Amur on the right bank, 950 miles from Ust-Strelotchnoi, bringing the drainings of the greater portion of Manchuria, and doubling the main volume of water. The headwaters of this stream issue from the northern slopes of the Chang-peh shan; quickly combined in a single channel, these waters flow past the town of Kirin, scarcely a hundred miles from the mountains, in a river twelve feet deep and 900 wide. Near Petuné the River Nonni joins it from Tsitsihar, and their united stream takes the Chinese name of Kwantung ('Mingled Union'); it is a mile and a half wide here and only three or four feet deep, a sluggish river full of islands. Then going east by north, growing deeper by its affluents, the Hurka, Mayen, Tunni, Hulan, and other smaller ones, it unites with the Amur at at Changchu, a hundred miles west from the Usuri. All accounts agree in giving the Songari the superiority. At Sansing, it is a deep and rapid river, but further down islands and banks interfere with the navigation. The Hurka drains the original country of the Manchus.[1]

The district south-east of the desert, and north of the Great Wall, is drained and fertilized by the Sira-muren, or Liau River, which is nearly valueless for navigation. Its main and western branch divides near the In shan Mountains into the Hwang ho and Lahar; the former rises near the Pecha peak, a noted point in those mountains. The Sira-muren runs through a dry region for nearly 400 miles before it turns south, and in a zigzag channel reaches the Gulf of Liautung, a powerful stream carrying its quota of deposit into the ocean; the width at Yingtsz' is 650 feet. The depth is 16 feet on the bar at high tide. The Yaluh kiang, nearly three hundred miles long, runs in a very crooked channel along the northern frontiers of Corea. But little is known about the two lakes, Hurun and Pir, except that their waters are fresh and full of fish; the River Urshun unites them, and several smaller streams run into the latter.

[1] *Voyage Down the Amur*, by Perry McD. Collins, in 1857. New York, 1860, chaps. xxxii.–lx., passim. Ravenstein's *Amur*. *Chinese Repository*, Vol. XIX., p. 289. Rev. A. Williamson, *Journeys in North China*, Vol. II., chaps. x.–xiii.

The larger part of Manchuria is covered by forests, the abode of wild animals, whose capture affords employment, clothing, and food to their hunters. The rivers and coasts abound in fish; among which carp, sturgeon, salmon, pike, and other species, as well as shell-fish, are plenty; the pearl-fishery is sufficiently remunerative to employ many fishermen; the Chinese Government used to take cognizance of their success, and collect a revenue in kind. The argali and jiggetai are found here as well as in Mongolia; bears, wolves, tigers, deer, and numerous fur-bearing animals are hunted for their skins. The troops are required to furnish 2,400 stags annually to the Emperor, who reserves for his own use only the fleshy part of the tail as a delicacy. Larks, pheasants, and crows of various species, with pigeons, thrushes, and grouse, abound. The condor is the largest bird of prey, and for its size and fierceness rivals its congener of the Andes.

The greater half of Shingking and the south of Kirin is cultivated; maize, Setaria wheat, barley, pulse, millet, and buckwheat are the principal crops. Ginseng and rhubarb are collected by troops sent out in detachments under the charge of their proper officers. These sections support, moreover, large herds of various domestic animals. The timber which covers the mountains will prove a source of wealth as soon as a remunerative market stimulates the skill and enterprise of settlers; even now, logs over three feet in diameter find their way up to Peking, brought from the Liau valley.

Manchuria is divided into three provinces, *Shingking*, *Kirin*, and *Tsitsihar*. The province of SHINGKING includes the ancient Liautung, and is bounded north by Mongolia; north-east and east by Kirin; south by the Gulf of Liautung and Corea, from which latter it is separated by the Yaluh River; and west by Chahar in Chihlí. It contains two departments, viz., Fungtien and Kinchau, subdivided into fifteen districts; there are also twelve garrisoned posts at the twelve gates in the Palisade, whose inmates collect a small tax on travellers and goods. Manchuria is under a strictly military government, every male above eighteen being liable for military service, and being, in fact, enrolled under that one of the eight standards to which by

birth he belongs. The administration of Shingking is partly civil and partly military; that of Kirin and Tsitsihar is entirely military.

The population of the province has been estimated by T. T. Meadows[1] at twelve millions, consisting of Manchus and Chinese. The coast districts are now mostly occupied and cultivated by emigrants from Shantung, who are pushing the Manchus toward the Amur, or compelling them to leave their hunting and take to farming if they wish to stay where they were born. The conquerors are being civilized and developed by their subjects, losing the use of their own meagre language, and becoming more comfortable as they learn to be industrious. But few aboriginal settlements now remain who still resist these influences. The inhabitants collect near the river, or along the great roads, where food or a market are easiest found.

The capital of Shingking is usually known on the spot as Shin-yang, an older name than the Manchu Mukden, or the Chinese name Fungtien. As the metropolis of Manchuria, it is also known as Shingking (the 'Affluent Capital'), distinguished from the name of the province by the addition of *pun-ching*, or 'head-garrison.' It lies in lat. 41° 50½′ N. and long. 123° 30′ E., on the banks of the Shin, a small branch of the Liau, and is reckoned to be five hundred miles north-east from Peking. The town is surrounded by a low mud wall about ten miles in circuit, at least half a mile distant from the main city wall, whose eight gates have double archways so that the crowd may not interfere in passing; this wall is about three miles around, and its towers and bastions are in good condition. It is 35 or 40 feet high, and 15 feet wide at the top, of brick throughout; a crenulated parapet protects the guard. But for its smaller scale, the walls and buildings here are precisely similar to those at Peking. The streets are wide, clean, and the main business avenues lined with large, well built shops, their counters, windows, and other arrangements indicating a great trade. This capital contains a large proportion of governmental establishments, *yamuns*, and nearly all the officials belong to the ruling race. Main

[1] *The Chinese and their Rebellions.* London, 1856.

streets run across the city from gate to gate, with narrow roads or *hu-tung* intersecting them. The palace of the early Manchu sovereigns occupies the centre; while the large warehouses are outside of the inner city. Everywhere marks of prosperity and security indicate an enterprising population, and for its tidy look, industrious and courteous population, Mukden takes high rank among Chinese cities. Its population is estimated to be under 200,000, mostly Chinese. The Manchu monarchs made it the seat of their government in 1631, and the Emperors have since done everything in their power to enlarge and beautify it. The Emperor Kienlung rendered himself celebrated among his subjects, and made the city of Mukden better known abroad, by a poetical eulogy upon the city and province, which was printed in sixty-four different forms of Chinese writing. This curious piece of imperial vanity and literary effort was translated into French by Amyot.

The town of Hingking,[1] sixty miles east of it, is one of the favored places in Shingking, from its being the family residence of the Manchu monarchs, and the burial-ground of their ancestors. It is pleasantly situated in an elevated valley, the tombs being three miles north of it upon a mountain called *Tsz'yun shan*. The circuit of the walls is about three miles. Hingking lies near the Palisade which separates the province from Kirin, and its officers have the rule over the surrounding country, and the entrances into that province. It has now dwindled to a small hamlet, and the guards connected with the tombs comprise most of the inhabitants.

Kinchau, fifteen leagues from Mukden, carries on considerable trade in cattle, pulse, and drugs. Gutzlaff[2] describes the harbor as shallow, and exposed to southern gales; the houses in the town are built of stone, the environs well cultivated and settled by Chinese from Shantung, while natives of Fuhkien conduct the trade. The Manchus lead an idle life, but keep on good terms with the Chinese. When he was there in 1832,

[1] Also called *Yenden;* Klaproth, *Mémoires*, Tome I., p. 446. Rémusat informs us that this name formerly included all of Kirin, or that which was placed under it.

[2] *Voyages Along the Coast of China.* New York, 1833.

the authorities had ordered all the females to seclude themselves in order to put a stop to debauchery among the native sailors. Horses and camels are numerous and cheap, but the carriages are clumsy. Kaichau, another port lying on the east side of the gulf, possesses a better harbor, but is not so much frequented.

Since the treaty of 1858 opened the port of Niuchwang or Yingtsz', on the River Liau, to foreign trade, the development of Shingking has rapidly increased. The trade in pulse and bean-cake and oil employs many vessels annually. Opium, silk, and paper are prepared for export through this mart, besides foreign goods. Fung-hwang ting, lying near the Yaluh River, commands all the trade with Corea, which must pass through it. There are many restrictions upon this intercourse by both governments, and the Chinese forbid their subjects passing the frontiers. The trade is conducted at fairs, under the supervision of officers and soldiers; the short time allowed for concluding the bargains, and the great numbers resorting to them, render these bazaars more like the frays of opposing clans than the scenes of peaceable trade. There is a market-town in Corea itself, called Kí-iu wăn, about four leagues from the frontier, where the Chinese "supply the Coreans with dogs, cats, pipes, leather, stags' horns, copper, horses, mules, and asses; and receive in exchange, baskets, kitchen utensils, rice, corn, swine, paper, mats, oxen, furs, and small horses." Merchants are allowed not more than four or five hours in which to conduct this fair, and the Corean officers under whose charge it is placed, drive all strangers back to the frontier as soon as the day closes.[1]

The borders of the sea consist of alluvial soil, effloresceing a nitrous white salt near the beach, but very fertile inland, well cultivated and populous. Beyond, the hill-country is extremely picturesque. Ever-changing views, torrents and fountains, varied and abounding vegetation, flocks of black cattle grazing on the hillsides, goats perched on the overhanging crags, horses, asses, and sheep lower down in the intervales, numerous

[1] *Annales de la Foi*, Tome XVIII., 1846, p. 302.

well-built hamlets, everywhere enliven the scene. The department of Kinchau lies along the Gulf of Liautung, between the Palisade and the sea, and contains four small district towns, with forts, around whose garrisons of agricultural troops have collected a few settlers. On the south, toward Chihlí and the Wall, the country is better cultivated.

The climate of Manchuria, as a whole, is healthy and moderate, far removed from the rigor of the plateau on its west, and not so moist as the outlying islands on the east. In summer the ranges are 70° to 90° F., thence down to 10° or 20° below zero. The rivers remain frozen from December nearly to April, and the fall of snow is less than in Eastern America. The seasons are really six weeks of spring, five months of summer, six weeks of autumn and four months of winter; the last is in some respects the enjoyable period, and is used by the farmers to bring produce to market. If the houses were tighter, their inmates would suffer little during the cold season. Huc speaks of hail storms which killed flocks of sheep in Mongolia, near Chahar. Darwin (*Naturalist's Voyage*, 2d ed., 1845, p. 115) corroborates the possibility of his statement by a somewhat similar experience near Buenos Ayres. He here saw many deer and other wild animals killed by "hail as large as small apples and extremely hard." Of the denuded country, near the Liau River, Abbé Huc says: "Although it is uncertain where God placed paradise, we may be sure that he chose some other country than Liautung; for of all savage regions, this takes a distinguished rank for the aridity of the soil and rigor of the climate. On his entrance, the traveller remarks the barren aspect of most of the hills, and the nakedness of the plains, where not a tree nor a thicket, and hardly a slip of a herb is to be seen. The natives are superior to any Europeans I have ever seen for their powers of eating; beef and pork abound on their tables, and I think dogs and horses, too, under some other name; rich people eat rice, the poor are content with boiled millet, or with another grain called *hac-bam*, about thrice the size of millet and tasting like wheat, which I never saw elsewhere. The vine is cultivated, but must be covered from October to April; the grapes are so watery that a hundred litres of

juice produce by distillation only forty of poor spirit. The leaves of an oak are used to rear wild silkworms, and this is a considerable branch of industry. The people relish the worms as food after the cocoons have been boiled, drawing them out with a pin, and sucking the whole until nothing but the pellicle is left."[1] Another says, the ground freezes seven feet in Kirin, and about three in Shingking; the thermometer in winter is thirty degrees below zero. The snow is raised into the air by the north-east winds, and becomes so fine that it penetrates the clothes, houses, and enters even the lungs. When travelling, the eyebrows become a mass of ice, the beard a large flake, and the eyelashes are frozen together; the wind cuts and pierces the skin like razors or needles. The earth is frozen during eight months, but vegetation in summer is rapid, and the streams are swollen by the thawing drifts of snow.

The province of KIRIN, or Girin, comprises the country north-east of Shingking, as far as the Amur and Usuri, which bound it on the north and east, while Corea and Shingking lie on the south-east (better separated by the Chang-peh shan than any political confine) and Mongolia on the west. All signs of the line of palisades have disappeared (save at the Passes) in the entire *trajet* between the Songari and Shan-hai kwan. The region is mountainous, except in the link of that river after the Nonni joins it till the Usuri comes in, measuring about one-fourth of the whole. This extensive region is thinly inhabited by Manchus settled in garrisons along the bottoms of the rivers, by Goldies, Mangoons, Ghiliaks, and tribes having affinity with them, who subsist principally by hunting and fishing, and acknowledge their fealty by a tribute of peltry, but who have no officers of government placed over them. Du Halde calls them *Kiching Tatse*, *Yupi Tatse*, and other names, which seem, indeed, to have been their ancient designations. The *Yu-pi Tahtsi*, or 'Fish-skin Tartars,'[2] are said to inhabit the extensive valley of the Usuri, and do not allow the subjects of the Emperor to

[1] *Annales de la Foi*, Tome XVI., p. 359.

[2] The inhabitants of ancient Gedrosia, now Beloochistan, are said to have clothed themselves in fish-skins. Heeren, *Historical Researches among Asiatic Nations*, Vol. I., p. 175.

live among them. In winter they nestle together in kraals like the Bushmen, and subsist upon the products of their summer's fishing, having cut down fuel enough to last them till warm weather. Shut out, as they have been during the past, from all elevating influences, these people are likely to be ere long amalgamated and lost, as well among Russian and other settlers coming in from the north, as amid the Chinese immigrants who occupy their land in the south. The entire population of this province cannot be reckoned, from present information, as high as three millions, the greater part of which live along the Songari valley.

Kirin is divided into three ruling *ting* departments or commanderies, viz., Kirin ula, or the garrison of Kirin, Petuné or Pedné, and Changchun ting. Kirin, the largest of the three, is subdivided into eight garrison districts. The town, called *Chuen Chwang*, or 'Navy Yard,' in Chinese, is finely situated on the Songari, in lat. 43° 45′ N., and long. 127° 25′ E., at the foot of encircling hills, where the river is a thousand feet wide. The streets are narrow and irregular, the shops low and small, and much ground in the city is unoccupied. Two great streets cross each other at right angles, one of them running far into the river on the west supported by piles. The highways are paved with wooden blocks, and adorned with flowers, gold fish, and squares; its population is about 50,000.

The four other important places in Kirin are Petuné, Larin, Altchuku, or A-shi-ho, and Sansing, the latter at the confluent of the Songari and Hurka. Altchuku is the largest, and Petuné next in size, each town having not far from 35,000 inhabitants; Larin is perhaps half as large, and like the others steadily increasing in numbers and importance. Ninguta on the river Hurka has wide regions under its sway where ginseng is gathered; near the stockaded town is a subterranean body of water that furnishes large fish. A great and influential portion of the Chinese population is Moslem, but no Manchus reside in the place. The former control trade and travel in every town.

Petuné, in lat. 45° 20′ N., and long. 125° 10′ E., is inhabited by troops and many persons banished from China for their crimes. Its favorable position renders it a place of considerable trade, and during the summer months it is a busy mart for

these thinly peopled regions. It consists of two main streets, with the chief market at their crossing. A large mosque attracts attention. The third commandery of Changchun, west of Kirin and south of Petuné, just beyond the Palisade, is a mere post for overseeing the Manchus and Mongols passing to and fro on the edge of the steppe.

The resources of this wide domain in timber, minerals, metals, cattle and grain have not yet been explored or developed. The hills are wooded to the top, the bottoms bring forth two crops annually, and the rivers take down timber and grain to the Russian settlers. Sorghum, millet, barley, maize, pulse, indigo, and tobacco are the chief crops; and latterly opium, which has rapidly extended, because it pays well. Oil and whiskey are extensively manufactured, packed in wicker baskets lined with paper and transported on wheelbarrows. The wild and domestic animals are numerous. Among the latter the hogs and mules, more than any other kind, furnish food and transportation; while tigers, panthers, and leopards, bears, wolves, and foxes reward the hunters for their pains in killing them.

The province of Tsi-tsi-har, or Hehlung kiang, comprises the northwest of Manchuria, extending four hundred miles from east to west, and about five hundred from north to south. It is bounded north by the Amur, from Shilka to its junction with the Songari; east and southeast by Kirin, from which the Songari partly separates it; southwest by Mongolia, and west by the River Argun, dividing it from Russia. The greatest part of it is occupied by the valley of the Nonni, Noun or Nún; its area of about two hundred thousand square miles is mostly an uninhabited, mountainous wilderness. It is divided into six commanderies, viz.: Tsitsihar, Hulan, Putek, Merguen, Sagalien ula, and Hurun-pir, whose officers have control over the tribes within their limits; of these, Sagalien or Igoon is the chief town in the northeast districts, and is used by the government of Peking as a penal settlement. The town stands on a plain but a rood or so above the river, which sweeps off to the mountains in the distance. Here is posted a large force of officers and men, their extensive barracks indicating the importance attached to the place. The garrison has gradually attracted a

population of natives and Chinese from the south, who live by fishing and hunting, as well as farming.

Tsitsihar, the capital of the province, lies on the River Nonni, in lat. 47° 20′ N., and long. 124° E., and is a place of some trade, resorted to by the tribes near the river. Merguen, Hurunpir, and Hulan are situated upon rivers, and accessible when the waters are free from ice. Tsitsihar was built in 1692 by Kanghí to owerawe the neighboring tribes. It is inclosed by a stockade and a ditch. The one-storied houses are constructed of logs, or of brick stuccoed, where timber is dear, and warmed by the brick beds; the tall chimneys outside the main buildings give a peculiar appearance to villages. Pulse, maize, tobacco, millet, and wheat, and latterly poppy are common crops. The valley of the Nonni is cultivated by the Taguri Manchus, among whom six thousand six hundred families of Yakutes settled in 1687, when they emigrated from Siberia. The Korchin Mongols occupy the country south and west of this valley. Some of its streams produce large pearls. The region lying between the Sialkoi Mountains and the River Argun is rough and sterile, presenting few inducements to agriculturalists. Fish abound in all the rivers, and furs are sought in the hills. Pasturage is excellent in the bottoms. Fairs, between the natives and Cossacks, are constantly held at convenient places on the Argun and other rivers. The racial distinction between the Mongols and Manchus is here seen in the agricultural labors of the latter, so opposed to the nomadic habits of the former. This region has, within the last half century, attracted Chinese settlers from Shantung and Chihlí. These colonists are fast filling up the vacant lands along the rivers, dispossessing the Manchus by their thrift and industry, and making the country far more valuable. They will in this way secure its possession to the Peking Government, and bring it, by degrees, under Chinese control, greatly to the benefit of all. In early days the policy of the Manchus, like that of the E. I. Company in India towards British immigration, discountenanced the entrance of Chinese settlers, and in both cases to the disadvantage of the ruling power.

The administration of Manchuria consists of a supreme civil

government at Mukden, and three provincial military ones, though Shingking is under both civil and military. There are five Boards, each under a president, whose duties are analogous to those at Peking. The oversight of the city itself is under a *fuyin* or mayor, superior to the prefect. The three provinces are under as many marshals, whose subordinates rule the commanderies, and these last have garrison officers subject to them, whose rank and power correspond to the size and importance of their districts. These delegate part of their power to "assistant directors," or residents, who are stationed in every town; on the frontier posts, the officers have a higher grade, and report directly to the marshals or their lieutenants. All the officers, both civil and military, are Manchus, and a great portion of them belong to the imperial clan, or are intimately connected with it. By this arrangement, the Manchus are in a measure disconnected with the general government of the provinces, furnished with offices and titles, and induced to recommend themselves for promotion in the Empire by their zeal and fidelity in their distant posts.[1]

Mongolia is the first in order of the colonies, by which are meant those parts of the Empire under the control of the *Li-fan Yuen*, or Foreign Office.[2] According to the statistics of the Empire, it comprises the region lying between lats. 35° and 52° N., and from long. 82° to 123° E.; bounded north by the Russian governments of Trans-Baikalia, Irkutsk, Yeniseisk, Tomsk, and Semipolatinsk; northeast and east by Manchuria; south by the provinces of Chihlí and Shansí, and the Yellow River; southwest by Kansuh; and west by Cobdo and Ílí. These limits are not very strictly marked at all points, but the length from east to west is about seventeen hundred miles, and one thousand in its greatest breadth, inclosing an area of

[1] Rev. Alex. Williamson, *Travels in Northern China*. London, 1870. Vol. II., Chaps. I. to XIV.; *Chinese Repository*, Vols. IV., p. 57; XV., p. 454; *Chinese Recorder*, Vol. VII., 1876, "The Rise and Progress of the Manjows," by J. Ross, pp. 155, 235, and 315.

[2] Compare Niebuhr's *History of Rome*, Vol. II., Sect. "Of the Colonies," where can be observed the essential differences between Roman settlements abroad and those of the Chinese; and still greater differences will be found in contrasting these with the offsets of Grecian States.

1,400,000 square miles, supporting an estimated population of two millions. This elevated plain is almost destitute of wood or water, inclosed southward by the mountains of Tibet, and northward by offsets from the Altai range. The central part is occupied by the desert of Gobi, a barren steppe having an average height of 4,000 feet above the sea level, and destitute of all running water. Owing to its elevation, extremely variable climate, and the absence of oases, it may be considered quite as terrible as Sahara, although the sand-waste here is, perhaps, hardly as unmitigated.

The climate of Mongolia is excessively cold for the latitude, arising partly from its elevation and dry atmosphere, and, on the steppes, to the want of shelter from the winds. But this has its compensation in an unclouded sky and the genial rays of the sun, which support and cheer the people to exertion when the thermometer is far below zero. The air has been drained of its moisture by the ridges on every side; day after day the sun's heat reaches the earth with smaller loss than obtains in moister regions in the same latitudes. Otherwise these wastes would support no life at all at such an elevation. In the districts bordering on Chihlí, the people make their houses partly under ground, in order to avoid the inclemency of the season. The soil in and upon the confines of this high land is unfit for agricultural purposes, neither snow nor rain falling in sufficient quantities, except on the acclivities of the mountain ranges; but millet, barley, and wheat might be raised north and south of it. The nomads rejoice in their freedom from tillage, however, and move about with their herds and possessions within the limits marked out by the Chinese for each tribe to occupy.

