THE COMMERCE BETWEEN THE ROMAN EMPIRE AND INDIA

by

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navigation of Arabia and the eastern mission of Gaius in 1 B.C. (15). In North India the coins of the early reigns are very few—the twelve of Augustus from Hazara being the largest number for one reign (16).

Augustus was unable to check the luxurious tastes of his wealthier subjects, nor does such a reformation ever come about through legislation merely; moreover Augustus, himself not luxurious, aided commerce all he could and gave Rome the beginnings of an imperial court, and the atmosphere of a court did not tend towards simple living. Contemporary literature shews that at the beginning of the Empire much merchandise of Indian origin was being paid for—thus we find Indian lions, tigers, rhinoceroses, elephants, and serpents already brought for exhibition, though rarely; Indian parrots kept as pets; Indian ivory and tortoiseshell employed for all kinds of ornaments; oriental pearls and Chinese silk worn by women; again, Celsus and Scribonius Largus reveal the use of Indian plant-products in Graeco-Roman medicine, but the evidence of ordinary writers is a better test of trade. We find aromatic spices and juices, such as Indian pepper, spikenard, cinnamon (Indian and Chinese), costus, and cardamom in common use, mostly coming by land or through the Arabians, as the epithets shew, and in medicine, besides these, Indian ginger, bdellium-myrrh, raisin-barberry, sugar, and aloes; again, we find gingelly-oil as a food, indigo as a paint, cotton used for clothing, ebony for furniture, rice as a cereal, and citrons, peaches, and apricots (17), as table-fruits or medicines. Again, Augustan literature, Pliny's accounts, and extant collections shew the already wide use of Indian precious stones—diamond, onyx, sardonyx, agate, sard, carnelian, crystal, amethyst, opal, beryl, sapphire, ruby, turquoise, garnet, and others. Poets like Tibullus and Propertius shew how fashionable

was the wearing of gems by women, and Suetonius and Pliny how abnormal were the extravagant tastes of Gaius and Nero among emperors. Full details of all these Indian products are given later with others as part of a complete survey, but even at the beginning of the Empire the traffic, mainly through intermediaries, was brisk; before that time we have very few references to Indian products in Roman literature, and passages in Cicero's speeches against Verres revealing the trade between Sicily and Asia, Syria, and Alexandria, and the luxurious side of Sicilian life, do not shew any abundance of wares peculiarly Indian (18). Pompey's campaigns introduced the Romans to new Indian wares from the land-routes; much larger quantities came to their notice on the downfall of Cleopatra, who rejoiced in Indian products (19), and with the battle of Actium began Rome's most luxurious period.

The Emperor Tiberius pursued a careful and successful financial policy, and expressed his anxiety at the great increase of oriental trade. He censured the wearing of silk by both sexes and checked its use by men, but his greatest anxiety was the extravagant tastes of ladies not only in dress but in jewels and precious stones—tastes which, he said, were sending Roman money (20) away to foreign and to unfriendly peoples. This ominous complaint seems to be confirmed by discoveries made of coins in India, for those of Tiberius are extraordinarily numerous, sometimes predominating over those of other reigns in single hoards, and they include both gold and silver. The remarkable instances are finds made at Pollachi, Vellalur, and Karur—all in the Coimbatore district (21). The total number of known coins of Tiberius found in the south and west of India is 1007 as against the 453 of Augustus, and large numbers of both these reigns have occurred together. In all they come to more than half the total number of identified Roman

elephants came Hindu trainers); the female "Indian" fortune-tellers apparently referred to by Juvenal; and such instances as the "Indian" cook of the Emperor Justinian, and the fashionable prostitutes, upon whom, according to our extant tariff-list of Coptos, such a heavy due was levied. On whole, the commerce in slaves between India and the West was, as we shall see, mainly concerned with exportation of them from West to East rather than the reverse (1).

When we come to deal with the animals and animal-products imported to the Roman Empire from the far East, we can speak with greater certainty, but we are met by a peculiar phenomenon which shews that the traffic in eastern mammals, birds, and so on continued to remain an indirect one; for the author of the *Periplus*, writing when the numbers of direct sailings by Greeks to and from Indian coasts were rising to an unprecedented height, speaks of the animal life of the Deccan (Dachinabades), yet nowhere mentions the exportation of any animal by sea from any Indian port (2). Again, the lions and leopards included in the Digest-list are surely African; for the list contains no mention of Asiatic or Indian animals such as the one-horned rhinoceros, the tiger, and the Indian parrots (3). I would conclude from this that the importation of animals and birds from the far East was exceptional and was conducted along the land-routes, even in the case of the regularly imported parrots, which are not mentioned by the *Periplus* or by the Digest-list, while Diodoros calls them Syrian, which shews that they came by land or by the Persian Gulf (4). Transport of animals by sea was disadvantageous from the point of view of space, sanitation, and real or imaginary dangers of sea-sickness; in spite of the existence of trapper-villages in India, hunting and trapping were despised callings there (5), and the animals after entry into the Roman Empire had to pay a poll-tax, as

well as customs-dues on entry at the frontiers, unless the importers were senatorial givers of shows (6). Importation of animals therefore was felt by the Greeks to be not worth while, though the Indians of old transported living animals by sea to the Persian Gulf and to Africa and China and were probably responsible for sending Ptolemy II his peacock and parrots. With the exception of parrots and monkeys Indian animals were imported by the Romans for exhibition, and the land-routes only were used, even after Hippalos' discovery, so that this traffic was really traffic with Parthia (7).

