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CHINESE CLAY FIGURES

PART I

PROLEGOMENA ON THE HISTORY OF DEFENSIVE ARMOR

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64 Plates and 55 Text-figures

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CONTENTS

CHINESE CLAY FIGURES

PART I

PROLEGOMENA ON THE HISTORY OF DEFENSIVE ARMOR

I. HISTORY OF THE RHINOCEROS.

An extensive collection of ancient clay figures gathered in the provinces of Shen-si and Ho-nan during the period from 1908 to 1910 is the basis of the present investigation. As the character of this material gives rise to research of manifold kinds, it has been thought advisable to publish it in two separate parts. Many of the clay statuettes which form the nucleus of our study are characterized by the wear of defensive armor, hence this first part is devoted to an inquiry into the history of defensive armor,—a task of great interest, and one which heretofore has not been attempted. It will be recognized that this subject sheds new light on the ancient culture of China and her relations to other culture zones of Asia. The second part of this publication will deal in detail with the history of clay figures, the practice of interring them, the religious significance underlying the various types, and the culture phase of the nation from which they have emanated.

Before embarking on our subject proper, a preliminary question must be decided. It is the tradition of the Chou period that the cuirasses[1] employed at that time were manufactured from the hides of two animals designated by the words *se* (No. 10,298) and *si* (No. 4218).[2] It is imperative to have a clear understanding of what these two animals were in the early antiquity of China. As this problem is still pending, and as a close and coherent investigation of the matter has never been made, I have decided to treat it from the very beginning by means of all accessible methods, with the possible hope of a final solution.

The present state of the problem is as follows: EDOUARD BIOT,[3]

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[1] "Cuirass" or "cuirbouilly" is the right term for this kind of armor, as these words (like French *cuirasse*, Italian *corazza*) go back to Latin *coratium* ("a breastplate of leather"), derived from the word *corium* ("leather").

[2] These figures refer to the numbers of the Chinese characters in the Chinese-English Dictionary of H. A. GILES.

[3] Le Tcheou-li, ou Rites des Tcheou, Vol. II, p. 507 (Paris, 1851).

the ingenious translator of the *Chou li*, has expressed his opinion in these words: "I translate by *buffalo* the character *si*, and by *rhinoceros* the character *se*. These two characters[1] denote in the *Shi king* a rhinoceros or a wild buffalo, without the possibility of distinguishing between them. The skin of the rhinoceros being very thick, it seems difficult to believe that it could have been sliced, and that the pieces were sewed together, in order to make cuirasses. In this case the two characters of the text[2] would designate here two species of buffalo."[3] PALLADIUS, in his Chinese-Russian Dictionary, treats the matter in the opposite way, and renders *se* by (1) "an animal resembling a wild ox," (2) "Malayan rhinoceros," and *si* by "rhinoceros." COUVREUR credits the word *se* first with the latter meaning, secondly with that of *bœuf sauvage*.[4]

CHAVANNES[5] has clearly and sensibly expressed the opinion that

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[1] It should properly read, "words."

[2] Referring to the passage of the *Chou li* where the hide cuirasses are mentioned.

[3] In his essay on the Manners of the Ancient Chinese (in LEGGE, Chinese Classics, Vol. IV, Prolegomena, p. 148), BIOT says that "they hunted also herds of deer, of boars, of wild oxen," on which LEGGE annotates, "These wild oxen would seem to be rhinoceroses." But in his original article (*Journal asiatique*, 1843, p. 321), BIOT has added the following comment: "Le caractère *si* est traduit ordinairement par rhinocéros, et c'est, en effet, son sens actuel. Lacharme a traduit, tantôt *bos sylvestris*, tantôt rhinocéros. Il me semble que les grandes chasses devaient être dirigées surtout contre des troupeaux de bœufs sauvages ou buffles." The objections raised by Biot in the above passage are not valid; it is certainly possible to slice rhinoceros-hide, and to sew the pieces together. Cuirasses and shields have been made from it, as may be seen from many specimens in the collections of our museums. A shield of rhinoceros-hide is illustrated in Plate XXVII. In accordance with the above definition, BIOT, likewise in his translation of the Annals of the Bamboo Books (Extrait du *Journal asiatique* 1841 and 1842, pp. 41, 46), rendered *se* by "rhinoceros" and *si* by "bœuf-*si* (rhinocéros)," while LEGGE (Chinese Classics, Vol. III, Prolegomena, pp. 149, 153) in both cases has "rhinoceros." It will be seen in the course of this investigation how Biot's error was caused, and that his opinion is untenable. W. R. GINGELL (The Ceremonial Usages of the Chinese, p. 81, London, 1852) treated the two words in a way opposite to that of Biot, translating in the passage of *Chou li* the term *si kia* by "rhinoceros-hide armor" and *se kia* by "wild buffalo's-hide armor." No one of those who from purely philological points of view proposed the rendering "wild buffalo" has ever taken the trouble to raise the question whether anything like wild buffalo exists in China, anciently or in modern times. BUSHELL (The Stone Drums of the Chou Dynasty, *Journal China Branch R. As. Soc.*, Vol. VIII, 1874, p. 154) was of the opinion that the ancient Chinese hunted the rhinoceros in the low swamps.

[4] The passage in *Lun yü* (XVI, 7) is translated by COUVREUR (Les quatre livres, p. 250), "Si un tigre ou un bœuf sauvage s'échappe de sa cage." Nevertheless in the glossary (p. 664) the word *se* is rendered by "rhinoceros." LEGGE (Chinese Classics, Vol. I, p. 307) translates here "rhinoceros," despite Chu Hi's (undoubtedly wrong) interpretation of *se* being a *ye niu* ("wild bull"). In his first edition of *Lun yü* (which is not accessible to me, but this may be gleaned from PLATH, Die Beschäftigungen der alten Chinesen, p. 56), LEGGE translated *se* by "wild ox." In the text of *Mêng-tse* (III, 2, IX, 6), LEGGE (Classics, Vol. II, p. 281) and COUVREUR (*l. c.*, p. 452) are in mutual accord in translating the word *si* by "rhinoceros," and this is likewise the case with reference to the word *se* in *Li ki*, II, 1, III, 40 (LEGGE in *Sacred Books of the East*, Vol. XXVII, p. 158; COUVREUR, *Li ki*, Vol. I, p. 181). In *Tso chuan*, VII, 2, LEGGE (Classics, Vol. V, p. 289) renders *si se* by "rhinoceroses and wild bulls."

[5] Les Mémoires historiques de Se-ma Ts'ien, Vol. III, p. 502.

se niu and *si* appear to be two different species of rhinoceros. Also G. DEVÉRIA[1] has translated *se* and *si* by "rhinoceros."

BRETSCHNEIDER, both a naturalist and an eminent sinologue, upheld the opinion that the rhinoceros, and goblets made from rhinoceros-horn, are repeatedly mentioned in the Chinese classics, and that the latter has been reputed from time immemorial for its antipoisonous virtues. He refers the saying that rhinoceros-horn cures all poisons, to the *Shên-nung pên ts'ao king*, attributed by tradition to the mythical Emperor Shên-nung, at all events the most ancient Chinese materia medica in existence.[2]

In the first edition of his Chinese-English Dictionary, Professor GILES, the eminent sinologue at the University of Cambridge, England, attributed to both *se* and *si* the meaning of "rhinoceros," without establishing a distinction between the two. In the second edition, however, we read under *se* (No. 10,298), "A bovine animal, figured as a buffalo with one horn, known as the *se niu*. Another name for the *si* 4128; see 8346 for its confusion with the rhinoceros." Under the last-named heading it is said that the term *si niu* is "a bovine animal, figured as a buffalo with a single horn;" with the addition that the traditional "rhinoceros" of foreigners seems to be wholly wrong. Further, the reader is requested to correct No. 4128 *si*, where the meanings "tapir" and "rhinoceros" had been given. In his "Adversaria Sinica" (p. 394), Mr. GILES has expounded more in detail the reasons which induced him to make these alterations. The arguments advanced by him are briefly three: 1. The rhinoceros is known to the Chinese as *pi kio*, "nose-horn." 2. In two passages of Chao Ju-kua (translation of HIRTH and ROCKHILL, pp. 118, 233), rhinoceroses are spoken of as being shot with arrows, while Giles finds it stated in the *T'u shu tsi ch'êng* that arrows cannot pierce the hide of the rhinoceros. 3. The *si* and the *se* are figured in the latter work as slightly differing

[1] Histoire des relations de la Chine avec l'Annam, p. 88 (Paris, 1880).

[2] *Chinese Recorder*, Vol. VI, 1875, p. 19, and Mediæval Researches, Vol. I, p. 153. Regarding the materia medica current under the name of Shên-nung see BRETSCHNEIDER (Botanicon Sinicum, pt. 1, pp. 27–32). BRETSCHNEIDER, though believing that in India the people from time immemorial attribute the same antipoisonous virtues to the rhinoceros-horn as the Chinese do, says he cannot believe that the Chinese have borrowed this practice from the Hindu or *vice versa*. The Hindu conception is not attested by any passage in Sanskrit literature, but only by Ctesias and Aelian who state that drinking-vessels made from the horn of the unicorn safeguard from poison and various diseases. The belief is likewise absent among the Greeks and Romans, in whose records the number of references to rhinoceros-horn is exceedingly small (H. BLÜMNER, Technologie und Terminologie der Gewerbe und Künste, Vol. II, p. 358). There is no evidence that the Chinese notions are due to any stimulus received from outside; they appear, on the contrary, as legitimate offshoots grown on Taoist soil. The Chinese likewise conceived the idea of carving rhinoceros-horn into cups, girdle-plaques, and fanciful ornaments. We shall come back to these various points in detail. Compare p. 154, note.

FIG. 1.

Monoceros of European Armorial Style, introduced into China by the Jesuit Father Ferdinand Verbiest (from *T'u shu tsi ch'êng*).

FIG. 2.

Rhinoceros, Design of European Origin, introduced into China by the Jesuit Father Ferdinand Verbiest (from *T'u shu tsi ch'êng*).

bovine animals,[1] with a single horn on the head. Says Mr. GILES, "The *Erh ya* says: the latter is like an ox, and the former like a pig, while the *Shan hai king* speaks of both as occurring in many parts of China. There is thus hopeless confusion, of which perhaps the explanation is that a term which originally meant a bovine animal was later on wrongly applied to the rhinoceros."

The first argument advanced by Mr. Giles is not admissible as good evidence in the case. "The rhinoceros is known to the Chinese as *pi kio*, 'nose-horn,' and is approximately figured in the *T'u shu*." By referring to the Chinese cyclopædia we find, however, that this name with the illustration is extracted from the *K'un yü t'u shuo*. The latter is not the production of a Chinese author, but of the Jesuit FERDINAND VERBIEST, born in 1623, and who arrived in China in 1659 and died in 1688.[2] This section of the *T'u shu tsi ch'êng* alluded to by Mr. Giles and devoted to "strange animals" contains quite a number of illustrations and texts derived from the work of Verbiest; and neither his zoölogical nomenclature nor his descriptions and illustrations, which are based on European lore, can be laid at the door of the Chinese. The evidence is here produced in Figs. 1 and 2. In Fig. 1, Verbiest pictures a "single-horned animal" (*tu kio shou*), saying, "India, situated on the continent of Asia, is the habitat of the single-horned animal which is as big as a horse, very light and swift, and yellow in color. On its head it has a horn, four to five feet long, of bright color. It is made into drinking-vessels which are capable of neutralizing poison. As the horn is pointed, the animal can charge a big lion. The lion, while struggling with it, takes refuge behind a tree; and when missing its aim, it butts the tree, while the lion bites it at this moment." In Fig. 2, the *pi kio shou* referred to by Mr. Giles is pictured. Verbiest comments, "The locality Kang-pa-ya[3] in India, situated on the continent of Asia, is the habitat of an animal called 'nose-horn' [rendering of 'rhinoceros']. Its body is as powerful as that of the elephant, but its feet are somewhat shorter. Its trunk is covered all over with red and yellow spots, and is overlaid with scales. Arrows cannot pierce it. On its nose there is a single horn as strong as steel. It prepares for its battles with the elephant by whetting its horn on the rocks; and hitting

[1] This is a debatable point. The two illustrations do not resemble bovine animals, but deer (see Figs. 9 and 10 on pp. 102 and 103). The "bovine animal with one horn" first appears in LIONEL GILES, An Alphabetical Index to the Chinese Encyclopaedia, p. 5 (London, 1911).

[2] WYLIE, Notes on Chinese Literature, p. 58; M. COURANT, Catalogue des livres chinois, p. 95; H. CORDIER, L'imprimerie sino-européenne en Chine, p. 59; P. PELLIOT *Bulletin de l'Ecole française d'Extrême-Orient*, Vol. III, 1903, pp. 109, 115.

[3] That is, Khambāyat or Cambay, in the western part of the province of Gujarāt.

the elephant's paunch, it kills it." The alleged combats of the rhinoceros with the lion and elephant are classical reminiscences (see p. 84) which are absent from Chinese folk-lore. Verbiest repeats the popular traditions current at his time in Europe, and like Cosmas Indicopleustes, still discriminates between the *monoceros* or *unicornis* (*tu kio*) and the *rhinoceros* (*pi kio*), illustrating the former by the unicorn of European heraldry. Consequently the terms employed by Verbiest are literal translations of European nomenclature into Chinese, made by Verbiest for his purpose; and the word *pi kio* cannot be claimed, as has been done by Mr. Giles, as a genuine term of the Chinese language. It is a foreign term not employed by the Chinese. Indeed, in a long series of Chinese texts dealing with the rhinoceros, and given below, not any use of this name is made. Only a single case is known to me: the Manchu-Chinese dictionary *Ts'ing wên pu hui* of 1786 (Ch. 4, p. 23) explains the Manchu word *sufen* by the said *pi kio*, adding the definition, "a strange animal bred in Cambaya in India, like an elephant, with short feet," etc., the same as given by Verbiest. This, accordingly, is a mere repetition of the latter's statement, and is not conclusive. Curiously enough, that expression which Mr. Giles credits as the only authentic word for "rhinoceros" is given a quite different meaning in the Polyglot Dictionary of K'ien-lung (Appendix, Ch. 4, p. 75), where we find the series Chin. *pi kio shou*, Manchu *sufen*, Tibetan *ba-men*, Mongol *bamin*. The Tibetan word *ba-men*, reflected in Marco Polo's *beyamini*,[1] denotes the gayal wild ox (*Bos gavaeus*). Whether this equation, as a matter of fact, is correct, is certainly a debatable question; but this point does not concern us here. The point to be brought out is that *pi kio* in the sense of "rhinoceros" is a term coined by Verbiest, and that it has not yet been pointed out in any Chinese text prior to his time.[2] Simultaneously Mr. Giles's argument directed against Hirth —"the *T'u shu* expressly

[1] See the writer's Chinese Pottery, p. 260, note 4.

[2] The general Chinese expression for rhinoceros-horn which is even now traded to Canton and there made into carvings is still *si kio;* hence it follows that at the present day the designation of the animal itself, as it has been for several millenniums, is the word *si*. The English and Chinese Standard Dictionary of the Commercial Press, issued by a commission of Chinese scholars, who must know their language, renders the word "rhinoceros" into *se niu* and *se* (Vol. II, p. 1919). COUVREUR (Dict. français-chinois, 2d ed.) has likewise *se niu*. DOOLITTLE (Hand-Book of the Chinese Language, Vol. I, p. 411) gives under "rhinoceros" *si, se niu*, and *si niu*. SCHLEGEL (Nederlandsch-chineesch Woordenboek, Vol. III, p. 622) renders the word by *se, si*, and *si niu*. True it is that in recent times the words *se* and *si* have been transferred to bovine animals, and the Chinese themselves are well aware of this fact. Thus Li Shi-chên, in his *Pên ts'ao kang mu*, remarks that the term "hairy rhinoceros" is *at present* referred to the yak (see p. 150). This, however, as will be established by abundant evidence, was not the case in former times. In fact, these recent adjustments prove nothing for conditions which obtained in earlier periods. The question as to how the word *se* became transferred to the buffalo is discussed on p. 161, note 5.

says that arrows cannot pierce the hide of the rhinoceros"— falls to the ground. This is a verdict of Verbiest, and not to be encountered in any Chinese report regarding the rhinoceros. It is, moreover, an argument of no meaning and no value; it is simply a popular notion of fabulous character.

The numerous stories formerly current anent the rhinoceros chiefly culminated in three points,— its ferocity, the use of its horn as a weapon of attack, and its invulnerability. These notions have been refuted by close observation. We quote an authority, R. LYDEKKER:[1] "Fortunately, in spite of stories to the contrary, the creature in its wild state appears to be of a mild and harmless disposition,[2] seeking rather to escape from

[1] The Game Animals of India, Burma, Malaya, and Tibet, p. 31 (London, 1907).

[2] Certainly; it is easily kept in confinement and tamed, and has often been transported over vast tracts of water and land. A good example of the overland transportation of a tamed rhinoceros or several animals is furnished by Se-ma Ts'ien, in the chapter on the Imperial Sacrifices to Heaven and Earth, when this animal together with an elephant was conducted as far as the foot of Mount T'ai in Shan-tung with a possible view to their being sacrificed; but the Emperor spared their lives, and the animals were allowed to return (see CHAVANNES, Les Mémoires historiques de Se-ma Ts'ien, Vol. III, p. 502). The following tributes of living rhinoceroses are on record. In the year 2 A.D. the country Huang-chi (south of Tonking, 30,000 *li* from the capital of China) sent a living rhinoceros as tribute to the Court of China, as mentioned three times in the *Ts'ien Han shu* (Ch. 27 B, p. 17 b). These texts have recently been studied by PAUL PELLIOT (*T'oung Pao*, 1912, pp. 457–460), who has revealed their fundamental importance for the history of Chinese relations with the countries of the Indian Ocean in the first century of our era. On the basis of Pelliot's translations, the country Huang-chi has recently been made the object of an interesting geographical study on the part of A. HERRMANN (Ein alter Seeverkehr zwischen Abessinien und Süd-China bis zum Beginn unserer Zeitrechnung, *Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, 1913, pp. 553–561). This author identifies Huang-chi with Abyssinia mainly on the ground that the rhinoceros occurs there. This argument is not cogent, since the home of the animal is in all parts of both Indias, Borneo, Java, and Sumatra as well. Also for other reasons this identification is unfortunate. The transportation of a live rhinoceros from Abyssinia to China over a maritime route would have been a feat impossible in those days, in view of the imperfect state of navigation, while it could easily have been accomplished, if Huang-chi, as assumed by me, was located on the Malayan Peninsula; and as shown by the Chinese records, the live rhinoceroses all hailed from Indo-China or Java. The name Huang-chi, moreover, cannot be derived from Aghāzī, as HERRMANN thinks. His decisive argument in support of this theory is, of course, the statement in the Chinese text that Huang-chi is 30,000 *li* distant from Ch'ang-ngan, the then capital of China. Mr. Herrmann unreservedly accepts this as a fact, and is in this manner carried away to eastern Africa. We have known for a long time (in fact, the Jesuits of the eighteenth century knew it) that the Chinese definitions of distances over maritime routes must not be taken at their surface value. Nor have we any reason to be more Chinese in this respect than the Chinese themselves. The following is expressly stated in the *Sung shu*, the History of the Liu Sung Dynasty (420–478 A.D.; Ch. 91): "The southern and south-western barbarians, generally speaking, live to the south and south-west of Kiao-chi (northern Annam), and also inhabit the islands in the great ocean; the distance is about three to five thousand *li* for those that are nearer, and twenty to thirty thousand *li* for those that are farther away. When sailing in a vessel it is difficult to compute the length of the road, and therefore we must recollect that the number of *li*, given with respect to the barbarians of the outer countries, must not be taken as exact" (see GROENEVELDT, in *Miscellaneous Papers relating to Indo-China*, Vol. I, p. 127). It is plainly indicated in this passage that the distances

its enemies by flight than to rout them by attack. When badly wounded, or so hustled about by elephants and beaters as to become bewildered, a rhinoceros will, however, occasionally charge home. In such onslaughts it is the common belief that the animal, like its African cousins, uses its horn as its weapon of offence; but this is an error, the real weapons being the triangular, sharp-pointed low tusks." The same author states in another work[1] on the skin of the animal, "From the immense thickness and apparent toughness of its enormous folds, it was long considered that the hide of the Indian rhinoceros was bullet-proof, and that the only places where the animal was vulnerable were the joints of the armor. . . . As a matter of fact, the skin of the living animal is quite soft, and can readily be penetrated in any place by a bullet, or easily pierced by a hunting knife. When dried it becomes, however, exceedingly hard; and it was formerly employed by the Indian princes in the manufacture of shields for their soldiery."

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given for the routes in the southern ocean are not exact, and that a description of twenty to thirty thousand *li* is nothing but a convention to denote the very remote barbarians of the south. Compare, on Chinese calculations of sea-routes, particularly G. SCHLEGEL (*T'oung Pao*, Vol. III, 1892, pp. 161–5). In *Hou Han shu* (Ch. 116, p. 3 a) the location of Huang-chi is positively indicated as being south of Ji-nan (Tonking), which means that it was situated on the Malayan Peninsula. In 84 A.D. the *Man I* beyond the boundary of Ji-nan offered to the Court a living rhinoceros and a white pheasant (*Hou Han shu*, Ch. 116, p. 3 b). In 94 A.D. the tribes in the south-west of Sze-ch'uan sent an envoy and interpreter presenting a rhinoceros and a big elephant (*ibid.*, Ch. 116, p. 8 b). At the time of the Emperor Ling (168–188 A.D.) of the Later Han dynasty, Kiu-chên in Tonking despatched a living rhinoceros to the Chinese Court (*Huan yü ki*, and *Ta Ming i t'ung chi*, ed. of 1461, Ch. 90, fol. 5, where it is said also that at the time of the Yüan dynasty [1260–1367] Annam presented a rhinoceros). In 539 Fu-nan sent a live rhinoceros (*Liang shu*, Ch. 54, p. 4). A similar report in regard to the country of Ho-ling (Java) occurs in 819 A.D. at the time of the T'ang dynasty (*Kiu T'ang shu*, Ch. 197, p. 2 b). Finally the poets Yüan Chên (779–831; GILES, Biographical Dictionary, p. 964) and Po Kü-i have celebrated in verse a tame rhinoceros which had been sent as tribute in the year 796; it was housed in the Shang-lin palace, and an official was appointed to care for it; but in the winter of the following year when great cold set in, the poor creature died. In 1009 Kiao-chi (Annam) presented a tame rhinoceros to the Court (*Sung shi*, Ch. 489), and there are other similar reports by the essayists of the Sung period.—TAVERNIER (Travels in India, ed. V. BALL, Vol. I, p. 114) saw a rhinoceros eating stalks of millet presented to it by a small boy; encouraged by this sight, the traveller seized some stalks, and the rhinoceros at once approached him, opening its mouth four or five times; he placed some stalks in it, and when the animal had eaten them, it continued to open its mouth to receive some more. Tame rhinoceroses, to which a good deal of freedom was allowed, were formerly not uncommonly kept by the Rājas of India. Surely, not only men, but also animals, are usually better than their reputation among men. One of the most notable facts about the behavior of the rhinoceros in captivity, as already observed by DARWIN (The Variation of Animals and Plants under Domestication, Vol. II, p. 165, Murray's edition, 1905), is that under this condition it breeds in India far more readily than the elephant. The captive elephants, in contrast to the rhinoceros, as pointed out by Darwin and confirmed by others (E. HAHN, Kulturgeschichte der Haustiere, p. 37), but very rarely breed; as a rule, they do not even copulate. There is no doubt that the rhinoceros possesses the qualities fitting it for domestication, and that only the lack of promising advantages has prevented man from embarking on such a plan.

[1] The New Natural History, Vol. II, pp. 1055–1056.

Naturally the skin of the animal is as soft and sensitive as that of any other living creature, and arrows are certainly painful to it. Only when properly prepared and dried does the skin assume that iron-like hardness which has achieved its reputation and probably caused the fable of its being impenetrable in the live beast. The account of the Arab envoy given in 993 to the Chinese Emperor, that "to capture a rhinoceros, a man with a bow and arrow climbs a big tree, where he watches for the animal until he can shoot and kill it," as narrated by Chao Ju-kua, is entirely trustworthy.[1] The fable lies entirely in the "arrows cannot pierce the hide," to which Mr. Giles gives credence. When it is said, "he rips up a man with his horn," Chao Ju-kua simply accepts the belief of all his contemporaries, eastern and western; and the remark certainly proves that he speaks of the rhinoceros, while it is no argument in favor of Mr. Giles's opinion that the animal in question is not the rhinoceros.

While the general result at which Mr. Giles has arrived is not novel, being partly anticipated, as we have seen, by Biot, Palladius, and Couvreur, his arguments, as summed up above under No. 3, are original, and deserve serious consideration and discussion. What appears to Mr. Giles as the most weighty evidence in favor of his view are the queer Chinese illustrations of the two animals. Queer they are, but we must make an attempt at understanding and explaining them. For this reason, we shall first enter on a somewhat lengthy digression into the iconography of the rhinoceros; and it will be seen that this, as every-

[1] The effect of arrows on the rhinoceros is well illustrated in the following story of GASPAR CORREA, who went to India in 1512, and wrote a detailed chronicle of the Portuguese possessions there. He describes a battle of King Cacandar, who availed himself of elephants fighting with swords upon their tusks, and in front of them were arrayed eighty rhinoceroses (*gaṇḍas*) "carrying on their horns three-pronged iron weapons with which they fought very stoutly . . . and the Mogors with their arrows made a great discharge, wounding many of the elephants and the *gaṇḍas*, which as they felt the arrows, turned and fled, breaking up the battles" . . . (quoted by YULE and BURNELL, Hobson-Jobson, p. 363). In India rhinoceroses were hunted with sabre, lance, and arrows. Timur killed on the frontier of Kashmir several rhinoceroses with sabre and lances, although this animal has such a hard skin that it can be pierced only by extraordinary efforts (PETIS DE LA CROIX, Histoire de Timur Bec, Vol. III, p. 159, quoted by YULE and BURNELL, Hobson-Jobson, p. 762). In Baber's Memoirs (quoted *ibid.*) a rhinoceros-hunt is described in these words: "A she rhinoceros, that had whelps, came out, and fled along the plain; many arrows were shot at her, but . . . she gained cover." The hunters of Java hide sickle-shaped knives under the moss on steep mountain-paths; the animal, dragging its paunch almost close to the ground, rips up itself, and is then easily mastered (P. J. VETH, Java, Vol. III, p. 289, Haarlem, 1903). HOSE and MCDOUGALL (The Pagan Tribes of Borneo, Vol. I, p. 145, London, 1912) have this observation to report: "Punans, who hunt without dogs (which in fact they do not possess), will lie in wait for the rhinoceros beside the track, along which he comes to his daily mud-bath, and drive a spear into his flank or shoulder; then, after hastily retiring, they track him through the jungle, until they come upon him again, and find an opportunity of driving in another spear or a poisoned dart through some weak spot of his armor."

thing else connected with the animal, is an attractive subject of great culture-historical interest. It should be stated at the outset that the Chinese sketches pointed out by Mr. Giles, and other Chinese illustrations as well, can never have been intended for any bovines, whatever the alleged bovine character in the animal may be; for there is in this world no bovine animal with a single horn and three toes which, as will be shown, appear in the early Chinese definition, and are plainly outlined in the sketch of the rhinoceros said in the *Erh ya* to be of hog-like appearance (Fig. 6).[1] The single horn and the three toes, however, are thoroughly characteristic of the rhinoceros, and of this animal exclusively. But we are first going to study the psychology of the case.

On the first day of May of the year 1515 the first live rhinoceros was brought to modern Europe from India by Portuguese, and presented to King Emanuel of Portugal.[2] In commemoration of this event, Albrecht Dürer, who took a deep interest in exotic animals and people, sketched in the same year a likeness of this rhinoceros, published as a wood-engraving, with a somewhat lengthy description in German. Dürer's original drawing is still preserved in the British Museum (Plate IX).[3] It is so weak that, as already pointed out by Dr. PARSONS,[4] the first serious

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[1] See likewise Fig. 9, p. 102.

[2] The history of this event is narrated in the Decadas de Asia of J. DE BARROS (quoted by YULE and BURNELL, Hobson-Jobson, p. 363): "And in return for many rich presents which this Diogo Fernandez carried to the King, and besides others which the King sent to Affonso Alboquerque, there was an animal, the biggest which Nature has created after the elephant, and the great enemy of the latter . . . which the natives of the land of Cambaya, whence this one came, call Ganda, and the Greeks and Latins Rhinoceros. And Affonso d'Alboquerque sent this to the King Don Manuel, and it came to this Kingdom, and it was afterwards lost on its way to Rome, when the King sent it as a present to the Pope."

[3] I am indebted to Mr. Laurence Binyon of the British Museum for his courtesy in favoring me with a copy of this wood-engraving, from which our reproduction is made. The particulars of the history of this engraving are discussed by C. DODGSON (Catalogue of Early German and Flemish Woodcuts in the British Museum, Vol. I, p. 307, London, 1903).

[4] Die natürliche Historie des Nashorns, welche von Doctor PARSONS in einem Schreiben an MARTIN FOLKES, Rittern und Präsidenten der Königlich-Englischen Societät abgefasset, mit zuverlässigen Abbildungen versehen, und aus dem Englischen in das Deutsche übersezet worden von Doctor GEORG LEONHART HUTH, Nürnberg, bey Stein und Raspe, 1747. The English original of this interesting pamphlet of 16 pages in quarto is not known to me. It is accompanied by three plates engraved on copper representing the first fairly exact figures of the rhinoceros in various views, its horn and other organs of its body. An anonymous copper-engraving was published in 1748 under the title, "Vera effigies Rhinocerotis qui in Asia, et quidem in terris Mogolis Magni in regione Assam captus et anno 1741 tertio aetatis anno a capitano Douvemont van der Meer ex Bengala in Belgium translatus est." This rhinoceros, a three years old animal, was exhibited in Holland in 1741, and styled on the placards the *behemoth* of the Bible (JOB, 40) and the unicorn of mediæval times. It proved an overwhelming sensation. In 1747 it made its appearance at Leipzig where GELLERT set it a literary monument in the poem with the beginning, "In order to behold the rhinoceros, I was told by my friend, I resolved to stroll out." In

student of the anatomy of the rhinoceros, it is impossible to assume that he had ever seen the animal. This fact is quite certain, for it is known that the King of Portugal despatched the animal to the Pope, and that it was drowned off Genova when the vessel on board which it was being carried was foundered. The only supposition that remains, therefore, is that some one of Lisbon near King Emanuel must have sent on to Dürer a rough outline-sketch of the novel and curious creature, which was improved and somewhat adorned by the great artist. But to what sources did he turn for information on the subject? Naturally to that fountain-head from which all knowledge was drawn during that period, the authors of classical antiquity. The fact that Dürer really followed this procedure is evidenced by the very description of the animal, which he added to his sketch, and in which he reiterates the story of the ancients regarding the eternal enmity and struggle of rhinoceros and elephant.[1] The most curious feature about Dürer's rhinoceros is that, besides the horn on

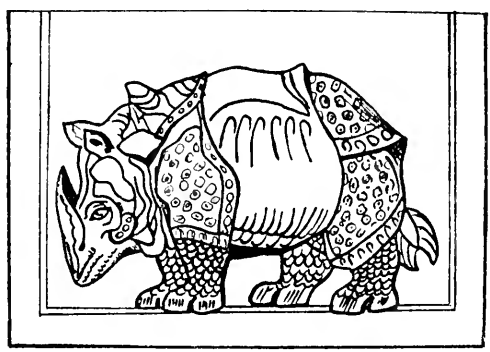

FIG. 3.
Marble Relief of Two-Horned Rhinoceros in Pompeii (from O. Keller, Antike Tierwelt).

1748 it reached Augsburg where Johann Ridinger made a drawing and etching of it with the title as stated (L. REINHARDT, Kulturgeschichte der Nutztiere, p. 751, München, 1912). The rhinoceros is a subject which for obvious reasons has seldom tempted an artist. It should be emphasized that no artist has ever made even a tolerably good sketch of it, and that only photography has done it full justice.

[1] According to the tales of the ancients, the feuds between the two animals were fought for the sake of watering-places and pastures; and the rhinoceros prepared itself for the combat by sharpening its horn on the rocks in order to better rip the arch-enemy's paunch which it knows to be its softest part (compare DIODOR, I, 36; AELIAN, *Nat. animalium*, XVII, 44; PAUSANIAS, IX, 21; and PLINY, *Nat. hist.*, VIII, 20: alter hic genitus hostis elephanto cornu ad saxa limato praeparat se pugnae, in dimicatione alvum maxime petens, quam scit esse molliorem). The same story is still repeated by JOHAN NEUHOF (Die Gesantschaft der Ost-Indischen Gesellschaft [1655–57], p. 349, Amsterdam, 1669) in his description of the Chinese rhinoceros, which is based on classical, not Chinese reports: "It makes permanent war on the elephant, and when ready to fight, it whets its horn on stones. In the struggle with the elephant it always hits toward its paunch where it is softest, and when it has opened a hole there, it desists, and allows it to bleed to death. It grunts like a hog; its flesh eaten by the Moors is so tough that only teeth of steel could bite it." The Brahmans allowed the flesh of the rhinoceros to be eaten as a medicine (M. CHAKRAVARTI, Animals in the Inscriptions of Piyadasi, *Memoirs As. Soc. of Bengal*, Vol. I, p. 371, Calcutta, 1906); according to al-Bērūnī (SACHAU, Alberuni's India, Vol. I, p. 204), they had the privilege of eating its flesh. CTESIAS stated wrongly that the flesh is so bitter that it is not eaten.

its nose, it is provided with another smaller horn on its neck. This proves that he must have read about a two-horned rhinoceros, for the specimen shipped to Portugal was the single-horned species of India. MARTIAL, in one of his epigrams (*Spect. Ep.* XXII), has the verse, "*namque gravem gemino cornu sic extulit ursum.*" As long as the fact of a two-horned rhinoceros was not yet scientifically established,— and Dr. Parsons was one of the first to point it out,— the critics of Martial felt greatly embarrassed over the statement that a rhinoceros with double horn[1] should have lifted a bear, and arbitrarily changed the verse in various ways to get around the double horn. Dürer no doubt had this passage in mind, and accepted it as a fact. Nobody at that time, however, knew the location of the second horn: thus it found its place on the neck.[2] This case is very instructive, for the Chinese

[1] The two-horned African rhinoceros is figured on the bronze coins of Emperor Domitian and on Alexandrian coins of the same emperor (IMHOOF-BLUMER and KELLER, Tier- und Pflanzenbilder auf Münzen und Gemmen, Plate IV, 8), and unmistakably referred to by PAUSANIAS (*l. c.*), who describes it as having the one horn on the extremity of its nose, the other, not very large, above the latter. The struggle between bear and rhinoceros is represented on a pottery lamp from Labicum, which is reproduced in Fig. 7 after O. KELLER (Tiere des classischen Altertums, p. 118, Innsbruck, 1887), in order to illustrate the affinity of this creature with the "hog-like" rhinoceros of the Chinese (Fig. 6). Dürer's picture formerly led astray many a student of classical antiquity by giving the impression that a horn was really growing up from the animal's back. Thus S. BOCHART, in his Hierozoicon (p. 931, Lugduni Batavorum, 1692), a learned treatise on the animals mentioned in the Bible, makes the following observation with reference to the verse of Martial above quoted: "Frustra etiam id observatur, Rhinocerotem geminum habere cornu. Alterum enim est in dorso, quo ursum extulisse dici non potest. Itaque ad illud cornu non pertinent haec poetae: gemino cornu sic extulit ursum." It was Bochart who proposed several conjectures tending to ameliorate Martial's text. JOHANNES BECKMANN (De historia naturali veterum libellus primus, p. 129, Petropoli et Goettingae, 1766) was the first to point out emphatically the actual truth in the matter, in these words: "Sed non soli philologi, verum etiam physici duo cornua neglectis illis veterum locis [i.e., the passages of Martial and Pausanias] negarunt Rhinoceroti; uti Scheuchzerus, Peyerus. Consultius fuisset nec affirmare nec negare. Hodie enim auctoritatibus gravissimorum virorum satis probatum est, esse Rhinocerotes etiam bicornes, qui cornu alterum non in fronte, non in dorso, sed etiam in nare habent." In view of our subject, it is of especial interest to us to note that this truth was generally recognized in Europe as late as the latter part of the eighteenth century, while Chinese authors were well informed on the subject from the beginning of our era.

[2] It has recently been asserted (compare the notice of S. REINACH, *Revue archéologique*, 1913, p. 105) that the rhinoceros on a marble relief of Pompeii (Fig. 3; reproduced also by REINACH, Répertoire de reliefs, Vol. III, p. 93; and O. KELLER, Die antike Tierwelt, Vol. I, p. 388) is an exact copy of the wood-engraving by Dürer and accordingly the work of a forger. This point of view seems to me inadmissible, and I concur with Reinach in the view that a common antique model may have been handed down by the illustrators of the bestiaries. The most striking coincidence between the rhinoceros of Pompeii and that of Dürer is the location of the second horn on the neck. This argument, however, is not cogent in establishing a close interdependence of the two; for also in China, on a picture of Yen Li-pên of the T'ang period (Fig. 11), the rhinoceros appears with a horn on its neck, and with scales on its body. As the artists all over the world were so much puzzled as to where to place the horn or horns, it is perfectly conceivable that Dürer, solely guided by his reading of ancient writers, even without having recourse to an antique pictorial representation, worked out his

draughtsmen who had set before them the task of portraying a rhinoceros saw themselves in the same predicament as Dürer, in that they were lacking all personal experience of the animal, and for this reason were actuated by the same psychological factors. They, on their part, resorted to the classical definitions of the animal, as laid down in the ancient dictionaries *Erh ya* and *Shuo wên;* they did not intend to picture a rhinoceros true to nature and directly from nature, simply because they were deprived of this opportunity, but they composed and pieced together the creature from certain notions which they formed from bits of information gathered from their literary records. Whatever caricatures their achievements may be, however, there cannot be the slightest doubt that they intended to represent a rhinoceros, not some other animal. Dürer's work, from a scientific viewpoint, is in details highly inaccurate and untrue; the modern naturalist may even pronounce the verdict that what he represented is far from resembling a rhinoceros at all; but the bare fact remains — and this is the essential point — that the artist, as expressly stated in the legend by his own hand, had the intention of representing in this work a rhinoceros. As in most cases, the artist does not reproduce an object as it appears in the world of reality, but conveys to us his own notions of things as they are projected in his mind. Exactly as it happened in China, so Dürer's model found many adherents and followers, even among the naturalists who copied him again and again, and who surpassed him in fanciful additions of scales, wrinkles, and other decorations. Even BONTIUS,[1] who pretends that he saw the animal in exotic forests and stables, and boasts of furnishing a figure of it free from Dürer's defects, represents it, instead of with hoofs, with a paw very similar to that of a dog, only that it is somewhat larger.

