THE KARKADANN AS A SCIENTIFIC AND ARTISTIC PROBLEM

The preceding sections dealt first with the figural representations of the rhinoceros in the Muslim world and then with the lore of various unicorns in relation to myths in other civilizations. Extensive as our account may have seemed, its enumeration and reconstruction of facts do not tell the whole story, since they have been presented in a historical vacuum. It is necessary to survey the whole development and to connect it wherever possible with the framework of intellectual growth in the Muslim world. After all, the myth of a strange animal represents a challenge to human resources and imagination and the approach to the problem reveals clearly the power of observation in explorers and the critical faculties in writers in each given period. In the case of the karkadann writers set the pace for artists because the former were the first to deal with the problem and it is on them, as we have seen, that the artists heavily leaned. It is, therefore, with them that we have to start the final part of this investigation.

When an author was confronted with the accounts of sailors and travelers, his first problem was to decide, and this far away from the habitat of the karkadann, whether this strange animal was just a human fabrication or a reality. As stated in al-Jāḥiẓ' *Kitāb al-ḥayawān,* this was still an issue as late as the ninth century. The attitude of al-Jāḥiẓ with regard to the doubted existence of the beast was based on literary learning; since it is mentioned in the Bible and in Aristotle, there is no question in his mind that its reality is assured and so he presents whatever information he has at his disposal.[1] There is, however, a certain amount of critical attitude in him and in the best writers of the ninth, tenth, and eleventh centuries. Thus al-Jāḥiẓ uses logical reasoning when he tries to challenge the story that the young karkadann puts its head out of its

[1] 145, vol. 7, p. 40.

mother's womb and eats leaves when passing trees. His argument runs like this: "What it has eaten must necessarily be excreted. If the young karkadann continued eating and did not excrete, it would be remarkable; if it excreted in the womb of its mother, it would be even more remarkable." [2] His conclusion is that he does not think that this is entirely impossible, but he is inclined not to believe it. For al-Mas'ūdī this story is incredible and he uses a scientific method to check it. He interviews men who have traveled in India as to the mode of pregnancy of the rhinoceros and their answer discredits the whole yarn.[3] Al-Bīrūnī, too, had a scientific attitude when he clearly distinguished between his own observations and what he has been told by others. It is true, the reports of his informants are full of fantastic details which al-Bīrūnī does not challenge, perhaps because he lacked proper means of checking them, but he is at least fully reliable as to what he has seen. This was no mean achievement considering the preconceived ideas about the subject and the uncritical acceptance of book learning. One has only to compare his observations with those of Ibn Baṭṭūṭa, whose preconceived notions of the rhinoceros obscured his perception of the animal on the several occasions that he saw it.

Al-Bīrūnī's independent attitude is likewise shown in his account of the mysterious khutū. He quotes in the first place an opinion which is founded on data provided by foreign informants thought to be familiar with the subject. Yet, in spite of the fact that their information is corrobated by literary sources, he questions this lore from his own observations, gives the reasons for his doubts, and with all due caution concludes by providing his own theory. In the end, he does not hesitate to throw doubt on all his given information because he sees the hopelessness of reconciling the various contradictory, if not outright confused, sources.

Al-Nadīm, another figure of the early period, is the only person who uses the literary form of an interview with an

[2] 145, vol. 7, p. 41.
[3] 184, vol. 1, pp. 387-388.

informant. About the year 987 (377) he interrogated a Christian monk who had spent some time in China and he reproduces this conversation in his *Fihrist*.[4] Needless to say, this more direct approach produces not only a vivid presentation of the freshly gained knowledge, but the information itself is new. Thus we learn for the first and only time how the "philosophers and wise men of China" [5] imagined that the strange figures in the horn originated. It is the first impressions of the newly born animal which are reproduced in the horn. This explanation of the mythical designs is just another myth, but we have here at least an awareness of a phenonemon which needs to be interpreted.[6] Al-Nadīm, unlike all the other Muslim writers, thought it worth while to reproduce this information. In this instance it is also possible to come fairly close to the original Chinese version of the myth. According to one Li Hsün, it was believed that "the rhinoceros, 'communicating with the sky' during the time of pregnancy, beholds the forms of things passing across the sky, and these are reproduced in the horn of the embryo: hence the designation 'communicating with the sky.'" [7] In both accounts the figures in the horn are thus due to visual sensations either of the pregnant mother or of the newly born calf, though the Chinese author (in his effort to explain the curious name of the animal) restricts the impressions to heavenly bodies. In view of this basic agreement it can be assumed that the particular version reproduced by al-Nadīm was also current in the Far East and picked up there by his informant. Another unusual statement is contained in al-Nadīm's reference to the price of rhinoceros horn. In contrast to the stereotyped wording in all other Muslim texts mentioning the high cost of the Chinese

[4] 192, vol. 1, p. 349; translation, 98, vol. 1, pp. 129-130.

[5] Ferrand (98, vol. 1, p. 140) speaks erroneously of "les savants de l'Inde," the text has فلاسفة الصين وعلماؤها.

[6] It is based on the principle so common in superstitions and in magic that "like produces like or that an effect resembles its cause" (105, p. 11).

[7] 165, p. 147; see also p. 137, footnote 1. Li Hsün lived in the second half of the eighth century; he made his statement in an account of the drugs of southern countries.

girdles, the monk reported that the price for the horn had actually fallen to a fraction of its former value owing to the change of taste on the part of the ruling Chinese king. In view of the alert mental attitude of al-Nadīm it is not surprising that he grasped certain facts even better than did his informant. For instance, when he heard the explanation for the figures in the horn he immediately exclaimed that this must be the horn of the karkadann. This the monk denied, since he had heard another name; laboring under the common delusion that different names meant different animals, he was unable to see the identity of the two.

The profuse variety of nomenclature tripped even the great al-Bīrūnī, who was led astray by the reports of travelers. After having reproduced his fine observations of the Indian rhinoceros (called ganda by him) he continues: "I thought that the ganda was the karkadann but a man who had visited Sufāla in the country of the Negroes told me that the kark, which the Negroes call impīlā, and the horn of which furnishes the material for the handles of our knives, comes nearer this description than the karkadann." In spite of this confusion of terms al-Bīrūnī must have realized a possible connection between sharav, ganda, karkadann, and kark, otherwise he would not have grouped together the separate descriptions of the real and mythical derivatives of the rhinoceros. In doing this he escaped the misconstructions of many writers like Marvazī and al-Damīrī who tried to amalgamate various reports so as to achieve an all-embracing, more or less uniform, but also confusing account.

The early fourteenth-century writer al-Nuwairī gives the usual potpourri on the karkadann based on al-Jāḥiẓ, al-Mas'ūdī, and others, but at least he deserves credit for having contributed a critical observation about the African rhinoceros in contradistinction to the Indian species. Being, as he was, a government official (kātib) and historiographer he was, of course, not interested in the physical differences of the two groups but rather in the variety of tales about the animal. Thus al-Nuwairī is the only medieval author encountered by me who, after having stated that the Indian rhinoce-

ros is so terrifying that it lets no other animal graze in its neighborhood, adds that the Ethiopian variety behaves differently and mingles with other animals.[8] In stating this he makes use of his advantageous geographical position as a resident of Egypt, just as about 300 years earlier al-Bīrūnī had profited from his Indian experiences. As we have briefly noted before, the observation of reality in the case of an Egyptian writer has its parallel in the pictorial arts. In the little carpet of a miniature of the *Maqāmāt* of 1337 (738) in the Bodleian Library (pl. 18, lower) we find for the first time in the traditional motif of the karkadann's pursuit of the elephant a realistically rendered rhinoceros. In spite of the smallness of the available area we have here—in defiance of the traditional unicorn—a representation of the bicorned species with which an Egyptian could be familiar, while a single-horned animal from India was nothing to him but a literary allusion.

All later writers preferred quantity of curious information to critical studies. They did not consult those of their contemporaries who had actually seen the animal, nor did they restrict themselves to al-Bīrūnī's trustworthy information.[9] Incredible reports from various sources were no longer questioned but were gladly accepted for their intriguing details. Al-Qazwīnī is typical of these eclectic writers, although he still manages to write a fairly well-integrated chapter on the karkadann. Perhaps the most uncritical author on the subject was al-Damīrī, whose hodgepodge account is characteristic of the decline in scientific attitude.[10] In a not too extensive report he repeats himself several times [11] because he used different sources which had the same elements. At other places he contradicts statements which he has made a few lines be-

[8] 201, vol. 7, p. 315.

[9] Marvazī quotes al-Bīrūnī extensively, but he adds a great deal of fantastic folklore from classical and Muslim writers.

[10] Besides al-Jāḥiẓ, al-Zamakhsharī, and Abū 'Umar b. 'Abd al-Barr, whose names are given in his article on the rhinoceros, he leans heavily on al-Gharnāṭī, 'Awfī, and al-Qazwīnī whom he does not mention as his sources.

[11] Thus he mentions the fight with the elephant three times and the stories of the "outside feeding" of the foetus and of the designs on the horn twice each.

fore, such as first declaring that the karkadann has one horn and then attributing three to him.[12] Valuable as his account might be to a modern scholar as a source of varied information, it shows clearly that the writer no longer tried to digest and integrate his material. But al-Damīrī is not by any means the first to incorporate blatant contradictions into a medley on the rhinoceros. About 250 years before his time Marvazī speaks, in the first section of his chapter on the karkadann, about the strange behavior of the young animal while it is still in its mother's womb and how, after birth, it tries to escape the licking of its dam. Only a few sentences afterward the same writer reproduces the classical myth that the whole species consists only of males and that no one knows how they come into existence. Yet Marvazī does not feel the slightest necessity to ease the shock of such conflicting statements, or to present at least some kind of explanation for the different theories. Such contradictory data within a single text—let alone those found in the writings of different authors—serve to explain how the karkadann could take on so many different forms and could even have two different shapes in the same manuscript.

Other sources of confusion were the various animals which were alleged to have single horns and which were sometimes identified with the rhinoceros. There is no better example of the state of mind of writers of these centuries than the fact that they not only described these different imaginary beasts, but dealt also with their medicinal value and their lawfulness as food.

It was in this period of uncritical writings that the artists started to use the karkadann as a figural motif. There was no well-established iconographic prototype for a unicorn from old Oriental, classical, and Sasanian times.[13] The karkadann

[12] Another contradiction is the length of gestation which is once given as 4 years and then as 3 or 7 years. In addition, the rhinoceros is said to be 100 cubits long and even more, and in another place it is alleged to be smaller than a buffalo.

[13] This generalization is not contradicted by very rare exceptions such as the old oriental model for the animal on the Berlin Mosul jar or the vague

was therefore quite unlike other motifs such as the "sphinx" or the "harpy," which were popular in this period. The lack of an iconographic prototype might appear puzzling in view of the various animals among the Persepolis sculptures which could have qualified as models for the karkadann. It may be that the beast which Ibn al-Balkhī described as karkadann was too fantastic and unlike the usual bovine type described by the writers to have appealed to the artists. On the other hand, the frequently occurring reliefs of the bull attacked by a lion[14] did not come up to the traditional picture of the karkadann as it had crystallized in medieval writings. It is true that this animal is a bovine and only one horn is shown, but this iconographic advantage is offset by the fact that the animal is overcome by the lion, which was impossible according to the texts. Thus the Achaemenian reliefs of the lion and the bull are but rarely used as pictorial models for a unicorn scene.[15]

The apparent nonexistence of the unicorn motif in Sasanian art is especially important for the development of the karkadann design in Muslim times. It can be explained by the fact that the rhinoceros was very little known in Sasanian Iran and probably completely unknown in earlier periods. The word karkadann or a similar form does not occur in the extant Middle Iranian literature. It is not found in the Pahlavi *Bundahishn* (in the chapter about the creation of the animals), nor, for that matter, in the Avesta. There exists also no other term meaning "rhinoceros" in this literature.[16] In spite of this lack of direct information the existence of karka-

affinity between the karkadann killed by Iskandar in the Demotte *Shāh-nāmah* and the griffin mount of Anahita on a Sasanian silver plate (228, pl. 116).

[14] 228, pl. 21.

[15] For one of the rare exceptions see plate 45 and its explanation on page 69. Usually the slain animals show two horns or two antlers.

[16] Kind information of Prof. B. Geiger. He also pointed out to me that kark occurs in Pahlavi only in the meaning "hen" and in the Avesta only in the compound kahrkāsa "vulture" (literally: hen-eater). Another modern Persian word for rhinoceros arj ارج, which is identical with Pahlavi arz, occurs in the *Bundahishn*, though it is counted there among the fish (276, p. 51).

dann in Pahlavi can be inferred with a high degree of certainty since this word is mentioned as the Persian designation in the Syriac translation of the Pseudo-Callisthenes.[17] Nöldeke has shown that this translation was most probably made by a Nestorian at the end of the Sasanian period (seventh century).[18] This would naturally imply that karkadann existed in Pahlavi, having been borrowed from the Sanskrit, and that the Syrian Christians of the Iranian empire became familiar with this term and used it in their literature. Although this deduction indicates the use of karkadann in Sasanian times, the term must have been uncommon, as demonstrated by its absence in the Pahlavi literature. While the rare use of the word seems to imply that the people were ordinarily unaware of the real animal, it should be pointed out that the notion of a unicorn as such was not unknown in Pahlavi literature. The *Bundahishn* speaks of a three-legged, six-eyed, and nine-mouthed ass whose head is adorned with a single golden, thousand-branched horn.[19] It stands in the ocean and with its horn "vanquishes and dissipates all the vile corruption due to the effort of the noxious creatures." These details indicate that the concept of this mythical animal is quite different from those held of the karkadann, which, in spite of fantastic elaborations, always kept a core of reality. The lore of the three-legged ass had therefore no influence on Muslim literature or Muslim iconography.[20]

In the absence of an established iconographic tradition in pre-Islamic and early Islamic times, one wonders what it was that caused the artists to take up the motif and then, at least

[17] 215, Syriac text, p. 211, line 15, translation, p. 119. The rhinoceros occurs there in the corrupt forms marqĕdad and bargĕdad. Eighty of the animals were sent with other gifts by Queen Kundāqā (Candace) of Samrāyĕ to Alexander the Great.

[18] 199, pp. 13-17.

[19] 276, pp. 67-69.

[20] The "purification of the water through the unicorn" was, however, introduced into the *Physiologus*. It appears there in the "water-conning" scene, which later found charming expression in late fifteenth-century tapestries (242, pp. 60 and 235-236, pl. 5). The Islamic world did not accept this part of the *Physiologus*, just as it had rejected the original Iranian myth of the three-legged ass.

in the East, only as late as the middle of the twelfth century. Further research might, of course, produce earlier examples, but they would hardly represent a common type. So far there is good evidence that no such animal designs were widely known in the ninth century, since al-Jāḥiẓ could refer only to representations of the 'anqā' and not of the karkadann when he wanted to prove that the two animals were not identical (see p. 33).[21] That from the late twelfth century on the animal enjoyed a certain popularity for about 150 to 200 years, is demonstrated by the fact that decorative schemes display it then as an isolated motif, that is, on its own merits and without any further folkloristic context.

It seems that the time has not yet come to give a definite answer for the raison d'être of the design. The karkadann is only one of the animals and one of the many motifs popular at this period, and it would be necessary to trace the background of at least the most important ones to find out what appealed to a Muslim in each of them. However, certain considerations come to mind which might give some explanation why artists were interested in this motif.