Among the apes and monkeys, in particular the long-tailed kinds called cercopitheci imported from Africa and Ethiopia to become pets, especially of fashionable ladies, were included probably hanuman, Madras, Malabar, and Nilghiri langurs of India; for Arrian, in declining to speak of Indian parrots and of the size and gracefulness of Indian monkeys or of the ways in which they were hunted, seems to be influenced by more than a mere desire of omitting what earlier writers had written, and on a silver dish found at Lampsacos is represented India as a woman surrounded by a parrot, a guinea-fowl, a tiger, a leopard, and hanuman monkeys (8); though the guinea-fowl was certainly African, the others were Indian. So, also, with the larger cats such as lions and leopards imported from Africa to Rome for exhibitions and beast-baitings came Asiatic and even Indian lions and leopards. The lions exhibited by Sulla and Pompey may have included the Indian lion, so that Catullus, who at any rate knew that the animal was found in India, may have seen one in Rome, while Aelian at a later date says that black-maned lions were found in India. Pliny too distinguishes lions with and lions without manes, and a maneless lion used to be found commonly in Gujarat and other regions

of India (9). Likewise ounces and caracals (lynces) may have entered indirectly into Rome's traffic with Indian regions by being brought through Parthia.

Of the Indian and Hyrcanian tiger, which comes next to the lion in the animal kingdom, we can be quite certain. It is true that the name τίγρις was applied loosely to animals such as jackals, and that Pliny's description of the tiger is not accurate, but other writers distinctly describe the real tiger, and all doubt is dispelled by the occurrence of the tiger on mosaics and modelled tigers' heads in jewelry, and on engraved gems, and so on (10). The animal was rarely brought to Rome; one had been presented to Athens by Seleucos, but Varro thought that the animal could not be captured alive. A tiger was first exhibited at Rome in a cage or den by Augustus when the theatre of Marcellus was dedicated in 13? B.C., and the four specimens exhibited by Claudius created perhaps a great impression, for on a mosaic found near the Arch of Gallienus are represented four tigers devouring their prey. A passage in Petronius appears to indicate that a tiger was carried about in a gilded cage, probably in Nero's reign, and gorged with the blood of human victims; Seneca probably saw these tigers, for he knew their striped appearance well, and their presence may have prompted Pomponius Mela to give his somewhat detailed reference to Hyrcanian tigers. The Romans noted the swiftness of their spring. Several more were exhibited by Domitian, and if we may so judge from Martial, some of them came from India—perhaps from their typical home in Bengal; Silius the poet seems to have seen them, since he too refers to the striped bodies of tigers. As many as ten were got by Gordian and killed by Philippus with many lions, elephants, and rhinoceros, and it is to be noted that in a great find of coins made in Bengal there were several of Gordian's time, though this

may be accidental (11). Greek merchants in the course of the second century A.C. seem to have met with tigers in Ceylon and in the region round the Gulf of Siam, but it is certain that these animals did not form a regular part of Rome's Indian trade either by land or sea; indeed it is probable that the example exhibited by Augustus and even those exhibited by Claudius were gifts made by Indian ambassadors (12).

The Romans may have supplemented their breeds of dogs by occasional importations of Indian and Tibetan hounds, these last being the famous "ants" which dug up the Tibetan gold! According to Herodotos, the Persians of his time caused the supplies of four large villages in the plains round Babylon to be appropriated for the feeding of Indian hounds; Ctesias also notices the Indian hounds of the Persians, and similar dogs were shewn in the procession of Ptolemy Philadelphos. We also have a papyrus of the third century B.C. on which are two separate epitaph-poems written for Zenon in honour of his Indian hunting-hound Tauron, which had given its life in saving its master in a fight with a wild boar (13). But when all is said, it is probably safer to conclude that by "Indian" is meant an established domestic breed introduced to Europe centuries before the Roman Empire began, and valued because of its large size (14).

The remaining mammals which entered into Rome's eastern trade all belong to the varied and useful order of ungulate or hoofed animals, but, as we shall see, it was not the animals themselves so much as the products of a few of them which were of any real importance in trade.

It was natural that the Indian humped cattle (*Bos Indicus*) used for draught, burden, and riding should spread westwards by land and we find that it was brought in large numbers so as to form part of the domestic cattle of Persia,

Syria, and Africa. Thus we find representations of it in Assyrian and later art, and Indian cattle were displayed in Ptolemy's procession, but there is no specific evidence that they ever reached Rome (15). The Yak (*Bos* or *Poephagus grunniens*), which is the common cattle of the Tatars, is well described by Aelian under the name "poephagos," and may have found its way westward occasionally, with the help of man, while the Buffalo (*Bos, Bubalus bubalis*), with the wild Buffalo (*Bubalus arni*) which was known to the Greeks after Alexander's conquests as the "wild bull of Arachosia," was not brought to Italy, as far as we can tell, until late in the fourth century A.C. (16). The "Indian camel" seen by Pausanias and described by him as coloured like a leopard was a giraffe (known to the Romans as "camelopardalis"), but by "Indian" he must have meant African, for, although the giraffe lived in India and in Europe in late tertiary times, it has been confined for ages to Africa. African also was the Indian one seen by Cassianus Bassus at Antioch in the sixth century A.C., like the "Indian" specimens sent to Anastasius I in 496 (17). Likewise the horse named Ἰνδός in a late inscription was an African one, we may presume, for by the sixth century A.C. horses were an export not from India to Persia, but from Persia to Ceylon, though the fine wild horses of Tatary, for example the dziggetai, may have been brought westwards in ancient times like all other animals which can be used for domestic and public purposes. Bactria was famous for its horses (18).