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own theory in regard to the second horn. But it is desirable that, as suggested by Reinach, the iconographic question should be studied in detail. Neither should the differences between the two be overlooked. Dürer's posterior horn is directly behind the ears; in the Pompeiian picture it is far behind the ears, above the front legs; in the same spot Dürer has a small triangular point, the significance of which is not clear. It is certainly astonishing that the artists of Pompeii could commit this error, as the two-horned African rhinoceros was perfectly known in the Roman circus, and is correctly represented on the coins of Domitian mentioned above.—ULYSSES ALDROVANDUS (Quadrupedum omnium bisulcorum historia, p. 354, Francofurti, 1647) has the figure of a rhinoceros, with an additional horn in the shape of a corkscrew placed on the shoulders.

[1] JACOBI BONTII, Historiae naturalis et medicae Indiae Orientalis libri sex, p. 51 (Amsterdam, 1658). The horn is correctly drawn. Bontius avails himself of the word *abada*, which was used by old Spanish and Portuguese writers for a rhinoceros, and adopted by some of the older English narrators. The word is probably connected with Malayan *badak*, "rhinoceros" (see YULE and BURNELL, Hobson-Jobson, p. 1). In G. DE MENDOZA (Dell' historia del gran regno della China, 1586, p. 437) the word *abada* is identified with the rhinoceros.

Archæologists are agreed that the rhinoceros (Fig. 4)[1] is represented on the black obelisk of Salmanassar (B.C. 860–824) in company with an elephant, human-looking apes, and long-tailed monkeys. This tribute-picture suggests to I. KENNEDY[2] the first certain evidence of Babylonian intercourse with India. The animals formed part of the tribute of the Muzri, an Armenian tribe living in the mountains to the north-east of Nineveh.[3] The rhinoceros is called in the inscription an "ox of the river Sakeya," and Kennedy criticises its representation as "very ugly and ill-drawn." Indeed, it is no more and no less than a bull, and, as far as natural truth is concerned, much inferior to the Chinese sketches. It even has cloven bull-feet, while one of the Chinese drawings has correctly three toes,[4] and the single clumsy horn rises on its forehead

FIG. 4.
Rhinoceros from Obelisk of Salmanassar II (from O. Keller, Antike Tierwelt).

[1] After O. KELLER, Die antike Tierwelt, Vol. I, p. 386 (Leipzig, 1909).

[2] The Early Commerce of Babylon with India (*Journal R. As. Soc.*, 1898, p. 259).

[3] According to J. MARQUART (Untersuchungen zur Geschichte von Eran, II, p. 101, Leipzig, 1905), who discusses the same passage in the inscription of Salmanassar II, Muzri is the name of a country and mountain-range (Muzūr Mountains) west of the Euphrates, and comprising also a part of the mountainous region south of the river. MARQUART translates "cattle of the river Irkea." Others, like Schrader, Hommel, and W. Max Müller (see B. MEISSNER, Assyrische Jagden, p. 20, Leipzig, 1911) identify Muzri with Egypt. KENNEDY does not explain how the rhinoceros could have gotten into that region from India; and it may have been, after all, an African species, although the single horn would rather point to India; the elephant, however, in his opinion, came over the passes of the Hindu Kush. There is, of course, the possibility that the lower Euphrates region may have harbored the rhinoceros, if we can depend upon the report of the *Hou Han shu* regarding the country of T'iao-chi (HIRTH, China and the Roman Orient, p. 38); and I am in full accord with what HIRTH remarks on this point in the preface (pp. X–XII). However this may be, I agree with KENNEDY, F. HOMMEL (Die Namen der Säugetiere bei den südsemitischen Völkern, p. 324), MEISSNER, and KELLER that the animal figured on the black obelisk of Salmanassar is intended for a rhinoceros, and not merely for an ox, for there is no ox with single horn as here represented. The Assyrian name for the rhinoceros is *kur-ki-za-an-nu=kurkizannu* (F. DELITZSCH, Assyrische Tiernamen, p. 56, Leipzig, 1874), which, according to HOMMEL (*l. c.*, p. 328), is a loan-word received from Ethiopic *karkand* (compare Arabic *karkadan*, Persian *kerk*). The trade-relations of India with Babylon are well established (see particularly G. BÜHLER, Indian Studies III, p. 84).

[4] The ancients did not notice this fact, nor did the Hindu, who classified the rhinoceros, owing to a confusion with the elephant, among the five-toed animals (M. CHAKRAVARTI, Animals in the Inscriptions of Piyadasi, *Memoirs As. Soc. Bengal*,

between the eyes, as it occurs in the armorial unicorns. It is very instructive to compare this Babylonian representation with those of the Chinese; and whoever will view them together will certainly grant attenuating circumstances to the latter. The Babylonian production is the more surprising, as the supposition is granted that the live animal was sent as tribute; and the "artist," we should think, had occasion to actually see it. The outcome is such a caricature, however, that this point of view seems impossible; the "artist" simply acted on hearsay, or had been instructed to represent a queer foreign animal of the appearance of an ox, but with only a single horn on its forehead. And here we are again landing right at the threshold of the psychology of the Chinese draughtsman who, most assuredly, had never throughout his life viewed any living specimen of a rhinoceros, but merely reconstructed it in a vision of his mind from what he had heard or read. Nevertheless his product is not what it may seem to us on the surface, but it is and remains what it is intended for, — the rhinoceros.

Another instructive example for the iconography of the rhinoceros is furnished by Cosmas Indicopleustes, the Egyptian monk and traveller of the sixth century A.D. COSMAS[1] discriminates between the unicorn (*monokeros*) and the "nose-horn" (*rhinokeros*), and has handed down to us sketches of both. In regard to the former, he remarks that he has not seen it, but that he had had occasion to notice four brazen figures of it set up in the four-towered palace of the King of Ethiopia, from which he was able to draw it. His figure[2] looks somewhat like a missing link between a horse and a giraffe, carrying on its head a straight, long horn. "In Ethiopia," Cosmas assures us, "I once saw a living rhinoceros from a great distance and saw also the skin of a dead one stuffed with chaff, standing in the royal palace, and thus I was able to draw it accurately." The result of this "accurate" drawing is the figure of a maned horse with bushy tail, with two horns planted upright on its nose.[3] Nobody, as far as I know, has as yet inferred from this figure that the Greek word *rhinokeros* relates to an equine animal and should be translated by "horse."

An interesting example of a Persian conception of the rhinoceros is depicted in the *Burlington Magazine*.[4] This is derived from an

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Vol. I, p. 371, Calcutta, 1906). In the commentary of Kuo P'o to the dictionary *Erh ya* (see below, p. 94) and in the *Kiao chou ki* of the fifth century A.D. it is clearly stated that the rhinoceros has three toes. Compare p. 95, note 6.

[1] Ed. MIGNE (*Patrologia*, Vol. 88), p. 442.

[2] Christian Topography, translated by MACCRINDLE, Plate IV, No. 28 (*Hakluyt Society*, 1897).

[3] *Ibid.*, No. 23.

[4] Vol. XXIII, July, 1913, Plate III.

illustrated "Description of Animals," the *Manafi-i-heiwan*, translated from Arabic into Persian and completed between 1295 and 1300. Here we have the interesting case that the author of this article, C. ANET, who evidently does not read Persian, mistakes the rhinoceros for "a horned gnu." But the picture is entitled in Persian *kerkeden* (or *kargadan*), "the rhinoceros," and it is therefore superfluous to discuss the point that it cannot represent a gnu.[1] Although the creature has the shape of an ox, exactly as on the Assyrian obelisk and in the Chinese woodcut (Fig. 5), with the additional hump of a zebu[2] and black antelope-like stripes on its body, it is unmistakably characterized by a single horn in the form of a crescent.[3]

In order to understand how the early Chinese illustrations of the rhinoceros alluded to by Mr. Giles were made, it is imperative to study the ancient definitions of the two words *se* and *si*. These definitions are sufficiently clear to place us on the right track in nicely discriminating between the two words, which plainly refer to two distinct species of rhinoceros. The weak point in Mr. Giles's definition of "bovine animal"[4] is that it is somewhat generalized, and leaves us entirely in the dark as to the difference between the two words *se* and *si*. They are physically differentiated words, and are expressed by different symbols in writing.

Se-ma Ts'ien[5] mentions the two species of rhinoceros and elephant as inhabitants of the country of Shu (Sze-ch'uan).[6] The commentator

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[1] A species of antelope restricted to Africa, which could hardly be expected in Persian art.

[2] This hints at the square-mouthed or white rhinoceros of Africa. One of the peculiarities of this species is the prominent, rounded, fleshy hump on the nape of the neck, just forward of the withers (E. HELLER, The White Rhinoceros, p. 20, Washington, 1913).

[3] A representation of the rhinoceros in sculpture is spoken of in a Persian description of the province of Fars from the beginning of the twelfth century; in Iṣṭakhr the portrait-statue of King Jamshīd was erected in stone, with his left hand grasping the neck of a lion, or else seizing a wild ass by the head, or again he is taking a unicorn (or rhinoceros) by the horn, while in his right hand he holds a hunting-knife, which he has plunged into the belly of the lion or unicorn (G. LE STRANGE, *Journal R. As. Soc.*, 1912, p. 27). In the Annals of the T'ang Dynasty it is on record that in 746 A.D. Persia offered a rhinoceros and an elephant (CHAVANNES, *T'oung Pao*, 1904, p. 76).

[4] What wild bovine animal should be understood has never been indicated.

[5] *Shi ki*, Ch. 117, pp. 3 b, 7 b.

[6] Our historians of Japan have been greatly puzzled by the fact that the Japanese Buddhist monk Tiao-jan (Japanese Chōnen), who came to China in 984, stated in his report embodied in *Sung shi* (Ch. 494, p. 4 b) that there were in his native country water-buffalo, donkeys, sheep, and plenty of — thus it has been translated — rhinoceroses and elephants (for example, by P. A. TSCHEPE, Japans Beziehungen zu China, p. 89, Yen-chou fu, 1907). O. NACHOD (Geschichte von Japan, Vol. I, p. 22) went so far as to appeal to a misunderstanding on the part of the Japanese informant, which he believes cannot be surprising, as Tiao-jan, though well versed in the written characters of the Chinese, did not understand their spoken language. This argu-

states, "The animal *se* is built like the water-buffalo. The elephant is a large animal with long trunk and tusks ten feet long; it is popularly styled 'river ape' (*kiang yüan*, No. 13,741). The animal *si* has a head resembling that of the ape *yüan* and a single horn on its forehead."[1]

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mentation is entirely inadmissible. It is certain that neither rhinoceros nor elephant exists in Japan: consequently Tiao-jan, in using the expression *si siang* (Japanese *sai-zō*) cannot be understood to convey to it its literal meaning, but he is sure to employ it in a different sense. Chinese expressions (and Japanese are largely based on them) do not always mean what they seem to imply on the surface, but are often literary allusions or reminiscences of a metaphorical significance. The Japanese monk indeed avails himself of a Chinese phrase of classical origin traceable to *Mêng-tse* (LEGGE, Classics, Vol. II, p. 281), and in my opinion, simply means to say that Japan produces "extraordinary wild animals." Yen Shi-ku, defining the word *shou* ("wild animals") in the Annals of the Han (*Ts'ien Han shu*, Ch. 28 A, p. 4 b), explains it as embracing such kinds as rhinoceros and elephants, whence it follows that this compound *si siang* is capable of rendering the general notion of wild animals. *Si siang* has thus become a stereotyped term occurring in many authors, although the literal meaning usually remains, as, for example, in *Ts'ien Han shu* (Ch. 28 B, p. 17), *Erh ya* (see p. 94, note 3), *Nan shi* (Ch. 78, p. 7), *T'ang shu* (Chs. 43 A, p. 1, and 221 A, p. 10 b), and in the History of Shu (*Shu kien*) written by Kuo Yün-t'ao in 1236 (Ch. 10, p. 1, ed. of *Shou shan ko ts'ung shu*, Vol. 23). HIRTH and ROCKHILL (Chau Ju-kua, p. 174) have taken a different view of the matter and suppose that the document utilized in the Sung Annals, and partially copied by Chao Ju-kua (inclusive of the statement that Japan produces *si siang*), contained a number of clerical errors; they are convinced that Tiao-jan's statement really was to the effect that there are neither rhinoceroses nor elephants in Japan. There is certainly no direct objection to be raised to such a point of view, but I am inclined to believe that with the indication as given there is no necessity of resorting to such a conjecture.

[1] This universal notion could have emanated only from the two-horned species with reference to the rear horn, which anatomically is indeed placed over the frontal bone, while the front horn is situated over the conjoined nasal bones (FLOWER and LYDEKKER, Introduction to the Study of Mammals, p. 403). The posterior horn immediately follows the anterior one, and is somewhat beneath the eyes. Curiously enough, this idea of the position of the horn on the forehead was transferred also to the single-horned species, and became a well-established tradition, which one author copied from another. It is found in the classical world as well as among the Arabic authors. CTESIAS (ed. BAEHR, p. 254) seems to be the most ancient writer in whom this tradition has crystallized: he describes the wild white asses of India as "having on the forehead a horn a cubit and a half in length." The fact that he speaks of the rhinoceros, above all, is evidenced by his reference to the horn being made into drinking-cups which were a preventive of poisoning (compare also LASSEN, Indische Altertumskunde, Vol. II, p. 646). The *monoceros* of India, in the description of PLINY (*Nat. hist.*, VIII, 21), had a single black horn projecting from its forehead, two cubits in length (*uno cornu nigro media fronte cubitorum duum eminente*). The horn of the rhinoceros sculptured in Assyria, as we have seen, is planted on its forehead. Of course, when describing a rhinoceros which he saw at the games in the circus, PLINY (VIII, 20) states correctly that it has a single horn on its nose (*unius in nare cornus*); so does AELIAN (XVII, 44), and so does likewise Kuo P'o. The Arabic merchant Soleiman, writing in 851 (M. REINAUD, Relation des voyages faits par les Arabes, Vol. I, p. 28), attributes to the rhinoceros of India a single horn in the middle of its forehead, and is duly seconded by his copyist Mas'ūdi (RUSKA, *Der Islam*, Vol. IV, p. 164). Ibn al-Faqīh, describing the two-horned species of Africa, states that it has on its forehead a horn, by means of which it inflicts mortal wounds; and another minor one is beneath the former and placed between its eyes (E. WIEDEMANN, Zur Mineralogie im Islam, p. 250). Even al-Bērūnī (E. SACHAU, Alberuni's India, Vol. I, p. 204), who imparts a sensible account of the Indian rhinoceros, asserts from hearsay that the African species has a conical horn on the skull, and a second and longer horn on the front. Early European observers also believed that the horn of the rhinoceros was growing on its forehead. BARKER, as quoted by YULE

In the other passage, the definition of Kuo P'o (276–324), the editor of the dictionary *Erh ya*, is quoted.

The following definitions of the words *se* and *si* are given in the ancient dictionary *Shuo wên* (about 100 A.D.), and are here reproduced from an edition of this work printed in 1598, which is an exact facsimile reproduction of the Sung edition of the year 986. In all probability, this one faithfully mirrors the text of the original issue. The definition of *se* consists of only five words: "It is like a wild ox and dark-colored."[1] The character is then explained as a pictorial symbol (compare the reproduction of the Chinese text on p. 92).

It is doubtless on this enigmatic and incomplete definition that the explanations of PALLADIUS and COUVREUR (above, p. 74) are based. In order to reach a satisfactory result, however, it is always necessary to consult all records relating to a case; and it will always be unsafe to rely upon a single statement, which, after all, may have been curtailed, or incorrectly handed down. Let us note at the outset that the *Shuo wên* by no means says that the animal in question is a wild ox, but only that it is *like* one; a comparison with a wild ox is not yet proof of identity with it. Hing Ping (932–1010), the commentator of *Shuo wên*, annotates on the above passage as follows,—"Its skin is so strong and thick that armor can be made from it,"—and quotes the *Kiao chou ki*[2] to the effect that "the horn is over three feet long and shaped like the handle of a horse-whip."[3] The fact that this author means to speak of a single horn becomes evident from the statement of Kuo P'o to be cited presently.[4] The

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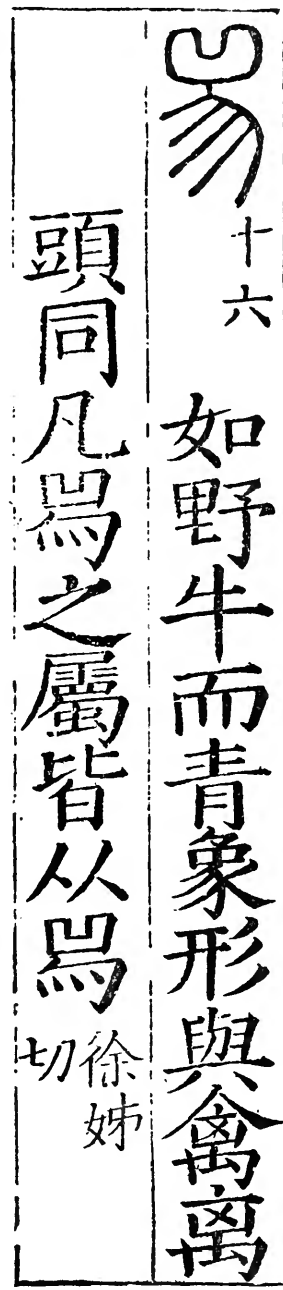
and BURNELL (Hobson-Jobson, p. 1), wrote in 1592, "Now this Abath [*abada, bada* = rhinoceros] is a beast that hath one horne only in her forehead, and is thought to be the female Unicorne, and is highly esteemed of all the Moores in those parts as a most soveraigne remedie against poyson."

[1] K'ang-hi's Dictionary quotes the *Shuo wên* as saying that "the animal *se* has the shape or body of a wild ox and is dark-colored."

[2] Records of Annam, of the fourth or fifth century, by Liu Hin-k'i (BRETSCHNEIDER, Bot. Sin., pt. 1, p. 159).

[3] In a somewhat different way, the *Shuo wên* is cited in *Yen kien lei han* (Ch. 430, p. 16 b), where original text and commentary are blended together: "The animal *se* resembles a wild ox and has a dark-colored skin which is so strong and thick that it can be worked up into armor. Among the animals on the mountain Po-chung, there is a large number of *se*." The latter name, according to PALLADIUS, is an ancient designation for a mountain in the west of Shan-si. The fact that the rhinoceros should have occurred there in ancient times is not at all surprising (see the notes below on the distribution of the animal in ancient times). It is noteworthy that we meet here the reading, "it resembles a wild ox," in agreement with the wording of the *Erh ya*, whence it follows that the *se* was not straightway looked upon as a wild ox, but as something else; it was merely likened to it—a phraseology which is echoed in Babylonia and in the classical authors. This simile seems to account for the erroneous attempt of later commentators, like Chu Hi, to interpret *se* as identical with a wild ox.

[4] The *Kiao chou ki* is credited in the *Yen kien lei han* with the words, "The *se* has a single horn which is over *two* feet long and shaped like the handle of a horse-whip."


象
十六
如野牛而青象形與禽離
頭同凡爲之屬皆从爲
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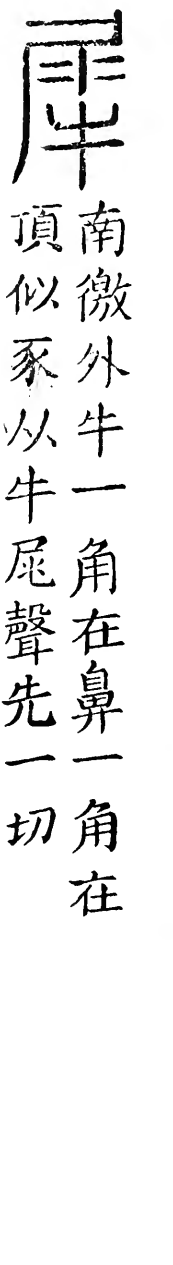
南徼外牛一角在鼻一角在
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animal *si* is defined in the *Shuo wên* as "an ox occurring beyond the southern frontier. It has a horn on its nose and another one on the crown of its head; it resembles a pig."[1] This definition fits no other animal than the two-horned species of rhinoceros, and has great historical value as a piece of evidence in determining the former geographical distribution of the species. The passage shows us that in the first century A.D. it no longer existed in northern China, where its habitat had been prior to that time, and that it was then driven back beyond the southern border, speaking roughly, south of the Yangtse. It was then naturalized in Yün-nan, in the country of the Ai-lao,[2] and in Tonking.[3]

To the author of *Kiao chou ki* we owe the following interesting description of the Annamese rhinoceros:[4] "The rhinoceros (*si*) has its habitat in the district of Kiu-tê (in Tonking). It has hair like swine, three toes, and a head like a horse. It is provided with *two* horns,—the horn on the nose being long, the horn on the forehead short." It is clearly manifest that this description comes from an eye-witness, or one well informed by the native hunters, and that it perfectly fits the two-horned so-called Sumatran rhinoceros (*Rhinoceros sumatrensis*), the only living Asiatic species with two horns, and also the most hairy one.[5] Its essential characteristics are well observed and briefly set forth in this definition.

The dictionary *Erh ya*, edited by Kuo P'o (276-324), defines the animal *se* as resembling the ox, and the animal *si* as resembling swine. The commentary by Kuo P'o explains that the *se* has a single horn, is dark in color, and weighs a thousand catties;[6] and "the *si* resembles in form

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[1] MARCO POLO (edition of YULE and CORDIER, Vol. II, p. 285) says regarding the rhinoceros of Java that its head resembles that of a boar.

[2] *Hou Han shu*, Ch. 116, p. 8 b.

[3] The question of the former geographical distribution of the rhinoceros in China is studied in detail below, pp. 159-166.

[4] *Yen kien lei han*, Ch. 340, p. 1. In Annamese the rhinoceros is called *hui* (written with the Chinese character for *se*) and *tây* or *tê* (written with the character for *si*).

[5] Hair grows sparsely all over the head and body, but attains its maximum development on the ears and the tail, its color varying from brown to black. The longest known specimen of the front horn is in the British Museum, and has a length of 32½ inches, with a basal girth of 17⅜ inches; a second specimen in the same collection measures 27⅛ inches in length, and 17⅞ in circumference (R. LYDEKKER, The Game Animals of India, p. 38). The statement of the *Kiao chou ki* that the horn is two or three feet long is therefore no exaggeration. Concerning the two horns in the *si*, there is consensus of opinion between that work and the *Shuo wên*.

[6] This may not be an exaggeration, though merely based on a rough estimate. The average weight of the rhinoceros, for reasons easy to comprehend, has never been ascertained. But if the weight of the skin alone may come to three hundred pounds (E. HELLER, The White Rhinoceros, p. 10), the complete animal may easily total a thousand and more. *K'ang-hi* and the modern editions of the *Erh ya* write "thousand

the water-buffalo,[1] but has the head of a pig, a big paunch, short legs, and three toes on its feet; it is black in color and has three horns, one on the head, another on the forehead, and the third on the nose. The horn on the nose is the one by means of which it feeds [that is, uproots shrubs and trees];[2] it is small and not long; it likes to eat thorny brambles; there is also a kind with but a single horn." Kuo P'o, accordingly, is fully acquainted with the single-horned rhinoceros (his three-horned species is discussed farther on), and renders it plain enough that in his opinion neither the *se* nor the *si* is a bovine animal, as he treats them in a different section; while in his section on bovines, with twelve illustrations of such, no hint is made at *se* or *si*.[3] The last doubt which might still exist as to the acquaintance with the single-horned rhinoceros on the part of Kuo P'o and Hü Shên, the author of *Shuo wên*, will be banished by another word, *tuan*[4] (or *kio tuan*), of which *Shuo wên* (Ch. 11, p. 2) says that it is an animal of the shape of swine, with a horn which is good for making bows, and which is produced in the country Hu-siu.[5]

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catties." *Yen kien lei han* (*l. c.*) has the erroneous reading "ten," which is impossible. Also Chang Yü-si, the author of the *Pu chu pên ts'ao* of the year 1057, as may be seen from the *Chêng lei pên ts'ao*, quotes the *Erh ya* as saying that "the *se* resembles an ox and has a single horn." Kuo P'o, accordingly, concurs with Liu Hin-k'i in the view that *se* is the single-horned rhinoceros.

[1] *Yen kien lei han* (Ch. 430, p. 1) offers the variant, "The *si* resembles swine, but is in shape like an ox;" then the same text as above is given, but the clause in regard to the three horns is wanting.

[2] While feeding, the point of the horn of the animal may come in contact with the ground, so that the point is sometimes worn flat on its outer face (E. HELLER, The White Rhinoceros, p. 31). According to Ibn al-Faqīh, the African rhinoceros tears herbage out with the anterior horn, and kills the lion with the posterior one (E. WIEDEMANN, Zur Mineralogie im Islam, p. 250).

[3] The rhinoceros is incidentally mentioned in another passage of *Erh ya* (Ch. B, fol. 29), where nine mountains with their famed productions are enumerated: "The finest productions of the southern region are the rhinoceros (*si*) and elephant of Mount Liang" (*Liang shan*, in Chung chou, Sze-ch'uan; PLAYFAIR, 2d ed., No. 3790, 2; BRETSCHNEIDER, Bot. Sin., pt. 3, p. 575, No. 187). Kuo P'o adds, "The rhinoceros furnishes hide and horn, the elephant ivory and bones." It follows therefrom, as is also confirmed by other sources, that in the third century A.D., the lifetime of Kuo P'o, the rhinoceros still existed in Sze-ch'uan, as seen above; its existence was attested there by Se-ma Ts'ien several centuries earlier.

[4] Composed of the classifier *kio* ('horn') and the phonetic element *tuan* (No. 12,136). Not in GILES; see PALLADIUS, Vol. I, p. 189. A unicorn is represented on the Han bas-reliefs (CHAVANNES, Mission archéologique, Vol. I, p. 60, Paris, 1913).

[5] Nos. 4930 and 4651. Other editions write Hu-lin. A horn bow is not a bow exclusively made from horn, which is technically impossible; but horn is only one of the substances entering into its manufacture. Technically the Chinese bow belongs to the class of composite bows, the production of which is a complicated process and requires a large amount of toil and dexterity. The foundation of the bow is formed of flexible wood connected with a bamboo staff. Along the back a thick layer of carefully soaked and prepared animal sinew is pressed, which, after drying, stiffens into a hard elastic substance. The inner side of the bow is then covered with two long horn sticks joining each other in the centre. The opposite of the horn bow is the wooden (or simple) bow (*mu kung*), as it is mentioned, for instance, as being used by

Kuo P'o states in regard to the same animal, "The horn is on the nose and capable of being made into bows. Li Ling presented ten such bows to Su Wu.[1] The animal mentioned in the Life of Se-ma Siang-ju in the *Shi ki* (Ch. 117) is the *k'i-lin*[2] *kio tuan*."

The animal with a horn on its nose is the single-horned rhinoceros; and the term *tuan* or *kio tuan* is a counterpart of the word *monoceros* of the ancients, as alluded to by Ctesias, Aristotle, Pliny, Aelian, and others, and which, according to the general consensus of opinion, relates to the one-horned rhinoceros of India. Bows manufactured from the horn are mentioned also in the Annals of the Kin Dynasty.[3] The allusion to armor by Hing Ping is additional proof for *se* being a rhinoceros, for, as we shall see, armor was not made in ancient China from the hides of bovine animals.[4]

It is beyond any doubt that in those various definitions there is plainly the question of a rhinoceros. We cannot get over the single horn, whether placed on the nose, the head, or the forehead;[5] we cannot get over the fact, either, that a conspicuous distinction between the single-horned (*se*) and two-horned (*si*) species is made, — a fact which will be discussed in full farther on when we have learned everything that Chinese authors have to report anent the two animals; nor can we get over the three toes which form a prominent characteristic of the rhinoceros,[6] but assuredly not of any bovine species. In fact, the Chinese definitions, without pretension to scientific accuracy, which could not be

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the populace of Tonking (*Ts'ien Han shu*, Ch. 28 B, p. 17), which in connection with it availed itself of flint, bamboo, and sometimes bone arrowheads.

[1] See GILES, Biographical Dictionary, pp. 450, 684.

[2] Regarding the *k'i-lin* see below, p. 113.

[3] *Kin shi*, Ch. 120, p. 3. Fossil rhinoceros-horn (from *Rhinoceros tichorrhinus*) is still employed by the Yakut in the manufacture of bows (B. ADLER, *Int. Archiv für Ethnographie*, Vol. XIV, 1901, p. 11).

[4] Regarding other Chinese notions of monoceroses see p. 114. Of later descriptions of the rhinoceros, the one contained in *Ying yai shêng lan* of 1416 by Ma Kuan is the most interesting. It is the most concise and correct definition ever given of the animal outside of our modern zoölogy. "The products of Champa are rhinoceros-horn and ivory of which there is a large quantity. The rhinoceros is like the water-buffalo. Animals of full growth weigh eight hundred catties. The body is hairless, black in color, and covered by a thick skin in the manner of a scale armor. The hoofs are provided with three toes. A single horn is placed on the extremity of the nose, the longest reaching almost fifteen inches. It subsists only on brambles, tree leaves and branches, and dried wood."

[5] As already remarked by CUVIER, the only real animal with a single horn is the rhinoceros.

[6] This statement reflects much credit on the observational power of the Chinese, especially as it is not pointed out by any classical author in describing the rhinoceros or unicorn. Al-Bērūnī (SACHAU, Alberuni's India, Vol. I, p. 203) is the only early author outside of China to make the same observation. Al-Bērūnī gives two different and contradictory descriptions of the rhinoceros, apparently emanating from two different sources. First, the animal is sensibly described from personal observation

expected, are perfectly sound and to the point in stating what a primitive observer could testify in regard to an animal so difficult of access and so difficult to describe. Surely, the Chinese definitions are not worse, and in several points perhaps better, than anything said about the animal in classical antiquity, among the Arabs, or in Europe up to the eighteenth century. And we shall soon recognize that until the very recent dawn of our scientific era the Chinese were the nation of the world which was best informed on the subject.[1] The Chinese likened the rhinoceros to the ox, the water-buffalo, the pig,[2] and its head to that of an ape.

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as follows: "The *gaṇḍa* exists in large numbers in India, more particularly about the Ganges. It is of the build of the buffalo [analogous to the Chinese definition], has a black scaly skin, and dewlaps hanging down under the chin. It has three yellow hoofs on each foot, the biggest one forward, the others on both sides. The tail is not long; the eyes lie low, farther down the cheek than is the case with all other animals. On the top of the nose there is a single horn which is bent upwards. The Brahmins have the privilege of eating the flesh of the *gaṇḍa*. I have myself witnessed how an elephant coming across a young *gaṇḍa* was attacked by it. The *gaṇḍa* wounded with its horn a forefoot of the elephant, and threw it down on its face." The other account of al-Bērūnī, which refers to the double-horned African species, is composed of the narrative of a man who had visited Sufāla in Africa, and of classical reminiscences freely intermingled with it; to the latter belong the beliefs in the mobility of the horn and in the sharpening of the horn against rocks, and here appears also the wrong notion that it has hoofs. — PLINY (*Nat. hist.*, VIII, 21, § 76) asserts that the single-horned oxen of India have solid hoofs (in India et boves solidis ungulis unicornes), a tradition which savors of the description of a unicorn after a sculpture (on the Assyrian obelisk the animal has bovine hoofs). Even ARISTOTLE (*Hist. an.*, II, 18; ed. of AUBERT and WIMMER, Vol. I, pp. 74, 254), who evidently speaks after Ctesias, characterizes the single-horned "Indian ass" as solid-hoofed (*μώνυχα*). This lacune in the descriptions of the ancients was aptly pointed out by BELIN DE BALLU (La chasse, poëme d'Oppien, p. 174, Strasbourg, 1787), who, in speaking of the familiarity of the ancients with the animal, concludes by saying, "Mais ce qui doit nous étonner c'est qu' aucun n'ait parlé d'un caractère particulier de cet animal, dont les pieds sont partagés en trois parties, revêtue chacune d'une sole semblable à celle du bœuf."

[1] The only reproach that can be made to the Chinese authors is that they never point to the peculiar skin-folds of the animal (with the only exception, perhaps, of Fan Chêng of the Sung period, who describes the rhinoceros of Annam as "clad with a fleshy armor;" see p. 113), and that, despite the live specimens procured for the Imperial Court (p. 80), no attempt has ever been made at a more precise description based on actual observation. But we may address the same charge of omission to the authors of India, the Greek writers on India, and to Pliny and Aelian. PLINY is content with stating that he saw the animal in the Roman circus, but does not describe what he saw, while he is eager to reproduce all the fables regarding the monoceros, emanating from India or from former sources relative to India. AELIAN (*Nat. an.*, XVII, 44) thinks it superfluous to describe the form of the rhinoceros, since a great many Greeks and Romans have seen and clearly know it. In matters of description the animal presents as difficult a subject as in matters of art. Exact descriptions of it are due only to competent zoölogists of recent times.

[2] How very natural this comparison is, may be gleaned from the account contained in *Nan Yüe chi* (quoted in *T'u shu tsi ch'êng*, chapter on rhinoceros), that at the time of the Han a rhinoceros once stampeded from Kiao chi (Annam) into Kao-liang (the ancient name for Kao-chou fu in Kuang-tung Province), and that it was mistaken by the people for a black ox, while those acquainted with the animal asserted that it was a black rhinoceros. The resemblance of the rhinoceros to an ox or buffalo has indeed obtruded itself on the observers of all times; and this notion is so far from being restricted to the Chinese, that it may almost be called universal. As seen above (p. 87), the Assyrians called the animal "ox of the river Sakeya." PLINY (*Nat. hist.*,

This is all exceedingly good: it is simply the result of that mental process which classifies a novel experience under a well-known category,

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VIII, 21, § 72, 76) speaks of the unicorn oxen of India. FESTUS calls the African rhinoceros the Egyptian ox, and PAUSANIAS tells of "Ethiopic bulls styled rhinoceroses" which he saw himself in Rome (O. KELLER, Die antike Tierwelt, Vol. I, p. 385). The Indian physician Caraka, who lived at the Court of King Kanishka in Kashmir, placed the rhinoceros in the class of buffalo (*anūpa*, *Mem. As. Soc. Bengal*, Vol. I, 1906, p. 371). The Arabic merchant Soleiman, who wrote in 851, compared the Indian rhinoceros with the buffalo (M. REINAUD, Relation des voyages, Vol. I, p. 29); and so did, as seen above, al-Bērūnī. Ibn al-Faqīh says regarding the African rhinoceros that it resembles a calf (E. WIEDEMANN, Zur Mineralogie im Islam, p. 250). The Talmud, in three passages, mentions the one-horned ox as an animal sacrificed by Adam (L. LEWYSOHN, Die Zoologie des Talmuds, p. 151, Frankfurt, 1858). The "sea-ox" mentioned by Leo Africanus (HIRTH and ROCKHILL, Chau Ju-kua, p. 145) certainly is the rhinoceros. The Malays designate the two-horned species *badak-karbau*, "the buffalo-rhinoceros," and the single-horned species *badak-gājah*, "the elephant-rhinoceros." It is difficult to understand, however, why some of the classical authors allude to the rhinoceros under the designation "the Indian ass" (ARISTOTLE, *Hist. an.*, II, 18, ed. of AUBERT and WIMMER, Vol. I, pp. 74, 254). Aristotle's definition is traceable to CTESIAS (ed. BAEHR, p. 254), who states that there were in India wild white asses celebrated for their swiftness of foot, having on the forehead a horn a cubit and a half in length, and that they are colored white, red, and black; from the horn were made drinking-cups which were a preventive of poisoning (compare also LASSEN, Indische Altertumskunde, Vol. II, p. 646). The mention of these antipoisonous cups is good evidence for the fact that Ctesias hints at the Indian rhinoceros (HERODOTUS, IV, 191, speaks of horned asses of Libya, but they are not one-horned). Ctesias is an author difficult to judge. His account of India, said to have been written in B.C. 389, it should be borne in mind, was derived second-hand, while he resided in Persia as court-physician of King Artaxerxes Mnemon, so that his data may partially be based on Persian accounts of India, and misunderstandings of his informants may have crept in; moreover, his report is handed down in a bad and fragmentary condition, and may have been disfigured by Photias of Byzance of the ninth century, to whom the preservation of his work is due. The definition of Ctesias in the present case cannot be regarded as correct, as we do not find in India, or anywhere else in the East, a comparison of the rhinoceros with an ass, nor any tradition to this effect,— a tradition which is not likely ever to have existed. If the ass really was contained in his original text, it must go back, in my estimation, to a misunderstanding on his part of the word imparted to him by the authorities whom he questioned. With the exception of the horn, Ctesias does not seem to have entertained any clear notion of the animal; and his description of the skin as white, red, and black, is baffling. V. BALL (*Proceedings Royal Irish Academy*, Vol. II, 1885, and in his edition of Tavernier's Travels in India, Vol. I, p. 114) tried to show that the colors seen by Ctesias were artificial pigments applied to the hide, as they are on elephants at the present day; rhinoceroses kept by the Rājas for fighting-purposes were, according to him, commonly painted with diverse bright colors. This forced explanation, shifting quite recent affairs to the days of early antiquity, is hardly plausible. It seems to me that we are bound to assume that the text of this passage is not correctly handed down. The colors white, red, and black would seem rather to have originally adhered to the horn. The Eastern lore of the rhinoceros, as shown by the reports of the Chinese and Arabs, essentially clusters around the horn.— MARCO POLO (ed. of YULE and CORDIER, Vol. II, p. 285) says in regard to the Javanese rhinoceros that its head resembles that of a wild boar; and this characterization is quite to the point, as is that of Kuo P'o when he compares the two-horned *si* to swine. A glance at Fig. 8, representing the specimen of a Sumatran two-horned rhinoceros in the Field Museum, will convince every one of the appropriateness of this simile. The pig shape of the rhinoceros is apparent also in a Roman representation on a clay lamp from Labicum illustrating the struggle between that animal and a bear (Fig. 7), so that even the most skeptic critic of Chinese animal sketches will be compelled to grant a certain foundation of fact to the hog-like rhinoceros of the *Erh ya* (Fig. 6).