The space on the north of Gobi to the confines of Russia, about one hundred and fifty miles wide, is warmer than the desert, and supports a greater population than the southern sides. Cattle are numerous on the hilly tracts, but none are found in the desert, where wild animals and birds hold undisputed possession. The thermometer in winter sinks to thirty and forty degrees below zero (Fr.), and sudden and great changes are frequent. No month in the year is free from snow or frost; but on the steppes, the heat in summer is almost

intolerable, owing to the radiation from the sandy or stony surface. The snow does not fall very deep, and even in cold weather the cattle find food under it; the flocks and herds are not, however, large.

The principal divisions of Mongolia are four, viz.: 1, Inner Mongolia, lying between the Wall and south of the desert; 2, Outer Mongolia, between the desert and the Altai Mountains, and reaching from the Inner Hing-an to the Tien shan; 3, the country about Koko-nor, between Kansuh, Sz'chuen, and Tibet; and, 4, the dependencies of Uliasutai, lying northwestward of the Kalkas khanates. The whole of this region has been included under the comprehensive name of Tartary, and if the limits of Inner and Outer Mongolia had been the bounds of Tartary, the appellation would have been somewhat appropriate. But when Genghis arose to power, he called his own tribe *Kukai Mongöl*, 'Celestial People,' and designated all the other tribes *Tatars*, that is 'tributaries.'[1] The three tribes of Kalkas, Tsakhars, and Sunnites, now constitute the great body of Mongols under Chinese rule.

Inner Mongolia, or *Nui Mungku*, is bounded north by Tsitsihar, the Tsetsen khanate, and Gobi, their frontiers being

[1] Abulgasi-Bayadur-chan (*Histoire Genéalogique des Tatars, traduite du Manuscript Tartare;* Leyde: 1726), gives another derivation for these two names. "Alänzä-chan eut deux fils jumeaux l'un appelle Tatar and l'autre Mogull ou pour bien dire Mung'l, entre les quels il partagea ses Estates lorsqu'il se vit sur la fin de sa vie." It is the first prince, he adds, from whom came the name *Tartar*—not from a river called Tata, as some have stated—while of the second: "Le terme Mung'l a esté changé par une corruption generale en Mogull; *Mung veut dire triste ou un homme triste*, et parceque ce prince estoit naturellement d'une humeur fort triste, il porta ce nom dans la verité"—(pp. 27–29). But Visdelon (D'Herbelot, ed. 1778, Tome IV., p. 327) shows more acquaintance with their history in producing proofs that the name *Tatar* was applied in the eighth century by the Chinese to certain tribes living north of the In shan, Ala shan, and River Liau. In the dissensions following upon the ruin of the Tang dynasty, some of them migrated eastwards beyond the Songari, and there in time rallied to subdue the northern provinces, under the name of *Nu-chih*. These are the ancestors of the Manchus. Another fraction went north to the marshy banks of Lakes Hurun and Puyur, where they received the name of *Moungul Tahtsz'*, *i.e.*, Marsh Tatars. This tribe and name it was that the warlike Genghis afterwards made conspicuous. The sound *Mogul* used in India is a dialectal variation.

almost undefinable; east by Kirin and Shingking; south by Chihlí and Shansí; and west by Kansuh. Wherever it runs the Wall is popularly regarded as the boundary between China and Mongolia. The country is divided into six *ming* or *chalkans*, like our corps, and twenty-four *aimaks*[1] (tribes), which are again placed under forty-nine standards or *khochoun*, each of which generally includes about two thousand families, commanded by hereditary princes, or dsassaks. The principal tribes are the Kortchin and Ortous. The large tribe of the Tsakhars, which occupies the region north of the Wall, is governed by a *tutung*, or general, residing at Kalgan, and their pasture grounds are now nominally included in the province of Chihlí. The province of Shansí in like manner includes the lands occupied by the Toumets, who are under the control of a general stationed at Suiyuen, beyond the Yellow River. In the pastures northwest from Kalgan, in the vicinity of Lakes Chazau and Ichí, and reaching more than a hundred miles from the Great Wall, lie the tracts appropriated to raising horses for the "Yellow Banner Corps." Excepting such grazing lands or the vast hunting grounds near Jeh-ho, reserved in like manner by the government, small settlements of Chinese are continually squatting over the plains of Inner Mongolia, from whence they have already succeeded in driving many of the aboriginal Mongol tribes off to the north. Those natives who will not retire are fain to save themselves from starvation or absorption by cultivating the soil after the fashion of their neighbors, the Chinese immigrants. It was, indeed, this influx of settlers which led Kanghí to erect the southern portion of Inner Mongolia into prefectures and districts like China Proper. This alteration of habits among its population seems destined, ere long, to modify the aspect of the country.

Most of the smaller tribes, except the Ortous, live between the western frontiers of Manchuria, and the steppes reaching north to the Sialkoi range, and south to Chahar. These tribes are peculiarly favored by the Manchus, from their having joined them in their conquest of China, and their leading men are

[1] *Abulgasi* (p. 83) furnishes a notice of these *aimaks* and their origin.

often promoted to high stations in the government of the country.

Outer Mongolia, or *Wai Mungku*, is the wild tract lying north of the last as far as Russia. It is bounded north by Russia, east by Tsitsihar, southeast and south by Inner Mongolia, southwest by Barkul in Kansuh, west by Tarbagatai, and northwest by Cobdo and Uliasutai. The desert of Gobi occupies the southern half of the region. It is divided into four *lu*, or circuits, each of which is governed by a khan or prince, claiming direct descent from Genghis, and superintending the internal management of his own khanate. The Tsetsen khanate lies west of Hurun-pir in Tsitsihar, extending from Russia south to Inner Mongolia. West of it, reaching from Siberia across the desert to Inner Mongolia, lies the Tuchétu (or *Tusiétu* of Klaproth[1]) khanate, the most considerable of the four; the road from Kiakhta to Kalgan lies within its borders. West of the last, and bounded south by Gobi and northeast by Uliasutai, lies the region of the Kalkas of Sainnoin; and on its northwest lies the Dsassaktu khanate, south of Uliasutai, and reaching to Barkul and Cobdo on the south and west. All of them are politically under the control of two Manchu residents stationed at Urga, who direct the mutual interests of the Mongols, Chinese, and Russians.

Urga, or Kuren, the capital, is situated in the Tuchétu khanate, in lat. 48° 20′ N., and long. 107½° E., on the Tola River, a branch of the Selenga. It is the largest and most important place in Mongolia, and is divided into *Maimai chin*, the Chinese quarter, and *Bogdo-Kuren*, the Mongol settlement, nearly three miles from the other. Its total population is estimated at 30,000, the Chinese inhabitants of which are forbidden by law to live with their families; of the Mongols here, by far the larger part is composed of lamas. In the estimation of these people Urga stands next to H'lassa in degree of sanctity, being the seat of the third person in the Tibetan patriarchate. According to the Lama doctrine this dignitary—the *Kutuktu*—is the terrestrial impersonation of the Godhead and never dies, but passes,

[1] *Mémoires*, Tome I., p. 2.

after his apparent decease, into the body of some newly born boy, who is sought for afterwards according to the prophetic indications of the Dalai-lama in Tibet. This holy potentate, though of limited education and entirely under the control of the attendant lamas, exercises an unbounded influence over the Kalkas. It is, indeed, by means of him that the Chinese officials control the native races of Mongolia. His wealth, owing to contributions of enthusiastic devotees, is enormous; in and about Urga he owns 150,000 slaves, an abundance of worldly goods, and the most pretentious palace in Mongolia. Outside of its religious buildings, Urga is disgustingly dirty; the filth is thrown into the streets, and the habits of the people are loathsome. Decrepid beggars and starving dogs infest the ways; dead bodies, instead of being interred, are flung to birds and beasts of prey; huts and hovels afford shelter for both rich and poor.[1]

The four khanates constitute one *aimak* or tribe, subdivided into eighty-six standards, each of which is restricted to a certain territory, within which it wanders about at pleasure. There are altogether one hundred and thirty-five standards of the Mongols. The Kalkas chiefly live between the Altai Mountains and Gobi, but do not cultivate the soil to much effect. They are devoted to Buddhism, and the lamas hold most of the power in their hands through the *Kutuktu*. They render an annual tribute to the Emperor of horses, camels, sheep, and other animals or their skins, and receive presents in return of many times its value, so that they are kept in subjection by constant bribing; the least restiveness on their part is visited by a reduction of presents and other penalties. An energetic government, however, is not wanting in addition. The supreme tribunal is at Urga; it is the *yamun*, par excellence, and has both civil and military jurisdiction. The decisions are subject to the revision of the two Chinese residents, and sentences are usually carried into execution after their confirmation. The punishments are horribly severe; but only a decided

[1] Prejevalsky, *Mongolia*, Vol. I.; Pumpelly, *Across America*, pp. 382–385; Michie, *Across Siberia*.

and cruel hand over these wild tribes can keep them from constant strife.

Letters are encouraged among them by the Manchus, but with little success. Many Buddhist books have been translated into Mongolian by order of the Emperors; nor can we wonder at the indifference to literature when this stuff is the aliment provided them. Their tents, or *yurts*, are made of wooden laths fastened together so as to form a coarse lattice-work; the framework consists of several lengths secured with ropes, leaving a door about three feet square. The average size is twelve feet across and ten feet high; its shape is round and the conical roof admits light where it emits smoke. The poles or rafters are looped to the sides, and fastened to a hoop at the top. Upon this framework sheets of heavy felt are secured according to the season. A hearth in the centre holds the fire which heats the kettle hanging over it, and warms the inmates squatted round, who usually place only felt and sheepskins under them. The felt protects from cold, rain, snow, and heat in a wonderful manner. A first-class *yurt* is by no means an uncomfortable dwelling, with its furniture, lining, shrine, and hot kettle in the centre. A carpet for sleeping and sitting on is sometimes seen in *yurts* of the wealthier classes; in these, too, the walls are lined with cotton or silk, and the floors are of wood. The lodges of the rich Kalkas have several apartments, and are elegantly furnished, but destitute of cleanliness, comfort, or airiness. Most of their cloths, utensils, and arms are procured from the Chinese. The Sunnites are fewer than the Kalkas, and roam the wide wastes of Gobi. Both derive some revenue from conducting caravans across their country, but depend for their livelihood chiefly upon the produce of their herds and hunting. Their princes are obliged to reside in Urga, or keep hostages there, in order that the residents may direct and restrain their conduct; but their devotion to the *Kutuktu*, and the easy life they lead, are the strongest inducements to remain.

The trade with Russia formerly all passed through Kiakhta, a town near the frontier, and was carried on by special agents and officials appointed by each nation. The whole business was managed in the interest of the government, and its rami-

fications furnished employment, position, and support to so many persons as to form a bond of union and guaranty of peace between them and their subjects. Timkowski's journey with the decennial mission to Peking in 1820–21 furnishes one of the best accounts of this trade and intercourse now accessible, and with Klaproth's notes, given in the English translation published in 1827, has long been the chief reliable authority for the divisions and organization of the Mongol tribes. Since the opening of the Suez Canal, through which Russian steamers carry goods to and fro between Odessa and China, the largest portion of the Chinese produce no longer goes to Kiakhta. That which is required for Siberia is sent from Hankow by way of Shansí, or from Kalgan and Tientsin, under the direction of Russian merchants at those places. Furs, which once formed the richest part of this produce, are gradually diminishing in quality and quantity with the increase of settlers. In 1843 the export of black tea for Russian consumption was only eight millions of pounds, besides the brick tea taken by the Mongols. Cottrell states the total value of the trade, annually, at that period, at a hundred millions of rubles, reckoned then to be equal to $20,830,000, on which the Russians paid, in 1836, about $2,500,000 as import duty. The data respecting this trade of forty years ago are not very accurate, probably; the monopoly was upheld mostly for the benefit of the officials, as private traders found it too much burdened.

Kiakhta is a hamlet of no importance apart from the trade. The frontier here is marked by a row of granite columns; a stockade separates it from Maimai chin. Pumpelly says: "One can hardly imagine a sharper line than is here drawn. On the one side of the stockade wall, the houses, churches, and people are European, on the other, Chinese. With one step the traveller passes really from Asia and Asiatic customs and language, into a refined European society." The goods pay duty at the Russian *douane* in a suburb of fifty houses, near Kiakhta. The Chinese town is also a small place, numbering between twelve and fifteen hundred men (no women being allowed in the settlement) who lived in idleness most of the year. This curious hamlet has two principal streets crossing at right angles, and

gates at the four ends, in the wooden wall which surrounds it. These streets are badly paved, while their narrowness barely allows the passage of two camels abreast. The one-storied houses are constructed of wood, roofed with turf or boards, and consist of two small rooms, one used as a shop and the other as a bedroom. The windows in the rear apartment are made of oiled paper or mica, but the door is the only opening in the shop. The dwellings are kept clean, the furniture is of a superior description, and considerable taste and show are seen in displaying the goods. The traders live luxuriously, and attract a great crowd there during the fair in February, when the goods are exchanged. They are under the control of a Manchu, called the *dzarguchi*, who is appointed for three years, and superintends the police of the settlement as well as the commercial proceedings. There are two Buddhist temples here served by lamas, and containing five colossal images sitting cross-legged, and numerous smaller idols.[1]

The western portion of Mongolia, between the meridians of 84° and 96° E., extending from near the western extremity of Kansuh province to the confines of Russia, comprising Uliasutai and its dependencies, Cobdo, and the Kalkas and Tourgouths of the Tangnu Mountains, is less known than any other part of it. The residence of the superintending officer of this province is at Uliasutai (*i.e.*, 'Poplar Grove'), a town lying northwest of the Selenga, in the khanate of Sainnoin, in a well cultivated and pleasant valley.

Cobdo, according to the Chinese maps, lies in the northwest of Mongolia; it is bounded north and west by the government Yeniseisk, northeast by Ulianghai, and southeast by the Dsassaktu khanate, south by Kansuh, and west by Tarbagatai. The part occupied by the Ulianghai or Uriyangkit tribes of the Tangnu Mountains lies northeast of Cobdo, and north of the Sainnoin and Dsassaktu khanates, and separated from Russia by the Altai. These tribes are allied to the Samoyeds, and the rule over them is

[1] Cottrell's *Recollections of Siberia*, Chap. IX., p. 314; Timkowski's *Travels*, Vol. I., pp. 4–91, 1821; Pumpelly, *Across America and Asia*, p. 387, 1871; Klaproth, *Mémoires*, Tome I., p. 63; Ritter, *Die Erdkunde von Asien*, Bd. II., pp. 198–226.

administered by twenty-five subordinate military officers, subject to the resident at Uliasutai. This city is said to contain about two thousand houses, is regularly built, and carries on some trade with Urga; it lies on the Iro, a tributary of the Jabkan. Cobdo comprises eleven tribes of Kalkas divided into thirty-one standards, whose princes obey an amban at Cobdo City, himself subordinate to the resident at Uliasutai. The Chinese rule over these tribes is conducted on the same principles as that over the other Mongols, and they all render fealty to the Emperor through the chief resident at Uliasutai, but how much obedience is really paid his orders is not known. The Kalkas submitted to the Emperor in 1688 to avoid extinction in their war with the Eleuths, by whom they had been defeated.

Cobdo contains several lakes, many of which receive rivers without having any outlet. The largest is Upsa-nor, which receives from the east the River Tes, and the Íkí-aral-nor into which the Jabkan runs. The River Irtysh falls into Lake Dzaisang. The existence of so many rivers indicates a more fertile country north of the Altai or Ektag Mountains, but no bounties of nature would avail to induce the inhabitants to adopt settled modes of living and cultivate the soil, if such a clannish state of society exists among them as is described by M. Lévchine to be the case among their neighbors, the Kirghís. The tribes in Cobdo resemble the American Indians in their habits, disputes, and modes of life, more than the eastern Kalkas, who approximate in their migratory character to the Arabs.

The province of Tsing hai, or Koko-nor (called Tsok-gumbam by the Tanguts), is not included in Mongolia by European geographers, nor in the Chinese statistical works is it comprised within its borders; the inhabitants are, however, mostly Mongols, both Buddhist and Moslem, and the government is conducted on the same plan as that over the Kalkas tribes further north. This region is known in the histories of Central Asia under the names of Tangout, Sifan, Turfan, etc. On Chinese maps it is politically called Tsing hai ('Azure Sea'), but in their books is named *Si Yu* or *Si Yih*, 'Western Limits.' The borders are now limited on the north by Kansuh, southeast by Sz'chuen,

south by Anterior Tibet, and west by the desert, comprising about four degrees of latitude and eleven of longitude.

It includes within its limits several large lakes, which receive rivers into their bosoms, and many of them having no outlets. The Azure Sea is the largest, lying at an altitude of 10,500 feet and overlooked by high mountains, which in winter are covered with snow, and in summer form an emerald frame that deepens the blueness of the water. It is over 200 miles in circuit, and its evaporation is replaced by the inflowing waters of eight large streams; one small islet contains a monastery, whose inmates are freed from their solitude only when the ice makes a bridge, as no boat is known to have floated on its salt water. The wide, moist plains on the east and west furnish pasturage for domestic and wild animals, and constant collisions occur between the tribes resorting there for food. The travels of Abbé Huc and Col. Prejevalsky furnish nearly all that is known concerning the productions and inhabitants of Koko-nor. The country is nominally divided into thirty-four banners, and its Chinese rulers reside at Síning, east of the lake; but they have more to do in defending themselves than in protecting their subjects. The whole country is occupied by the Tanguts of Tibetan origin, who are brigands by profession, and roam over the mountains around the headwaters of the Yangtsz' and Yellow Rivers; by the Mohammedan Dunganis, who have latterly been nearly destroyed in their recent rebellion; and by tribes of Mongols under the various names of Eleuths, Kolos, Kalkas, Surgouths, and Koits. The Chinese maps are filled with names of various tribes, but their statistical accounts are as meagre of information as the maps are deficient in accurate and satisfactory delineations.

The topographical features of this region are still imperfectly known, and its inhospitable climate is rendered more dangerous by man's barbarity. High mountain masses alternate with narrow valleys and a few large depressions containing lakes; the country lying south of the Azure Sea, as far as Burmah, is exceedingly mountainous. West and southwest of the lake extends the plain of Tsaidam, which at a recent geological age has been the bed of a huge lake; it is now covered with morasses, shaking

bogs, small rivers, and sheets of water—the most considerable of the latter being Lake Kara, in the extreme western portion. The saline argillaceous soil of this region is not adapted to vegetation. Large animals are scarce, due in part to the plague of insects which compels even the natives to retreat to the mountains with their herds during certain seasons. Its inhabitants are the same as those of Eastern Koko-nor; they are divided into five banners, and number about 1,000 *yurts*, or 5,000 souls.

The Burkhan-buddha range forms the southern boundary of this plain, and the northernmost limit of the lofty plateau of Tibet. Its length from east to west is not far from 130 miles, its eastern extremity being near the Yegrai-ula (the near sources of the Yellow River) and Toso-nor. The range has no lofty peaks, and stretches in an unbroken chain at a height of 15,000 to 16,000 feet; it is terribly barren, but does not attain the line of perpetual snow. The southern range, which separates the headwaters of the Yellow and Yangtsz' Rivers, is called the Bayan-kara Mountains; that northwest of this is called on Chinese maps, Kílien shan and Nan shan, and bounds the desert on the south. On the northern declivities of the Nan shan range are several towns lying on or near the road leading across Central Asia, which leaves the valley of the Yellow River at Lanchau, in Kansuh, and runs N.N.W. over a rough country to Liangchau, a town of some importance situated in a fertile and populous district. From this place it goes northwest to Kanchau, noted for its manufactures of felted cloths which are in demand among the Mongol tribes of Koko-nor, and where large quantities of rhubarb, horses, sheep, and other commodities are procured. Going still northwest, the traveller reaches Suhchau, the last large place before passing the Great Wall, which renders it a mart for provisions and all articles brought from the west in exchange for the manufactures of China. This city was the last stronghold of the Dungani Moslems, and when they were destroyed in 1873 it began to revive out of its ruins. About fifty miles from this town is the pass of Kiayü, beyond which the road to Hamí, Urumtsi, and Ílí leads directly across the desert, here about three hundred miles wide. This route has been for ages the line of internal communication between

the west of China and the regions lying around and in the basins of the Tarim River and the Caspian.[1] A better idea of the security of traffic and caravans within the Empire, and consequently of the goodness of the Chinese rule, is obtained by comparing the usually safe travel on this route with the hazards, robberies, and poverty formerly met with on the great roads in Bokhara, and the regions south and west of the Belur tag.

The productions of Koko-nor consist of grain and other vegetables raised along the bottoms of the rivers and margins of the lakes; sheep, cattle, horses, camels, and other animals. Alpine hares, wild asses,[2] wild yaks, vultures, lammergeiers, pheasants, antelopes, wolves, mountain sheep, and wild camels are among the denizens of the wilds. The Chinese have settled among the tribes, and Mohammedans of Turkish origin are found in the large towns. There are eight corps between Koko-nor and Uliasutai, comprising all the tribes and banners, and over which are placed as many supreme generals or commanders appointed from Peking. The leading tribes in Koko-nor are Eleuths, Tanguts, and Tourbeths, the former of whom are the remnants of one of the most powerful tribes in Central Asia. Tangout submitted to the Emperor in 1690, and its population since the incorporation has greatly increased. They inhabit the hilly region of Kansuh, Koko-nor, Eastern Tsaidam, and the basin of the Upper Yellow River. They resemble gipsies, being above the average in height, with thick-set features, broad shoulders, hair and whiskers, black, dark eyes, nose straight, lips thick and protruding, face long and never flat, skin tawny. Unlike the Mongols and Chinese they have a strong growth of beard and whiskers which, however, they always shave. They wear no tail, but shave their heads; their dress consists of furs and cloths made into long coats that reach to the knees. Shirts or trowsers are not made use of; their upper legs are generally left bare. Women dress like the men. Their habitations are wooden huts or black cloth tents. The Tangut is cunning,

[1] Compare Richthofen, *China*, Band I., 2er Theil.; Yule, *Cathay and the Way Thither*, passim.