Shortly before the first pictures of the karkadann appeared in the East, the amalgamation of the khutū horn with that of the karkadann had taken place. This meant that the karkadann was no longer regarded merely as the supplier of the high-priced horn for the curious girdles of the Chinese, which had been its greatest distinction; its antidotal quality then made it significant for the Muslims themselves. On the other hand, the mysterious khutū horn had finally found a body to

[21] The only early Islamic example known to me from the literature is a fragmentary statuette of the animal, excavated in a Khwārizmian castle, said to be from the end of the eighth century A.D. Representations of a four-armed deity from a contemporary castle of the same region indicate cultural relations between Khwârizm and India at this period which could also explain the occurrence of the rhinoceros in this early art (101, p. 164). The only statuette of a rhinoceros mentioned in the Muslim literature with which I am familiar is the one of gold and jewels that was given by native chieftains to Iskandar after he had spoken to the "talking tree." This precious object was given with other gifts, among them two elephant tusks, thus possibly indicating an Indian locale (102, vol. 4, pp. 232-233, line 1575; 103, vol. 6. p. 169).

be attached to and could thus be represented in an animal decoration. This must have made the Muslim world receptive to the inclusion of the karkadann as a motif at this particular time.

Furthermore, an additional reason for its new popularity was possibly the sequence of animals chasing each other, which constituted a favorite Seljuk decoration for circular bands on metal and pottery objects. As the fiercest beast and killer of all animals, including the elephant, it was an obvious choice for this decorative scheme. Finally, it should be remembered that this period was very fond of fantastic animals such as those usually defined as sphinxes, harpies, and griffins. The karkadann fitted well into this group.

The era was receptive to becoming visually aware of a new animal. The commercial activities of the big cities made a large body of learned men possible. These scholars and their colleagues, supported by princes, were exhaustive in their encyclopedic surveys of the world, its people, animals and plants. This is testified by the works of al-Idrīsī, Yāqūt, Ibn al-Baiṭār, al-Qazwīnī, Ibn Khallikān, and others, all of which reveal a tremendous curiosity toward the various aspects of the world—even of its "wonders"—and an attempt to satisfy this widespread yearning.[22] What these learned books might lack in originality they made up by a great deal of detailed information, real or fancied. There is not only an insistence on the correct dates and spelling of names, but also on visual recording. Thus when Ibn al-Ṣūrī (died 1242/639) was botanizing in Syria he was accompanied by an artist who made colored drawings of plants in the different stages of their growth.[23] It was also at this time and in line with this thoroughness that the illustration of manuscripts dealing with animals and plants was deemed necessary. This learned activity extended even to imaginary monsters and supernatural beings from a lower folkloristic level. One has only to look

[22] 234, vol. 2, pts. 1 and 2 passim.

[23] 234, vol. 2, pt. 1, p. 54; vol. 2, pt. 2, p. 649, quoting Ibn Abī Uṣaibi'a (130, vol. 2, p. 219).

through illuminated copies of al-Qazwīnī's text to see the many strange creatures which existed in the world of a thirteenth-century Muslim.

All these factors seem to explain the existence of the karkadann in Muslim art. If there is any doubt left, it might center around the isolated figures of the animal. Here the folkloristic appeal of the elephant-hunt scenes with their delight in telling a story does not apply; and we can likewise assume that the artist did not haphazardly select this unusual animal just to satisfy scientific curiosity. Was it then the magic quality of the horn that caused the artist to prefer a fearful monster to other equally decorative designs with more pleasant associations and led him to apply it several times to a beautiful luxury object (pls. 1 and 2)? Or had the design become common enough so that not too much attention was paid to it as an individual motif? If we knew more about the working of the Muslim mind in the twelfth, thirteenth, and fourteenth centuries, the answer to these questions would not be so difficult. One factor which prevents a solution is our present lack of knowledge as to whether there is any psychological basis for the choice of certain motifs in Muslim art. We thus do not know whether we are confronted with a case parallel to certain phenomena in Western art. During the Romanesque period, for instance, one frequently finds capitals and initial letters decorated with monsters which do not fit into the usual religious aspect of contemporary art. These creatures have been explained as "psychologically significant images of force, aggressiveness, anxiety and fear;" in other words, as "projected emotions."[24] It seems still premature to speculate whether the fascination of the Muslim artist for a violent all-powerful monster, which without mercy kills man and beast and is only rarely vanquished and subdued, is likewise conditioned by human fears. As has been stated before, the final explanation of the motif lies in the further study of all important designs used during the Middle Ages.

Once the picture of the karkadann was presented to the

[24] 236, pp. 132-137.

public its appeal lay in the fact that it evoked a wide response. It proved equally attractive to the scholar and to an illiterate audience of popular stories; only their intellectual reactions and mental associations were different. It is also certain that whatever the intent of the artist and the education of the onlooker may have been, neither of them seems to have been concerned with a conscious symbolism in the design.

In view of the lack of an established iconographic prototype, medieval Muslim artists had to rely for their representations mainly on the writers. Naturally they were influenced by the opinion of their contemporaries like al-Qazwīnī and al-Damīrī though they also followed long-established descriptions such as those of al-Jawharī and Firdawsī. All these authors proved to be difficult sources of information. The texts were often fantastic and contradictory and their terminology was misleading. The descriptions provided material for only some of the bodily aspects of the animal, while a great deal of intriguing information was of no use to a painter or sculptor. One cannot blame the writer for restricting his accounts because his aim was not to provide the raw material for a decorative artist; yet these limited and fanciful sketches were all that the painter had to go on for his designs.

In view of this handicap the artist needed further help. In some instances he was able to exploit a peculiar linguistic condition, because by reading كرگ to mean gurg, "wolf," all iconographic difficulties were removed and he could then easily paint a wolflike animal with a single horn. I am not familiar with other Muslim examples of substitutional iconography based on two meanings of a written word, but the phenomenon has, for instance, been observed in India.[25]

[25] See the Indian motif of the elephant-carrying bird which was originally the solar bird garuḍa carrying in its talons or beak the chthonic snake nāga. Since nāga means both snake and elephant the one animal was substituted for the other and a new iconographic type was created (127, pp. 17 and 21; 265, vol. 2, letterpress to pl. 59; 279, pp. 255-257). In this case the substitution is due to the two definitions of a word, while in the case of karg-gurg, we have not only two definitions but also two pronunciations. By the way, the elephant-carrying garuḍa is also the prototype for the elephant-carrying sīmurgh, see p. 32 and pl. 17.

Muslim art provides, however, another instance where the re-interpretation of the name created the physical appearance of an animal unknown to the artist. This happened in the case of the giraffe, called in Persian shutur-gāv-palang شتر گاو پلنگ (literally, "camel-ox-leopard"), illustrated in the al-Qazwīnī manuscript of 1789 in the Freer Gallery of Art. When the Indian artist had to reproduce this unfamiliar animal he did not follow the text (which starts with a statement that the head is like that of a camel, and so on), but he concocted a creature whose bovine-horned head is carried on a long neck above the furry body of a leopard (pl. 16, upper).[26] Here too, then, there is hardly any doubt that it was the word which created the physical form.

Substitutional iconography engendered by linguistic conditions was by its very nature only of limited help. In the case of the unicorns it was applied only to some of the animals in the *Shāh-nāmah* illustrations. For other texts and other occasions the artist still needed inspiration for his imagery. In certain instances he eagerly employed foreign iconographic models. This happened when these models seemed to fit the mental picture he had formed from the scant information in Muslim literature. To this category belongs the buffalo- or cowlike karkadann which follows an iconographic type from China; or we can refer to the karkadann in the shape of an antelope, deer, or goat which ultimately seems to have been derived from Indian models, literary or figurative. It is also for this reason that an iconographic model was assumed to be the most likely prototype of the equine karkadann and not alone the occasional hints about a relationship of the karkadann with the horse, as found in Arab authors.

The happy conjunction of textual allusions with foreign iconographic types which gave visual realization to several

[26] There is nothing of a camel in this "giraffe," if we do not regard the elongated neck as having been inspired by that animal.

The process which leads from a descriptive name to a new type of animal is also found, in China, in the case of the Chinese word t'o ni'ao or ostrich, actually "camel-bird," which is represented as the literal meaning of the word implies (165, pp. 126 f., figs. 16 and 17).

forms of the karkadann is, of course, not an isolated phenomenon. It was similarly fecund in the case of other animals. Thus the sīmurgh turned, in the Mongol period, from a mere parrotlike bird into the much more colorful and more awe-inspiring fêng-huang type of Chinese derivation, which from that time on graced so many fine miniatures and other art objects.[27] Another good example is the faras al-mā' فرس الماء,[28] whose name means literally "water-horse," but obviously refers to the hippopotamus. This animal is described as an aquatic "superhorse" in such zoological treatises as the *'Ajā'ib al-makhlūqāt* or the *Manāfi'-i ḥayavān*.[29] It required the appearance of the Far Eastern horse with flames emanating from above the front legs (pl. 48, upper)[30] to create in the Mongol period a picture of the animal which was then accepted as a proper rendition of the animal (pl. 48, lower).[31]

The Muslim artist likewise used foreign designs to illustrate certain details in the animal physique. Thus when the chinoiserie trend of the sixteenth century introduced Chinese

[27] The early type is represented in a *Mu'nis al-aḥrār* miniature (pl. 8), while the Far Eastern type is found, for instance, in the Sulaimān-Bilqis and other paintings (pls. 34-37).

[28] Another Arabic name is faras al-baḥr فرس البحر "horse of the sea." In Persian the animal is called asb-i ābī اسب آبی.

[29] "One says it resembles the horse on land, only that its mane and tail are bigger, etc." (al-Qazwīnī.) The same author reports also a story of a dark-colored horse with white dots which came out of the water and covered a mare (217, vol. 1, p. 141; 218, pp. 228-229). The *Manāfi'-i ḥayavān* in the Morgan Library states "its face and forehead resemble those of a horse" (5, fol. 29a).

[30] See also 261, pt. 2, vol. 2, pls. 117 and 129 (mirrors of the Sui and T'ang periods). No examples of the design from the Sung and Yüan periods are known to me, but Dr. Cammann informs me that the antiquarians of the Sung period knew the motif on the T'ang mirrors and called it hai-ma "sea-horse." This legendary animal with its flames above the front legs was used in mandarin squares to denote a low military rank (68, p. 110, fig. 11b). According to Cammann it is first mentioned for this use in the specifications for Ming military insignia of 1393.

[31] See also 157, fig. 14. The Sarre manuscript of al-Qazwīnī shows, however, a winged horse (154, vol. 5, pl. 853B). This is a parallel to the representations of the winged karkadann. In both cases the wings seem to imbue the animals with the special qualities mentioned in the text.

fabulous animals with branched and crooked horns (see pls. 43, upper, and 45) this type of horn with its "protuberances" was applied to the nose of the karkadann in a Beatty manuscript (pl. 14, upper) since it seemed to tally with the description in the al-Qazwīnī text.

In taking over a foreign iconographic model it was to be expected that the coloration would be changed or certain anatomical details would be misinterpreted or altogether discarded. We noticed this in the case of the Princeton shādhahvār, which is red—not white, as a hsieh-chai type animal should be.[82] It is likewise quite natural that the Near Eastern artist was entirely unaware of the symbolical meaning of the animal that he copied. It thus happens that in Islam the animal carries with it mental associations different from those of its prototype. In China the ch'i-lin is the noblest and most perfect of all animals, the emblem of goodness and virtue, and its apearance a sign of happy augury,[83] while the karkadann, which at least in one case took over its shape, is a ferocious and tyrannical beast. The same contrast is to be found in the reinterpretation of the hsieh-chai as shādhahvār. The Chinese monster stands for equity, since it is able to distinguish between right and wrong,[84] while the Near Eastern animal is characterized by its sound-producing horn, although some writers have also referred to its carnivorous appetite.

In spite of all the help given by literary references and foreign models, artistic imagination was still necessary and the artists provided it in many of their creations. This resulted in many "sports" which were, like all mythical creations of the East, "zoologically beguiling" and imbued with lifelike appearance, though nothing similar to them existed in nature.

The great disparity of iconographic types until recent times naturally makes one wonder why the Islamic artists did not continue to paint the rhinoceros realistically, once they had determined what the animal was like and were able to por-

[82] 68, p. 108.
[83] 273, t. x, p. 423.
[84] 68, p. 108.

tray it in its actual shape. Applied to specific representations this question could also be phrased: how can it be explained that the early seventeenth-century artist illustrating the *Shāh-nāmah* in the Metropolitan Museum showed the karg as an antelope with a horn on its nose, after earlier artists, like the painter of the Princeton *Shāh-nāmah,* had been able to produce the general impression of the animal and all its characteristic features?

The answer seems to be twofold: the condition is due both to a mental attitude and the lack of a technical process. There is first the continued uncritical belief in early authorities whose writings were handed down through generations, often augmented or reduced in later compilations but not basically changed, let alone improved, by new observations. This explains the continued use of the al-Qazwīnī text with its many absurd myths of the karkadann, sinād, ḥarīsh, and shādhahvār, even after many people had become aware that the stories could not be true, and it accounts likewise for the adherence to traditional iconographic types, after the true character of a natural phenomenon had been established. This intellectual authoritarianism has often been quoted as a cause of cultural stagnation. Less obvious is the second factor, namely, the technical inability to make a large number of unvarying copies of pictures all illustrating the same text. This prevented the wider dissemination of new knowledge based on more discriminating observation, and thus made scientific work in the modern sense impossible. With this limitation Muslim scholars suffered the same handicaps in scientific reporting as the writers of antiquity and the Middle Ages. The West overcame this disadvantage in about 1461 when the first illustrated printed book, Boner's *Edelstein,* was published in Bamberg, and was soon to be followed by other books with figures of tools and well-observed natural objects.[85] Such scientific reporting, with its wide distribution of immutable pictures, could not be paralleled in Turkey before 1729 when, as the second printed Turkish book, a history of the Ottoman navy,

[85] 140, pp. 54-56.

with five maps, was printed in Istanbul;[86] nor in Egypt until 1800 when, during the French occupation, the first all-Arabic publication, the journal *Tanbīh,* was printed in Cairo;[87] nor in Iran until 1816, when the first press was introduced in Tabriz.[88] The dates 1461 and 1729, 1800 and 1816, illustrate in a nutshell the difference in scientific development in the two civilizations.

Since there never seems to have been a great demand for representations of the karkadann, no definite iconographic type crystallized to become universally accepted throughout the Islamic world. Only the bovine type came close to this distinction. In Spain a decided preference for one type was evolved, otherwise no regional preference for one or the other version is recognizable. The Spanish version, however, presents a special case, since the winged feline karkadann with a short stubby head and a long curved horn with helical grooves is, as far as we know, to be found in but one medium, ivory, and only during the first half of the eleventh century A.D. In the Islamic world outside al-Andalus, the literary and iconographic sources used by the artist and his individual approach to the artistic problem is usually more important in understanding a type than the country of origin of the decorator or the region where he worked.

While the karkadann occurs fairly frequently in Syria and Iran, and is likewise to be found in Spain, Iraq, and Anatolia, one wonders why Egypt and India, the two countries which were in a position to be better informed about the animal than others in the caliphate, did not make wider and more original use of it. The rarity if not lack of the design in early Egyptian decoration can be explained by the fact that the animal

[86] 31, p. 12. The book by Ḥājji Khalifa is entitled *Tühfat ül-kibār fi esfār ül-biḥār* ("Present for the Great Ones Dealing with Naval Wars"). In 1729-1730 (1142) a book of fables appeared entitled *Ta'rīkh ül-Hind ül-gharbī* ("History of the West Indies"), which contained 4 geographical maps, 1 celestial chart, and 13 figures of men, animals, and plants (31, p. 14).

[87] 107, p. 149 (No. 16 of his list). After the departure of the French in 1801, printing in Egypt stopped until 1822 when, on orders of Muhammad 'Alī, it was again introduced into the country (107, p. 157; 42, pp. 13 ff.).

[88] 61, vol. 4, pp. 155 and 468.

came into general vogue only after the middle of the twelfth century. It is thus apparently lacking in the Fatimid repertory.[39] In the Mameluke period it occurs mostly on brass objects, which, though made in Cairo, reveal a great deal of Mesopotamian inspiration, if they were not in certain cases actually made by Mesopotamian artists.[40] Since the motif on Egyptian pieces of the karkadann attacking other animals is no different from earlier representations of the same subject on objects made in regions farther east, it may be surmised that the design came to Egypt from this part of the Muslim world. Only where the artists were on their own (as in the case of the carpet designs of plate 18, lower) did an original version result, which took notice of the specific character of the African rhinoceros.

