worn thumb rings on their right thumbs in hunting and warfare as an aid in drawing the bowstring in the typical Mongolian release; but it remained for the Manchus to introduce the custom for everyday use, as a sign that they belonged to a martial race. For Court wear the Manchus were eager to

get rings of rare substances such as this, to make a greater impression. All the hornbill thumb rings that we have seen have been of the familiar Later Ch'ing type, with one side flattened to make an ornamental facing. They are usually very plain, with merely the red surface of the casque shown on the flat side for decoration, as illustrated in *Figure 8*. However, one in the Beck collection not only has carving in relief on its red facing, but it also has an incised design around the back.

After the introduction of tobacco from the West in the early eighteenth century, the Manchus and their Chinese subjects adopted the custom of carrying snuff bottles. The example in *Figure 6*, from the Seattle Art Museum, seems to have been made from a cross-section of casque that was pressed to widen it and give it translucency. Then the interior was hollowed out and the two broad faces were carved with scenes symbolizing long life, after which the narrow strips of red on each side were carved into dragons. Others have the faces left plain, or with a very simple design, while the principal decoration is provided by the carving of the red portion at the sides.

All the Ch'ing Dynasty hornbill objects that we have discussed so far were made from previously treated *ho-ting*, but in the case of some of the smallest snuff bottles the original core material was utilized—perhaps after the red sheathing had been stripped off for other uses. A plain, untreated *ho-ting* snuff bottle is in the collection of Henry C. Hitt of Bremerton, Washington, while the Carnegie Museum has quite an elaborate one, with a mythical animal on one side, and an inscription in two forms of Chinese writing on the other.

Some Chinese carvings were made on the hornbill ivory *in situ* without any preliminary preparation, right on the skull itself. These represent the finest and most elaborate achievements in *ho-ting* work. Yet the technique is essentially that of the ivory carver rather than of the *ho-ting* craftsman as such. As far as we know, the only example showing the complete skull of the Helmeted Hornbill is the one in the University Museum, as shown in *Figure 1*. Two more carved skulls are in the Chicago Museum of Natural History (see details in *Figure 11*). These differ in workmanship from the first, and from each other, suggesting separate artists. The three are tentatively said to come from the eighteenth century, but it is hard to date them as we have no definite clues. The carving on the one in Philadelphia (*Figure 11a*) pictures a famous

incident at the founding of the Chou Dynasty in the twelfth century B.C. It shows Wen Wang, the first Chou king, discovering Chiang Tzu-ya the statesman who later helped him to conquer China, as an exile disguised as a simple fisherman. The Chicago carvings (*Figures 11 b and c*) show, respectively, a garden episode in the romance between the T'ang Emperor Ming Huang and the beautiful Yang Kuei-fei, and an unidentified theatrical scene.

About ten years ago, an elderly woman came into the Oriental section of the Metropolitan Museum with an even stranger object: the

Figure 7. Oval hornbill buckle.
Walter Beck, New York City.

stuffed head of a Helmeted Hornbill, feathers and all, having the face of the casque elaborately carved to show a Chinese scene. The owner thought it was an ostrich's head, and said that it had been brought from the East many years before. Unfortunately her name was not noted down, and the present whereabouts of this apparently unique specimen is not known.

Practically all the Ch'ing Dynasty carvings that we have been discussing are said to have come originally from Peking. But we do not know whether they were all originally carved there, or whether some were made in Canton, which seems to have been a centre of the *ho-ting*

industry down to the end of the dynasty. However, the later Cantonese work in hornbill ivory, during the nineteenth century, seems to have been entirely devoted to the making of European-style jewelry for the Occidental trade, so it has no real connection with the purely Chinese art.

Meanwhile, the use of hornbill ivory spread to Japan. The Japanese word for it was *hōden*. This seems to have been an obvious borrowing from the Chinese expression *ho-ting*, and yet the Japanese never wrote it with the original Chinese characters (they used kana, or other characters merely as phonetics), which would seem to indicate some knowledge that the Chinese expression had been a purely phonetic transcription from another language and did not actually mean "crane's crest." At the same time, it would appear that at least some of the educated Japanese, like the later Europeans, were deluded by the knowledge of the Chinese written term into thinking that the substance really did come from the head of a crane. For example, an eighteenth century Japanese book on arts and industries, the *Sō-ken ki-shō*, says of *hōden*, "According to tradition this is a bone from the head of a phoenix; but it is not necessary to slaughter this thing of good omen (the fabulous phoenix), for it is really the head bone of a Chinese crane."

