ing a subdued note resembling the harsh croaking of a frog." The noise made by the old bulls, as they roam singly during the rutting season, is much more formidable, being usually compared to the roar of the lion; and many sportsmen who have hunted the gnu bear testimony to the remarkable likeness between the solitary males with their long manes, when seen at a considerable distance, and the "king of beasts." They are by no means the formidable creatures their ferocious aspect might lead one to suppose. However defiant the herd appears as it approaches a caravan, the report of a gun puts the whole troop of gnus to flight, and they are never known to attack man unless driven thereto in self-defence. The female has seldom more than a single young one at a birth, the calf at first being of a whitish colour. When captured young, the gnu may, according to Captain Harris, be reared by the hand on cows' milk; and although of uncertain temper, it can be got to herd with the cattle on the farm. The flesh of the calf is considered a delicacy, but that of the adult is insipid, being almost destitute of fat. Its long silky tail is in great request for chowries, and its hide is cut into strips and used for ropes and twine.

The brindled gnu is a more northerly form, never being found south of the Orange river. It is readily distinguished from the other species by the black colour of its tail and mane, the obscure vertical streaks on its body, its more elevated withers, and its extremely long aquiline nose. While equally grotesque in appearance and manner, it is much less spirited and active than the gnu. Its flesh is highly prized by the natives, who also convert its hide into mantles, rendered attractive to South-African taste by being dressed without removing the long hair of the mane and beard.

GOA, a Portuguese settlement on the Malabar or western coast of India, lying between 15° 44′ 30″ and 14° 53′ 30″ N. lat., and between 73° 45′ and 74° 26′ E. long. It is bounded on the N. by the river Tirakul or Auraundem, separating it from Sáwant Wári-State, on the E. by the Western Ghâts, on the S. by Kanara district, and on the W. by the Arabian Sea. Total area, 1062 square miles; population, 392,234.

This settlement forms a patch of foreign territory on the east of the Bombay coast, and is surrounded on all sides, except to the seaward, by British districts. Goa is a hilly country, especially the recently acquired portion known as the Novas Conquistas. Its distinguishing feature is the Sahyadri Mountains, which after skirting a considerable portion of the north-eastern and south-eastern boundary, branch off westwards across the territory with numerous spurs and ridges. The plains are well watered by large navigable rivers. The most important is the Mandavi river, on whose banks both the ancient and modern cities of Goa stand, with a fine harbour formed by the promontories of Bardez and Salsette. The port of New Goa or Panjim is divided into two anchorages by the projection of the *cabo* (cape) from the island of Goa, both capable of safely accommodating the largest shipping.

Goa ranks high as regards its early importance among the cities of western India. It emerges very distinctly in the 14th century, and was visited by the famous traveller Ibn Batuta. In the 15th century it formed the chief emporium of trade on the western side of India. Caravans of merchants brought down its products to the coast, and it was the only city in western India which enjoyed at this period a revenue of £10,000. Its wealth and advantageous situation attracted the Mahometan princes of the Deccan, and in 1469 it was taken by the Báhmani king. A fleet of 120 ships operated from the sea; the Báhmani troops forced their way down the passes of the Ghâts; and Goa capitulated. It next passed under the Bijápur dynasty, and on the arrival of Albuquerque, at the beginning of the 16th century, its military and commercial capabilities at once struck his mind. In 1510 the fleet of Albuquerque, consisting of 20 sail of the line, with a few small vessels and 1200 fighting men, hove in sight off the harbour. A holy mendicant or *jogi* had lately foretold its conquest by a foreign people from a distant land, and the disheartened citizens rendered up the town to the strangers. Eight leading men presented the keys of the gates to Albuquerque on their knees, together with a large banner which was usually unfurled on state occasions. Mounted on a richly caparisoned steed, Albuquerque entered the city in a triumphal procession, with the Portuguese banners carried by the flower of the Lisbon nobility and clergy amidst the acclamations of an immense multitude, who showered upon the conqueror filigree flowers of silver and gold. Albuquerque behaved well to the inhabitants, but was shortly afterwards expelled by the Bijápur king. However, he returned a few months later with a fleet of 28 ships carrying 1700 men, and after a bloody attack, in which 2000 Mussulmans fell, forced his way into the town. For three days the miserable citizens were subjected to every atrocity. The fifth part of the plunder, reserved for the Portuguese crown, amounted to £20,000.

he conquest of Goa illustrates the essentially military basis on which the Portuguese power in India rested. The subsequent history of the town has been one of luxury, ostentation, and decay. After bearing a siege by the king of Bijápur, and suffering from a terrible epidemic, Goa reached the summit of its prosperity at the end of the 16th century, during the very years when the English Company was struggling into existence under Elizabeth. "Goa Dourada," or Golden Goa, seemed a place of fabulous wealth to the plain merchants who were destined to be the founders of British India. "Whoever has seen Goa need not see Lisbon," said a proverb of that day. Indeed, if the accounts of travellers are to be trusted, Goa presented a scene of military, ecclesiastical, and commercial magnificence, such as has had no parallel in the European capitals of India. The brilliant pomp and picturesque display of Goa were due to the fact that it was not only a flourishing harbour, but the centre of a great military and ecclesiastical power. The Portuguese based their dominion in India on conquest by the sword. They laboured to consolidate it by a proselytizing organization which throws all other missionary efforts in India into the shade.

Goa reached its climax of pomp and power about the year 1600. Immediately afterwards commenced the long struggle with the Dutch, which before the end of the century had stripped Portugal of its fairest possessions in the East. In 1603 the Dutch blockaded Goa, but had to raise the siege. In 1635 the old epidemic fever which had afflicted Goa in the preceding century again broke out, and raged for five years. In 1639 the Dutch once more blockaded Goa, but found their meagre force of twelve ships insufficient for its capture. In 1666 luxury and the plague and the Dutch privateers had effectually crippled the commerce of Goa. Thevenot in that year drew a powerful picture of the decayed city. In 1675 Dr John Fryer described the city as in a ruinous state, whilst the inhabitants still made pitiful attempts at display in spite of their increasing misery. In 1683 Goa narrowly escaped falling into the hands of the Marhattá hordes under Sambáji. Before 1687 the abandonment of Old Goa had taken place. "Many streets," says an official document of that year, "have now become lonely and uninhabited." The river had silted opposite its quays, ships could no longer approach the city, the fever had again broken out, and the population had moved out to suburbs nearer the mouth of the river. In 1695 only 20,000 inhabitants remained. In 1739 the whole territory was attacked by the Marhattás, and only saved by the unexpected appearance of a new viceroy with a fleet. Various attempts were made in vain to rebuild Old Goa, and by the middle of the 18th century "this fairest but poorest settlement had become a burden to the Portuguese Home Government, costing no less than 300,000 piastres a year."