Equally surprising, on first thought, is the not too frequent use of the motif in India, where the animal is at home and must have been known to many artists. It is not represented, for instance, on the ivory powder primers of the Mughal period which show combinations of all sorts of animals.[41] It is likewise missing on a large Mughal carpet in the Textile Museum in Washington on which many different specimens of Indian fauna are realistically rendered in a landscape setting.[42] There is only a vague stylization of it on the animal rug with fantastic zoological combinations.[43] However, the carpet in the National Gallery in Washington and several

[39] 176. Rhinoceros horn is not mentioned in al-Maqrīzī's account of the treasures of the Fatimids (150). The horn already had, however, a reputation in Pharaonic times, owing to its healing and magical powers. In the tomb of Hor-Aha pottery imitations of the horn were found which served as substitutes for real pieces and were supposed to have the same magical powers. The animal had disappeared from Egypt in historical times (249, pp. 42 f., footnote 4).

[40] Thus a tray in the Metropolitan Museum of Art (No. 91.1.602) was made in Cairo by one Ḥusain b. Aḥmad b. Ḥusain of Mosul (84, p. 234 and fig. 3). It is closely related to another tray in the same museum (No. 91.1.605) which has three representations of the motif of the attacking karkadann (see above, p. 28, footnote 9).

[41] 51, figs. 1-9, 11-12.

[42] No. R 6.3. This carpet, which is nearly 20 feet long, is still unpublished.

[43] 15, title picture and fig. 3.

Mughal miniatures prove that the rhinoceros in its actual form is not altogether foreign to the artistic repertory of Muslim India. Its apparent rarity conforms only to the scant interest paid to it in the non-Muslim literature and arts of India.

The decline of the decorative arts in the Muslim world since the time of Tīmūr, noticeable in pottery, glass, and even metalwork, had its effect on the use of the karkadann motif. The imagination of the artists in the twelfth, thirteenth, and early fourteenth centuries was no longer as vivid as before. The craftsmen seem to be satisfied with certain standard shapes and themes of ornamèntation. This eliminated many decorative motifs, among them the isolated karkadann and the karkadann-elephant fight. The fact that al-Damīrī no longer mentions the antidotal quality of the karkadann horn, in spite of the fact that he was familiar with al-Qazwīnī's text, also helps to explain their disappearance. The animal continues, however, to be painted in the always popular *'Ajā'ib al-makhlūqāt* and *Shāh-nāmah* manuscripts.

The tradition of the legendary karkadann, based on bookish and uncritical literary sources, was broken only in the early sixteenth century.[44] This must have been due in the first

[44] This fact has some bearing on the critical evaluation of objects. It applies for instance in the case of a large green-glazed Persian bowl, formerly in the V. Everit Macy collection (82, pp. 8-9, No. 30; 172, p. 124, No. 488, illustrated). The vessel belongs to a ceramic group which has been attributed to the Garrūs district in Kurdistan (213, vol. 2, p. 1531), and it has been dated tenth to eleventh century. It is decorated with the figure of a rhinoceros easily distinguishable by many of its characteristic features such as the bulky mass of its body, the pointed ears, the wide mouth with the protruding upper lip, and especially the curved horn on its nose. How can such a representation be explained, when in spite of diligent search it has not been possible to find another representation of a rhinoceros dating from before 1337 which approximately reproduces its physical appearance or shows at least the correct position of the horn? It will be readily admitted that this writer knows only a limited portion of the existing Muslim objects which portray the "unicorn" and that these represent only a minute fraction of all the designs made in the Middle Ages. Still, it must also be taken into account that popular, scholarly treatises such as those of Ibn Bukhtīshū', al-Qazwīnī, and al-Damīrī knew nothing of the most obvious feature of the animal, the position of its horn.

Furthermore, the motif was hardly known when the Garrūs pottery was made. Yet, a village potter working in a provincial district of Iran, a great

place to the fact that more people became familiar with the animal so that information about its actual appearance could spread in the Muslim world. In this respect it will be remembered that from the late fourteenth century on there exist records of rhinoceros hunts by princes and rulers. The possibility of direct observation was artistically exploited when, in the late fifteenth century or even more so in the sixteenth century, the trend in Persian miniature painting turned toward realism. This explains the sudden appearance of a fairly well-observed rhinoceros in the otherwise undistinguished *Shāh-nāmah* of 1544 (951), while the manuscripts of the second half of the fifteenth century had still used the legendary type of the karkadann (pls. 26, 27, and 30).

This trend in Persian miniatures coincides with the rise of the Mughal empire as a leading Muslim power, which meant also the rise of a new school of painting preponderantly realistic in its nature. Most of the realistic renditions of the rhinoceros thus come from India, which is not only a home of the animal but, in the Mughal period, is also the source of remarkably lifelike portraits of animals. On the other hand, Persian artists often produced strange hybrids in which a new perception was curiously blended with traditional ideas.

In the eighteenth century, al-Qazwīnī manuscripts of inferior quality, and thus destined for the simple and impecunious, showed illustrations of the karkadann, in which a kind of dreary resemblance to the rhinoceros emerged.[45] The text, of course, still tells the old tales and superstitions, but the miniatures have now nearly caught up with the actual animal. The encounter with reality is, however, disenchanting. The ferocious and yet impressive character of the old monster has gone and all that remains is an immense and unprepossessing hulk of a body. No new ramifications of the age-old myth could possibly grow up around this sort of an animal.

distance away from the regions where the rhinoceros lives, is said to have made the most realistic representation of the animal in the early Muslim Middle Ages. The only conclusion to be drawn from all these facts seems to be that either the decoration of the bowl was changed when the piece was restored or that the bowl is not as old as was hitherto believed.

[45] See 9, fol. 112a; and 10, fol. 465a, old collation (pl. 14, lower).

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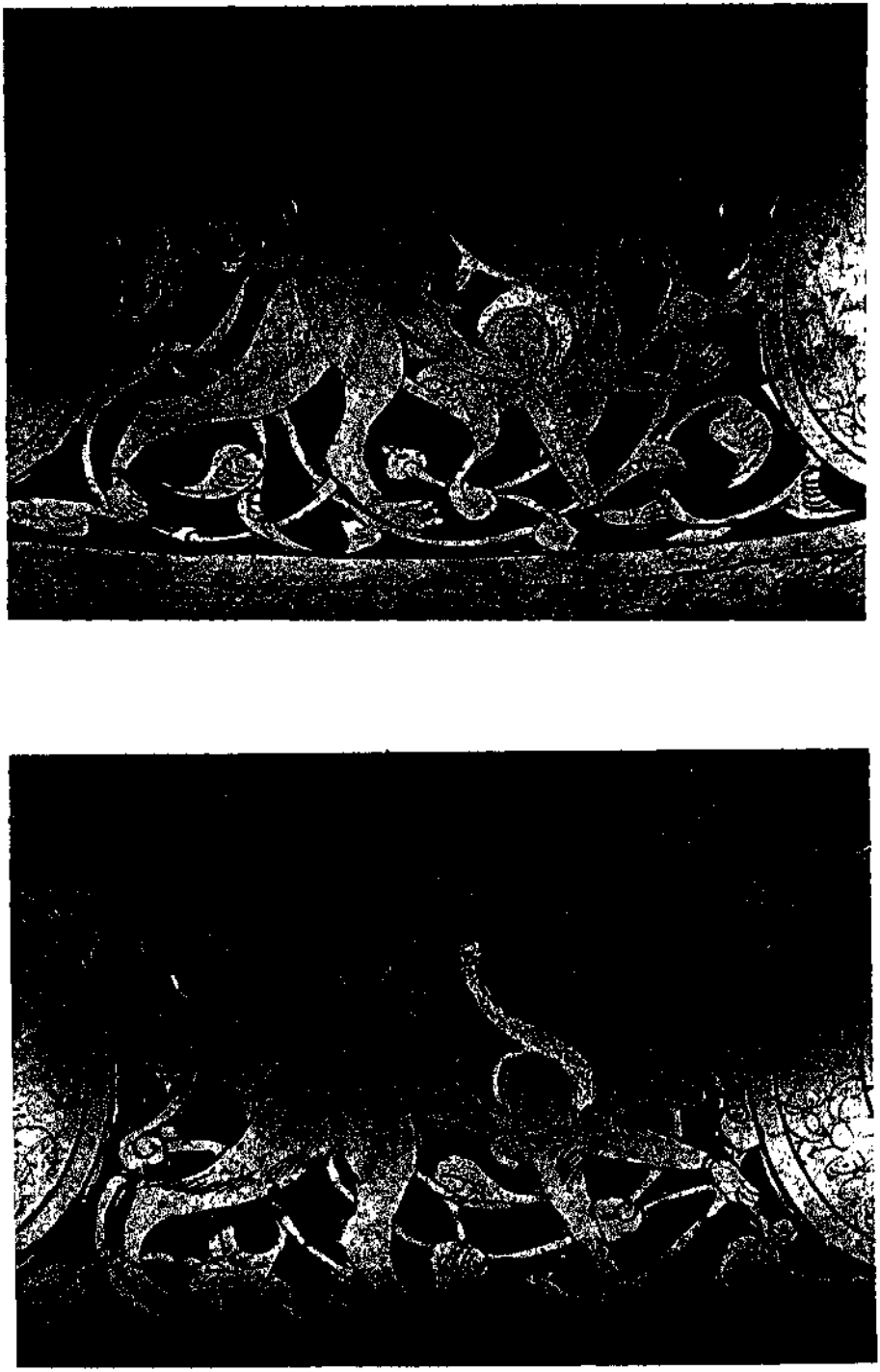
INDEX

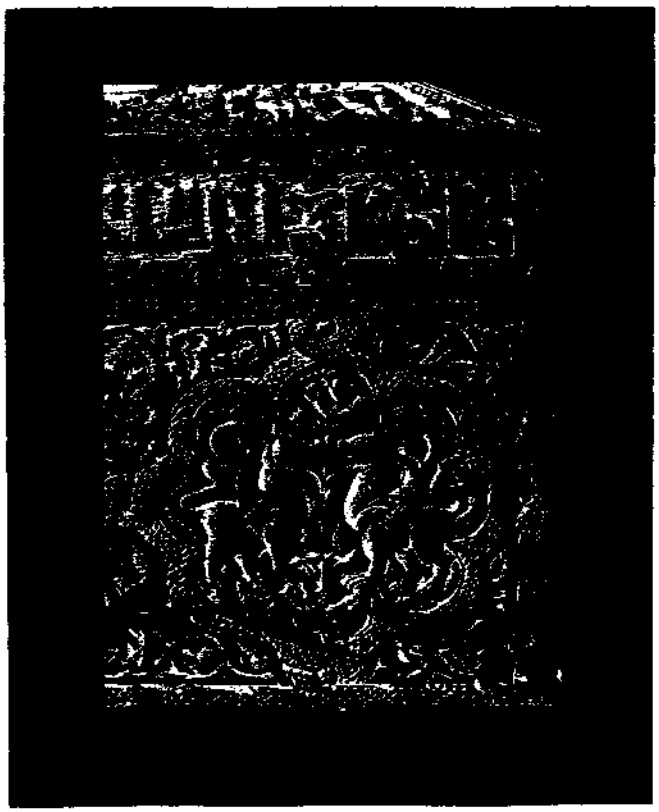
Enameled glass vessel. Freer Gallery of Art, No. 33.13.



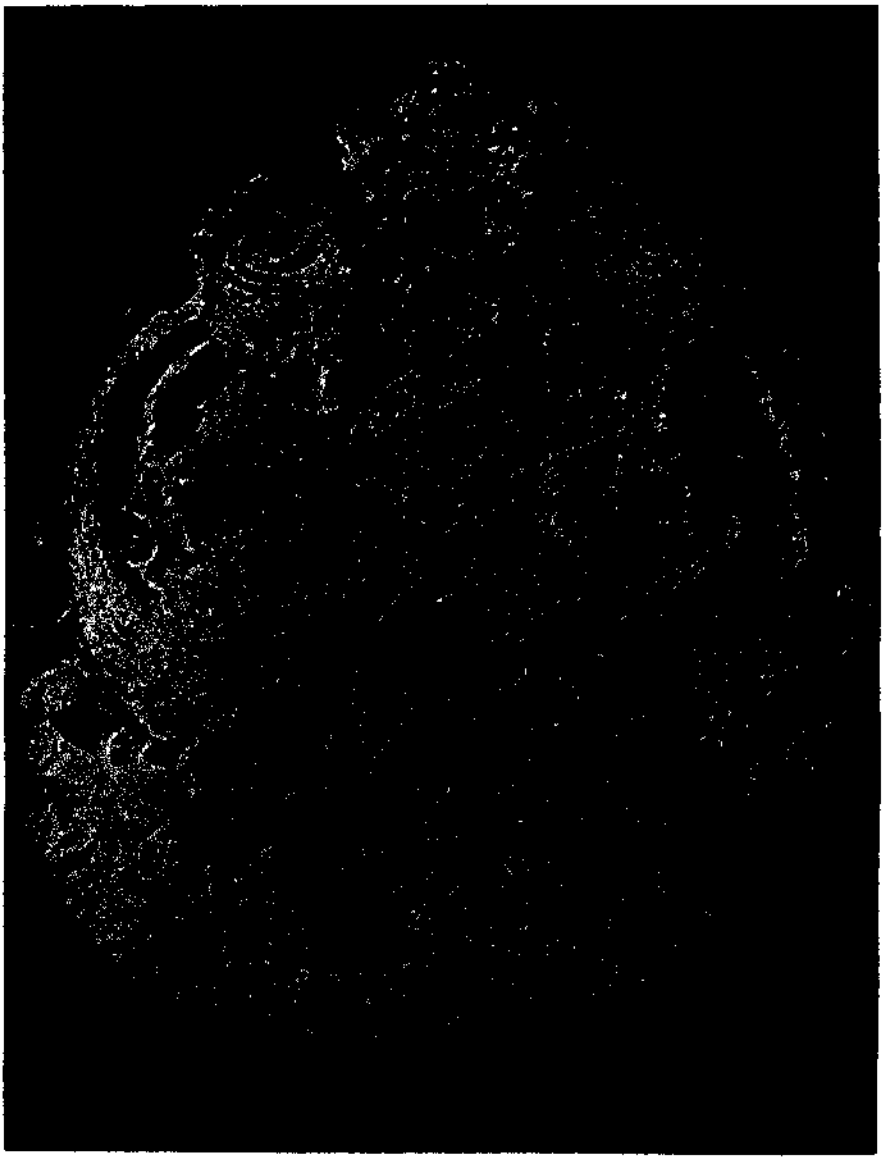
Unicorns on glass vessel of plate 1.

Upper: Details of a bronze canteen. Freer Gallery of Art, No. 41.10.
Middle and lower: Sculptures from Konya (after 225, fig. 12, and 227, pl. 17).

Detail of decoration on a bronze bucket. Courtesy of R. Stora, New York.



Left: Detail of ivory box. Pamplona, Cathedral. Photograph courtesy of Mas, Barcelona.
Right: Ivory box. Courtesy of the Marquis de Ganay, Paris.



Plaque, Madrasa Muqaddamiya, Aleppo. Photograph courtesy of M. Jean Sauvaget.