The two other types of mammals with which we have to deal are the large thick-skinned ungulates—the Rhinoceroses and the Elephants. Of the rhinoceroses, the Romans were acquainted both with the two-horned kinds, nearly all African, and the one-horned kinds, which are Indian. According to the description of Dio Cassius, the rhinoceros exhibited by Augustus and killed to celebrate his victory

over Cleopatra possessed only one horn; so had the specimen seen by Strabo. Both therefore belonged to the Indian species. We find also that Pompey exhibited a one-horned rhinoceros and Pliny says that this kind was not an unusual sight in Rome. They were most frequently seen, we need have no doubt, in the Asiatic part of the Empire, and the Hou-han-shu (Dynastic History) states that they were met with (doubtless in captivity) in the district of Chaldaea or Babylonia (T'iao-chih). Those exhibited by Domitian were chiefly African kinds, as shewn by the image stamped upon some of his coins, but the one-horned type is the one generally appearing on engraved gems and on tesserae until his reign. The so-called unicorn is an imaginary creation arising from a confusion of the Indian rhinoceros with the Indian wild ass and with some species of antelope (19).

The Indian elephant, which was used frequently in war after Alexander's conquests, was first introduced to the Romans when Pyrrhos transported some from Epiros to Italy in 281 B.C. Whether the Carthaginians used them together with the African species, and employed Indian mahouts to train both kinds, I am not certain. But it is to be noticed that Hasdrubal at Panormos in 251 used elephants driven by "Indians"; so did Hannibal and Hasdrubal during the second Punic War with Rome; and at the battle of Raphia Ptolemy's Libyan beasts could not stand against the Indian troop of Antiochos. Again, centuries later than this, it is true, Cosmas shews that elephants destined for use in war were bred chiefly in Ceylon, and that the Ethiopians did not know how to train the beasts at all. The Greeks and Romans always thought wrongly that Ceylon and India produced larger elephants than Africa, but it may be that Polybios, inaccurate as he is in matters of geography, when he said Indian, meant Indian and not Ethiopian. Arrian

but from the "Chera" Kingdom in South India, so frequently visited by Greek merchants from the reign of Claudius onwards, but the "Seric" skins exported from Barbaricon on the Indus we may take it were partly Chinese furs brought with silk and diverted to the Indus, partly Tibetan furs (especially of martens and ounces or snow-leopards which we may identify with the skins of the gold-digging "ants" seen by Nearchos, for instance), and partly raw furs from regions even north of Tibet, brought by caravans to Indian seas and destined for ordinary wear and for purposes of luxury in the West (36). We may go farther and conclude that, besides these, good Parthian and Babylonian hides came westwards not only by land-routes but by way of the Indus, as did several kinds of Persian stones and plants, as we shall see; for Babylonian and Parthian hides appear in the Digest-list, and this means that they came either from the Persian Gulf round Arabia or direct from the Indus to the Red Sea and Egypt. Even to-day it is very easy to get various skins from Tibet and Turkestan at the towns of the Indus and yet difficult to get them elsewhere in the East. Naturally, however, much of this trade must have been carried on by Rome through the Parthians who added hides from their own territories, and Caesarea in Cappadocia was a well-known centre for them. The "negotiatores Parthicarii" seem to have had special connexion with Parthian peltry, and a "praetor Parthicarius" had jurisdiction over them. In ancient India special trapper-villages existed for the supplying of pelts and so on, but the hunting and trapping of animals was not regarded as an honourable calling, and generally we find that the supplies of skins came from the northern districts. The Mahabharata in the Sabha Parva speaks of presents brought to Yudhisthira from the Saka, Tukhara, and Kanka tribes, and they include clothes of the goat and sheep wool, skins of martens and weasels, besides

silk and fine muslins, and, in the Ramayana, Sita receives woollen stuffs, furs, fine silks, precious stones, and so on. The wool would be native (probably Kashmir wool) while the furs may have come with silk from distant regions of Asia. We may be quite sure that among those sent westwards by the Indians were fine skins of lions, tigers, and leopards. But when Pliny says that lycium was sent to Rome in the skins of rhinoceroses and camels by Indians, he indicates no more than a native method of packing for the purpose of exportation (37).