In 1759 further attempts to rebuild Old Goa were given up, and the governor changed his residence to Panjim or New Goa, the present city, at the mouth of the river. In 1775 the population was reduced to about 1600 souls, of whom 1198 were Christians, almost entirely half-castes and native converts. In 1759 also the Jesuits were expelled. They had got into their hands what little commerce remained, and the last touch was put to the ruin of Old Goa. "The river washes the remains of a great city,—an arsenal in ruins, palaces in ruins, quay walls in ruins, churches in ruins,—all in ruins. We looked and saw the site of the Inquisition, the bishop's prison, a grand cathedral, great churches, chapels, convents, religious houses, on knolls surrounded by jungle and trees scattered all over the country. We saw the crumbling masonry which once marked the lines of streets and enclosures of palaces, dockyards filled with weeds and obsolete cranes."

Panjim or New Goa lies in lat. 15° 30′ N., long. 75° 53′ E., at the mouth of the river Mandavi, and is a modern town with few pretensions to architectural beauty. Ships of the largest tonnage can lie out in the harbour, but only vessels of moderate size can be brought alongside of the city. The population is estimated at 15,000. Panjim was the residence of the viceroy from 1759, and in 1843 was ranked the capital of the Portuguese possessions in India.

The territory of Goa, including the two cities of Old Goa and Panjim with the adjoining country under Portuguese rule, amounts, as already stated, to 1062 square miles. Of the total population, namely, 392,234, nearly two-thirds or 232,089 are Roman Catholics, 128,824 are Hindus, and 2775 Mahometans. The Roman Catholics are subject in spiritual matters to an archbishop, who has the title of primate of the East. The Hindus and Mahometans enjoy perfect liberty in their religious affairs, and have their own places of worship. Agriculture forms the chief industry of the country. The total area under cultivation is 234,754 acres. Rice is the staple produce; next is the cocoa-nut, which is deemed important from the variety of uses to which the products are applied. The chief exports are cocoa-nuts, betel-nuts, mangoes, water-melons, cinnamon, pepper, salt fish, gum, firewood, and salt; and the chief imports rice, cloth, sugar, wines, tobacco, glassware, and hardware. The district seldom suffers from great floods. Some parts are subjected to inundations during heavy rains, but little damage is done to the crops. The high-lying town of Panjim takes its name from the native word *Panji*, meaning "arable land that cannot be inundated." The total revenue in 1873–74 was £108,148; the expenditure, £107,145. The police force numbers 619 men. In 1869–70 there were 137 lower schools, and 25 higher schools, including a National Lyceum with 2433 pupils. There are also medical and chemistry schools, and since 1870 a college for the study of practical sciences has been established. The prevailing endemic diseases are intermittent and remittent fevers, diarrhœa, and dysentery. The average annual rainfall for the three years ending 1875 was 100·22 inches.

See "Livro dos privilegios da Cidada de Goa," in *Archivio Portuguez Oriental*, 1857; *Archivo da Relaçaa de Goa contendo varios documentos dos Seculos*, 17, 18, e 19, by J. I. de Arrancheas Garcia, 1872, &c.; *Feições meteorologicas de Goa*, 1867; *Boletim do Governo dos Estados da India, Goa and New Goa*, 1838–70, &c.; *O Gabinete litterario das Fontainhas* (monthly, 1846, &c.); Tolbort, "The Authorities for the History of the Portuguese in India," in *Journ. of Asiatic Soc. of Bengal*, 1873; R. F. Burton, *Goa and the Blue Mountains*, 1851; Mrs Burton, *A.E.I., Arabia, Egypt, India*, 1879.

GOA POWDER, a drug occurring in the form of a yellowish-brown powder, varying considerably in tint, which has recently been brought into notice by Dr Fayrer of Calcutta as a remedy for ringworm. It derives its name from the Portuguese colony of Goa, where it appears to have been introduced about the year 1852. In 1875 it was shown by Dr Lima that the substance had been exported from Bahia to Portugal, whence it found its way to the Portuguese colonies in Africa and Asia. The tree which yields it belongs to the genus *Andira* of the natural order *Leguminosæ*, and has been named *A. Araroba*. It is met with in great abundance in certain forests in the province of Bahia, preferring as a rule low and humid spots. The tree is from 80 to 100 feet high, and is furnished with imparipinnate leaves, the leaflets of which are oblong, about 1½ inch long and ⅔ inch broad, and somewhat truncate at the apex. The flowers are papilionaceous, of a purple colour, and arranged in panicles. The Goa powder or araroba is contained in the trunk, filling crevices in the heartwood. To obtain it, the oldest trees are selected as containing a larger quantity, and after being cut down are sawn transversely into logs, which are then split longitudinally, and the araroba chipped or scraped off with the axe. During this process the workmen feel a bitter taste in the mouth; and great care has to be taken to prevent injury from the irritating action of the powder on the eyes. In this state, *i.e.*, mixed with fragments of wood, the Goa powder is exported in casks.

In India Goa powder has been used in the form of a paste, made by mixing the powder with vinegar or lime juice, as a local application for the cure of Indian ringworm. It appears to be one of the best remedies for that obstinate disease; and so highly is it valued that its price in Bombay averages £3, 12s. per lb. Its use in chloasma, intertrigo, and psoriasis, as well as in various other skin diseases, has also been attended with considerable success. The only disadvantages attending its use are—that it leaves a stain which is difficult to remove, and that the powder is apt to set up severe irritation of the eyes, if it come in contact with the conjunctiva. On this account Mr Balmanno Squire prefers to use it in the form of ointment. When given internally it has been found to act as an emetic and purgative. In England it is now regarded as one of the most efficacious remedies in intractable cases of ringworm.

GOÁLPÁRA, the most westerly district of Assam, between 25° 21′ and 26° 54′ N. lat. and between 89° 44′ and 91° 0′ E. long., bounded on the N. by Bhután, E. by Kámrúp, S. by the Gáro Hills, and W. by Kuch Behar and Rangpur. The district is situated on the Brahmaputra, at the corner where the river takes its southerly course into Bengal. The scenery is striking. Along the banks of the river grow clumps of cane and reed; farther back stretch fields of rice cultivation, broken only by the fruit trees surrounding the villages, and in the background rise the forest-clad hills overtopped by the white peaks of the Himalayas. The soil of the hills is of a red ochreous earth, with blocks of granite and sandstone interspersed; that of the plains is of alluvial formation. Earthquakes are common and occasionally severe shocks have been experienced. The Brahmaputra annually inundates vast tracts of country. Numerous extensive forests yield valuable timber. Wild animals of all kinds are found.