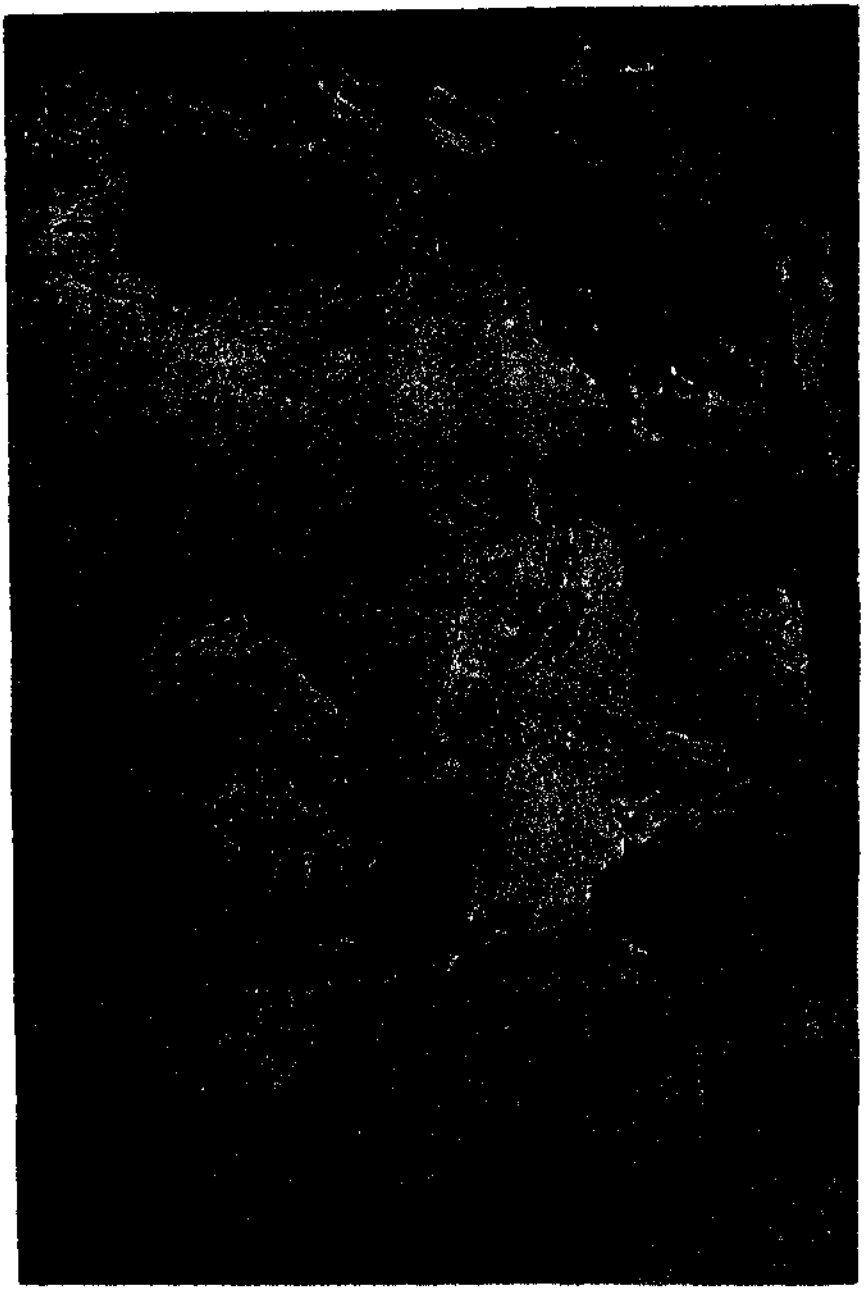
"Kardunn" from a *Na't al-ḥayawân* manuscript. Courtesy of the Trustees of the British Museum.

Miniature from a *Mu'nis al-aḥrār* manuscript. Photograph courtesy of the Cleveland Museum of Art.

"Iskandar Battling a Karkadan." Courtesy of the Museum of Fine Arts, Boston.

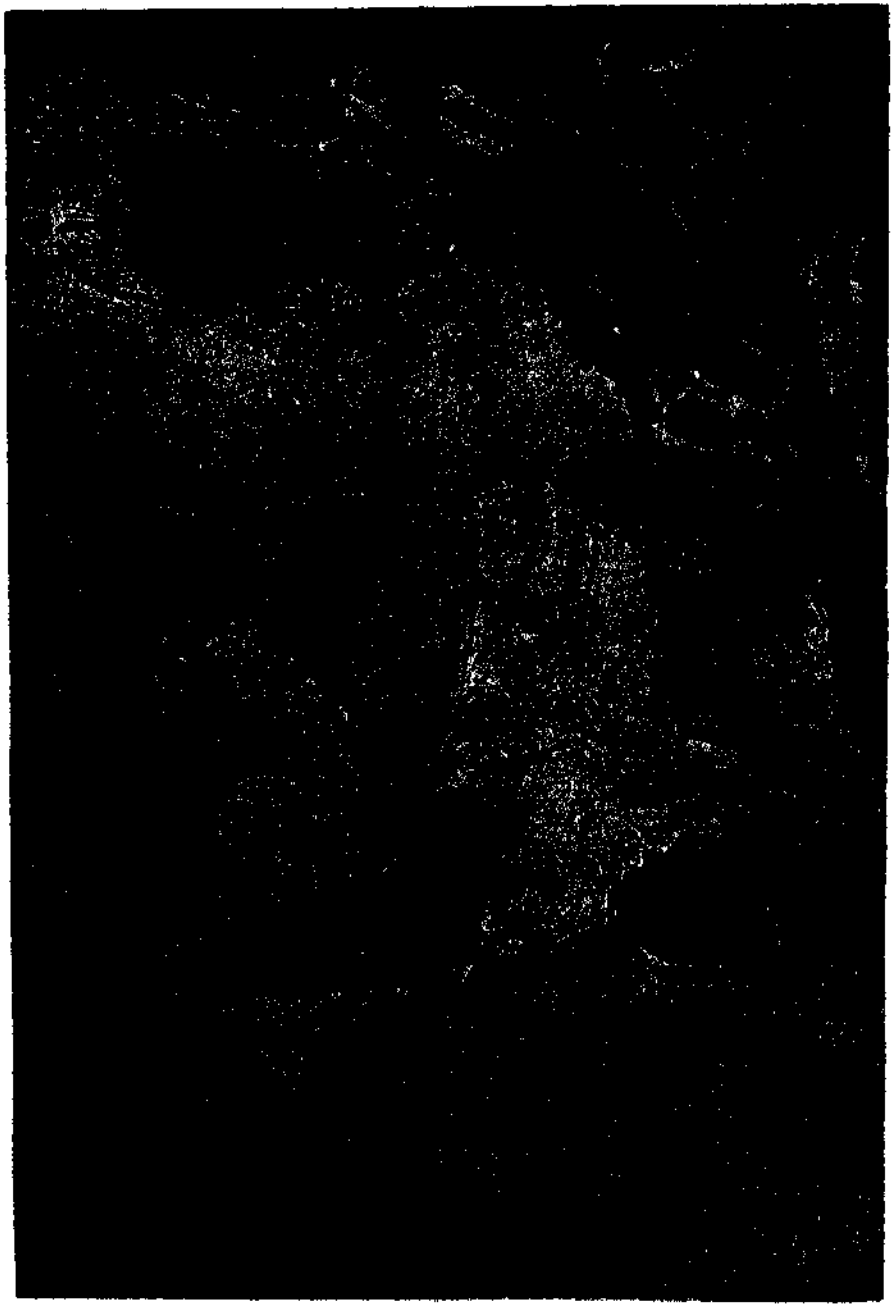
"Karkadan" from a *Manāfi'-i ḥayavān* manuscript. Photograph courtesy of The Pierpont Morgan Library.

"Domestic Oxen" from a *Manāfi'-i ḥayavān* manuscript. Photograph courtesy of The Pierpont Morgan Library.



Lohan on a rhinoceros. Freer Gallery of Art, No. 19.174.

Representations of the karkadann. Upper left: Photograph courtesy of Islamische Abteilung, Staatliche Museen, Berlin. Upper right: Courtesy of H. Kevorkian, New York. Lower: Photograph courtesy of the owner.



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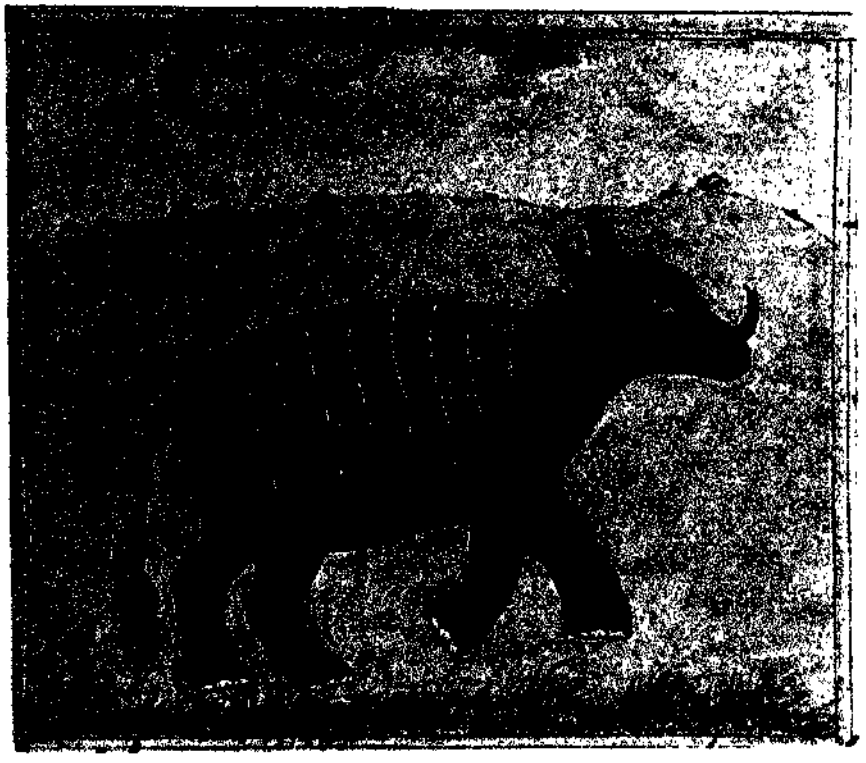
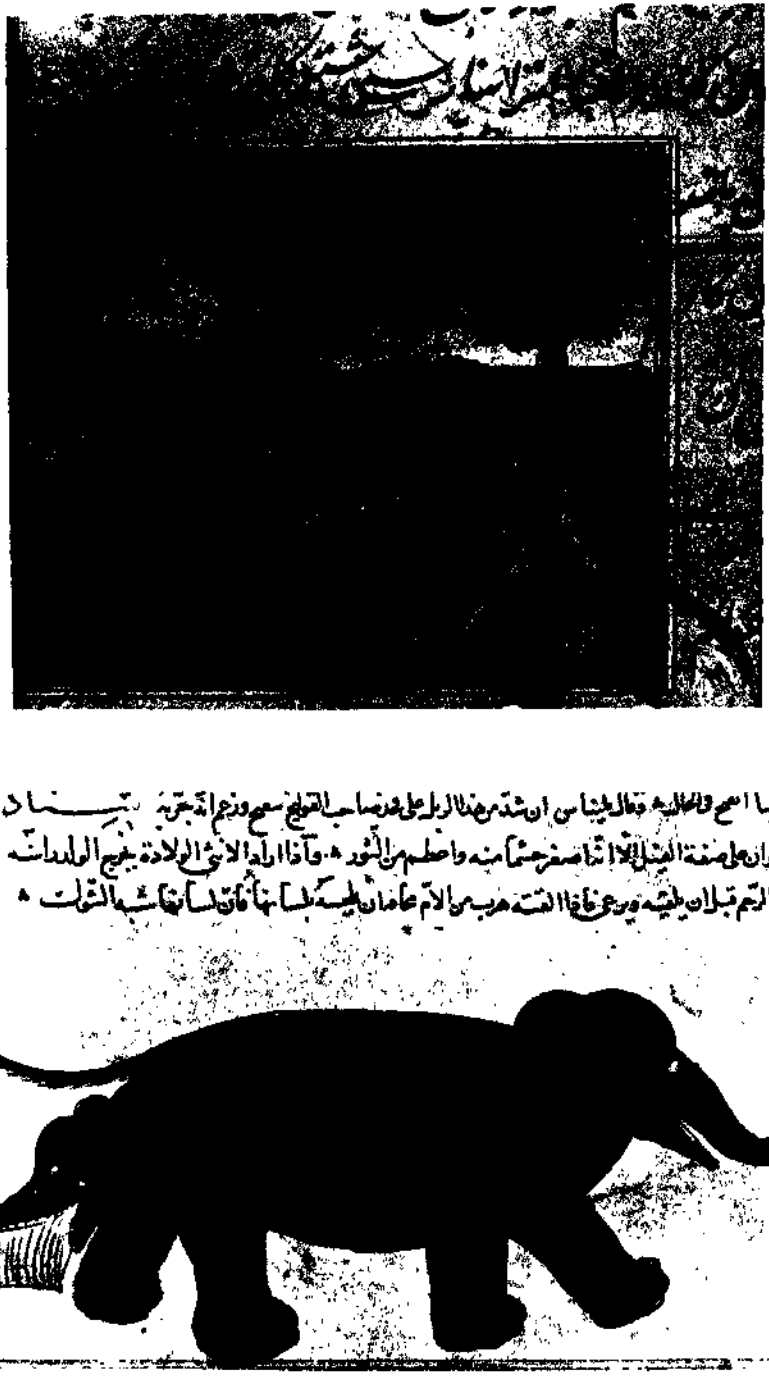
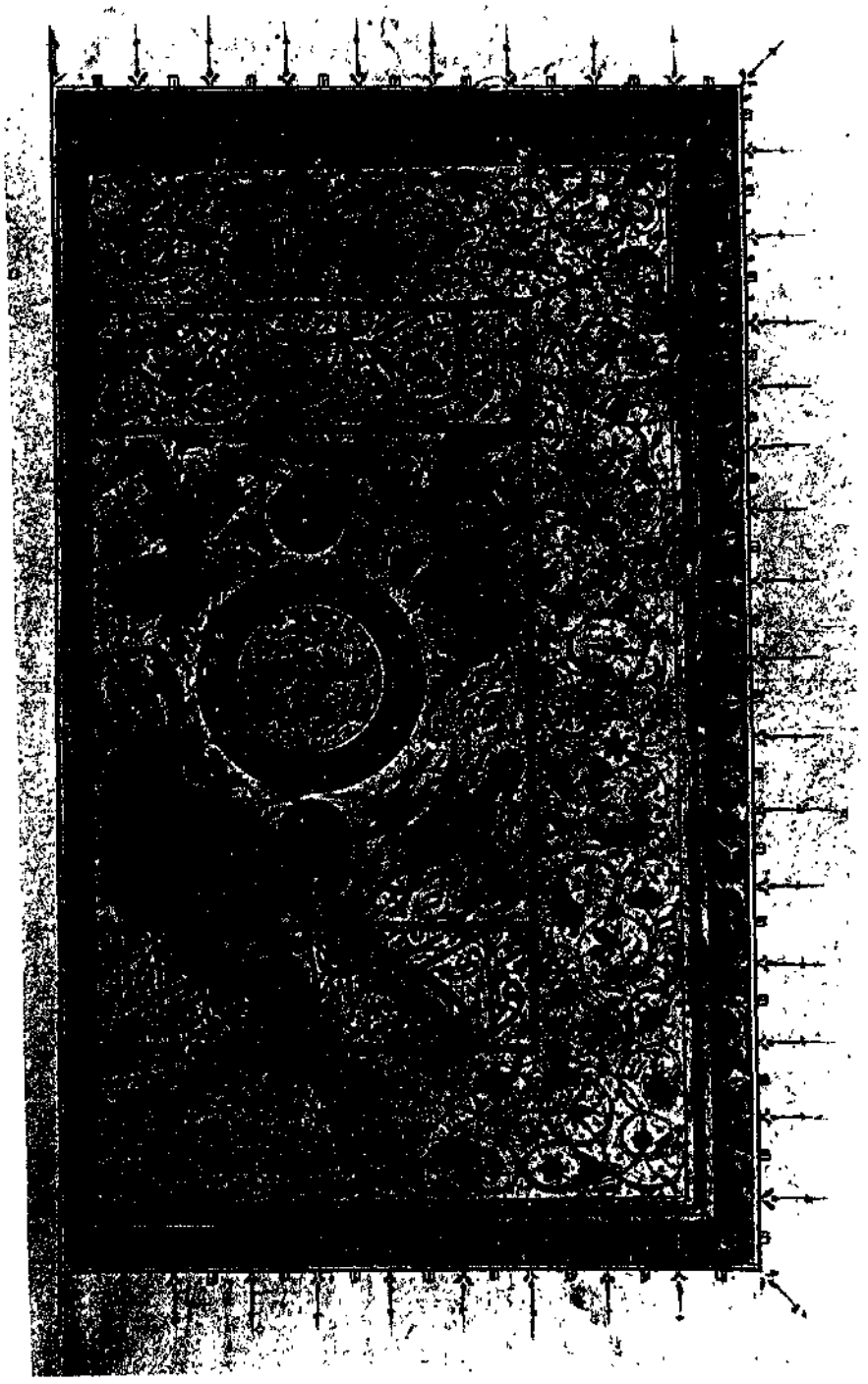


Representations of the karkadann. Upper: Courtesy of A. Chester Beatty, Esq., London. Lower: Freer Gallery of Art, No. 07.625.