Probably the belief that it came from a Chinese bird, rather than from a bird of the South Seas, arose because the Japanese at that time must have been obtaining the hornbill ivory from Chinese traders, at the port of Nagasaki. For this was the period of isolation, during the reign of the Tokugawa Shoguns, when the Japanese were not permitted to indulge in overseas trade on their own.

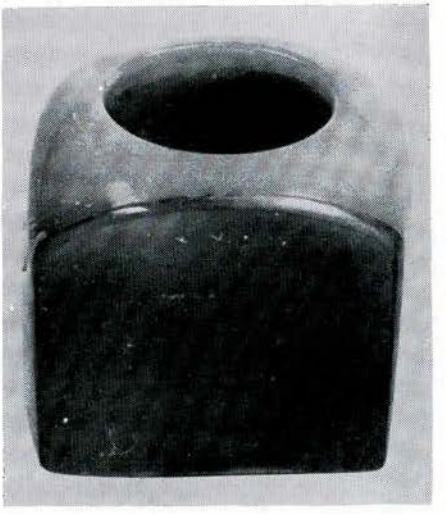


Figure 8. Archer's thumb ring. Chicago Natural History Museum.

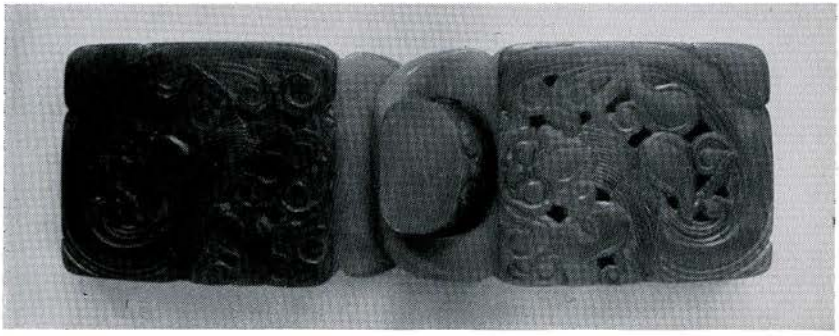


Figure 9. Common type of hornbill buckle.
Chicago Natural History Museum.

However, after the opening of Japan in 1868, Japanese traders probably obtained the hornbill ivory for themselves from the lands to the south, as a later nineteenth century reference to this material in Lower Burma speaks of its export to Japan.

The Japanese book that we have already quoted describes *hōden* as a jewel, so it must have been very rare in Japan and highly prized. Indeed, it must have had an excessively high value, as examples of Japanese work in it are very hard to find. The Newark Museum has two netsukes, or belt toggles, carved from it. One is a miniature copy of a Chinese belt buckle, with the prominent details in red, apparently from a piece pre-treated in the Chinese manner; and the second represents a cluster of chrysanthemum flowers and leaves carved on a flat oval from the core of a hornbill casque. Even though the red sheath was stripped

Figure 10. Manchu plume holder. Miss C. F. Bieber, Sante Fe.

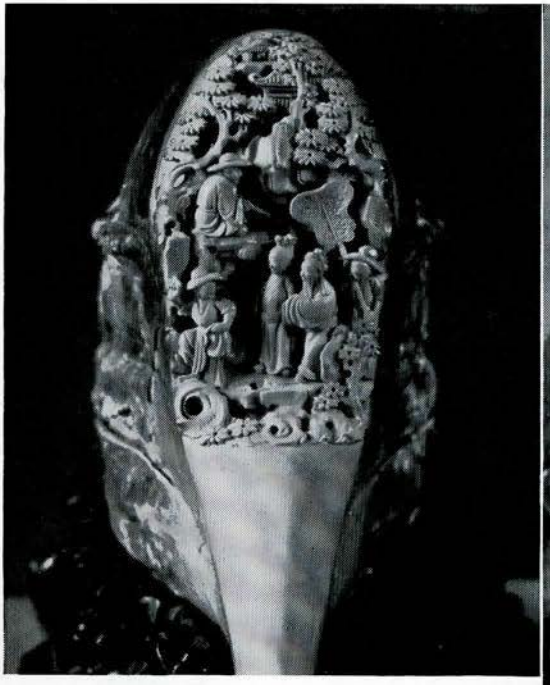
off the second piece in advance, the red-orange tint of the layer immediately below it remains, and this has been utilized to give colour to some of the flowers at the sides. As additional lily-gilding, in the Japanese manner, tiny specks of metal were inlaid on the leaves and carved to simulate insects feeding on the plants (see *Figure 15*).