Goálpára has always formed the frontier between Bengal and Assam; originally it must have constituted part of the legendary Hindu kingdom of Kámrúp; from that it must have fallen into the hands of the early rájás of Kuch Behar, who, however, were unable long to retain their kingdom. From the east the wild Ahams came down the valley of the Brahmaputra, while from the west the Mughuls extended the limits of the Delhi empire. In 1668 the Mughuls came into collision with the Ahams, but were forced to retreat with a decisive defeat. The district came into British possession with the rest of Bengal in 1765. It has undergone several changes in administration, and in 1872, when Assam was constituted a separate administration, Goálpára was included within it.

In 1872 the population was 407,714,—311,419 being Hindus, and 89,916 Mahometans. Goálpára town, with between 3000 and 4000 inhabitants, is the most populous place, as well as the chief centre of trade. Dhubri is the point where the traffic of northern Bengal is shipped on board the Assam steamers. Gauripur and Lakhshmipur carry on a thriving trade in timber.

Rice forms the staple crop of the district. Mustard and jute are also largely grown. The area under cultivation is estimated at 600,000 acres, or about one-third of the total area. The district is not liable to any form of natural calamity; occasionally blights have been caused by worms and insects, but the harvests have never been affected. The manufactures consist of the making of brass and iron utensils and of gold and silver ornaments, weaving of silk cloth, basket-work, and pottery. The cultivation of tea has recently been introduced, and is advancing considerably. The chief centres of traffic are Goálpára town, Dhubri, Jogigopha, Bijni, Gauripur, and Singiwári. Local trade is in the hands of Márwári merchants, and is carried on at the *bázárs*, weekly *hâts* or markets, and periodical fairs. The chief exports are mustard-seed, jute, cotton, timber, lac, silk cloth, india-rubber, and tea; the imports, Bengal rice, European piece goods, salt, hardware, oil, and tobacco. The Brahmaputra and its tributaries are the chief means of communication, and are navigated by river steamers and the largest native boats. Goálpára is considered an unhealthy district both for Europeans and for natives. The principal diseases are intermittent and remittent fevers, diarrhœa, dysentery, rheumatism, and chest complaints. Cholera frequently occurs in an epidemic form, and small-pox is more or less prevalent every year. The mean annual temperature is 75° Fahr.; and the average annual rainfall is 98·75 inches.

GOÁLPÁRA, the chief town of above district, situated on the left bank of the Brahmaputra, in 26° 11′ 0″ N. lat., 90° 41′ 0″ E. long. It was the frontier outpost of the Mahometan power in the direction of Assam, and has long been a flourishing seat of river trade. The civil station is built on the summit of a small hill commanding a magnificent view of the valley of the Brahmaputra, bounded on the north by the snowy ranges of the Himálayas and on the south by the Gáro hills. The native town is built on the western slope of the hill, and the lower portion is subject to inundation from the marshy land which extends in every direction. Population (1872) 4678.

GOAT. All the species of the genus *Capra* may be divided into two classes, the one being represented by the ibex (see IBEX) and the other the goat. The latter class is subdivided into the ægagrus or wild goat (*Capra ægagrus*) and the domestic goat (*Capra hircus*), of which there are many varieties.

The Wild Goat, or Paseng of the Persians (*Capra ægagrus*, Pall.), is an inhabitant of the mountainous regions of Central Asia from the Caucasus to the Himalayas, and is occasionally met with in troops at great elevations. It stands somewhat higher than any of the domesticated varieties of the goat, from which it further differs in its stouter limbs and more slender body. Its neck is short, and is thus fitted to bear the enormous horns, which in the male are larger proportionally than in any other ruminant animal. These measure nearly three feet in length, are obscurely triangular in form, transversely ridged, and are bent backward as in the domestic varieties. The wild goat of the Himalayas, according to Darwin, when it happens to fall accidentally from a height, makes use of its massive horns by bending forward its head and alighting on them, thus breaking the shock. In the female the horns are exceedingly diminutive, or are altogether awanting. The fur, which over the greater part of the body is short, is of a greyish-brown colour, with a black line running along the entire length of the back; the short tail and the muzzle are also black, while the under surface of the neck, and the beard, which is present in both sexes, are of a brown colour. The paseng is exceedingly wary of the approach of man, and as its agility is no less remarkable there has been little opportunity of studying it closely. The concretions known as *bezoar-stones*, which were formerly much used in medicine and as antidotes of poison, are believed to have been originally obtained from the intestines of this species.

Considerable diversity of opinion has been expressed by naturalists as to the original stock of the domestic goat, which is met with in nearly every quarter of the globe,—the now prevalent and the most probable opinion being that the various domestic breeds are severally descended from wild stock now extinct. Both the ibex and the ægagrus interbreed freely with the common goat, though the produce is not always fertile. Instances of this are not unusual in the Alps and Pyrenees, where goats abound in a semi-domesticated state. Hybrids between the goat and the sheep are also known to have occurred, but are rare.

The following are the chief domestic breeds, possessing distinct characteristics:—the Common Goat, the Maltese, the Syrian, the Angora, the Cashmere, the Nubian or Egyptian, and the Dwarf Goat of Guinea.

The Common Goat.—This has many varieties which differ from each other in length of hair, in colour, and slightly in the configuration of the horns. The ears are more or less upright, sometimes horizontal, but never actually pendent, as in some Asiatic breeds. The horns are rather flat at the base and not unfrequently corrugated; they rise vertically from the head, curving to the rear, and are more or less laterally inclined. The colour varies from a dirty white to a dark-brown, but never black, which indicates Eastern blood. Most of the European countries possess more than one description of the common goat. In the British Isles there are two distinct types, one short and the other long haired. In the former case the hair is thick and close, with frequently an undercoat resembling wool. The horns are large in the male, and of moderate size in the female, flat at the base and inclining outwards. The head is short and tapering, the forehead flat and wide, and the nose small; the legs strong, thick, and well covered with hair. The colour varies from white or grey to black, but is frequently fawn, with a dark line down the spine and across the shoulders. The other variety owns a shaggy coat, generally of a reddish-black hue, though sometimes grey or pied and occasionally white. The head is long, heavy, and ugly, the nose coarse and prominent, the horns are situated close together, and often continue parallel almost to the extremities, being also large, corrugated, and pointed. The legs are long, and the sides flat, the animal itself being generally gaunt and thin. This breed is peculiar to Ireland, the Welsh being of a similar description, but more often white. The short-haired goat is the English goat proper. From the constant crossing however that takes place between these native breeds and imported foreign specimens, one meets in England with animals possessing very great diversity of form. Both the British breeds and those from abroad are frequently ornamented with two peculiar tassel-like appendages, which hang near together under the throat. It is supposed by many that these ornaments are traceable to some foreign origin; but although there are foreign breeds that possess them, they appear to pertain quite as much to the English native breeds as to those of distant countries, and indeed the peculiarity referred to is mentioned in very old works that describe the goats of the British Islands. The milk produce in the common goat as well as other kinds varies very greatly with individuals. Irish goats often yield a quantity of milk, but the quality is comparatively poor. The goats of France are very similar to those of Britain, varying in length of hair, colour, and character of horns. A French writer describes them as possessing "a particularly neat and compact head, small mouth, horns corrugated, and inclining upwards and outwards, a thin neck, narrow chest, and long body, long but muscular legs, and in colour white, black, fawn, or pied." The Norway breed is frequently pure white with long hair; it is rather small in size, with small bones, a short rounded body, head small with a prominent forehead, and short, straight, corrugated horns. The facial line is concave. The horns of the male are very large, and curl round after the manner of the wild goat, with a tuft of hair between and in front.