[2] The wild ass is called by Prejevalsky the most remarkable animal of these steppes. Compare Yule's *Marco Polo*, Vol. I., p. 220 (2d edition).

stingy, lazy, and shiftless. His sole occupation that of tending cattle (yaks). He is even more zealous a Buddhist than are the Mongols, and extremely superstitious.[1] The trade at Síning is large, but not equal to that between Yunnan and Burmah at Talí and Bhamo; dates, rhubarb, chowries, precious stones, felts, cloths, etc., are among the commodities seen in the bazaar. It lies about a hundred miles from the sea, at an elevation of 7,800 feet, and near it is the famous lamasary of Kumbum, where MM. Huc and Gabet lived in 1845. The town is well situated upon the Síning ho, and though constructed for the most part of wood, presents a fine appearance owing to the number of official buildings therein. The population numbers some 60,000 souls.[2]

The towns lying between the Great Wall and Ílí, though politically belonging to Kansuh, are more connected with the colonies in their form of government than with the Eighteen Provinces. The first town beyond the Kiayü Pass is Yuhmun, distant about ninety miles, and is the residence of officers, who attend to the caravans going to and from the pass. It is represented as lying near the junction of two streams, which flow northerly into the Purunkí. The other district town of Tunhwang lies across a mountainous country, upwards of two hundred miles distant. The city of Ngansí chau has been built to facilitate the communication across the desert to Hami or Kamil, the first town in Songaria, and the dépôt of troops, arms, and munitions of war. "With the town of Hami," says an Austrian visitor in these regions, "the traveller comes upon the southern foot-hills of the Tien shan, and the first traces of Siberian civilization. Magnificent mountain scenery accompanies him on his way toward the west to the Russian line. In the government of Semipolatinsk are the ex-

[1] For a notice of the *Ouigours*, who formerly ruled Tangout, consult Klaproth, *Mémoires*, Tome II., p. 301, ff. See also Rémusat, *Nouveaux Mélanges Asiatiques*, Tome II., p. 61, for a notice of the *Ta-ta-tung'o*, who applied their letters to write Mongolian.

[2] *Chinese Repository*, Vol. IX., p. 113; Vol. I., p. 118. *Penny Cyclopædia*, Arts. BAYAN KARA, TANGUT. Kreitner, *Im fernen Osten*, p. 702. Huc, *Travels*, passim.

press mail-wagons which stand ready at his order to carry him at furious speed to the town of the same name, then to the right bank of the River Irtysh, and so to Omsk." [1] This route and that stretching towards the southwest bring an important trade to Hami; the country around it is cultivated by poor Mongols.[2] Barkul, or Chinsí fu, in lat. 43° 40′ N., and long. 93° 30′ E., is the most important place in the department; the district is called Ího hien. A thousand Manchus, and three thousand Chinese, guard the post. The town is situated on the south of Lake Barkul, and its vicinity receives some cultivation. Hami and Turfan each form a *ting* district in the southeast and west of the department. The trade at all these places consists mostly of articles of food and clothing.

Urumtsi, or Tih-hwa chau (the *Bich-balik* of the Ouigours in 1100 [3]), in lat. 43° 45′ N., and long. 89° E., is the westernmost department of Kansuh, divided into three districts, and containing many posts and settlements. In the war with the Eleuths in 1770, the inhabitants around this place were exterminated, and the country afterwards repeopled by upwards of ten thousand troops, with their families, and by exiles; emigrants from Kansuh were also induced to settle there. The Chinese accounts speak of a high mountain near the city, always covered with ice and snow, whose base is wooded, and abounding with pheasants; coal is also obtained in this region. The cold is great, and snow falls as late as July. Many parts produce grain and vegetables. All this department formerly constituted a portion of Songaria. The policy of the Chinese government is to induce the tribes to settle, by placing large bodies of troops with their families at all important points, and sending their exiled criminals to till the soil; the Mongols then find an increasing demand for their cattle and other products, and are induced to become stationary to meet it. So far as is known, this policy had succeeded well in the regions beyond the Wall, and those around Koko-nor; but the rebellion of the Dunganis,

[1] Lieut. Kreitner, *Im fernen Osten.*

[2] In Rémusat's *Histoire de la Ville de Khotan* (p. 76) there is an account of a journey made in the 10th century between Kanchan and Khoten.

[3] Rémusat calls it *Pentalope. Nouveaux Mélanges*, Tome I., p. 5.

who arose in these outlying regions at the moment when the energies of the Peking government were all directed to suppressing the Tai-ping insurrection, destroyed these improvements, and frustrated, for an indefinite period, the promising development of civilization among the inhabitants.

That part of the Empire called Ílí is a vast region lying on each side of the Tien shan, and including a tract nearly as large as Mongolia, and not much more susceptible of cultivation. Its limits may be stated as extending from lat. 36° to 49° N., and from long. 71° to 96° E., and its entire area, although difficult to estimate from its irregularity, can hardly be less than 900,000 square miles, of which Songaria occupies rather more than one-third. It is divided into two *Lu*, or 'Circuits,' viz., the Tien shan Peh Lu, and Tien shan Nan Lu, or the circuits north and south of the Celestial Mountains. The former is commonly designated Songaria, or Dzungaria, from the Songares or Eleuths, who ruled it till a few scores of years past, and the latter used to be known as Little Bokhara, or Eastern Turkestan.

Ílí is bounded north by the Altai range, separating it from the Kirghís; northeast by the Irtysh River and Outer Mongolia; east and southeast by Urumtsi and Barkul in Kansuh; south by the desert and the Kwănlun range; and west by the Belur-tag, dividing it from Badakshan and Russian territory.[1]

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[1] The recent treaty between Russia and China (ratified in 1881), marks the boundaries between Ílí and Russian territory in the following sections:

Art. VII. A tract of country in the west of Ílí is ceded to Russia, where those who go over to Russia and are thereby dispossessed of their land in Ílí may settle. The boundary line of Chinese Ílí and Russian territory will stretch from the Pieh-chên-tao [Bedschin-tau] Mountains along the course of the Ho-êrh-kwo-ssŭ [Yehorsos] River, to its junction with the Ílí River, thence across the Ílí River, and south to the east of the village of Kwo-li-cha-tè [Kaldschat] on the Wu-tsung-tau range, and from this point south along the old boundary line fixed by the agreement of Ta-Chêng [Tashkend] in the year 1864.

Art. VIII. The boundary line to the east of the Chi-sang lake, fixed in the year 1864 by the agreement of Ta-Chêng [Tashkend], having proved unsatisfactory, high officers will be specially deputed by both countries jointly to examine and alter it so that a satisfactory result may be attained. That there may be no doubt what part of the Khassak country belongs to China and what to Russia, the boundary will consist of a straight line drawn from the Kwei Tung Mountains across the Hei-i-êrh-te-shih River to the Sa-wu-êrh range, and

In length, the Northern Circuit extends about nine hundred miles, and the width, on an average, is three hundred miles. The Southern Circuit reaches nearly twelve hundred and fifty miles from west to east, and varies from three hundred to five hundred in breadth, as it extends to the Kwănlun range on the south. There is probably most arable land in the Northern Circuit.

Íli, taken north of the Tarim basin, may be regarded as an inland isthmus, extending southwest from the south of Siberia, off between the Gobi and Caspian deserts, till it reaches the Hindu Kush, leading down to the valley of the Indus. The former of these deserts incloses it on the east and south, the other on the west and northwest, separated from each other by the Belur and Muz-tag ranges, which join with the Tien shan, that divide the isthmus itself into two parts. These deserts united are equal in extent to that of Sahara, but are not as arid and tenantless.

This region has some peculiar features, among which its great elevation, its isolation in respect to its water-courses, and the character of its vegetation, are the most remarkable. Songaria is especially noticeable for the many closed river-basins which occur between the Altai and Tien shan, among the various minor ranges of hills, each of which is entirely isolated, and containing a lake, the receptacle of its drainage. The largest of these singular basins is that of the River Íli, which runs about three hundred miles westward, from its rise in the Tien shan (lat. 85°) till it falls into Lake Balkash, which also receives some other streams; the superficies of the whole basin is about forty thousand square miles. The other lakes lie northeastward of Balkash; the largest of them are the Dzaisang, which receives the Irtysh, the Kisilbash, into which the Urungu

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the high officers deputed to settle the boundary will fix the new boundary along such straight line which is within the old boundary.

Art. IX. As to the boundary on the west, between the Province of Fei-êrh-kan [Ferghana], which is subject to Russia, and Chinese Kashgar, officials will be deputed by both countries to examine it, and they will fix the boundary line between the territories at present actually under the jurisdiction of either country, and they will erect boundary stones thereon.

flows, and four or five smaller ones between them, lying north of the city of Ílí. Lake Temurtu, or Issik-kul, lies now just beyond the southwestern part of this Circuit, and was until recently contained therein. This sheet of water is deep and never freezes; it is brackish, but full of fish; the dimensions are about one hundred miles long, and thirty-five wide; its superabundant waters flow off through the Chu ho into the Kirghís steppe.

The Ala-tau range defines the lake on the north shore. Says a Russian traveller in describing this region, "It would be difficult to imagine anything more splendid than the view of the Tien shan from this spot. The dark blue surface of the Issik-kul, like sapphire, may well bear comparison with the equally blue surface of Geneva Lake, but its expanse—five times as great—seeming almost unlimited, and the matchless splendor of its background, gives it a grandeur which the Swiss lake does not possess. The unbroken, snowy chain here stretches away for at least 200 miles of the length of the Issik-kul; the sharp outlines of the spurs and dark valleys in the front range are softened by a thin mist, which hangs over the water and heightens the clear, sharp outlines of the white heads of the Tien shan giants, as they rise and glisten on the azure canopy of a central Asian sky. The line of perpetual snow commences at three-fifths of their slope up, but as one looks, their snowless base seems to sink the deeper in the far east, till the waves of the lake seem to wash the snowy crests of Khan-Tengsè." Forty small rivers flow into it, but its size is gradually lessening.[1]

Little is known concerning the topography, the productions, or the civilization of the tribes who inhabit a large part of Songaria, but the efforts of the Chinese government have been systematically directed to developing its agricultural resources, by stationing bodies of troops, who cultivate the soil, there, and by banishing criminals thither, who are obliged to work for and assist the troops. It gives one a higher idea of the rulers of China, themselves wandering nomads originally, when they are seen carrying on such a plan for extending the capabilities of

[1] Compare also Schuyler, *Turkistan*, Vol. II., pp. 127 ff.

these remote parts of their Empire, and teaching, partly by force, partly by bribes, and partly by example, the Mongol tribes under them the advantages of a settled life.

The productions of Songaria are numerous. Wheat, barley, rice and millet, are the chief corn stuffs; tobacco, cotton, melons, and some fruits, are grown; herds of horses, camels, cattle, and sheep, afford means of locomotion and food to the people, while the mountains and lakes supply game and fish. The inhabitants are composed mostly of Eleuths, with a tribe of Tourgouths, and remnants of the Songares, together with Mongols, Manchus, and Chinese troops, settlers and criminals.

Tien-shan Peh Lu is divided by the Chinese into three commanderies, *Ílí* on the west, *Tarbagatai* on the north, and *Kurkara usu* on the east, between Ílí and the west end of Kansuh. The government of the North and South Circuits is under the control of Manchu military officers residing at Ílí. This city, called by the Chinese Hwuiyuen ching, and Gouldja (or Kuldja) and Kuren by the natives, lies on the north bank of the Ílí River, in lat. 43° 55′ N., and long. 81½° E.; it contains about fifty thousand inhabitants, and carries on considerable trade with China through the towns in Kansuh. The city was defended by six strong fortresses in its neighborhood, and the solidity of the stone walls enabled it to resist a vigorous assault in the Dungani rebellion. Its circuit is nearly four miles, and two wide avenues cross its centre, dividing it into four equal parts, through each of which run many lanes. Its houses indicate the Turkish origin of its builders in their clay or adobe walls and flat roofs, and this impression is increased by the Jumma mosque of the Taranchis, and the Dungan mosque, outside of the walls. The last has a wonderful minaret built of small-roofed pavilions one over another; both of them affect the Chinese architecture in their roofs, and their walls are faced with diamond-shaped tiles. The Buddhist temple has hardly been rebuilt since the city has returned to Chinese rule. The supply of meats and vegetables is constant, and the variety and quality exceed that of most other towns in the region. The population is gradually increasing with the return of peace and trade, but is still under twenty thousand, of which not one-fifth

are Chinese and Manchus: the Taranchis constitute half of the whole, and Dunganis are the next in number. The province is the richest and best cultivated of all this region of Ílí; its coal, metals, and fruits are sources of prosperity, and with its return to Chinese sway under new relations in respect to Russian trade, its future is promising.

The destruction of life was dreadful at the capture of Kuldja and other towns, which were then left a heap of ruins.[1] Schuyler estimates that not more than a hundred thousand people remained in the province, out of a third of a million in 1860. It is stated in Chinese works that when Amursana, the discontented chief of the Songares, applied, in 1775, to Kienlung for assistance against his rival Tawats or Davatsi, and was sent back with a Chinese army, in the engagements which ensued, more than a million of people were destroyed, and the whole country depopulated. At that time, Kuldja was built by Kienlung, and soon became a place of note. Outside of the town are the barracks for the troops, which consist of Eleuths and Mohammedans, as well as Manchus and Chinese. Coal is found in this region, and most of the inland rivers produce abundance of fish, while wild animals and birds are numerous. The resources of the country are, however, insufficient to meet the expenses of the military establishment, and the presents made to the begs, and the deficit is supplied from China.[2]

[1] 175,000 perished in Kuldja alone.

[2] The question of the existence of volcanoes in Central Asia, especially on the Kuldja frontier, has always been a matter of doubt and discussion among geologists and Russian explorers. The Governor of Semiretchinsk, General Kolpakofsky, was, in 1881, able to report the discovery of the perpetual fires in the Tien shan range of mountains. The mountain Bai shan was found twelve miles northeast of Kuldja, in a basin surrounded by the massive Ailak mountains; its fires are not volcanic, but proceed from burning coal. On the sides of the mountain there are caves emitting smoke and sulphurous gas. Mr. Schuyler, in his *Turkistan*, mentions that these perpetual fires in the mountains, referred to by Chinese historians, were considered by Severtzoff, a Russian, who explored the region, as being caused by the ignition of the seams of coal, or the carburetted hydrogen gas in the seams. The same author further mentions that Captain Tosnofskey, another Russian explorer, was told of a place in the neighborhood from which steam constantly rose, and that near this crevice there had existed, from ancient times, three pits, where persons afflicted with rheumatism or skin diseases were in the habit of bathing.

Subordinate to the control of the commandant at Kuldja are nine garrisoned places situated in the same valley, at each of which are bodies of Chinese convicts. The two remaining districts of Tarbagatai and Kur-kara usu are small compared with Ílí; the first lies between Cobdo and the Kirghís steppe, and is inhabited mostly by emigrants from the steppes of the latter, who render merely a nominal subjection to the garrisons placed over them, but are easily governed through their tribal rulers. The Tourgouths, who emigrated from Russia in 1772, into China, are located in this district and Cobdo, as well as in the valleys of the Tekes and Kunges rivers. They have become more or less assimilated with other tribes since they were placed here. In the war with the Songares, many of the people fled from the valley of Ílí to this region, and after that country was settled, they submitted to the Emperor, and partly returned to Ílì. The chief town, called Tuguchuk by the Kirghís, and Suitsing ching by the Chinese, is situated not far from the southern base of the Tarbagatai Mountains, and contains about six hundred houses, half of which belong to the garrison. It is one of the nine fortified towns under the control of the commandant at Kuldja, and a place of some trade with the Kirghís. There are two residents stationed here, with high powers to oversee the trade across the frontier, but their duties are inferior in importance to those of the officials at Urga. 2,500 Manchu and Chinese troops remain at this post, and since the conquest of the country in 1772 by Kienlung, its agricultural products have gradually increased under the industry of the Chinese. The tribes dwelling in this distant province are restricted within certain limits, and their obedience secured by presents. The climate of Tarbagatai is changeable, and the cold weather comprises more than half the year. The basin of Lake Ala-kul, or Alaktu-kul, occupies the southwest, and part of the Irtysh and Lake Dzaisang the northeast, so that it is well watered. The trade consists chiefly of domestic animals and cloths.

The town of Kur-kara usu lies on the River Kur, northeast from Kuldja and on the road between it and Urumtsi; it is called Kingsui ching by the Chinese. The number of troops

stationed at all these posts is estimated at sixty thousand, and the total population of Sôngaria under two millions.

The Tien-shan Nan Lu, or Southern Circuit of Ílí, the territory of 'the eight Mohammedan cities,' was named *Sin Kiang* ('New Frontier') by Kienlung. It is less fertile than the Northern Circuit, the greatest part of its area consisting of rugged mountains or barren wastes, barely affording subsistence for herds of cattle and goats. The principal boundaries are the Kwănlun Mountains, and the desert, separating it from Tibet on the south; Cashmere lies on the southwest, and Badakshan and Kokand are separated from it on the west and northwest by the Belur-tag, all of them defined and partitioned by the mountain ranges over which the passes 12,000 to 16,000 feet high furnish both defence and travel according to the season.

The greater part of this Circuit is occupied with the basin of the Tarim or Ergu, which flows from the Belur range in four principal branches[1] (called from the towns lying upon their banks the Yarkand, Kashgar, Aksu, and Khoten Rivers), and running eastward, receives several affluents from the north and south, and falls into Lake Lob in long. 89° E., after a course, including windings, of between 1,100 and 1,300 miles. Of the river system from which this stream flows Baron Richthofen says, "the region which gives birth to this river is on a scale of grandeur such as no other river in the world can boast. It is girt round by a wide semicircular collar of mountains of the loftiest and grandest character, often rising in ridges of 18,000 to 20,000 feet in height, while the peaks shoot up to 25,000 and even 28,000 feet. The basin which fills in the horse-shoe shaped space encompassed by these gigantic elevations, though deeply depressed below them, stands at a height above the sea varying from 6,000 feet at the margin to about 2,000 in the middle, and formed the bed of an ancient sea. From its wall-like sides on the south, west, and north, the waters rush headlong down, and though the winds blowing from all directions deposit most of their moisture on the remoter sides of the surrounding

[1] Wood, *Journey to the Source of the River Oxus*, p. 356. From the hills that encircle Lake Sir-i-kol rise some of the principal rivers in Asia: the Yarkand, Kashgar, Sirr, Kuner, and Oxus.

ranges, viz., the southern foot of the Himalayas, the west side of the Pamir, and the northern slope of the Tien shan, the streams formed thereby winding through the cloud-capped lofty cradle-land, and breaking through the mountain chains, reach the old ocean bed only partly well watered. The smallest of them disappear in the sand, others flow some distance before expanding into a level salt basin and are there absorbed. Only the largest, whose number the Chinese estimate at sixty, unite with the Tarim, a river 1,150 miles long, and therefore in length between the Rhine and Danube, but far surpassing both in the massiveness of surrounding mountains, just as it exceeds the Danube in the extent of its basin. Its tributaries form along the foot of the mountains a number of fruitful oases, and these by means of artificial irrigation have been converted into flourishing, cultivated states, and have played an important part in the history of these regions."[1] Col. Prejevalsky's explorations in this totally unknown country have brought out a multitude of facts pregnant with interest both for historical and geographical study. Among the most important results of his discoveries is the location of Lob more than a degree to the south of its position on Chinese maps, and a consequent bend of the Tarim from its due eastern course before it reaches its outlet. This lake, consisting of two sheets of water, the Kara-buran and Kara-kurchin (or Chon-kul), lies on the edge of the desert, in an uninhabited region, and surrounded by great swamps, which extend also northwest along the Tarim to its junction with the Kaidu. It is shallow, overgrown with weeds, and is for the most part a morass, the water being fresh, despite the salt marshes in the vicinity. The people living near it speak a language most like that of Khoten; they are Moslems. Lake Lob is elliptical, 90 to 100 versts long and 20 wide, 2,200 feet above the sea. Enormous flocks of birds come from Khoten on the southwest, as they go north, and make Lob-nor their stopping-place. The desert in this region is poor and desolate in the extreme. Its southern side is formed by the Altyn-tag range, a spur of the Kwănlun Mountains that rises about 14,000 feet in a sheer

[1] *Richthofen's Remarks* in Prejevalsky's *Lob-nor*, p. 138. London, 1879.

wall. Wild camels are found in its ravines, whose sight, hearing, and smell are marvellously acute. No other river basins of any size are found within the Circuit, except a large tributary called the Kaidu, which, draining a parallel valley north of Lob-nor, two hundred miles long, runs into a lake nearly as large, called Bostang-nor, from which an outlet on the south continues it into the Tarim, about eighty miles from its mouth. The tributaries of this river are represented as much more serviceable for agricultural purposes than the main trunk is for navigation. The plain through which the Tarim flows is about two hundred miles broad and not far from nine hundred miles long, most of it unfit for cultivation or pasturage. The desert extends considerably west of the two lakes. The climate of this region is exceedingly dry, and its barrenness is owing, apparently, more to the want of moisture than to the nature of the soil. The western parts are colder than those toward Kansuh, the river being passable on ice at Yarkand, in lat. 38°, for three months, while frost is hardly known at Hami, in lat. 43°.

The productions of the valley of the Tarim comprise most of the grains and fruits found in Southern Europe; the sesamum is cultivated for oil instead of the olive. Few trees or shrubs cover the mountain acclivities or plains. All the domestic animals abound, except the hog, which is reared in small numbers by the Chinese. The camel and yak are hunted and raised for food and service, their coats affording both skins and hair for garments. The horse, camel, black cattle, ass, and sheep, are found wild on the edge of the desert, where they find a precarious subsistence. The mountains and marshes contain jackals, tigers, bears, wolves, lynxes, and deer, together with some large species of birds of prey. Gold, copper, and iron are brought from this region, but the amount is not large, and as articles of trade they are less important than the sal-ammoniac, saltpetre, sulphur, and asbestos obtained from the volcanic region in the east of the Celestial Mountains. The best specimens of the *yuh* or nephrite, so highly prized by the Chinese, are obtained in the Southern Circuit.

The present divisions of this Circuit are regulated by the

position of the eight Mohammedan cities. The western departments of Kansuh naturally belong to the same region, and the cities now pertaining to that province are inhabited by entirely similar races, and governed in the same feudal manner, with some advantages in consideration of their early submission to Kienlung. The first town on the road, of note, is Hami; Turfan and Pidshan are less important as trading posts than as garrisons. The eight cities are named in the *Statistics of the Empire* in the following order, beginning at the east: Harashar, Kuché, Ushí (including Sairim and Bai), Aksu, Khoten, Yarkand, Kashgar, and Yingkeshar or Yangi Hissar. The superior officers live at Yarkand, but the Southern Circuit is divided into four minor governments at Harashar, Ushí, Yarkand, and Khoten, each of whose residents reports both to Kuldja and Peking. There is constant restiveness on the part of the subject races, who are all Moslems, arising from their clannish habits and feuds; they have not the elements of substantial progress and national growth, either under their own rulers or Chinese. They have lately thrown off the Peking Government, but they have generally regretted the rapines and waste caused by the strifes and change, and would probably receive the *Kitai* (so they term the Chinese) back again. The latter are not hard masters, and bring trade and wealth the longer they remain. One of the Usbek chiefs under Yakub khan gave the pith of the situation between the two, when he replied to Dr. Bellew's remark that he talked like a Chinese himself, "No, I hate them. But they were not bad rulers. We had everything then; we have nothing now. We never see any signs of the Kitai trade, nor of the wealth they brought here."