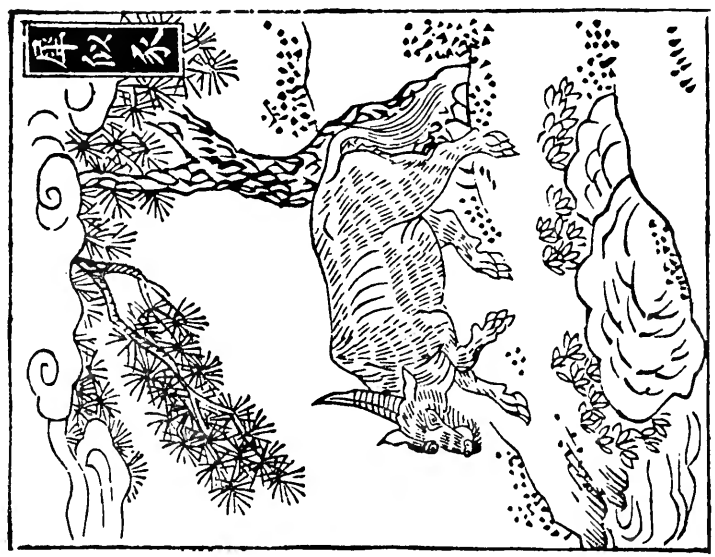

FIG. 6.
The Animal "*si* resembling Swine" (from the Illustrated Edition of *Erh ya*).

FIG. 5.
The Animal "*se* resembling the Ox" (from the Illustrated Edition of *Erh ya*).

and the comparisons could not be any better. We should halt a moment to reflect by what class of people these observations had been made. Most certainly by the hardy hunters who chased the wild beasts. We must distinguish between the original observer and story-teller, and the scholar closeted in his study who draughted the definitions for the consumption of the learned. It was not the Chinese philologist who went out into the jungle to study the rhinoceros; he, indeed, never had occasion to see it, but he derived his knowledge from reports made to him by the sportsman. The latter probably was plain and matter-of-fact; the

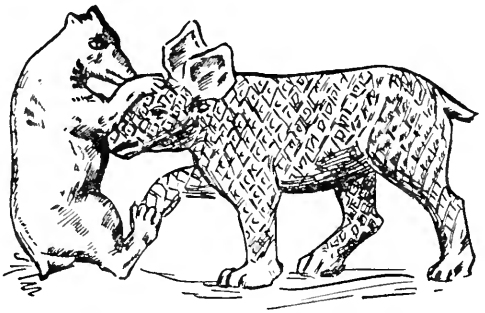

FIG. 7.
Struggle of Bear and Rhinoceros, represented on a Clay Lamp from Labicum (after O. Keller, Tiere des classischen Altertums).

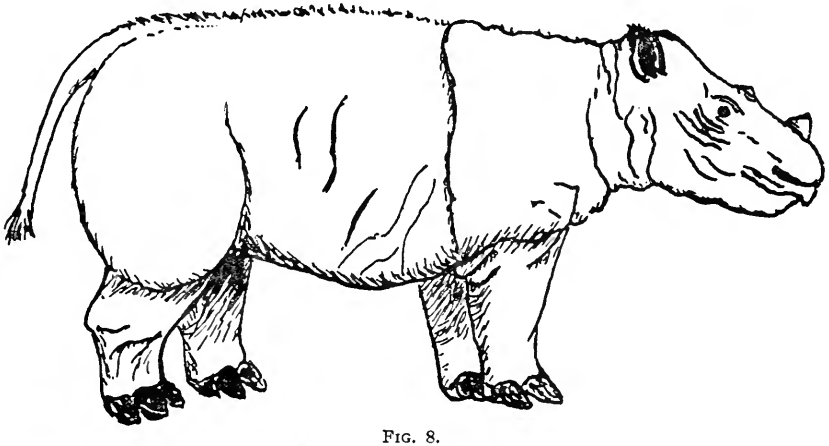

FIG. 8.
Sumatran Rhinoceros, Sketch from Museum Specimen (compare Elliot, Catalogue of the Collection of Mammals, Zoöl. Series, Vol. VIII, p. 105).

former added a bit of romance and exaggeration. Have we any right to ridicule the Chinese over their embarrassment as to where to locate the horn or the horns, when we observe that this was still a matter of wild speculation amidst Europe in the seventeenth and eighteenth centuries?[1]

[1] Dr. PARSONS, in the pamphlet quoted, justly remarks, "Nothing could serve as a better proof of how easily men may fall into uncertainty through preconceived conclusions than this very topic of the horn of the rhinoceros."

Have we any right to look down upon their artists in their naïve attempts to sketch the rhinoceros in the shape of an ox with a horn on the forehead (Fig. 5), when we observe that the so-called "civilization" of Assyria and the painting of Persia committed the same error, or when we glance at the puerile drawings of Cosmas and recall Dürer's work with the horn on the animal's neck?

In the above definitions we recognize the elements and tools with which the subsequent Chinese illustrators worked. They set out to illustrate, not the rhinoceros, but the descriptions given of it in the ancient dictionaries. They studied, not the animal, but the ready-made definitions of it encountered in book-knowledge. They read, and their reading guided the strokes of their brush. "The *se* resembles in body a water-buffalo, the *si* a pig:" consequently such bodies were outlined by the illustrator of *Erh ya;* and long, curved, and pointed single horns were placed on the heads (Figs. 5 and 6).[1] He apparently shunned the three horns, as the matter was difficult to draw; and nobody knew how to arrange them. He carefully outlined the three toes

[1] Our illustrations are derived from a folio edition of the *Erh ya* printed in 1801 (3 vols.), which is designated as "a reproduction of the illustrated *Erh ya* of the Sung period" (*Ying Sung ch'ao hui t'u Erh ya*). The ancient illustrations of the *Erh ya* by Kuo P'o and Kiang Kuan are lost (see BRETSCHNEIDER, Bot. Sin., pt. 1, p. 34), and were renewed in the age of the Sung, presumably without any tradition connecting the latter with the former. This fact may account for the purely reconstructive work of some illustrations, and we may well assume that the earlier sketches were far better. Many other illustrations of the *Erh ya* have been brought about in the same manner as those of the rhinoceros. Compare, for instance, the picture of the fabulous horse *po* (No. 9393) surrounded by flamed fluttering bands and about to lacerate a tiger seized by its carnivora-like, sharp claws; while a panther is swiftly making for safety to escape a similar fate. Of course, the craftsman has never observed this scene, but faithfully depicts the definition of the book, "The animal *po* is like a horse with powerful teeth, devouring tigers and panthers." This notion, as indicated by Kuo P'o, goes back to the *Shan hai king*, which says, "There is a wild animal styled *po*, like a white horse with black tail and powerful teeth, emitting sounds like a drum and devouring tigers and panthers." (Here we have a parallel to, and presumably an echo of, the flesh-eating horses of Diomed and the man-devouring Bucephalus of the Alexander legend; see J. v. NEGELEIN, Das Pferd im arischen Altertum, pp. 43, 75, Königsberg, 1903.) Otherwise the horses pictured in the *Erh ya*, aside from their technical drawbacks, are quite realistic; and so are the oxen and other animals which came under the every-day observation of the Chinese. It is still a mystery, and a problem worth while investigating, why the Chinese were rather good at drawing some animals and completely failed in others. It may be pointed out that the tapir of the *Erh ya*, aside from the exaggerated trunk and wrong tail, is rather correctly outlined with its white saddle, and corresponds to a well-known species (*Tapirus indicus*). In view of the retrospective and reconstructive sketches of this work, we have the same state of affairs as in the illustrations accompanying the *Shan hai king*, and as formerly shown by me in *Jade*, in the *San li t'u*, and to a certain extent in the *Ku yü t'u p'u*. The illustrators of the ancient Rituals did not directly picture the actual, ancient ceremonial objects, most of which were lost past hope in their time, but reconstructed them from the descriptions supplied by the commentators of the ancient texts, and for better or worse, based their illustrations on these artificial reconstructions, which to a large extent are erroneous or imaginary.

in the animal *si;* and this feature, combined with the single horns, is sufficient flavor of the rhinoceros to guard from any rash conclusion even one who has not considered the psychological foundation of these sketches.

From the fact that the animal *se* is drawn in the shape of an ox, Mr. Giles infers that the word *se* does not denote the rhinoceros, but "a bovine animal." Then, how about the word *si?* The animal *si* (Fig. 6) is undeniably represented in the *Erh ya t'u* with the body of a hog,— why not, to be consistent, also translate the word *si* by "swine"? If a child who was invited to make a sketch of a whale should delineate it in the shape of a fish, should we conclude for this reason that the whale is a fish? To make use of an illustration for a far-reaching philological and zoölogical conclusion, it is indispensable to ascertain the real value of such an illustration, and to make a somewhat critical study of its origin and basis. Mr. Giles is right in stating that there are illustrations of the animal *se* that are purely those of an ox. The ill-reputed *San li t'u*, for instance, stooped to this wisdom when the difficult task arose of illustrating in the shape of a rhinoceros the target used by the lords and ministers in the practice of archery, and spoken of in the *Chou li* and *I li*. But what wonder! Those illustrators who employed the pure-ox design simply stood on the platform of the sober and incomplete definition of the *Shuo wên*, "The animal *se* is like a wild ox." Nothing could be more convenient to the unthinking and mechanical craftsman; this plain recipe freed him from the responsibility for the horn. Anybody could outline an ox with two regular horns; and by inscribing it *se*, the satisfaction at this achievement was naturally the greater.

It is incorrect, however, to say that the animal *se*, as outlined in *T'u shu tsi ch'êng* (Fig. 9), is the picture of an ox. In its general features it resembles a kind of deer, as does likewise the animal *si* (Fig. 10). A lengthy discussion of the "deer-like" rhinoceros follows below (p. 109). Again, in Fig. 9, the draughtsman has taken particular pains to set off distinctly three toes in the left front foot; and where is the bovine animal with three toes? And where is the bovine animal with a single horn, and with this peculiar shape of horn? As to Fig. 10, it presents itself as an illustration of the legend that, while the rhinoceros is gazing at the moon, the peculiar designs within its horn are formed (p. 147). This notion exclusively refers to rhinoceros-horn, so that the animal here intended can be no other than the rhinoceros.[1]

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[1] The two illustrations of *T'u shu tsi ch'êng* are derived, with a few slight alterations, from *San ts'ai t'u hui* (section on Animals, Ch. 3, p. 7; Ch. 4, p. 12), where, curi-

FIG. 9.
The Animal *se* (from *T'u shu tsi ch'êng*).

FIG. 10.
The Animal *si* gazing at the Moon (from *T'u shu tsi ch'ëng*).

The three-horned rhinoceros described by Kuo P'o is perhaps not so fabulous as it may appear at first sight; for it is known to naturalists that the animal has also the tendency of developing three horns. E. HELLER[1] states in regard to the black rhinoceros covering the whole of Africa with the exception of the Congo Basin that, although the species is almost invariably two-horned, occasional variations of one and *three-horned* specimens are met with. In the light of this observation, PLINY'S (*Nat. hist.*, VIII, 21) notice of oxen of India, some with one horn, and others with three (Indicos boves unicornes tricornesque), is apt to lose much of the legendary character with which it was formerly charged. As far as I know, a three-horned specimen has not yet been pointed out among the species of the Indo-Malayan region; notwithstanding, the possibility remains that such may have occurred in times of antiquity. However this may be, whether we assume that the notion of a three-horned species was founded on a natural observation or not, the fact of the coincidence between Kuo P'o and Pliny remains, and hints at the existence of a tradition anent a three-horned variety in the beginning of our era.[2] At any rate, whether real or imaginary, the latter is but a variation of the two-horned species; and by omitting Kuo P'o's illusory "horn on the head," we arrive at a fairly accurate description of it, and then Kuo P'o exactly agrees with Hü Shên's definition of the word *si*. And there can be no doubt of the point that

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ously enough, they are separated and dispersed in two different chapters. In the latter work, the horn of the *se* is decorated with different designs, which are white on black, while they are black on white in *T'u shu*. The *si* of *San ts'ai* is adorned with flamed and fluttering bands, and the crescent of the moon is absent.

[1] The White Rhinoceros, p. 35 (Washington, 1913). Again on p. 17: "The number of dermal horns on the snout is of less importance. These have been found to show some individual variation in the African species varying from one to three in number in the same species. The front horn, however, is nearly always the better developed and is never wanting."

[2] The case could certainly be argued also from a purely philological point of view. Kuo P'o's creation might be explained as an ill-advised combination of the single-horned and two-horned species, or even regarded as a subsequent interpolation in his text, due to a scribe who meant to be sure of his definition being as complete as possible. Pliny's *tricornis* might be rationally interpreted as the result of an arithmetical process, providing the rhinoceros as a species of ox with two bovine horns, and adding the nose-horn as the third. In this manner Damīrī's three-horned rhinoceros must have arisen (RUSKA, *Der Islam*, Vol. IV, 1913, p. 164), for it has one horn between the eyes and two above the ears. The natural explanation based on zoölogical observation appeals to me to a much higher degree, for we must not be forgetful of the fact that it is impossible for the human mind to invent spontaneously such an observation; a feature of this kind, in order to be observed by man, must have somehow pre-existed in nature. It means nothing, of course, to say that the three horns are a fable; if fable it is, then how did the fable come into existence? It is not the question of a mythological conception, or of a mythical monster, but plainly of a really existing animal described in sober words. I feel confident that the three-horned variation in a living or extinct species will be found some day also in Eastern Asia.

what Kuo P'o intends to describe is the two-horned species of rhinoceros, not any other animal: his statement in regard to "the horn on the nose" excludes any other idea, and the bovine animal with such a horn remains as yet to be discovered. Li Shi-chên of the sixteenth century, as will be seen below (p. 150), rejects the definition of Kuo P'o as erroneous; that is to say, he did not know of any three-horned variety, and recognized in it the two-horned species. An illustration of this three-horned creature may be viewed in the *Wa-Kan San-sai-zu-e*, the Japanese edition of the Chinese cyclopædia *San ts'ai t'u hui*.[1] The definition runs thus: "The rhinoceros has the hair of swine and three toes on each foot; it has the head of a horse and three horns, on the nose, the forehead, and on the skull, respectively." The three toes and three horns are exactly drawn in accordance with this prescription; curiously enough, however, the head is not that of a horse, but of a bull. The old tradition of the draughtsmen is retained in spite of the definition.

Kuo P'o, in all probability, is not the first or the only author to speak of a three-horned variety. A work *Kiao Kuang chi*,[2] Account of Kiao chou (northern part of what is now Annam) and Kuang-tung, reports, "In the territory of the Barbarians of the South-west occurs a strange rhinoceros with three horns emitting light at night like big torches at a distance of a thousand paces. When it sheds its horns, it hides them in a remote and dense jungle to prevent men from seeing them. The sovereigns hold this strange product in high esteem, and make it into hair-pins. These are capable of checking evil and rebellion." Here we have the testimony of an eye-witness or one reproducing a hearsay account; and, quite correctly, he points out this variety as a freak of nature. The exact date of the work in question is unfortunately not known to me; but as the quotation is placed between one from *Kuang-chi* by Ku Yi-kung, who according to BRETSCHNEIDER[3] belonged to the Liang dynasty (502–556), and one from *Kuang chou ki*, a work of the Tsin period (265–419), the inference may be justifiable that *Kiao Kuang chi* likewise is a production of the Leu-ch'ao period. However remote from truth all these Chinese illustrations may be, most of them are fairly correct as to the outlines of the horn, naturally because

[1] The illustration is easily accessible in L. SERRURIER, Encyclopédie japonaise, le chapitre des quadrupèdes, Plate VIII (Leiden, 1875). This cut is not contained in a recent edition of this Japanese work (Tōkyō, 1906), but is replaced by a rhinoceros with two horns, the one on the forehead, the other on top of the skull. These attempts clearly prove that Japanese as well as Chinese illustrators did not draw the animal from life, but from the definitions of the books. In the Chinese *San ts'ai t'u hui* (Ch. 4, p. 32) only a three-horned animal (*san kio shou*) is depicted.

[2] Quoted in the chapter on Rhinoceros in *T'u shu tsi ch'êng*.

[3] Bot. Sin., pt. 1, p. 164.

the horn as an article of trade was always known, but not the animal itself.[1]

The rôle played by the rhinoceros in Chinese art is limited. As shown by the symbol illustrated in the *Po ku t'u lu* (Fig. 18), it was pictured in early antiquity; and other representations of that period mentioned in Chinese records are discussed on p. 160. The animal lacks those æsthetic qualities of form which tempt the brush of the painter; and this may be the reason why despite the living rhinoceroses sent up as tribute to the capital (see p. 80) it has never been immortalized on any Chinese scroll known to us.[2] There is, however, one case on record. Chang Shi-nan, who wrote the book *Yu huan ki wên* early in the thirteenth century,[3] narrates that he once saw in Sze-ch'uan (Shu) the painting of an unknown artist showing the outlines of a rhinoceros with a horn on its nose.[4] The inhabitants of Sze-ch'uan, accordingly, were familiar with the animal, and for this reason represented it correctly. On some Buddhist pictures it may owe its existence to a mere lucky chance; that is, to the fact that it was so copied from an Indian-Buddhist model. On Yen Li-pên's picture showing Samantabhadra's elephant,[5] the rhinoceros is unmistakably contrasted with the elephant as the smaller animal with scaly body, and head surmounted by a single horn. Another illustration of the same subject is reproduced in Fig. 11 from *Ch'êng shi mo yüan* (Ch. 6 B, p. 16) published in the Wan-li period, after 1605. Possibly it occurs also on the later typical paintings of Buddha's Nirvāṇa in the group of wailing animals.[6] On the sculptures of Angkor-Vat the rhinoceros is represented as the vehicle of the god Kārttikeya.[7]

The Mongol emperors made practical use of the typical, conventional designs of the rhinoceros on the standards of the army: there was a standard with the picture of the animal *se*, "resembling an ox, with a single horn, and of dark color," and another with a picture of the

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[1] A modern Chinese school-book published at Shanghai in 1901, and illustrated by Wu Tse-ch'êng of Su-chou, illustrates the word *si* with the cut of a rhinoceros of European origin, and the word *se* with a jovial ox of his own invention; while the text accompanying it, imbued with the spirit of the *Shuo wên* and *Erh ya*, speaks of one horn on the nose and three toes.

[2] It is likewise absent from classical Greek art. The marble relief of Pompeii, the lamp from Labicum, and the coins of Domitian referred to, are the only known examples of its representation in late Roman art.

[3] WYLIE, Notes, p. 165.

[4] The text is reprinted in *T'u shu tsi ch'êng*, chapter on rhinoceros, *hui k'ao*, p. 5.

[5] Reproduced in the writer's *Jade*, p. 342.

[6] See for example A. GRÜNWEDEL, Buddhistische Kunst in Indien, p. 114, or Buddhist Art in India, p. 124 (in the right lower corner).

[7] According to M. G. COEDÈS, Les bas-reliefs d'Angkor-Vat, p. 12 (Paris, 1911).

掃象圖

FIG. 11.
"Brushing the Elephant." Rhinoceros with Scaly Armor in Front. Wood-engraving from *Ch'êng-shi mo yüan.*

rhinoceros *si niu*, which is not described. They had also standards with designs of a three-horned animal (*san kio shou*) and the unicorn (*kio tuan*), which was outlined "like a sheep, with a small tail and a single horn on its crest."[1]

In plastic art,[2] the rhinoceros has been carved from jade either as the handle of a paper-weight or as the knob of a seal.[3] An example of either kind is illustrated in *Ku yü t'u p'u* (Ch. 74, p. 1, reproduced in

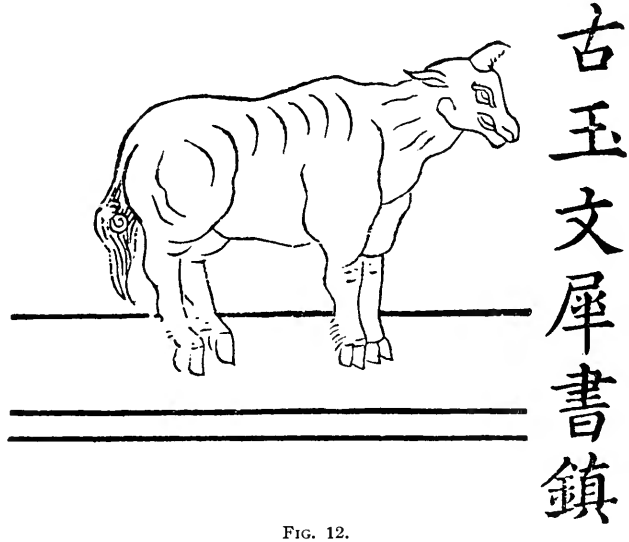

FIG. 12.
Ancient Paper-Weight of Jade surmounted by Figure of Rhinoceros (from *Ku yü t'u p'u*).

Fig. 12; and Ch. 37, p. 11). The traditional reconstructions of the animal are here faithfully preserved; the three toes (the third, of course, is not visible) and the shape of the horn, though it is wrongly placed, come somewhat near the truth. The manufacturers of ink-cakes availed themselves of the same design for printing on the surface of their products. The *Ch'êng shi mo yüan* (Ch. 13, p. 30) illustrates "a spiritual rhinoceros" (*ling si*) with body of an ox, hump of a zebu, cloven feet, snout of a pig, and horn on the front.

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[1] *Yüan shi*, Ch. 79, p. 10 (K'ien-lung edition).

[2] BUSHELL (Chinese Art, Vol. I, p. 91) figures a bronze vessel of the type styled *hi ts'un*, and describes it as being "shaped in the form of a rhinoceros standing with ears erect and a collar round the neck." But this explanation conflicts with Chinese tradition, according to which the animal *hi* is a sacrificial ox; and an ox is apparently represented in this bronze. Neither is there a single or double horn, which would be necessary to establish such a case.

[3] Seals surmounted by the full figure of a rhinoceros seem to make their first appearance in the Han period (see *Hou Han shu*, Ch. 40, p. 5).

The most curious item in the history of the iconography of the rhinoceros is the illustration of the animal in the *Chêng lei pên ts'ao* published in 1208 by the physician T'ang Shên-wei[1] (reproduced in Fig. 13). Here we see the animal represented as a hairy and spotted deer, its head being surmounted by a single curved horn, peacefully chewing a bunch of leaves with a most innocent expression on its face. The legend is *si kio* ("rhinoceros-horn"), all illustrations of animals

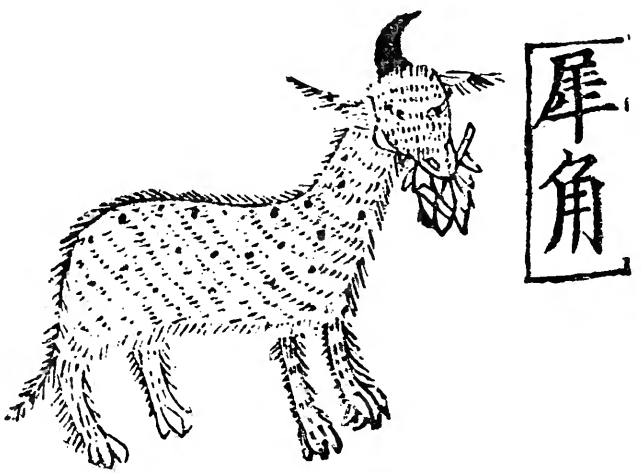

FIG. 13.
Deer with Single Horn, labelled Rhinoceros-Horn, being an Echo of the Indian Legend of Ekaçriṅga (from *Chêng lei pên ts'ao*, edition of 1523).

in this work being named for the product yielded by them; and the illustration is immediately followed by the description of the two animals *se* and *si*, so that there can be no doubt that this figure, in the mind of the author, is intended for the rhinoceros. It will certainly not induce us to propose for the word *si* the new translation "cervine animal;" but a rhinoceros of cervine character has really existed in the imagination of the ancient world. The idea started from India, has taken a footing in the classical authors, and long survived even down to our middle ages. It is a fascinating story, deserving full discussion, the more so as it has never been clearly and correctly set forth. Two classical texts may first be quoted which fit well as an explanation to our Chinese woodcut. PLINY (*Nat. hist.*, VIII, 21) tells regarding the Orsaean Indians that "they hunt the indomitable, fierce *monoceros* (unicorn) which has the head of a *stag*, the feet of the elephant, the

[1] Regarding this work and its history see *T'oung Pao*, 1913, p. 351. In the edition of 1523 from which our illustration is taken it is in Ch. 17, fol. 20 b.

tail of a boar, while the rest of the body is like that of the horse; it emits a deep roar, and has on the middle of its forehead a single black horn two cubits in length. This beast, it is asserted, cannot be captured alive."[1] In the *Cyranides*, a curious Greek work written between 227 and 400 A.D.,[2] it is said, "The rhinoceros is a quadruped resembling the *stag*, having a very large horn on its nose. It can be captured only by means of the perfume and the beauty of well dressed women; it is indeed much inclined toward love."[3] The importance of this passage, first of all, rests on the fact that the single-horned cervine animal is here clearly identified with the rhinoceros, an identification not yet made by Pliny, who speaks of rhinoceros and monoceros as two distinct species; and we remember that Cosmas Indicopleustes makes the same distinction in regard to India. In his introduction, F. DE MÉLY[4] observes that the *Cyranides* is the first work to reveal to us the starting-point of the legend of the chase of the unicorn which is nothing but the rhinoceros. This, however, is very inexact. The first Occidental source relating this legend is the *Physiologus* which is older than the *Cyranides*. The *Physiologus*[5] tells of the monoceros that it is a small animal resembling a buck, but very cunning; the hunter cannot approach it, as it possesses great strength; the horn grows in the centre of its head; it can be captured only by a pure virgin who suckles it; then she seizes it, and carries it into the palace of the king; or according to another version, the unicorn falls asleep while in the lap of the virgin, whereupon the hunters gradually approach and fetter it. The *monoceros* is located by PLINY in India; and the western legend of the unicorn ensnared by a virgin was first traced by S. BEAL[6] to the ancient Indian legend of Ekaçṛiṅga, the hermit Single Horn. H. LÜDERS,[7] who has traced with great ingenuity the development of the legend in the sources of Indian

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[1] Orsaei Indi . . . venantur asperrimam autem feram monocerotem, reliquo corpore equo similem, capite cervo, pedibus elephanto, cauda apro, mugitu gravi, uno cornu nigro media fronte cubitorum duum eminente. hanc feram vivam negant capi. (Ed. of C. MAYHOFF, Vol. II, p. 104.)

[2] F. DE MÉLY, Les lapidaires grecs, p. LXXI; DE MÉLY is the first editor and translator of this work.

[3] *L. c.*, p. 90.

[4] *L. c.*, p. LXV.

[5] F. LAUCHERT, Geschichte des Physiologus, pp. 22, 254 (Strassburg, 1889); F. HOMMEL, Die aethiopische Übersetzung des Physiologus, p. 68 (Leipzig, 1877); E. PETERS, Der griechische Physiologus und seine orientalischen Übersetzungen, p. 34 (Berlin, 1898); K. AHRENS, Das "Buch der Naturgegenstände," p. 43 (Kiel, 1892).

[6] The Romantic Legend of Çākyamuni Buddha, p. 125; see also his Buddhist Records of the Western World, Vol. I, p. 113.

[7] Die Sage von Ṛṣyaśṛiṅga (*Nachrichten d. k. Ges. d. Wiss. zu Göttingen*, 1897, pp. 1–49), p. 29; an additional study from his pen on the same subject *ibid.*, 1901, pp. 1–29.

literature, justly points out that all our mediæval versions of the story,[1] as a last resort, go back to the Greek *Physiologus*, and that the last clause of the Greek text contains a visible trace of the old Indian legend of the king's daughter who carries away the penitent into the palace of her father. Lüders rises also against the view of Lauchert, who interprets the story in *Physiologus* from a misunderstood passage of AELIAN (XVI, 20); and I am in full accord with the criticism of Lüders, to which the argument should be added that this alleged influence of Aelian on the *Physiologus* is out of the question, as Aelian is in time posterior to the latter.[2] F. W. K. MÜLLER studied the same question in connection with a Japanese Nō play, the plot of which is the legend of Ekaçṛiṅga.[3] Müller likewise thinks Lauchert's explanation to be hardly plausible, and admits, with excellent arguments, the dependence of the *Physiologus* story on the tradition of India. There is but one point in which my opinion differs from the one expressed by Müller. Müller, at the close of his highly interesting study, advances the theory that the real unicorn, as already recognized by Marco Polo, may always have been the

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[1] Of the mediæval versions, that of JOHN TZETZES, the Byzantine poet and grammarian, who flourished during the twelfth century, in his *Chiliades* (v, 398), deserves special mention: "The monoceros carries a horn on the middle of its forehead. This animal is passionately fond of perfumes. It is hunted in this manner. A young man disguised as a woman exhaling the odor of the most exquisite perfumes takes his position in the places frequented by this quadruped. The hunters lie in ambush at a short distance. The odor of the perfumes soon attracts the monoceros toward the young man; it caresses him, and he covers its eyes with perfumed woman's gloves. The hunters hasten to the spot, seize the animal which does not offer resistance, cut off its horn, which is an excellent antidote to poison, and send it back, without inflicting on it further harm."

[2] Claudius Aelianus flourished under Septimius Severus, and probably outlived Elagabalus (218–222 A.D.). His writings come down from the beginning of the third century (BAUMGARTEN, POLAND, and WAGNER, Die hellenistisch-römische Kultur, p. 615, Leipzig, 1913), while the *Physiologus* was written in Alexandria as early as the second century (*ibid.*, p. 622). Little is known about Aelian's life; only Philostratus and Suidas have some brief notes regarding him. He availed himself of the writings of Athenaeus, who wrote at the time of Elagabalus, or in the first years of Alexander Severus (222–235); Philostratus mentions his death in his Lives of Sophists composed between 222 and 244. As regards the *Physiologus*, it is necessary to discriminate between the final Greek recension clothed in a Christian-theological garb, as we have it now, and the primeval source or sources of animal stories without the allegories, from which the former was extracted. LAUCHERT (*l. c.*, p. 42) certainly is quite right in rejecting the hypothesis of an "*Urphysiologus*" in the sense that it was a literary production serving as model to our *Physiologus;* but a primeval *Physiologus* must be presupposed for about the beginning of the first century, in the sense that it simply was an assemblage of verbal stories current in Alexandria, and some of which were imported from India (compare *T'oung Pao*, 1913, pp. 361–4).

[3] Ikkaku sennin, eine mittelalterliche japanische Oper (*Bastian Festschrift*, pp. 513–538, Berlin, 1896). Lüders, whose work appeared in 1897, did not take note of Müller's investigation; it seems that the treatises of both scholars originated about the same time, and independently of each other. Compare also J. TAKAKUSU, The Story of the Ṛṣi Ekaśṛṅga (*Hansei Zasshi*, Vol. XIII, 1898, pp. 10–18); and K. WADAGAKI, Monoceros, The Rishi (*ibid.*, pp. 19–24).

rhinoceros. Also O. KELLER[1] has arrived at the same result, and reduced all ancient traditions and representations of the unicorn to the Indian rhinoceros. This opinion seems to me fundamentally wrong. Not one of the numerous variants of the ancient Indian tradition regarding the Hermit Single-Horn alludes in this connection to the rhinoceros; he is miraculously born from a gazelle, and has received his horn from the latter.[2] Single-Horn is not even his original name, but this one was Antelope-Horn (Ṛishya-çṛiṅga); and according to LÜDERS,[3] the name Single-Horn has arisen from the latter, owing to popular etymological re-interpretation caused by the tradition, already appearing in the Mahābhārata that the penitent had a single horn on his head. In other texts, the Padmapurāṇa, Skandapurāṇa, and Kanjur, he is even equipped with *two* horns, while the versions of the Rāmāyaṇa and the Pāli Jātaka make no statement with regard to the horn. The Greek *Physiologus*, in the story alluded to, avails itself of the word *monokeros* ("unicorn"), which literally corresponds in meaning to Sanskrit Ekaçṛiṅga, and describes the creature as a small animal resembling a buck, without any qualities inherent in the rhinoceros; and this is plainly corroborated by the illustration accompanying the *Physiologus*, in

[1] Die antike Tierwelt, Vol. I, pp. 415–420; this is presumably the weakest chapter of an otherwise intelligent and excellent book. I do not understand how Keller arrives at the opinion that the ancients in general treat *monoceros*, *unicornis*, and *rhinoceros* as identical notions, and in most cases conceive them as the African rhinoceros. The historical connection of the unicorn legend with Ekaçṛiṅga has escaped Keller entirely.

[2] The iconography of Ekaçṛiṅga in Indian art has been traced by LÜDERS and MÜLLER. It is notable that any suggestion of a rhinoceros is absent. As proved by the masks of the hermit used in the dramatic plays of Japan and Tibet (Plate X), he was conceived as a human being with a single, short, forked horn, or with a very long, curved horn. The illustration of the Japanese mask is derived from the work *Nōgaku dai-jiten* (Dictionary of Nō Plays) by Masada Shōjirō and Amaya Kangichi (Tōkyō, 1908; compare *Bulletin de l'Ecole française d'Extrême-Orient*, Vol. IX, 1909, p. 607). The Tibetan mask, much worn off by long use, was obtained by me from a monastery of Bagme, in the western part of the province of Sze-ch'uan. It is very striking that the rhinoceros hardly plays any rôle in the culture-life, folklore, or mythology of India. The allusions to it in literary records are exceedingly sparse. The word *khaḍga* appears but a few times in Vedic literature, a rhinoceros-hide being mentioned in one passage as the covering of a chariot (MACDONELL and KEITH, Vedic Index, Vol. I, p. 213, London, 1912). The animal is mentioned in the inscriptions of King Açoka (third century B.C.); and the consumption of its flesh, blood, and urine plays a certain rôle in Indian pharmacology (see CHAKRAVARTI, *Mem. As. Soc. Beng.*, Vol. I, p. 370, Calcutta, 1906; and HOOPER, *J. As. Soc. Beng.*, Vol. VI, 1910, p. 518). It is very curious that no Indian record regarding rhinoceros-horn cups and their antipoisonous virtues has as yet been pointed out; our information on this point rests on Ctesias, Aelian (see below, p. 115), some Arabic authors, and more recent observers like Linschoten and GARCIA AB HORTO (Aromatum et simplicium aliquot medicamentorum apud Indos nascentium historia, p. 66, Antverpiae, 1567), who says, "Illud tamen scio Bengala incolas eius cornu adversus venena usurpare, unicornu esse existimantes, tametsi non sit, ut ii referunt qui se probe scire autumant." It remains to be pointed out also that the literatures of India contain no accounts of unicorns.

[3] *L. c.*, p. 28.

which the animal is outlined as a long-tailed antelope with a large single horn curved like that of a gazelle.[1] PLINY, as we saw, credits the *monoceros* of India with the head of a stag and a single horn on its forehead (that is, the gazelle-horned Ekaçriṅga), but does not identify it with the rhinoceros, which was well known to him from the circus. For the first time, as far as the West is concerned, the identification of the single-horned cervine animal with the rhinoceros is made in the *Cyranides*.[2] In the East, the first intimation of it leaks out in our Chinese illustration from *Chêng lei pên ts'ao*, which depicts the rhinoceros in the form of a deer with one horn on its forehead, and which, without any doubt, is an offshoot of the Indian conception of Ekaçriṅga. Now, we encounter the curious fact that at a much older date also the Chinese mention a single-horned deer under the name *p'ao* (No. 9104), described in the *Erh ya* as an animal "with the tail of an ox and one horn." PALLADIUS[3] straightway translated the word by "rhinoceros," but this venture is not justified by Chinese tradition; the Chinese, in this case, make no reference whatever to the rhinoceros. On the contrary, Kuo P'o, the editor and interpreter of *Erh ya*, states that the animal *p'ao* is identical with the deer called *chang* (No. 407); and Yen Shi-ku (579–645), as quoted in K'ang-hi's Dictionary, maintains that it resembles in shape the deer *chang*. The very definition shows that the animal *p'ao* is a near cousin of the *k'i-lin*[4] which has likewise "the tail

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[1] Figured by STRZYGOWSKI, Der Bilderkreis des griechischen Physiologus, Plate XII (*Byzantinische Zeitschrift*, Ergänzungsheft 1, 1899), and KELLER (*l. c.*, p. 419). Regarding the illuminated editions of the *Physiologus* see also O. M. DALTON, Byzantine Art, p. 482 (Oxford, 1911).

[2] Neither LÜDERS nor MÜLLER has consulted these two important passages of Pliny and the Cyranides.

[3] Chinese-Russian Dictionary, Vol. I, p. 58.

[4] At times a temptation was felt to identify the animal *lin* with the rhinoceros. Shên Kua, the versatile author of the *Mêng k'i pi t'an* of the twelfth century, narrates that in the period Chi-ho (1054–56) the country Kiao-chi (Annam) offered a *lin* like an ox, having the entire body covered with large scales and a single horn on its head. There is no question that this animal was a rhinoceros; this follows also from the further observation of the author that it did not resemble the *lin*, as described in ancient records, and that there were people designating it as a mountain-rhinoceros (*shan si*, a variety recognized also by Li Shi-chên). But as Shên Kua could not trace any report in which scales are attributed to the rhinoceros (for explanation see p. 149), he formed the erroneous theory that the animal in question was identical with the *T'ien-lu* cast in bronze by the Emperor Ling in 186 A.D., a specimen of which he had beheld at Nan-yang in Têng chou in Ho-nan. In a similar manner, Fan Chên of the Sung period, in his work *Tung chai ki shi* (Ch. 1, p. 8; in *Shou shan ko ts'ung shu*, Vol. 84), tells the story of two *K'i-lin* sent as tribute from Kiao-chi in the period Kia-yu (1056–63), which he had occasion to see in the imperial palace. He describes them as having the shape of water-buffalo clad with a fleshy armor, and equipped with a single horn on the extremity of the nose; they subsisted on grass, fruit, and melon, and every time before feeding had to be beaten on their horns with a stick. This writer likewise concludes with a discussion, in which serious doubts of the identification of these animals with the *lin* are expressed.

of an ox and a single horn."[1] Indeed in the *Erh yu t'u*, both creatures are figured almost alike, and agree in their essential characteristics. It is obvious that, as iconographic types, these creatures are not derived from any rhinoceros, but point in the direction of the fabulous one-horned monsters (known in archæology as "Oriental animals") developed in the art of Mesopotamia.[2] In regard to the type of *k'i-lin*, this has been aptly pointed out by A. GRÜNWEDEL;[3] and as the same West-Asiatic forms found their way into the art of India, we here have the basis for the origin of the single-horned gazelle (deer or antelope) transferred to, or personified in, the person of Ekaçṛiṅga. In Babylonia, these types of unicorn are very ancient, going back to the third millennium B.C.,[4] and could not have been developed there from a rhinoceros. The conclusion therefore presents itself that the notion of a unicorn cervine animal which was developed in Western Asia from remote times spread together with artistic motives into India and China,[5] while the identification of this fabulous creature with the

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[1] Regarding the *k'i-lin* see Yen Shi-ku (in *Ts'ien Han shu*, Ch. 6, p. 5 b); MAYERS (Chinese Reader's Manual, p. 127); F. W. K. MÜLLER (in *Feestbundel aan P. J. Veth*, p. 222, Leiden, 1894); DE GROOT (The Religious System of China, Vol. II, pp. 822–4); and H. DORÉ (Recherches sur les superstitions en Chine, pt. 1, Vol. II, pp. 446–8). I do not subscribe to everything that the last two authors say about the subject. The Chinese illustrations are reproduced in C. GOULD (Mythical Monsters, pp. 350, 353, 354, London, 1886).