The scarlet sheathing of the hornbill casques which the Japanese artisans did not use in carving the netsukes they utilized in other ways, since the material was too costly to waste. For example, they cut minute slivers of it to inlay fine lines and dots of bright colour on other substances. An *inro*, or medicine box, in the Havemeyer collection at the Metropolitan Museum is a fine specimen of this. Its golden lacquer surface is ornamented with the figure of a white elephant in ivory, on which the saddle and other trappings are inlaid in mother-of-pearl, tortoise shell, gold, and hornbill sheath. The last is used to give the saddle blanket a brilliant outline.

A German writer has said that this sheath material was also used to render the red cheeks of Uzume, or the red hair of the Shōjō demons, popular subjects for the netsuke carvers of Old Japan. But all the examples of these figures that we personally have seen had their details worked in vermillion lacquer, which is far more opaque. (The German's translator complicated matters still further by confusing the Hornbill with the Toucan; but the latter, while it might superficially look similar because of its large beak, is an entirely different kind of bird.)

The Chinese, from whom the Japanese had learned the art of using hornbill ivory, had probably themselves learned about it from the peoples to the south, in the regions from which they obtained the raw material. For there was a long tradition of its use in the East Indies. In the Ming Dynasty, the Chinese had just begun to import it; but an early Ming traveller, Ma Huan, writing in 1416 about the Palembang region of Sumatra, reported a sizable industry there. He said that they used *ho-ting* for making the hilts and scabbards of their swords, and for various other purposes.

In the last century, an English visitor to Sumatra named Forbes testified to the persistence of the art. He wrote that in Palembang the hornbill casques commanded a high price, since the people there used them to make studs and cuff links of great beauty (obviously for sale to Europeans). Recently, Mr. A. F. C. A. van Heyst kindly sent the writer a



(*a*) University Museum.

(*b*) Chicago Natural History Museum.

Figure 11.
Carved Hornbill skulls.

(*c.*) Chicago Natural History Museum.

photograph from the Indies Institute in Amsterdam, showing an exhibit of modern jewelry made from hornbill ivory, which was until recently still being produced in Sumatra. The display consists of European-style brooches, ear-drops, etc., all severely plain, with their only decoration provided by the polished red and yellow substance in itself. As far as we know, the Second World War with the Japanese occupation of the Indies, followed by the post-war civil strife, have brought an end to this art, along with many other specialized local industries.

In Borneo, the other great island home of the Helmeted Hornbill, from which the first recorded imports of *ho-ting* came to China, the work in hornbill ivory ranges from rather simple carvings without much detail to intricate objects of the most delicate craftsmanship. Typical examples of the simpler type are the toggles that were used to fasten the belts and sword-ropes of the head hunters, before head-hunting was officially abolished, and the so-called "tiger-tooth" ear plugs, such as could only be worn by tribal elders, or by a man who had taken a head. The University Museum has specimens of both these types which were brought back from Sarawak in 1897 (see *Figure 13*). The British Museum has others from the same collection, while the University Museum of Archaeology and Ethnology in Cambridge, England, also has examples.

The older toggles were made from rather large lumps of the substance, and their highly stylized carving can sometimes be recognized as representing animal forms. The "tiger tooth" ear plugs are rather small by contrast, since two are generally made from a single casque. They are shaped like a carrot, about an inch long, with a flaring projection at the top which keeps them from slipping through the holes pierced for them at the top of each ear. Sometimes the pair is fastened together by a string of trade beads, for added ornament and as a protection against loss in case one should drop out.

The older examples of both types in the University Museum have been carved from the ivory portion without any of the red sheathing, although on later examples of both toggles and earrings the red portion is commonly used. It seems possible, therefore, that in the 1890's when the former were obtained, the red sheaths were still generally being stripped off and reserved for export to China as a valuable trade commodity.