The *Maltese Goat* has its ears long and wide and perfectly pendulous, hanging down below the jaw. The hair is long and cream-coloured. Specimens of this kind are usually hornless, which is perhaps the cause of it having been called the "Hornless Variety." It would appear, however, that the absence of these appendages is simply a freak of nature, and not the peculiar characteristic of a particular species.

The Syrian Goat.—This breed is met with in various parts of the East, in Lower Egypt, on the shores of the Indian Ocean, and in the island of Madagascar. Both its hair and ears are excessively long, the latter so much so that they are sometimes clipt to prevent their being torn by stones or thorny shrubs. Its horns are somewhat erect and spiral, with an outward bend.

The *Angora Goat* is often confounded with the Cashmere, but is in reality quite distinct from it. The principal feature of this breed, of which there are two or three varieties, is the length and quantity of its hair, which has a particularly soft and silky texture, covering the whole body and a great part of the legs with close matted ringlets. The horns of the male differ from those of the female, being directed vertically and in shape spiral, whilst in the female they have a horizontal tendency, somewhat like those of a ram. The face has a sheepish expression. The coat is composed of two kinds of hair, the one short and coarse and of the character of hair, which lies close to the skin, the other long and curly and of the nature of wool, forming the outer covering. Both are used by the manufacturer, but the exterior portion, which makes up by far the greater bulk, is much the more valuable. The process of shearing takes

place in early spring, and is conducted with the utmost care; the average amount of wool yielded by each animal is about 2½ lb. The best quality comes from castrated males, the females producing the next best. The annual export of wool from Angora is estimated at about 2,000,000 lb, and its value at £200,000. Large herds are shipped at Constantinople and sent to Cape Colony, where this breed thrives well and is largely propagated, the climate being specially suitable to the perfect development of the wool. A very valuable consignment of these animals arrived in London in May 1879 for transshipment to the Cape, having been procured from different parts of Asia Minor, by means of great personal exertion, by Mr J. B. Evans, a South-African goat farmer. The wool, or mohair, as it is technically termed, of these goats was remarkably long, fine, and heavy, the average weight of the produce of the herd being reckoned at 6 lb per head. So highly is this breed

FIG. 1.—Angora Male Goat.

esteemed by the Turkish farmers that it was with the greatest reluctance they were induced to sell them, and then only at exorbitant prices, some of the males costing £250 and females £150. £50 and £60 are common prices for these goats at Angora. Fig. 1 is from a photograph of the finest male of the flock, the fleece of which was estimated to weigh when shorn full 15 lb. The breed was introduced at the Cape about 1864. In 1878, according to the customs returns, 1,300,585 lb weight of mohair was exported, of the value of £105,313. The Angora is a bad milker and an indifferent mother, but its flesh is better eating than that of any other breed, and in its native country is preferred to mutton. The kids are born very small, but grow fast, and arrive early at maturity. This variety of the goat approaches nearest in its nature, form, and habits to the sheep, even the voice having a strong resemblance.

The Cashmere Goat.—This animal has a delicate head, with semi-pendulous ears, which are both long and wide. The hair varies in length, and is coarse and of different colours according to the individual. The horns are very erect, and sometimes slightly spiral, inclining inwards and to such an extent in some cases as to cross. The coat is composed, as in the Angora, of two materials; but in this breed it is the under coat that partakes of the nature of wool and is valued as an article of commerce. This undergrowth, which is of a uniform greyish-white tint, whatever the colour of the hair may be, is beautifully soft and silky, and of a fluffy description resembling down. It makes its appearance in the autumn, and continues to grow until the following spring, when if not removed, it falls off naturally; its collection then commences, occupying from eight to ten days. The animal undergoes during that time a process of combing by which all the wool and a portion of the hair, which of necessity comes with it, is removed. The latter is afterwards carefully separated, when the fleece in a good specimen weighs about half a pound, being worth between half to three quarters of a rupee. It is sold by the "turruk" of 12 lb. This is the material of which the far-famed and costly shawls are made, which at one time had such a demand that, it is stated, "16,000 looms were kept in constant work at Cashmere in their manufacture." Those goats having a short, neat head, very long, thin ears, a delicate skin, small bones, and a long heavy coat, are for this purpose deemed the best. There are several varieties possessing this valuable quality, but those of Cashmere, Thibet, and Mongolia are the most esteemed. About the year 1816 a small herd of Cashmeres was introduced into France with a view to acclimatize and breed them for the sake of their wool, but the enterprise failed. A few were purchased and brought over to England by Mr C. T. Tower, who, by careful treatment, so far succeeded with them that, in course of time, he had a shawl made from their fleece, which turned out to be of good quality. At the death of the owner some years later, the herd, which had then deteriorated through in-breeding, was presented to the Queen and placed in Windsor Park.

The *Nubian Goat*, which is met with in Nubia, Upper Egypt, and Abyssinia, differs greatly in appearance from all those previously described. The coat is in the female extremely short, almost like that of a race-horse, and the legs are very long. This breed therefore stands considerably higher than the common goat. One of its peculiarities is the strongly convex shape of the face, the forehead being very prominent and the nostrils sunk in, the nose itself extremely small, and the lower lip projecting from the upper. The ears are long, broad, and thin, and hang down by the side of the head like a "double lop" rabbit. The horns are quite black, slightly twisted, and very short, flat at the base, pointed at the tips, and recumbent on the head. But

FIG. 2.—Nubian Goat.

little was known of this breed in Europe—in the West at least—until some ten or twelve years ago, when some were imported into France by the Société d'Acclimatation of Paris, who found its milking qualities to surpass those of all other breeds. Among the goats that are met with in England a good many show unmistakable signs of a more or less remote cross with this breed, derived probably from specimens brought from the East on board ships for supplying milk during the voyage. It is no doubt on this account that they often go by the name of "Indian" goats.