Left: Island scene with a karkadann. Right: The lure of the ring dove. Courtesy of Princeton University Library.

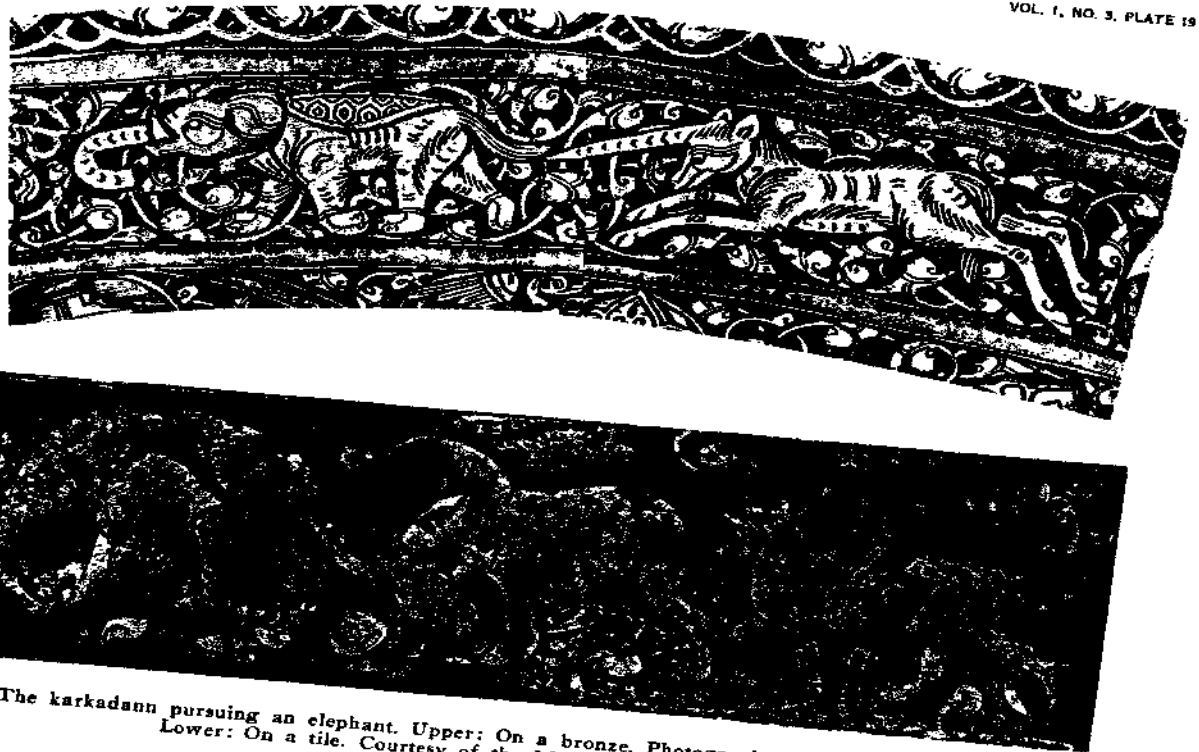


Upper: "Shutur-gâv-palang." Freer Gallery of Art, No. 07.625. Lower: "Sinâd." Courtesy of the owner.



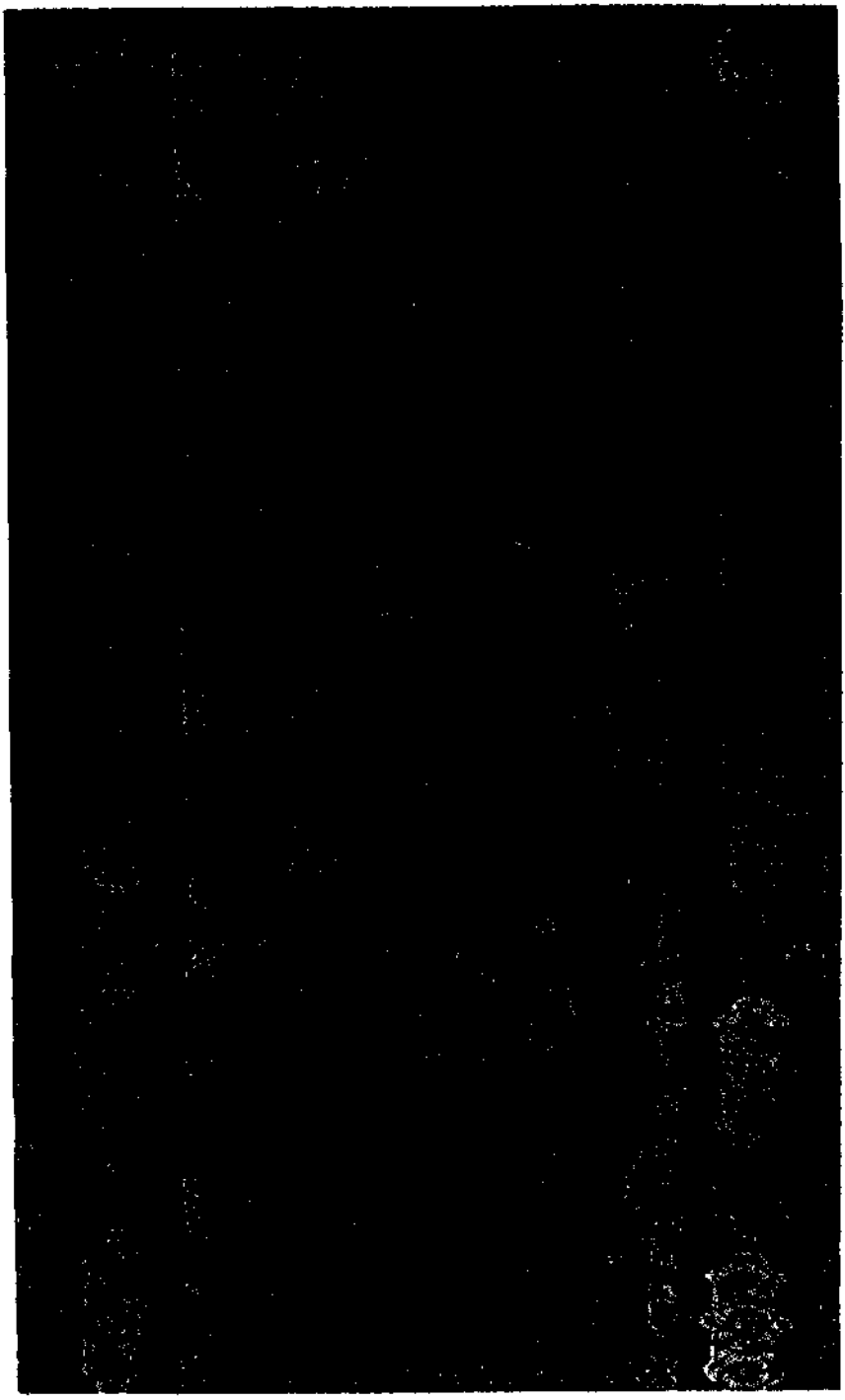
Right title page of an al-Qazwini manuscript. Courtesy of the Metropolitan Museum of Art.

The karkadann pursuing an elephant. Upper: On a tile. Photograph courtesy of Islamische Abteilung, Berlin. Middle: On a bronze plate. Hermitage, Leningrad. Lower: On a carpet. Courtesy of the Bodleian Library, Oxford.

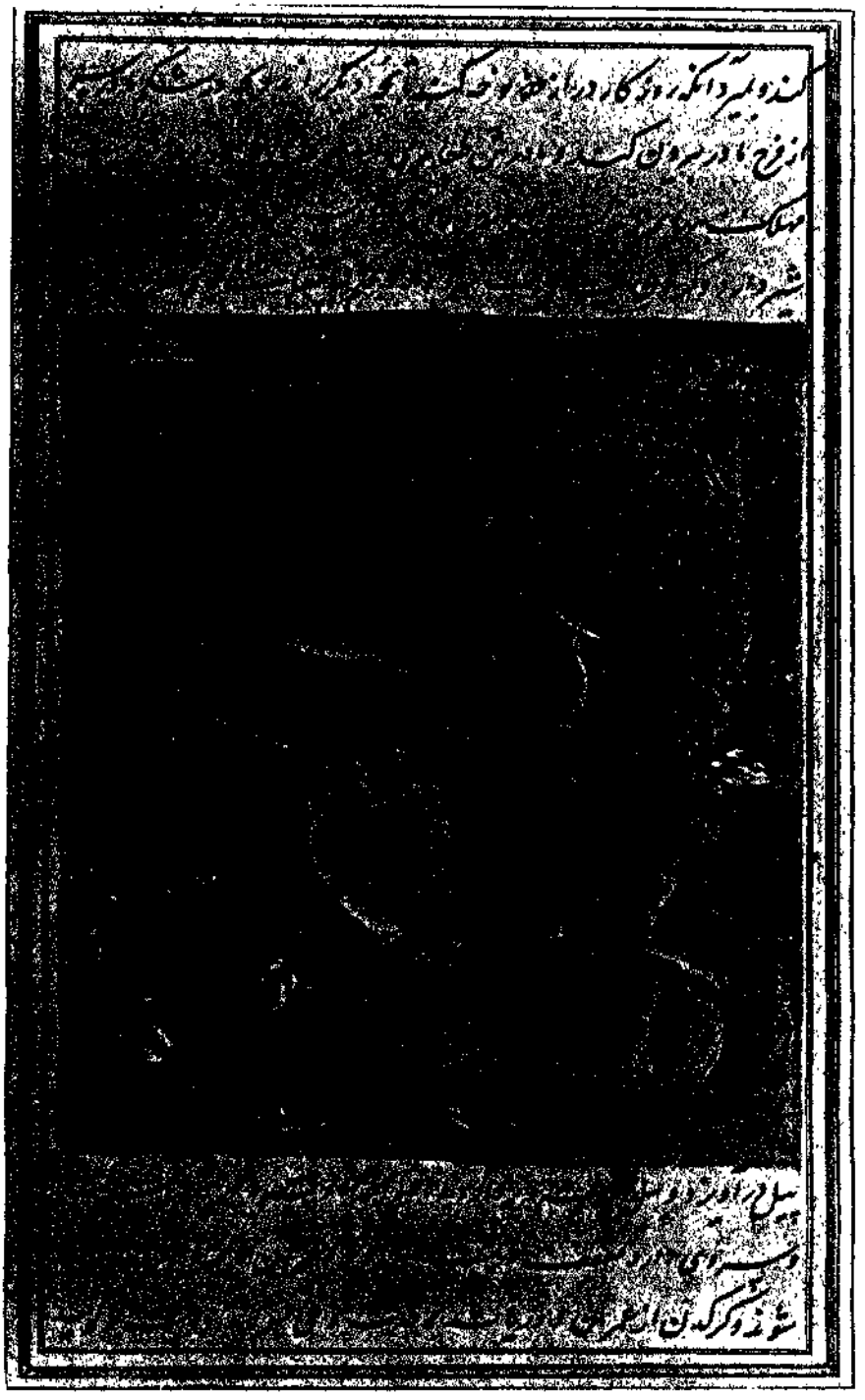


The karkadann pursuing an elephant. *Upper:* On a bronze. Photograph courtesy of D. S. Rice. *Lower:* On a tile. Courtesy of the Museum of Fine Arts, Boston.

Enameled glass vessel. Photograph courtesy of H. Kevorkian, New York.

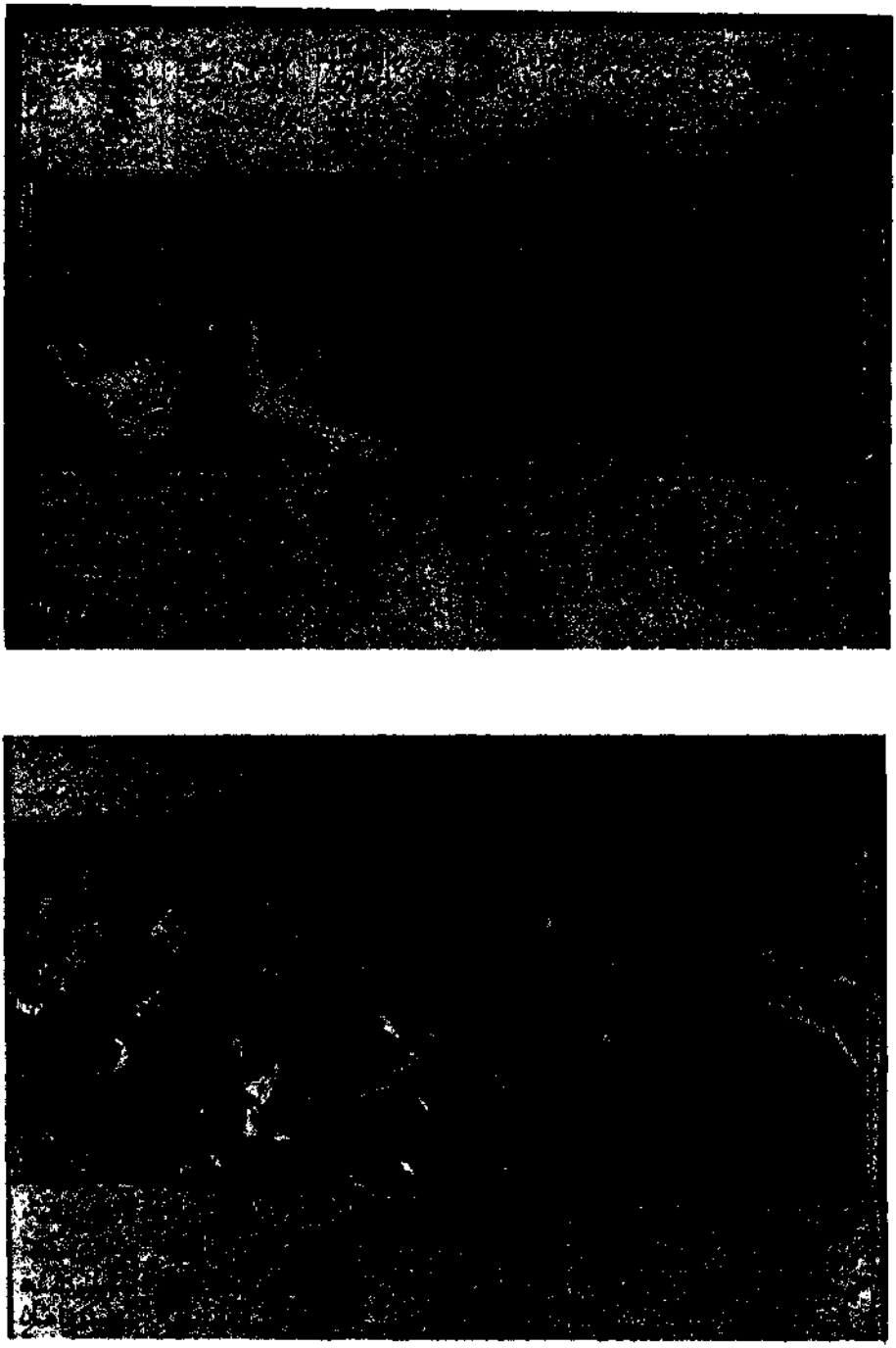


Mughal carpet. Photograph courtesy of the National Gallery of Art, Washington (Widener collection).