The remaining mammal-products with which we have to deal were furnished by the Ungulate Order which comprises animals of such varied outward aspect. The "butyron" (Sanskrit *bhutari*), which the *Periplus* says was exported from Ariace and from Barygaza to East Africa, was a preparation of oil from butter, called by the Indians "ghi," and by us "clarified butter." On the African coast, which produced little oil, it was naturally in demand, but it probably entered into western medicine like ordinary butter. It is still sent from India to Africa by Indian traders to-day and is prepared by the Indians chiefly from the milk of humped cattle (*Bos Indicus*) and in certain districts from the buffalo, while in the north the Tibetan yak is available (38). The yak, too, may have provided for exportation to the West in ancient times not only horns like that which Ptolemy Philadelphos received from India, but also tails of long silky white hair, referred to by Aelian and by Cosmas, and called to-day Chowri(e)s and used all over the East to drive away flies and to create currents of air. They are articles of taste and luxury and may have provided some of the Roman fly-flaps or fly-whisks, and formed perhaps a part of the "Capilli Indici" mentioned in the Digest-list (39).

Again, for fine texture and softness no Asiatic wool has

been found to equal the *pashm* or *pushm* wool of the shawl-goat of Kashmir, Bhutan, Tibet, and the northern face of the Himalayas, and this wool, from which are made the famous Kashmir shawls, is a valuable article of trade between Tibet and the lower plains of India. We know that Aurelian received a red-dyed short woolly pallium as a present from a Persian king, and there is no reason why the fine raw wool should not have been exported westwards by way of the Indus or Broach. I suggest that what has been a settled opinion for a long time is a correct one, that the material called, apparently, "Marococorum lana" in the Digest-list was raw wool of the shawl-goat sent from North-west Indian ports to Egypt to be worked up there or in Syria or in the looms of private households generally. The Muztagh on the northern side of Kashmir is called the range of the Karakoram or Korakoram (Black Mountain) from which we get some such word as Ma(c)rococorum; again, this wool of the Digest-list was important enough to be included in a tariff-list for import-duty in Egypt during the second century A.C., after Trajan had fostered, as we have seen, closer relations with the Kushan monarchy, which included Kashmir—a district of which, together with the north-western regions of India, Ptolemy shews a remarkably detailed knowledge. When the author of the *Periplus* wrote, inland districts of those regions had not been explored by Roman subjects, and no wool appears among the exports given by him, so that it is possible that for some time the Arabians kept it a secret in their hands (40). Their own broad-tailed sheep were known to the Greeks, but only the fat tail was useful, the body being covered by coarse hair instead of wool; the Arabians therefore would be much tempted to pass on to the West as "Arabian" the finer fleeces from the higher regions of Asia. Dirksen thinks that in the Digest passage (which is exceedingly corrupt)

the wool is named from a trade-route, or that the name is a collective one for all oriental wool which the East provided in ancient times. The wool was probably not sent dyed, for the lac-dye and wool would fetch higher prices if sold separately and from the western point of view there were in Egypt imperial manufactories not only of wool, but of dyeing, and there were also the dye-works of Syria; moreover the red-dyed wool astonished Aurelian and his successors as a thing of novelty, and the dye and the wool would have to compete with imperial products. The high value of this shawl-goat wool in ancient times is shewn by the fact that when the Sassanid Hormisdas (Hormizd) II (302–310) married the daughter of the king of Kabul, the bride's trousseau excited great admiration as a wonderful product of the looms of Kashmir, and it is probable that the practice of sending the wool westwards commenced only during the second century A.C. (41).

We can speak with greater certainty in the case of the Musk Deer (*Moschus moschiferus*) the male of which produces the famous odour which is very highly valued in the East and is more persistent and penetrating than any other odour. It was known to Cosmas in the sixth century A.C., as a product obtained, as we should expect, in the Indus district, and it is difficult to believe that so important an ingredient in perfumes to-day was not imported to the West through Persia or from the Indus or from Broach before the time of Cosmas, though it was only established in trade during the Arabian epoch. The musk deer inhabits the Himalayas above the height of 8000 feet, from Gilgit eastwards, extending to Tibet, North-western China, and Siberia, and the musk (from the Sanskrit *mushka*, that is, the scrotum) is known to-day in three kinds, the most valued coming from China, a less valued from Assam or

Nepal, and the least valued from Central Asia. With it at the Indus mouth the Romans found beaver-musk of N. Asia (42).

So far we have been dealing with animal-products which on the whole formed a part of Rome's trade with North-west India and with regions north of that country; but the next items bring us to part of Rome's trade with India and Africa alike. The hides, teeth, and horns of rhinoceroses probably formed articles of this trade with both regions. Horns were exported from Adulis, the depôt of the Axumite kingdom, but these were the product of the African species. Pliny says that lycium was sent by the Indians in the skins of rhinoceroses and camels, but the more important were the horns, out of which the Romans made oil flasks called "gutti," and vessels made out of the horns of Indian rhinoceroses and the so-called "unicorns" (which, as we have said, were the same animals) have always been esteemed for their supposed medical properties, and for the alleged property of rendering harmless any poison drunk out of them (43). We find that the Romans brought rhinoceros-horns to China apparently from India in A.D. 166 (44).