The *Nepaul Goat* appears to be a variety of the last breed, it having the same arched facial line, pendulous ears, and long legs. The horns, however, are more spiral. The colour of the hair, which is longer than in the Nubian, is black, grey, or white, with black blotches.

The *Guinea Goat* is a dwarf species originally from the coast whence its name is derived. There are three varieties. Besides the commonest (*Capra recurva*, Linn.), there is a rarer breed (*Capra depressa*, Linn.), inhabiting the Mauritius and the islands of Bourbon and Madagascar. The other variety is met with along the White Nile, in Lower Egypt, and at various points on the African coast of the Mediterranean. Some of these dwarf goats may be seen at the Jardin d'Acclimatation in Paris.

Habits and Management.—The milch goat has been aptly described as the "poor man's cow"—a designation it well merits, for with a couple of these animals the cottager may at an almost nominal expense enjoy the same advantages in a domestic point of view as the rich man with his "Alderney." Comparatively few are kept in England, because the advantages of goat-keeping are but very imperfectly known, and also on account of the large proportion of land under cultivation. The goat in a state of nature frequents hills and mountainous places, and in a domesticated condition it generally gives preference to elevated situations; but it is a mistake to suppose that it will not thrive on low ground. Being naturally adapted to rocks and dry soils, however, it should not be exposed in marshy places, as this brings on disease of the feet and general ill health; otherwise there is no animal more uniformly hardy. The common varieties will stand heat and cold equally well, but have a decided objection to storms of wind and rain; when they are left to roam loose, therefore, a rough shed should be erected to shelter them from the weather. Under this arrangement a goat may be left out day and night the whole year round; but, if it is kept for the sake of its milk, the yield is greater and it thrives better if housed during winter. Owing to the troublesome propensity of these animals to bark trees and destroy shrubs by nipping off all young and tender shoots, they should not be allowed to roam loose—except on a common—unless proper protection is afforded by wire netting or some such arrangement.

The goat breeds, generally speaking, but once a year. If well housed and under liberal treatment, it will bring forth young twice in twelve months; but this is not advisable. As a rule, at the first birth one kid only is produced, but afterwards two and sometimes three. One has been known for three consecutive years to drop four at a birth; but this is rare and by no means desirable, as the progeny are sure to be small and thrive badly,—the dam in most cases having insufficient milk for so large a family.

The goat propagates at a very early period of its life. The male is generally capable of engendering at seven months; and, in the case just referred to of four at a birth, the father on one occasion was barely six months old. One is sufficient for a hundred females. The latter bring forth at twelve months, and sometimes earlier. For the sake of the future growth and productiveness of the animal, however, it is unwise to permit intercourse between the sexes earlier than at eighteen or at least sixteen months. It is owing to the baneful practice of letting them breed as soon as they will, under the mistaken idea that a more rapid return is obtained, that so many diminutive specimens are met with, both dam and progeny being spoiled in consequence.

The best kind for milch purposes are those with long and deep bodies, not necessarily so broad at the chest as about the haunches, the belly ample, and the legs tolerably short; head fine and tapering, with prominent eyes, ears long, thin, wide, and inclining horizontally, horns short and not corrugated, neck thick, and coat close and short. The udder above all must be not only large but soft and elastic, with nice pointed teats. Hornless specimens are often the best milkers.

The goat has 32 teeth, and by these the age up to five years may be pretty accurately ascertained. The lower jaw possesses 12 molars and 8 incisors, and the upper 12 molars alone. The kid at its birth has 6 molars but no incisors; the latter, however, are generally all cut in about three weeks, the first cut molar being visible at three months. At a year or fifteen months old the two front "milk teeth," as the first set of incisors are called, fall, and are replaced by permanent ones; the next two at from two years to thirty months, the third pair from two and a half to three and a half years, and the fourth and last at from three and a half to four and a half years. When all are changed the mouth is said to be "full."

Between two and five years old the she-goat gives the best return in milk, continuing productive often for eight or nine years; its length of life is on an average from ten to fifteen. These animals vary very greatly in the quantity of milk they yield. An ordinary specimen gives from 2 to 3 pints, a superior one 2 quarts, and occasionally first-rate individuals are found supplying 3 quarts a day. The Nubian breed surpasses the common goat in this respect, as the following table from the French work of M. du Plessis will show, in which the yield of a Nubian is compared with that of a half-bred, itself a superior milker.

Half-bred Nubian and Native.			*Pure Nubian Breed.*		
	Milk.	Cream.		Milk.	Cream.
1st day	3·57 litres.	·22 litres.	1st day.	4·39 litres.	·3800 litres
2d "	3·42 "	·21 "	2d "	4·41 "	·3848 "
3d "	3·35 "	·20 "	3d "	4·53 "	·3850 "
4th "	3·62 "	·23 "	4th "	4·67 "	·3969 "
5th "	3·69 "	·24 "	5th "	4·94 "	·4030 "
	17·65 "	1·10 "		22·94 "	1·9497 "

The litre being as near as possible 1¾ pints, the return in English measure is accordingly—from the half-bred 31 pints, or an average per day of 3 quarts, and from the pure Nubian 40 pints, or nearly 4 quarts daily, the richness of the quality being proportionately greater.

Milking should be performed at regular hours, morning and night; but with heavy milkers three times daily is better for the first two or three months, as the oftener the udder is emptied when once full the quicker it is replenished, a sufficient supply of food being of course provided. It is a good plan to accustom the animal to jump on a platform whilst being milked; the teats are thus more easily manipulated, and more command is obtained over the goat and the pail. Feeding and milking should always be carried on at the same time.

Many persons are under the wrong impression that the milk of the she-goat,—which by the way has no strong *hircine* scent attaching to her like the male, another common error,—possesses a flavour peculiar to itself; but this is quite a mistake. Out of dozens kept by the present writer, only one has been found to yield milk differing from that of the cow in taste. The peculiarity in this case seemed natural to the animal, and the milk was decidedly unpalatable.

The flesh of the common goat, although quite eatable, is not to be recommended in comparison with mutton, being rather hard and indigestible. Kid, however, is a great delicacy, and tastes like lamb or veal, according to the manner of dressing. It is preferable cooked like veal, with layers of bacon tied round and stuffed, for with the exception of the suet there is very little fat. A good rich gravy should accompany the joint when served, and there should be no lack of cooking. Hot or cold it is then equally acceptable. Suckling kids are the best eating, as they have then their milk flesh, and are nice and plump. The skins dressed and sewed together make handsome rugs. For food and other remarks on goat-keeping see AGRICULTURE, vol. i. p. 399. (S. H. P.)