The finer, more elaborate hornbill ivory carvings from Borneo are represented by other types of earrings still being made and worn there. Some are small and chunky-looking, with keyring-like projections for attachment to the ears, but the most handsome are very long ones, generally carved from the whole of the upper beak and casque. The flat, yellowish portion is figured with a pattern in relief, while the red exterior is usually cut away to leave a design in silhouette, although it is sometimes left plain; then the end of the bill is notched and bent into a hook for attaching it to the ear lobe. A superb example of this type, from Dutch Borneo, was shown at the Indonesian Exhibition sent over to this country by the Netherlands Government in 1948. (It is illustrated in the exhibition's catalogue, "Indonesian Art.")

More rarely, in making such earrings, the beak itself is cut away and a hook is formed from the ivory portion, as shown in *Figure 12*, which shows a pair being worn by the artist who made them. Mr. T. H. Harrisson, the Government Ethnologist in Sarawak and Head of the Sarawak Museum, who very kindly provided this photograph, also sent the writer some additional information about the Helmeted Hornbill in Northern Borneo. He says that it is a rather wild bird, extremely shy and hard to catch, and that most of the specimens are trapped in the nest by nomadic Punan tribesmen and sold to the settled peoples for salt and tobacco. It seems likely that this practice was a very old one, for the Ming legend of the bird-hunting apes very probably arose from similar cases of half-wild hunters furnishing hornbill casques to the more civilized natives of the coast, remaining unseen by the foreign merchants who were the third parties in the transaction.

Further comments on the use of hornbill ivory in Borneo were provided by Mr. I. A. N. Urquhart, through the kindness of Dr. Bushnell of the University Museum in Cambridge. According to him, in one locality (the Belaga Sub-district), hornbill earrings are no longer being made very much—partly because the modern tribesmen are less inclined to puncture and stretch their ear-lobes, so that they are unable to wear such earrings, and partly because the traditional arts and crafts are tending to decline. As a result, hornbill earrings, though they are not yet rarities, are still quite uncommon and much valued, and therefore not easy to obtain. In other areas, he knew of one or two people who worked hornbill in their spare time; and although he observed that in

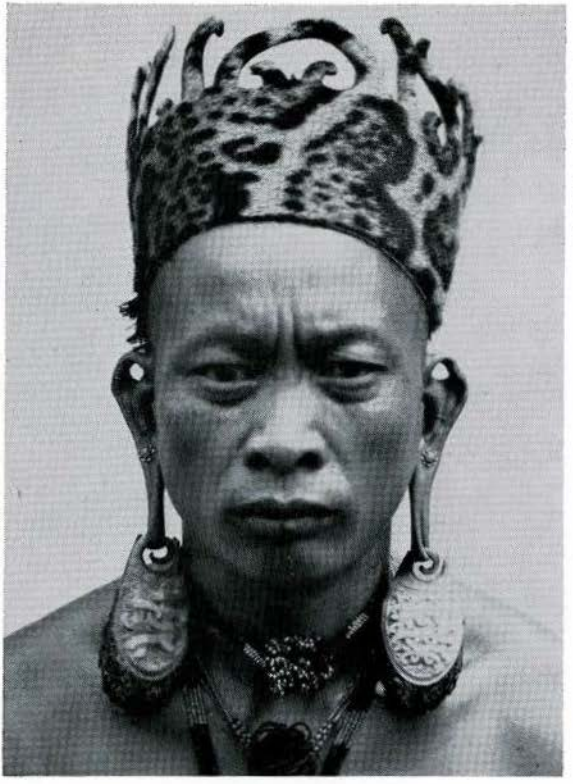


Figure 12. Chief Anyi, a Kelabit artist in modern Borneo, wearing hornbill earrings that he made himself. Courtesy of T. H. Harrisson.

Figure 13. Nineteenth Century toggle and earplugs from Sarawak. University Museum.

Figure 14. The first picture of the Helmeted Hornbill to reach Europe.

the Baram district hornbill earrings were made to a somewhat greater extent, he says they still could not be called common there. In short, it would seem that even in Borneo, the carving of hornbill ivory is tending to become a dying art, though it has survived longer there than anywhere else.

Hornbill ivory was also worked for a very long period on the mainland of Southeast Asia, in Lower Burma, Siam, and Malaya, and probably in Indo-China as well. Lodovico de Varthema, the early European traveller, describing his visit to Tenasserim at the beginning of the sixteenth century, mentioned it. He said that the people there made sword hilts out of the red and yellow beak of a kind of bird much larger than an eagle, which could have been none other than the Helmeted Hornbill.