Harashar (or Karashar) lies on the Kaidu River, not far from Lake Bagarash or Bostang, about two hundred and ninety miles west of Turfan, in lat. 42° 15′ N., and long. 87° E. It is a large district, and has two towns of some note within the jurisdiction of its officers—namely, Korla and Bukur. Harashar is fortified, and from its being a secure position, and the seat of the chief resident, attracts considerable trade. The embroidery is superior; but the tribes living in the district are more addicted to hunting than disposed to sedentary trades. Korla lies

southwest of Harashar on the Kaidu, between lakes Bostang and Lob, and the productions of the town and its vicinity indicate a fertile soil; the Chinese say the Mohammedans who live here are fond of singing, but have no ideas of ceremony or urbanity. Bukur lies two hundred miles west of Korla and "might be a rich and delicious country," says the Chinese account, "but those idle, vagrant Mohammedans only use their strength in theft and plunder; the women blush at nothing." The town formerly contained upward of ten thousand inhabitants, but Kienlung nearly destroyed it; the district has been since resettled by Hoshoits, Tourbeths, and Turks, and the people carry on some trade in the produce of their herds, skins, copper, and agates.

Kuché, about eighty miles west from Bukur, lat. 41° 37′ N., and long. 83° 20′ E., is a larger and more important city than that of Harashar, for the road which crosses the Tien shan by the pass Muz-daban to Ílí, here joins that coming from Aksu on the west and Hami on the east. It is three miles in circuit, and is defended by ten forts and three hundred troops. The bazaars contain grain, fruits, and vegetables, raised in the vicinity by great labor, for the land requires to be irrigated by hand from wells, pools, and streams. Copper, sulphur, and saltpetre are carried across to Ílí, for use of government as well as traffic, being partly levied from the inhabitants as taxes; linen is manufactured in the town, and sal ammoniac, cinnabar, and quicksilver are procured from the mountains. Kuché is considered the gate of Turkestan, and is the chief town, politically speaking, between Hami and Yarkand. The district and town of Shayar lie south of Kuché, in a marshy valley producing abundance of rice, melons, and fruit; the pears are particularly good. Two small lakes, Baba-kul and Sary-kamysch, lie to the east of this town, and are the only bodies of water between Bostang-nor and Issik-kul. The population is about four thousand, ruled by *begs* subordinate to the general at Kuché.

The valley of the Aksu contains two large towns, Aksu and Ushí or Ush-turfan, besides several posts and villages. Between the former and Kuché, lie the small garrisons and districts of Bai and Sairim. The first contains from four to five hundred

families, ruled by their own chiefs. Sairim or Hanlemuh is subordinate to Ushí in some degree, but its productions, climate, and inhabitants are like those of Kuché. "Their manners are simple," remarks a Chinese writer, speaking of the people; "they are neither cowards nor rogues like the other Mohammedans; they are fond of singing, drinking, and dancing, like those of Kuché." Aksu is a large commercial and manufacturing town, containing twenty thousand inhabitants, situated, like Kuché, at the termination of a road leading across the Tien shan to Ílí, and attracting to its market traders from Siberia, Bokhara, and Kokand, as well as along the great road. Its manufactures of cotton, silk, leather, harnesses, crockery, precious stones, and metals are good, and sent abroad in great numbers. The country produces grain, fruits, vegetables, and cattle in perfection, and the people are more civilized than those on the east and north; "they are generous and noble, and both sing and ridicule the oddities and niggardliness of the other Mohammedans." The Chinese garrison consists of three thousand soldiers, and the officers are accountable to those at Ushí.

Ushí lies about 70 miles due west of Aksu, in lat. 41° 15′ N. and long. 79° 40′ E., and is stated to contain ten thousand inhabitants. The Chinese name is Yung-ning ching (*i.e.* 'City of Eternal Tranquillity'). The officers stationed here report to the commandant at Ílí, but they communicate directly with Peking, and receive the Emperor's sanction to their choice of begs, and to the envoys forwarded to the capital with tribute. Copper money is cast here in ingots, somewhat like the ingots of sycee in the provinces. There are six forts attached to Ushí, to keep in order the wandering tribes of the Kirghís, called Pruth Kirghís,[1] which roam over the frontier regions between Ushí and Yarkand. They pay homage to the officers at Ushí, but give no tribute. Those who do pay tribute are taxed a tenth, but the Kirghís on this frontier are usually allowed to roam where they like, provided they keep the peace. This region was nearly depopulated by Kienlung's generals, and at present sup-

[1] Called also *Pourouts*. Compare Klaproth (*Mémoires*, Tome III., p. 332), who has a notice of these tribes.

ports a sparse population compared with its fertility and resources.

The government of Kashgar, known, at the time of the Arab conquest, as *Kichik Bukhara*, presents a vast, undulating plain, of which the slope is very gradual toward the east, and of which the general elevation may be reckoned at from three to four thousand feet above the sea. The aspect of its surface is mostly one of unmitigated waste—a vast spread of bare sand and gloomy salts, traversed in all directions by dunes and banks of gravel, with the scantiest vegetation, and all but absence of animal life. Such is the view that meets the eye and joins the horizon everywhere on the plain immediately beyond the river courses and the settlements planted on their banks.[1] The population of this whole district is considerably less than a million and a half. The natural mineral productions here are of great value, and it is a knowledge of this fact which has induced the Chinese to persevere in retaining so expensive and turbulent a frontier province. The gold and jade of Khoten, silver and lead of Cosharab, and copper of Khalistan, have given abundant employment to Chinese settlers; while coal, iron, sulphur, alum, sal ammoniac, and zinc, though worked in unimportant quantities before the insurrection of Yakub khan (Atalik Ghazi), furnished the inhabitants with supplies for domestic use. An important hinderance to building villages in many sections of this territory is the prevalence of sand dunes here. Solitary houses and even whole settlements lying in the path of these moving hills are suddenly overwhelmed and oftentimes totally effaced.

The town of Kashgar is situated at the northwestern angle of the Southern Circuit, on the Kashgar River, a branch of the Tarim, in lat. 39° 25′ N., and long. 76° 5′ E., at the extreme west of the Empire. Several roads meet here. Going in a northwest direction, one leads over the Tien shan to Kokand; a second passes south, through Yarkand and Khoten, to Leh and Cashmere; a third, the great caravan route, from China through

[1] H. W. Bellew, *Kashmir and Kashgar. A Narrative of the Journey of the Embassy to Kashgar in* 1873–4, p. 2.

Ushí, may be said to end here; and the fourth and most frequented, leads off northwest over the Tien shan through the Rowat Pass, and along the western banks of Lake Issik-kul to Ílí. Kashgar was the capital of the Oigours for a long time, and its ruler forced his people, as far east as Hami, to accept Islamism about the year 1000. They then came under Genghis' sway, and this city increased its importance, but when Abubahr Miza took Yarkand, he razed Kashgar to the ground. Under Chinese rule it became one of the richest marts in Central Asia, and its future importance is secured by its position. The city is enclosed with high and massive walls, supported by buttress bastions, and protected by a deep ditch on three sides, the river flowing under the fourth. There are but two gates; the area within is about fifty acres. Around it are populous suburbs.

In the middle of the town is a large square, and four bazaars branch from it through to the gates; the garrison is placed without the walls. The manufactures of Kashgar excel those of any other town in the two Circuits, especially in jade, gold, silk, cotton, gold and silver cloths, and carpets. The country around produces fruit and grain in abundance; "the manners of the people have an appearance of elegance and politeness," says the Chinese geographer; "the women dance and sing in family parties; they fear and respect the officers, and have not the wild, uncultivated aspect of those in Ushí." This judgment is in a measure confirmed by Bellew, who credits the people with being singularly free from prejudice against the foreigners, quite indifferent on any score of his nationality or religion, and content so long as he pays his way and does not offend the customs of the natives. Several towns are subordinate to Kashgar, because of its oversight of their rulers, and consumption of their products. Southwest lies Tash-balig, and on the road leading to Yarkand is Yangi Hissar, both of them towns of some importance; the whole distance from Kashgar presents a succession of sandy or saline tracts, alternating with fertile bottoms wherever water runs. Small villages and post houses serve to connect the larger towns, but the soil does not reward the cultivators with much produce.

Yarkand, or Yerkiang, is the political capital of the Southern Circuit, as the highest military officers and strongest force are stationed here. It is situated on the Yarkand River, in lat. 36° 30′ N., and long. 77° 15′ E., in the midst of a sand-girt oasis of great fertility. The environs are abundantly supplied with water by canals. The stone walls are three miles in circumference, but its suburbs are much larger; the houses are built of dried bricks, and the town has a more substantial appearance than others in Ílí. There are many mosques and colleges, which, with the public buildings occupied by the government and troops, add to its consideration. Yarkand is one of the ancient cities of Tartary, and was, in remote times, a royal residence of Turk princes of the Afrasyab dynasty. In modern times it owes its rank as a well-built city chiefly to Abubahr Miza, whose short-lived sway from Aksu to Wakhan left its chief results in the mosques and bazaars erected or enlarged by him. By means of quarrying jade in the Karakash valley, and working the bangles, ear-rings and other articles in the city, thousands of families found employment under Chinese rule.

With the overthrow of that sway and then of Yakub khan in its restoration, all this industry disappeared. In the destruction ensuing on these long struggles for supremacy, one learns the explanation of the barbarism which has succeeded the downfall of mighty empires all over Western Asia. The city has no important manufactures; it enjoys a local reputation for its leather, and boots and shoes made here are esteemed all over the province. Among other articles of trade are horses, silk, and wool, and fabrics made from them; but everything found at Kashgar is sold also at this market. In a Chinese notice of the city, the customs at Yarkand are stated to have yielded over $45,000 annually; the taxes are 35,400 sacks of grain, 57,569 pieces of linen, 15,000 lbs. of copper, besides gold, silk, varnish, and hemp, part of which are carried to Ílí. Jade is obtained from the river in large pieces, yellow, white, black, and reddish, and the articles made from it are carried to China. The Chinese authorities have no objection to the resorting thither of natives of Kokand, Badakshan, and other neighboring states, many of whom settle and marry.

Khoten is situated on the southern side of the desert, and the district embraces all the country south of Aksu and Yarkand, along the northern base of the Kwănlun Mountains, for more than three hundred miles from east to west. The capital is called Ílchí on Chinese maps, and lies in an extensive plain on the Khoten River in lat. 37° N., and long. 80° E. The town of Karakash (meaning 'Black Jade')[1] lies in lat. 37° 10′, long. 80° 13′ 30″, a few miles northwest in the same valley, and is said by traders to be the capital rather than Ílchí; it is located on the road to Yarkand, distant twelve days' journey. On this road the town of Gummí is also placed, whose chief had in his possession a stone supposed to have the power of causing rain. Kirrea lies five days' journey east of Ílchí, near the pass across the mountains into Tibet and Ladak; a gold mine is worked near this place, the produce of which is monopolized by the Chinese. The three towns of Karakash, Ílchí, and Kirrea, are the only places of importance between the valley of the Tarim and Tibet, but none of them have been visited for a long time by Europeans.[2] The population of the town or district is unknown; one notice[3] gives it a very large number, approaching three millions and even more, which at any rate indicates a more fertile soil and genial climate than the regions north and south of it. Dr. Morrison, in his *View of China*, puts it at 44,630 inhabitants; and although the former includes the whole district, and is probably too large, the second seems to be much too small.

Khoten is known, in Chinese books, by the names of *Yu-tien*, *Hwan-na*, *Kieu-tan*, and *Kiu-sa-tan-na*—the last meaning, in Sanscrit, "Breast of the Earth."[4] Its eastern part is marshy, but that the country must have a considerable elevation is manifest from the fact that the river which drains and connects it with the Tarim runs quite across the desert in its course. The country is governed by two high officers and a

[1] But Rémusat says that Karakash is a river and no town.

[2] Wood (*Journey to the Oxus*, p. 279) refers to a frontier town by the name of Ecla.

[3] *Penny Cyclopædia*, *Art.* THIAN SHAN NAN LU.

[4] Rémusat, *Histoire de Khotan*, p. 35.

detachment of troops; there are six towns under their jurisdiction, the inhabitants of which are ruled in the same manner as the other Mohammedan cities. The people, however, are said to be mostly of the Buddhist faith, and the Chinese give a good account of their peacefulness and industry. The trade with Leh and H'lassa is carried on by a road crossing the Kwănlun over the Kirrea Pass, beyond which it divides. The productions of Khoten are fine linen and cotton stuffs, jade ornaments, amber, copper, grain, fruits, and vegetables; the former for exportation, the latter for use. It was in this region that Col. Prejevalsky discovered (in 1879) a new variety of wild horse, a specimen of which has been stuffed and exhibited in St. Petersburg. The animal in question, though belonging undoubtedly to the genus *Equus*, presents, in many respects, an intermediate form between the domestic horse and the wild ass.

Rémusat published, in 1820, an account of this country, drawn from Chinese books, in which the principal events in its history are stated, commencing with the Han dynasty, before the Christian era, down to the Manchu conquest. In the early part of its history, Khoten was the resort of many priests from India, and the Buddhist faith was early established there. It was an independent kingdom most of the time, from its earliest mention to the era of Genghis khan, the princes sometimes extending their sway from the Kiayü pass and Koko-nor to the Tsung ling, and then being obliged to contract to the valley now designated as Khoten. After the expulsion of the Mongols from China, Khoten asserted its independence, but afterward fell under the sway of the Songares and Eleuths, and lost many of its inhabitants. The Manchus conquered it in 1770, when the rest of the region between the Tien shan and Kwănlun fell under their sway, but neither have they settled in it to the same extent, nor made thereof a penal settlement, as in other parts of Ílí.[1]

The government of Ílí differs in some respects from that of Mongolia, where religion is partly called in to aid the state. In

[1] Concerning the nomenclature of this region compare Rémusat, *Histoire de Khotan*, p. 66. See, moreover, *ib.*, p. 47 ff., the legend of a drove of desert rats assisting the king of this land against the army of his enemies.

the Northern Circuit, the authority is strictly military, exercised by means of residents and generals, with bodies of troops under their control. The supreme command of all Ílí is intrusted by the colonial office to a Manchu *tsiangkiun*, or military governor-general at Kuldja, who has under him two councillors to take cognizance of civil cases, and thirty-four residents scattered about in both Circuits. This governor has also the control of the troops stationed in the three western departments of Kan-suh, but has nothing to do with the civil jurisdiction of those towns. The entire number of soldiers under his hand is stated at 60,000, most of whom have families, and add agricultural, mechanical, or other labors to the profession of arms. The councillors are not altogether subordinate to the general, but report to the Colonial Office.

In the Northern Circuit, there is a deputy appointed for every village and town, invested with military powers over the troops and convicts, and civil supervision over the native *píko* or chieftains, who are the real rulers acknowledged by the clans. The character of the inhabitants north of the Tien shan is rendered unlike that of those dwelling in the Southern Circuit, not more by the diversity in their language and nomadic habits, than by the sway religious rites and allegiance have over them. Through this latter motive, the government of Mongolia and the Northern Circuit is rendered far easier and more effectual for the distant court of Peking than it otherwise would be. The appointment of the native chieftains is first announced to the general at Kuldja and the Colonial Office, and they succeed to their post when confirmed, which, as the station is in a measure hereditary, usually follows in course.

The inhabitants of the Southern Circuit are Mohammedans and acknowledge a less willing subjection to the Emperor than those in the Northern, the differences in race, religion, and language being probably the leading reasons. The government of the whole region is divided among the Manchu residents or *ambans* at the eight cities, who are nominally responsible to the general at Ílí, and independent of each other, but there is a gradation in rank and power, the one at Yarkand having the priority. The begs are chosen by the tribes themselves, and

exercise authority in all petty cases arising among the people, without the interference of the Chinese. The troops are all Manchu or Chinese, none of the Turks being enrolled in separate bodies, though individuals are employed with safety. There is considerable difference in the rank and influence of the begs, which is upheld and respected by the *ambans*. The allowances and style granted them are regulated in a measure by their feudal importance. The revenue is derived from a monthly capitation tax on each man of about half a dollar, and tithes on the produce; there are no transit duties as in China, but custom-houses are established at the frontier trading towns. The language generally used in the Southern Circuit is the Jaghatai Turki of the Kalmucks; the Usbecks constitute the majority of the people, but Eleuths and Kalmucks are everywhere intermixed. The Tibetans have settled in Khoten, or more probably, remnants still exist there of the former inhabitants.

The history of the vast region constituting the present government of Ílí early attracted the attention of oriental scholars, and few portions of the world have had a more exciting history. After the expulsion of the Mongols from China by Hungwu, A.D. 1366, they found that they, as a tribe, were inferior in power to the western tribes, but it was not till about 1680 that the Eleuths, north of the Tien shan under the Galdan,[1] began to attack the Kalkas, and drive them eastward. The Sunnites, Tsakhars, and Solons, portions of the Eastern Mongols, had already joined the Manchus; and the Kalkas, to avoid extermination, submitted to them also, and besought their assistance against the Eleuths. Kanghí received their allegiance, and tried to settle the difficulties peaceably, but was obliged to send his troops against the Galdan, and drive him from the territory of the Kalkas to the westward of Lob-nor and Barkul. The Emperor was materially aided in this enterprise by the secession from the Eleuths of the Songares, whose khan had taken offence, and drawn his hordes off to the south. The khans of the Kalkas and their vast territory thus

[1] "Galdan, better known by his title of Contaïsch"—Rémusat, *Nouveaux Mélanges*, Tome II., p. 29. See also Schuyler's *Turkistan*, Vol. II., p. 168.

became subject to the Chinese. The Galdan lost all his forces, and expired by poison, in 1697, his power dying with him, and his tribe having already become too weak to resist.

Upon the ruins of his power arose that of Arabdan, the khan of the Songares. He subjugated the Northern Circuit, passed over into Turkestan, Tangout, and Khoten, and gradually reduced to his sway nearly all the elevated region of Central Asia west of Kansuh. He expelled the Tourgouths from their possessions in Cobdo, and compelled them to retreat to the banks of the Volga. Kanghí expelled the Songares from the districts about Koko-nor, but made no impression upon their authority in Songaria. After the death of Arabdan, about 1720, his throne was disputed, and the power weakened by dissensions among his sons, so that it was seized by two usurpers, Amursana and Tawats, who also fell out after their object was gained. Amursana repaired to Peking for assistance, and with the aid of a Chinese army expelled Tawats, and took possession of the throne of Arabdan. But he had no intention of becoming a vassal to Kienlung, and was no sooner reinstated than he resisted him; he defeated two Chinese armies sent against him, but succumbed on the third attack, and fled to Tobolsk, where he died in 1757.

The territory of Arabdan then fell to Kienlung, and he pursued his successes with such cruelty that the Northern Circuit was nearly depopulated, and the Songares and Eleuths became almost extinct as distinct tribes. The banished tribe of Tourgouths was then invited by the Emperor to return from Russian sway to their ancient possessions, which they accepted in 1772; the history of the Chinese embassy to them, and their disastrous journey back to Cobdo over the Kirghís steppe and through the midst of their enemies, is one of the most remarkable instances of nomadic wanderings and unexampled suffering in modern times.[1] Chinese troops, emigrants, exiles, and nomadic tribes and families, were sent and encouraged to come

[1] Compare Rémusat (*Nouveaux Mélanges*, Tome II., p. 102), who has compiled a brief life of their leader Ubusha. De Quincey's essay, *The Flight of a Tartar Tribe*. Ritter, *Asien*, Bd. V. pp. 531–583: *Welthistorischer Einfluss des chinesischen Reichs auf Central- und West-Asien.*

into the vacant territory, so that erelong it began to resume its former importance. In the period which has since elapsed, the Manchus have been enabled to prevent any combination among the clans, and maintain their own authority by a mixed system of coercion and coaxing which they well know how to practise. The agricultural and mineral resources of the country have been developed, many of the nomads induced to attend to agriculture by making their chieftains emulous of each other's prosperity, and by exciting a spirit of traffic among all.

There have been some disturbances from time to time, but no master spirit has arisen who has been able to unite the tribes against the Chinese. In 1825, there was an attempt made from Kokand by Jehangír, grandson of the *kojeh* or prince of Kashgar, to regain possession of Turkestan; the khan of Kokand assisted him with a small army, and such was their dislike of the Chinese, that as soon as Jehangír appeared, the Mohammedans arose and drove the Chinese troops away or put them to death, opening the gates to the invader. He took possession of Yarkand and Kashgar, and advanced to Aksu, where the winter put a stop to the campaign. In the next year, the khan of Kokand, seeing the disposition of the people, thought he would embark himself in the same cause, and made an incursion as far as Aksu and Khoten, reducing more than half the Southern Circuit to himself, but ostensibly in aid of Jehangír. The kojeh, beginning to fear his aid, withdrew; and the khan, having suffered some reverses from the Chinese troops, made his peace on very favorable terms, and returned to his own country. Jehangír went to Khoten from Yarkand, but his conduct there displeasing the people, the Chinese troops, about 60,000 in number, had no difficulty in dispersing his force, and resuming their sway. The adherents of the kojeh fled toward Badakshan, while he himself repaired to Isaac, the newly appointed kojeh of Kashgar, by whom he was delivered up to the Chinese with his family, and all of them most barbarously destroyed.

The kojeh was rewarded with the office of prince of Kashgar, but having been accused of treasonable designs he was ordered to come to Peking for trial; the charges were all disproved, and he returned to Kashgar after several years' residence at

the capital of the Empire. The country was gradually reduced by Changling, the general at Ílí, but Kashgar suffered so much by the war and removal of the chief authority to Yarkand, that it has not since regained its importance. During this war, the dislike of the Mohammedans to the Chinese sway was exhibited in the large forces Jehangír brought into the field; and if he had been a popular spirited leader, there is reason for supposing he might have finally wrested these cities from the Chinese. The joy of Taukwang at the successful termination of the expedition and capture of the rebel, was so extravagant as to appear childish; and when Jehangír was executed at Peking, he ordered the sons of two officers who had been reported killed, "to witness his execution, in order to give expansion to the indignation which had accumulated in their breasts; and let the rebel's heart be torn out and given to them to sacrifice it at the tombs of their fathers, and thus console their faithful spirits." Honors were heaped upon Changling at his return to Peking, and rewards and titles showered upon all the troops engaged in the war.