GOATSUCKER, a bird from very ancient times absurdly believed to have the habit implied by the common name it bears in many European tongues besides our own—as testified by the Greek Αἰγοθήλας, the Latin *Caprimulgus*, Italian *Succiacapre*, Spanish *Chotacabras*, French *Tettechèvre*, and German *Ziegenmelker*. The common Goatsucker (*Caprimulgus europæus*, Linn.), is admittedly the type of a very peculiar and distinct Family *Caprimulgidæ*, a group remarkable for the flat head, enormously wide mouth, large eyes, and soft, pencilled plumage of its members, which vary in size from a Lark to a Crow. Its position has been variously assigned by systematists. Though of late years judiciously removed from the *Passeres*, in which Linnæus placed all the species known to him, Professor Huxley considers it to form, with two other Families—the Swifts (*Cypselidæ*) and Humming-birds (*Trochilidæ*), the division *Cypselomorphæ* of his larger group *Ægithognathæ*, which is equivalent in the main to the Linnæan *Passeres*. There are two ways of regarding the *Caprimulgidæ*—one including the genus *Podargus* and its allies, the other recognizing them as a distinct Family, *Podargidæ*. As a matter of convenience we shall here comprehend these last in the *Caprimulgidæ*, which will then contain two subfamilies, *Caprimulginæ* and *Podarginæ*; for what, according to older authors, constitutes a third, though represented only by *Steatornis*, the singular

Common Goatsucker.

Oil-bird, or Guacharo, certainly seems to require separation as an independent Family (see GUACHARO).

Some of the differences between the *Caprimulginæ* and *Podarginæ* have been pointed out by Mr Sclater (*Proc. Zool. Soc.*, 1866, p. 123), and are very obvious. In the former, the outer toes have *four* phalanges only, thus presenting a very uncommon character among birds, and the middle claws are pectinated; while in the latter the normal number of five phalanges is found, and the claws are smooth, and other distinctions more recondite have also been indicated by him (*tom. cit.*, p. 582). The *Caprimulginæ* may be further divided into those having the gape thickly beset by strong bristles, and those in which there are few such bristles or none—the former containing the genera *Caprimulgus*, *Antrostomus*, *Nyctidromus*, and others, and the latter *Podager*, *Chordiles*, *Lyncornis*, and a few more.

The common Goatsucker of Europe (*C. europæus*) arrives late in spring from its winter-retreat in Africa, and its presence is soon made known to us by its habit of chasing its prey, consisting chiefly of moths and cockchafers, in the evening-twilight. As the season advances the song of the cock, from its singularity, attracts attention amid all rural sounds. This song seems to be always uttered when the bird is at rest, though the contrary has been asserted, and is the continuous repetition of a single burring note, as of a thin lath fixed at one end and in a state of vibration at the other, and loud enough to reach in still weather a distance of half-a-mile or more. On the wing, while toying with its mate, or performing its rapid evolutions round the trees where it finds its food, it has the habit of occasionally producing another and equally extraordinary sound, sudden and short, but somewhat resembling that made by swinging a thong in the air, though whether this noise proceeds from its mouth is not ascertained. In general its flight is silent, but at times when disturbed from its repose, its wings may be heard to smite together. The Goatsucker, or, to use perhaps its commoner English name, Nightjar,[1] passes the day in slumber, crouching on the ground or perching on a tree—in the latter case sitting not across the branch but lengthways, with its head lower than its body. In hot weather, however, its song may sometimes be heard by day and even at noontide, but it is then uttered, as it were, drowsily, and without the vigour that characterizes its crepuscular or nocturnal performance. Towards evening the bird becomes active, and it seems to pursue its prey throughout the night uninterruptedly, or only occasionally pausing for a few seconds to alight on a bare spot—a pathway or road—and then resuming its career. It is one of the few birds that absolutely make no nest, but lays its pair of beautifully-marbled eggs on the ground, generally where the herbage is short, and often actually on the soil. So light is it that the act of brooding, even where there is some vegetable growth, produces no visible depression of the grass, moss, or lichens on which the eggs rest, and the finest sand equally fails to exhibit a trace of the parental act. Yet scarcely any bird shows greater local attachment, and the precise site chosen one year is almost certain to be occupied the next. The young, covered when hatched with dark-spotted down, are not easily found, nor are they more easily discovered on becoming fledged, for their plumage almost entirely resembles that of the adults, being a mixture of reddish-brown, grey, and black, blended and mottled in a manner that passes description. They soon attain their full size and power of flight, and then take to the same manner of life as their parents. In autumn all leave their summer haunts for the south, but the exact time of their departure has hardly been ascertained. The habits of the Nightjar, as thus described, seem to be more or less essentially those of the whole Subfamily—the differences observable being apparently less than are found in other groups of birds of similar extent.

A second species of Goatsucker (*C. ruficollis*), which is somewhat larger, and has the neck distinctly marked with rufous, is a summer visitant to the south-western parts of Europe, and especially to Spain and Portugal. The occurrence of a single example of this bird at Killingworth, near Newcastle-on-Tyne, in October 1856, has been recorded by Mr Hancock (*Ibis*, 1862, p. 39); but the season of its appearance argues the probability of its being but a casual straggler from its proper home. Many other species of *Caprimulgus* inhabit Africa, Asia, and their islands, while one (*C. macrurus*) is found in Australia. Very nearly allied to this genus is *Antrostonus*, an American group containing many species, of which the Chuck-will's-widow (*A. carolinensis*) and the Whip-poor-will (*A. vociferus*) of the eastern United States (the latter also reaching Canada) are familiar examples. Both these birds take their common name from the cry they utter, and their habits seem to be almost identical with those of the Old-World Goatsuckers. Passing over some other forms which need not here be mentioned, the genus *Nyctidromus*, though consisting of only one species (*E. albicollis*) which

[1] Other English names of the bird are Evejar, Fern-Owl, Churn-Owl, and Wheel-bird—the last from the bird's song resembling the noise made by a spinning-wheel in motion.

inhabits Central and part of South America, requires remark, since it has tarsi of sufficient length to enable it to run swiftly on the ground, while the legs of most birds of the Family are so short that they can make but a shuffling progress. *Heleothreptes*, with the unique form of wing possessed by the male, needs mention. Notice must also be taken of two African species, referred by some ornithologists to as many genera (*Macrodipteryx* and *Cosmetornis*), though probably one genus would suffice for both. The males of each of them are characterized by the wonderful development of the ninth primary in either wing, which reaches in fully adult specimens the extraordinary length of 17 inches or more. The former of these birds, the *C. macrodipterus* of Afzelius, is considered to belong to the west coast of Africa, and the shaft of the elongated remiges is bare for the greater part of its length, retaining the web, in a spatulate form, only near the tip. The latter, to which the specific name of *vexillarius* was given by Mr Gould, has been found on the east coast of that continent, and is reported to have occurred in Madagascar and Socotra. In this the remigial streamers do not lose their barbs, and as a few of the next quills are also to some extent elongated, the bird, when flying, is said to look as though it had four wings. Specimens of both are rare in collections, and no traveller seems to have had the opportunity of studying the habits of either so as to suggest a reason for this marvellous sexual development.