We now come to one of the most important of the articles which formed Rome's eastern trade—namely ivory, which has been used for ornament and for decoration from the earliest times, and, except when fossil ivory was used, the supply in historical times came from Africa and India, being tusks of the African and the Indian elephant respectively. Down to the end of the epoch before Christ Africa had been a natural source for supplies of the best ivory, but the early rise of the Babylonian and Persian civilisations across the land-routes between India and the West had created a more extensive trade in Indian than in African ivory, until Ptolemy II obtained large quantities of the African. It has been said that the usual derivation of the

Greek word for elephant and its ivory (ἐλέφας, Latin *ebur*) is etymology at its wildest, and yet the explanation is probably correct that the word represents the Sanskrit *ibha* (elephant) with the Semitic definite article prefixed. We are told distinctly that the Greeks at the height of their culture used Indian as well as Ethiopian ivory for the exposed parts of the body in statues, and we have "Indian" ivory mentioned frequently (45) as soon as the Roman Empire begins. That the Roman commerce in ivory was enormous is shewn by the large number of uses to which it was put—the references in ancient writers being very common and the surviving articles in ivory endless. In literature alone we find it used for statues, chairs, beds, sceptres, hilts, scabbards, chariots, carriages, tablets, book-covers, table-legs, doors, flutes, lyres, combs, brooches, pins, scrapers, boxes, bird-cages, floors, and so on, and extant examples in their multitudes would add to an already remarkable list, covering as they do the whole epoch of ancient history. It is no wonder that Lucian makes a man's riches consist of gold, raiment, slaves, and ivory. Ivory is white, durable, hard, and yet easy to work, and the Romans used it at first in temples and for the insignia of the higher magistrates, but the growth of luxury brought with it immoderate display, particularly in the covering of whole articles of furniture and in the use of ivory in luxurious couches, table-legs, and beds (46). Indian supplies came of course partly by the land-routes, but the sea-route received much also, and as the epithet Assyrian shews, the Persian Gulf too (47), and when the author of the *Periplus* wrote his book after the discovery and use of the monsoons, the traffic along the great sea-route was well developed. In his time the main centre of the trade in African ivory was Adulis, the trade-depôt of the Axumites, but the material was also sent from Barygaza, Muziris, and Nelcynda on

territory, and though none is mentioned by the *Periplus*, asafetida, galbanum and sarcocolla (36) appear in some versions of the Digest-list. Moreover, it is possible, I think, that the kings of the "Frankincense country" (Hadramaut) from the west of Cane to as far as Ras Hasik and the Kuria Muria islands, ruling Cane, Syagros, and Socotra from Sabbatha inland, tried to monopolise the traffic in all the gum-resins by trade with the Indus and Broach (37).

Loads of gum-resins from India were clearly incidental additions to the famous Arabian and African supplies, but non-resinous juices and oils from Indian plants, used variously as colours, foods, and medicines, played a more important part. Of colours there were three which the Romans obtained from two genera of Indian plants. The Indigo of to-day, produced from *Indigofera tinctoria* and other species and by the time of the *Periplus* exported from Barbaricon on the Indus, had become known to the Romans soon after the Empire began, when India was known to produce plants yielding various colours; for Vitruvius indicates that its introduction to Rome was a recent event; in his day the scantiness of supply caused the wide use of a substitute prepared from woad, and Pliny says that the importation of indigo was a recent development—a curious fact in face of the acknowledged use of it by the ancient Egyptians and the long-standing dye traffic of the Arabians across their desert-routes. After the discovery of the monsoons indigo was an important material in Roman painting and a less important dye and medicine. When broken small it produced a black colour used by painters in "light and shade" work, and when mixed with water a beautiful purplish-blue, but it could be adulterated in various ways. The price of the black was seven denarii a pound, and the price of the blue twenty. There is no need to assume that Ἰνδικὸν μέλαν of the *Periplus* and the

atramentum Indicum of Pliny (who confesses his ignorance of what the substance Indicum was) was Chinese Black coming by way of India, for both the black and the blue were produced by the Indian Indigo. Pliny bewails the decadence of painting in his time with particular reference to the walls of rooms and the use of Indian material, but since neither Chinese Black nor Indigo could be used for frescoes, the colour-basis of blues on surviving wall-paintings of ancient times is always found to be oxide of copper. The Scythian blue of Pliny, the κύανος of Theophrastos, is sulphate of copper: still, we hear of ἰνδικοπλάσται (38).

More important than indigo because of its suitability for more varied uses was the juice called "lycium" used by the Romans to provide a yellowish dye, an astringent for the eyes, and for sores, wounds, and so on, and a cosmetic for the face. It was produced from the roots stem and berries of several species of Raisin Barberry growing for the most part high up among the Himalayas, and hence we find that it was exported from Barbaricon on the Indus and from Barygaza, being sent, according to Pliny, by the Indians in the skins of camels and rhinoceroses, and it appears in the Digest-list. Much of this was obtained probably from *Berberis Sinensis* of China, *B. Wallichiana* of Nepal, *B. floribunda* of North India, *B. asiatica* chiefly of Nepal, and *B. aristata* chiefly of North India but extending southwards, but the bulk must have come from the *Berberis Lycium* of Nepal, forming the best kind of "Indian" lycium; the preparation of the juice in Lycia caused one kind to be called "Pataric" and the general importance of the juice (which is called rhuzot or houzis to-day) in the period of the Roman Empire is shewn by the numerous lycium pots which have been found in the ruins of Herculaneum and Pompeii. Dioscurides and Scribonius indicate that the trade had been conducted partly along

12, with elephant, it seems). *Jahr. d. D. Arch. Instit.* XXVI. 8; XXXVII, *Anz.* 113. *Vienna (Antike Bronzen)*, 1283.