An Englishman named Davison, who studied the birds of Lower Burma in the last century, discussing the occurence of *Rhinoplax vigil* in Tenasserim in his own time, wrote that the heads of the bird were in great demand. They sold for as much as fifty rupees apiece, which is about twenty dollars in U. S. currency. "They are carved in relief," he remarked, "in the most outrageously indecent manner, and are considered most potent love charms; the happy possessor, it is said, being able to work his wicked will with the most virtuous and modest."

Still another English ornithologist of that period, A. O. Hume, wrote that hornbill heads obtained in Lower Burma were sold in Siam for making carvings, as well as in China and Japan. And since the bird also occurs in Southern Siam, as we have mentioned, this would seem to indicate that the Siamese required so much hornbill ivory that local sources could not meet the demand. Carvings in hornbill ivory from Siam and Tenasserim are unknown in this country, but some examples may yet come to light in the storage sections of our museums.

Although Malaya proper for centuries exported hornbill ivory to China through the port of Macassar, a considerable amount of the substance was used locally, for finger rings and other carved objects. The people there valued it particularly, because they believed that things made from it could detect poison, like the fabled unicorn's horn of Europe, turning colour whenever dangerous food or drink was brought near it.

Incidentally, in Malaya the Helmeted Hornbill is often called the "Kill your mother-in-law" bird (*Tebang mentua*). This name arose be-

cause of its strange call, consisting of loud *toks* repeated increasingly faster and ending in wild laughter, which gave rise to an old legend. They say that the Helmeted Hornbill was once a Malayan who cordially disliked his mother-in-law, and finally chopped down the stilts that supported her hut when she was inside it, in order to get rid of her. As punishment for this misdeed the gods then changed him into this bird, and condemned him forever to re-live his crime by making the sound of the axe striking the foundation posts, followed by his outburst of unholy glee when the house came crashing down.

India is the only place in Southeast Asia from which we have no information about the use of hornbill ivory. It cannot have been unknown there, however, since we know from the tribute records for Bengal that Indian traders transported it to China. Furthermore, the Moghul Emperors in Delhi spared no expense to obtain rare and valuable substances to decorate themselves and their Court, and they could hardly have missed this one. If someone can manage to find out what the Indians called hornbill ivory, it might still be possible to trace examples in the records of the Moghul Treasury.

The lack of information on hornbill ivory in India seems especially hard to understand when we find that its use spread far beyond there, into the Near East. A reference by the Arabic writer al-Akfāni in the early fourteenth century suggests that he might have heard of the Helmeted Hornbill and its product, since he speaks of a miraculous substance from the forehead of a large bird in the Eastern islands; but the earliest known carvings from it in Western Asia are much later.

Sir John Chardin, an English traveller who visited Persia in the seventeenth century, reported that the king of the country wore an archer's thumb ring of a red and yellow substance, "which grew," he was told, "like a tuft upon the head of a great bird on the Isle of Ceylon." This did not mean that the substance actually came from Ceylon, although it might have been imported from the Indies by way of that island, as the Singhalese were noted as middlemen. Also, while the Persian thumb rings were used for the same purpose as those in China, their form was very different. Like those of Moghul India, they were narrow and sloping, and somewhat wider at one side, instead of being broad and flat like the Chinese ones. Thus this ring of the Persian king would not have been brought from the Far East, but must have been carved locally from imported hornbill ivory.