[2] A distinction must be made between iconographic or archæological type or artistic representation, and traditions or speculations regarding such a type. The *lin*, as early mentioned in *Shi king* and *Li ki*, may very well be an indigenous Chinese thought. Nevertheless its subsequent portrayal in art rests on a borrowed type, which has again fertilized native ideas as to form and behavior of the creature. An interesting example of the fact that iconography and literary tradition may move along lines widely different and emanating from diverse sources is afforded by the unicorn of Europe. The unicorn tradition of the *Physiologus* is traceable to India; the iconography of the creature, however, has no connection with Indian art, but leans in the beginning toward the ancient West-Asiatic types. Throughout the middle ages, there is not a trace of the rhinoceros in the representations of the unicorn (compare Marco Polo's astonishment when he saw the ugly beast on Java, "not in the least like that which our stories tell of as being caught in the lap of a virgin, in fact, altogether different from what we fancied"); now it is an antelope, now an ox, now a narwhal, now a hybrid formation composed of various creatures. My opinion in this respect deviates from the one expressed by STRZYGOWSKI (*l. c.*) that there may be interaction between the animal types of the earliest Buddhist art in India and those of the *Physiologus*. It is not there the question of interaction, but of affinity, solely caused by West-Asiatic productions which both have in common as their source.

[3] Bemerkungen über das Kilin (*Feestbundel aan P. J. Veth*, pp. 223–5, Leiden, 1894), and Buddhist Art in India, p. 19.

[4] E. SCHRADER, Die Vorstellung vom monokeros und ihr Ursprung (*Abhandlungen der preussischen Akademie*, 1892, pp. 573–581).

[5] In order to dispel the doubts of those who may not feel inclined in this case to link China with the West, another striking analogy may be indicated, which will show that Chinese ideas regarding unicorns coincide with those entertained in the West, and which crop up in the classical authors. In the *Erh ya* is defined an animal called *chui* (written with the classifier 'horse' and the phonetic complement *sui*, No. 10,388), "like a horse with a single horn; those without horn are spotted." Kuo P'o comments,

rhinoceros — owing to the single horn — is the product of a much later period; this is not the starting-point, but the final result of the matter. It is, of course, necessary to assume that this result was brought about in India itself; [1] otherwise it would be unintelligible why it appears on the surface in the *Cyranides* and in China.[2] In my opinion, we are even

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"In the eighth year of the period Yüan-k'ang (298 A.D.) it was in the territory of Kiu-chên (in Tonking) that hunters captured a wild animal of the size of a horse with one horn, the horn being soft as the core of the young antlers of the deer (*lu jung*). This is identical with the animal *chui*. At present men sometimes meet it in the dense mountainous jungles, and there are among them also those without horn." Kiu-chên is situated in Tonking; and on p. 81 mention has been made of the tribute of a live rhinoceros sent from there to the Emperor Ling (168–188 A.D.); indeed, that region was always famed for this animal, which is apparently intended in the text of Kuo P'o. The same conception of the rhinoceros as a horse or horse-like animal with a single horn is met likewise in the West. The ancients enumerate altogether five animals as having single horns, the Indian ass first traceable to Ctesias, the single-horned ox, the monoceros, the single-horned horse, and the oryx of Africa. STRABO (XV, 56) quotes from Megasthenes' remarks upon Indian animals that there are horses in India with one horn. AELIAN (*Nat. anim.*, III, 41) says, "India, it is reported, produces horses with a single horn, likewise single-horned asses. Cups are made from these horns; and if a mortal poison is poured into them, it will do no harm to him who drinks it, for the horn of both animals seems to be an antidote against poison." In another chapter (XVI, 20) AELIAN describes the unicorn of the Indians, "called by them *kartazonos* [a word apparently connected with Assyrian *kurkizannu*, mentioned above, p. 87], said to equal in size a full-grown horse." HORACE (*Serm.*, I, 5, 58–60) speaks of a wild horse having a single horn in the midst of its forehead. As a matter of fact, the rhinoceros has no similarity to a horse; and it is difficult to see how the simile could ever arise. The bare fact remains, however, that it did; but it is inconceivable that this notion, not founded on a natural observation, could spontaneously spring up in the West and East alike. There is no other way out of this puzzle than to presume that India, to which the account of Megasthenes reproduced by Strabo and Aelian refers, is responsible for this idea, and disseminated it to the West and to China.

[1] It may be pointed out in this connection, though it is not wholly conclusive for the present case, that the Sanskrit word *vārdhrāṇasa* means a rhinoceros and an old white goat-buck.

[2] We meet also in ancient China a unicorn conceived of as a wild goat. This is the animal termed *chai* (No. 245) and *hiai* (No. 4423) *chai*. The fundamental passage relating to it is in the Annals of the Later Han Dynasty (*Hou Han shu*, Ch. 40, p. 3), where a judicial cap in the shape of this animal, and worn by the censors, is mentioned. The definition given of the animal in the text of the Annals is, "A divine goat (*shên yang*) which is able to discriminate between right and wrong, and which the king of Ch'u used to capture." Huai-nan-tse is quoted in K'ang-hi (under *hiai*) as saying that King Wên of Ch'u was fond of wearing *hiai* caps; the un-Chinese word *hiai chai*, therefore, will probably be a word of the language of Ch'u (T. DE LACOUPERIE, Les langues de la Chine avant les Chinois, p. 17, Paris, 1888), as above all proved by the vacillating modes of writing (FORKE, Lun-hêng, pt. II, p. 321). The comment added to the text of *Hou Han shu* is extracted from *I wu chi*, which may be read in SCHLEGEL'S Uranographie chinoise, p. 587 (it is, of course, impossible, as proposed by Schlegel, to identify the animal with the Tibetan *chiru;* see below, p. 120). It is not stated in *Hou Han shu* nor in *I wu chi* (nor in K'ang-hi) that "it eats fire in its ravenous fury, even to its own destruction" (GILES). This is a subsequent addition which arose under the influence of Buddhist art. F. W. K. MÜLLER (*Feestbundel aan P. J. Veth*, p. 222, Leiden, 1894) has recognized correctly that this explanation is derived from the iconography of the animal, which is represented as being surrounded by flames. Müller, however, omits to state that this is a secondary development, which has nothing to do with the previous pre-Buddhistic conception of the creature on Chinese soil, when it was not equipped with flames, nor set in relation with a lion. The

forced to admit that the counterpart to the illustration of the *Chêng lei pên ts'ao* has already pre-existed in India, and was transmitted from there to China; for neither the author of that work, nor any other Chinese source, as far as I know, furnishes any explanation for this picture. An unexpected confirmation of this opinion comes to us from another quarter, — Tibet.

In the Tibetan language we meet the word *bse-ru* which at present denotes two animals, — first, the rhinoceros, and second, a kind of antelope. The former is the original and older significance, the latter is secondary. The second element of the compound, *ru*, means "horn," and may be dropped; the proper word is *bse* (pronounced *se*). The stem is *se*, the prefixed labial *b-* not being part of the word-stem, and like most prefixes in Tibetan nouns, representing the survival of an ancient numerative. This is corroborated by the corresponding Lepcha word *sa* and the Chinese word *se*, all three referring to the rhinoceros. This linguistic coincidence leads to the conclusion that the Chinese and Tibetans as stocks of the large Indo-Chinese family of peoples were acquainted with the rhinoceros in prehistoric times, for otherwise they could not have the word for it in common; and this conclusion will be fully upheld by our historical inquiry into the subject. This fact of comparative philology is also apt to refute the supposition of Mr. Giles that "a term which originally meant a bovine animal was later on wrongly applied to the rhinoceros." As proved by comparison with the Tibetan and Lepcha words, the Chinese term originally must have designated the rhinoceros.[1] Above all it is incumbent upon me to demonstrate that the Tibetan word *bse* really designates the rhinoceros, and that the Tibetans were familiar with this animal. The ancient

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translation "lion-unicorn" adopted by Müller is not to the point, as far as the time of Chinese antiquity is concerned. The *hiai chai* is not explained as a lion (nor could this be expected, as the lion was unknown in ancient China), but as a divine wild goat (*shên yang*). The fact that the conception of the animal existed among the Chinese in times prior to the contact with India is clearly proved by the occurrence of the word in Huai-nan-tse, in *Tso chuan* (Sŭan Wang 17th year: LEGGE, Chinese Classics, Vol. V, p. 332), Se-ma Ts'ien's *Shi ki* (Ch. 117), *Lun hêng*, *Hou Han shu*, *Erh ya*, and *Shuo wên*. Only in such late compilations as the Japanese version of the *San ts'ai t'u hui* do we meet the statement that the animal resembles a lion, merely because it is sketched like a lion crowned with a single horn (see L. SERRURIER, Encycl. japonaise, le chapitre des quadrupèdes, Plate III; or E. KAEMPFER, The History of Japan, Vol. I, p. 195, Glasgow, 1906). The connection of this creature with the rhinoceros, and its transformation into a goat, will be discussed below (p. 171).

[1] The hypothesis of such "confusions," which are usually assumed to suit one's own convenience, is untenable also for other reasons obvious to every ethnologist: people in the primitive stages of culture, being nearer to nature than we, are surely the keenest observers of animal life and habits, and will most assuredly never confound a bovine animal with a rhinoceros; they may, by way of explanation, compare the one with the other, but from comparison to confusion is a wide step.

Sanskrit-Tibetan dictionary Mahāvyutpatti[1] renders the Tibetan word *bse* by the Sanskrit word *gaṇḍa* which refers to the rhinoceros.[2] Wherever this word appears in the works of Sanskrit Buddhist literature, it is faithfully reproduced in the Tibetan translations by the word *bse*. An interesting example of its application appears in a Tibetan work from the first part of the ninth century.[3] It is well known that in India the Pratyeka-Buddha was styled Single-Horn Hermit and compared with the solitary rhinoceros;[4] and this simile is explained in that Tibetan book in the words that the Pratyeka-Buddha, who in the course of a hundred eons (*kalpa*), through the accumulation of merit, is no longer like ordinary beings, resembles the rhinoceros in his habit of living in the same solitary abode. It is interesting to note that in this early Tibetan text the word *bse-ru* is used for the designation of the rhinoceros. This comparison has passed into Tibetan poetry, and is frequently employed by the mystic and poet Milaraspa, who speaks of himself as being "lonely like a rhinoceros."[5] This meaning of *bse* is confirmed by two Chinese lexicographical sources, — the *Hua i yi yü*, which in its Tibetan-Chinese vocabulary[6] renders *bse-ru* by Chinese *si niu;* and the Polyglot Dictionary of the Emperor K'ien-lung (Ch. 31, p. 4 a), where *bse* is explained by Chinese *si* ("rhinoceros"). The national Tibetan word *bse*, akin to Lepcha *sa* and Chinese *se*, naturally bears out the fact that the ancient Tibetans were familiar with the

[1] Tanjur (Palace edition), Sūtra, Vol. 123, fol. 265 a. This work was written in the first part of the ninth century.

[2] Al-Bērūnī (SACHAU, Alberuni's India, Vol. I, p. 203) knew this word, and correctly described under it the rhinoceros of India (p. 95). It is likewise mentioned by GARCIA AB HORTO (*l. c.*) and other early European travellers enumerated by YULE and BURNELL (Hobson-Jobson, p. 363). The rhinoceros brought to Portugal in 1515 (mentioned above, p. 83) was labelled "rhinocero, called in Indian *goinda*."

[3] Entitled *Sgra sbyor bam-po gñis-pa* (Tanjur, Sūtra, Vol. 124, fol. 14 a, 4), correctly dated by G. HUTH (*Sitzungsberichte der preussischen Akademie*, 1895, p. 277) in the first part of the ninth century. Compare also the application of the word in Tāranātha (SCHIEFNER'S translation, p. 245): the sorcerer Ri-ri-pa summoned the fierce beasts of the forest, the rhinoceros and others, and mounted on their backs.

[4] EITEL, Hand-book of Chinese Buddhism (pp. 76, 123, 197); F. W. K. MÜLLER, Ikkaku sennin (*l. c.*, p. 530); and H. KERN, Manual of Indian Buddhism (pp. 61 and 62, note 1).

[5] G. SANDBERG (Tibet and the Tibetans, p. 297), who is ignorant of the fact that *bse* or *bse-ru* means "rhinoceros," and who merely carries the modern popular meaning of the word, "antelope," into the sphere of literature, makes Milaraspa say that he is "lonely as a seru" (antelope). The antelope, however, is not a lonely, but a highly social animal living in herds. Nowhere in Buddhist literature has *bse-ru* the significance of "antelope," but only that of "rhinoceros." The Tibetan poet, who in every line is imbued with the language and spirit of India, most obviously intends with this simile a literary allusion to the Buddhist comparison of the Pratyeka-Buddha with the rhinoceros.

[6] Copied by me from the manuscript deposited by HIRTH in the Royal Library of Berlin. Regarding the work see HIRTH (*J. China Branch R. As. Soc.*, Vol. XXII, 1888, pp. 207 *et seq.*), and *Bull. Ecole française*, 1912, p. 199.

animal. We know that the primeval habitat of the Tibetan stock was located along the upper course of the Huang-ho (where Ptolemy knows them as *Bœutai*, derived from the native name *Bod*, "Tibetans;" the Yellow River is styled by him *Bautisos*), as well as along the upper Yang-tse. There they lived in close proximity to the ancient Chinese; and in that locality, as will be established from Chinese records, the rhinoceros was their contemporary. Large parts of the present Chinese provinces of Kan-su and Sze-ch'uan are still settled by Tibetan tribes; and we shall see that the rhinoceros occurred there in the times of antiquity, and long survived, even down to the middle ages. The Pai-lan — a tribe belonging to the Tibetan group of the K'iang, and bordering in the north-east on the Tu-yü-hun — in 561 A.D. sent an embassy to China to present a cuirass of rhinoceros-hide (*si kia*) and iron armor.[1] Whether they had made this cuirass themselves, or had received it from an outside source (this fact is not indicated), this tribute, at any rate, shows that they were acquainted with this material and its manufactures.[2] The *Pên ts'ao yen i* of 1116 extols the horns of the Tibetan breed of rhinoceros for the fine quality of the natural designs displayed in them (see p. 148). Li Shi-chên, in his *Pên ts'ao kang mu* (see p. 149), expressly names as habitats of the rhinoceros the regions of the Si Fan and Nan Fan; that is, the western and southern Tibetans, — the former scattered over Sze-ch'uan and Yün-nan with their borderlands, the latter peopling the valley of the Tsang-po (Brahmaputra) and the Himalayan tracts adjoining India. Indeed, down to the middle of the nineteenth century, or even later, the rhinoceros was to be met with along the foot of the Himalaya as far west as Rohilkund and Nepal; and it survived longer still in the Terai of Sikkim.[4] J. CH. WHITE [4] notes the

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[1] *Chou shu*, Ch. 49, p. 5 b.

[2] In the year 824 the Tibetans offered to the Chinese Court silver-cast figures of a rhinoceros and a stag (*T'ang shu*, Ch. 216 B, p. 6 b). BUSHELL (The Early History of Tibet, p. 88) translates the word *si* in this passage by "yak," but this point of view is not admissible. True it is that some modern Chinese writers on Tibet call the yak *si niu*, but this usage of the word is not earlier than the eighteenth century. The T'ang Annals, however, persistently designate the Tibetan yak by the word *li niu* (No. 6938); and in the very passage alluded to, the gift of the rhinoceros and stag silver figures is immediately followed by the words, "and they brought as tribute a yak" (*kung li niu*), which BUSHELL correctly interprets likewise as yak. The words *si* and *li niu* in the same sentence cannot possibly refer to the same animal; and it becomes evident from a consideration of all Chinese sources concerned that down to the end of the Ming dynasty the Chinese word *si* with reference to Tibet and Tibetan tribes invariably denotes the rhinoceros, and nothing else. Rhinoceros-horn was formerly included among the tribute gifts which the Dalai Lamas of Tibet were obliged to send to China; it took its place between coral, genuine pearls, precious stones, amber, etc. (*Wei Tsang t'u chi*, 1792, Ch. A, p. 17).

[3] R. LYDEKKER, The Game Animals of India, p. 30.

[4] Sikhim and Bhutan, p. 322 (London, 1909).

rhinoceros in a few of the lower valleys of Bhūtan, though not common. In Tibet proper, the animal does not occur at present, but fossil remains of it were discovered at high elevations by Sir R. Strachey near the source of the Tsang-po.[1] The early Tibetan translators, when they correctly rendered the Sanskrit word *gaṇḍa* by *bse*, must have entertained an exact notion or reminiscence of the rhinoceros; but the animal, as everywhere, became rapidly exterminated in those territories where Tibetans had occasion to behold and to hunt it, while the inhabitants of Central Tibet seldom or never had this opportunity. For this reason, also in Tibet, the rhinoceros underwent the process of fabulous "unicornization." Reports of a Tibetan unicorn greatly stirred the imagination of European explorers, and gave rise to wild speculations. Captain S. TURNER,[2] I believe, was the first to circulate such a report, being informed by the Rāja of Bhūtan that he was in possession of a unicorn, a sort of horse, with a horn growing from the middle of its forehead; it was kept at some distance from Tassisudon, the capital, and the people paid it religious respect, but Turner had no occasion to see it. The Lazarist fathers Huc and Gabet, who reached Lhasa in 1846, are said to have even claimed the discovery in Tibet of the unicorn of Scripture. Major Latter, in the first part of the nineteenth century, was very sanguine of being able to find a veritable unicorn in the interior of Tibet: he was advised by a native that he had often seen these animals, which "were fierce and exceedingly wild and seldom taken alive, but frequently shot;" and that they are commonly met with on the borders of the great desert, about a mile from Lhasa. From a drawing which accompanied Major Latter's communication, the presumed unicorn was something like a horse, but with cloven hoofs, a long, curved horn growing out of the forehead, and a boar-shaped tail. Under the heading "Unicorns in Asia,"[3] a writer revived the opinion of the existence of veritable unicorns, such as were reported to Major Latter: the animal in question was of the deer kind, having a single horn at the top of the head; it was known by the name of the *Seru*.[4] Then

[1] A. R. WALLACE (The Geographical Distribution of Animals, Vol. II, p. 214; also Vol. I, p. 122) refers to this in the words that more than twenty species of extinct rhinoceroses are known, and that one has even been found at an altitude of 16,000 feet in Tibet. Mr. L. A. WADDELL (Lhasa and its Mysteries, p. 315) has this suggestive remark: "The dense rank growth of wildflowers and weeds along the borders of the fields was such as to make this part of the Tsang-po oasis a quite suitable habitat for the rhinoceros, and to bring the discovery of the fossil remains of that animal by Sir R. Strachey near the source of this river into harmony with present-day facts."

[2] An Account of an Embassy to the Court of the Teshoo Lama, p. 157 (London, 1800).

[3] *Asiatic Journal*, Vol. II, 1830.

[4] Compare W. HAUGHTON, On the Unicorn of the Ancients (*Annals and Magazine of Nat. Hist.*, Vol. IX, 1862, pp. 368, 369).

the famous J. D. HOOKER[1] took the matter in hand, and published a sketch of the Chiru Antelope with the addition "unicorn of Tibet," a name which he thought was suggested by the animal when viewed in profile. It is identified as *Antilope* or *Pantholops Hodgsoni*, having been described by HODGSON.[2] It remains a mysterious creature, and little is known about it.[3] P. LANDON[4] denies that this antelope, as pointed out by Hooker, occurs near the Cholamu Lake at the present day. L. A. WADDELL[5] reports under *Chiru*, "None were seen and the people did not appear to know of any."

In Anglo-Indian nomenclature we now find two words in use, *chiru* and *seru*, the latter also Anglicized as *serow*, on which YULE, in his "Hobson-Jobson," unfortunately has not commented. *Serow* has become a household stock-word of the Anglo-Indian sportsman to denote a large variety of different Indian, Burmese, and Tibetan antelopes.[6] G. SANDBERG[7] recognizes in it the Tibetan word *bse-ru*, and identifies the latter with the species *Nemorhaedus bubalinus*. JÄSCHKE[8] says under *bse* or *bse-ru*, "Unicorn, 'tchiru,' an antelope, probably the same as *gtsod*," with reference to Hooker. CHANDRA DAS,[9] who has fully

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[1] Himalayan Journals, 2d ed., p. 401 (London, 1893).

[2] *Journal As. Soc. Bengal*, 1846, p. 338.

[3] N. KUEHNER, Description of Tibet, in Russian (Vol. I, pt. 2, p. 157; and notes p. 77).

[4] Lhasa, Vol. I, p. 393.

[5] Lhasa and its Mysteries, p. 483.

[6] R. LYDEKKER, The Game Animals of India, pp. 139 *et seq.* M. DAUVERGNE (*Bull. Musée d'hist. nat. de Paris*, Vol. IV, 1898, p. 219) describes the animal as follows: "Serow; Ramu de Kashmir, ou chèvre-antilope, *Nemorhaedus bubalinus* Hodgs. Habite les rochers escarpés et broussailleux des montagnes, à une hauteur de 3,000 mètres, dans l'Himalaya et Kashmir. Très difficile à chasser, il tient tête aux chiens, qu'il fait rouler dans les précipices. C'est généralement l'hiver qu'on le chasse, car alors il se détache sur la neige, grâce à la teinte noire de sa robe, et comme il est très lourd, il s'effondre et se fait prendre par les chiens."

[7] Tibet and the Tibetans, p. 297. On p. 298 he points out that the word *chiru* should be written *gcig ru* ("one horn"). This derivation is impossible, as "one horn" can be in Tibetan only *ru* (or *rva*) *gcig*, or *ru žig*. The name Ekaçriṅga is rendered into Tibetan *Rva gcig-pa*. (Compare also *Hor c'os byuṅ*, ed. HUTH, p. 16, l. 14.) *Chiru* is simply a local or dialectic variation of *se-ru*. Strange words exert a singular fascination upon the human mind. The Anglo-Indian *chiru* has had several good fortunes. Thanks to the imaginative powers of G. SCHLEGEL (Uranographie chinoise, p. 587), it has found cheerful hospitality in Chinese astronomy, the Chinese animal *hiai* being wrongly identified with it. A few years ago the *chiru* was deemed worthy of the honor of being admitted into the sanctum of classical philology. O. KELLER (Die antike Tierwelt, Vol. I, p. 293) identifies the Indian Oryx mentioned by Aelian, and the Oryx on the Hydaspes mentioned by Timotheus, with the Tibetan *chiru*,— a venture which has no foundation; in fact, the oryx of Aelian is located in India, and corresponds to the Indian black-buck.

[8] Tibetan-English Dictionary, p. 593. Skr. *khaḍga* rendered by JÄSCHKE "a certain animal" is the rhinoceros.

[9] Tibetan-English Dictionary, p. 1319.

recognized the original meaning of *bse-ru* as "rhinoceros," proceeds to state that in Tibet the word is applied to the clumsy-looking deer known to sportsmen as the "serow." Both lexicographers, in this respect, rely on the statements of the European sportsmen, but leave us in the dark as to the opinion of the Tibetans on the point. The question arises, — Do those European speculations on a Tibetan unicorn identified with an antelope styled *se-ru* have any foundation in a Tibetan tradition? The French Missionaries, in their Tibetan Dictionary (p. 1056), give a slight intimation of the existence of such a tradition by remarking that the animal *bse-ru* is believed in Tibet to belong to the genus of goats (*ex genere caprarum*), but that nobody has ever seen it; the latter clause doubtless means that nobody has encountered this wild goat in the shape of a unicorn which it is fabled to be. I. J. SCHMIDT[1] had a certain presentiment of the matter when he annotated a passage in his translation of the Geser Saga, that the Tibetan and Mongol name of the unicorn is *seru*, that the existence of this animal in the wild mountains of Tibet is asserted in Tibetan books, but that the description given of it does not at all fit the rhinoceros. The unicorn which stopped Chinggis Khan on his expedition to Tibet and induced him to return,[2] judging from the description given by the Tibetan historian,[3] is identical with the Chinese *k'i-lin*, as already recognized by G. SCHLEGEL.[4] Another association of the unicorn with Tibet appears on the tribute painting ascribed to Li Kung-lin (Li Lung-mien), where BONIN[5] has pointed it out among the envoys from the Kingdom of Women. In the Polyglot Dictionary of the Emperor K'ien-lung[6] we find the Tibetan

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[1] Die Thaten Bogda Gesser Chan's, p. 56 (St. Petersburg, 1839). Compare also p. 125.

[2] G. HUTH, Geschichte des Buddhismus in der Mongolei, Vol. II, p. 25.

[3] "An animal of green color with the body of a stag, the tail of a horse, and a single horn on its head."

[4] *T'oung Pao*, Vol. VI, 1896, p. 433. According to Chinese tradition, however (see the texts of *Kui sin tsa chi* and *Ch'o keng lu*, in *T'u shu tsi ch'êng*, Chapter *kio tuan, ki shi*, p. 1 b), the marvellous animal opposing the conqueror belonged to the class of unicorns (*kio tuan*), and is described as a hundred feet high, with a single horn like that of the rhinoceros, and able to speak a human language.

[5] Le royaume des neiges, pp. 40, 299 (Paris, 1911). M. Bonin's description of this painting is based on a copy of it in the Musée Guimet, which is certainly not the original from the hand of Li Kung-lin; it is a much later and somewhat weak copy, as stated also by TCHANG YI-TCHOU and HACKIN (La peinture chinoise au Musée Guimet, p. 59). On Plate V of the latter publication, the portion of the picture illustrating the envoys of the Kingdom of Women is reproduced; the unicorn is a wretched production. Mr. Freer of Detroit owns two copies of the same painting, both far superior to the one in the Musée Guimet. One of these offers such high qualities as come very near to an original. The other is a copy of the Yüan period, executed in 1364.

[6] Appendix, Ch. 4, p. 53.

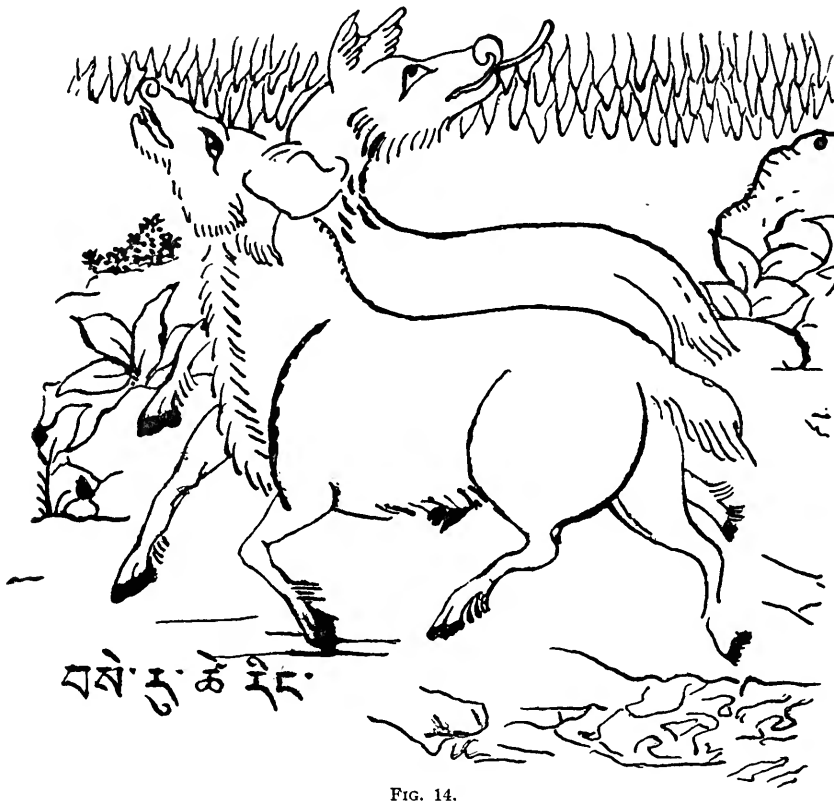

FIG. 14.
Se-ru as Emblem of Long Life (from Tibetan Wood-engraving).

word *bse-ru* rendered by Chinese *shên yang* ("divine goat");[1] and this is thus far the only literary indication which I am able to trace in regard to a Tibetan unicorn of goat-like character.[2]

Such a *bse-ru* is represented on a Tibetan woodcut as an emblem of long life (*bse-ru ts'e riṅ;* Fig. 14). The picture, of which it forms a

[1] The Manchu has the artificial formation *śengkitu*, and three other words besides,— *śacintu*, *tontu*, and *tubitu* (see SACHAROV, Manchu-Russian Dictionary, p. 734),—for the designation of this unicorn. It will be remembered that the term *shên yang* occurs in *Hou Han shu* in defining the unicorn *hiai chai* (p. 115, note 2).

[2] The Mongols have adopted *seru* as a loan-word from Tibetan in the sense of "rhinoceros," as stated by KOVALEVSKI and GOLSTUNSKI in their Mongol dictionaries; but they take the word also in the sense of a "deer," as shown by the Mongol translation of the Tibetan medical work translated into Russian by A. POZDNÄYEV (Vol. I, p. 288). The Mongol equivalent of Tibetan *bse-ru* and Chinese *si kio* is here *bodi gürügäsün* ("the animal of the bodhi," Sanskrit *bodhimṛiga*); that is, the gazelle. Besides, the Mongols have a seemingly indigenous word for "rhinoceros," — *kiris*, *keris*, or *kers-un äbär*.

part, is known as "the six subjects of long life" (*ts'e riṅ drug skor*). These are,— the Buddha Amitāyus (the Buddha of Endless Life), the long-lived wishing-tree (*dpag bsam šiṅ ts'e riṅ*) figured as a peach-tree in Chinese style, the long-lived rocks (*brag ts'e riṅ*), the Chinese God of Longevity Shou-sing (in Tibetan *Mi ts'e riṅ*) seated on a mat and holding a rosary, a pair of cranes (*kruṅ kruṅ ts'e riṅ*) pecking at some peaches (*k'am-bu*) that are planted in a jar, and a pair of *bse-ru*. Though apparently inspired by the deer, which is the emblem of the Chinese God of Longevity, their outlines considerably differ from the latter, and approach the Tibetan notion of the appearance of a *bse-ru;*[1] but, curiously enough, they are without any horns. There can be little doubt, accordingly, that in recent times, when the rhinoceros had almost vanished from the memory of the Tibetan people, the word *bse-ru* was transferred to a species of deer or antelope; and, as the ancient tradition of the *bse-ru* being a single-horned animal had persisted through the centuries, the single horn, in popular imagination, was fixed on the antelope. When we inquire why it was just the antelope, and not any other animal on which the idea of a unicorn was projected, the story of Ekaçṛiṅga presents itself again as the happiest solution. We know that this legend, in a Tibetan translation, has been incorporated in the Kanjur; and A. SCHIEFNER[2] has translated it from this version. It is likewise extant in Kshemendra's Avadānakalpalatā, of which a literal versified rendering, and an abridged prose edition made for children by order of the Fifth Dalai Lama, exist in the Tibetan language. This plain version has rendered the story immensely popular among Tibetans; and, as pointed out, it is current also in a dramatized form. The Tibetan mask of Ekaçṛiṅga (Plate X) is equipped with an unmistakable antelope-horn.[3] The psychological process is therefore quite clear. The rhinoceros was grad-

[1] My explanation is based on the interpretation of this woodcut given me by an intelligent Lama. A. GRÜNWEDEL, in his Russian Description of the Lamaist Collection of Prince Uchtomski (*Bibl. Buddhica*, No. 6, p. 26), has figured a similar woodcut, but without explanation. The God of Longevity bears the Mongol legend *Tsaghan Åbughän* ("The White Old Man"), who is certainly, as stated on p. 117, a national Mongol deity; but from an iconographic point of view, as he appears in Grünwedel's drawing, he is nothing but a copy of the well-known Chinese God of Longevity.

[2] In RALSTON, Tibetan Tales, p. 253.

[3] On the lid of a Tibetan censer in the Field Museum (Cat. No. 122,522) are represented the full figures of two gazelles opposite and turned away from each other (the wheel of the law being placed between them), the well-known Buddhist motive symbolizing Buddha's first sermon in the Deer-Park (GRÜNWEDEL, Buddhist Art in India, p. 143). One of these is provided with a single horn on its forehead; the other, apparently conceived as the doe, is hornless. The former seems suggested again by a reminiscence of Ekaçṛiṅga, but it is not known to me whether the Tibetans would name it *bse-ru*. Other Tibetan censers are surmounted by a monster of Chinese style, showing a horn on its nose and another on its forehead,— manifestly derived from the two-horned rhinoceros.

ually forgotten by the people, the word *bse* or *bse-ru* of this meaning continued in literature; the people retained the recollection of its being a single-horned animal, and in their attempts at finding this creature, the legend of Hermit Single-Horn, the son of an antelope or gazelle, flashed into their minds; so that the unicorn *bse-ru* was finally identified with a species of antelope named for this reason *bse-ru*. This unicorn *bse-ru* we now recognize also in the Chinese drawing of *Chêng lei pên ts'ao* (Fig. 13). Since the proof is now established that the interaction and intermingling of deer and rhinoceros have taken place in China, in Tibet, and in the West with the first conspicuous allusion in the *Cyranides*,[1] and that this process of adjustment and affiliation has radiated from the Indian legend of Single-Horn born from a gazelle, we are justified in concluding that the foundation, or at least the commencement, of this transformation, must have arisen in India. The development of the matter in Tibet shows sufficiently that Ekaçriṅga is disguised also under our Chinese illustration. So much about the latter.

A most interesting psychological parallel to the representations of the rhinoceros in China is formed by the ostrich. We now know from the reproductions of CHAVANNES[2] that in the T'ang period the ostrich was chiselled in stone in a very naturalistic manner on the imperial burial-places (Fig. 15).[3]

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[1] A counterpart of the rhinoceros of cervine character occurs also among the Arabs. In Ethiopic, the word *charīsh* corresponds to the *monokeros* of the Septuaginta (JOB, XXXIX, 9), and in all probability signifies the "rhinoceros." According to Qazwīnī, *charish* is an animal of the size of a ram, of great strength and swiftness, with a single horn on its forehead like the horn of the rhinoceros (*karkadan*). Some Arabic lexicographers even take it for a marine animal, others identify it directly with the rhinoceros. HOMMEL (Die Namen der Säugetiere bei den südsemitischen Völkern, p. 333, Leipzig, 1879), to whom this information is due, regards the Arabic word as a loan from Ethiopic. Damīrī, in his Lexicon of Animals, avails himself of this word in translating the text of the *Physiologus* regarding the unicorn (K. AHRENS, Das Buch der Naturgegenstände, p. 43). What escaped Hommel is the fact that Cosmas Indicopleustes (MCCRINDLE, Ancient India as described in Class. Lit., p. 157) states that the Ethiopians, in their language, call the rhinoceros *arou* or *harisi*. G. JACOB (Studien in arabischen Geographen IV, p. 166, Berlin, 1892) holds that Qazwīnī is the only Arabic author to discriminate between *charīsh* and the rhinoceros, and identifies the former with the Saiga-antelope of southern Russia. The rendering "unicorn" by the Seventy and the English Bible is erroneous. The Hebrew word, thus translated, is *reem*, corresponding to Assyrian *rīmu*. It is now generally interpreted as a wild buffalo, and on the basis of Assyrian monuments is ingeniously identified with *Bos primigenius* by J. U. DÜRST (Die Rinder von Babylonien, pp. 8–11, Berlin, 1899). The animal, called in Hebrew *behemoth* (JOB, XL, 15–24), and formerly taken for the rhinoceros (p. 83), is the hippopotamus of the Nile. The Bible does not mention the rhinoceros or the unicorn.

[2] *Mission archéologique*, Nos. 458, 459, 472, 481.

[3] These ostriches belong to the very best ever executed in the history of art. They are much superior to any representations of the bird by the Egyptians (O. KELLER, Die antike Tierwelt, Vol. II, p. 170), the Assyrians (P. S. P. HANDCOCK, Mesopotamian Archaeology, p. 307), and the classical nations (IMHOOF-BLUMER and O. KELLER, Tier- und Pflanzenbilder auf Münzen und Gemmen, Plates V, 52; XXII, 33–36).

It was the great general and explorer Chang K'ien, the first modern Chinese, who during his peregrinations to the west, among many other novel things, discovered also the ostrich for his compatriots. After he had negotiated his treaties with the countries of the west, the King of Parthia (An-si) sent an embassy to the Chinese Court and presented large bird's eggs,[1] which most probably were ostrich eggs. A live

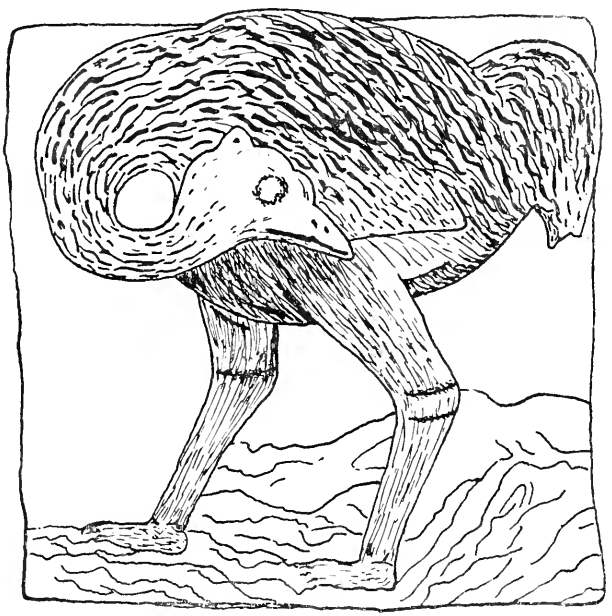

FIG. 15.
Ostrich sculptured in Stone, T'ang Period (Sketch after Chavannes, Mission, No. 472).

specimen (or specimens) of the "large bird of T'iao-chi" was despatched as tribute from the same country in 101 A.D., and termed in China "Parthian bird."[2]

They are not made after any western artistic models, but constitute invincible proof for the fact that the Chinese artists in the T'ang era observed and studied nature, and worked after natural models. This case may be recommended for due consideration to the adherents of the preconceived dogma that all Chinese art is copied from that of the west, and that no art is possible outside of the sanctum of classical art.