(28) E.g. *B.M. Rings*, 182, *K.M.B.* 3282–3, 8563, 8707. See Aristotle, *H.A.* VIII. 14. 6. Diodor. Sic. II. 53. Athenae. v. 8. 32. 201 (*b*). Ov. *Am.* II. 6. *Anth. Pal.* IX. 562 (wicker cage). Pers. *Prol.* 8. Mart. X. 3. 7; XIV. 73, 77. Varro, *R.R.* III. 9. 17. Ael. XVI. 2; XIII. 8; XVI. 5; VI. 19. Pliny X. 117. Solin. 23. Apulei. *Flor.* 12. Oppian, *Cyneg.* II. 408–9. Stat. *S.* II. 4. Paus. II. 28. Philostr. *Soph.* I. 7. 2. *Anth. Lat.* Riese, II. 691. Clem. Alex. *Paed.* III. 4. 270–1 P ('Indian birds'), and Schol. *ad loc.* Prisc. *Perieg.* 1033–4. Arr. *Ind.* 15, 9. *Hist. Aug.* '*Elagab.*' 20–1. *B.M.* 2478–80, 2482. *K.M.B.* 7913–20, 8056, 8062 and others as cited above. Pliny min. *Ep.* IV. 2. Dion. *de Av.* I. 19. Marc. Empir. 8. Scribon. 27. Philostorg. *H.E.* 3. 11. *Ind. Antiqu.* XIV. 304. Thompson, *Gloss.* 198–9. Newton, *Dict. of Birds*, s.v. *Parrot*. *Penny Cycl.* s.v. *Psittacidae*. Inscription: *C.I.G.* 3846 Z[43] (Phrygia).

(29) See Diodor. II. 53. Frazer, ad Paus. vol. III. p. 259. Reinach, *Antiqu. d. Bosph. Cimm.* p. 58; cp. alleged derivation from Psittace near the Tigris and suggested derivation of Ctesias' *βίτταϰος* from the Persian tedek. Heeren, *As. Nat.* II. tr. 1846, 361.

(30) Sen. *Dial.* XII *ad Helv.* 10 etc. monal(?) in Ael. XVI. 2—great Indian cock, cp. Ctes. *Ind.* 3. Yule, *Marco Polo*, I. 280.

(31) Thompson, *Gloss.* 182–4.

(32) Hehn, 363 (phoenix). Pliny X. 5 (X. 132 does not allude to silver or any but the common pheasants); XI. 121. Sid. Apoll. *C.* IX. 325. Philostrat. *Apollon.* III. 49. Herod. II. 73. Tac. *Ann.* VI. 28. Dio Cass. LVIII. 27. Dion. *de Av.* I. 32. Lucian, *Navig.* 44; *De morte peregr.* 27. *Pauly*, s.v. *Fasan*, 2002.

(33) Pliny X. 146, 156. Columella VIII. 2. 13. Hehn, 321. Indian jungle-fowl brought to ancient Egypt:—*J. E. Arch.* 1923, 1 ff. Median cocks:—Varro, *R.R.* III. 9. 6. See *J.A.O.S.* 33, 361 ff. Darwin, *The Variation of Animals and Plants under Domestication*, I. 236–289, ch. VII. 2nd ed.

(34) Lucian, *Navig.* 23, cp. Ael. XVI. 2. Hehn, 349 ff.

(35) Suet. *Aug.* 43. Strabo XV. 1. 45. Dio Cass. LXIX. 16. Ael. IV. 36; XII. 32; XVII. 2. *Pauly*, s.v. *Schlange*, 532, 548.

(36) Chinese literature shews that the skins and furs were important articles of the trade of the Chinese—Hirth, 226.

(37) *Peripl.* 39, 6. Pliny XII. 31; XXXIV. 145; XXXVII. 204. *Dig.* XXXIX. 4. 16. 7. Arr. *Ind.* 15, 4–7. Strabo XV. 1. 44; XI. 2. 3. *Cod. Just.* X. 47. 7. *Cod. Theod.* XIV. 10. Herodian IV. 10. Paul. Silent. III. 6. 79. Furs in India—*Ramayana*, I. 605 ff. (perhaps). *Mahabharata*, II. 50; I. p. 373. Lassen I. 373–4. Watt, *Dict.* 458–461 (a list). *Camb. Hist. Ind.* 208. Schoff, ad *Peripl.* 257.

(38) *Peripl.* 14, 41. Pliny VIII. 176; XXVIII. 159. Diosc. II. 72 etc. Ctes. *Ind.* 22. Heeren, *Asiat. Nat.* II. tr. 1846, p. 301 and n. 8. In Cosmas we have the statement that the tame *ταυρέλαφοι* of India were used for carrying pepper and other wares, and produced milk and butter—Cosmas XI. 441 D.

(39) Ael. *d. A.* III. 34 (arni-buffalo's horn? or rhinoceros-horn?). *Dig.* XXXIX. 4. 16. 7. Cosmas XI. 441 B, 444 B (McCrindle, p. 360). Heeren, *As. Nat.* 364–9 (unicorn). Ctes. *Ind.* 25.