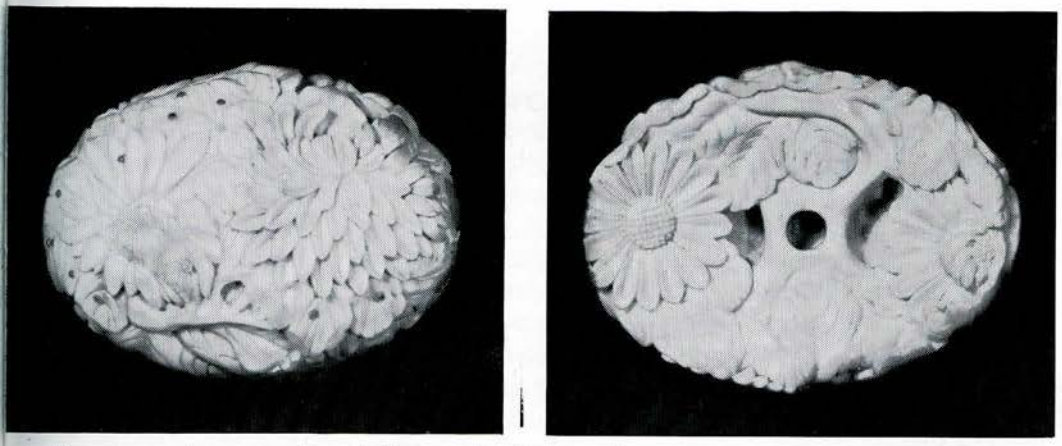


Figure 15. Japanese hornbill netsuke (front and rear views). Newark Museum.

Figure 16. Turkish hornbill spoon in the Seraglio Museum, Istanbul. Courtesy of John Pope.

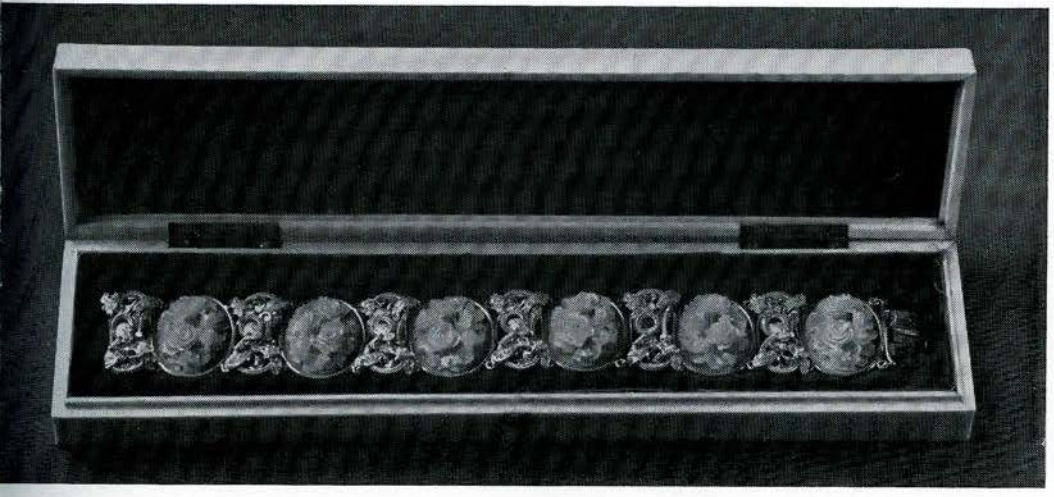


Figure 17. European-style bracelet of hornbill ivory from Canton. Mrs. Morrison Huston, Philadelphia.

Another typical use of hornbill ivory in the Near East was for the bowls of spoons. Perhaps the most famous example was a sherbet ladle among the Crown Jewels of the Ottoman Sultans of Turkey, with its dipping-end formed of this substance. It was long believed to have been made from the beak of the fabulous phoenix, and was not correctly identified until the middle of the last century, when it was sent to an official of the British Museum for identification. Presumably it is still retained among the National Treasures of Turkey. John Pope of the Freer Gallery kindly undertook to find out about it on a recent visit to Istanbul; but he discovered that the things from the Treasury were still in their wartime hiding place in Anatolia, so it was not possible to trace it. However, he did see, in the Seraglio Museum (*Topkapu Sarayi*), two spoons with their bowls of hornbill ivory, displayed among some kitchen equipment from the former palace of the Sultans. One of these, with a long handle of ivory and ebony inlay, is pictured in *Figure 16*. The reason for this particular use of hornbill ivory was apparently because of the long-persistent Near Eastern belief that this substance could warn about the presence of poison. And incidentally, this superstition is one of the proofs that it was probably imported directly from Malaya, because such ideas about it were apparently never held in other parts of eastern Asia.

The Europeans first learned about the Helmeted Hornbill through seeing examples of its skull, imported by way of the Arabs. Toward the end of the sixteenth century, a Venetian merchant obtained such a skull in Damascus and brought it back to Italy. He showed it to Aldrovandi, the leading naturalist of that day, telling him that it had come from a fabulous bird of India, called the *Semenda* (? *Simurgh*), and compared it to the phoenix of Antiquity. Aldrovandi sketched it for his famous book on Ornithology, publishing it with a rather full description. With a scepticism appropriate to the new age of science, Europe's first ornithologist was suspicious of the attribution; but his reasoning was rather Mediaeval. This was probably not the skull of the Indian phoenix, he argued, because he could not find in its beak the organ pipes for making harmonious music, with which that bird was fabled to lure its prey. Shortly after, this skull was purchased by the Grand Duke of Tuscany for his private museum.