Since this insurrection, the frontiers of Kashgar and Kokand have been passed and repassed by the Pruth Kirghís; in 1830, they excited so much trouble because their trade was restricted, that a large force was called out to restrain them, and many lives were lost before the rising was subdued. The causes of the dispute were then examined, and the trade allowed to go on as before. The oppressions of the residents sometimes goad on the Mohammedans to rise against the Chinese, but the policy of the Emperor is conciliatory, and the complaints of the people are in general listened to. The visits of the begs and princes to Peking with tribute affords them an opportunity to state their grievances, while it also prevents them from cabalting among themselves. In 1871 the Russians took possession of nearly the whole of Tien-Shan Peh Lu during an insurrection of the Dunganis against Chinese control. The Tarantchis having attacked a Russian outpost, and Yakub Beg being on suspiciously good terms with the rebels, it was determined to occupy Kuldja—which was effected after a campaign of less than a month, led by Gen. Kolpakofsky. The Chinese government was

immediately informed that the place should be restored whenever a sufficient force could be brought there to hold it against attacks, and preserve order. After the final conquest of the Dungan tribes in 1879–80, this territory was returned by the Russians upon conclusion of their last treaty with China, exactly ten years from the date of possession. The old manner of government is now resumed and the country slowly recovering from the frightful devastation of the insurrection. The salaries of the governor-general and his councillors, and the residents, are small, and they are all obliged to resort to illegal means to reimburse their outlays. The highest officer receives about $5,200 annually, and his councillors about $2,000; the residents from $2,300 down to $500 and less. These sums do not, probably, constitute one-tenth of the receipts of their situations.[1]

The third great division of the colonial part of the Chinese empire, that of TIBET, is less known than Ílí, though its area is hardly less extensive. It constitutes the most southern of the three great table lands of Central Asia, and is surrounded with high mountains which separate it from all the contiguous regions. The word Tibet or Tubet is unknown among the inhabitants as the name of their country; it is a corruption by the Mongols of *Tu po*,[2] the country of the Tu, a race which overran it in the sixth century; Turner gives another name, *Pue-koachim*, signifying the 'snowy country of the north,' doubtless a local or ancient term. The general appellation by the people is *Pot* or *Bod*, or *Bod yul*—"the land of Bod."[3] It is roughly bounded northeast by Koko-nor; east by Sz'chuen and Yunnan; south by Assam, Butan, Nípal, and Gurhwal; west by Cashmere; and north by the unknown ranges of the Kwănlun Mountains. The southern frontier curves considerably in its course,

[1] *Chinese Repository*, Vol. V., pp. 267, 316, 351, etc.; Vol. IX., p. 113. *Penny Cyclopædia*, *Art.* SONGARIA. Boulger, *Russia and England in Central Asia*, 2 Vols., London, 1879. Schuyler, *Turkistan*, 2 vols., N. Y., 1877. Petermann's *Mittheilungen*, Appendices XLII. and XLIII., 1875.

[2] This derivation is explained somewhat differently in Rémusat, *Nouveaux Mélanges*, Tome I., p. 190.

[3] To these Ritter adds the names of Wei, Dzang, Nga-ri, Kham, Bhodi, Peu-Tsang, Si-Dzang, Thupho, Tobbat, Töböt, Tübet, Tibet, and Barantola, as all applying to this country. *Asien*, Bd. III., S. 174–183.

but is not less than 1,500 miles from the western extremity of Nípal to the province of Yunnan; the northern border is about 1,300 miles; the western frontiers cannot be accurately defined, and depend more upon the possession of the passes through which trade is carried on than any political separation. Beltistan, Little Tibet, and Ladak, although included in its limits on Chinese maps, have too little subjection or connection with the court of Peking, to be reckoned among its dependencies.

Tibet, in its largest limits, is a table land, the highest plains of which have a mean elevation of 11,510 feet, or about 1,300 feet lower than the plateau of Bolivia, near Lake Titicaca. The snow-line on the north side of the Himalaya is at an altitude of 16,630 feet; on the southern slope it is at 12,982 feet. Several striking analogies may be traced between this country and Peru: the tripartite divisions caused by lofty ranges; their common staples of wool, from alpacas and vicunas in one, and sheep and goats in the other; the abundance of precious metals, and many specific customs. The entire province of Tibet is divided by mountain chains into three distinct parts; its western portion consists of the basin of the Indus, until it breaks through into Cashmere at Makpon-i-Shagaron. It begins near Mount Kailasa, and stretches northwest between the Hindu Kush and Himalaya, comprising the whole of Beltistan and Ladak; the Kara-korum, Mus-tag, or Tsung ling range defines it on the northeast. The second part consists of an extensive desert land, commencing at Mount Kailasa, and having the Tsung ling on the west, the Kwănlun on the north (which separates it from Khoten, and the high watershed of the Yangtsz', Salween, and other rivers), and Lake Tengkiri, on the east; the Himalaya constitutes its southern boundary. This high region, called Katshe or Kor-kache, has not been traversed by intelligent travellers and is one of the few yet unknown regions of the earth, and is nearly uninhabitable, owing to the extreme rigor of its climate.[1]

[1] See Rémusat, *Nouveaux Mélanges*, I., p. 190, for notices of tribes anciently inhabiting this district and Bokhara. Compare also Heeren (*Historical Researches*, Vol. I., pp. 180–186), who gives in brief the accounts of Herodotus and Ctesias.

The eastern part, consisting of the basin of the Yaru-tsangbu, contains, in its plains, most of the towns in Tibet, until it reaches the Alpine region which lies between the River Yaru and the Yangtsz', a space extending from long. 95° to 99° E. This district is described as a succession of ridges and gorges, over which the road takes the traveller on narrow and steep paths, crossing the valleys by ropes and bridges enveloped in the clouds. Mount Kailasa, a notable peak lying in the north-eastern part of Nari, is not far from 26,000 feet high. The number of summits covered with perpetual snow exceeds that of any other part of the world of the same extent.

The road from Sz'chuen to H'lassa strikes the Yalung kiang, in the district of Ta tsien lu, and then goes southwesterly to Batang on the Yangtsz' kiang; crossing the river it proceeds up the narrow valley a short distance, and then crosses the mountains northwest to the Lantsan kiang or River Meikon, by a series of pathways leading over the gorges, till it reaches Tsiamdo; from this point the road turns gradually south-west, following the valleys when practicable, till it ends at H'lassa.

The largest river in Tibet is the Erechumbu, or Yaru-tsangbu; *tsangbu* means river, and is often alone used for this whole name. It rises in the Tamchuk range, at the Mariam-la pass in Nari, 60 miles east of Lake Manasarowa, the source of the Sutlej; it flows a little south of east for about seven hundred miles, through the whole of Southern Tibet, between the first and second ranges of the Himalayas, as far as long. 90° E. Its tributaries on the north are numerous, and among them the Nauk-tsangbu and Dzangtsu are the largest. The volume of water which flows through the mountains into Assam by this river, is equal to that by the Indus into Scinde. The disputed question, whether the Yaru-tsangbu joins the Brahmaputra or Irrawadi, has been settled by presumptive evidence in favor of the former, but a distance of about 400 miles is still unexplored;[1] the fall in this part is about 11,000 feet, to where the river Dihong has been traced in Assam. This makes the Brah-

[1] Introduction by Col. Yule, in Gill's *River of Golden Sand.*

maputra the largest and longest river in Southern Asia; its passage into Assam is near 95° E. longitude.

The eastern part of Tibet, beyond this meridian, is traversed by numerous ranges of lofty mountains, having no separate names, the direction of which is from west to east, and from northwest to southeast. From these ranges, lateral branches run out in different directions, containing deep valleys between them. In proportion as the principal chains advance towards the southeast they converge towards one another, and thus the valleys between them gradually become narrower, until at last, on the frontiers of Yunnan and Burmah, they are mere mountain passes, whose entire breadth does not much exceed a hundred miles, having four streams flowing through them. In fact, Tibet incloses the fountain heads of all the large rivers of Southern and Eastern Asia. The names and courses of those in Eastern Tibet are known only imperfectly from Chinese maps, but others have described them after their entrance into the lowlands.

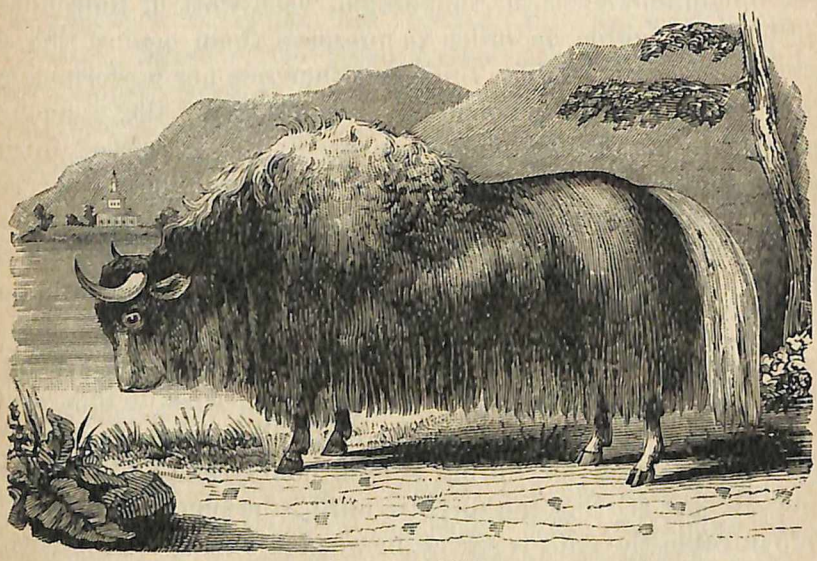
Tibet, especially the central part, is a country of lakes, in this respect resembling Cobdo. The largest, Tengkiri-nor, situated in the midst of stupendous mountains, about one hundred and ten miles northwest of H'lassa, is over a hundred miles long and about thirty wide. The region north of it contains many isolated lakes, most of them salt. Two of the largest, the Bouka and Kara, are represented as connected with the River Nu. Lake Khamba-la, Yamoruk or Yarbrokyu, sometimes called Palti, from a town on its northern shore, is a large lake south of H'lassa, remarkable for its ring shape, the centre being filled by a large island, around which its waters flow in a channel thirty miles or more in width. On the island is a nunnery, called the Palace of the Holy Sow, said to be the finest in the country. In Balti or Little Tibet are many sheets of water, the largest of which, the Yik and Paha, are connected by a river flowing through a marshy country. A long succession of lakes fill one of the basins in Katsche, suggesting the former existence of another Aral Sea. The sacred lakes of Manasarowa and Ravan-hrad (Mapam-dalai and Langga-nor, of the Chinese) form the headwaters of the Sutlej.

The climate of Tibet is characterized by its purity and excessive dryness. The valleys are hot, notwithstanding their proximity to snow-capped mountains; from May to October the sky is clear in the table-lands, and in the valleys the moisture and temperature are favorable to vegetation, the harvest being gathered before the gales and snows set in, after October. The effects of the air resemble or are worse than those of the kamsin in Egypt. The trees wither, and their leaves may be ground to powder between the fingers; planks and beams break, and the inhabitants cover the timbers and wood-work of their houses with coarse cotton, in order to preserve them against the destructive saccidity. The timber neither rots nor is worm-eaten. Mutton, exposed to the open air, becomes so dry that it may be powdered like bread; when once dried it is preserved during years. This flesh-bread is a common food in Tibet. The carcass of the animal, divested of its skin and viscera, is placed where the frosty air will have free access to it, until all the juices of the body dry up, and the whole becomes one stiffened mass. No salt is used, nor does it ever become tainted, and is eaten without any further dressing or cooking; the natives eat it at all periods after it is frozen, and prefer the fresh to that which has been kept some months. The food called *jamba* is prepared by cooking brick tea during several hours, then adding butter and salt, and stirring the mixture until it becomes a thick broth. When eaten the stuff is served in wooden bowls, and a plentiful supply of roasted barley-meal poured in, the whole being kneaded by the hands and devoured in the shape of dough pellets.

The productions of Tibet consist of domestic animals, cattle, horses, pigs; some wild animals, such as the white-breasted argali, orongo-antelope, ata-dzeren, wolf, and steppe-fox; and few plants or forests, presenting a strong contrast with Nipal and Butan, where vegetable life flourishes more luxuriantly. Sheep and goats are reared in immense flocks, for beasts of burden over the passes, and for their flesh, hair, and coats. Chiefest among the animals of this mountain land is the yak.[1] The

[1] Called by Wood *Kash-gow* (*Journey to the Oxus*, p. 319). *Chauri gau*, *sarlyk*, and *sarlac*, are other names.

domesticated variety, or long-haired yak, is the inseparable companion and most trusty servant not only of the Tibetans, but of tribes in Cashmere, Ladak, Tangout, and Mongolia, even as far north as Urga. It is a cross-breed, or mule from the yak bull and native cow, which alone is hardy enough for these elevated regions.[1] These creatures are of the same size as our cattle, strong, sure-footed and possessed of extraordinary endurance; they retain, however, something of their wild nature, even after long domestication, and must be carefully treated,



Domesticated Yak.

especially when being loaded and unloaded. They thrive best in hilly countries, well watered and covered with grass—the two last being indispensable. The hair is black or black and white, seldom entirely white. One sort is without horns, and when crossed with the cow bears sterile males, or females which are fertile for one generation. As to the wild yak of Tibet, a traveller says: "This handsome animal is of extraordinary size and beauty, measuring, when grown, eleven feet in length, exclusive of its bushy tail, which is three feet long; its height at the hump is six feet; girth around the body eleven feet, and its

[1] This cross is mentioned by Marco Polo, *Yule's ed.*, Vol. I., p. 241.

weight ten or eleven hundred weight. The head is adorned with ponderous horns, two feet nine inches long, and one foot four inches in circumference at the root. The body is covered with thick, black hair, which in the old males assumes a chestnut color on the back and upper parts of the sides, and a deep fringe of black hair hangs down from the flanks. The muzzle is partly gray, and the younger males have marks of the same color on the upper part of the body, whilst a narrow, silvery-gray stripe runs down the centre of the back. The hair of young yaks is much softer than that of older ones; they are also distinguishable by their smaller size, and by handsomer horns, with the points turned up. The females are much smaller than the males, and not nearly so striking in appearance; their horns are shorter and lighter, the hump smaller, and the tail and flanks not nearly as hairy."[1] This animal is useful for its milk, flesh, and wool, as well as for agricultural purposes and travel.

There is comparatively little agriculture. The variety of wild animals, birds, and fishes, is very great; among them the musk deer, feline animals, eagles, and wild sheep, are objects of the chase. The brute creation are generally clothed with an abundance of fine hair or wool; even the horses have a shaggier coat than is granted to bears in more genial climes. The Tibetan mastiff is one of the largest and fiercest of its race, almost untamable, and unknown out of its native country. The musk deer is clothed with a thick covering of hair two or three inches long, standing erect over the whole body; the animal resembles a hog in size and form, having, however, slender legs. The Tibetan goat affords the shawl wool, so highly prized for the manufacture of garments.[2]

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[1] Prejevalsky, *Travels in Mongolia*, etc., Vol. I., p. 187.

[2] B. H. Hodgson, Notice of the Mammals of Tibet, *Journal As. Soc. of Bengal*, Vol. XI., pp. 275 ff.; also *ib.* Vols. XVI., p. 763, XIX., p. 466, and XXVI., No. 3, 1857. Abbé Armand David, Notes sur quelques oiseaux de Thibet, *Nouv. Arch. du Museum, Bull.*, V. 1869, p. 33; *ib. Bull*, VI., pp. 19 and 33. *Bull*, VIII., 1872, pp. 3–128, IX., pp. 15–48, X., pp. 3–82. *Recherches pour servir à l'histoire naturelle des mammifères comprennant des considérations sur la classification de ces animaux, etc., des études sur la faune de la Chine et du Tibet oriental*, par MM. Milne-Edwards, etc., 2 vols. Paris, 1868–74.

Fruits are common; small peaches, grapes, apples, and nuts, constitute the limited variety. Barley is raised more than any other grain the principal part of agricultural labors being performed by the women. Pulse and wheat are cultivated, but no rice west of H'lassa. Ṛhubarb, asafœtida, ginger, madder, and safflower are collected or prepared, but most of the medicines come from China and Butan. Turnips, rape, garlic, onions, and melons are raised in small quantities. The mineral productions are exceedingly rich. Gold occurs in mines and placer diggings, and forms a constant article of export; lead, silver, copper, and cinnabar are also dug out of the ground, but iron has not been found to much extent. The great difficulty in the way of the inhabitants availing themselves of their metallic wealth, apart from their ignorance of the best modes of mining, is the want of fuel with which to smelt the ore. Tincal, or crude borax, is gathered on the borders of a small lake in the neighborhood of Tengkiri-nor, where also any quantity of rock salt can be obtained. Precious stones are met with, most of which find their way to China.

The present divisions of Tibet, by the Chinese, are *Tsien Tsang*, or Anterior Tibet, and *Hau Tsang*, or Ulterior Tibet. Anterior Tibet is also called U (Wei) and U-tsang, and includes the central part of Bod-yur where H'lassa is; east of this lies Kham (Kăng) or Khamyul, and northeast toward Koko-nor is Khamsok, *i.e.*, Kham on the River Sok. Near the bend of the Brahmaputra is the district of Kongbo, where rice can be raised; going westward are Takpo, doUs and gTsang on the borders of Nari, ending in a line nearly continuous with the eastern border of Nípal. The Chinese books mention eight cantons in Anterior Tibet, five of them lying east of H'lassa, added to which are thirty-nine feudal townships in Khamsok called *tu-sz'*, all of them chiefly nominal or at present antiquated. Csoma de Körös speaks of several small principalities in Kham, and describes the inhabitants as differing from the rest of the Tibetans in appearance and language; they assimilate probably with the tribes on the Burman and Chinese frontiers. Nari (A-li in Chinese) is divided into Mangyul, Khorsum, and Maryul. The first of these districts lies nearly conter-

minous with Nípal, and its area is probably about the same, but its cold, dry, and elevated regions, support only a few shepherds; Khorsum and Maryul lie north and northwest in a still more inhospitable clime; the latter adjoins Ladak and Balti and is the reservoir of hundreds of lakes situated from 12,000 to 15,000 feet above the sea. A ridge separates the valley of the Indus from the Sutlej, crossed at the Bogola Pass, 19,220 feet high, and then over the Gugtila Pass, 19,500 feet into Gartok. The people throughout this elevated region are forced to live in tents, wood being almost unknown for building.

H'lassa, the *gyalsa* or capital of Tibet, is situated on the Kichu River, about twelve leagues from its junction with the Yaru, in lat. 29° 39′ N., and long. 91° 05′ E.; the name signifies *God's ground*, and it is the largest town in this part of Asia. It is famous for the convents near it, composing the ecclesiastical establishments of the Dalai (or 'Ocean')-lama, whose residence is in the monastery of Pobrang-marbu (*i.e.*, 'Red town') on Mount Putala. The principal building of this establishment is three hundred and sixty-seven feet high, and it contains, as the Chinese expression is, "a myriad of rooms." This city is the head-quarters of Buddhism, and the hierarchy of lamas, who, by means of the Dalai-lama, and his subordinate the Kutuktu, exercise priestly control over wellnigh all Mongolia as well as Tibet. The city lies in a fertile plain nearly 12,000 feet high, about twelve miles wide, and one hundred and twenty-five from north to south, producing harvests of barley and millet, with abundant pasturage and some fruit trees. Mountains and hills encircle it; of these the westernmost is Putala, the river running so near its base that a wall has been built to preserve the buildings from the rise of the waters. The Chinese garrison is quartered about two miles north of this mount, and two large temples, called *H'lassa tso-kang* and *Ramotsie tso-kang*, resplendent with gold and precious stones, stand very near it. The four monasteries, Séra, Brebung, Samyé, and Galdan, constitute as many separate establishments.[1] During the sway of the Songares in

[1] Klaproth, *Description du Tubet*, p. 246.

Íli, their prince Arabdan made a descent upon H'lassa, and the Lama was killed. Kanghí placed a new one upon the see, in 1720, appointing six leading officers of the old Lama to assist him in the government. Three of these joined in an insurrection, and in the conflicts which succeeded, H'lassa suffered considerably. The population of the town is conjectured to be 24,000; that of the province is reckoned by Csoma at about 650,000.

The town was visited in the year 1811 by Mr. Manning, whose description of its dirty and miserable streets swarming with dogs and beggars, and the meanness of its buildings, corresponds with what Huc and Gabet found in 1846. Mr. Manning remained there nearly five months, and had several interviews with the Dalai-lama; he was much impeded in his observations by a Cantonese *munshí* or teacher, and exposed to danger of illness from insufficient shelter and clothing. His reception by the chief of the Buddhist faith on the 17th of December, was equally remarkable with that by the Teshu-lama of Bogle in 1774, and of Turner in 1783. Mr. Manning was alone and unprotected and had very few presents, but his offering was accepted; it consisted of a piece of fine broadcloth, two brass candlesticks, twenty new dollars, and two vials of lavender water. He rode to the foot of the mountain Putala, and dismounted on the first platform to ascend by a long stairway of four hundred steps, part of them cut in the rock, and the rest ladder steps from story to story in the palace, till he reached a large platform roof off which was the reception hall. Upon entering this he found that the *Tí-mu-fu* or *Gesub Rimboché*, the highest civil functionary in Tibet, was also present, which caused him some confusion: "I did not know how much ceremony to go through with one before I began with the other. I made the due obeisance, touching the ground three times with my head to the Grand Lama, and once to the *Tí-mu-fu*. I presented my gifts, delivering the coins with a handsome silk scarf with my own hands to them both. While I was *kotowing*, the awkward servants let one of the bottles of lavender water fall and break. Having delivered the scarf to the Grand Lama, I took off my hat, and humbly gave him my

clean shaven head to lay his hands upon. . . . The Lama's beautiful and interesting face and manner engrossed all my attention. He was about seven years old; had the simple manners of a well educated princely child. His face was, I thought, poetically and affectingly beautiful. He was of a cheerful disposition, his beautiful mouth perpetually unbending into a graceful smile, which illuminated his whole countenance. No doubt my grim beard and spectacles excited his risibility. We had not been seated long before he put questions which we rose to receive and answer. He inquired whether I had met with difficulties on the road; to which I replied that I had had troubles, but now that I had the happiness of being in his presence they were amply compensated. I could see that this answer pleased both him and his people, for they found that I was not a mere rustic, but had some tincture of civility in me." [1]

The capital of Tsang or Ulterior Tibet is Shigatsé, situated 126 miles west of H'lassa, and under its control. The monastery where the Teshu-lama and his court resides is a few miles distant, and constitutes a town of about 4,000 priests, named Teshu-Lumbo. He is styled Panchen Rimboché, and is the incarnation of Amitabha Buddha. His palace is built of dark brick and has a roof of gilded copper; the houses rise one above another and the gilt ornaments on the temples combine to give a princely appearance to the town. The fortress of Shigatsé stands so as to command both places. The plain between this town and H'lassa is a fertile tract, and judging from the number of towns in the valleys of the basin of the Yaru, its productive powers are comparatively great. Ulterior Tibet is divided into six other cantons, besides the territory under the jurisdiction of the chief town, most of their fortified capitals lying westward of Shigatsé.