The death of the elephant. Photograph courtesy of the Walters Art Gallery, Baltimore.

Isfandiyār killing two karg monsters. Teheran, Gulistān Palace.

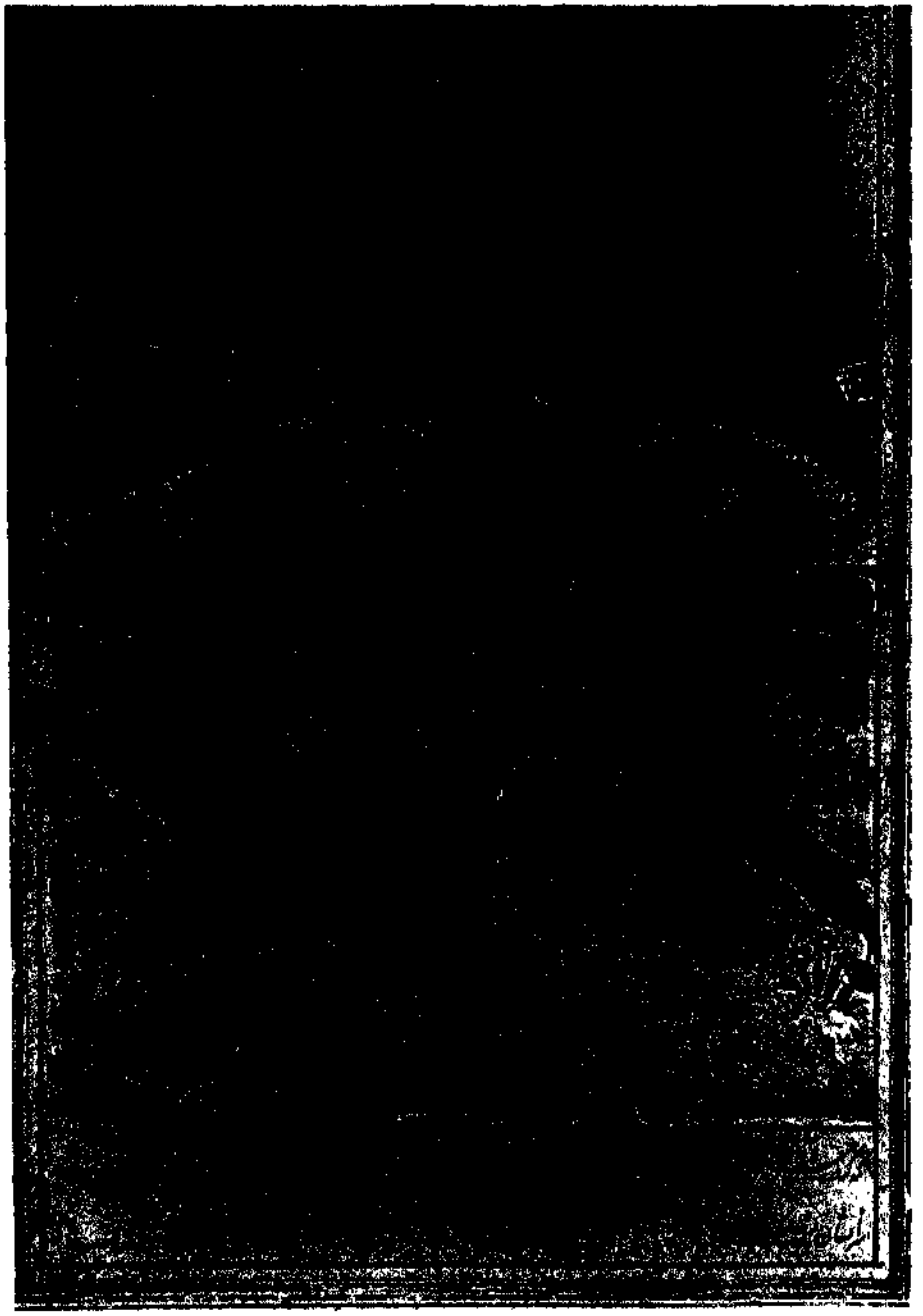


Upper: Gushtāsp killing a karg. Lower: Iskandar killing a karg. Photographs courtesy of George Hewitt Myers, Washington, D. C.

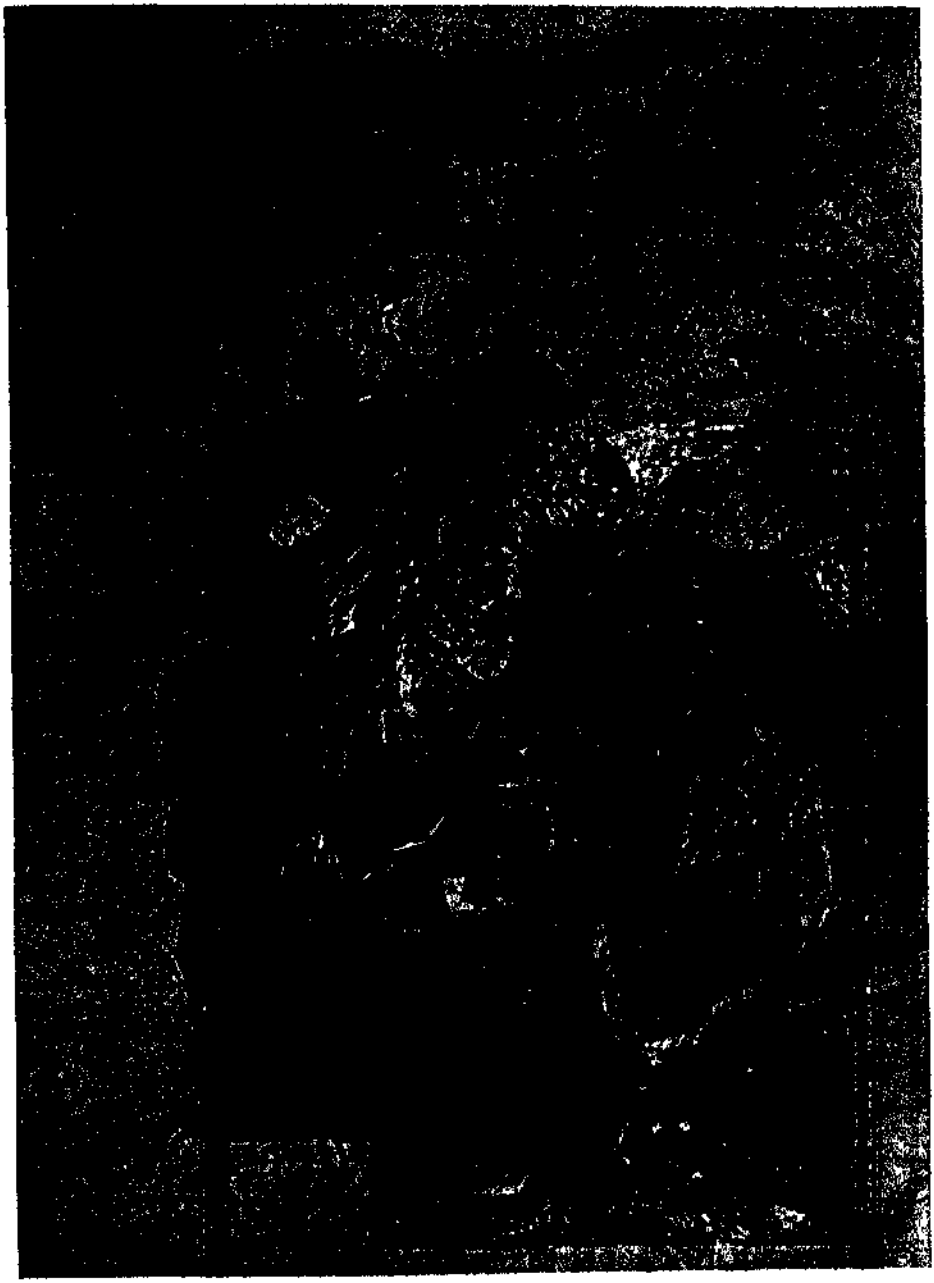
Bahrâm Gūr killing a karg. Freer Gallery of Art, No. 30.10, reverse.

Gushtâsp killing a karg. Bibliothèque Nationale, Paris.

Bahrām Gūr killing a karg. Courtesy of H. Kevorkian, New York.

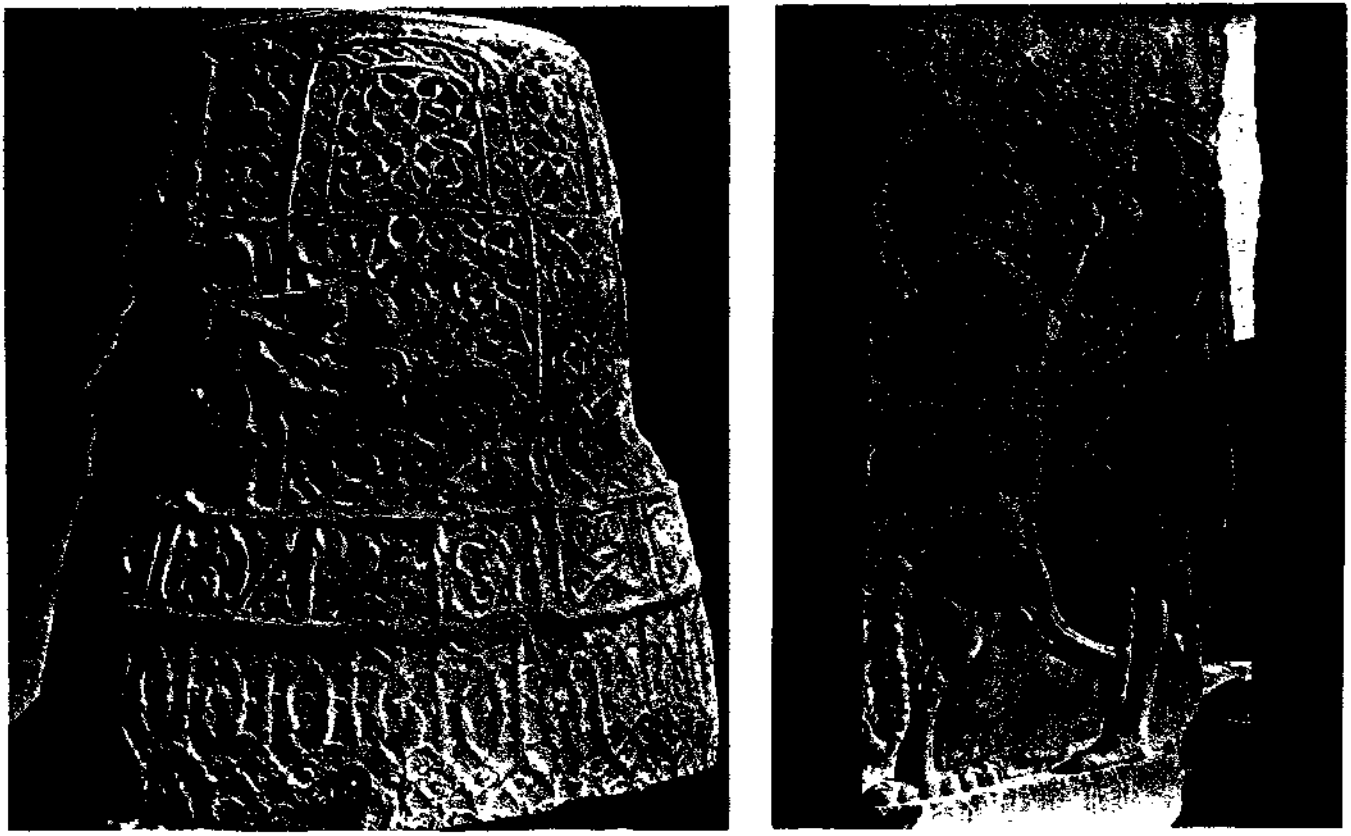


Isfandiyār killing karg monsters. Courtesy of H. Kevorkian, New York.

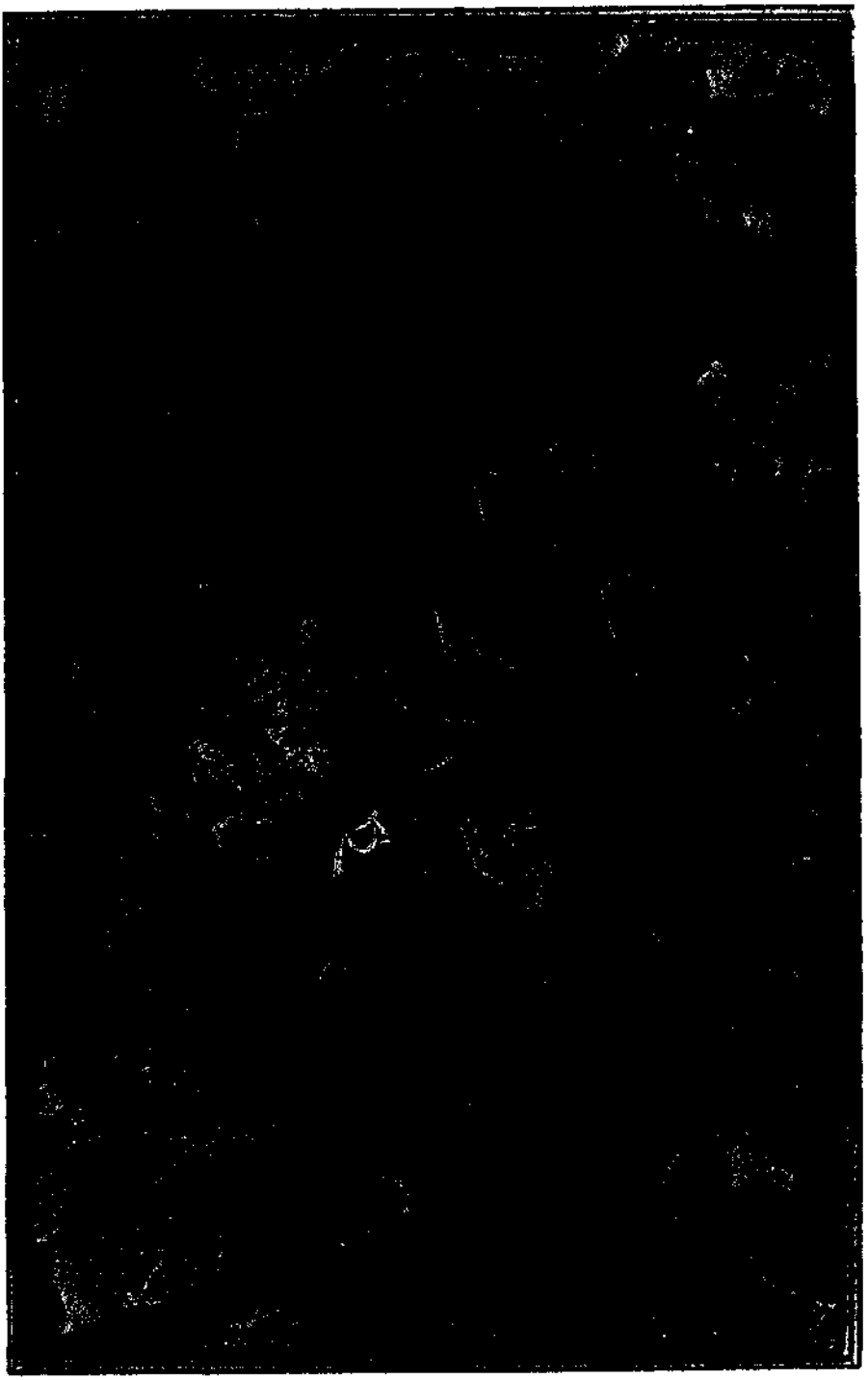


Isfandiyār killing karg monsters. Courtesy of the Metropolitan Museum of Art.

Isfandiyār killing karg monsters. Courtesy of Princeton University Library.