In the second half of the eighteenth century, the beak of a Helmeted

Hornbill was shown in the royal collection of the King of France, and it was described and illustrated by Buffon, the great French naturalist. Another beak turned up in a private collection in London, at about the same time. An English naturalist named Edwards reproduced the latter quite faithfully in colour, in his book on rare birds, without being able to identify it. In spite of these existing examples, no one in Europe knew what the bird from which the skulls came actually looked like, until 1823, when General Thomas Hardwicke sent back to England the sketch of a specimen in the Asiatic Society's museum in Calcutta. (The engraving of this, shown in *Figure 14*, is fairly accurate except for the tail feathers, and a too-horizontal posture.) Even at that late date, however, it does not seem to have occurred to anyone that the casque contained a carvable substance. It was some forty years more—in the 1860's—before Lodovico de Varthema's extraordinary bird was finally identified as having been the same creature.

It seems doubtful that any actual carvings in hornbill ivory reached the Occident before the middle of the nineteenth century. At least, no Chinese examples would likely have been brought to Europe or America until increased trade developed with Canton and other ports about that time. The early traders with their limited cargo space were interested in pay-loads of porcelains, tea, and silk, with perhaps a few objects of carved ivory on the side, and did not bother much with anything else.

When pieces did finally reach the West, they were not associated with the Hornbill. A contemporary European account of Canton and its commerce, published in 1867, mentions a shop catering exclusively to the foreign trade, which, in addition to its regular line of fine elephant ivory carvings, made very handsome ornaments "from a horny substance of deep yellow colour which forms the crest of a species of crane found in Cochin China." This shop, called Ho-a-ching, was situated on what the foreign residents called "Club Street," on Honam Island across the river from the city proper. Perhaps the handsome bracelet in *Figure 17* came from there, although it has no identifying trademark except for the goldsmith's stamp (Te-hsing). This seems quite likely, since it came to this country in an ivory box of the finest workmanship, fully worthy of the Ho-a-ching reputation. It was made about 1873 as a wedding present for Evelyn Quintard of Stamford, Connecticut, who was married in that

year, and is now in the possession of her descendant, Mrs. Morrison C. Huston of Philadelphia.

Another set of Cantonese hornbill jewellery in this country is an heirloom owned by Mrs. H. M. Dun of Wilton, Connecticut. This was purchased by her grandfather in San Francisco, in 1883, as a wedding present for her mother. It consists of a deeply-cut brooch and a pair of earrings with the same type of floral ornamentation that is found on the bracelet. In fact, since the mounting of the brooch is said to bear the same hallmark as that on the bracelet, these probably had an identical origin.

In all these pieces of "crane's crest" jewellery made according to Western taste for the foreign trade, none of the brilliant red sheathing has been utilized. One inevitably gets the impression that the Chinese craftsmen had stripped off the valuable outer layers for home use, and then used what remained to make things for the "foreign devils," just as they reserved for export the second quality porcelains or even the rejects from their kilns. But if the quality of the material is somewhat inferior, the workmanship certainly is not. The delicacy of the flowers and the translucence of their extraordinary thin leaves make each medallion a beautiful thing.

European-style carvings in hornbill ivory were still being made in Canton at the turn of the century, and examples of "crane's crest" carving were shown among the Chinese exhibits at the Paris Exposition of 1900. But after that time we have been unable to find any more references to such work being done there, and it seems to have died out entirely soon after. Meanwhile the Court at Peking, that had furnished the patrons for the fine objects of truly Chinese *ho-ting* work, collapsed with the fall of the Ch'ing Dynasty in 1911, and few people in modern China would recognize a piece of hornbill ivory if they saw one.

Hornbill ivory has now lost its international character as a valuable item in world trade which was carved by many nations. Only in Borneo does work in this substance still continue. And there it is a purely local art, devoted to making ornaments for domestic use which seldom leave the island. At least the Helmeted Hornbill has benefited, for the decline of interest in its valued possession has helped to discourage the hunters who, in some areas, were bringing it to the point of extinction.

S. V. R. C.

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S. V. R. C.