(40) The Greeks perhaps could obtain ordinary woollen clothes in Indian marts—for instance in Kaviripaddinam—Pillai, 25.

(41) *Hist. Aug.* '*Aurel.*' 29. G. Rawlinson, *7th Orient. Mon.* 106, 141. *Dig., loc. cit.* Ptol. VII. 1. 47–50. Vincent, Appendix to vol. II. p. 56. *Grundz.* I. (i) pp. 249, 251. Dirksen, *Abh. der K. Akad. d. Wissensch. zu Berlin*, 1843, pp. 105–6. Strabo XV. 3. 21. Watt, *Dict.* s.v. *Sheep and Goats*, p. 559. Chwostow, 116. Heeren, *op. cit.* II. 273. *Ramayana*, I. 201. But Karakoram is Turkish.

(42) Cosmas XI. 444 B, 445 D–448 A. Actius, 16, 122. Serapion, *de Simpl.* 185 etc. Lassen III. 45. Watt, *Dict.* s.v. *Deer*, pp. 58 ff. Ferrand I. pp. 292–5. *ϰοστό(α)ριν* in Cosmas might be costus.

(43) *Peripl.* 6, 17 (African). Pliny VI. 173. Mart. XIV. 52, in lemm. Juv. VII. 130. Watt, *Dict.* s.v. *Rhinoceros*. Philostr. *Apoll.* III. 2.

(44) Chwostow, 398, and see below.

(45) Paus. V. 12. 3. Lucian, *de Sacrif.* 11, cp. id. *Zeus Trag.* 8. Virg. *G.* I. 57. *Aen.* XII. 67–8. Hor. *Od.* I. 31. 6. Ov. *Met.* VIII. 288. Catull. LXIV. 48 and so on. Perrot et Chipiez II. 730, *Pauly*, s.v. *Elfenbein*. Much African ivory obtained by Ptolemy II before 250 decreased the price considerably—see Tarn in *Class. Quart.* 1926, 100.

(46) Homer, *Odyss.* XXIII. 200. Pliny XXXVI. 22. Dionys. Halic. *A.R.* III. 62. 'Virg.' *Catal.* VIII. 23. Ov. *P.* IV. 5. 18 etc. Hor. *Od.* II. 18. 1. *Sat.* II. 6. 103. Athenae. XV. 50 = 695 C. Dio Chrys. *Or. de Ven.* 7. Galen V. 837. Kühn. etc. Varro, *L.L.* IX. 47. Lucian,

gascar and even Sofala; back to Red Sea not before May. H. Salt, *Voyage to Abyssinia*, 103. Sabaeans visited Chinese court with a rhinoceros early in 1st cent. A.D.—Herrmann (who thinks Ta-ts'in was Arabia), *Verkehrswege*, 8. Chinese and E. Africa—Herrmann in *Zeits. d. Ges. f. Erdk.* 1913, pp. 553-561.

(22) Tales about cinnamon and casia—Pliny XII. 87-8, 93. Herod. III. 110-111, cp. 107. Strabo XVI. 4. 14, 'from the far interior.' Pliny VI. 174 shews that cinnamon was *landed* at Mosyllon and in XII. 82 that Greeks now knew that cinnamon and casia were at least not Arabian. Besides the references given above, see *C.I.G.* 2852, lines 59-60. Petron. 78. 30 (as a name, cp. *Thes. Lingu. Lat. Onomast.* II. s.v. *Cinnamus*; *E.E.* VIII. 221). Dio Chrys. *Or.* XXXIII. 28, Arnim (*φρύγανα*). Pompon. Mela III. 8. 79 (of Arab. Eud.). Columella III. 8. Wessely, 1309 and index. *O.P.* VIII. 1088. *Flor.* I. 100. 32. *Tebt. P.* 190, 250. *Soc.* 628, 8. 9. *B.G.U.* 953, 4. Scribon. 70, 93, 106, 110 etc.; frequent in all medical writers. *C.I.L.* III. *S.* I. 1953, 32. Stat. *S.* V. 3. 42-3; IV. 5. 32; II. 6. 88, cp. Mart. IV. 13. 3; III. 63. 3-4; X. 97. 2; IV. 55. 1; III. 55. 1-3; VI. 54. 26. Pers. VI. 35-6. Virg. *G.* II. 466. Euseb. IV. 887-8 etc. Schoff, *J.A.O.S.* 40, 260-270. Vincent, II. 511 514. J. d'Alwis in *J.R.A.S. Ceylon Br.* III. No. 12, 1860-1, pp. 372-380. McCr. *Ptol.* 219-220. Chwostow, 91 ff., 104, 107, 441 (with authorities). *J. R. Stud.* 1917, p. 55. Perhaps *κάρπιον* of Ctes. 28 comes ultimately from Sinhalese Koredhu, whence Kirfah, *κάρπιον*. Heeren, *As. Nat.* 369.

(23) Scribon. 110, 113, 126, 173 etc. Pliny XII. 45-6 (Syriacum). Cels. V. 23. 1; VI. 7. 2 C; 3 B. Cp. nard of Commagene.

(24) The sea-route gave the epithet Alexandrinus which appears in Cels. V. 24. 1. Price of cal. arom.—5 den. (apparently) a pound. The Romans confused grass-nards with malabathrum, since they considered this a marsh-plant.