[1] *Shi ki*, Ch. 123, p. 6; HIRTH, China and the Roman Orient, p. 169. FORKE (*Mitteilungen des Seminars*, Vol. VII, 1904, p. 139) wrongly says that the *Shi ki* mentions "large birds (ostriches) with eggs as large as earthen pots as a peculiar feature of T'iao-chi;" this is not in the text of the *Shi ki*, which speaks only of large bird's eggs, but it is found in *Ts'ien Han shu* (Ch. 96 A, p. 6 a). The trade in ostrich eggs in the west is of very ancient date (O. KELLER, *l. c.*, p. 168).

[2] *Hou Han shu*, Ch. 118, p. 9; CHAVANNES, *T'oung Pao*, 1907, p. 178. M. CHAVANNES advances the theory that the Chinese erroneously applied to the ostrich the

It was styled also "great horse bird."[1] Its resemblance to the camel was emphasized, and hence the name "camel-bird" was formed. Living ostriches were sent to China again in the T'ang period. In 650 Tokhāra offered large birds seven feet high, of black color, with feet resembling those of the camel, marching with outspread wings, able to run three hundred *li* a day, and to swallow iron; they were styled camel-birds.[2] The T'ang artists, accordingly, were in a position to witness and to study live specimens of the bird; and the fact that they really did so leaks out in the realistic high-relief carvings referred to above. But what do we find among the latter-day draughtsmen who endeavored to illustrate the creature for books?

Fig. 16 shows the woodcut with which the *Pên ts'ao kang mu* of Li Shi-chên is adorned. BRETSCHNEIDER (*l. c.*), in a somewhat generous spirit, designated it as "a rude, but tolerably exact drawing of the camel-bird." FORKE[3] holds that this ostrich is pictured like a big goose, but with the feet of a mammal; and he comes far nearer to the truth. Li Shi-chên, born in K'i chou in the province of Hu-pei, spent his life-

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name "bird of Parthia" (An-si, Arsak), but that in fact these birds originated from T'iao-chi, that is, Desht Misan or Mesene, where ruled Arabic princes who had all facilities for obtaining ostriches from Arabia. This theory does not seem necessary to me. As already observed by BRETSCHNEIDER (*Notes and Queries*, Vol. IV, p. 53; and Mediæval Researches, Vol. I, pp. 144–145), the ostrich is described in *Wei shu* as a bird indigenous to Persia (compare also *Sui shu*, Ch. 83, p. 7 b; *Pei shi*, Ch. 97, p. 8), and is again mentioned in the T'ang Annals as a Persian bird; there is, on the other hand, the testimony of the Persian authors and of Xenophon (*Anabasis*, I, 5), who saw the bird on the banks of the Euphrates; and up to the present time, ostriches are met with, though not frequently, in western Asia. HANDCOCK (*l. c.*, p. 25) observes that the ostrich appears in Mesopotamian art at a late period, though in Elam rows of ostriches are found depicted on early pottery, closely and inexplicably resembling the familiar ostriches on the pre-dynastic pottery of ancient Egypt; it sometimes, however, assumes a conspicuous position in the embroidery of an Assyrian king's robe, and is found also on a chalcedony seal in Paris. Further references to Assyrian representations are given by O. KELLER (*l. c.*, pp. 172, 594). In ancient Syria, the ostrich is well attested by the interesting description in JOB (XXXIX, 13–18), — Moses prohibited the flesh of the bird as unclean food,— and by reliefs at Hierapolis of Roman times. It further occurs in the Syrian version of the *Physiologus*. BREHM (Tierleben, Vol. III, p. 692) sums up, "In Asia, the area of the habitat of the ostrich may formerly have been much more extended than at present; but even now, as established by Hartlaub with as much diligence as erudition, it occurs in the deserts of the Euphrates region, especially the Bassida and Dekhena, in all suitable localities of Arabia, and finally in some parts of *southern Persia*. Vámbéry even learned that it is still sometimes found on the lower course of the Oxus, in the region of Kungrad (?), and is named there camel or coffer bird." Also in the Encyclopædia Britannica (Vol. XX, p. 362) it is said, "It is probable that it still lingers in the wastes of Kirwan in eastern Persia, whence examples may occasionally stray northward to those of Turkestan, even near the lower Oxus."

[1] *Ts'ien Han shu*, Ch. 96 A, p. 6 b. In this passage the bird is noticed as a native of Parthia, and commented on by Yen Shi-ku.

[2] CHAVANNES, Documents, p. 156. In the period K'ai-yüan (713–741) ostrich eggs were sent from Sogdiana (*ibid.*, p. 136).

[3] *L. c.*, p. 138.

time as magistrate of the district of P'êng-k'i in the prefecture of T'ung-ch'uan, province of Sze-ch'uan. The chances are that he had never seen the sculptures of ostriches in the mausolea of the T'ang emperors near Li-ts'üan, Shen-si Province; but, be this as it may, his woodcut proves that the T'ang tradition of the representation of the ostrich was wholly unknown to him, and moreover, that he himself had never beheld an ostrich. We have no records to the effect that ostriches were transported to China during the Ming period; and they were then probably known merely by name. Li Shi-chên's production is simply a reconstruction based on the definitions of the texts ("marching with outspread wings, feet of a camel," etc.); the only exact feature is the two toes, which are mentioned also in the older descriptions of the bird; everything else, notably the crane's head, is absurd, and a naturalist of the type of Bretschneider should have noticed this.

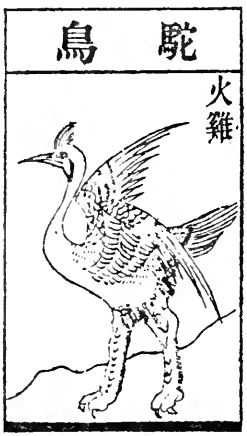


FIG. 16.
Ostrich (from *Pên ts'ao kang mu*).

In the great cyclopædia *T'u shu tsi ch'êng*, published in 1726, we find a singular illustration of the ostrich, which is reproduced in Fig. 17 as an object-lesson in Chinese psychology. This accomplishment must open every one's eyes: here we plainly see that the illustrator had not the slightest idea of the appearance of an ostrich, but merely endeavored, with appalling result, to outline a sketch of what he imagined the "camel-bird" should look like. He created a combination of a camel and a bird by illustrating the bare words, as they struck his ears, without any recourse to facts and logic; he committed the logical blunder (so common among the Chinese from the days of the Sung period) of confounding a descriptive point of similarity with a feature of reality. All Chinese texts are agreed on the point that the bird is just like a camel, or conveys that impression. This case is most instructive in disclosing the working of the minds of the recent Chinese illustrators, and in exhibiting the value due to their productions. It would not do in the present case to deny that this figure is intended for an ostrich, to define it as a new animal species, a "bird-shaped biped camel" (something like an *Avi-camelus bipes*), and to conclude that the Chinese term *t'o niao* does not denote the ostrich. On the contrary, we have to conclude that illustrations of this character are out and out valueless for our scientific purposes, that definitions of an animal cannot be deduced from them, but that all reasoning on the nature of the respective animal

FIG. 17.
Alleged Ostrich (from *T'u shu tsi ch'êng*).

can be based solely on the texts.[1] The illustrations are posterior in time and mere accessories, and, even if fairly sensible, of sheer secondary importance; in each and every case, however, if utilized as the basis for any far-reaching conclusion, their history, sources, and psychological foundation must be carefully examined. Another impressive lesson to be derived from the case of the ostrich is that China, which by virtue of a widely accepted school opinion appears to us as the classical soil of ultra-conservative perseverance of traditions, is very liable also to lose traditions, and even rather good ones. The excellent ostrich representations of the T'ang have not been perpetuated, but have remained as isolated instances. Indeed, they seem to have remained unknown to Chinese artists, archæologists, and naturalists, and hidden away in seclusion and oblivion until discovered by M. Chavannes. It is this very China unknown to the Chinese, which, as research advances, will become our most attractive subject of study.

We referred above (p. 100) to the fact that the ancient illustrations to the *Erh ya* are lost, and that Kuo-P'o's sketches of the rhinoceros may have been nearer to the truth. In now raising the question whether any representations of the animal are handed down in the ancient monuments of China, we naturally remember the primeval form of writing that mirrors the stage of her primitive culture. The celebrated Catalogue of Bronzes, the *Po ku t'u lu*, published by Wang Fu in the period Ta-kuan (1107–1111), has preserved to us (Ch. 9, p. 23) two ancient symbols which are veritable representations of the single-horned rhinoceros *se* (Fig. 18). They are placed on the ends of a handle of a bronze wine-kettle attributed to the Shang dynasty (B.C. 1766–1154). The explanatory text runs as follows: "The two lateral ears of the vessel are connected by a handle, on which are chased two characters in the shape of a rhinoceros (*se*). When it is said in the *Lun yü* that 'a tiger and rhinoceros escape from their cage,'[2] it follows that the rhinoceros is

[1] And these must certainly be handled with a critical mind, as, for instance, a glance at the chapter "Ostrich" in the *T'u shu tsi ch'êng* will convince one. The first extract there given from the *Ying yai shêng lan* of 1416 deals with the "fire-bird" of Sumatra, which is the cassowary (see GROENEVELDT, in *Miscell. Papers relating to Indo-China*, Vol. I, pp. 198, 262). *Mo k'o hui si*, a work written by P'êng Ch'êng in the first half of the eleventh century (BRETSCHNEIDER, Bot. Sin., pt. 1, p. 174), is quoted as making a contribution to the subject in question, because a bird able to eat iron and stone is mentioned there; this bird, however, called *ku-t'o*, occurs in Ho-chou, the present Lan-chou fu in Kan-su, is built like an eagle, and over three feet high! Accordingly we here have a wrong association of ideas, and the subject has nothing to do with the ostrich. The editors of the cyclopædia blindly follow the uncritical example of Li Shi-chên, who embodied the same in his notes on the ostrich. Finally, Verbiest's *K'un yü t'u shuo* is laid under contribution, as he describes the "camel-bird" of South America. This is the Rhea belonging to the Ratite family, but distinguished from the true ostrich by its possession of three toes.

[2] LEGGE, Chinese Classics, Vol. I, p. 306; and above, p. 74, note 4.

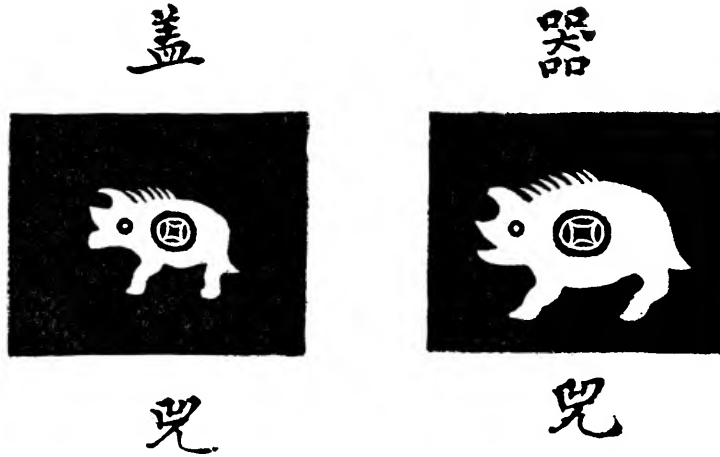


FIG. 18.
Single-Horned Rhinoceros on a Bronze Kettle attributed to Shang Period (from *Po ku t'u lu*, edition of 1603).

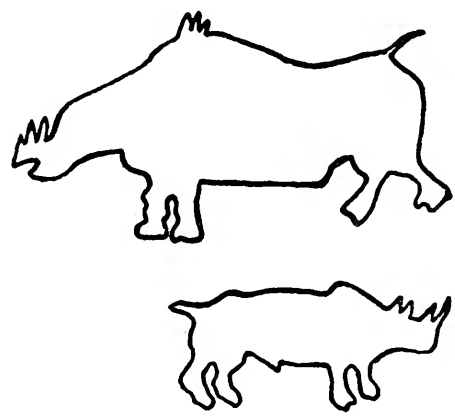


FIG. 19.
Bushman Sketches of Rhinoceros (from E. Cartailhac and H. Breuil, La caverne d'Altamira, pp. 180, 189).

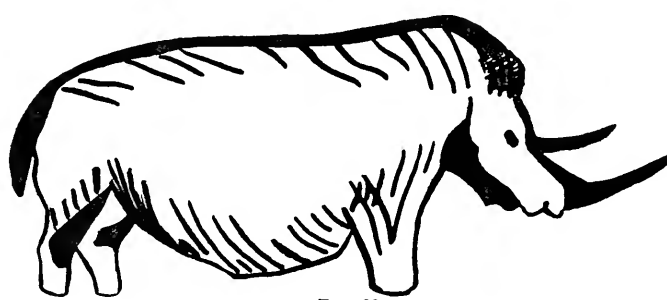


FIG. 20.
Red Drawing of a Two-Horned Rhinoceros, from Font-de-Gaume (after Capitan and Breuil).

not a tame animal. Indeed, it inflicts injury on man; and for this reason the ancients availed themselves of it to fine a person a cup of wine, which is expressed by the phrase 'to raise the goblet of rhinoceros-horn.'[1] This goblet receives its name from the rhinoceros, and so it is proper also that there should be wine-kettles with the emblem of the rhinoceros. On the two ends of the handle of this vessel is pictured a rhinoceros with head and body complete, the latter having the shape of a glutton (*t'ao t'ie*). This certainly indicates that it symbolizes a warning. In this manner all vessels were decorated during the Shang dynasty, and it is by such symbolic forms that they are distinguished from those of the Chou." Whatever the rough character of these two sketches transmitted by the *Po ku t'u lu* may be,[2] the single-horned rhinoceros is here clearly outlined with a naïve and refreshing realism, such as could be spontaneously produced only by the hand of primitive man, who with a few forceful outlines recorded his actual experience of the animal. Here we do not face the narrow-breasted academic and philological construction of the scholars of the Sung period, but the direct and vigorous impression of the strong-minded hunter of past ages, who was formed of the same stuff as the Bushman of southern Africa and palæolithic man living in the caves of Spain and France. No bridge spans the chasm yawning between the Shang and Sung productions. The Shang rhinoceros breathes the same spirit as its companions on the rock paintings of the Bushman (Fig. 19), and in the palæolithic cave of Font-de-Gaume in France (Fig. 20). The general form of the

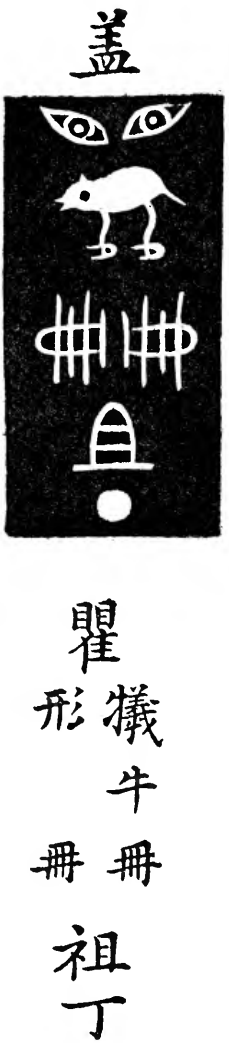


FIG. 21.
Inscription on Bronze Kettle attributed to Shang Period, showing Pictorial Form of Sacrificial Bull (from *Po ku t'u lu*).

[1] Quotation from *Shi king* (see LEGGE, Chinese Classics, Vol. IV, p. 233). The rhinoceros-horn goblets are discussed below, p. 167.

[2] Another cruder and more conventionalized symbol of the rhinoceros *se*, in which, however, the single horn is duly accentuated, is figured in the same work (Ch. 1, p. 25 b), as occurring in the inscription on a round tripod vessel (*ting*) attributed to the Shang period.

animal is well grasped in the Chinese sketch, and the shape of the horn is correctly outlined. For the sake of comparison, and in order to show that the primitive Chinese man knew very well how to discriminate between a rhinoceros and an ox, the contemporaneous symbol for the sacrificial bull (*hi niu*), and designs of recumbent oxen (explained as such in the *Po ku t'u lu*) on the lid of a bronze vessel, are here added (Figs. 21 and 22). We arrive at the result, which will be corroborated by other evidence, that in the earliest stage of Chinese culture the animal *se* was the single-horned rhinoceros.[1]

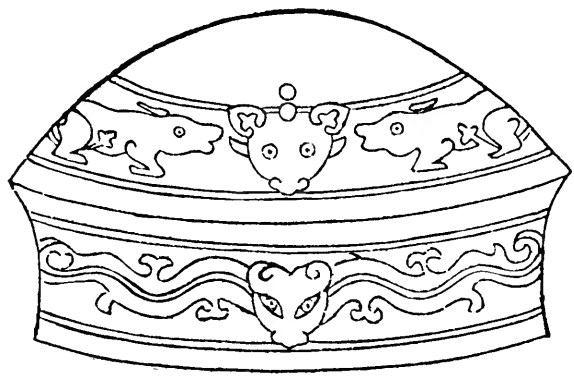


FIG. 22.
Lid of Bronze Kettle attributed to Shang Period, with Designs of Recumbent Oxen (from *Po ku t'u lu*).

Before plunging into the Chinese sources relative to the rhinoceros, it will be well to remember that all living species of rhinoceros are by most naturalists referred to a single genus, which is found living in Africa and south-eastern Asia, while formerly it was widely distributed over the entire Old World (with the exception of Australasia), ranging as far north as Siberia.[2] Three species exist in Asia, — *Rhinoceros unicornis*, the great one-horned rhinoceros, at the present day almost entirely restricted to the Assam plain, but formerly extensively distributed over India; [3] *Rhinoceros sundaicus*, called also the Javan rhinoceros, the smaller one-horned rhinoceros, found in parts of eastern Bengal (the Bengal Sunderbans near Calcutta), in Assam, throughout Burma, the Malay Peninsula, Sumatra, Java, and Borneo; and *Rhinoceros* (or *Dicerorhinus*) *sumatrensis*, the Asiatic two-horned rhinoceros, rare in Assam, ranging from there to Burma, Siam, the Malay Peninsula,

[1] The later developments of the early forms of the symbol *se* may be viewed by those who are debarred from Chinese sources in F. H. CHALFANT, Early Chinese Writing, Plate II, No. 17 (*Memoirs Carnegie Museum*, Vol. IV, No. 1, Pittsburgh, 1906). According to a communication of the late Mr. CHALFANT (Dec. 18, 1913), the ancient bone inscriptions twice reveal a character which may be identified with the word *se*, while the character for *si* has not yet been traced in them.

[2] Hornless species formerly occurred in North America, where the group has existed since the latter part of the Eocene period.

[3] Chiefly after W. T. BLANFORD, The Fauna of British India; Mammalia, pp. 471–477.

Sumatra, and Borneo.[1] Judging from this remarkable case of discontinuous distribution[2] and from historical records, there is every reason to believe that in ancient times this animal, like all the large mammals now facing extinction, was distributed over a much larger geographical area; and this fact is fully confirmed by palæontological research, as well as by the records of the Chinese.

For the purpose of our inquiry it should be particularly borne in mind that it is in the territory of Assam where we meet the three species together. "The Imperial Gazetteer of India"[3] states, in the chapter on Assam, "Rhinoceros are of three kinds: the large variety (*unicornis*), which lives in the swamps that fringe the Brahmaputra; the smaller variety (*sondaicus*), which is occasionally met with in the same locality; and the small two-horned rhinoceros (*sumatrensis*), which is now and again seen in the hills south of the Surmā Valley, though its ordinary habitat is Sumatra, Borneo, and the Malay Peninsula." Assam is inhabited by numerous tribes, a large portion of which ranges among the Indo-Chinese family. What now holds good for Assam, as will be recognized from a survey of Chinese sources, two millenniums and more ago was valid for the south-western and southern parts of China, the Tibeto-Chinese borderlands, and Indo-China in its total range; in short, the historical fact will be established that in the past the rhinoceros in its two main varieties, the single-horned and two-horned, had occupied the whole territory of south-eastern Asia.

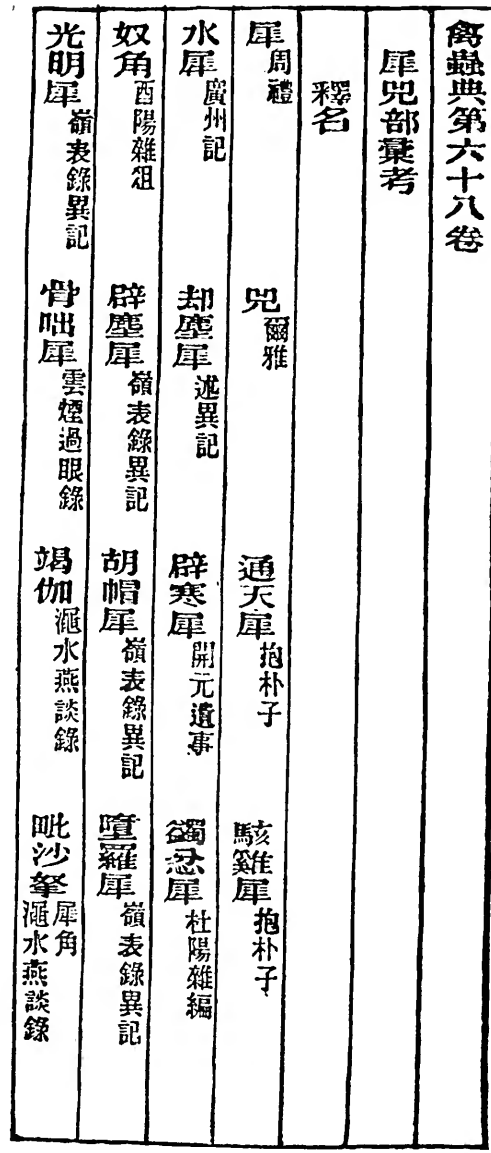
The greater part of the knowledge possessed by the Chinese in regard to the rhinoceros has been digested by Li Shi-chên in his materia medica *Pên ts'ao kang mu* (Ch. 51 A, p. 5) completed in 1578 after twenty-six years' labor. He first quotes a number of authors beginning from the fifth century, and then sums up the argument in his own words. This discourse is also of value for zoögeography, in that it contributes materially to the possibility of reconstructing the early habitats of the rhinoceros in China. The text of this work is here translated *in extenso*, but rectified and supplemented from the materia medica of the Sung period, the *Chêng lei pên ts'ao*, first printed in 1108.[4]

[1] Al-Bērūnī (973–1048) states that the rhinoceros existed in large numbers in India, more particularly about the Ganges (SACHAU, *l. c.*, Vol. I, p. 203). In the sixteenth century it occurred in the western Himālaya and also in the forests near Peshāwar (YULE and BURNELL, Hobson-Jobson, p. 762). LINSCHOTEN found it in great numbers in Bengal (*ibid.*, p. 1); so also GARCIA AB HORTO (*l. c.*, p. 66): multos in Cambaya Bengala finitima, et Patane inveniri tradunt. ABUL FAZL ALLAMI (1551–1602), in his *Ain I Akbari* written in 1597 (translation of H. S. JARRETT, Vol. II, p. 281, Calcutta, 1891), mentions the occurrence of the rhinoceros among the game in the Sarkár of Sambal (near Delhi).

[2] Compare E. HELLER, The White Rhinoceros, p. 39.

[3] Vol. VI, p. 20 (Oxford, 1908).

[4] See *T'oung Pao*, 1913, p. 351.


禽蟲典第六十八卷
犀兕部彙考
釋名
犀周禮
兕爾雅
水犀廣州記
却塵犀述異記
通天犀抱朴子
駭雞犀抱朴子
奴角酉陽雜俎
辟塵犀嶺表錄異記
辟寒犀開元遺事
獨忍犀杜陽雜編
光明犀嶺表錄異記
胡帽犀嶺表錄異記
嚲羅犀嶺表錄異記
骨咄犀雲煙過眼錄
竭伽滙水燕談錄
毗沙拏犀角滙水燕談錄

Other texts of importance apt to throw light on the matter have been added from the *T'u shu tsi ch'êng* and several other works, so that the result is a fairly complete digest of what Chinese authors of the post-Christian era have to say about the rhinoceros and its horn. After this survey, we shall turn to the times of early antiquity, and discuss the subject in the light of such information as has been handed down to us from those days.

Li Shi-chên opens his discourse on the rhinoceros with the explanation of the name. "The symbol for the word *si* still has in the seal character *chuan wên* the form of a pictograph,[1] and is the name for the female rhinoceros. The *se* is styled also 'sand rhinoceros' (*sha si*). The *Erh ya i* [2] says that the words *se* and *tse* (female) approach each other in sound like the two words *ku* ('ram,' No. 6226) and *ku* ('male'). In general, *si* and *se* are one and the same. The ancients were fond of saying *se*, the people of subsequent times inclined toward the word *si*. In the northern dialects the word *se* prevails, in the southern dialects the predilection is for *si*. This is the difference between the two. In Sanskrit literature the rhinoceros is called *khaḍga*." [3]

Li Shi-chên then proceeds to quote the ancient work *Pie lu*,[4] which makes the following important statement in regard to the former localities where the rhinoceros occurred: "The habitat of the rhinoceros

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[1] This is indeed the case in the *Shuo wên* (see p. 92). The names of the rhinoceros and the various kinds of its horn are here reproduced from *T'u shu tsi ch'êng* (p. 134).

[2] An appendix to the *Erh ya* by Lo Yüan of the twelfth century (BRETSCHNEIDER, Bot. Sin., pt. 1, p. 37).

[3] Written with Nos. 1456 and 1558 (*k'et-ga*); compare EITEL, Hand-book of Chinese Buddhism, p. 76. (Other Sanskrit words for "rhinoceros" are *gaṇḍa*, *gaṇḍaka*, *gaṇḍānga*.) The work *Sheng shui yen t'an lu*, written by Wang P'i-chi about the end of the eleventh century (WYLIE, Notes, p. 195), seems to be the first to impart this Sanskrit name (see the Chinese text opposite); it further gives a Sanskrit word for the horn in the Chinese transcription *pi-sha-na* corresponding to Sanskrit *vishāṇa* ("horn"). The latter and the word *khaḍga* were among the first Sanskrit words in Chinese recognized by Abel Rémusat (see S. JULIEN, Méthode, p. 3).

[4] The *Pie lu* is not identical with the *Ming i pie lu*, as first stated by BRETSCHNEIDER (Bot. Sin., pt. 1, p. 42), but later rectified by him (in pt. 3, p. 2). It is an independent work, which must have existed before the time of T'ao Hung-king, and which was known to the latter and commented on by him. This is quite clear in the present case, as Li Shi-chên first introduces the *Pie lu*, and then proceeds, "T'ao Hung-king says." And since the latter starts with the phrase "at present," it is apparent that he had the words of the *Pie lu* before his eyes, and gave his definition in distinction from the older work. This is also proved by the text of the *Chêng lei pên ts'ao* published in 1108 by the physician T'ang Shên-wei (edition of 1523, Ch. 17, fol. 21), where the two quotations are separated and marked by type of different size. As in Bretschneider's opinion nearly all the geographical names occurring in the *Pie lu* refer to the Ts'in (third century B.C.) or Han periods, although some of them can be traced to the Chou dynasty (B.C. 1122–249), the above passage surely relates to a time antedating our era by several centuries; and it goes without saying, that as a matter of fact, in the age of the Chou and at a far earlier date, the two-horned rhinoceros must have been a live citizen in the south-western parts of China.

(*si*) is in the mountains and valleys of Yung-ch'ang and in Yi-chou;[1] Yung-ch'ang is the southern part of the present country of Tien (Yün-nan)." [2]

The next author invoked by Li Shi-chên is T'ao Hung-king (452–536), a celebrated adept of Taoism and a distinguished physician, author of the *Ming i pie lu*, a treatise on materia medica.[3] He states, "At present the rhinoceros (*si*) inhabits the distant mountains of Wu-ling,[4] Kiao-chou,[5] and Ning-chou.[6] It has two horns; the horn on the forehead is the one used in fighting.[7] There is a kind of rhinoceros styled 'communicating with the sky' (*t'ung t'ien*), whose horn is intersected by a white vein running clear through from the base to the tip; the night dew does not moisten it. It is employed as a remedy, whereby its wonderful properties are tested. In the opinion of some, this is the horn of the water-rhinoceros, which is produced in the water.[8] The Annals of the Han Dynasty speak of the horn of 'the rhinoceros frightening fowl' (*hiai ki si*): when it was placed in the rice that served as food for the chickens, they were all scared and did not dare to peck;

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[1] PLAYFAIR, The Cities and Towns of China, No. 8596 (2d ed., No. 7527, 1). In the Han period, Yi-chou was the name of a province occupying the territory of the present province of Sze-ch'uan, a part of Kuei-chou and Yün-nan (BRETSCHNEIDER, Bot. Sin., pt. 3, p. 565), while the southern part of Yün-nan is understood by the designation Yung-ch'ang. The *Pie lu*, accordingly, locates in south-western China the rhinoceros *si*, which, as follows from the comment of T'ao Hung-king, is the two-horned species.

[2] This last clause is not contained in the text of the *Chêng lei pên ts'ao*, and is doubtless a later comment, presumably derived from T'ao Hung-king's edition of the *Pên ts'ao king*, which is listed in the Catalogue of the Sui Dynasty, and according to Bretschneider's supposition, embraced likewise the text of the *Pie lu*.

[3] His biography is in *Nan shi* (Ch. 76, p. 4 b) and *Liang shu* (Ch. 51, p. 12).

[4] PLAYFAIR, No. 8112 (2d ed., No. 7080): district forming the prefectural city of Ch'ang-tê, Hu-nan Province.

[5] Northern part of the present Tonking (see HIRTH and ROCKHILL, Chau Ju-kua, p. 46).

[6] PLAYFAIR, No. 5239, 2 (4672, 2): in Lin-an fu, Yün-nan Province. Under the Tsin it was a province comprising Yün-nan and part of Kuei-chou (compare *Hua yang kuo chi*, Ch. 4, p. 1, ed. of *Han Wei ts'ung shu*).

[7] Thus the two-horned (so-called Sumatran) rhinoceros is here clearly mentioned.

[8] The rhinoceros is fond of spending the hot hours of the day immersed in water, and thence the Chinese designation "water-rhinoceros" may take its origin. In this position particularly, the animal calls to mind the water-buffalo. In ancient times it was therefore dreaded as being able to overturn boats, which is quite believable; and soldiers crossing a river were encouraged to prompt action by their commander shouting the name of the animal (CHAVANNES, Les Mémoires historiques de Se-ma Ts'ien, Vol. I, p. 225, Vol. IV, p. 37; FORKE, Lun-Hêng, pt. II, p. 322; according to FORKE, the reading of the text is *ts'ang kuang*, but as quoted in *T'u shu tsi ch'êng* and *P'ei wên yün fu* it is *ts'ang se*, as in *Se-ma Ts'ien*). The water-rhinoceros (*shui si*) is mentioned in *Kuang chou ki* (see BRETSCHNEIDER, Bot. Sin., pt. 1, No. 377) as occurring in the open sea off the district of P'ing-ting, resembling an ox, emitting light when coming out of, or descending into, the water, and breaking a way through the water (quoted in *T'u shu tsi ch'êng*).

when it was placed on the roof of a house, the birds did not dare to assemble there.[1] There is also the horn of the female rhinoceros, which is very long, with patterns resembling those of the male, but it is not fit to enter the pharmacopœia." [2]

[1] The allusion to the *hiai ki si* occurs in Ch. 108 of *Hou Han shu* (compare CHAVANNES, Les pays d'Occident d'après le Heou Han Chou, *T'oung Pao*, 1907, p. 182; and HIRTH, China and the Roman Orient, p. 79), where this kind of horn is ascribed to the country of Ta Ts'in (the Roman Orient). The legend given in explanation as above is derived from the famous Taoist writer Ko Hung, who died about 330 A.D.; and it is not accidental that the Taoist T'ao Hung-king here copies his older colleague, for the legend is plainly Taoistic in character. It is quoted in the commentary to *Hou Han shu*, but not in the text of the Annals. The view of Hirth, that it has arisen in consequence of a false etymology based on the Chinese characters transcribing a foreign word, seems to me unfounded. First, as Chavannes remarks, the foreign word supposed to be hidden in *hiai-ki* has not yet been discovered, and in all probability does not exist. Second, as will be seen from *P'ei wên yün fu* (Ch. 8, p. 87 b), the term *hiai ki si* does not occur in *Hou Han shu* for the first time, but is noted as early as the *Chan kuo ts'e* at the time of Chang I, who died in B.C. 310, when the King of Ch'u despatched a hundred chariots to present to the King of Ts'in fowl-scaring rhinoceros-horns and jade disks resplendent at night (*ye kuang pi*). It is certainly somewhat striking to meet here these two names, which are identical with those in *Hou Han shu*, and occur there close together; and it cannot be denied that the passage of *Chan kuo ts'e* might be an interpolation. Huai-nan-tse, who died in B.C. 122, alludes to a rhinoceros-horn frightening foxes (*si kio hiai hu*, quoted in *P'ei wên yün fu*, *l. c.*, p. 89 a, "when placed in the lair of a fox, the fox does not dare return"), which is a case analogous in word and matter to the fowl-frightening horn. These notions must be taken in connection with the other legends regarding the rhinoceros, which all seem to spring from indigenous Taoist lore. The text of Ko Hung, as quoted in *P'ei wên yün fu* and translated by Hirth and Chavannes, is fuller than cited above in the *Pên ts'ao*, while the final clause in regard to placing the horn on the roof does not occur in Ko Hung. The latter links the *hiai ki si* with the *t'ung t'ien*, which Hirth and Chavannes translate "communicating with Heaven." This is certainly all right; but I prefer to avoid this term, because it may give rise to misunderstandings, as we are wont to think of Heaven as the great cosmic deity. A comparative study of all passages concerned renders it clear that the rhinoceros is not associated with spiritual, but with material heaven; that is, the sky. It is the stars of the sky which are supposed to be reflected in the veins of the horn. This means that the designs of the horn gave the impetus to the conception of connecting the rhinoceros with the phenomena of the sky,— again a thoroughly Taoistic idea, in which no trace of an outside influence can be discovered. Father ZOTTOLI (Cursus litteraturae sinicae, new ed., Vol. I, p. 301) renders the term *t'ung t'ien si tai* by "penetrantis coelum rhinocerotis cingulum."— Chao Ju-kua (HIRTH'S and ROCKHILL'S translation, p. 103) attributes *hiai ki si* or *t'ung t'ien si* also to Baghdad (but I see no reason why these words should denote there a precious stone, instead of rhinoceros-horn). On p. 108 (note 10) the two authors represent the matter as though this reference might occur in *Ling-wai tai ta*, but in fact it is not there (Ch. 3, p. 1 b); it must therefore be due to Chao Ju-kua, who seems to indulge in a literary reminiscence taken from *Hou Han shu*. The passage, accordingly, affords no evidence for a trade in rhinoceros-horns from Baghdad to China, which *per se* is not very likely.—In the illustrations to the *Fêng shên yen i* (ed. of *Tsi ch'êng t'u shu*, p. 9, Shanghai, 1908), T'ung t'ien kiao chu (see W. GRUBE, Die Metamorphosen der Götter, p. 652) is seated astride a rhinoceros (outlined as a bull with a single striped horn), apparently because his name *T'ung t'ien* has been identified with *t'ung t'ien si*.

[2] There are several additions to this text as edited in the *Chêng lei pên ts'ao*, the most interesting of which is that "only the living horns are excellent." This means the horn of a live animal slain in the chase, which was believed to be superior in quality to a horn cast off and accidentally found (compare HIRTH and ROCKHILL, Chau Ju-kua, p. 233). Similar beliefs prevailed in regard to ivory. That coming from the tusk of an elephant killed by means of a pike was considered the best; next in quality

Li Shi-chên does not refer to Ko Hung, the famous Taoist adept of the fourth century,[1] who is the first author to impart a fantastic account in regard to rhinoceros-horn. He is likewise the first to set forth its quality of detecting poison. His text is here translated, as given in *T'u shu tsi ch'êng*.[2]

"Mr. Chêng[3] once obtained a genuine rhinoceros-horn of the kind 'communicating with the sky,' three inches long, the upper portion being carved into the form of a fish. When a man carries such a piece in his mouth and descends into the water, the water will give way for him and leave a vacant space three feet square, so that he has a chance to breathe in the water.[4] The horn 'communicating with the sky' has a single red vein like a silk string running from the base to the tip. When a horn filled with rice is placed among a flock of chickens, the chickens want to peck the grains. Scarcely have they approached the horn to within an inch when they are taken aback and withdraw. Hence the people of the south designate the horn 'communicating with the sky' by the name 'fowl-frightening horn.' When such a horn is placed on a heap of grain, the birds do not dare assemble there. Enveloped by a thick fog or exposed to the night dew, when placed in a courtyard, the horn does not contract humidity. The rhinoceros (*si*) is a wild animal living in the deep mountain-forests. During dark nights its horn emits a brilliant light like torch-fire. The horn is a safe guide to tell the presence of poison: when poisonous medicines of liquid form are stirred with a horn, a white foam will bubble up, and no other test is necessary; when non-poisonous substances are stirred with it, no foam will rise. In this manner the presence of poison can be ascertained. When on a journey in foreign countries, or in places where contagion from *ku*

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was the ivory of an animal which was found shortly after it had died a natural death; least esteemed was that discovered in mountains many years after the animal's death (PELLIOT, *Bulletin de l'Ecole française d'Extrême-Orient*, Vol. II, 1902, p. 166). In Siam, the rhinoceros is still killed with bamboo pikes hardened in the fire and thrust into its jaws and down the throat, as described by Bishop PALLEGOIX (Description du royaume Thai ou Siam, Vol. I, p. 75, Paris, 1854).

[1] He died in 330 A.D. at the age of eighty-one; see GILES (Biographical Dictionary, p. 372); MAYERS (Chinese Reader's Manual, p. 86); BRETSCHNEIDER (Bot. Sin., pt. 1, p. 42); and PELLIOT (*Journal asiatique*, 1912, Juillet-Août, p. 145).

[2] Chapter on Rhinoceros (*hui k'ao*, p. 3), introduced by the author's literary name Pao-p'u-tse, and the title of his work *Têng shê p'ien*, which is not included in the Taoist Canon.

[3] Presumably Chêng Se-yüan, a relative and spiritual predecessor of Ko Hung (L. WIEGER, Taoisme, Vol. I, Le canon, p. 16; PELLIOT, *l. c.*, p. 146).