The degree of skill the Tibetans have attained in manufactures, mechanical arts, and general civilization, is less than that of the Chinese, but superior to the Mongols. They appear to be a mild and humane people, possessing a religious sense

[1] *Mission of George Bogle to Tibet and Journey of Thomas Manning to Lhasa.* Edited by C. R. Markham. London, 1876, p. 265.

and enjoying an easy life compared with their southern neighbors. They are well-bred and affable, fond of gossiping and festivities, which soften the heart and cheer the temper. Women are treated with care and are not often compelled to work out of doors. No two people or countries widely separated present a stronger contrast than do the stout, tall, muscular, and florid Butías, upon their fertile fields and wooded hills, with the squat, puny, sluggish, and swarthy Tibetans in their rugged, barren mountains. They distinguish five sorts of people among themselves, the last of whom are the Butías; the others are the inhabitants of Kham, or Anterior Tibet, those in Tsang, the nomads of Kor-kache, and the people of Little Tibet. All of them speak Tibetan with some variations. The Tibetans are clad with woollens and furs to such a degree that they appear to emulate the animals they derive them from in their weight and warmth; and with this clothing is found no small quantity of dirt. The dress of the sexes varies slightly in its shape; yellow and red are the predominant colors. Large bulgar boots of hide are worn by all persons; the remainder of the dress consists of woollen robes and furs like those of the Chinese. The women wear many jewels, and adorn their hair as do the Mongols with pearls, coral, and turquoises. Girls braid their hair in three tresses, married women in two. The head is protected by high velvet caps; the men wear broad-brimmed coverings of various materials.

The two religious sects are distinguished by yellow and red caps; the latter are comparatively few, allow marriage to the lamas, but do not differ materially in their ritual or tenets. There is no country where so large a proportion of the people are devoted to religious service as in Tibet, nor one where the secular part of the inhabitants pays such implicit deference to the clergy. The food of the Tibetans is taken at all hours, mutton, barley, and tea constituting the staple articles. On all visits tea is presented, and the cup replenished as often as it is drained. Spirits and beer, both made from barley, are common beverages. On every visit of ceremony, and whenever a letter is sent from one person to another, it is necessary to connect a silk scarf with it, the size and texture being proportioned

to the rank and condition of the parties. The sentence *Om mani padmí hum* is woven upon each end.

The following note by Col. Yule, condensed from Koeppen's *Lamaische Hierarchie und Kirche*, contains the most satisfactory explanation of this puzzling mystic formula: "Om mani padmí hûm!—the primeval six syllables, as the lamas say, among all prayers on earth form that which is most abundantly recited, written, printed, and even spun by machines for the good of the faithful. These syllables form the only prayer known to the ordinary Tibetans and Mongols; they are the first words that the child learns to stammer, and the last gasping utterance of the dying. The wanderer murmurs them on his way, the herdsman beside his cattle, the matron at her household tasks, the monk in all the stages of contemplation (*i.e.*, of *far niente*); they form at once a cry of battle and a shout of victory! They are to be read wherever the Lama church hath spread, upon banners, upon rocks, upon trees, upon walls, upon monuments of stone, upon household utensils, upon strips of paper, upon human skulls and skeletons! They form, according to the idea of the believers, the utmost conception of all religion, of all wisdom, of all revelation, the path of rescue and the gate of salvation! . . . . . Properly and literally these four words, a single utterance of which is sufficient of itself to purchase an inestimable salvation, signify nothing more than: "O the Jewel in the Lotus! Amen!" In this interpretation, most probably, the *Jewel* stands for the Bodhisatva Avalokiteçvara, so often born from the bud of a lotus flower. According to this the whole formula is simply a salutation to the mighty saint who has taken under his especial charge the conversion of the North, and with him who first employed it the mystic formula meant no more than *Ave Avalokiteçvara!* But this simple explanation of course does not satisfy the Lama schoolmen, who revel in glorifications and multitudinous glossifications of this formula. The six syllables are the heart of hearts, the root of all knowledge, the ladder to re-birth in higher forms of being, the conquerors of the five evils, the flame that burns up sin, the hammer that breaks up torment, and so on. *Om* saves the gods, *ma* the Asuras, *ni* the men,

pad the animals, *mí* the spectre world of *pretâs*, *hûm* the inhabitants of hell! *Om* is 'the blessing of self-renunciation, *ma* of mercy, *ni* of chastity, etc.' 'Truly monstrous,' says Koeppen, 'is the number of *padmis* which in the great festivals hum and buzz through the air like flies.' In some places each worshipper reports to the highest Lama how many *om manis* he has uttered, and the total number emitted by the congregation is counted by the billion."

Grueber and Dorville describe *Manipe* as an idol, before which *stulta gens insolitis gesticulationibus sacra sua facit, identiden verba haec repetens*:—'O Manipe, mi hum, O Manipe, mi hum; *id est* Manipe, salva nos!'" Rémusat (*Mélanges Posthumes*, Paris, 1843, p. 99) translates this phrase by: "Adoration, O thou precious stone who art in the lotus!" and observes that it illustrates the fundamental dogma of Buddhism, viz.: the production of the material universe by an absolute being; all things which exist are shut up in the breast of the divine substance; the 'precious stone' signifying that *the world is in God.* Mr. Jameson says that the sentence *Om mani padmí hung* is formed of the initial letters of various deities, all of whom are supposed to be implored in the prayer.[1]

In reverential salutations, the cap is removed by the inferior, and the arms hang by the side. The bodies of the dead are placed in an open inclosure, in the same manner as practised by the Parsees, where birds and beasts of prey devour them, or they are dismembered in an exposed place. Lamas are burned, and their ashes collected into urns. As soon as the breath has departed, the body is seated in the same attitude as Buddha is represented, with the legs bent before, and the soles of the feet turned upwards. The right hand rests upon the thigh, the left turns up near the body, the thumb touching the shoulder. In this attitude of contemplation, the corpse is burned.

In Tibet, as in Butan, the custom of polyandry prevails. The choice of a wife lies with the eldest son, who having made known his intentions to his parents sends a matchmaker to pro-

[1] Compare, for further discussion of this subject, Timkowski's *Mission to Peking*, London, 1827, Vol. II., p. 349. Wilson's *Abode of Snow*, p. 329.

pose the matter to the parents of the girl. The consent of the parents being obtained, the matchmaker places an ornament of a jewel set in gold, called *sedzia* upon the head of the damsel, and gives her presents of jewels, dresses, cattle, etc., according to the means of the young man. The guests invited on the day of the marriage bring presents of such things as they choose, which augments the dowry. A tent is set up before the bride's house, in which are placed three or four square cushions, and the ground around sprinkled with wheat; the bride is seated on the highest cushion, her parents and friends standing near her according to their rank, and the assembled party there partake of a feast. The bride is then conducted to the house of her lover by the friends present, her person being sprinkled with wheat or barley as she goes along, and there placed by his side, and both of them served with tea and spirits. Soon after, the groom seats himself apart, and every one present gives a scarf, those of superior rank binding them around their necks, equals and inferiors laying them by their sides. The next day, a procession is formed of the relatives of the newly married pair, which visits all the friends, and the marriage is completed. The girl thus becomes the wife of all the brothers, and manages the domestic concerns of their household. The number of her husbands is sometimes indicated by as many points in her cap. This custom is strengthened by the desire, on the part of the family, to keep the property intact among its members; but it does not prevent one of the husbands leaving the roof and marrying another woman, nor is the usage universal. Rémusat speaks of a novel in Tibetan, in which the author admirably portrays the love of his heroine, Triharticha, for her four lovers, and brings their marriage in at the end in the happiest manner.

The dwellings of the poor are built of unhewn stones, rudely piled upon each other without cement, two stories high, and resembling brick-kilns in shape and size; the windows are small, in order not to weaken the structure; the roof is flat, defended by a brushwood parapet, and protected from the molestation of evil spirits by flags, strips of paper tied to strings, or branches of trees. Timber is costly and little used; the floors

are of marble or tiles, and the furniture consists of little else than mats and cushions. The temples and convents are more imposing and commodious structures; some of those at H'lassa are among the noblest specimens of architecture in Central Asia.

The mausoleum of the Teshu-lama at Teshu Lumbu resembles a plain square watch-tower surmounted by a double Chinese canopy roof, the eaves of which are hung with bells, on which the breeze plays a ceaseless dirge. The body of the lama reposes in a coffin of gold, and his effigy, also of gold, is placed within the concavity of a large shell upon the top of the pyramidal structure which contains it. The sides of the pyramid are silver plates, and on the steps are deposited the jewels and other costly articles which once appertained to him. An altar in front receives the oblations and incense daily presented before the tomb, and near by is a second statue of the deceased as large as life in the attitude of reading. Scrolls and pennons of silk hang from the ceiling, and the walls are adorned with paintings of priests engaged in prayer. The whole structure is substantially built, and its rich ornaments are placed there not less for security than to do honor to the revered person deposited beneath. The windows are closed with mohair curtains, and a skylight in the upper story serves for lighting the room, and for passing out upon the roof. The roof or parapet is ornamented with cylinders of copper or other materials, which imparts a brilliant appearance to the edifices.

The manufactures of Tibet consist of woollens, cloth, blankets, yarn, goat-hair shawls, musk, paper, metals, and jewelry. Their lapidaries cut every kind of ornament in superior style, and gold and silverware forms a considerable article of trade to China. These and other crafts must necessarily languish, however, from the immense proportion of men who are withdrawn from labor into monasteries, compelling the residue to devote most of their strength to tillage. The most important exports to China consist of gold dust, precious stones, bezoars, asafœtida, musk, woollens, and skins; for which the people receive silks, teas, chinaware, tobacco, musical instruments, and metals. The trade is carried on through Sining fu in Kansuh, and

Batang in Sz'chuen. Tincal, rock-salt, and shawl wool, are additional articles sent to Ladak, Butan, and India.

Music is studied by the priesthood for their ceremonies, and with much better effect than among the Chinese priests. Their amusements consist in archery, dancing, and observance of many festivals connected with the worship of the dead or of the living. Dram-drinking is common, but the people cannot be called a drunken race, nor does the habit of opium eating or smoking, so fatally general in Assam, prevail, inasmuch as the poppy cannot well be cultivated among the mountains.

Education is confined to the priesthood, but the women, who conduct much of the traffic, also learn arithmetic and writing. The language is alphabetical, and reads from left to right; there are two forms of the character, the *uchen* used for books, and the *umin* employed in writing, which do not differ more than the Roman and the running-hand in English. The form of the characters shows their Sanscrit origin, but there are many consonants in the language not found in that tongue, and silent letters are not unfrequent in the written words. There are thirty consonants in the alphabet, distributed into eight classes, with four additional vowel signs; each of them ends in a short *a*, as *ka*, *nga*, *cha*, which can be lengthened by a diacritical mark placed underneath. The syllables are separated from each other by a point; the accented consonant is that which follows the vowel, and the others, whether before or after it, are pronounced as rapidly as possible, and not unfrequently omitted altogether in speaking. The variations in this respect constitute the chief features of the patois found in different parts where Tibetan is spoken. A dictionary and grammar[1] of this language were printed in 1834 in Calcutta by Csoma de Körös, a Hungarian who resided among the priests near Ladak. The literature is almost wholly theological, as far as it has been examined, and such works as are not of this character, have probably been introduced from China. Their divisions of time, numeration, chronology, and weights, have also been adopted

[1] *Essay towards a Dictionary, Tibetan and English. A Grammar of the Tibetan Language in English.* Calcutta, 1834.

from that country with a few alterations. An Englishman, Mr. Brian Hodgson, who lived in Nípal from 1820 to 1843, has added more than any one else to our knowledge of the literature of this country. This gentleman procured complete copies of the original documents of the Buddhist canon preserved in Sanscrit in Nípalese monasteries, as well as (by a present from the Dalai-lama) the whole of the existing literary remains of the once flourishing Christian mission at H'lassa. His more important essays on these lands have now been brought together in a single volume.[1]

The history of Tibet has been made partially known to Europe through the Mongol author, Sanang Setsen,[2] but if free access could be had to their annals, it is probable that a methodical history could be extracted, reaching back at least three centuries before Christ. Tibet was ruled by its own princes till the rise of Genghis; the first monarch, who united the various tribes under his sway B. C. 313, was Seger-Sandilutu-Kagan-Tül-Esen,[3] and from the fact that Buddhism was introduced during his reign, it might be inferred that he came from the south. H'lassa was founded by Srongzan-Gambo, or Srongbdzan sgambouo,[4] about A.D. 630, after which time Tibetan history becomes more authentic, inasmuch as this king introduced the alphabet. The Tang dynasty carried their arms into Tibet from Khoten, but the people threw off their yoke during the decline of that family. Mohammedanism also disturbed the supremacy of the Buddhist faith, and severe persecutions followed about the beginning of the tenth century by an Islam prince Darma, but it was repelled at his death, and has never since made the least impression upon the people. Genghis reduced Tangout, one of the principalities, northeast of Koko-nor, and soon after brought the whole country under his sway; this

[1] *Essays on the Language, Literature, and Religion of Nepal and Tibet*, etc. London, 1874.

[2] Rémusat, *Observations sur l'Histoire des Mongols orienteaux de Sanang Setsen*, Paris, l'an 8. *Ssanang Ssetsen, Geschichte der Mongolen*, Uebers., von. J. J. Schmidt, Petersb., 1829.

[3] Rémusat relates the story of his origin, *Mélanges Posthumes*, p. 400.

[4] Klaproth, *Description du Tubet.*

Kublai still further settled as a dependency of his empire. The people recovered their independence on the expulsion of the Mongols, and under the Ming dynasty formed several small kingdoms, among which were Ladak and Rodok, both of them still existing.

From a short résumé of letters written from Tibet in 1626, by Romish missionaries living there, it appears that the kingdom of Sopo was the most powerful in the north, and Cogué, U-tsang, and Maryul were three southern principalities. The king of Cogué allowed these missionaries to reside in his territories, and took pleasure in hearing them converse and dispute with the shenas. The Dalai-lama at this time was the king's brother, and possessed subordinate influence in the state, but the priests were numerous and influential. The conquest of Mongolia and Tangout opened the way for Kanghí to enter Tibet, but the intercourse between the Emperor and Dalai-lama was chiefly connected with religion and carrying tribute. An index of the freedom of communication between Tibet and the west is found in the passports issued to the traders visiting H'lassa in 1688. The lamas held the supreme power until towards the end of his reign, when Chinese influence became paramount. The country had already been conquered by the Songar chieftain, so that on his defeat it could offer little resistance. Kanghí appointed six of the highest princes or *gialbo* over the provinces; but soon after his death, in 1727, three of them conspired against Yungching, and were not subdued without considerable resistance. The Emperor then appointed the loyal prince or *gialbo* as governor-general, and he remained in his vice-regal office till his death, about 1750. Kienlung, finding that his son was endeavoring to make himself fully independent, executed him as a rebel, suppressed the office, and appointed two Chinese generals to be associated with the Dalai-lama and his coadjutor, in the administration of the country. The troops were increased and forts erected in all parts of the country to awe the people and facilitate trade.

The present government of Tibet is superintended by two *ta chin*, 'or great ministers,' residing at H'lassa, who act conjointly, while they serve as checks upon each other; they do

not hold their office for a long time. They have absolute control over all the troops in the country, and the military are generally confined to the garrisons, and do not cultivate the soil. The collection of revenue, transmission of tribute to Peking, and direction of the persons who carry it, and those who conduct the trade at Batang and Sining fu, are all under their control. The Dalai-lama, and the Teshu-lama are the high religious officers of the country, each of them independent in his own province, but the former holding the highest place in the hierarchy. The Chinese residents confer with each concerning the direction of his own province. All known appointments to office or nobility must be sanctioned by the residents before they are valid, but merely religious offices are not under this surveillance. In the villages, the authority is administered by secular deputy lamas called *deba*, and by commandants called *karpon*, who are sent from the capital. Each *deba* is assisted by a native *vazir* of the place, who, with the chief lama, form the local government, amenable to the supreme magistracy. The western province of Nari is peopled by nomads, who wander over the regions north of Ravan-hrad, and are under the authority of *karpons* sent from H'lassa, without the assistance of lamas. The two high-priests themselves are likewise assisted by councillors. One of these, called Soopoon Choomboo, who held the office of *sadeek* or adviser when Turner visited Teshu-Lumbo, was a Manchu by birth, but had long lived in Tibet.

The nomadic clans of Dam Mongols and other tribes occupying the thirty-nine feudal townships or *tu-sz'* in Anterior Tibet, are governed by the residents without the intervention of the lamas. The disturbances in Ulterior Tibet in 1792, resulting from the irruption of the Nipalese and sack of Teshu-Lumbo, were speedily quelled by the energy of Kienlung's government, and the invaders forced to sue for mercy. The southern frontier was, in consequence of this inroad, strongly fortified by a chain of posts, and the communication with the states between Tibet and India strictly forbidden and watched. It gave the Chinese an opportunity to strengthen their rule and extend their influence north to Khoten and into Ladak. The natural

mildness of character of the Tibetans, and similarity of religion renders them much easier under the Chinese yoke, than the Mohammedans.[1]

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[1] Authorities on Tibet besides those already referred to: *Journal Asiatique*, Tomes IV., p. 281; VIII., p. 117; IX., p. 31; XIV., pp. 177, ff. 277, 406, etc. Du Halde, *Description of China*, Vol. II., pp. 384–388. Capt. Samuel Turner, *Account of an Embassy to the Court of Teshoo Lama in Tibet*, London, 1800. *Histoire de ce qui s'est passé au Royaume du Tibet, en l'année* 1626; trad. de l'Italien. Paris, 1829. P. Kircher, *China Illustrata*. MM. Pércu et [illegible]cq, *Recueil de Voyages du Thibet*, Paris, 1796. *Journal of the Asiati*[illegible] *of Bengal*, passim. *Chinese Repository*, Vols. VI., pp. 28, 494, IX., p. [illegible]lief mu[illegible] III., p. 505. Ritter, *Asien*, Bd. II., 4er Abschnitt, and Bd. III., S. [illegible] Richthofen, *China*, Bd. I., S. 228, 247, 466, 670, 683, etc. C. H. Des[illegible]*La mission du Tibet de* 1855 *à* 1870, *comprennant l'exposé des affaires relig*[illegible]*ses*, etc. *D'après les lettres de M. l'abbé Desgodins, missionaire apostolique*, Verdun, 1872. Lieut. Kreitner, *Im fernen Osten*, pp. 829 ff., and in *The Popular Science Monthly*, for August, 1882. Emil Schlagintweit, *Tibetan Buddhism, Illustrated by Literary Documents and Objects of Religious Worship*, London, 1863. Abbé Huc, *Travels through Tartary, Tibet and China*, 2 vols.

CHAPTER V.

POPULATION AND STATISTICS.

Much of the interest appertaining to the country and people here treated of, in the minds of philanthropic and intelligent men, has arisen from the impression they have received of its vast population. A country twice the size of the Chinese empire would present few attractions to the Christian, the merchant, or the ethnologist, if it were no better inhabited than Sahara, or Arizona: a people might possess most admirable institutions, and a matchless form of government, yet these excellencies would lose their interest, did we hear that it is the republic of San Marino or the kingdom of Muscat, where they are found. The population of few countries in the world has been accurately ascertained, and probably that of China is less satisfactory than any European or American state of the present day. It is far easier to take a census among a people who understand its object, and will honestly assist in its execution, than in a despotic, half-civilized country, where the mass of the inhabitants are afraid of contact or intercourse with their rulers; in most such states, as Abyssinia, Turkey, Persia, etc., there is either no regular enumeration at all, or merely a general estimate for the purposes of revenue or conscription.

The subject of the population of China has engaged the attention of the monarchs of the present dynasty, and their censuses have been the best sources of information in making up an intelligent opinion upon the matter. Whatever may be our views of the actual population, it is plain that these censuses, with all their discrepancies and inaccuracies, are the only reliable sources of information. The conflicting opinions and

conclusions of foreign writers neither give any additional weight to them, nor detract at all from their credibility. As the question stands at present, they can be doubted, but cannot be denied; it is impossible to prove them, while there are many grounds for believing them; the enormous total which they exhibit can be declared to be improbable, but not shown to be impossible.

No one who has been in China can hesitate to acknowledge that there are some strong grounds for giving credit to them, but the total goes so far beyond his calculations, that entire belief must, indeed, be deferred till some new data have been furnished. There are, perhaps, more peculiar encouragements to the increase of population there than in any other country, mostly arising from a salubrious climate, semi-annual crops, unceasing industry, early marriages, and an equable taxation, involving reasonable security of life and property. Turning to other countries of Asia, we soon observe that in Japan and Persia these causes have less influence; in Siam and Burmah they are weak; in Tibet they are almost powerless.

At this point every one must rest, as the result of an examination into the population of the Chinese Empire; though, from the survey of its principal divisions, made in the preceding chapters, its capability of maintaining a dense population needs no additional evidence. The mind, however, is bewildered in some degree by the contemplation of millions upon millions of human beings thus collected under one government; and it almost wishes there might be grounds for disbelieving the enormous total, from the dreadful results that might follow the tyrannical caprice or unrestrained fury of their rulers, or the still more shocking scenes of rapine and the hideous extremities of want which a bad harvest would necessarily cause.

Chinese literature contains many documents describing classes of society comprised in censuses in the various dynasties. The results of those enumerations have been digested by Ma Twan-lin in a judicious and intelligent manner in the chapters treating on population, from which M. Ed. Biot has elaborated

many important data.[1] The early records show that the census was designed to contain only the number of taxable people, excluding all persons bound to give personal service, who were under the control of others. Moreover, all officials and slaves, all persons over 60 or 66 years of age, the weak or sick, those needing help, and sometimes such as were newly placed on state lands, were likewise omitted. Deducting these classes, Ma Twan-lin gives one census taken in the ninth century, B.C., as 13,704,923 persons, between the ages of 15 and 65, living within the frontiers north of the Yangtsz' River. This figure would be worth, according to the tables of modern statistics, about 65 per cent. of the entire population, or as representing 21,753,528 inhabitants.

The mighty conqueror, Tsin Chí Hwangtí, changed the personal corvée to scutage, and introduced a kind of poll-tax, by accepting the money from many who could not be forced to do the work required. This practice was followed in the Han dynasty, and in B.C. 194, the poll-tax was legalized, to include all men between 15 and 66, while a lighter impost was levied on those between 7 and 14. During the four centuries of this family's régime, the object and modes of a census were well understood. Ma Twan-lin gives the results of ten taken between A.D. 2 and 155. His details show that it was done simply for revenue, and was omitted in bad years, when drought or freshets destroyed the harvests; they show, too, an increase in the number of slaves, that women were now enumerated, and that girls between 15 and 30 paid a poll-tax. In B.C. 30, the limits of age were placed between 7 and 56. The average of these ten censuses is 63,500,600, the first one being as high as 83,640,000, while the next and lowest, taken fifty-five years afterwards, is only 29,180,000, and the third is 47,396,000. These great variations are explained by the disturbances arising in consequence of the usurpation of Wangmang, A.D. 9–27, and subsequent change of the capital, and the impossibility, during this troubled period, of canvassing all parts of the Empire.