The second group of *Caprimulginæ*, those which are but poorly or not at all furnished with rictal bristles, contains about five genera, of which there is here only room to particularize *Lyncornis* of the Old World and *Chordiles* of the New. The species of the former are remarkable for the tuft of feathers which springs from each side of the head, above and behind the ears, so as to give the bird an appearance like some of the "Horned" Owls—those of the genus *Scops*, for example; and remarkable as it is to find certain forms of two Families, so distinct as are the *Strigidæ* and the *Caprimulgidæ*, resembling each other in this singular external feature, it is yet more remarkable to note that in some groups of the latter, as in some of the former, a very curious kind of dimorphism takes place. In either case this has been frequently asserted to be sexual, but on that point doubt may fairly be entertained. Certain it is that in some groups of Goatsuckers, as in some groups of Owls, individuals of the same species are found in plumage of two entirely different hues—rufous and grey. The only explanation as yet offered of this fact is that the difference is sexual, but, as just hinted, evidence to that effect is conflicting. It must not, however, be supposed that this common feature, any more than that of the existence of tufted forms in each group, indicates any close relationship between them. The resemblances may be due to the same causes, concerning which future observers may possibly enlighten us, but at present we must regard them as analogies not homologies. The species of *Lyncornis* inhabit the Malay Archipelago, one, however, occurring also in China. Of *Chordiles* the best known species is the Night-hawk of North America (*C. virginianus* or *C. popetue*), which has a wide range from Canada to Brazil. Others are found in the Antilles and in South America. The general habits of all these birds agree with those of the typical Goatsuckers.

We have next to consider the birds forming the genus *Podargus* and those allied to it, whether they be regarded as a distinct Family, or as a Subfamily of *Caprimulgidæ*. As above stated, they have feet constructed as those of birds normally are, and their sternum seems to present the constant though comparatively trivial difference of having its posterior margin elongated into two pairs of processes, while only one pair is found in the true Goatsuckers. *Podargus* includes the bird (*P. cuvieri*) known from its cry as Morepork to Tasmanian colonists, and several other species, the number of which is doubtful, from Australia and New Guinea. They have comparatively powerful bills, and it would seem feed to some extent on fruits and berries, though they mainly subsist on insects, chiefly *Cicadæ* and *Phasmidæ*. They also differ from the true Goatsuckers in having the outer toes partially reversible, and they are said to build a flat nest on the horizontal branch of a tree for the reception of their eggs, which are of a spotless white. Apparently allied to *Podargus*, but differing among other respects in its mode of nidification, is *Ægotheles*, which belongs also to the Australian Subregion; and further to the northward, extending throughout the Malay Archipelago and into India, comes *Batrachostomus*, wherein we again meet with species having aural tufts somewhat like *Lyncornis*. The *Podarginæ* are thought by some to be represented in the New World by the genus *Nyctibius*, of which several species occur from the Antilles and Central America to Brazil. Finally, it may be stated that none of the *Caprimulgidæ* seem to occur in Polynesia or in New Zealand, though there is scarcely any other part of the world suited to their habits in which members of the Family are not found. (A. N.)

GOBELIN, the name of a family of dyers, who in all probability came originally from Rheims, and who in the 15th century established themselves in the Faubourg Saint Marcel, Paris, on the banks of the Bièvre. The first head of the firm was named Jehan, and died in 1476. He discovered a peculiar kind of scarlet dye, and he expended so much money on his establishment that it was named by the common people *la folie Gobelin*. To the dye works there was added in the 16th century a manufactory of tapestry. So rapidly did the wealth of the family increase, that in the third or fourth generation some of them forsook their trade and purchased titles of nobility. More than one of their number held offices of state, among others Balthasar, who became successively treasurer general of artillery, treasurer extraordinary of war, councillor secretary of the king, chancellor of the exchequer, councillor of state, and president of the chamber of accounts, and who in 1601 received from Henry II. the lands and lordship of Briecomte-Robert. He died in 1603. The name of the Gobelins as dyers cannot be found later than the end of the 17th century. In 1662 the works in the Faubourg Saint Marcel, with the adjoining grounds, were purchased by Colbert on behalf of Louis XIV., and transformed into a general upholstery manufactory, in which designs both in tapestry and in all kinds of furniture were executed under the superintendence of the royal painter Lebrun. On account of the pecuniary embarrassments of Louis XIV., the establishment was closed in 1694, but it was reopened in 1697 for the manufacture of tapestry, chiefly for royal use and for presentation. During the Revolution and the reign of Napoleon the manufacture was suspended, but it was revived by the Bourbons, and in 1826 the manufacture of carpets was added to that of tapestry. In 1871 the building was partly burned by the Communists.

See Lacordaire, *Notice historique sur les manufactures impériales de tapisserie des Gobelin et de tapis de la Savonnerie, précédée du catalogue des tapisseries qui y sont exposées*, Paris, 1853: and also the article TAPESTRY.

GOBI is the name usually applied by European geographers to a vast stretch of desert in Central Asia, which has its western limits in the neighbourhood of 75° E. long., and its eastern somewhere between 114° and 115°. Like many other geographical designations, the word is not only of doubtful origin, but in conventional usage has modified its meaning. According to Sir T. Douglas Forsyth, it is originally the Turki for "great"; and Richthofen informs us that by the Chinese it is employed, not as a proper name, but, like Shamo, as a general term for any sandy and desert piece of country. This being the case, the great German geographer proposes to displace the word Gobi in European usage by the Chinese Han-hai or Dry Sea, suggestive as he says not only of the present appearance but also of the former history of the region; but it is to be feared that the older designation has become too familiar, and the disadvantages arising from its use are of too recondite a character, to render it likely that his proposal will be generally accepted.

[1] In New Zealand, however, this name is given to an Owl (*Scologlaux novæ-zelandiæ*).