[4] It is interesting to note that this belief is still upheld in the modern folk-lore of Annam: "Celui qui peut se procurer une corne de rhinocéros et la sculpte en forme de poisson, s'il la met entre ses dents, peut descendre sans danger, comme le rhinocéros ou le poisson, tout au fond de l'eau" (P. GIRAN, Magie et Religion Annamites, p. 104, Paris, 1912).

poison[1] threatens, a man takes his meals in other people's houses, he first ought to stir his food with a rhinoceros-horn. When a man hit by a poisonous arrow is on the verge of dying, and his wound is slightly touched with a rhinoceros-horn, foam will come forth from his wound, and he will feel relief.[2] This property of the horn 'communicating with the sky' of neutralizing poison is accounted for by the fact that the animal, while alive, particularly feeds on poisonous plants and trees provided with thorns and brambles,[3] while it shuns all soft and smooth vegetal matter. Annually one shedding of its horn takes place in the mountains, and people find horns scattered about among the rocks;[4] in this case, however, they must deposit there, in the place of the real one, another horn carved from wood, identical with that one in color, veins, and shape. Then the rhinoceros remains unaware of the theft. In the following year it moves to another place to shed its horn.[5] Other kinds of rhinoceros-horn also are capable of neutralizing poison, without having, however, the wonderful power of the *t'ung-t'ien* variety."

Su Kung, the editor of the *T'ang sin pên ts'ao* (the revised edition of the materia medica of the T'ang dynasty) states as follows: "The *tse* (No. 12,325) is the female rhinoceros. The patterns on its horn are smooth, spotted, white, and clearly differentiated. It is ordinarily called the 'spotted rhinoceros' (*pan si*). It is highly esteemed in pre-

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[1] See *T'oung Pao*, 1913, p. 322.

[2] The belief that the horn will check the effects of poisoned arrows is repeated in the *Pei hu lu*, written by Tuan Kung-lu around 875 in the T'ang period (PELLIOT, *Bulletin de l'Ecole française*, Vol. IX, 1909, p. 223). The notes of this book regarding the horn are all based on the text of Ko Hung; instead of *t'ung t'ien si*, the term *t'ung si* is employed.

[3] The animal feeds, indeed, on herbage, shrubs, and leaves of trees.

[4] The supposition of the rhinoceros shedding its horn regularly has not been ascertained by our zoölogists; but it is not very probable that it does so, nor have the Chinese made the actual observation. It is clear that their conclusion is merely based on the circumstantial evidence of detached horns occasionally found and picked up in the wilderness, which suggested to them the notion of a natural process similar to the shedding of cervine antlers.

[5] A similar story is told in regard to the elephant by Chên Kūan, who wrote two treatises on the medical virtues of drugs, and who died in the first part of the seventh century (BRETSCHNEIDER, Bot. Sin., pt. 1, p. 44): "The elephant, whenever it sheds its tusks, itself buries them. The people of K'un-lun make wooden tusks, stealthily exchange them, and take the real ones away." K'un-lun is the Chinese designation for the Malayan tribes of Malacca, and was extended to Negrito, Papua, and the negroes of Africa (see HIRTH and ROCKHILL, Chau Ju-kua, p. 32). In this connection we should remember also the words of PLINY (*Nat. hist.*, VIII, 3, §7), that the elephants, when their tusks have fallen out either accidentally or from old age, bury them in the ground (quam ob rem deciduos casu aliquo vel senecta defodiunt). It is not impossible that the great quantity of fossil ivory mentioned as early as by THEOPHRAST (*De lapidibus* 37, Opera ed. F. WIMMER, p. 345; compare the interesting notes of L. DE LAUNAY, Minéralogie des anciens, Vol. I, pp. 387–390, Bruxelles, 1803) may have given rise to this notion.

scriptions, but is not such an efficient remedy as the horn of the male rhinoceros."[1]

Ch'ên Ts'ang-k'i, who lived in the first half of the eighth century, states in his work *Pên ts'ao shi i* ("Omissions in Previous Works on Materia Medica") as follows: "There are not two kinds of the rhinoceros, called the land and water animal. This distinction merely refers to finer and coarser qualities of horns.[2] As to the rhinoceros 'communicating with the sky,' the horn on its skull elongates into a point after a thousand years. It is then adorned, from one end to the other, with white stars, and can exhale a vapor penetrating the sky; in this manner it can communicate with the spirits,[3] break the water, and frighten fowl. Hence the epithet 'communicating with the sky' is bestowed on it. Pao-p'u-tse[4] says, 'When such a rhinoceros-horn is carved into the shape of a fish, and one holding this in his mouth descends into water, a passage three feet wide will open in the water.'"[5]

Su Sung, author of the *T'u king pên ts'ao*, published by imperial order in the age of the Sung dynasty, has the following: "Of rhinoceros-horn, that coming from the regions of the Southern Sea (*Nan hai*) takes the first place; that from K'ien and Shu[6] ranks next. The rhinoceros resembles the water-buffalo, has the head of a pig, a big paunch, short legs, the feet being similar to those of the elephant and having three toes. It is black in color, and has prickles on its tongue. It is fond of eating thorny brambles.[7] Three hairs grow from each pore in its skin,

[1] Li Shi-chên's text exactly agrees with that given in the *Chêng lei pên ts'ao*. It is an interesting coincidence that the horn of the female rhinoceros (*tse si kio*) is mentioned in the Annals of the T'ang Dynasty (*T'ang shu*, Ch. 40, p. 6 b) as the tribute sent from the district of Si-p'ing in Shen chou, the present territory of Si-ning in Kan-su. The Annals therefore confirm the statement of the contemporaneous *Pên ts'ao*.

[2] It will be seen below that Li Shi-chên does not share this opinion.

[3] The same paragraph is found in Li Shi, the author of the *Sü po wu chi* (Ch. 10, p. 8 b; ed. of *Pai hai*), ascribed by tradition to the T'ang period, but in fact coming down from the Sung. He interprets the expression *t'ung t'ien* by the words, "It is capable of communicating with the spirits" (*nêng t'ung shên*). According to him, "the horn communicating with the sky" is a thousand years old, long and pointed, overstrewn with white stars, the tip emitting a vapor.

[4] Surname of Ko Hung, a famous Taoist writer, who died at the age of eighty-one about 330 A.D. (see p. 138).

[5] The text in the *Chêng lei pên ts'ao* is somewhat fuller. It opens by saying that the flesh of the rhinoceros cures all poisons, especially poisoning caused by the bites of snakes and mammals. On Java bits of the horn are considered as an infallible antidote against snake-bites (P. J. VETH, Java, Vol. III, p. 289). At the close of Ch'ên Ts'ang-k'i's text it is added that the horn is called also *nu kio* (literally, "slave horn") and *shi kio* ("the horn, with which the animal feeds"); the word *nu* seems to be the transcription of a word from a non-Chinese language.

[6] Ancient designations for the present territory of the provinces of Kuei-chou and Sze-ch'uan.

[7] The entire definition, except the "prickles on the tongue," is derived from Kuo P'o (see p. 93). MARCO POLO (ed. of YULE and CORDIER, Vol. II, p. 285), speaking of

as in swine. There are one-horned, two-horned, and three-horned ones." [1]

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the rhinoceros on Java, says, "They do no mischief, however, with the horn, but with the tongue alone; for this is covered all over with long and strong prickles [and when savage with any one they crush him under their knees and then rasp him with their tongue]." YULE comments that the belief in the formidable nature of the tongue of the rhinoceros is very old and widespread, though he can find no foundation for it other than the rough appearance of the organ. Dr. PARSONS (p. 9 in the pamphlet quoted above, p. 83) observes, "As to the tongue of the rhinoceros, the scribes assure us that it is so rugged that it can lick off with it the flesh from the bones of a man, but the tongue of the live animal examined by me is as soft and mild as that of a calf; whether it will grow rougher with the advancing age of the animal, I am unable to say." It is easy to see how the fable of the prickly tongue arose. The animal mainly feeds on herbage, and the alleged or real observation of its inclination for brambles led to the conclusion that its tongue must be thorn-proof and prickly. A similar belief seems to obtain in Siam: "On dit que ce monstrueux quadrupède fait ses délices des épines de bambou" (Mgr. PALLEGOIX, Description du royaume Thai ou Siam, Vol. I, p. 156, Paris, 1854).

[1] Now follows in the *Pên ts'ao* the quotation from the *Erh ya* translated above (p. 93). The text then following in the *Pên ts'ao* is purported to be a quotation from *Ling piao lu i;* but it is in fact abridged, and intermingled with extracts from *Yu yang tsa tsu.* For this reason I have abandoned at this point the text of the *Pên ts'ao*, and given separately translations of the two documents, as they are published in *T'u shu tsi ch'êng* (Chapter on Rhinoceros, *hui k'ao*, p. 4). In evidence of my statement, the text of the *Pên ts'ao* here follows; the main share in the confusion will probably be due to Su Sung, not to Li Shi-chên. "The *Ling piao lu i* by Liu Sün (of the T'ang period) says, 'The rhinoceros has two horns: the one on the forehead is called *se si*, the other, on the nose, is called *hu mao si*. The male rhinoceros also has two horns both of which are comprised under the name *mao si* ('hairy rhinoceros'). At present people uphold the opinion that it has but a single horn. These two kinds of horn are provided with grain patterns, and their price largely depends upon the finer or coarser qualities of these designs. The most expensive is the horn with floral designs of the rhinoceros 'communicating with the sky.' The animals with such horns dislike their own shadow, and constantly drink muddy water in order to avoid beholding their reflection. High-grade horns bear likenesses of all things. Some attribute the qualities of the *t'ung t'ien* horn to a pathological cause, but the natural reason cannot be ascertained. The term *tao ch'a* means that one half of the lines pass through in the direction downward; the term *chêng ch'a* means that one half of the lines pass through in the direction upward; the term *yao ku ch'a* means that the lines are interrupted in the middle, and do not pass through. Such-like are a great many. The *Po-se* designate ivory as *po-ngan*, and rhinoceros-horn as *hei-ngan*,— words difficult to distinguish. The largest rhinoceros-horn is that of the *to-lo-si*, a single horn of which weighs from seven to eight catties. This is identified with the horn on the forehead of the male rhinoceros. It has numerous decorations conveying the impression of scattered beans. If the specks are deep in color, the horn is suitable to be made into plaques for girdle-ornaments; if the specks are scattered here and there, and light in color, the horn can be made only into bowls and dishes. In the opinion of some, the animal called *se* is the female of the *si*. [It resembles the water-buffalo, and is of dark color. Its hide is so hard and thick that it can be worked into armor.] I do not know whether this is the case or not." (There is here a confusion in Li Shi-chên's text. The passage enclosed in brackets does not occur in the text of the *Chêng lei pên ts'ao*, where it runs, "In the opinion of some, the animal called *se* is the female of the *si;* I do not know whether this is the case or not." The rest is evidently interpolated, and is derived from the *Shuo wên* and its commentaries; at all events, it cannot be ascribed to Su Sung.) "Wu Shi-kao, a physician of the T'ang period, tells the following story: 'The people near the sea, intent on capturing a rhinoceros, proceed by erecting on a mountain-path many structures of decayed timber, something like a stable for swine or sheep. As the front legs of the rhinoceros are straight, without joints, it is in the habit of sleeping by leaning against the trunk of a tree. The rotten

The *Ling piao lu i ki*[1] says, "The rhinoceros, in general, resembles an ox in form. Its hoofs and feet are like those of the elephant. It has a double armor and two horns. The one on the forehead is styled *se si*; the other, on the nose, which is comparatively smaller, is termed *hu mao si*.[2] The designs and spots in the anterior horn are small; many have extraordinary patterns. The male rhinoceros likewise has two horns, both of which are designated *mao si* ('hairy rhinoceros'), and are provided with grain patterns.[3] They are capable of being worked into plaques for girdles.[4] Among a large number of rhinoceros-horns there

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timber will suddenly break down, and the animal will topple in front without being able for a long time to rise. Then they attack and kill it.' " The conclusion is translated above in the text.

[1] In the *Pên ts'ao*, and otherwise, usually styled *Ling piao lu i*. According to BRETSCHNEIDER (Bot. Sin., pt. 1, p. 170), it is an account of the natural productions of China by Liu Sün of the T'ang dynasty.

[2] HIRTH and ROCKHILL (Chau Ju-kua, p. 233), briefly alluding to this text, understand the terms *se si* and *hu mao si* as two different varieties of the rhinoceros. This point of view seems to me inadmissible, as Liu Sün distinctly speaks of the two-horned variety only, and then goes on to specify the two horns in the same animal, which differing in size and shape are, from a commercial and industrial standpoint, of different value. The term *Hu mao* ('cap of the Hu'; the Hu in general designate peoples of Central Asia, Turks and Iranians) is a very appropriate designation for the anterior horn of this species, which is a low, flat, roundish knob, and indeed resembles a small skull-cap. In the *Ming kung shi* (Ch. 4, p. 8; new edition in movable types, 1910, in 8 chs.), a most interesting description of the life at the Court of the Ming dynasty (compare HIRTH, *T'oung Pao*, Vol. VI, 1895, p. 440), this cap is explained as coming down from the T'ang dynasty, and as having been used by the heir-apparent of the Ming; it was made from sable and ermine skins, and worn in the winter on hunting-expeditions to keep the ears warm. It is mentioned in *T'ang shu*, Ch. 24, p. 8 (and presumably in other passages).

[3] Li Shi-chên (p. 150) expands this theme. Fang I-chi, who graduated in 1640, in his *Wu li siao shi* (Ch. 8, p. 20 b), states that only the rhinoceros-horn of Siam has grain patterns, while they are absent in the hairy (that is, the double-horned) rhinoceros of Annam, which has flower-like and spotted designs.

[4] In the Treasure-House of Nara in Japan are preserved objects carved from rhinoceros-horn coming down from the T'ang period, as leather belts with horn plaques, drinking-cups, Ju-i, and back-scratchers. The girdles studded with plaques carved from the horn seem to make their appearance in China under the T'ang dynasty; the assertion of BUSHELL (Chinese Art, Vol. I, p. 119) that they were the "official" girdles of the dynasty does not seem to be justified: at least, they are not enumerated in the class of official girdles, but seem to have been restricted to the use of princesses (compare the account of *Tu yang tsa pien*, translated below, p. 152). Interesting texts bearing on rhinoceros-horn girdles are communicated in *T'u shu tsi ch'êng* (Chapter on Girdles, *tai p'ei, ki shi*, p. 9 b). Such girdles were made also in Champa: the Sung Annals (*Sung shi*, Ch. 489, p. 2) relate a tribute sent from there in the period Hien-tê (954–962) of the Hou Chou dynasty; it was local products including rhinoceros-horn girdles with plaques carved in the form of cloud-dragons. A rhinoceros-horn girdle sent from the Court of the Sung to that of the Khitan is mentioned in *Liao shi* (Ch. 10, p. 1). Under the Kin dynasty (1115–1234) the materials employed for official costume were ranked in the order jade, gold, rhinoceros-horn, ivory (*Kin shi*, Ch. 34, § 3, p. 7). The emperor wore a hat-pin of rhinoceros-horn, and a girdle of black horn (*wu si tai*); the imperial saddle was decorated with gold, silver, rhinoceros-horn, and ivory. Officials of the second rank and higher were entitled to a girdle of the *t'ung si* horn; those of the third rank, to a girdle of the *hua si* horn; the rest, to plain rhinoceros-horn girdles (*ibid.*, Ch. 43). They were in vogue also

are few in which the lines pass through from one end to the other. These are pointed, and their designs are large and numerous. Those with small designs are styled *tao ch'a t'ung*.[1] These two kinds are called also 'bottomless jade cups.'[2] If there is not sufficient space for the lines to pass through, and the white and black designs are equally distributed, then the price is considerably increased, and the horn will become the treasure of numberless generations. When I lived at P'an-yü,[3] I made a thorough examination of what is current there concerning rhinoceros-horn. There is, further, the *to-lo-si*, the largest among the rhinoceros-horns, which may reach seven catties in weight.[4] This is the horn on the forehead of the male rhinoceros, which has numerous designs in the interior conveying the impression of scattered beans. If the stripes are deep in color, the horn is capable of being made into girdle-plaques and implements; if the stripes are dispersed and light in color, the horn may be employed to advantage for the making of cups,

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at the Court of the Ming emperors (*Ta Ming hui tien*, Ch. 5, p. 30), and were allowed to alternate with tortoise-shell girdles (*Ming kung shi* by Liu Jo-yü, Ch. 4, p. 3 b, new ed. of 1910). Under the Yüan dynasty a bureau for works in rhinoceros-horn and ivory was established. This was a sort of court-atelier, in which couches, tables, implements, and girdle-ornaments inlaid with these materials were turned out for the use of the imperial household. An official was placed in charge of it in 1263, and he received an assistant in 1268; the force consisted of a hundred and fifty working-men (*Yüan shi*, Ch. 90, p. 5, K'ien-lung edition). According to Qazwīnī (1203–83), the inhabitants of Sandābil (Kan-chou in Kan-su Province) were clad in silk and adorned with ivory and rhinoceros-horn (J. MARQUART, Osteuropäische und ostasiatische Streifzüge, p. 87, Leipzig, 1903). DE GOEJE is inclined to think in this connection of rhinoceros-horn set with gold and worn as amulet; but an instance of such a mode of use is not known in China, and it rather seems that it is in this case likewise the question of girdles decorated with plaques of ivory and rhinoceros-horn. The Mohammedan authors were well aware of the fondness of the Chinese for this material and its employment for girdles, and during the middle ages became the most active importers of the horn into China. The Arabic merchant Soleiman writing in 851 relates that the inhabitants of China make from the horn girdles reaching in price to two and three thousand dinars and more, according to the beauty of the figure found in the design of the horn (M. REINAUD, Relation des voyages faits par les Arabes, Vol. I, p. 29). Hafiz el Gharb, who wrote at the end of the eleventh century, observed, "The most highly esteemed ornaments among the Chinese are made from the horn of the rhinoceros, which, when cut, presents to the eye singular and varied figures" (CH. SCHEFER, Relations des Musulmans avec les Chinois, p. 10, in *Centenaire de l'Ecole des langues orientales*, Paris, 1895).

[1] *Tao*, "to reverse;" *ch'a*, "to insert;" *t'ung*, "to pass through."

[2] Thus this phrase is explained in GILES's Dictionary, p. 1326 b (tenth entry).

[3] PLAYFAIR (2d ed.), No. 4927: one of the two districts forming the city of Kuang-chou (Canton).

[4] HIRTH and ROCKHILL (Chau Ju-kua, p. 233), relying on Gerini, identify the country *To-lo* or *To-ho-lo*, as written in *T'ang shu*, with a country situated on the Gulf of Martaban. The journey from Kuang-chou to that country takes five months. An embassy with tribute came from there to China in the period Chêng-kuan (627–650), and emphasis is laid on the great number of fine rhinoceroses. See also SCHLEGEL (*T'oung Pao*, Vol. IX, 1898, p. 282) and PELLIOT (*Bull. de l'Ecole française*, Vol. IV, 1904, p. 360).

dishes, utensils, platters, and the like.[1] Then there is the horn 'frightening fowl' with a white, silk-like thread; placed in the rice, it scares the fowl away. The 'dust-dispelling horn' is utilized to make hairpins and combs for women; it keeps dust out of the hair. As to the 'water-dispelling horn,' when brought into the water of a river or the sea, it has the power of breaking a way across it. Exposed to a fog, and in the evening, it does not contract moisture. As to the 'resplendent horn,' this one, when put in a dark house, emits its own light.[2] Of all these various horns, I know only from hearsay, for I have not been able to procure and see them."

The *Yu yang tsa tsu* by Tuan Ch'êng-shi of the ninth century[3] makes the following comments on the rhinoceros: "The variety of rhinoceros styled 'communicating with the sky' dislikes its own shadow, and is in the habit of drinking muddy water.[4] When the animal is immersed in the water, men avail themselves of this opportunity to capture it, as it is impossible for it to pull its feet out of the mud. The natural structure of the horn is such that it is filled with figures resembling objects of nature. It is asserted by others that the designs penetrating the rhinoceros-horn are pathological.[5] There are three varieties of design, styled *tao ch'a* ('lines inverted and inserted'), *chêng ch'a* ('straight and inserted'), and *yao ku ch'a* ('inserted like a barrel-shaped drum').[6] They are styled 'inverted,' if one half of the lines pass

[1] The colors indicated by the Chinese writers altogether answer the facts. In its exterior, the color of rhinoceros-horn is usually black or dark brown. A cross-section reveals various colors. A specimen kindly presented to the Museum by Mr. F. W Kaldenberg of New York exhibits in the interior a large black zone running through the centre and extending from the base to the tip, and filling the entire space of the extremity. In the lower, broad portion it is surrounded on the one side by a gold-brown section, about 3.5 cm wide and 21 cm long, and on the other side by a mottled light-yellow and greenish zone almost soap-like in appearance. This horn was found in the woods, and is in places eaten through by insects. The surface of the base exhibits the tips of the bristles, and appears like a coarse brush. The fibres running longitudinally, owing to the effect of weathering, can be easily detached.

[2] As shown above (p. 138), optic properties are attributed to the horn as early as the time of Ko Hung. The subject is discussed in detail below (p. 151).

[3] As now established by P. PELLIOT (*T'oung Pao*, 1912, pp. 373–375), this work was published about 860.

[4] The *Pên ts'ao* adds, "In order to avoid beholding its reflection." This notion is doubtless derived from the animal's predilection for a mud-bath; its favorite haunts are generally in the neighborhood of swamps (LYDEKKER, *l. c.*, p. 31).

[5] The *Pên ts'ao* adds, "But the natural reason cannot be ascertained." This is a comment of Su Sung.

[6] The meaning of these technical terms is not quite easy to grasp. The word *tao* (No. 10,793) is "to invert," *ch'a* (No. 205) means "to insert:" *tao ch'a*, accordingly, may mean "lines inserted in the horn in an inverted position;" and *chêng ch'a*, "lines inserted straight." *Yao* ('loins') *ku* (No. 6421; in *Pên ts'ao* erroneously No. 6227) is the former name for a barrel-shaped drum (*hua ku*, see A. C. MOULE, Chinese Musical Instruments, p. 57, where an example from a verse of Su Tung-p'o is quoted). Yao K'uan, the author of the *Si k'i ts'ung yü*, written about the middle of the twelfth

through in the direction downward. They are styled 'straight,' if one half of the lines pass through in the direction upward. They are styled 'drum-shaped,' if the lines are interrupted in the middle, without passing through. The *Po-se* designate ivory as *po-ngan*, and rhinoceros-horn as *hei-ngan*.[1] Wu Shi-kao, a physician from Ch'êng shi mên,

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century (WYLIE, Notes, p. 160), makes the following remark: "The fundamental color of rhinoceros-horn is black. Is the color simultaneously black and yellow, the horn is styled 'standard throughout' (*chêng t'ou*). Is the horn yellow with black borders, it is styled 'inverted throughout' (*tao t'ou*). The horns of standard color are highly esteemed by our contemporaries. If the shape of the horn is round, it is designated as 'horn communicating with the sky' (*t'ung t'ien si*). In the south, there are counterfeits which may be recognized from gradually getting warm when rubbed. In view of the fact that rhinoceros-horn by nature is cold, it does not become warm when rubbed."

[1] Su Sung makes the addition, "words difficult to distinguish." *Po-ngan* means literally "white *ngan*" (No. 57), and *hei-ngan* "black *ngan*,"— evidently transcriptions of *Po-se* words. PALLADIUS, in his Chinese-Russian Dictionary (Vol. I, p. 7), has indicated *po-ngan* ("ivory") and *hei-ngan* ("rhinoceros-horn") as Persian loan-words. Ivory, however, is called in Persian *shirmāhī;* and rhinoceros, as well as the horn of it, *kerkeden*. It is true that *Po-se* is the Chinese name for Persia, which first appears in the *Wei shu;* but Persia is not meant in the above passage. *P'ei wên yün fu* (Ch. 8, p. 89 b) gives three quotations under the heading *hei-ngan si*. One from a book *Sheng shui yen t'an* says that the *Po-se* call rhinoceros-horn *hei-ngan;* the reference to the name of ivory is omitted, so that the clause "it is difficult to discriminate" makes no sense. The second is derived from the *Leng chai ye hua* of the monk Hui-hung, written toward the close of the eleventh century (WYLIE, Notes on Chinese Literature, p. 164), and says that "the men of the south (*nan jên*) designate ivory as *po-ngan*, rhinoceros-horn as *hei-ngan*." The third reference is taken from a poem of Tu Fu (712–770), who remarks that *hei-ngan* is a general article of trade of the *Man*. These texts render it probable that the country of *Po-se* here referred to is not Persia, but identical with the Malayan region *Po-se* mentioned by Chou K'ü-fei in his *Ling-wai tai ta*, written in 1178 (Ch. 3, p. 6 b; edition of *Chi pu tsu chai ts'ung shu*), and then after him in the *Chu fan chi*, written in 1225 by Chao Ju-kua (translation of HIRTH and ROCKHILL, p. 125). The two authors seek it in or near the Malay Peninsula, though Negritos are not necessarily to be understood: the mere statement that the inhabitants have a dark complexion and curly hair is not sufficient to warrant this conclusion. GERINI identifies the name Po-se with Lambesi below Atjeh on the west coast of Sumatra, which seems somewhat hypothetical. Mr. C. O. BLAGDEN (*Journal Royal As. Soc.*, 1913, p. 168) is inclined to regard *Po-se* as identical with Pase (or Pasai) in north-eastern Sumatra, but adds that there is no evidence that the place existed as early as 1178. The above text shows that the *Po-se* of the Chinese mediæval writers were a Malayan tribe speaking a Malayan language, for the two transcriptions *po-ngan* and *hei-ngan* can be interpreted through Malayan. In the Hakka dialect, *hei-ngan* is *het-am;* and *hītam* is the Malayan word for "black" (Javanese Ngoko *hireng*). *Pei-ngan* is in the Hakka dialect *p'ak-am* (compare Dictionnaire chinois-français dialecte Hac-ka by CH. REY), in Cantonese *pak-om*, in Yang-chou *puk-yā*. In Javanese Krâmâ "white" is *peṭak*, in Javanese Ngoko *putih*, likewise in Batak, in common Malayan *pūteh*. We should expect that the two Malayan words, judging from the Chinese transcriptions, would terminate in the same syllable, which caused misunderstandings on the part of Chinese dealers. There is (or was) perhaps a certain Malayan dialect, in which the word for "white" ended in *-am*, or in which the words for "white" and "black" terminated in *-i* or *-ih* (compare Madagassy *iṇtim*, *iṇti*, "black;" and *puti*, "white;" G. FERRAND, Essai de phonétique comp. du malais et des dialectes malgaches, pp. 24, 54, Paris, 1909). It is evident that neither the Malayan words for "ivory" (*gāding*, Javanese *gaḍing*) and "rhinoceros-horn" (*chula bādak* or simply *chula*), nor the words for "elephant" (*gājah*, Javanese *gajah*) and "rhinoceros" (*badak*, Javanese *warak*), are intended here, but only the color names "white" and "black," with which the traders distinguished ivory and rhi-

while he served in the district of Nan-hai (in Kuang-tung), had occasion to meet there a captain who told him this story: 'The people of my country, intent on capturing a rhinoceros, proceed to erect on a mountain-path many wooden structures like watch-houses or posts for tethering animals.[1] As the front legs of the animal are straight, without joints, it is in the habit of sleeping by leaning against a tree. The rotten timber will suddenly break down, and the animal is unable to rise.[2] Another

noceros-horn. The Malayan word *badak* seems to cover the entire Malayan area where the rhinoceros is found; it occurs on Borneo in the language of the Dayak (A. HARDELAND, Dajacksch-deutsches Wörterbuch, p. 24, Amsterdam, 1859), and on Sumatra (M. JOUSTRA, Karo-Bataksch Woordenboek, p. 59, Leiden, 1907). Among the Malayans, the rhinoceros-horn (*chula*) is supposed to be a powerful aphrodisiac; and there is a belief in a species of "fiery" rhinoceros (*badak api*) which is excessively dangerous when attacked (W. W. SKEAT, Malay Magic, p. 150, London, 1900). The horn is carefully preserved, as it is believed to be possessed of medicinal properties, and is highly prized by the Malays, to whom the Semang generally barter it for tobacco and similar commodities (SKEAT and BLAGDEN, Pagan Races of the Malay Peninsula, Vol. I, p. 203, London, 1906). There is nothing in these Malayan beliefs showing that complex series of ideas, met with in China. They may be a weak echo of Chinese notions conveyed by Chinese traders bartering among them for the horn.

[1] *Chü yi* (Nos. 2974 and 13,205). I do not know but this may have to be taken as a compound with a more specific technical meaning. The two *Pên ts'ao* have changed this unusual term into "stables for swine or sheep." There is no doubt of what is meant, — posts of rotten timber, which will easily break to pieces under the burden of the animal leaning toward it.

[2] This story has passed also into the Arabic account of the merchant-traveller Soleiman, written in 851 A.D. (M. REINAUD, Relation des voyages faits par les Arabes et les Persans dans l'Inde et à la Chine, Vol. I, p. 29, Paris, 1845): "The *kerkeden* (rhinoceros) has no articulation in the knee, nor in the hand; from the foot up to the armpit it is but one piece of flesh." In *T'oung Pao* (1913, pp. 361–4) the historical importance of this tradition is pointed out by me inasmuch as this originally Indian story has migrated also to the West, where it leaks out in the Greek *Physiologus* (only the rhinoceros is replaced by the elephant), and in CAESAR's and PLINY's stories of the elk. I wish to make two additions to these remarks. AELIAN (*Nat. an.*, XVI, 20), describing the rhinoceros of India, called by him καρτάζωνος, asserts that its feet have no joints and are grown together like the feet of the elephant (τοὺς μὲν πόδας ἀδιαρθρώπους τε καὶ ἐμφερεῖς ἐλέφαντι συμπεφυκέναι: ed. of F. JACOBS). This passage, therefore, confirms my former conclusion that it was the rhinoceros which was credited in India with jointless legs; but we see that the same notion was likewise attached to the elephant. It may be the case, accordingly, that the elephant with jointless legs was borrowed by the *Physiologus* straight from India. Mr. W. W. ROCKHILL (Diplomatic Audiences at the Court of China, p. 32, London, 1905) quotes a statement made to him by T. WATTERS on the kotow question with reference to Lord Macartney's embassy, as follows: "It was an opinion universal, and was told among the Chinese, that the *Kuei-tse* or foreigner was not built up like the *jen* [that is, man] or Chinaman, and particularly that he had no joints in his legs. So that, if the *Kuei-tse* was knocked down or otherwise put on the ground, he could not rise again. It was because the Emperor did not want to have possibly a death or at any rate an unseemly spectacle that he waived the kotow." Compare also Rubruck's story of "the creatures who have in all respects human forms, except that their knees do not bend, so that they get along by some kind of jumping motion" (W. W. ROCKHILL, The Journey of William of Rubruck, p. 199, London, 1900). The fabulous notion of the jointless legs of the rhinoceros may have arisen from the observation that the animal is indeed in the habit of sleeping in a standing position. Says E. HELLER (The White Rhinoceros, p. 41), "The hot hours of the day are spent by the white rhinoceros sleeping in the shade of the scattered clumps of trees or bushes which dot the grassy veldt. They seem to rest indifferently, either lying down or standing

name for the rhinoceros is *nu kio*. There is also the *chên ch'u*, which is presumably a rhinoceros. The rhinoceros has three hairs growing out of each pore.[1] Liu Hiao-Piao asserts that the rhinoceros sheds its horn and buries it, and that people exchange it for a counterfeit horn."

The story alluded to in the latter clause is better worded in the *Pên ts'ao*, which says, "It is told also that the rhinoceros sheds its horn every year, and itself buries it in the mountains. The people near the sea, with all secrecy, make wooden horns, and exchange these for the real ones, and so they go ahead continually. If they would go to work openly, the animal would conceal its horns in another place and defy any search." [2]

Li Sün, who wrote an account of the drugs of southern countries (*Hai yao pên ts'ao*) in the second half of the eighth century, expresses himself in these words: "The rhinoceros 'communicating with the sky,' during the time of pregnancy, beholds the forms of things [3] passing across the sky, and these are reproduced in the horn of the embryo: hence the designation 'communicating with the sky.' [4] When the horn, placed in a water-basin during a moonlight night, reflects the brilliancy of the moon, it is manifest that it is a genuine horn 'communicating with the sky.' The *Wu k'i ki* [5] says, 'The mountain-rhinoceros lives on bamboo and trees. Its urinating is not completed in the course of a day. The I Liao [6] get hold of it by means of bow and arrow. This is

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up with lowered head. When at rest they stand with their noses almost touching the ground, their heads being elevated to a horizontal position only when alarmed."

[1] The same is said in the *Pên ts'ao* in regard to the seal (compare G. SCHLEGEL, *T'oung Pao*, Vol. III, 1892, p. 508). Compare p. 140.

[2] In the text of the *Chêng lei pên ts'ao*, Su Sung terminates, "I do not know whether at present they take horns in this manner or not." Compare the account of Ko Hung, p. 139.

[3] The *Chêng lei pên ts'ao* reads "the destiny of things" (*wu ming*) instead of "forms of things" (*wu hing*).

[4] In the notes embodied in the *Pên ts'ao* regarding the elephant (Ch. 51 A, p. 4) it is said that the patterns in the horn are formed while the rhinoceros gazes at the moon, and that the designs spring forth in the tusks of the elephant while the animal hears the thunder. A work *Wu têng hui yüan*, as quoted in *P'ei wên yün fu* (Ch. 21, p. 113 b), similarly says that the rhinoceros, while enjoying the moonlight, produces the designs in its horn, and that the floral decorations enter the tusks of the elephant when it has been frightened by thunder. These passages prove that it is material heaven to whose influence the formation of the natural veins in horn and tusk is ascribed. The rhinoceros gazing at the moon is represented in *T'u shu tsi ch'êng* (Fig. 10).

[5] A work listed in the *T'ai p'ing yü lan* as being published in 983; but, as it is quoted here by Li Sün, it must have existed in or before the eighth century.

[6] An aboriginal tribe belonging to the stock of the *Man*, according to *T'ang shu* (Ch. 43 A, p. 6 b) settled in Ku chou (PLAYFAIR, No. 3256) in the province of Kuei-chou. Compare p. 82 in regard to the possibility of killing a rhinoceros with arrows.

the so-called rhinoceros of K'ien.'[1] The *I wu chi*[2] says, 'In the sea-water of Shan-tung there is a bull that delights in the sounds of string and wind instruments. When the people make music, this bull leaves the water to listen to it, and at that moment they capture it.'[3] The rhinoceros has a horn on its nose, and another on the crown of its head. The nose-horn is the one best esteemed. The natural histories (*pên ts'ao*) are acquainted only with the mountain-rhinoceros. I have not yet seen the water-rhinoceros."[4]

K'ou Tsung-shi, a celebrated physician of the Sung period, reports in his *Pên ts'ao yen i* (completed in 1116)[5] thus: "The designs in the horns of the river-rhinoceros and the southern rhinoceros are fine. The black rhinoceros-horn has designs clearly displayed, while the yellow rhinoceros-horn has very sparse designs. None equals the patterns in the horn of the Tibetan breed, which are high, and come out clearly at both ends.[6] If the forms of objects pictured in the horn are yellow, while the rest is black, the horn is 'standard color throughout' (*chêng t'ou*). If the forms of objects are black, while the rest is yellow, the horn is 'inverted throughout' (*tao t'ou*). If the black color is taken as standard, and the forms of the design are imitative of real objects, the horn is a treasure; this horn is styled *t'ung si* ('penetrating rhinoceros'). It is an indispensable condition that the patterns come out clearly, and that the yellow and black be sharply differentiated. If both ends are moist and smooth, the horn is of the first quality."[7]

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[1] The territory of the province of Kuei-chou, where the rhinoceros formerly occurred, as already attested by Su Sung (above, p. 140).

[2] Several works of this title were in existence (see BRETSCHNEIDER, Bot. Sin., pt. 1, p. 154).

[3] The animal in question is certainly not a rhinoceros, and has crept in here by way of wrong analogy. In his notes on cattle, Li Shi-chên mentions a variety "marine ox" (*hai niu*, Ch. 51 A, p. 7 a). This creature is described after the *Ts'i ti ki* by Fu Ch'ên of the fifth century or earlier (BRETSCHNEIDER, Bot. Sin., pt. 1, p. 201) as follows: "Its habitat is around the islands in the sea near Têng-chou fu (in Shan-tung); in shape it resembles an ox, it has the feet of an alligator (*t'o* No. 11,397, not *iguana*, as GILES still translates, despite the correction of E. v. ZACH, *China Review*, Vol. XXIV, 1900, p. 197), and the hair of a bull-head fish. Its skin is soft, and can be turned to manifold purposes; its blubber is good to burn in lamps." The marine ox, accordingly, must be an aquatic mammal of the suborder of Pinnipedia (seals). There may be a grain of truth in the above story: the intelligence of seals is remarkable, they are easily tamed and susceptible to music. There is an interesting chapter on tamed seals in the classical treatise of K. E. v. BAER, Anatomische und zoologische Untersuchungen über das Wallross (*Mémoires de l'Acad. imp. des sciences de St. Pétersbourg*, 6th series, Vol. IV, 1838, pp. 150–159).

[4] The last clause is not in the text of *Chêng lei pên ts'ao*.

[5] PELLIOT (*Bulletin de l'Ecole française d'Extrême-Orient*, Vol. IX, 1909, p. 217).

[6] The rhinoceros of Tibet has been discussed above, p. 116.

[7] The Arabic authors assert that the interior of the Indian rhinoceros-horn frequently presents designs of a human figure, a peacock, or fish, and that the price paid in China is raised according to the beauty of these designs (M. REINAUD, Relation

Li Shi-chên himself, the author of the *Pên ts'ao kang mu*, sums up as follows: "The habitat of the rhinoceros is in the regions of the *Si Fan*,[1] the southern Tibetan tribes (*Nan Fan*), the southern portions of Yün-nan, and in Kiao-chou, and occurs there everywhere. There are three species,— the mountain-rhinoceros, the water-rhinoceros, and the *se si*. There is, further, a hairy rhinoceros resembling the mountain-rhinoceros, and living in hilly forests; great numbers of it are captured by men. The water-rhinoceros makes its permanent abode in water, and is therefore very difficult to capture. It has, in all, two horns. The horn on its nose is long, that on its forehead is short. The skin of the water-rhinoceros has a pearl-like armor,[2] but not so the mountain-rhinoceros.