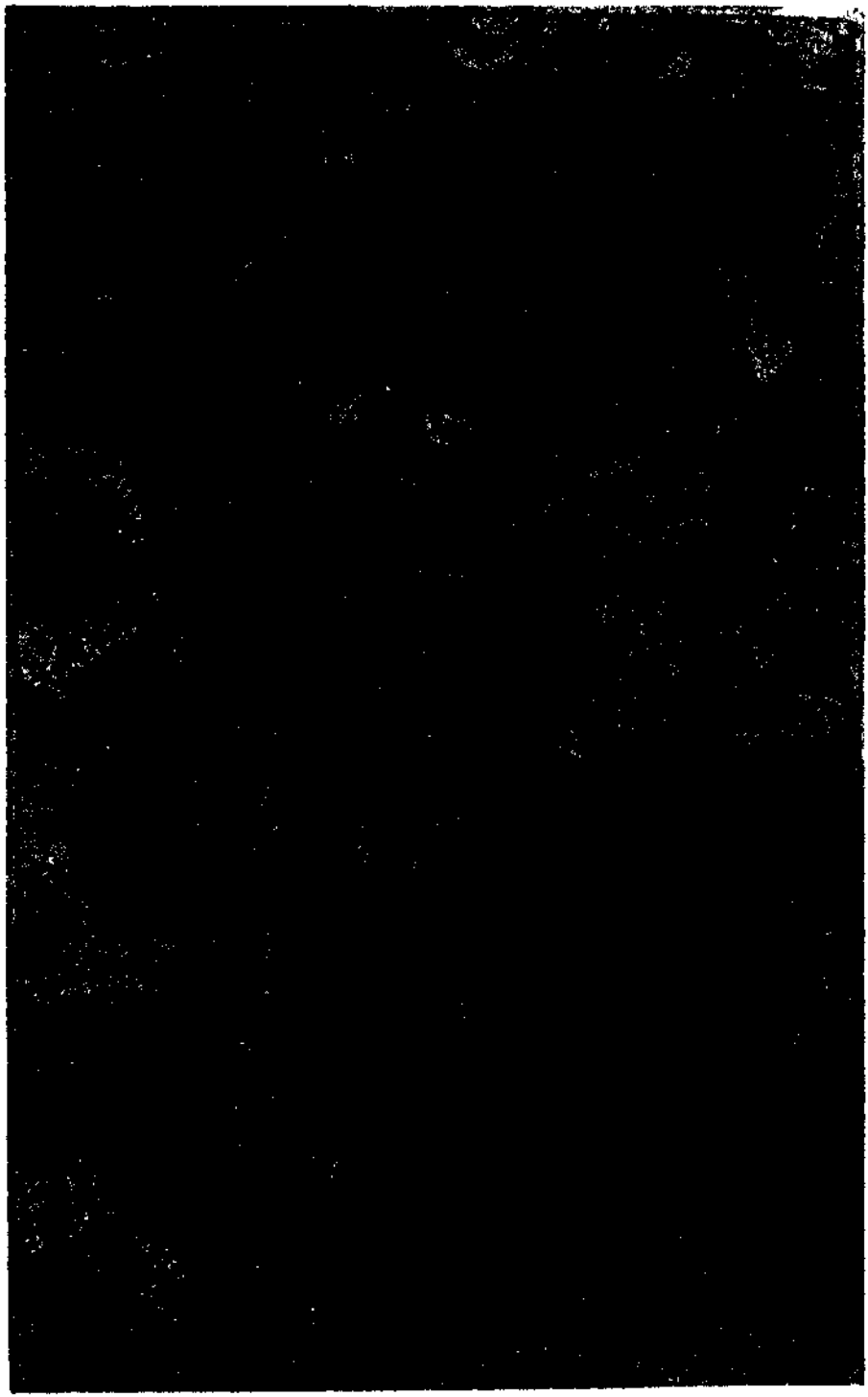


Left: Pottery vessel. Photograph courtesy of Islamische Abteilung, Berlin. Right: Persepolis, Palace of Darius. Courtesy of the Oriental Institute, University of Chicago.



Bābur on a rhinoceros hunt. Photograph courtesy of the Walters Art Gallery.

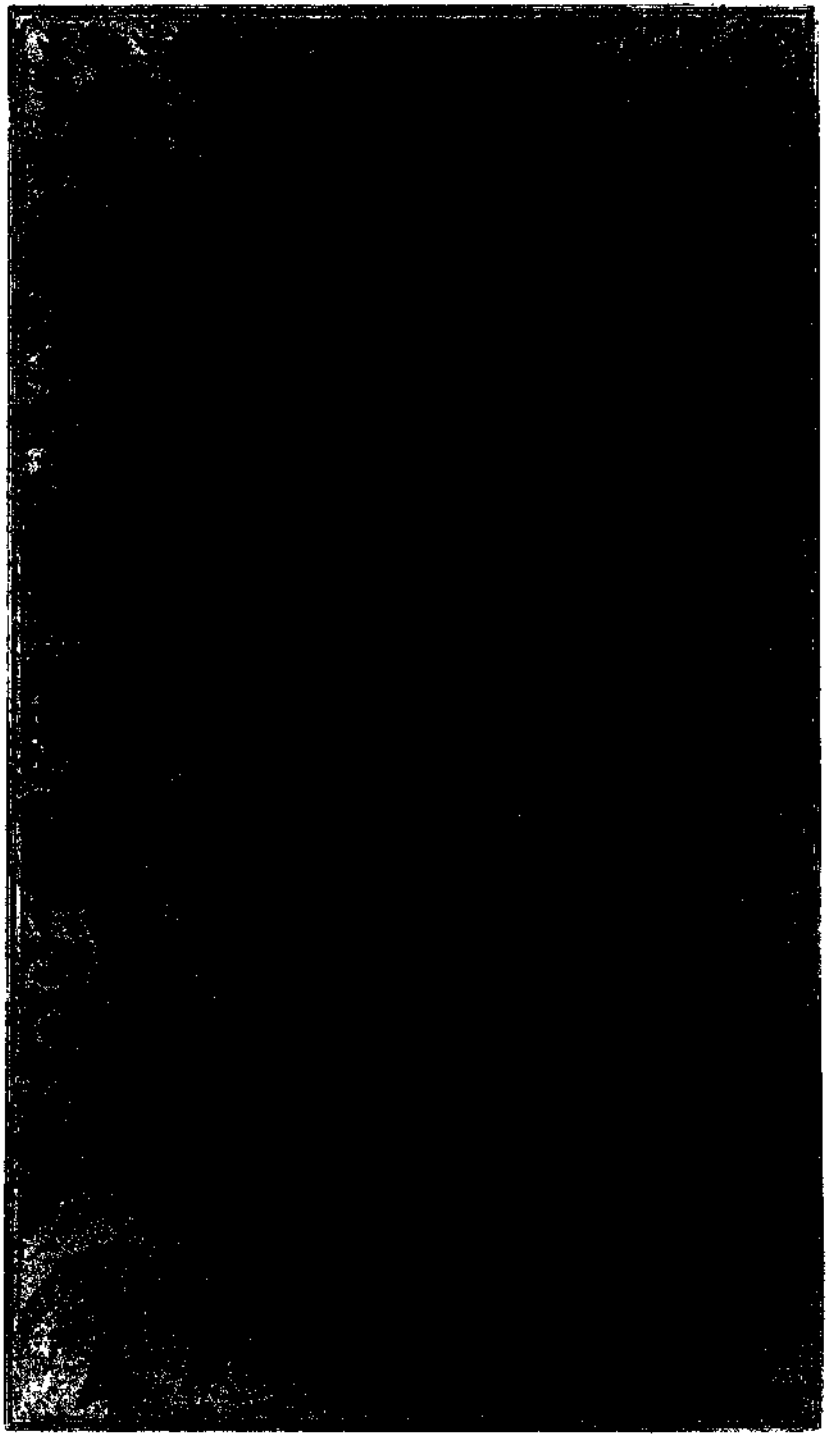
Jahāngīr on a rhinoceros hunt. O. Sohn-Rethel collection, Düsseldorf (after 156, p. 418).



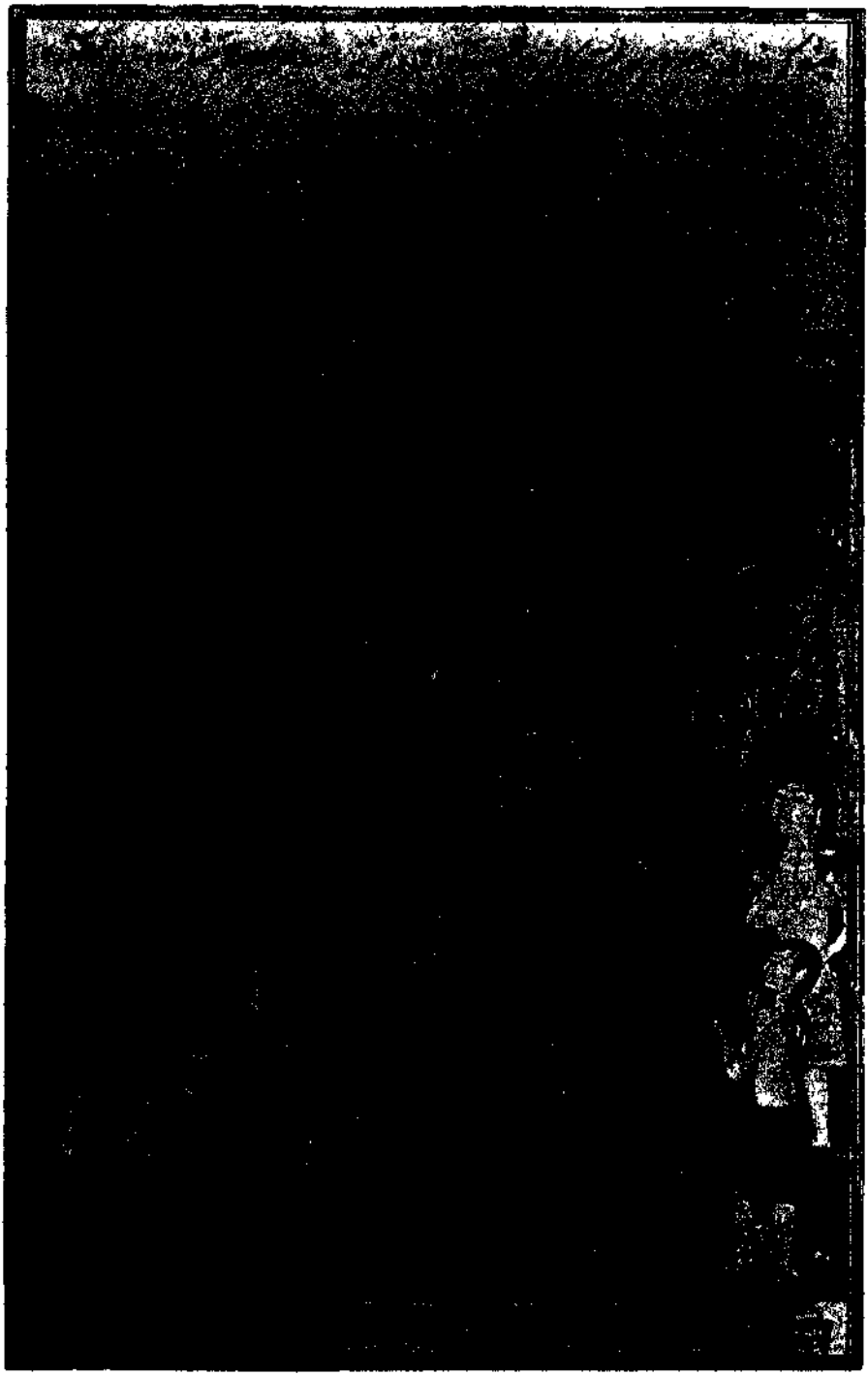
Bilqis surrounded by animals. Courtesy of H. Kevorkian, New York.

Sulaimān's host. Courtesy of Dr. E. Kahler, Princeton.

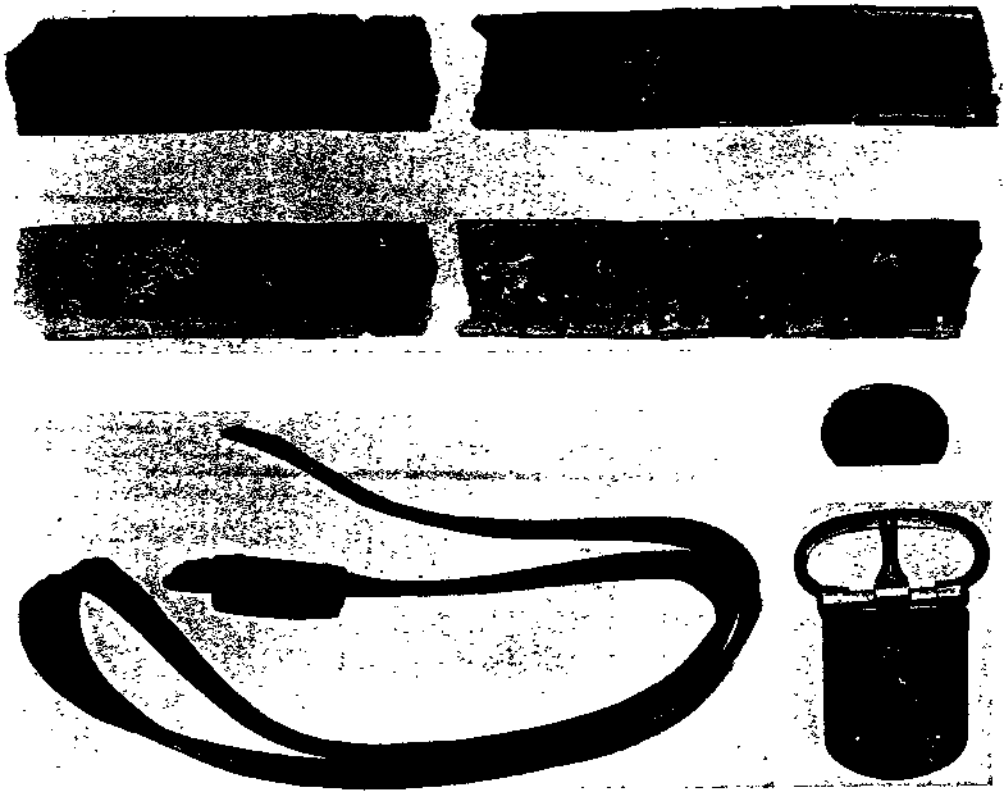
Laila visiting Majnūn. Photograph courtesy of N. Heerameneck, New York.



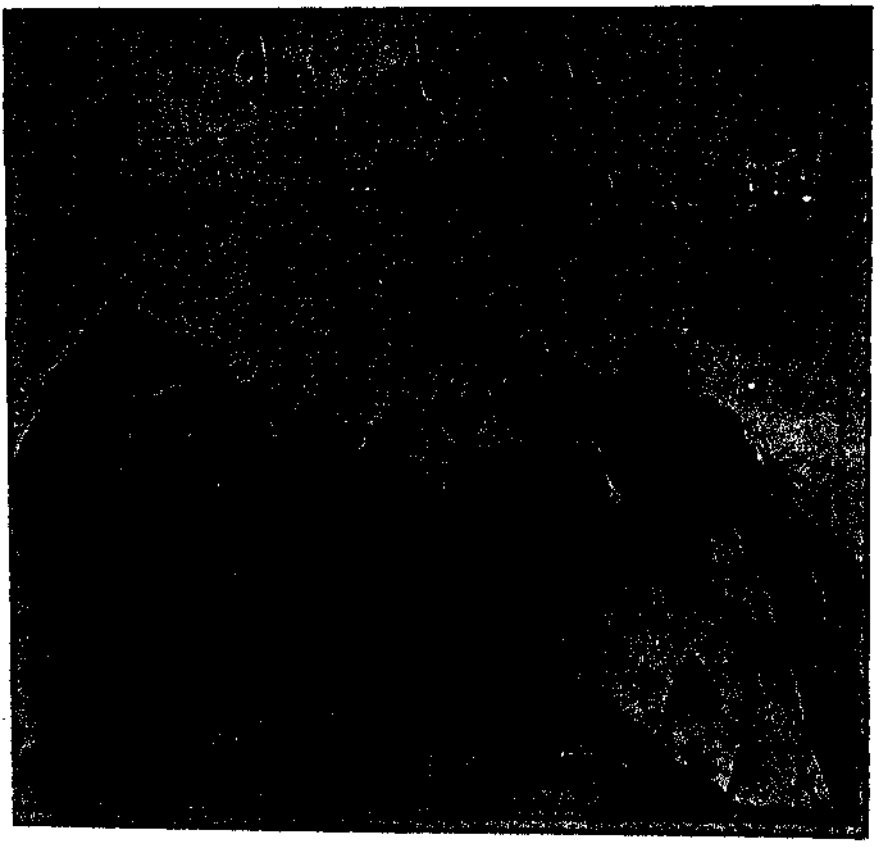
The animal kingdom. Freer Gallery of Art, No. 45.29.