(25) *Nard*:—*St Mark* XIV. 3-5. *St John* XII. 3-6. *Song of Sol.* I. 12. *O.P.* 1088, 1384. Hor. *Od.* II. 11. 16. *Epode* XIII. 8-9; V. 59. *Od.* IV. 12. 17. Diosc. I. 7, cp. 17, 18. Tibull. II. 2. 7; III. 4. 27; III. 6. 64. *C.I.L.* X. 1284 (name). Prop. V. 7. 32. *Anth. Pal.* V. 1, 43, cp. VI. 250, 6; 254, 4; 231, 5. Pliny XIII. 15; XII. 42-7; XXXVII. 204. Grat. *Cyneg.* 314. *Peripl.* 46, 56, 63. Cosmas XI. 445 D. Prisc. *Perieg.* 984. Cels. V. 23. 2; VI. 6. 6, 9 A, cp. III. 21. 7-8 etc. Strabo XVI. 4, 25. Galen XIV. 73; XIX. 737 etc.; XII. 84-5. Wessely, index, *ναρδίνου, νάρδος*. *Soc.* 628, 7. *P.Z.* 69. 5 (*Annales*, XXII. 221). *S.B.* 5307, 1. The Celtic was a European plant. Galen X. 492; VI. 439-440, 426; XII. 429, 604; X. 791 etc. *Dig., loc. cit.* Apic. I. 15, 16; IX. 1, 7; VII. 6 (282); VIII. 2 (347), cp. IX. 8; I 16. Ptol VII. 2. 23. I suspect that the 'nardinum' which is mentioned in medical inscriptions of the West was made from 'Celtic nard'—see *Signacula Medicorum Ocularіorum* (A. Espérandieu), Nos. 2, 8, 31, 86, 140, 194-5, 208, and esp. 226. *Grass-nards*:—Schoff, ad *Peripl.* p. 169. *Penny Cycl.* s.v. *Sweet Calamus* and s.v. *Sugar*. *Peripl.* 39. *Exod.* XXX. 33. *Song of Sol.* VI. 14. *Is.* XLIII. 24. *Jerem.* VI. 20. *Ezek.* XXVII. 19. Pliny XII. 104-6. Diosc. I. 17, 18 etc. Veget. *Ar. Vet.* 4. 13. 4. Calamus aromaticus it seems included Sweet Flag, partly Indian. Ginger-grass of India is also meant by Stat. *S.* II. 1. 160; V. 1. 212; IV. 5. 30-1. Cp. Cels. IV. 21. 2; III. 21. 7 etc. Theophr. *H.P.* IX. 7. 1 and 3 etc., but not IV. 11. 13. See also Schoff, *J.A.O.S.* 43, pp. 216 ff. Watt, s.v. *Acorus Calamus*.

(26) Pliny XII. 41; XXXVII. 204. *Peripl.* 39, 46. *Dig., loc. cit.* Cosmas XI. 445 D? Diosc. I. 16. Ov. *M.* X. 308. Hor. *Od.* III. 1. 44. Prop. IV. (V) 6. 5. Lucan IX. 917. Colum. XII. 20, 5 etc. Pliny XII. 16, 50 etc. Galen V. 22; VII. 46 etc. *O.P.* XI. 1384 (5th cent. A.D.). *B.G.U.* 953. 3. Wessely, 2680. Scribon. 70, 121, 125-6, 129, 144, 173, 176-7, 269 etc. Cels. III. 21. 7; IV. 21. 2; V. 3 etc. Aretae. V. 8. 5; VIII. 13. 8. Strabo XVI. 4. 26, *κοστάρια* of the Nabataeans? cf. also Theophr. *H.P.* IX. 7. 6; *de Od.* 28, 34.

(27) *Jat.* III. 405. *Camb. Hist. Ind.* I. p. 207. Pillai, 25. Pliny XXI. 1-11. *Peripl.* 49. Schoff, id. p. 191. Pliny XII. 94. Garland-shops in ancient India:—*Ramayana*, III. 128 ff. Inscript. in *Arch. Surv. Ind.* X. p. 18.

(28) Pliny XII. 135; XIII. 18. Pallad. *de Gent. Ind. et. Br.* p. 4. Theophr. *H.P.* IX. 7. 2.

(29) Pliny XII. 30. *Dig., loc. cit.* Duchesne, *Lib. Pont.* I. p. 178. Cosmas XI. 445 D, 448 B. *Soc.* 297, 19. Paul. Aegin. VII. 3, s.v.

(30) Diosc. I. 68. *Peripl.* 30, 39. Pillai, 25. *Encycl. Brit.* s.v. *Frankincense* (quoted). Müller, *Geog. Gr. Min.*, Proleg. CVIII. Philostrat. *Apollon.* III. 4. *Dig., loc. cit.*, cp. *Ramayana*, I. 636 ff. Lassen I. 335; III. 39-40.

(31) Theophr. IV. 4. 12; IX. 1. 2. *Peripl.* 39, 48, 49. Pliny XII. 35-6, 71. Diosc. I. 67. Galen XI. 849 etc. Isid. *Orig.* XVII. 8. *O.P.* VIII.