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des voyages faits par les Arabes, Vol. I, p. 29). REINAUD (Vol. II, pp. 68, 69) comments on this point that the Chinese are satisfied to compare the designs with flowers and millet-seeds, and do not discover in them half of the things which the Arabs saw in them. It seems to me that the Arabs, in this case, merely reproduce the ideas of the Chinese. The philosophy of these designs was fully developed in the T'ang period. K'ou Tsung-shi speaks of real objects visible in the horn; and Wang P'i-chi, in his *Shêng shui yen t'an lu* (p. 135), offers an elaborate contribution to this question. According to him, "the designs in the horn from Kiao-chi are like hemp-seeds, the horn being dry, a bit warm, and glossy; the horn imported on ships and coming from the Arabs has patterns like *chu yü* flowers [this name applies to three different plants: BRETSCHNEIDER, Bot. Sin., pt. 2, No. 498], is glossy and brilliant with colors, some resembling dog-noses, as if they were glossed with fat; others with floral designs and strange objects, these horns being styled *t'ung t'ien si;* some like sun and stars, others like clouds and moon; some like the corolla of a flower, some like scenery; some have birds and mammals, others dragons and fishes; some have deities, others palaces; and there are even costume and cap, eyes and eyebrows, staff and footgear [conveying the illusion of the picture of a wanderer], beasts, birds, and fishes. When the horn is completed into a carving, as if it were a veritable picture, it is highly esteemed by the people. The prices are fluctuating, and it is unknown how they are conditioned." There is assuredly an inward relation between the statements of this account and the Arabic texts of Damīrī quoted by REINAUD (Vol. II, p. 69). It is hardly necessary to insist on the chronological point that Damīrī (1344–1405) wrote his zoölogical dictionary *Hayāt el-haiwān* (C. HUART, Littérature arabe, p. 365, Paris, 1902) several centuries after Wang P'i-chi (end of eleventh century). From a psychological point of view, the dependence of the Arabs in this matter on the philosophy of the Chinese is self-evident. Neither the classical world nor ancient India has developed any similar thoughts; and this subject is decidedly Chinese, with a strong Taoist flavor of nature sentiment. It must not be overlooked, either, that al-Bērūnī (SACHAU, Alberuni's India, Vol. I, p. 204) merely states that "the shaft of the horn is black inside, and white everywhere else," and that he is entirely reticent about figures in the horn. The Arabs interested in the trade of the horn to China imbibed this lesson, and propagated it themselves in catering to the taste of their customers. The question is whether, in the interest of the business, they did not help nature by art, and may have produced several of the more fanciful designs artificially. This, however, is no matter of great concern; and the fact remains that bristly fibres of various tinges compose the horn, and result in a natural play of design and color which is apt to arouse the imaginative power of a susceptible mind.

[1] Western Tibetan tribes; from our standpoint, eastern Tibetans.

[2] I take this to be identical with what our zoölogists say in regard to the skin of the Asiatic species, which "has the appearance of a rigid armor studded with tubercles." The whole skin of the Javan species, as already remarked by B. CUVIER (The Animal Kingdom, Vol. I, p. 157, London, 1834), is covered with small compact angular tubercles. JOANNES RAIUS (Synopsis methodica animalium quadrupedum, p. 122, Londini, 1693) describes the skin of the rhinoceros thus: "Auriculae porcinae,

The *se si* is the female of the rhinoceros which is termed also 'sand-rhinoceros.' It has but a single horn on the crown of the head. The natural designs of the horn are smooth, white, and clearly differentiated, but it is useless as medicine, for the patterns on the horn of the male are big, those on the horn of the female too fine. In the beginning of the period Hung-wu (1368–1398) Kiu-chên[1] sent one as tribute, which was called one-horned (*monoceros*) rhinoceros. The view of Ch'ên Ts'ang-k'i that there are not the two kinds of land and water animals, the view of Kuo P'o that the rhinoceros has three horns, and the view of Su Sung that the hairy rhinoceros is the male rhinoceros, are all erroneous. The term 'hairy rhinoceros' is at present applied to the yak.[2] The designs of the rhinoceros-horn are like fish-roe. On account of their shape they are styled 'grain patterns.'[3] Inside of the latter there are eyes, styled 'grain eyes.' If yellow decorations rise from a black background, the horn is 'standard throughout.' If black decorations rise from a yellow background, the horn is 'inverted throughout.' If within the decorations there are again other decorations, the horn is 'double throughout.' The general designation for these is *t'ung si*, and they are of the highest grade. If the decorations are spotted, as it were, with pepper and beans, the horns are middle grade. The horn of the black rhinoceros, which is of a uniform black color and devoid of decorations, is the lowest grade.[4] If the horn of the rhinoceros 'communicating with the sky' emits light, so that it can be seen at night, it is

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molli et tenui cute vestitae; reliquum corpus dura admodum et crassa, velut squamis quibusdam crustaceis rotundis aspera." This is the reason why in some Chinese and early European sketches the animal is covered with scales (see Figs. 3 and 11, and Plate IX).

[1] PLAYFAIR, No. 1295 (1278): in Annam (compare above, p. 81).

[2] Li Shi-chên refers to the notes on this subject contained in the same chapter. This remark renders it plain that it was the notion of "rhinoceros" which was transferred in recent times to the yak, and that the development was not in the reverse order, as assumed by Professor Giles.

[3] This and the following sentences, commenting on the natural designs of the horn, have been translated by S. JULIEN (in M. REINAUD, Relation des voyages faits par les Arabes, Vol. II, p. 68).

[4] In the Memoirs on the Customs of Cambodja by Chou Ta-kuan of the Yüan period, translated by P. PELLIOT (*Bulletin de l'Ecole française d'Extrême-Orient*, Vol. II, 1902, p. 167), it is said that the white and veined rhinoceros-horn is the most esteemed kind, and that the inferior quality is black. The List of Medicines exported from Hankow, published by the Imperial Maritime Customs (p. 15, Shanghai, 1888), is therefore wrong in stating that the black and pointed horns are considered the best. A valuation for the horn is not given there. According to a report of Consul-General G. E. ANDERSON of Hongkong (*Daily Consular and Trade Reports*, 1913, p. 1356), rhinoceros-horns are imported into Hongkong to some extent, the price ranging from $360 to $460 per picul, or from about $1.30 to $1.65 gold per pound; they are largely of African production, and imported from Bombay. According to L. DE REINACH (Le Laos, Paris, no date, p. 271), rhinoceros-horns have in the territory of the Laos a market-value of 111–137 fr. the kilo, and rhinoceros-skins 60–70 fr. a hundred kilo.

called 'horn shining at night' (*ye ming si*):[1] hence it can communicate with the spirits, and open a way through the water. Birds and mammals are frightened at seeing it. The *Shan hai king* speaks of white rhinoceroses.[2]

[1] This idea may have been borrowed from the precious stones believed to shine at night (HIRTH, China and the Roman Orient, pp. 242–244; CHAVANNES, Les pays d'occident d'après le Heou Han Chou, *T'oung Pao*, 1907, p. 181). Jade disks shining at night (*ye kuang pi*) are mentioned in *Shi ki* (Ch. 87, p. 2 b). The note of Li Shi-chên is doubtless suggested by the following passage of the *Tu yang tsa pien*, written by Su Ngo in the latter part of the ninth century (WYLIE, Notes on Chin. Lit., p. 194; ed. of *Pai hai*, Ch. B, p. 9, or *P'ei wên yün fu*, Ch. 8, p. 87 b): "In the first year of the period Pao-li (825 A.D.) of the Emperor King-tsung of the T'ang dynasty, the country of Nan-ch'ang [in Kiang-si; PLAYFAIR, No. 4562] offered to the Court a rhinoceros-horn shining at night (*ye ming si*). In shape it was like the 'horn communicating with the sky.' At night it emitted light, so that a space of a hundred paces was illuminated. Manifold silk wrappers laid around it could not hide its luminous power. The Emperor ordered it to be cut into slices, and worked up into a girdle; and whenever he went out on a hunting-expedition, he saved candle-light at night." We even hear of a luminous pillow (*ye ming chên*) lighting an entire room at night (*Yün sien tsa shi*, Ch. 6, p. 3 b, in *T'ang Sung ts'ung shu*, which quotes from *K'ai-yüan T'ien-pao i shi*). The story of *Tu yang tsa pien* may be connected with the curious tradition regarding Wên K'iao (*Tsin shu*, Ch. 67, p. 5), who by the alleged light emitted from a rhinoceros-horn beheld the supernatural monsters in the water (see PÉTILLON, Allusions littéraires, p. 227; S. LOCKHART, A Manual of Chinese Quotations, p. 280; and GILES, Dictionary, p. 794 b,—who translate 'to light a rhinoceros-horn,' which is not possible, as in this case the horn would burn down; the horn was shining through its alleged own light). An illustration of this scene by Ting Yün-p'êng is published in *Ch'êng shi mo yüan* and *Fang shi mo p'u*. The notion that the rhinoceros-horn is luminous at night, and is therefore styled "shining or bright horn" (*ming si*, or *kuang ming si*), and also "shadow horn" (*ying si*), is found in *Tung ming ki* (Wu-ch'ang print, Ch. 2, p. 2), embodied in a fabulous report on a country Fei-lo, said to be nine thousand *li* from Ch'ang-ngan in Indo-China (Ji-nan). This work relating to the time of the Han Emperor Wu, though purported to have been written by Kuo Hien of the Han, is one of the many spurious productions of the Leu-ch'ao period (fourth or fifth century), and teeming with anachronisms and gross inventions; some accounts in it are interesting, but devoid of historical value (see WYLIE, Notes, p. 191). The assertion there made, that the inhabitants of Fei-lo drive in carriages drawn by rhinoceros and elephant, is very suspicious; but the report that the horns sent from there were plaited into a mat, the designs of which had the appearance of reticulated silk brocade, is probably not fictitious; for this is confirmed by a passage of the T'ang Annals (Chapter *wu hing chi*, quoted in *T'u shu tsi ch'êng*), according to which a certain Chang Yi-chi had a mat made for his mother from rhinoceros-horn. Since the latter (the designation "horn," from a scientific standpoint, is a misnomer) is composed of agglutinated hair or bristles, it is possible to dissolve a horn into thread-like fibres; and the possibility of a technique employing these for the plaiting of mats must be admitted.

[2] According to the more precise wording of the passage, as quoted in *P'ei wên yün fu* (Ch. 8, p. 88 a), the white rhinoceros occurs in the mountains of Kin-ku, inhabited by large numbers of other wild animals, also hogs and deer. The *Shan hai king* is an apocryphal work teeming with fables, and has little value for scientific purposes. The *P'ei wên yün fu*, further, quotes the *Tung kuan Han ki* (completed about 170 A.D.; BRETSCHNEIDER, Bot. Sin., pt. 1, No. 990) to the effect that in the first year of the period Yüan-ho (84 A.D.) of the Emperor Chang of the Han dynasty the country Ji-nan (Tonking) offered to the Court a white pheasant and a white rhinoceros. But this text, unreservedly accepted by HIRTH (Das weisse Rhinoceros, *T'oung Pao*, Vol. V, 1894, p. 392), must be taken with some caution, as it is identical with, and apparently derived from, the passage in *Hou Han shu* (Ch. 116, p. 3 b), according to which, in the first year of the period Yüan-ho (84 A.D.), the *Man I* beyond the boundary of Ji-nan offered to the Court a live rhinoceros and a white pheasant. The

"The work *K'ai-yüan i shi*[1] mentions the 'cold-dispelling' rhinoceros-horn (*pi han si*), whose color is golden, and which was sent as tribute by Tonking (*Kiao-chi*).[2] During the winter months it spreads warmth, which imparts a genial feeling to man. The *Po k'ung leu t'ie*[3] speaks of the 'heat-dispelling' rhinoceros-horn (*pi shu si*) obtained by the Emperor Wen-tsung (827–840 A.D.) of the T'ang dynasty.[4] During the summer months it can cool off the hot temperature. The *Ling piao lu i*[5] records the horn of the 'dust-dispelling' rhinoceros (*pi ch'ên si*), from which hairpins, combs, and girdle-plaques are made, with the effect that dust keeps aloof from the body. The *Tu yang tsa pien*[6]

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text of the official Annals is decisive, and it is easy to see that the word "live" could have been altered into "white" by the suggestion of the white pheasant. The *T'ang leu tien*, a description of the administrative organization of the period K'ai-yüan (713–741) of the T'ang dynasty, ascribed to the Emperor Yüan-tsung (compare PELLIOT, *Bulletin de l'Ecole française d'Extrême-Orient*, Vol. III, 1903, p. 668), says that "the white rhinoceros (*pai se*) is an auspicious omen of the first order" (*shang jui;* quoted in *Yen kien lei han*, Ch. 410, p. 17 b). But as most of the creatures appearing in the category of such "auspicious omens" are imaginary, it is more than probable that this white rhinoceros owes its existence to pure fancy. The white rhinoceros, therefore, does not rest on good evidence; and I am not convinced that the Chinese were ever acquainted with such a variety. Moreover, the so-called White or Square-nosed Rhinoceros (*Rhinoceros simus cottoni*) has not yet been traced in Asia, but is restricted to Africa. It is described and illustrated by A. NEWTON (*Proceedings of the Zoölogical Soc. of London*, Vol. I, 1903, pp. 222–224; see *ibid.*, Vol. II, 1903, p. 194), R. LYDEKKER (The Game Animals of Africa, p. 38, London, 1908), and E. L. TROUESSART (Le Rhinocéros blanc du Soudan, *Proceedings* etc., 1909, pp. 198–200, 3 plates). A fine monograph is devoted to it by E. HELLER, The White Rhinoceros (*Smithsonian Misc. Collections*, Vol. 61, No. 1, Washington, 1913, 31 plates), embodying the results of Colonel Roosevelt's African expedition. As to the "white" color, Mr. Heller observes, "The skins cannot under the most lenient circumstances be classed as white. They are, however, distinctly lighter than those of the black species, and may on this account be allowed to retain their popular designation of white. Their true color is smoke gray of Ridgway, a color conspicuously lighter than the dark clove-brown of their geographical ally, *Diceros bicornis*."

[1] Matters omitted in the Annals of the Reign of *K'ai-yüan* (713–742) by Wang Jên-yü, written during the Wu-tai period (907–960); see BRETSCHNEIDER, Bot. Sin., pt. 1, p. 156.

[2] The text is quoted in *P'ei wên yün fu* (Ch. 8, p. 87 b) as follows: "The country of Tonking sent a rhinoceros-horn of golden color, which was placed in a golden pan in a hall of the palace; the warmth caused by it was felt by every one; the envoy said that it was the cold-dispelling rhinoceros-horn."

[3] The complete title runs *T'ang Sung Po k'ung leu t'ie;* it is a cyclopædia in 100 chapters arranged according to subject-matters dealing with affairs of the T'ang and Sung periods (Ming edition in John Crerar Library, No. 786, in 96 vols.).

[4] The exact text is given in *P'ei wên yün fu*. A sceptre of auspicious augury (*Ju i*), made from a "heat-dispelling horn" in the possession of the same emperor, is mentioned in *Tu yang tsa pien* (Ch. B, p. 12; see note 6). Another *Ju i* of ordinary rhinoceros-horn is spoken of in *Yün sien tsa shi* (Ch. 3, p. 5 b; ed. of *T'ang Sung ts'ung shu*).

[5] See p. 142.

[6] An account of rare and curious objects brought to China from foreign countries from 763 to 872, by Su Ngo in the latter part of the ninth century (BRETSCHNEIDER, *l. c.*, p. 204; WYLIE, Notes on Chin. Lit., p. 194). According to the passage in the original text (ed. of *Pai hai*, Ch. C, p. 9 b), this girdle was in the possession of the

refers to the 'wrath-removing' rhinoceros-horn (*küan*, No. 3141, *fên si*), from which girdles are made, causing men to abandon their anger; these are scarce and veritable treasures."

These extracts, ranging from the fifth to the sixteenth century, leave no doubt that during this interval the two words *se* and *si* invariably referred to the rhinoceros, that the two species of the single-horned and two-horned animal were recognized, that their geographical distribution was perfectly and correctly known,[1] and that the main characteristics of the animal were seized upon. Among these, the horn naturally attracted widest attention, and in most cases was the only part of the animal that came within the experience of the writers. The wondrous lore surrounding the horn, the supernatural qualities attributed to it, led also to fabulous stories regarding the animal itself, which in the midst of impenetrable forests was seldom exposed to the eye of an observer. A lengthy dissertation on the healing properties of the horn, and on its utilization in prescriptions, is added in the *Pên ts'ao kang mu*; but this matter has no direct relation to our subject.[2]

Princess T'ung-ch'ang, and consisted of small balls turned from horn, as shown by the description that they were round like the clay pellets used in shooting with the bow *tan* (No. 10,603). These bows, a combination of a sling with a bow, are still turned out in Peking, and used in slaying birds, to prevent the plumage from being damaged. In India they are known as *goolail* (YULE and BURNELL, Hobson-Jobson, p. 386), and are chiefly employed for exterminating crows, being capable of inflicting severe injuries. Every ethnologist is familiar with these sling-bows or pellet-bows, as they are called, and with the difficult problem presented by their geographical distribution over India, south-eastern Asia, and in the valley of the Amazon in South America (compare G. ANTZE, in *Jahrbuch des Museums für Völkerkunde zu Leipzig*, Vol. III, 1908, pp. 79–95; and W. HOUGH, *Am. Anthr.*, 1912, p. 42). It is further added in the *Tu yang*, that this horn, when placed in the ground, does not rot,—a notion presumably originated by occasional finds of fossil horns or those accidentally shed by the animal.

[1] The case is certainly such that the zoölogist, as in so many other cases, is obliged to learn from the historian in regard to the distribution of animals in former periods of history. Our zoögeographers trace the area of the two-horned rhinoceros to Sumatra, Borneo, Siam, and the Malay Peninsula, and from there extending northward through Burma and Tenasserim to Chittagong and Assam. Our investigation has taught us that it covered in ancient times a much wider geographical zone, including Cambodja, Annam, and southern China, in particular Kuei-chou, Hu-nan, Yün-nàn, and Sze-ch'uan.

[2] The theory of Ko Hung or Pao-p'u-tse of the fourth century, as shown above (p. 139), is that the horn can neutralize poison, because the animal devours all sorts of vegetable poisons with its food. Li Shi-chên states that the horn is non-poisonous, and is forestalled in this opinion by T'ang Shên-wei. Shavings of the horn, the decoction of which is taken in fever, small-pox, ophthalmia, etc., are still to be had in all Chinese drug-stores. A specimen obtained by me at Hankow was said to come from Tibet. According to S. W. WILLIAMS (The Chinese Commercial Guide, p. 95, Hongkong, 1863), a decoction of the horn shavings is given to women just before parturition and also to frightened children. As stated by the same author, the skin of the animal is likewise employed in medicine. It is made into a jelly which is highly esteemed, and the same is done with the feet (SOUBEIRAN and THIERSANT, La matière médicale chez les Chinois, p. 47, Paris, 1874). This practice presumably originated in Siam. Monseigneur PALLEGOIX (Description du royaume Thai ou

The word *se* is presumably the older of the two, as the ancient Chinese seem to have been first acquainted with this species, while it was still alive in their country; at a somewhat later time, which, however, still ranged in a prehistoric period, they became familiar with the two-horned *si*. This theory would account for the statement of Li Shi-chên that the ancients were fond of saying *se*, while later on people inclined toward the word *si;* and that in the north (the ancient habitat of the *se*) the word *se* prevailed, in the south the word *si*. This came about

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Siam, Vol. I, p. 156) reports the following: "On attribue beaucoup de vertus à sa corne, et (chose singulière!) sa peau, quelque épaisse et coriace qu' elle soit, est regardée comme un mets délicat et fortifiant pour les personnes faibles. On grille d'abord la peau, on la ratisse, on la coupe en morceaux et on la fait bouillir avec des épices assez longtemps pour la convertir en matière gélatineuse et transparente. J'en ai mangé plusieurs fois avec plaisir, et je pense qu'on pourrait appliquer avec succès le même procédé aux peaux de quelques autres animaux." The skin, as well as the horn, the blood, and the teeth, were medicinally employed in Cambodja, notably against heart-diseases (A. CABATON, Brève et véridique relation des événements du Cambodge par Gabriel Quiroga de San Antonio, p. 94, Paris, 1914). In Japan rhinoceros-horn is powdered and used as a specific in fever cases of all kinds (E. W. CLEMENT, Japanese Medical Folk-lore, *Transactions As. Soc. of Japan*, Vol. XXXV, 1907, p. 20). Ko Hung of the fourth century, as we observed, is the very first Chinese author to develop the theory of the horn as to its ability to detect poison, and as an efficient antidote against poison. He also reasons his theory out, and supports it with arguments of natural philosophy breathing a decidedly Taoist spirit. Nothing appears in his account that would necessitate a cogent conclusion as to his dependence on Indian thought. Indian-Buddhist influence on the Taoism of that period certainly is within the reach of possibility, but like everything else, remains to be proved; and for the time being I can only side with PELLIOT (*Journal asiatique*, 1912, Juillet-Août, p. 149) when he remarks to L. Wieger, "Ici non plus, je ne nie pas la possibilité de semblable influence, mais j'estime qu'il faut être très prudent." If a Buddhist text translated from Sanskrit into Chinese in or before the age of Ko Hung, and containing a distinct reference to this matter, can be pointed out, I am willing to concede that Ko Hung is indebted to an Indian source; if such evidence should fail to be forthcoming, it will be perfectly sound to adhere to the opinion that Ko Hung's idea is spontaneous, and the expression of general popular lore obtaining at his time; and there is no valid reason why it should not be. No ancient Sanskrit text containing similar or any other notions concerning this subject has as yet come to the fore; and the evidence in favor of Indian priority is restricted to the slender thread of Ctesias' account (p. 97), which is insufficient and inconclusive. The light-minded manner with which BUSHELL (Chinese Art, Vol. I, p. 119) dealt in the matter (as if the lore of the horn and the horn itself had only been a foreign import in China!) must be positively rejected. BRETSCHNEIDER (above, p. 75) no doubt was a saner judge. Neither in ancient India nor in the classical world do we find any trace of such beliefs as those expounded by Ko Hung and his successors, nor a particle of all that Chinese natural philosophy of the horn. AELIAN merely reiterates Ctesias; JUVENAL (VII, 130) mentions an oil-bottle carved from the horn; the *Periplus Maris Erythraei* (ed. FABRICIUS, pp. 40, 44, 56) refers to the export of the horn from African ports only, not from India. The Cyranides (F. DE MÉLY, Les lapidaires grecs, p. 90) are ignorant of the poison-revealing character of the horn. But for Ctesias, we should be compelled to admit that this belief originated in China and spread thence to India. At any rate, the report of Ctesias stands isolated in the ancient world; the untrustworthy character of this author is too well known to be insisted upon, and it would be preposterous to build a far-reaching conclusion on any of his statements which cannot be checked by other sources. His text is handed down in poor condition, and as late as by Photius, patriarch of Byzance (820–891), so that I am rather inclined to regard the incriminated passage as an interpolation of uncertain date. The belief in rhinoceros-horn being an efficient antidote against poison prevailed in Europe until recent times.

naturally, as the south bordered on Indo-China, where the two-horned species abounded, and a lively trade in its horn was carried on at all times. Hence in the primeval period represented by the songs of the *Shi king* the rhinoceros is styled *se*.

The philological students of China will certainly feel somewhat uneasy at the thought that an animal like the rhinoceros should have been within the vision of the early Chinese. We are all wont to look at

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It seems to have received a fresh impetus from India in the sixteenth century. The Portuguese physician GARCIA AB HORTO (Aromatum et Simplicium aliquot, p. 66, Antverpiae, 1567; or Due libri dell' historia dei semplici, aromati, et altre cose che vengono portate dall' Indie Orientali pertinenti all' uso della medicina, p. 58, Venetia, 1582) first reports from personal experience that rhinoceros-horn is employed in Bengal as an antipoisonous remedy, and goes on to tell that this is a fact established by experiments; his story is that of two poisoned dogs—the one who had swallowed double the dose was cured after taking in water a powder prepared from the horn, while the other dog, who had been given but a small quantity of poison and did not receive the remedy of the horn, was doomed to death. Doctor NICOLÒ MONARDES, physician in Sevilla (Delle cose che vengono portate dall' Indie occidentali pertinenti all' uso della medicina, p. 72, Venetia, 1582), has the following account: "L' Unicorno vero è cosa di maggiore effetto, che habbiamo veduto, e nella quale si trova maggiore esperienza; del quale poco si scrive. Solo Philostrato nella vita di Apollonio dice, essere contra il veneno; il que ampliarono molto i Moderni. Bisogna, che sia del vero; perche ne sono molti di falsi, e finti. Io vidi in questa città un Vinitiano, che ne portò un pezzo molto grande, e ne dimandava cinquecento scudi; delquale fece in mia presenza la esperienza. Prese un filo, e lo unse molto bene con Elleboro, e lo passò per le creste di due polli; all' uno de'quali diede un poco di Unicorno raso in un poco di acqua comune; e all' altro non diede cosa alcuna. Questo morì tra un quarto di hora; l'altro che prese l'Unicorno durò due giorni, senza voler mangiare, e alla fine di due giorni morì, secco come un legno. Credo io, che se si desse ad huomo, che non morrebbe; perche tiene le vie più aperte da potere scacciare da se il veneno; e gli si può ancho fare de gli altri rimedij, col mezzo de' quali, e coll' Unicorno potrebbe liberarsi. Di tutte queste Medicine compongo io una polvere, che cosi per qualità manifeste, come per proprietadi occulte ha gran virtù, e è di grande efficacia contra tutti i veneni, e contra le febbri Pestilentiali, ò che habbiano mala qualità; ò cagione venenosa." Then he describes the composition of this remedy. This European doctor was a contemporary of Li Shi-chên. Who, after reading the confession of his firm belief in the virtues of rhinoceros-horn, will blame the Chinese physicist? In the court ceremonial of France as late as 1789, instruments of unicorn-horn are said to have been employed for testing the royal food for poison.— Chinese lore of the rhinoceros is based on actual observation and speculation built thereon. Not only, as previously pointed out, are the observations of the Chinese in this line more complete, but even more accurate, than those of the classical peoples. In fact, the Chinese adopted nothing from the latter as to their notions of the animal. It is of especial interest that the fantastic belief of the ancients in the mobility of the horn is entirely absent in China. PLINY (*Nat. hist.*, VIII, 21, §73; ed. MAYHOFF, Vol. II, p. 103) observes in regard to the animal *eale*, which has been regarded by some authors as the two-horned rhinoceros, "It has movable horns several cubits long, which it can alternately raise in a combat and turn straightforward or obliquely, according to opportunity" (maiora cubitalibus cornua habens mobilia, quae alterna in pugna sistit variatque infesta aut obliqua, utcumque ratio monstravit). The mobility of the horn is insisted on by COSMAS: "When it is wandering about, the horns are mobile; but when it sees anything which excites its rage, it stiffens them, and they become so rigid that they are strong enough to tear up even trees with the roots — those especially which come in the way of the front horn" (MCCRINDLE, Ancient India, p. 156). In a similar manner al-Bērūnī (SACHAU, Alberuni's India, Vol. I, p. 204) says about the African rhinoceros that its second and longer horn becomes erect as soon as the animal wants to ram with it.

things in the dim candle-light of school traditions, and to think of the rhinoceros as an exclusively southern, tropical animal; but the fact remains that it is not, any more than the tiger, whose original home doubtless was on the Amur, and who is a comparatively recent intruder into Bengal. Climatic conditions and natural surroundings were different in ancient China from what they are at present; and the hills were still crowned by dense forests which were haunted by colossal pachyderms, like the elephant, the tapir, and the rhinoceros.[1]

The historical fact that the rhinoceros was a living contemporary of the ancient Chinese is fully confirmed by the investigations and results of palæontology. As early as 1871, F. PORTER SMITH[2] stated, "The teeth of the extinct rhinoceros of China, met with in the caves of Sze-ch'uan, are sold as dragon's teeth." Specimens of teeth in the possession of the naturalist D. Hanbury, obtained in Shen-si or Shan-si, were examined by Waterhouse of the British Museum, and referred to *Rhinoceros tichorhinus* Cuv., *Mastodon*, *Elephas*, *Equus*, and two *Hippotheria*.[3]

Armand David discovered at Süan-hua fu, north-west of Peking, Chili Province, bones from the extremities of a mammal and a nasal bone fragment, which were sent to Paris and determined by GAUDRY[4] as belonging to *Rhinoceros antiquitatis;* and in 1903 M. SCHLOSSER[5] was able to show that this species had once been distributed as far south as the Yang-tse.

The famous naturalist A. R. WALLACE[6] wrote in 1876 that in northern

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[1] The alligator is now extinct in the Yang-tse, but has risen to life again in the ancient bone carvings of Ho-nan, and is represented in several excellent specimens in the Field Museum obtained with many others from the late F. H. Chalfant.

[2] Contributions towards the Mat. Med. of China, p. 185. Not all "dragon-teeth" (*lung ch'i*), however, originate from the rhinoceros. A number of these gathered by me in a drug-store of Hankow and now in the American Museum of New York (Cat. No. 13,847) were examined by the palæontologist Mr. B. Brown, and contained five teeth of Rhinoceros, one tooth of Mastodon, two teeth of Hipparion (1 m^2), and one tooth (P_3) of an undescribed Hipparion. The palæontologist M. Schlosser of Munich (see below) has devoted a careful study to these teeth with remarkable results. Rhinoceros-teeth were employed for medicinal purposes as early as the middle ages. In the Annals of the Sung Dynasty (*Sung shi*), Biography of Ts'ien Shu (929–988; GILES, Biographical Dictionary, p. 144), there is a record that in the year 963 this prince, ruler of Wu and Yüe, sent as tribute ten thousand ounces of silver, one thousand single rhinoceros-teeth (*si ya*), fifteen thousand catties of perfume and drugs, and a hundred wrought objects of gold, silver, genuine pearls, and tortoise-shell (*P'ei wên yün fu*, Ch. 21, p. 114 b). For the year 983, a tribute of rhinoceros-teeth is recorded in the same Annals as having been sent from San-fo-ts'i (Palembang on the north-east coast of Sumatra).

[3] *China Review*, Vol. V, 1876, p. 69.

[4] *Bulletin de la société géologique de France*, Vol. XXIX, 1871-72, p. 178.

[5] Die fossilen Säugetiere Chinas (see below), p. 56.

[6] The Geographical Distribution of Animals, Vol. I, p. 123.

China remains of *Hyæna*, *Tapir*, *Rhinoceros*, *Chalicotherium*, and *Elephas*, had recently been found, closely resembling those from the Miocene or Pliocene deposits of Europe and India, and showing that the Palæarctic region had then the same great extent from west to east that it has now. Of two species,—complete carcasses with the skin,—the two horns, hair, and well-preserved interior organs, were discovered in frozen soil between the Yenisei and Lena Rivers in Siberia.[1] They lived during the ice age, and were covered with a coarse hairy and finely curled coat, the skin being smooth and without the characteristic folds of the now living species. K. A. ZITTEL[2] defines the zone of these two species (*Rhinoceros mercki* and *antiquitatis*) as extending over the whole of northern and central Asia, inclusive of China, and over northern and middle Europe.[3] The best study of this subject, thus far, has been made by M. SCHLOSSER.[4] He records a new species from China (*Rhinoceros habereri*) [5] in two different types, and two others belonging to the forest fauna, one of which is referred to the two-horned Sumatran type,

[1] This first find was made in 1771 on the bank of the river Wilui near 64° N. lat. It was first described by the prominent naturalist P. S. PALLAS, in his treatise De reliquiis animalium exoticorum per Asiam borealem repertis complementum (in *Novi Commentarii Acad. Scient. Petropolitanae*, Vol. XVII, 1772, p. 576), and in his Reise durch verschiedene Provinzen des russischen Reichs (Vol. III, p. 97, St. Petersburg, 1776). Head and feet of this animal are still preserved in St. Petersburg. A fundamental investigation still remains that of J. F. BRANDT, De rhinocerotis antiquitatis seu tichorhini seu pallasii structura externa etc. (*Mémoires de l'Acad. de St. Pétersbourg*, series 6, Vol. V, 1849, pp. 161–416). A rich collection of rhinoceros-bones made in the western part of Transbaikalia is in the Museum at Troitskosavsk (compare MOLLESON, in *Papers of the Troitskosavsk-Kiachta Section of the Russian Geogr. Soc.*, in Russian, Vol. I, 1898, p. 71; and the detailed descriptions of Mme. M. PAVLOV, *ibid.*, Vol. XIII, 1910, pp. 37–44).

[2] Palæozoologie, Vol. IV, p. 296. For a restoration of the woolly rhinoceros found in Siberia see N. N. HUTCHINSON, Extinct Monsters, Plate XXI.

[3] We know that fossil rhinoceros-horn had attracted the attention of Siberian natives long before it came to the notice of European scientists. It was employed to strengthen their bows, and the belief was entertained that it exerted a beneficial influence on the arrow hitting its mark. (Compare A. E. v. NORDENSKIÖLD, Die Umsegelung Asiens und Europas auf der Vega, Vol. I, p. 367, Leipzig, 1882.) Now we read in the Annals of the Kin Dynasty (*Kin shi*, Ch. 120, p. 3 a) that the Niüchi, a Tungusic tribe, availed themselves of rhinoceros-horn for the same purpose; and it may therefore be presumed that they obtained it through the medium of trade from inner Siberia (compare above, p. 95). Fossil rhinoceros-horns have also been found in the valley of the Kolyma River. K. v. DITMAR (Reisen und Aufenthalt in Kamtschatka, Vol. I, p. 37, St. Petersburg, 1890) saw one from that region nearly three feet long, and emphasizes the co-existence there of numerous remains of rhinoceros, mammoth, and narwhal.

[4] Die fossilen Säugetiere Chinas (*Abhandlungen der bayer. Akademie*, Cl. II, Vol. XXII, 1903, pp. 1–221, 14 plates). This work is conveniently summed up by H. F. OSBORN (The Age of Mammals, pp. 332–335), where an interesting map (p. 505) is added, showing the former and recent distribution of the rhinoceros. The material described by Schlosser is derived from Chinese drug-stores, and was collected by K. Haberer. The author gives also a valuable summary of the localities in China where fossil remains of mammals have been found (pp. 9–19).

[5] *L. c.*, pp. 58–63.

and the other (*Rhinoceros brancoi*) possibly to the single-horned Indian species. This fact is in striking agreement with the result of our historical investigation, according to which these two species were known to the ancient Chinese and distinguished by the two names *si* and *se*. In view of the acquaintance of the Chinese with these two species, the question as to the age of the fossil remains is, of course, important. According to the researches of Schlosser, the number of species of fossil rhinoceroses traceable in China amounts to at least seven, three of which originate from the Pleistocene, four from the Pliocene; and Schlosser was able to prove that *Rhinoceros sinensis Owen* does not represent a species from the Tertiary, as presumed heretofore, but should be rather one from the Pleistocene.[1] There is, accordingly, from a geological viewpoint, good reason to believe that several species of rhinoceros could have survived on Chinese soil down to the historic period when man made his first appearance there;[2] and it is in the records of the Chinese that this fact has been preserved to us. It even seems to me (but this is the mere personal impression of a layman, which may not be acceptable to a specialist in this field) that the Chinese records, in a highly logical manner, fill a gap between the palæontological facts of Siberia and the present-day existence of the hairy two-horned rhinoceros in south-eastern Asia. If it is admissible to identify the Siberian *tichorhinus* with the latter species, or to consider the former as the primeval ancestor of the latter, it is conceivable that the Siberian animal, pressed by the advance of the ice, started on a migration southward, and first halted in northern China, where it became the *si* of the Chinese, and whence it finally proceeded south-east. Whatever this fancy may be worth, there can be no doubt of two points,— first, that the ancient Chinese, from the very beginning of their history, were acquainted with two species of rhinoceros, the single-horned and the two-horned ones, distinguished as *se* and *si;* and, second, that the

[1] *L. c.*, p. 52.

[2] We owe to M. SCHLOSSER an interesting discovery in regard to the age of man on Chinese soil. He describes (pp. 20–21) and figures a tooth, a molar (m_3) of the left upper jaw, which originates either from man or from a new anthropoid. This tooth is perfectly fossilized, wholly untransparent, and shows between the roots a reddish clay, such as is found only in teeth really coming from the Tertiary, and not from the loess; so that the author is inclined to ascribe to it a tertiary origin, or at all events, a very great age, going back at least to old Pleistocene. A definite solution of the problem cannot be reached at present. "The purpose of this notice is," concludes SCHLOSSER, "to call the attention of subsequent investigators, who may have an opportunity of undertaking excavations in China, to the possibility that either a new fossil anthropoid or tertiary man, or yet an old-Pleistocene man, might be found." I agree with Schlosser on this point, and regard his discovery, which certainly so far remains entirely hypothetical, as highly suggestive, and pointing in the direction of a future possibility of a new Pithecanthropus being discovered in Chinese soil.

former is identical with the present *Rhinoceros indicus unicornis* (as proved above all by the linguistic relationship of the word *se* with Tibetan *bse* and Lepcha *sa*), and the latter with the present *Rhinoceros sumatrensis*.[1]

We may now attempt something like a reconstructive history of the rhinoceros in the historical era. At the time of the *Shi king*, the rhinoceros was known to the Chinese as a game-animal. In a song celebrating a hunting-expedition by King Süan, it is said, "We have bent our bows: we have our arrows on the string. Here is a small boar transfixed; there is a large rhinoceros (*se*) killed."[2] As a metaphor, the name of the animal is employed in another song, in which soldiers constantly occupied on the war-path complain of cruel treatment, and say, "We are not rhinoceroses, we are not tigers, to be kept in these desolate wilds."[3] Also cups carved from rhinoceros-horn (*se kung*)[4] make their début in the *Shi king;* and from the passages where it is mentioned, an apparent symbolism is connected with it. In the region of Pin it was customary for the people in the tenth month to visit the palace of their prince with offerings of wine, and "to raise the cup of rhinoceros-horn with wishes for numberless years without end."[5] In another song, a woman yearning for her absent husband takes a cup of wine poured out of a rhinoceros-horn, in the hope that her grief will not last forever.[6] The idea of the healing property of the horn is possibly here involved.

In the *Shu king*, embodying the most ancient historical records of the nation, the rhinoceros is not directly mentioned, but one of the two principal products yielded by it is alluded to. At least, this is the opinion of the Chinese commentators. In the chapter entitled Tribute of Yü (*Yü kung*), "teeth" and "hide" are stated to have been the produce of the two provinces Yang-chou and King-chou,— the former covering the littoral territories south and north of the Yang-tse delta; the latter, the present area of Hu-nan and Hu-pei. The term "teeth" is interpreted

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[1] It would now be appropriate to introduce for the two extinct Chinese species the names *Rhinoceros unicornis* var. *sinensis* (Chinese *se*), and *Rhinoceros bicornis* var. *sinensis* (Chinese *si*).