As a sea the Gobi or Han-hai must have been comparable in extent to the Mediterranean, and the ancient coast-line can be pretty clearly recognized. In its present state it may be divided into two distinct basins, the western taking its name from the river Tarim or Tarym, and the eastern from the Chinese Shamo or "Sand Desert." The Dzungarian valley stretches westwards like a gulf. The Tarim basin is bounded on the S. by the range of mountains which, under various names applicable to different portions, such as the Kwen-lun and the Altyntag, forms the northward rim of the great plateau of Thibet; on the west it comes up to the spurs of the Pamir plateau, and on the north it lies along the foot of the Thian Shan. If we measure from the source of any of its principal tributaries, the Tarim must have a course of more than 1000 miles. The head-waters rise in the mountains just named, and the more important of them in the south and west. The Khotan river and its confluent the Kara-Kash both descend from the Karakorum mountains, and flow in a generally northward direction; the Zarafshan or Yarkand River, rising in the same range, winds about in the first part of its course so as to enter the Gobi almost from the west; and the Kizil Su or Kashgar River has its numerous head streams in the Kizil Yart mountains belonging to the Pamir plateau. The Aksai River and the Shah Yar are the most important contributions from the Thian Shan. The course of all of these rivers after they enter the Gobi is largely matter of conjecture, and all that can be asserted with confidence is that they unite to form the Tarim, and find their final goal in an inland lake. They have probably all reached a common channel about 82° E. long.; but as the stream presses eastward it again breaks up into numerous branches, the arrangement of which, except along the route followed by Przhevalski, is still unknown. As it passes east the stream gradually loses in volume by absorption, evaporation, and the demands of riparian populations. In the neighbourhood of the Ugendarya, the breadth is about 300 or 360 feet, and the depth about 20. The course of the Tarim lies much nearer the northern side of the Gobi than the southern, but it gradually trends south east, and at length passing through Lake Karaburan, loses itself in Lake Chon-Kul (*i.e.*, great lake) or Kara-Kurchin. This last lake is identified with the famous Lob-nor, the position of which has been one of the outstanding problems of comparative geography. Against the identification a number of objections have been urged by Richthofen (*cf.* "Bemerkungen zu den Ergebnissen von Ober-lieut. Prejewalski's Reise" in *Zeitsch. für Erdk.*, Berlin, 1878), the most important of which are the prevailing tradition that the Lob-nor was a salt lake while the Chon-Kul is fresh, and the fact that the Chinese maps place the Lob-nor to the north of the position assigned to the Chon Kul, which according to Przhevalski lies about 39° 30′ N. lat., immediately to the N. of the Altyntag range (13,000 to 14,000 feet high). The country through which the Lower Tarim flows is dreary and monotonous. "In general," reports the traveller, "the Lob-nor desert is the wildest and most unfertile of all that I have yet seen in Asia; it is sadder than the desert of Ala-Shan." A meagre vegetation of tamarisks and reeds lines the course of the river. Away towards the south-west there stretch, if we may trust to native reports, those vast fields of drifting and treacherous sands which have given so much of its terror to the legendary account of the desert of Gobi. That the reports are in the main true, and that the legends are founded on fact, appears to be rendered probable by the statements of Sir T. Douglas Forsyth, who has contributed an interesting paper on the subject to the *Proceedings of the Royal Geographical Society* (1876). The population of the Tarim basin is scanty and poverty-stricken. On the Lower Tarim there are nine villages with a total of 1200 souls. Cattle-rearing is more general than agriculture, which indeed is of the most recent introduction, and confines itself to barley and wheat. Mahometanism is the universal religion, and the language appears to be identical with the Taranchi and the Sart.

The Shamo or eastern basin is quite different in its character. Here we have no large river like the Tarim, and, instead of its boundaries being marked by lofty ranges of mountains from 13,000 to 20,000 feet high, the ground gradually rises in a series of scarcely marked terraces. The central point, at Ozon Khoshu, is the lowest discovered in Central Asia, being only 607 metres (1948 feet) above the level of the sea. "The aspect of the country," says Ney Elias, "who crossed in a north-westerly direction from China, is that of low hills or downs, with valleys and plains intervening, the whole of a rocky or stony nature rather than sandy, though patches of sand do occur every here and there. What little vegetation exists is chiefly composed of weeds, 'scrub,' and heath, there being scarcely any grass, and only a dwarfed and stunted tree here and there, in the gorges or passes of those low rocky ranges that at uncertain intervals cross the desert in almost parallel lines from east to west." Of the western portion of the basin we have no modern account.

Marco Polo was the first European who gave a distinct description of the desert of Gobi. He tells us how on quitting Charchan (the modern Chachan, according to Yule) "you ride some five days through the sands finding none but bad and bitter water; and then you come to a city called Lop at the edge of the desert . . . . The length of the desert is so great that it would take a year and more to ride from one end of it to the other. It is all composed of hills and valleys of sand." And then he goes on to speak of spirits that haunt the waste, and syllable men's names, and of strange noises like the tramp and hum of a great cavalcade, of the sound of drums, and a variety of musical instruments. Polo appears to have proceeded east from Khotan to Lob, and then further east to Etsina on the southern edge of the desert, and afterwards to have spent forty days in crossing the desert northwards to Karakorum.[1]

Later notices of the Gobi, especially of its eastern portions, are given by Gerbillon, 1688-98 (in Duhalde's appendix), by the Dutchman Evert Ysbrand Ides (1692-94), and by Lorenz Lange, who was sent in 1727-28 and in 1736 by Peter the Great to Peking.[2] But it was not till the present century that accurate information began to accumulate about the eastern portions, and the traveller who has lifted the veil from the western portions is still engaged in his explorations. In 1830-31 Fuss and Bunge crossed the eastern Gobi from Urga to Kalgan; and Dr Fritsche executed a series of journeys in the same district between 1869 and 1873.[3] The missions of the Russian officials Andre Gustavitch Prinz (1863) and Shishmaroff (1868) added little to the knowledge of the region; but in 1870 Pavlinoff, consul at Chuguchak, being accompanied by a Government topographer Matusovski, made valuable observations on the route from Suok to Kobdo, and from Kobdo to Uliassutai.[4] Of still greater moment were the travels of Ney Elias in 1872-73, and of Przhevalski between 1870 and 1877. In his earlier journey (1870-72) Przhevalski travelled across the Gobi in a line almost due south from Urga, and in 1877 he struck south-east from the Yulduz range, one of the outrunners of the Thian Shan.

Besides the works referred to in the text see especially Richthofen's

[1] See Yule's *Marco Polo*, vol. i. p. 178-200.

[2] Lange's narrative has often been printed. See especially *Tagebuch Zweer Reisen von L. Lange: aus ungedruckten Quellen mitgetheilt vom Herrn Prof. Pallas*, Leipsic, 1781.

[3] See *Verhandlungen der Gesellschaft für Erdkunde*, 1874, and for map *Zeitsch. der Ges. für Erdk.*, Berlin, 1874.

[4] See results of journey in Petermann's *Mittheil.*, Jan. 1873.