[1] This careful digest is contained in the *Journal Asiatique* for 1836 (April and May), and will repay perusal.

The inference from these data, that the real population of the Chinese Empire north of the Nan ling at the time of Christ was at least eighty millions, is as well grounded as almost any fact in its history.[1]

After the downfall of the Han dynasty, a long period of civil war ensued, in which the destruction of life and property was so enormous that the population was reduced to one-sixth of the amount set down in A.D. 230, when disease, epidemics, and earthquakes increased the losses caused by war and the cessation of agriculture, according to Ma Twan-lin; and it is not till A.D. 280, when the Tsin dynasty had subjected all to its sway, that the country began to revive. In that year an enumeration was made which stated the free people between 12 and 66 years in the land at 14,163,863, or 23,180,000 in all. From this period till the Sui dynasty came into power, in 589, China was torn by dissensions and rival monarchs, and the recorded censuses covered only a portion of the land, the figures including even fewer of the people, owing to the great number of serfs or bondmen who had sought safety under the protection of landowners. At this time a new mode of taking the census was ordered, in which the people were classified into those from 1 to 3 years, then 3 to 10, then 10 to 17, and 17 to 60, after which age they were not taxed; the ratio of the land tax was also fixed. A census taken in 606 in this way gives an estimated population of 46,019,956 in all China; the frontiers, at this period, hardly reached to the Nan ling Mountains, and the author's explanation of the manner of carrying on some public works shows that even this sum did not include persons who were liable to be called on for personal service, while all officials, slaves, and beggars were omitted. Troubles arose again from these enforced works, and it was not till the advent to power of the Tang dynasty, in 618, that a regular enumeration was possible.

[1] The population of the Roman Empire at the same period is estimated at 85,000,000 by Merivale (Vol. IV., pp. 336–343), but the data are less complete than in China; he reckons the European provinces at 45,000,000, and the Asiatic and African colonies at the remainder, giving 27,000,000 to Asia Minor and Syria. The area of China, at this time, was less than Rome by about one-fourth.

This family reigned 287 years, and Ma Twan-lin gives fifteen returns of the population up to 841. They show great variations, some of them difficult to explain even by omitting or supplying large classes of the inhabitants. The one most carefully taken was in A.D. 754, and gives an estimated total of about seventy millions for the whole Empire, which, though nearly the same as that in the Han dynasty in A.D. 2, extended over a far greater area, even to the whole southern seaboard. In addition to former enumerated classes, many thousands of priests were passed by in this census.

The years of anarchy following the Tang, till A.D. 976, when the Sung dynasty obtained possession, caused their usual effect. Its first census gives only about sixteen millions of taxable population that year, when its authority was not firmly assured; but in 1021 the returns rise to 43,388,380, and thence gradually increase to 100,095,250 in 1102, just before the provinces north of the Yellow River, by far the most fertile and loyal, were lost. The last enumeration, in 1223, while Ma Twan-lin was living, places the returns in the southern provinces at 63,304,000; this was fifty years before Kublai khan conquered the Empire. Our author gives some details concerning the classes included in the census during his own lifetime, which prove to a reasonable mind that the real number of mouths living on the land was, if anything, higher than the estimates. In 1290, the Mongol Emperor published his enumeration, placing the taxable population at 58,834,711, "not counting those who had fled to the mountains and lakes, or who had joined the rebels." This was not long after his ruthless hand had almost depopulated vast regions in the northern provinces, before he could quiet them.

In the continuation of Ma Twan-lin's *Researches*, there are sixteen censuses given for the Ming dynasty between 1381 and 1580; the lowest figure is 46,800,000, in 1506, and the highest, 66,590,000, in 1412, the average for the two centuries being 56,715,360 inhabitants. One of its compilers declares that he cannot reconcile their great discrepancies, and throws doubts on their totals from his inability to learn the mode of enumeration. Three are given for three consecutive years (1402–1404), the difference between the extremes of which amounts to sixteen

millions, but they were all taken when Yungloh was fighting Kienwăn, his nephew, at Nanking, and settling himself at Peking as Emperor, during which years large districts could not possibly have been counted.

Before entering upon a careful examination of this question, it will be well to bring together the various estimates taken of the population during the present dynasty. The details given in the table on page 264 have been taken from the best sources, and are as good as the people themselves possess.

Besides these detailed accounts, there have been several aggregates of the whole country given by other native writers than Ma Twan-lin, and some by foreigners, professedly drawn from original sources, but who have not stated their authorities. The most trustworthy, together with those given in the other table, are here placed in chronological order.

	Reign of Monarch.		A.D.	Population.	Authorities.
1.	Hungwu,	13th year,	1381	59,850,000	Continuation of Ma Twan-lin. Ed. Biot, *Journal Asiatique*, 1836.
2.	Yungloh,	9th year,	1412	65,377,000	
3.	Wanleih,	7th year,	1580	60,692,000	
4.	Shunchí,	18th year,	1662	21,068,600	*General Statistics of the Empire*; Medhurst's *China*, p. 53.
5.	Kanghí,	6th year,	1668	25,386,209	
6.	"	49th year,	1710?	23,312,200	
7.	"	49th year,	1710?	27,241,129	*Yih Tung Chí*, a statistical work; Morrison's *View of China*.
8.	"	50th year,	1711	28,605,716	*General Statistics; Chinese Repository*, Vol. I., p. 359.
9.	Kienlung,	1st year,	1736	125,046,245	*Mémoires sur les Chinois*, Tome VI., p. 277 ff.
10.	"	8th year,	1743	157,343,975	
11.	"	8th year,	1743	149,332,730	
12.	"	8th year,	1743	150,265,475	*Les Missionaires*, De Guignes, Tome III., p. 67.
13.	"	18th year,	1753	103,050,060	*General Statistics; Chinese Repository*, Vol. I., p. 359.
14.	"	25th year,	1760?	143,125,225	*Yih Tung Chi*, a statistical work; Morrison's *View of China*.
15.	"	25th year,	1760?	203,916,477	*Mémoires sur les Chinois*, Tome VI.
16.	"	26th year,	1761	205,293,053	De Guignes, Tome III., p. 72.
17.	"	27th year,	1762	198,214,553	Allerstein; Grosier; De Guignes, Tome III., p. 67.
18.	"	55th year.	1790	155,249,897	"Z." of Berlin, in *Chinese Repository*, Vol. I., p. 361.
19.	"	57th year,	1792	307,467,200	*General Statistics*; Dr. Morrison, Anglo-Chinese Coll. Report, 1829. Statement made to Lord Macartney.
20.	"	57th year,	1792	333,000,000	
21.	Kiaking,	17th year,	1812	362,467,183	*General Statistics; Chinese Repository*, Vol. I., p. 359.
22.	Tungchí,	8th year,	1868	404,946,514	Vassilivitch.
23.	Kwangsŭ,	7th year,	1881	380,000,000	*Chinese Custom's Reports.*

Seven of these censuses, viz., the 7th, 8th, 12th, 13th, 17th, 20th, 21st and 23d, are given in detail in the following table.

TABLE OF THE DIFFERENT CENSUSES OF THE EIGHTEEN PROVINCES.

PROVINCES.	Area in English square miles.	Aver. population to a sq. m. in 1812.	Census in 1710, or before.	Census of 1711.	Census of 1753.	Last Census of 1812.	Estimate in 1792, given Macartney.	Census in 1762 by Allerstein.	Census of 1743, from De Guignes.	*Almanac de Gotha*, 1882, taken from Chinese Customs' Reports.	Revenue in taels of $1.33 each.
Chihlí	58,949	475	3,260,075	3,274,870	9,374,217	27,990,871	38,000,000	15,222,940	16,702,765	28,000,000	3,942,000
Shantung	65,104	444	.....	2,278,595	12,769,872	28,958,764	24,000,000	25,180,734	12,159,680	29,000,000	6,344,000
Shansí	55,268	252	1,792,329	1,727,144	5,162,351	14,004,210	27,000,000	9,768,189	8,969,475	17,056,925	6,313,000
Honan	65,104	420	2,005,088	3,094,150	7,114,346	23,037,171	25,000,000	16,332,507	12,687,280	29,069,771	5,651,008
Kiangsu.....	44,500	850	3,917,707	2,656,465	12,618,987	37,843,501	} 32,000,000	} 23,161,409	} 26,766,365	{ 37,800,000	} 11,733,000
Nganhwui.....	48,461	705	1,350,131	1,357,829	12,435,361	34,168,059		} 22,761,030		{ 34,200,000	
Kiangsi	72,176	320	5,528,499	2,172,587	5,055,251	23,046,999	19,000,000	11,006,640	6,681,350	23,000,000	3,744,000
Chehkiang	39,150	671	2,710,649	2,710,312	8,662,808	26,256,784	21,000,000	15,429,690	15,623,990	26,300,000	5,856,000
Fuhkien.....	53,480	276	1,468,145	706,311	4,710,399	14,777,410	15,000,000	8,063,671	7,643,035	14,800,000	2,344,000
Hupeh	70,450	389	469,927	433,943	4,568,860	27,370,098	14,000,000	8,080,603	} 4,264,850	{ 27,400,000	2,091,000
Hunan	74,320	251	375,782	335,034	4,336,332	18,652,507	13,000,000	8,829,320		{ 20,048,969	1,905,000
Shensí.....	67,400	153	240,809	2,150,696	3,851,043	10,207,256	18,000,000	7,287,443	} 14,804,035	{ 10,309,769	3,042,000
Kansuh	86,608	175	311,972	368,525	2,133,222	15,193,125	12,000,000	7,812,014		{ 9,285,377	563,000
Sz'chuen	166,800	128	144,154	3,802,689	1,368,496	21,435,678	27,000,000	2,782,976	15,181,710	35,000,000	2,968,000
Kwangtung.....	79,456	241	1,148,918	1,142,747	3,969,248	19,174,030	21,000,000	6,797,597	6,006,600	19,200,000	193,000
Kwangsi	78,250	93	205,995	210,674	1,975,619	7,313,895	10,000,000	3,947,414	1,143,450	8,121,327	794,000
Kweichau	64,554	82	51,089	37,731	1,718,848	5,288,219	9,000,000	3,402,722	255,445	5,679,128	185,000
Yunnan	107,969	51	2,255,666	145,414	1,003,058	5,561,320	8,000,000	2,078,892	1,189,825	5,823,670	432,000
Shingking.....	.....	..	4,194	.....	221,742	2,167,286	.....	668,852	235,620	..... .	.....
	1,297,999	268	27,241,129	28,605,716	103,050,060	362,447,183	333,000,000	198,214,553	150,265,475	380,000,000	58,097,000

The first three belong to the Ming dynasty, and are taken from a continuation of Ma Twan-lin's *Researches*, whence they were quoted in the *Mirror of History*, without their details. During the Ming dynasty, a portion of the country now called the Eighteen Provinces, was not under the control of Hungwu and his descendants. The wars with the Japanese, and with tribes on the north and west, together with the civil wars and struggles between the Chinese themselves, and with the Nü-chí in Manchuria, must have somewhat decreased the population.

The first census of 1662 (No. 4), is incidentally mentioned by Kienlung in 1791, as having been taken at that time, from his making some observations upon the increase of the population and comparing the early censuses with the one he had recently ordered. This sum of 21,068,600 does not, however, include all the inhabitants of China at that date; for the Manchus commenced their sway in 1644, and did not exercise full authority over all the provinces much before 1700; Canton was taken in 1650, Formosa in 1683.

The census of 1668 (No. 5), shows a little increase over that of 1662, but is likewise confined to the conquered portions; and in those provinces which had been subdued, there were extensive tracts which had been almost depopulated at the conquest. Any one who reads the recitals of Semedo, Martini, Trigautius, and others, concerning the massacres and destruction of life both by the Manchus and by Chinese bandits, between 1630 and 1650, will feel no loss in accounting for the diminution of numbers, down to 1710. But the chief explanation of the decrease from sixty to twenty-seven millions is to be found in the object of taking the census, viz., to levy a poll-tax, and get at the number of men fit for the army—two reasons for most men to avoid the registration.

The census of 1711 (No. 8), is the first one on record which bears the appearance of credibility, when its several parts are compared with each other. The dates of the preceding (Nos. 6 and 7), are rather uncertain; the last was extracted by Dr. Morrison from a book published in 1790, and he thought it was probably taken as early as 1650, though that is unlikely. The other is given by Dr. Medhurst without any explanation,

and their great disparity leads us to think that both are dated wrongly. The census of 1711 is much more consistent in itself, though there are some reasons for supposing that neither did it include all the population then in China. The census was still taken for enrolment in the army, and to levy a capitation tax upon all males between the ages of sixteen and sixty. But this tax and registration were evaded and resisted by the indignant Chinese, who had never been chronicled in this fashion by their own princes; the Emperor Kanghí, therefore, abolished the capitation tax. It was not till about this time that the Manchus had subdued and pacified the southern provinces, and it is not improbable that this census, and the survey taken by the Jesuits, were among their acts of sovereignty. Finding the people unwilling to be registered, the poll tax was merged in the land tax, and no census ordered during the reign of Yungching, till Kienlung revived it in order to have some guide in apportioning relief during seasons of distress and scarcity, establishing granaries, and aiding the police in their duties. Many, therefore, who would do all in their power to prevent their names being taken, when they were liable to be taxed or called on to do military service, could have no objection to come forward, when the design of the census was to benefit themselves. It matters very little, however, for what object the census was taken, if there is reason to believe it to have been accurate. It might indeed act as a stimulus to multiply names and figures whom there were no people to represent, as the principle of paying the marshals a percentage on the numbers they reported did in some parts of New York State in 1840.

The three next numbers (9, 10, and 11), are taken from De Guignes, who quotes Amiot, but gives no Chinese authorities. The last is given in full by De Guignes, and both this and that of Allerstein, dated twenty years after, are introduced into the table. There are some discrepancies between these two and the census of 1753, taken from the *General Statistics*, which cannot easily be reconciled. The internal evidence is in favor of the latter, over the census of 1743; it is taken from a new edition of the *Ta Tsing Hwui Tien*, or 'General Statistics of the Empire,' and the increase during the forty-two years which

had elapsed since the last census is regular in all the provinces, with the exception of Shantung and Kiangnan. The extraordinary fertility of these provinces would easily induce immigration, while in the war of conquest, their populousness and wealth attracted the armies of the Manchus, and the destruction of life was disproportionably great. The smaller numbers given to the western and southern provinces correspond moreover to the opposition experienced in those regions. On the whole, the census taken in 1753 compares very well with that of 1711, and both of them bear an aspect of verity, which does not belong to the table of 1743 quoted by De Guignes.

From 1711 to 1753, the population doubled itself in about twenty-two years, premising that the whole country was faithfully registered at the first census. For instance, the province of Kweichau, in 1711, presents on the average a mere fraction of a little more than a single person to two square miles; while in 1753 it had increased in the unexampled ratio of three to a square mile, which is doubling its population every seven years; Kwangtung, Kwangsí, and Kansuh (all of them containing to this day, partially subdued tribes), had also multiplied their numbers in nearly the same proportion, owing in great measure, probably, to the more extended census than to the mere increase of population.

The amounts for 1736, three of 1743, and those of 1760, 1761, and 1762 (Nos. 9, 10, 11, 12, 15, 16, and 17), are all extracted from De Guignes, who took them from the *Mémoires sur les Chinois*. The last, that of 1762, is given in detail in the table. The discrepancy of sixty millions between that given by Amiot for 1760, and that by Dr. Morrison for the same year, is owing, there can be little doubt, to foreigners, and not to an error of the Chinese. The work from which Dr. Morrison extracted his estimate for that year was published in 1790, but the census was taken between 1760 and 1765. The same work contains the census of 1711 (No. 8), quoted by him, and there is good cause for believing that Amiot's or Grosier's estimate of 157,343,975 for 1743, is the very same census, he having multiplied the number 28,605,716 by five, supposing

them to have been families and not individuals. The three ascribed to the year 1743, are probably all derived from the same native authorities by different individuals.

The three dated in 1760, 1761, and 1762, are harmonious with each other; but if they are taken, those of 1753 and 1760, extracted from the *Yih Tung Chí* by Dr. Morrison, must be rejected, which are far more reasonable, and correspond better with the preceding one of 1711. It may be remarked, that by reckoning five persons to a family in calculating the census of 1753, as Amiot does for 1743, the population would be 189,223,820 instead of 103,050,060, as given in the table. This explains the apparent decrease of fifty millions. All the discrepancies between these various tables and censuses must not be charged upon the Chinese, since it is by no means easy to ascertain their modes of taking the census and their use of terms. In the tables, for example, they employ the phrase *jin-ting*, for a male over 15 years of age, as the integer; this has, then, to be multiplied by some factor of increase to get at the total population; and this last figure must be obtained elsewhere. It must not be overlooked that the object in taking a census being to calculate the probable revenue by enumerating the taxable persons, the margin of error and deficiency depends on the peace of the state at the time, and not chiefly on the estimate of five or more to a household.

The amount for 1736 corresponds sufficiently closely with that for 1743; and reckoning the same number of persons in a family in 1753, that tallies well enough with those for 1760, 1761, and 1762, the whole showing a gradual increase for twenty-five years. But all of them, except that of 1753, are probably rated too high. That for 1762 (No. 17), has been justly considered as one of the most authentic.

The amount given by "Z." of Berlin (No. 18), of 155⅛ millions for 1790 is quoted in the *Chinese Repository*, but the writer states no authorities, was probably never in China, and as it appears at present, is undeserving the least notice. That given by Dr. Morrison for 1792 (No. 19), the year before Lord Macartney's embassy, is quoted from an edition of that date, but probably was really taken in 1765 or thereabouts, but he

did not publish it in detail.[1] It is probably much nearer the truth than the amount of 333 millions by the commissioner Chau to the English ambassador. This estimate has had much more respect paid to it as an authentic document than it deserved. The Chinese commissioner would naturally wish to exalt his country in the eyes of its far-travelled visitors, and not having the official returns to refer to, would not be likely to state them less than they were. He gave the population of the provinces in round numbers, perhaps altogether from his own memory, aided by those of his attendant clerks, with the impression that his hearers would never be able to refer to the original native authorities.

The next one quoted (No. 21) is the most satisfactory of all the censuses in Chinese works, and was considered by both the Morrisons and by Dr. Bridgman, editor of the *Chinese Repository*, as "the most accurate that has yet been given of the population."

In questions of this nature, one well authenticated table is worth a score of doubtful origin. It has been shown how apocryphal are many of the statements given in foreign books, but with the census of 1812, the source of error which is chiefly to be guarded against is the average given to a family. This is done by the Chinese themselves on no uniform plan, and it may be the case that the estimate of individuals from the number of families is made in separate towns, from an intimate acquaintance with the particular district, which would be less liable to error than a general average. The number of families given in the census of 1753, is 37,785,552, which is more than one-third of the population.

The four censuses which deserve the most credit, so far as the sources are considered, are those of 1711, 1753, 1792, and 1812 (*i.e.*, Nos. 8, 13, 19, and 21); these, when compared, show the following rate of increase:

From 1711 to 1753, the population increased 74,222,602, which was an annual advance of 1,764,824 inhabitants, or a

[1] Sir G. Staunton, *Embassy to China*, Vol. II., Appendix, p. 615: "Table of the Population and Extent of China proper, within the Great Wall. Taken in round numbers from the Statements of Chow ta-zhin."

little more than six per cent. per annum for forty-two years. This high rate, it must be remembered, does not take into account the more thorough subjugation of the south and west at the later date, when the Manchus could safely enrol large districts, where in 1711 they would have found so much difficulty that they would not have attempted it.

From 1753 to 1792, the increase was 104,636,882, or an annual advance of 2,682,997 inhabitants, or about 2½ per cent. per annum for thirty-nine years. During this period, the country enjoyed almost uninterrupted peace under the vigorous sway of Kienlung, and the unsettled regions of the south and west rapidly filled up.

From 1792 to 1812, the increase was 54,126,679, or an annual advance of 2,706,333—not quite one per cent. per annum —for twenty years. At the same rate of progress the present population would amount to over 450,000,000, and this might have been the case had not the Tai-ping rebellion reduced the numbers. An enumeration (No. 22), was published by the Russian Professor of Chinese Vassilivitch in 1868 as a translation from official documents. Foreigners have had greater opportunities for travel through the country, between the years 1840 to 1880, and have ascertained the enormous depopulation in some places caused by wars, short supplies of food in consequence of scarcity of laborers, famines, or brigandage, each adding its own power of destruction at different places and times. The conclusion will not completely satisfy any inquirer, but the population of the Empire cannot now reasonably be estimated as high as the census of 1812, by at least twenty-five millions. The last in the list of these censuses (No. 23), is added as an example of the efforts of intelligent persons residing in China to come to a definite and independent conclusion on this point from such data as they can obtain. The Imperial Customs' Service has been able to command the best native assistance in their researches, and the table of population given above from the *Gotha Almanac* is the summary of what has been ascertained. The population of extra-provincial China is really unknown at present. Manchuria is put down at twelve millions by one author, and three

or four millions, by another, without any official authority for either; and all those vast regions in Ílí and Tibet may easily be set down at from twelve to fifteen millions. To sum up, one must confess that if the Chinese censuses are worth but little, compared with those taken in European states, they are better than the guesses of foreigners who have never been in the country, or who have travelled only partially in it.

The Chinese are doubtless one of the most conceited nations on the earth, but with all their vanity, they have never bethought themselves of rating their population twenty-five or thirty per cent. higher than they suppose it to be, for the purpose of exalting themselves in the eyes of foreigners or in their own. Except in one case none of the estimates were presented to, or intended to be known by foreigners. The distances in *li* between places given in Chinese itineraries correspond very well with the real distances; the number of districts, towns, and villages in the departments and provinces, as stated in their local and general topographical works, agree with the actual examination, so far as it can be made: why should their censuses be charged with gross error, when, however much we may doubt them, we cannot disprove them, and the weight of evidence derived from actual observation rather confirms them than otherwise; and while their account of towns, villages, distances, etc., are unhesitatingly adopted until better can be obtained? Some discrepancies in the various tables are ascribable to foreigners, and some of the censuses are incomplete, or the year cannot be precisely fixed, both of which vitiate the deductions made from them as to the rate of increase. Some reasons for believing that the highest population ascribed to the Chinese Empire is not greater than the country can support, will first be stated, and the objections against receiving the censuses then considered.[1]

[1] This interesting subject can then be left with the reader, who will find further remarks in Medhurst's *China*; De Guignes' *Voyages à Peking*, The Missionaries, in Tomes VI. and VIII. of *Mémoires*, Ed. Biot, in *Journal Asiatique* for 1836. *The Numerical Relations of the Population of China during the 4,000 Years of its Historical Existence; or the Rise and Fall of the Chinese Population*, by T. Sacharoff. Translated into English by the Rev. W. Lobscheid, Hongkong, 1862. *Notes and Queries on China and Japan*, Vol. II., pp. 88, 103, and 117.