[2] *Shi king*, ed. LEGGE, p. 292.

[3] *Ibid.*, p. 424.

[4] Nos. 6393 and 6398. The two characters are read *kung* (according to *T'ang yün*) and *kuang* (according to *Shuo wên*).

[5] *Ibid.*, p. 233. The rhinoceros belongs to the long-lived animals. "Individuals have lived for over twenty years in the London Zoölogical Gardens, and it is stated that others have been kept in confinement for fully fifty years. Consequently there is no doubt that the animal is long-lived, and it has been suggested that its term of life may reach as much as a century" (R. LYDEKKER, The Game Animals of India, p. 31).

[6] *Ibid.*, p. 9.

as ivory; the term "hide," as rhinoceros-hide.[1] This inference is very reasonable, for the tributes or taxes of those territories cannot have been any ordinary animal teeth or hides of any kind, but they certainly were those teeth and hides most highly prized in the Chou period,— and these were ivory, and rhinoceros-hide desirable for body armor.[2] The sovereigns of the Chou dynasty hunted the rhinoceros. In B.C. 965, as recorded in the Annals of the Bamboo Books, Chao Wang invaded the country of Ch'u, and crossing the Han River, met with a large single-horned rhinoceros (or rhinoceroses). Yi Wang, in B.C. 855, captured, when hunting in the forest of Shê, a two-horned rhinoceros, and had it carried home.[3]

The rhinoceros was also pictured at an early date. When the emperor mounted his chariot, they posted on both sides of it the lords, whose chariots had red wheels, two crouching rhinoceroses being represented on each wheel; and they posted in front the lords, whose chariots had red wheels with a single tiger represented on each wheel.[4] This

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[1] LEGGE, Chinese Classics, Vol. III, pp. 111, 115; COUVREUR, Chou King, pp. 71, 73 (see also HIRTH, The Ancient History of China, p. 121). LEGGE remarks, "This view is generally acquiesced in. Are we to suppose then that the rhinoceros and elephant were found in Yang-chou in Yü's time? They may very well have been so. Hu Wei observes that from the mention or supposed mention of these animals some argue for the extension of the limits of the province beyond the southern mountain-range to Kuang-tung, Kuang-si, and Annam, and replies that the princes might be required to send articles of value and use purchased from their neighbors, as well as what they could procure in their own territories." This conclusion of Hu Wei is quite unnecessary. It is merely elicited by the school opinion that the geographical distribution of animals must have been the same anciently as at present. There can certainly be no more erroneous view. Nothing in nature remains unchangeable. All the large mammals formerly had a far wider range, gradually narrowed by natural events and human depredations. We are simply forced to admit that the rhinoceros, as well as the elephant, existed in Yang-chou and King-chou in the times of antiquity. This logically results from the Chinese records, and is a logical inference from a zoö-geographic point of view. No jugglery or sophistry, like extension of geographic provinces, misunderstanding of words, or introduction of bovines, is necessary to explain and to understand a fact of such simplicity as this one.

[2] The skin of the rhinoceros was utilized in the Chou period also for the manufacture of a yellow glue employed for the purpose of combining the wooden and horn parts of a bow (*Chou li*, XLIV, BIOT'S translation, Vol. II, p. 586). The commentator Wang Chao-yü of the twelfth century justly adds that either skin or horn can be made into glue, but that, as far as the rhinoceros is concerned, only the skin is laid under contribution to this end. Naturally, since the horn is too valuable. Chêng K'ang-ch'êng assures us that in his time (second century A.D.) the stag-glue was exclusively made from the antlers. It is hardly conceivable that Yang-chou and King-chou should have sent as tribute bovine hides which could be obtained everywhere: the specification of these territories implies a specific material peculiar to them; of wild bovines there, nothing is known.

[3] LEGGE, Chinese Classics, Vol. III, Prolegomena, pp. 149, 153; BIOT'S translation of *Chu shu ki nien*, pp. 41, 46 (Paris, 1842). Note that the idea of the monoceros *hiai-chai* originated in the country of Ch'u (above, p. 115, note 2). In the Ch'un-ts'iu period, as it appears from a passage of *Tso chuan* (LEGGE, Chinese Classics, Vol. V, p. 289), both *se* and *si* were still plenty.

[4] CHAVANNES, Les Mémoires historiques de Se-ma Ts'ien, Vol. III, p. 214.

juxtaposition of rhinoceros and tiger is noteworthy, for it turns up again in Chuang-tse: "To travel by water and not avoid sea-serpents and dragons, — this is the courage of a fisherman. To travel by land and not avoid the rhinoceros and the tiger, — this is the courage of hunters." [1] And in Lao-tse's *Tao tê king* (Ch. 50): "He who knows how to take care of his life, when travelling by road, never meets rhinoceros or tiger; when entering the army, he does not require defensive or offensive armor. The rhinoceros, therefore, finds no place where to insert its horn, the tiger where to lay its claws, the soldier where to pierce him with his sword." [2] Finally in the passage of *Lun yü* [3] already referred to.

The extermination of wild animals made rapid progress; the gradually advancing Chinese agriculturist cleared the hills and deforested the plains in order to till the ground and to yield the means of subsistence for the steadily increasing populace. The famous passage in *Mêng-tse* [4] is of primary importance: Chou-kung, the organizer of the government of the Chou dynasty, broke the rebellions and established peace throughout the empire; "he drove far away also the tigers, leopards, rhinoceroses, and elephants, — and all the people was greatly delighted." Toward the end of the Chou period (middle of the third century B.C.) the one-horned rhinoceros was, in all likelihood, extinct in northern China; and the two-horned species had gradually withdrawn, and taken refuge in the high mountain-fastnesses of the south-west. The strong desire prevailing in the epoch of the Chou for the horn of the animal, which was carved into ornamental cups, and for its valuable skin, which was worked up into armor, had no doubt contributed to its final destruction in the north. So there is no reason to wonder that to the later authors the extinct animal *se* was a blank, and offered a convenient field for fanciful speculations. [5]

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[1] GILES, Chuang Tzŭ, p. 214.

[2] Compare S. JULIEN, Le livre de la voie et de la vertu, p. 183. It is noticeable that the word *kia*, which in Lao-tse's time designated a cuirass of rhinoceros-hide, appears here in close connection with the rhinoceros.

[3] LEGGE, Chinese Classics, Vol. I, p. 307.

[4] LEGGE, The Chinese Classics, Vol. II, p. 281.

[5] It is a well-known phenomenon in all languages that newly-discovered animals are named for those already known, for example, that sea-mammals are named for land-mammals to which they bear some outward resemblance, or insects for larger animals. Thus we know a rhinoceros-beetle (*Oryctes rhinoceros*) with horns or processes on its head (see *Science*, 1913, p. 883), and a rhinoceros-bird or hornbill (*Buceros rhinoceros*) noted for the extraordinary horny protuberance on the crest of its bill. These examples certainly do not mean that our word "rhinoceros" originally referred to an insect or a bird; but in our effort to coin a name for this beetle and bird, we happened to hit upon the rhinoceros, because certain characteristics of it were, by way of comparison, seen in the former. It is exactly the same when the Chinese, in literary

Se-ma Ts'ien, the father of Chinese history, who was born in B.C. 145, and died between B.C. 86 and 74, and who in his Historical Memoirs repeatedly mentions the two species, doubtless was personally familiar with them; for he locates them in Sze-ch'uan,[1] and we know that he, a great traveller and observer, accompanied the military expedition of the Emperor Wu sent in B.C. 111 into Sze-ch'uan and Yün-nan.[2] Again and again, Chinese authors in the beginning of our era point to that territory as the stronghold of the rhinoceros. We noticed that Kuo P'o of the third century alludes to Mount Liang in Sze-ch'uan as its habitat (p. 94); and we may add to this the weighty testimony of Ch'ang K'ü

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style, sometimes designate the buffalo "the water-rhinoceros" (*shui se*). In the pre-Christian era the word *se* invariably applied to the single-horned rhinoceros,—a fact confirmed by the concordance of the word with Tibetan (*b*)*se* (p. 116). In times following the ultimate extermination of this species on Chinese soil, this word naturally fell into disuse and became open to other functions; while *si* is still retained as the general word for rhinoceros, whether single or two horned. The word *se* was transferred to the buffalo, because to a naïve and primitive mind the two animals, as has been demonstrated by the world-wide propagation of this notion, bear a striking similarity to each other. The attribute "water" fits both with their fondness for lying embedded for hours in mud and water. A sequel of this transfer in meaning, then, was the impression of recent Chinese authors that the word *se* had denoted also the wild buffalo or ox in the times of antiquity. This, of course, is a phantom. The most instructive passage where the words *si* and *shui se* are used together in close succession occurs in *Sung shi* (Ch. 489, p. 1), where it is said, in the chapter on Champa (Chan-ch'êng), that "the country abounds in peacocks and rhinoceros (*si niu*), that the people keep yellow oxen and buffalo (*shui niu*), and that those engaged in the capture of rhinoceros and elephant (*si siang*) pay a tax on them to the king; they eat the flesh of wild goats and buffalo (*shui se*)." In Siam, permission to capture wild elephants must still be obtained from the Government, and for each animal caught a royalty of $150 is paid (C. C. HANSEN, *Daily Consular and Trade Reports*, 1911, p. 751). In mediæval times when the rhinoceros became gradually scarcer on Chinese soil, and the supply of its skin no longer satisfied the demand for it, buffalo-hide was substituted for it. Chinese authors, with fair accuracy, indicate the time when this change went into effect. A book *Ts'e lin hai ts'o*, quoted in the cyclopædia *Yen kien lei han* (Ch. 228, p. 4), states in substance that what is designated rhinoceros-hide armor in the T'ang History is at present made from buffalo hide, but continues under the general name "rhinoceros" (*si*). The Chinese, accordingly, were perfectly aware of the fact that the ancient cuirasses were wrought from rhinoceros-hide, and that buffalo-hide was a later substitute. Ch'êng Ta-ch'ang, who wrote in the latter part of the twelfth century, says in a discourse on defensive armor (inserted in *Wu pei chi*, published in 1621 by Mao Yüan-i, Ch. 105, p. 4) that the skin of a domesticated animal like the ox is always handy, while the two rhinoceroses *si* and *se* cannot be reared, and their skins are not always obtainable; and that in his time armor was produced from buffalo-hide. In *T'ang shu* (Ch. 41, p. 1) the tribute sent by the district of Kuang-ling in Yang-chou (circuit of Huai-nan) is stated to have consisted of armor made from buffalo-hide (*shui se kia*). The rhinoceros is here out of the question, as it did not occur in that region; and the geographical chapters of the T'ang Annals give us the best clew to the tracing of the geographical distribution of the rhinoceros in the China of that period. It is worthy of note that the term *shui si* ("water rhinoceros") is still employed with reference to the rhinoceros only, not the buffalo. Chung Kia-fu writing in 1845 (*Ch'un ts'ao t'ang chi*, Ch. 30, p. 13) makes the remark that "the cups and dishes carved from rhinoceros-horn (*si kio*) in his time are not from the genuine rhinoceros (*shui si*), but from the horn of a wild ox (*ye niu*) in the countries of the foreign barbarians."

[1] *Shi ki*, Ch. 117, p. 3 b.

[2] CHAVANNES, Les Mémoires historiques de Se-ma Ts'ien, Vol. I, p. XXXI.

of the period of the Tsin dynasty (265–419), who in his interesting work *Hua yang kuo chi* ascribes colossal rhinoceroses to the country of *Pa*, the ancient designation for the eastern part of Sze-ch'uan, and further places the animal in the district of Hui-wu, the present Hui-li in the prefecture of Ning-yüan, province of Sze-ch'uan.[1] However doubtful the exact date of the work *Pie lu* may be, the fact remains that it plainly indicates south-western China in its whole range as the geographical area of the rhinoceros (p. 135).

With their victorious advance toward the south-east in the third and second centuries B.C., the horizon of the Chinese people widened; and they encountered the two-horned rhinoceros also in Tonking.[2] The tributes of live rhinoceroses sent to the Chinese Court from that region have been mentioned (p. 80). Liu Hin-k'i, author of the Records of Kiao-chou, of the fourth or fifth century, gives a perfectly correct description of the two-horned Annamese rhinoceros (p. 93). T'ao Hung-king, the universal genius of the fifth and sixth centuries, logically combines the ancient information relative to the south-west with the additional experience coming from the conquered south-east: Hu-nan, Yün-nan, and Kiao-chou in Tonking, according to him, represent the home of the rhinoceros (p. 136). This alliance of the two geographical zones is a fact of the greatest interest, for this observation of T'ao Hung-king incontrovertibly proves that the word *si* can but signify the rhinoceros, and particularly the two-horned species. When the Chinese first struck the rhinoceros of Annam, the matter is not reported as a novel experience; but they merely renewed an old experience which they had long before made in their own country, and applied the same familiar word to it. If the *si* of Tonking is the rhinoceros (and there is not an atom of doubt about it),[3] the *si* formerly recorded in Sze-ch'uan, Yün-nan,

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[1] PLAYFAIR, No. 2480 (2d ed., No. 2341). The passages referred to are in *Hua yang kuo chi*, Ch. 1, p. 2 b; Ch. 3, p. 23 (ed. of *Han Wei ts'ung shu*).

[2] *Ts'ien Han shu*, Ch. 28 B, p. 17. Thus the pseudo-embassy of the Emperor Marc Aurel, presenting in 166 A.D. the Annamese products ivory, rhinoceros-horn and tortoise-shell, and mentioned in the Annals of the Later Han Dynasty (HIRTH, China and the Roman Orient, pp. 42, 176), was not the first to make the rhinoceros-horn of Annam known to the Chinese, who were acquainted with it at least two centuries earlier.

[3] The fact is still evidenced by present-day conditions and the continuous trade carried on at all times in rhinoceros-horn from Annam to China. Compare G. DEVÉRIA, Histoire des relations de la Chine avec l'Annam, pp. 41, 88 (Paris, 1880); S. W. WILLIAMS (The Chinese Commercial Guide, p. 94) states that the best sort of rhinoceros-horn comes from Siam and Cochinchina, selling at times for $300 apiece, while that from India, Sumatra, and southern Africa, represents an inferior sort, and sells for $30 and upwards apiece. For the middle ages we have the testimony of Chao Ju-kua (HIRTH'S and ROCKHILL'S translation, p. 46). As has been pointed out, the word *se* gradually sank into oblivion in the post-Christian era, and was superseded by the exclusive use of the word *si*, which was then applied also to the

etc., must likewise be the rhinoceros; and T'ao Hung-king is our witness in establishing the identity of the animal as occurring in the Chinese and Indo-Chinese zones. This fact is borne out also by the coincidence of the definitions contributed by Kuo P'o and Liu Hin-k'i.

In the T'ang period (618–906) the animal must have been plentiful in many parts of China. The geographical section in the Annals of that dynasty carefully enumerates the various articles sent up to the capital as taxes from every district; and it is the local products which come into question. Besides, rhinoceros-horn, as far as I know, was not imported at that time from beyond the sea. The present territory of the province of Hu-nan in central China seems to have then abounded in the animal,[1] for no less than eight localities within its boundaries are on record which furnished rhinoceros-horn to the Court: viz., Li-yang in Li chou, circuit of Shan-nan; Wu-ling in Lang-chou; K'ien-chung in K'ien-chou; Lu-k'i in Ch'ên-chou; Lu-yang in Kin-chou; Ling-k'i in K'i chou (modern Yung-shun fu); Kiang-hua in Tao-chou, circuit of Kiang-nan; and Shao-yang in Shao-chou. Rhinoceros-horn was further supplied from Lung-k'i in Tsiang-chou, from T'an-yang in Sü-chou, Sze-ch'uan; from Ts'ing-hua in Shi-chou (now Shi-nan fu) in Hu-pei Province; from Yi-ts'üan[2] in Yi-chou, province of Kuei-chou; from Annam; and elephants and rhinoceroses were sent from Ling-nan (Kuang-tung), forming the southern part of Yang-chou.[3] Is it conceivable that the tribute of those regions should have consisted of bovine horns which have hardly any commercial value? From mediæval times onward, as the geographical knowledge of the Chinese more and more advanced, and their intercourse and trade with the nations of the southern ocean increased, they became cognizant of the existence of the rhinoceros in India,[4] Java,[5] and Sumatra, and even

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single-horned rhinoceros. The rhinoceros of India is indeed designated *si* (*Hou Han shu*, Ch. 118, p. 5 b; *Nan shi*, Ch. 78, p. 7; *T'ang shu*, Ch. 221 A, p. 10 b). This proves again that the word *si* refers to the rhinoceros, and to this animal only.

[1] Hu-nan, as said before, is mentioned also by T'ao Hung-king. In this province formerly occurred both the rhinoceros and the elephant, furnishing hide and ivory, respectively, at the time of the Chou dynasty (HIRTH, The Ancient History of China, p. 121, and above, p. 159). In *Hu-nan fang wu chi*, "Records of the Local Products of Hu-nan" (Ch. 3, p. 14; edition of 1846), it is stated that there was rhinoceros-horn among the local products sent as tribute from Heng-chou; the text is quoted from *Kiu yü chi*, a geographical description of China, which, according to BRETSCHNEIDER (Bot. Sin., pt. 1, p. 162), was published in 1080 A.D.

[2] PLAYFAIR, Nos. 6381, 6713 (2d ed., No. 5701).

[3] PLAYFAIR, No. 8350 (2d ed. No. 3939). Compare *T'ang shu*, Chs. 40, pp. 1 b, 6 b; 41, pp. 9 a, 9 b, 10 a; 43, p. 1 a.

[4] See note 3 on p. 163.

[5] As regards Java, rhinoceros-horn is listed among its products in *T'ang shu* (Ch. 222 C, p. 3; and GROENEVELDT, *Miscell. Papers relating to Indo-China*, Vol. I, p. 139). The *Sung shi* (Ch. 489; GROENEVELDT, *ibid.*, p. 144) reports a tribute from Java

Africa. The interesting notes of Chao Ju-kua written in 1225,[1] eminently translated and interpreted by HIRTH and ROCKHILL, afford an excellent view of all the localities from which rhinoceros-horn was traded to China, during the middle ages;[2] he refers to the Berbera coast as producing big horns (p. 128), and records them also for the island of Pemba (p. 149).[3]

Returning to China, we find trustworthy accounts, according to which the rhinoceros has persisted there in some localities at least down to the thirteenth century. Kuo Yün-tao, who composed an elaborate history of Sze-ch'uan in the thirteenth century,[4] states that the region of the aboriginal tribes of the south-west (*Si-nan I*) harbors a great number of rhinoceroses and elephants; and this agrees with the above statement of Su Sung (p. 140) that rhinoceros-horns came from Sze-ch'uan at the same period. As the author includes also the province of Kuei-chou, we are allowed to presume that the two-horned rhinoceros still inhabited the forests of Sze-ch'uan and Kuei-chou during the age of the Sung dynasty (960–1278).[5] In the year 987, as narrated in the Annals of the Sung Dynasty,[6] a rhinoceros penetrated from the southern part of K'ien into Wan-chou[7] where people seized and slew it,

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of short swords with hilts of rhinoceros-horn or gold, and records the word *ti-mi* as the native name of the rhinoceros. This word is not Javanese, in which the animal is called *warak*, but is presumably traceable to the Kawi language (compare the discussions of this word by G. SCHLEGEL, *T'oung Pao*, Vol. X, 1899, p. 272; and P. PELLIOT, *Bull. de l'Ecole française*, Vol. IV, 1904, p. 310).

[1] PELLIOT, *T'oung Pao*, 1912, p. 449.

[2] At least as early as the fifth century, carved objects of rhinoceros-horn were traded to China from the Roman Orient and India (HIRTH, China and the Roman Orient, p. 46). In the year 730 a tribute of rhinoceros-horn from Persia is mentioned (CHAVANNES, *T'oung Pao*, 1904, p. 51).

[3] The Geography of the Ming Dynasty (*Ta Ming i t'ung chi*, ed. of 1461, Ch. 91, fol. 20) lists rhinoceros-horn also among the products of Arabia (*T'ien-fang*). Under the Ming, rhinoceros-horn was imported to China from Champa, Cambodja, Malacca, Borneo, Siam, Bengal, and rhinoceros-flesh from Java. These data are derived from the *Si yang ch'ao kung tien lu* by Huang Shêng-tsêng, published in 1520 (reprinted in *Pie hia chai ts'ung shu*); this is the most convenient work on the countries of the Indian Ocean and on Chinese knowledge of them during the Ming, and gives more information than the Ming Annals.

[4] *Shu kien* (Ch. 10, p. 1), reprinted in *Shou shan ko ts'ung shu*, Vol. 23. The preface of Li Wên-tse is dated 1236.

[5] It might seem that the rhinoceros was extinct in China proper at the time of the Yüan period (1271–1367), judging from a remark made by Chou Ta-kuan, in his Memoirs on the Customs of Cambodja, to the effect that the latter country harbors the rhinoceros, elephant, the wild buffalo, and the mountain-horse, which do not occur in China (PELLIOT, *Bulletin de l'Ecole française*, Vol. II, 1902, p. 169); but the passage is by no means conclusive, and may simply be interpreted in the sense that the author had never seen or heard of a rhinoceros in China.

[6] *Sung shi*, Chapter *Wu hing chi*, quoted in *T'u shu tsi ch'êng* (Chapter on Rhinoceros).

[7] Now the district of Wan in K'uei-chou fu, Sze-ch'uan Province.

keeping its skin and horn. It should be remembered that Li Shi-chên, who lived in the sixteenth century, still assigned to the rhinoceros the southern portion of Yün-nan and the adjoining Tibetan regions. Even at the present time the rhinoceros may still exist in isolated spots on Chinese territory.

JOHAN NEUHOF[1] locates it in the province of Sze-ch'uan, particularly near the small town of Po (P'a is presumably meant).

O. DAPPER[2] appropriates to the rhinoceros Sze-ch'uan and Chucheu-fu (?) in Kuang-si. DU HALDE[3] ascribes the rhinoceros to the prefecture of Wu-chou in Kuang-si. L. RICHARD[4] states, "On account of the devastation prevailing in Kuang-si, a great number of wild animals are found there: the tiger, rhinoceros, panther, tapir, wolf, bear, and fox." The zoölogist W. MARSHALL,[5] in a general summary of the Chinese fauna, observes that the south, and particularly the south-west, of China, harbor decidedly Indian types of mammals, among these the Indian tapir and the single-horned rhinoceros.

The products yielded by an animal, and the manner of their utilization, allow also conclusive evidence in regard to the nature of the animal itself. That rhinoceros-horn was worked in ancient times and well differentiated from other ordinary horn, is evidenced by the curious fact that three distinct verbs pertaining to the treatment of ivory, ordinary horn, and rhinoceros-horn, are listed in the dictionary *Erh ya*. The carving of ivory is designated by the word *ku* (No. 6248); the treating of ordinary horn (*kio*), by the word *hio*;[6] the carving of rhinoceros-horn (*si*), by the word *ts'o* or *ts'uo* (No. 11,766). In the latter case Mr. GILES, in the second edition of his Dictionary, has justly retained the meaning "to make rhinoceros-horn into cups; to carve." The word is apparently identical with *ts'o* (No. 11,778), meaning "to file, trim, cut, plane, polish," etc., including all the various manipulations of the carver.

At this point it may not be amiss to call to mind the fact that a

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[1] Die Gesantschaft der ostindischen Geselschaft, p. 348 (Amsterdam, 1669).

[2] Beschryving des Keizerryks van Taising of Sina, p. 230 (Amsterdam, 1670).

[3] A Description of the Empire of China, Vol. I, p. 121 (London, 1738).

[4] Comprehensive Geography of the Chinese Empire, p. 198 (Shanghai, 1908).

[5] Die Tierwelt Chinas (*Zeitschrift für Naturwissenschaften*, Vol. 73, 1900, p. 73).

[6] Composed of the classifier *kio* ('horn') at the foot, and the phonetic complement *hio* ('to learn'). The character is not contained in our current Chinese dictionaries (not even in PALLADIUS); students of Chinese will easily find it in K'ang-hi's Dictionary under classifier 148 (13 strokes, first character). The definition of the word *hio* given by the *Shuo wên — chi kio* ("to treat horn") — calls for attention, any word like cutting or carving being avoided. The ancient Chinese were familiar with all processes of horn-work (soaking, slicing, welding, etc.), which are described in the *Chou li*.

rhinoceros-horn is capable of being carved, but that the horn of a bovine animal cannot be carved. These horns, biologically, are entirely different in origin and structure. The Chinese were quite right in regarding the rhinoceros-horn as a marvel of nature, for it is a unique phenomenon of creation. It is composed of a solid mass of agglutinated hairs or bristles, and has no firm attachment to the bones of the skull, which are merely roughened and somewhat elevated so as to fit into the concave base of the solid horn. Ox, sheep, or antelope, however, have hollow horns; deer and giraffe, bony antlers. None of these is fit to be worked into a cup; and a cup carved from a horn can mean nothing but one carved from rhinoceros-horn. Horns of bovine animals, as we all know, may be utilized as drinking-vessels, or, as among primitive tribes, as powder-flasks, or, as among the Tibetans, even as snuff-bottles, or, as in India, to pour out holy water; but they are by nature made ready for use, and do not require any carving. The *se kung* of antiquity are certainly cups carved from rhinoceros-horn,[1] not cups of buffalo-horn, as Mr. GILES (No. 10,298) has it in the second edition of his Dictionary.

Naturally, none of those ancient drinking-horns has survived, but at a later time they were imitated in bronze. There are, at least, some bronze drinking-cups preserved, which are connected by Chinese archæologists with the drinking-horns of antiquity. In the *Po ku t'u lu* (Ch. 16, p. 16) an illustration (Fig. 23) is given under the title *Han hi shou pei* ("cup with the head of a sacrificial bull, of the Han period"). A similar bronze (Fig. 24) is figured in the *Kin shi so*, with the legend *Chou se kung* ("rhinoceros-horn cup of the Chou period").[2] The text of the *Po ku t'u lu* quotes the passage of the *Shi king* in which the *se kung* are spoken of (above, p. 159), and says that this bronze cup comes very near to them. The bull-head is certainly a feature which originated only subsequently in bronze-casting, when the accepted forms of the horn cups were imitated in bronze. It is noticeable that the cup, as figured in the Sung Catalogue of Bronzes, corresponds in a measure to the form of a rhinoceros-horn inverted and hollowed out from the base.

[1] Likewise PALLADIUS (Vol. I, p. 136) and COUVREUR (p. 451).

[2] The authenticity of the specimen of the *Kin shi so* seems somewhat contestable. The head is that of a stag, but is equipped with ox-horns. The dating in the Chou period is arbitrary and unsupported by evidence. It is remarked in the explanatory text that it is not known whether the piece is a rhinoceros-horn cup (*se kung*). The similarity of the two specimens (Figs. 23, 24) with the rhyton of the Greeks is apparent, but there is no necessity of assuming an historical interrelation of the two types. Both were independently developed from natural horns used as drinking-cups, which were subsequently imitated in more durable materials, like clay and metal. Moreover, the Greek rhyton has a feature lacking in the Chinese specimens,— a single oblong loop-handle.

As stated by a great number of commentaries,[1] the *se kung* were carved from wood if rhinoceros-horn were lacking. Certainly, there could have never been any want of bovine horns; and it is inconceivable that an ox-horn should have been ever reproduced in wood. Fan Ch'êng-ta, in his *Kui hai yü hêng chi*,[2] has a note to the effect that "the people on the seacoast make cups from ox-horn (*niu kio pei*) by splitting the horn

FIG. 23.
Bronze Rhyton attributed to Han Period (from *Po ku t'u lu*).

in two and smoothing the edges to enable them to drink wine from them, which appears as a survival of the ancient rhinoceros-horn goblets." They did not carve their cups from ox-horn, however: they merely split the latter, as the author advisedly says.[3]

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[1] See *T'u shu tsi ch'êng, K'ao kung tien*, sect. 197, *kung pu*.

[2] Edition of *Chi pu tsu chai ts'ung shu*, p. 14 b.

[3] It may be stated positively that a confusion of rhinoceros and ox horns (or any other horns) is absolutely impossible, the two being entirely distinct organic substances of different origin and structure; and we are quite willing to believe Chang Shi-nan, the author of *Yu huan ki wên* early in the thirteenth century, that an artisan of Shuang-liu hien in Ch'êng-tu fu, who chanced upon the idea of making ox-horn into rhinoceros-horn, was not very successful in passing off his ware, because it did not exhibit any of the properties of rhinoceros-horn. The latter is indeed a unique product

The *Chou li* has a report on the office of the horn-collectors (*kio jên*) whose task it was to collect teeth, horns, and bones in mountains and marshy places.[1] Chêng K'ang-ch'êng of the second century A.D. comments that the big ones among these objects came from the elephant and rhinoceros, those of small dimensions came from Cervidae. They did not pick up ox-horns. The word *kio* ("horn") is

FIG. 24.
Bronze Rhyton attributed to Chou Period (from *Kin shi so*).

used also in the sense of a vessel carved from horn; and there are several types of ancient bronze vessels, the names of which are written with characters combined with the classifier *kio* ("horn"). This would hardly be the case if these various bronze forms did not go back to older vessels carved from horn. He who will study the illustrations of these cups in the *Po ku t'u lu*, or in the *T'u shu tsi ch'êng*, where they are reproduced after the former work, will be struck by the fact that they do not exhibit the slightest resemblance to ox-

of nature and has no substitute. A very interesting piece of ancient Japanese pottery in the Imperial Museum of Tōkyō (figured by N. G. MUNRO, Prehistoric Japan, p. 483) is made in imitation of an animal's horn, bearing a striking resemblance to a rhinoceros-horn.

[1] BIOT, Chou li, Vol. I, p. 378. The *Chou li* describes the rhinoceros-horn as yellow (Vol. II, p. 586).

horns, but display most elegant shapes of soft, rounded outlines, such as could have been carved only from rhinoceros-horn. Moreover, these horn vessels were differentiated according to their capacities: the vessel *kio* (No. 2218) containing one pint (*shêng*); the vessel *ku* (No. 6221), two pints; the vessel *chi* (No. 1925), three pints;[1] the vessel *kio* ("horn"), four pints;[2] the vessel *kung* or *kuang* (No. 6393), seven pints. All of these served the same purpose,—they were filled with wine; and the ancient tradition is that the bad or tardy disciple, or whoever had violated a rule or lost a game, was forced to empty the horn at a draught by way of punishment.[3] Now, there could be no greater absurdity than to suppose that these drinking-horns were veritable ox-horns, whether from a wild or domesticated ox, and were emptied at a draught by those wretched fellows. Every former German student knows from experience that an ox-horn contains such a volume of liquor, that even the strongest drinker in the world could not empty it at a draught; and every one who has lived among the Chinese is acquainted with those tiny bits of porcelain cups from which they enjoy their hot rice-wine during meals, and knows how limited their abilities *in Baccho* are. The punishment of forcing a negligent student to do away with a quantity of wine contained in a buffalo-horn would certainly have been most efficient in killing him instantly and saving further trouble about him; that, however, was not the intention of the law-giver. Naturally, these drinking-cups of early antiquity were nothing but miniature cups carved from rhinoceros-horn. Indeed, it is the very horn of the rhinoceros, which renders this cup eligible as a fit means of correction, for "the horn of the rhinoceros is terrible to its enemies; and for this reason the holy emperors of old, in condemning a man to empty a cup by way of punishment, wanted it to be made from rhinoceros-horn."[4] The terror which the animal was able to inspire in man should be brought home to the mind of the culprit, and this was the essential point of his punishment. Similar was the idea when the rhinoceros-horn cup was emptied on the occasion of a vow; as in the case of the three lords who pledged fidelity to the King of Tsin, with imprecations of calamities to

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[1] According to *Shuo wên* (Ch. 11, p. 4), four pints; while the vessel *shang* (No. 9744) held three pints.

[2] Compare the dictionary *Kuang ya* by Chang I, written in the first part of the third century (Ch. 8, p. 5 b; edition of *Han Wei ts'ung shu*).

[3] Compare BIOT, Chou li, Vol. I, p. 259; Vol. II, p. 17. In one passage of the *Li ki* (ed. COUVREUR, Vol. II, p. 618), horns (together with *kia*) appear as sacrificial cups, from which to pour out libations to the ancestors.

[4] According to *Yün hui*, as quoted by A. TSCHEPE (Histoire du royaume de Tsin, p. 308, Shanghai, 1910).

themselves should they break their word.[1] As Wang Fu says in the *Po ku t'u lu* (quoted above, p. 131), the rhinoceros represented on the bronze wine-kettles of the Shang period was a fit emblem to serve as a warning to the drinker, and to inculcate in him moderation: as the rhinoceros is capable of doing injury to man, so excessive indulgence in spirits might harm him.[2]

We now recognize that the rhinoceros, looked upon as a moral and educational factor, moves on the same line as the monoceros *hiai-chai* discussed above (p. 115), which is able to decide judicial proceedings.[3] This inward affinity proves that this monoceros is a legitimate offshoot of the rhinoceros. We have seen that the single-horned rhinoceros *se* existed in the country of Ch'u in the beginning of the Chou dynasty (p. 160), and it was among the people of Ch'u that the notion and word *hiai chai* originated (p. 115). The transformation into a goat of what originally was the rhinoceros was developed by the notion of "butting" under the influence of a legend emanating from Ch'u, which unfortunately is lost.

In past times the rhinoceros was so plentiful in the home of the Chinese, that carvings from its horn belonged to the common household objects, especially at the period before the utilization of metals, when wood, bone, horn, antler, and stone furnished the material for the making of implements.

There are other objects stated to have been made of rhinoceros-horn, where the supposition that ox-horn might be involved is again out of the question. In the biography of Li Se, who died in B.C. 208,[4] objects carved from rhinoceros-horn and ivory (*si siang k'i*) are mentioned, and classed among *objets de vertu*.[5] Implements of ox-horn would certainly not rank in this category. According to *Hou Han shu*,[6] seals were cut out of rhinoceros-horn and ivory. Everybody knows the

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[1] TSCHEPE, *l. c.* The warlike character of the rhinoceros is still indicated by the literary designation *Si pu* for the Board of War (*Ping pu*) and the rhinoceros forming the badge of the ninth grade of the military officials.

[2] The rhinoceros as a means of punishment appears also in the case of Wan of Sung, who paid the penalty of his crimes by being bound up in a rhinoceros-hide (*Tso chuan, Chuang kung*, twelfth year: LEGGE, Chinese Classics, Vol. V, p. 89).

[3] In the time of the philosopher Wang Ch'ung, who wrote his work *Lun hêng* in 82 or 83 A.D., Kao Yao and this creature were painted in the courtyards of public buildings; the latter, in agreement with the ancient definitions, apparently as a goat with a single horn, for it instinctively knew the guilty. When Kao Yao administered justice and entertained doubts of a man's guilt, he ordered this goat to disentangle the case: it butted the guilty party, but spared the innocent (FORKE, Lun-hêng, pt. II, p. 321).

[4] GILES, Biographical Dictionary, p. 464.

[5] *Shi ki*, Ch. 87, p. 2 b.

[6] Ch. 40, p. 5 a.

square and rectangular cubes in which Chinese seals are shaped, and to cut such a seal out of ox-horn is impossible.

Finally, the memorable passage in the *Chou li* from which we started, and that is discussed in the following chapter, regarding the manufacture of hide armor, is sufficient evidence in itself that the hide in question is only that of the rhinoceros. Mr. Giles renders the words *se* and *si* indiscriminately by "bovine animal;" it is manifest, however, from the text in question, that *se* and *si* are two distinct animals, but can by no means be two distinct bovine animals. It will be seen that the *Chou li* speaks of three kinds of cuirasses, — those made from the hide of the two-horned rhinoceros (*si*), which consist of seven layers, and will last a hundred years; those made from the hide of the single-horned rhinoceros (*se*), which consist of six layers, and will last two hundred years; and those made from a combination of both hides, which consist of five layers, and will last three hundred years. The skin of the rhinoceros was utilized for the manufacture of hide armor, because it was the thickest and strongest known in the animal kingdom,[1] and because the rhinoceros was justly considered a strong, warlike, and long-lived creature (see p. 159); and the qualities of the animal were believed to be transfused into the body of the wearer of the cuirass. The single-horned rhinoceros was the bigger and stronger of the two species known; and for this reason armor from its hide was believed to last twice as long as that of the two-horned kind. We notice that there is a close interrelation between the number of layers of the hide and the number of years that the armor is supposed to endure. All this becomes intelligible only if we interpret the two words *se* and *si* in the manner that has been proposed.[2] But what would the interpretation be if the armor of the Chou had been made from the hide of wild bovine animals? The passage, in this case, could receive no intelligent and convincing interpretation. That bovine hide can be utilized in the making of armor, nobody denies. It is utterly inconceivable, however, that the ancient Chinese should have taken the trouble to hunt wild bovine animals, in order to secure their skins for cuirasses, since they were in possession of plenty of domestic cattle from which leather was obtainable; and this one certainly could

[1] The toughness and durability of rhinoceros-hide are indicated also by its utilization in the coffin of the Son of Heaven, which was fourfold. The innermost coffin was formed by hide of water-buffalo and rhinoceros, each three inches thick. This leather case was enclosed in a coffin of white poplar timber; and this one, in two others of catalpa-wood (COUVREUR, Li ki, Vol. I, p. 184; LEGGE's translation in *Sacred Books of the East*, Vol. XXVII, p. 158).

[2] The fact that the general notion of leather and hide (*p'i ko*) was closely associated with rhinoceros-skin is evidenced by Yen Shi-ku defining that term by the words *si se* (*Ts'ien Han shu*, Ch. 28 B, p. 16 b).

have been employed with greater facility and the same result for the purpose of defence. And if they had really employed cowhide to this end, why should the *Chou li* not simply state that cuirasses were made of this material (*niu p'i*)? Why should it introduce the story of two wonderful animals *se* and *si*, interwoven with religious beliefs of longevity, if nothing but a mere every-day cowhide was at issue? On the other hand, there is every reason to believe that the skin of ox or cow was never, for religious reasons, employed in ancient China in the making of armor. The ox was a sacred, and in a measure inviolable animal, looked upon as the helpmate in gaining man's daily bread. He was the animal sacrificed to the deities Heaven and Earth. There is no account to the effect that neat-leather was ever employed for cuirasses; while the tradition that rhinoceros-skin is a fit material for this purpose, as we saw, has been maintained even by later authors.