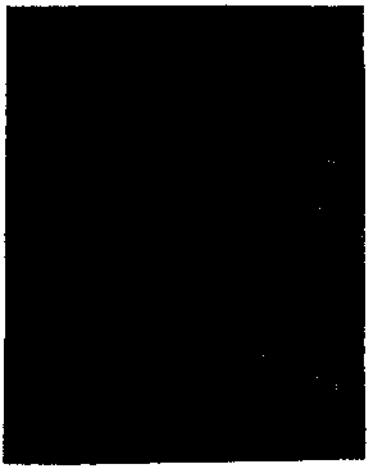
The Island of Wāqwāq. Courtesy of the Museum of Fine Arts, Boston.

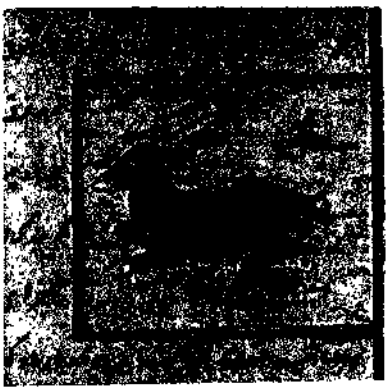


Left: Girdle with plaques of rhinoceros horn and silver buckle. Right: Pendant ornaments in form of containers made of rhinoceros horn. Nara, Shōsōin (after 147, vol. 7, pl. 33; vol. 1, pl. 20; vol. 7, pl. 51).

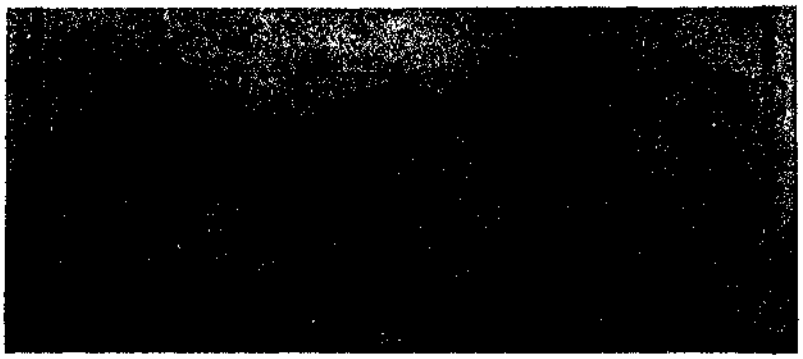


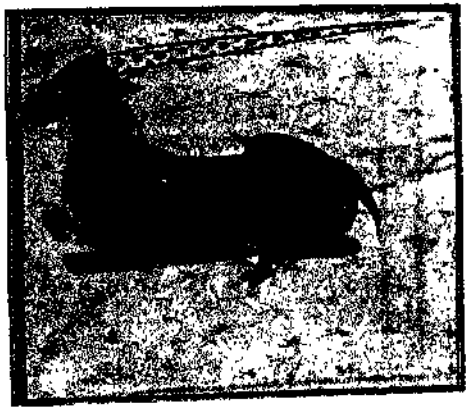
Upper: Snake harish. Courtesy of Princeton University Library. Lower: The capture of the harish. Photograph courtesy of The Pierpont Morgan Library.

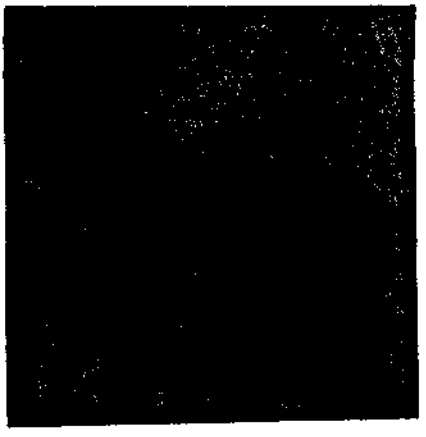




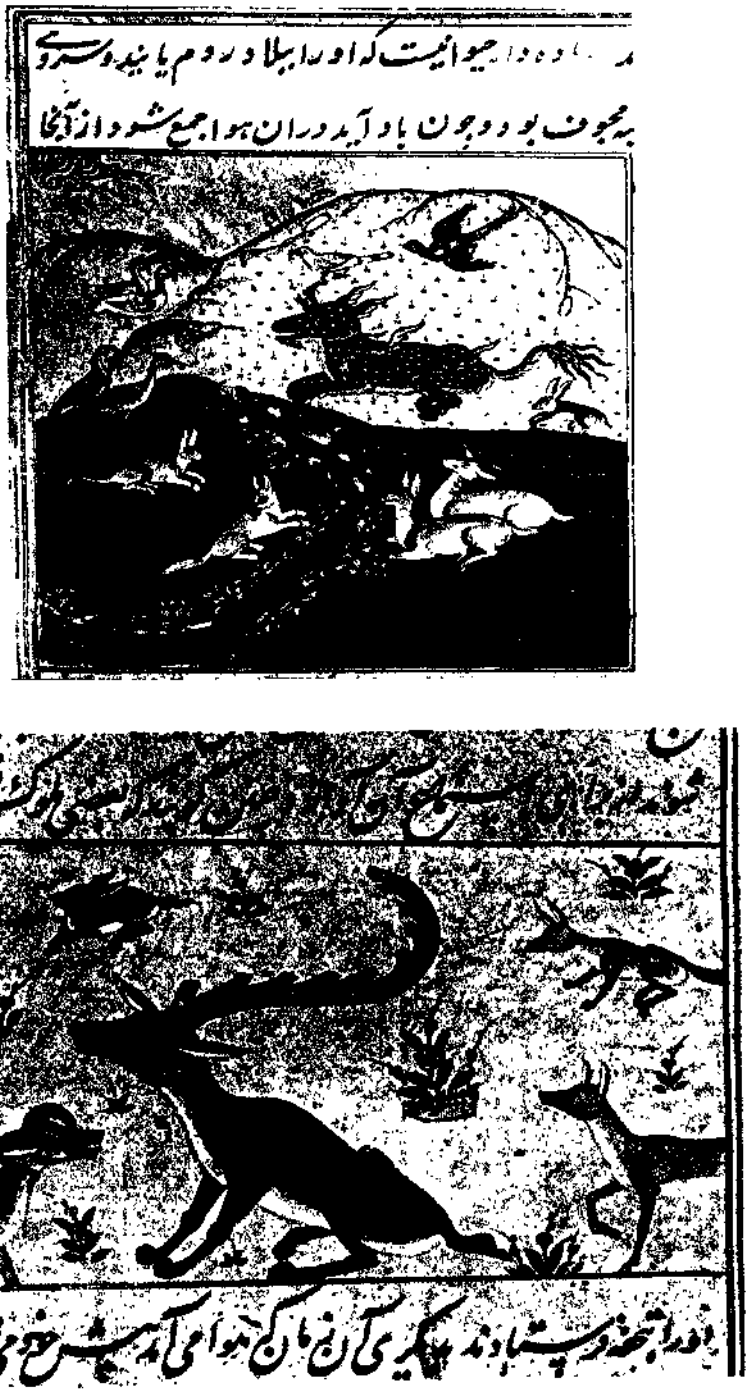
The harish in al-Qazwini manuscripts. Upper: Courtesy of the owner. Middle left: Photograph courtesy of Islamische Abteilung, Berlin. Middle right: Courtesy of H. Kevorkian, New York. Lower: Courtesy of A. Chester Beatty, Esq., London.



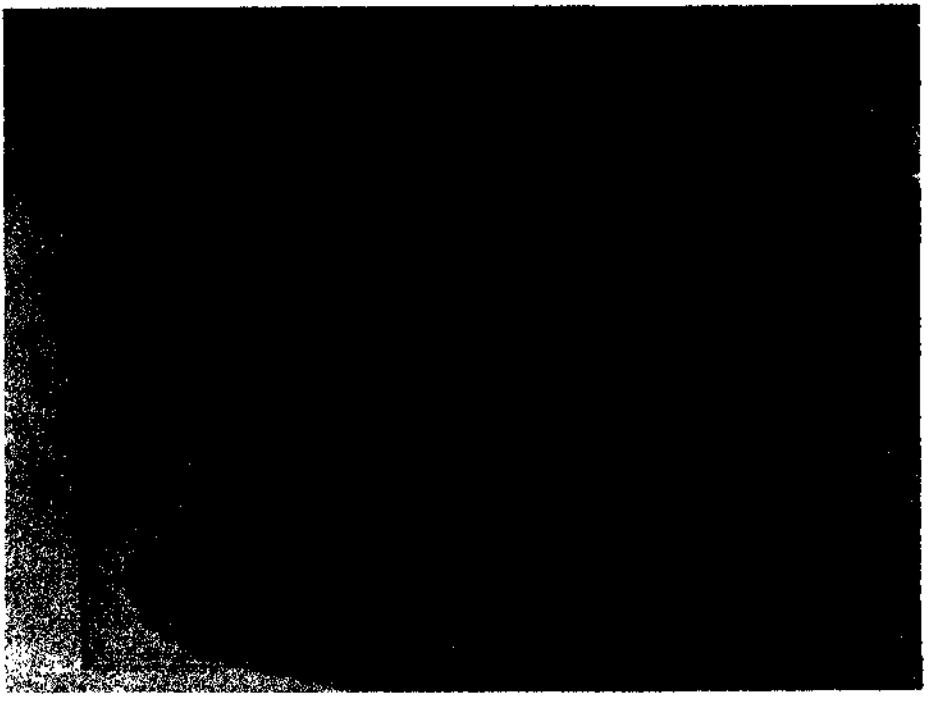




Upper: "Shādhahvār." Photograph courtesy of the owner. Middle: "Sinād." Courtesy of Princeton University Library. Lower left: "Shādhahvār." Courtesy of H. Kevorkian, New York. Lower right: "Shādhahvār." Photograph courtesy Islamische Abteilung, Berlin.



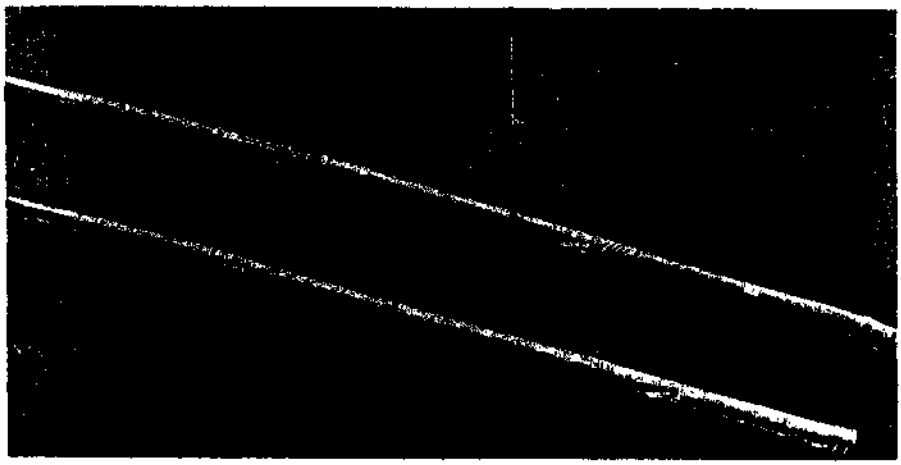
The lure of the shādhahvār's horn. Upper: Courtesy of Princeton University Library. Lower: Courtesy of A. Chester Beatty, Esq., London.

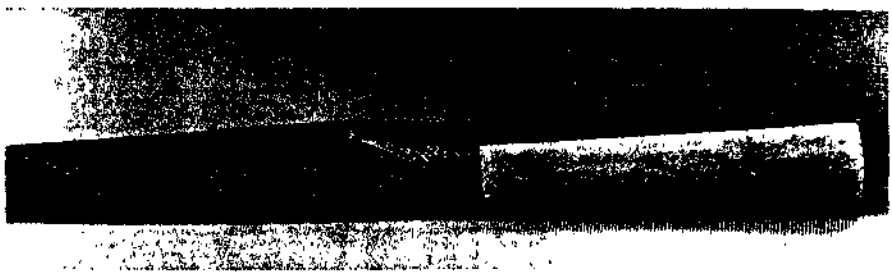


The Mi'rāj in al-Qazwīnī manuscripts. Upper: Photograph courtesy of Islamische Abteilung, Berlin. Lower: Courtesy of the owner.

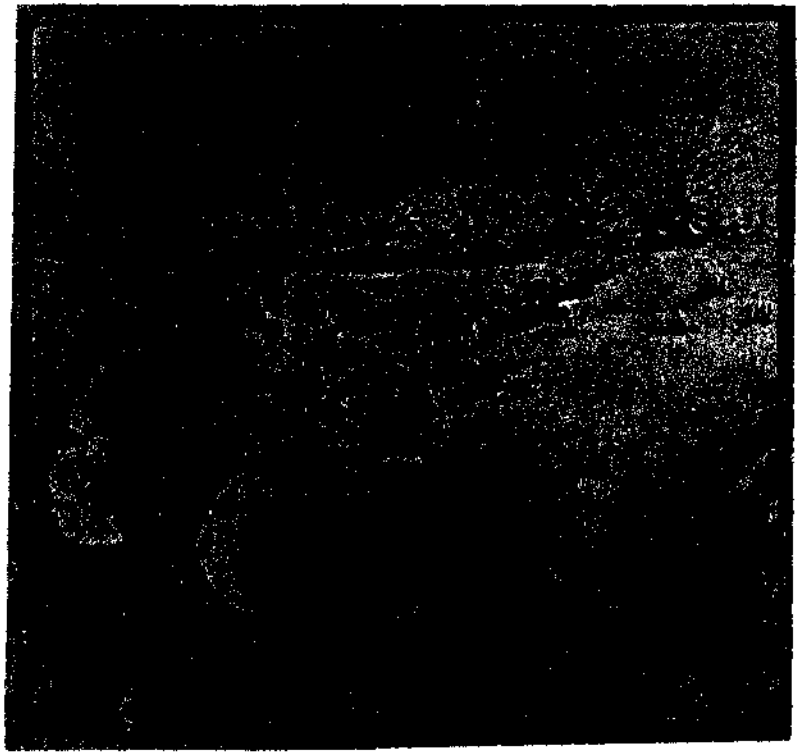
Dragon, lion, and ch'i-lin. Freer Gallery of Art, No. 48.17.

"Yaḥmūr," from a *Manāfʿ-i ḥayavān* manuscript. Freer Gallery of Art, No. 38.2.





Upper: Detail of lower "Unicorn horn" shown below. Middle: "Unicorn horns." Treasury, San Marco, Venice (after 238, figs. 211 and 212). Lower: Knife with handle of walrus ivory. Photograph courtesy of the Walters Art Gallery.



Upper: "Hai-ma" on bronze mirror. Freer Gallery of Art, No. 44.5. Lower: "Asb-i ābi" from a *Manāfi' -i ḥayavān* manuscript. Photograph courtesy of The Pierpont Morgan Library.