The area of the Eighteen Provinces is rather imperfectly given at 1,348,870 square miles, and the average population, therefore, for the whole, in 1812, was 268 persons on every square mile; that of the nine eastern provinces in and near the Great Plain, comprising 502,192 square miles, or two-fifths of the whole, is 458 persons, and the nine southern and western provinces, constituting the other three-fifths, is 154 to a square mile. The surface and fertility of the country in these two portions differ so greatly, as to lead one to look for results like these. The areas of some European states and their population, are added to assist in making a comparison with China, and coming to a clearer idea about their relative density.

States.	Area.	Population.	Average to sq. m.	Census of
France	204,092	36,905,788	182	December, 1876.
Germany	212,091	45,194,172	213	December, 1880.
Great Britain	121,608	35,246,562	289	April, 1881.
Italy	114,296	28,437,091	249	December, 1879.
Holland	20,497	4,060,580	198	December, 1880.
Spain	190,625	16,053,961	84	December, 1877.
Japan	160,474	34,338,479	213	1877.
Bengal	156,200	68,750,747	440	1881.

All these are regarded as well settled countries, but England and Bengal are the only ones which exceed that of China, taken as a whole, while none of them come up to the average of the eastern provinces. All of them, China included, fall far short, however, of the average population on a square mile of the kingdoms of Judah and Israel, in the reigns of Abijah and Jeroboam, if the 1,200,000 men brought into the field by them can be taken as a ratio of the whole number of inhabitants; or if the accounts given by Josephus of the density in his day are trustworthy. In estimating the capabilities of these European countries to support a dense population, allowances must be made for roads, pasture-lands, and parks of noblemen, all of which afford little or no food.

In England and Wales, there are nearly twenty-nine millions of acres under cultivation, seventeen millions of which are pas-

ture-lands, and only ten millions devoted to grain and vegetables; the other two millions consist of fallow-ground, hop-beds, etc. One author estimates that in England 42 acres in a hundred, and in Ireland 64, are pastures—a little more than half of the whole. There are, then, on the average about two acres of land for the support of each individual, or rather less than this, if the land required for the food of horses be subtracted. It has been calculated that eight men can be fed on the same amount of land that one horse requires; and that four acres of pasture-land will furnish no more food for man than one of ploughed land. The introduction of railroads has superseded the use of horses to such an extent that it is estimated there are only 200,000 horses now in England, instead of a million in 1830. If, therefore, one-half the land appropriated to pasture should be devoted to grain, and no more horses and dogs raised than a million of acres could support, England and Wales could easily maintain a population of more than four hundred to a square mile, supposing them to be willing to live on what the land and water can furnish.

The Irish consume a greater proportion of vegetables than the English, even since the improvement by emigration after 1851; many of these live a beggarly life upon half an acre, and even less, and seldom taste animal food. The quantity of land under cultivation in Belgium is about fifteen-seventeenths of the whole, which gives an average of about two acres to each person, or the same as in England. In these two countries, the people consume more meat than in Ireland, and the amount of land occupied for pasturage is in nearly equal proportions in Belgium and England. In France, the average of cultivated land is $1\frac{3}{8}$ acre; in Holland, $1\frac{1}{6}$ acre to each person.

If the same proportion between the arable and uncultivated land exists in China as in England, namely one-fourth, there are about six hundred and fifty millions of acres under cultivation in China; and we are not left altogether to conjecture, for by a report made to Kienlung in 1745, it appears that the area of the land under cultivation was 595,598,221 acres; a subsequent calculation places it at 640,579,381 acres, which is almost the same proportion as in England. Estimating it at six hundred

and fifty millions—for it has since increased rather than diminished—it gives one acre and four-fifths to every person, which is by no means a small supply for the Chinese, considering that there are no cultivated pastures or meadows.

In comparing the population of different countries, the manner of living and the articles of food in use, form such important elements of the calculation, in ascertaining whether the country be overstocked or not, that a mere tabular view of the number of persons on a square mile is an imperfect criterion of the amount of inhabitants the land would maintain if they consumed the same food, and lived in the same manner in all of them. Living as the Chinese, Hindus, Japanese, and other Asiatics do, chiefly upon vegetables, the country can hardly be said to maintain more than one-half or one-third as many people on a square mile as it might do, if their energies were developed to the same extent with those of the English or Belgians. The population of these eastern regions has been repressed by the combined influences of ignorance, insecurity of life and property, religious prejudices, vice, and wars, so that the land has never maintained as many inhabitants as one would have otherwise reasonably expected therefrom.

Nearly all the cultivated soil in China is employed in raising food for man. Woollen garments and leather are little used, while cotton and mulberry cultivation take up only a small proportion of the soil. There is not, so far as is known, a single acre of land sown with grass-seed, and therefore almost no human labor is devoted to raising food for animals, which will not also serve to sustain man. Horses are seldom used for pomp or war, for travelling or carrying burdens, but mules, camels, asses, and goats are employed for transportation and other purposes north of the Yangtsz' River. Horses are fed on cooked rice, bran, sorghum seed, pulse, oats, and grass cut along the banks of streams, or on hillsides. In the southern and eastern provinces, all animals are rare, the transport of goods and passengers being done by boats or by men. The natives make no use of butter, cheese, or milk, and the few cattle employed in agriculture easily gather a living on the waste ground around the villages. In the south, the buffalo is applied more

than the ox to plough the rice fields, and the habits of this animal make it cheaper to keep him in good condition, while he can also do more work. The winter stock is grass cut upon the hills, straw, bean stalks, and vegetables. No wool being wanted for making cloth, flocks of sheep and goats are seldom seen—it may almost be said are unknown in the east and south.

No animal is reared cheaper than the hog; hatching and raising ducks affords employment to thousands of people; hundreds of these fowl gather their own food along the river shore, being easily attended by a single keeper. Geese and poultry are also cheaply reared. In fishing, which is carried on to an enormous extent, no pasture-grounds, no manuring, no barns, are needed, nor are taxes paid by the cultivator and consumer.

While the people get their animal food in these ways, its preparation takes away the least possible amount of cultivated soil. The space occupied for roads and pleasure-grounds is insignificant, but there is perhaps an amount appropriated for burial places quite equal to the area used for those purposes in European countries; it is, however, less valuable land, and much of it would be useless for culture, even if otherwise unoccupied. Graves are dug on hills, in ravines and copses, and wherever they will be retired and dry; or if in the ancestral field, they do not hinder the crop growing close around them. Moreover, it is very common to preserve the coffin in temples and cemeteries until it is decayed, partly in order to save the expense of a grave, and partly to worship the remains, or preserve them until gathered to their fathers, in their distant native places. They are often placed in the corners of the fields, or under precipices where they remain till dust returns to dust, and bones and wood both moulder away. These and other customs limit the consumption of land for graves much more than would be supposed, when one sees, as at Macao, almost as much space taken up by the dead for a grave as by the living for a hut. The necropolis of Canton occupies the hills north of the city, of which not one-fiftieth part could ever have been used for agriculture, but where cattle are allowed to graze, as much as if there were no tombs.

Under its genial and equable climate, more than three-fourths of the area of China Proper produces two crops annually. In Kwangtung, Kwangsí, and Fuhkien, two crops of rice are taken year after year from the low lands; while in the loess regions of the northwest, a three-fold return from the grain fields is annually looked for, if the rain-fall is not withheld. In the winter season, in the neighborhood of towns, a third crop of sweet potatoes, cabbages, turnips, or some other vegetable is grown. De Guignes estimates the returns of a rice crop at ten for one, which, with the vegetables, will give full twenty-five fold from an acre in a year; few parts, however, yield this increase. Little or no land lies fallow, for constant manuring and turning of the soil prevents the necessity of repose. The diligence exhibited in collecting and applying manure is well known, and if all this industry result in the production of two crops instead of one, it really doubles the area under cultivation, when its superficies are compared with those of other countries. If the amount of land which produces two crops be estimated at one-fourth of the whole (and it is perhaps as near one-third), the area of arable land in the provinces may be considered as representing a total of 812 millions of acres, or $2\frac{3}{4}$ acres to an individual. The land is not, however, cut up into such small farms as to prevent its being managed as well as the people know how to stock and cultivate it; manual labor is the chief dependence of the farmer, fewer cattle, carts, ploughs, and machines being employed than in other countries. In rice fields no animals are used after the wet land has received the shoots, transplanting, weeding, and reaping being done by men.

In no other country besides Japan is so much food derived from the water. Not only are the coasts, estuaries, rivers, and lakes, covered with fishing-boats of various sizes, which are provided with everything fitted for the capture of whatever lives in the waters, but the spawn of fish is collected and reared. Rice fields are often converted into pools in the winter season, and stocked with fish; and the tanks dug for irrigation usually contain fish. By all these means, an immense supply of food is obtained at a cheap rate, which is eaten fresh or preserved with or without salt, and sent over the Empire, at a cost which

places it within the reach of all above beggary. Other articles of food, both animal and vegetable, such as dogs, game, worms, spring greens, tripang, leaves, etc., do indeed compose part of their meals, but it is comparatively an inconsiderable fraction, and need not enter into the calculation. Enough has been stated to show that the land is abundantly able to support the population ascribed to it, even with all the drawbacks known to exist; and that, taking the highest estimate to be true, and considering the mode of living, the average population on a square mile in China is less than in several European countries.

The political and social causes which tend to multiply the inhabitants are numerous and powerful. The failure of male posterity to continue the succession of the family, and worship at the tombs of parents, is considered by all classes as one of the most afflictive misfortunes of life; the laws allow unlimited facilities of adoption, and secure the rights of those taken into the family in this way. The custom of betrothing children, and the obligation society imposes upon the youth when arrived at maturity, to fulfil the contracts entered into by their parents, acts favorably to the establishment of families and the nurture of children, and restricts polygamy. Parents desire children for a support in old age, as there is no legal or benevolent provision for aged poverty, and public opinion stigmatizes the man who allows his aged or infirm parents to suffer when he can help them. The law requires the owners of domestic slaves to provide husbands for their females, and prohibits the involuntary or forcible separation of husband and wife, or parents and children, when the latter are of tender age. All these causes and influences tend to increase population, and equalize the consumption and use of property more, perhaps, than in any other land.

The custom of families remaining together tends to the same result. The local importance of a large family in the country is weakened by its male members removing to town, or emigrating; consequently, the patriarch of three or four generations endeavors to retain his sons and grandsons around him, their houses joining his, and they and their families forming a social, united company. Such cases as those mentioned in the

Sacred Commands are of course rare, where nine generations of the family of Chang Kung-í inhabited one house, or of Chin, at whose table seven hundred mouths were daily fed,[1] but it is the tendency of society. This remark does not indicate that great landed proprietors exist, whose hereditary estates are secured by entail to the great injury of the state, as in Great Britain, for the farms are generally small and cultivated by the owner or on the metayer system. Families are supported on a more economical plan, the claims of kindred are better enforced, the land is cultivated with more care, and the local importance of the family perpetuated. This is, however, a very different system from that advocated by Fourier in France, or Greeley in America, for these little communities are placed under one natural head, whose authority is acknowledged and upheld, and his indignation feared. Workmen of the same profession form unions, each person contributing a certain sum on the promise of assistance when sick or disabled, and this custom prevents and alleviates a vast amount of poverty.

The obstacles put in the way of emigrating beyond sea, both in law and prejudice, operate to deter respectable persons from leaving their native land. Necessity has made the law a dead letter, and thousands annually leave their homes. No better evidence of the dense population can be offered to those acquainted with Chinese feelings and character, than the extent of emigration. "What stronger proof," observes Medhurst, "of the dense population of China could be afforded than the fact, that emigration is going on in spite of restrictions and disabilities, from a country where learning and civilization reign, and where all the dearest interests and prejudices of the emigrants are found, to lands like Burmah, Siam, Cambodia, Tibet, Manchuria, and the Indian Archipelago, where comparative ignorance and barbarity prevail, and where the extremes of a tropical or frozen region are to be exchanged for a mild and temperate climate? Added to this consideration, that not a single female is permitted or ventures to leave the country, when consequently, all the tender attachments that

[1] *Sacred Edict*, pp. 51, 60.

bind heart to heart must be burst asunder, and, perhaps, forever."[1]

Moreover, if they return with wealth enough to live upon, they are liable to the vexatious extortions of needy relatives, sharpers, and police, who have a handle for their fleecing whip in the law against leaving the country;[2] although this clause has been neutralized by subsequent acts, and is not in force, the power of public opinion is against going. A case occurred in 1832, at Canton, where the son of a Chinese living in Calcutta, who had been sent home by his parent with his mother, to perform the usual ceremonies in the ancestral hall, was seized by his uncle as he was about to be married, on the pretext that his father had unequally divided the paternal inheritance; he was obliged to pay a thousand dollars to free himself. Soon after his marriage, a few sharpers laid hold of him and bore him away in a sedan, as he was walking near his house, but his cries attracted the police, who carried them all to the magistrates, where he was liberated—after being obliged to fee his deliverers.[3] Another case occurred in Macao in 1838. A man had been living several years in Singapore as a merchant, and when he settled in Macao still kept up an interest in the trade with that place. Accounts of his great wealth became rumored abroad, and he was seriously annoyed by relatives. One night, a number of thieves, dressed like police-runners, came to his house to search for opium, and their boisterous manner terrified him to such a degree, that in order to escape them he jumped from the terrace upon the hard gravelled court-yard, and broke his leg, of which he shortly afterward died. A third case is mentioned, where the returned emigrants, consisting of a man and his wife, who was a Malay, and two children, were rescued from extortion, when before the magistrate, by the kindness of his wife and mother, who wished to see the foreign woman.[4] Such instances are now unknown,

[1] *China: Its State and Prospects*, p. 42.

[2] *Ta Tsing Leu Lee; being the Fundamental Laws, etc., of the Penal Code of China*, by Sir G. T. Staunton, Bart, London, 1810. Section CCXXV.

[3] *Chinese Repository*, Vol. I., p. 332.

[4] *Ibid.*, Vol. VII., p. 503; Vol. II., p. 161.

owing to the increase of emigration; they were, indeed, never numerically great, on account of the small number of those who came back.

The anxiety of the government to provide stores of food for times of scarcity, shows rather its fear of the disastrous results following a short crop—such as the gathering of clamorous crowds of starving poor, the increase of bandits and disorganization of society—than any peculiar care of the rulers, or that these storehouses really supply deficiencies. The evil consequences resulting from an overgrown population are experienced in one or another part of the provinces almost every year; and drought, inundations, locusts, mildew, or other natural causes, often give rise to insurrections and disturbances. There can be no doubt, however, that, without adding a single acre to the area of arable land, these evils would be materially alleviated, if the intercommunication of traders and their goods, between distant parts of the country, were more frequent, speedy, and safe; but this is not likely to be the case until both rulers and ruled make greater advances in just government, science, obedience, and regard for each other's right.

It would be a satisfaction if foreigners could verify any part of the census. But this is, at present, impossible. They cannot examine the records in the office of the Board of Revenue, nor can they ascertain the population in a given district from the archives in the hands of the local authorities, or the mode of taking it. Neither can they go through a village or town to count the number of houses and their inhabitants, and calculate from actual examination of a few parts what the whole would be. Wherever foreigners have journeyed, there has appeared much the same succession of waste land, hilly regions, cultivated plains, and wooded heights, as in other countries, with an abundance of people, but not more than the land could support, if properly tilled.

The people are grouped into hamlets and villages, under the control of village elders and officers. In the district of Nan-hai, which forms the western part of the city of Canton, and the surrounding country for more than a hundred square miles, there are one hundred and eighty *hiang* or villages; the popu-

lation of each *hiang* varies from two hundred and upwards to one hundred thousand, but ordinarily ranges between three hundred and thirty-five hundred. If each of the eighty-eight districts in the province of Kwangtung contains the same number of *hiang*, there will be, including the district towns, 15,928 villages, towns, and cities in all, with an average population of twelve hundred inhabitants to each. From the top of the hills on Dane's Island, at Whampoa, thirty-six towns and villages can be counted, of which Canton is one; and four of these contain from twelve to fifteen hundred houses. The whole district of Hiangshan, in which Macao lies, is also well covered with villages, though their exact number is not known. The island of Amoy contains more than fourscore villages and towns, and this island forms only a part of the district of Tung-ngan. The banks of the river leading from Amoy up to Changchau fu, are likewise well peopled. The environs of Ningpo and Shanghai are closely settled, though that is no more than one always expects near large cities, where the demand for food in the city itself causes the vicinity to be well peopled and tilled. In a notice of an irruption of the sea in 1819, along the coast of Shantung, it was reported that a hundred and forty villages were laid under water.

Marco Polo describes the mode followed in the days of Kublai khan: "It is the custom for every burgess of the city, and in fact for every description of person in it, to write over his door his own name, the name of his wife, and those of his children, his slaves, and all the inmates of his house, and also the number of animals that he keeps. And if any one dies in the house, then the name of that person is erased, and if a child is born its name is added. So in this way the sovereign is able to know exactly the population of the city. And this is the practice throughout all Manzi and Cathay."[1] This custom was observed long before the Mongol conquest, and is followed at present; so that it is perhaps easier to take a census in China than in most European countries.

The law upon this subject is contained in Secs. LXXV. and

[1] Yule's *Marco Polo*, Vol. II., p. 152.

LXXVI. of the statutes.[1] It enacts various penalties for not registering the members of a family, and its provisions all go to show that the people are desirous rather of evading the census than of exaggerating it. When a family has omitted to make any entry, the head of it is liable to be punished with one hundred blows if he is a freeholder, and with eighty if he is not. If the master of a family has among his household another distinct family whom he omits to register, the punishment is the same as in the last clause, with a modification, according as the unregistered persons and family are relatives or strangers. Persons in government employ omitting to register their families, are less severely punished. A master of family failing to register all the males in his household who are liable to public service, shall be punished with from sixty to one hundred blows, according to the demerits of the offence; this clause was in effect repealed, when the land tax was substituted for the capitation tax. Omissions, from neglect or inadvertency to register all the individuals and families in a village or town, on the part of the headmen or government clerks, are punishable with different degrees of severity. All persons whatsoever are to be registered according to their accustomed occupations or professions, whether civil or military, whether couriers, artisans, physicians, astrologers, laborers, musicians, or of any other denomination whatever; and subterfuges in representing one's self as belonging to a profession not liable to public service, are visited as usual with the bamboo; persons falsely describing themselves as belonging to the army, in order to evade public service, are banished as well as beaten. From these clauses it is seen that the Manchus have extended the enumeration to classes which were exempted in the Han, Tang, and other dynasties, and thus come nearer to the actual population.

"In the Chinese government," observes Dr. Morrison, "there appears great regularity and system. Every district has its appropriate officers, every street its constable, and every ten houses their tything man. Thus they have all the requisite means of ascertaining the population with considerable accu-

[1] *Penal Code*, p. 79, Staunton's translation.

racy. Every family is required to have a board always hanging up in the house, and ready for the inspection of authorized officers, on which the names of all persons, men, women, and children, in the house are inscribed. This board is called *mun-pai* or 'door-tablet,' because when there are women and children within, the officers are expected to take the account from the board at the door. Were all the inmates of a family faithfully inserted, the amount of the population would, of course, be ascertained with great accuracy. But it is said that names are sometimes omitted through neglect or design; others think that the account of persons given in is generally correct." The door-tablets are sometimes pasted on the door, thus serving as a kind of door-plate; in these cases correctness of enumeration is readily secured, for the neighbors are likely to know if the record is below the truth, and the householder is not likely to exaggerate the taxable inmates under his roof. I have read these *mun-pai* on the doors of a long row of houses; they were printed blanks filled in, and then pasted outside for the *pao-kiah* or tithing man to examine. Both Dr. Morrison and his son, than whom no one has had better opportunities to know the true state of the case, or been more desirous of dealing fairly with the Chinese, regarded the censuses given in the *General Statistics* as more trustworthy than any other documents available.

In conclusion, it may be asked, are the results of the enumeration of the people, as contained in the statistical works published by the government, to be rejected or doubted, therefore, because the Chinese officers do not wish to ascertain the exact population; or because they are not capable of doing it; or, lastly, because they wish to impose upon foreign powers by an arithmetical array of millions they do not possess? The question seems to hang upon this trilemma. It is acknowledged that they falsify or garble statements in a manner calculated to throw doubt upon everything they write, as in the reports of victories and battles sent to the Emperor, in the memorials upon the opium trade, in their descriptions of natural objects in books of medicine, and in many other things. But the question is as applicable to China as to France: is the estimated

population of France in 1801 to be called in question, because the *Moniteur* gave false accounts of Napoleon's battles in 1813? It would be a strange combination of conceit and folly, for a ministry composed of men able to carry on all the details of a complicated government like that of China, to systematically exaggerate the population, and then proceed, for more than a century, with taxation, disbursements, and official appointments, founded upon these censuses. Somebody at least must know them to be worthless, and the proof that they were so, must, one would think, ere long be apparent. The provinces and departments have been divided and subdivided since the Jesuits made their survey, because they were becoming too densely settled for the same officers to rule over them.

Still less will any one assert that the Chinese are not capable of taking as accurate a census as they are of measuring distances, or laying out districts and townships. Errors may be found in the former as well as in the latter, and doubtless are so; for it is not contended that the four censuses of 1711, 1753, 1792, and 1812 are as accurate as those now taken in England, France, or the United States, but that they are the best data extant, and that if they are rejected we leave tolerable evidence and take up with that which is doubtful and suppositive. The censuses taken in China since the Christian era are, on the whole, more satisfactory than those of all other nations put together up to the Reformation, and further careful research will no doubt increase our respect for them.

Ere long we may be able to traverse a census in its details of record and deduction, and thus satisfy a reasonable curiosity, especially as to the last reported total after the carnage of the rebellion. On the other hand, it may be stated that in the last census, the entire population of Manchuria, Koko-nor, Ílí, and Mongolia, is estimated at only 2,167,286 persons, and nearly all the inhabitants of those vast regions are subject to the Emperor. The population of Tibet is not included in any census, its people not being taxable. It is doubtful if an enumeration of any part of the extra provincial territory has ever been taken, inasmuch as the Mongol tribes, and still less the Usbeck or other Moslem races, are unused to such a thing, and would

not be numbered. Yet, the Chinese cannot be charged with exaggeration, when good judges, as Klaproth and others, reckon the whole at between six and seven millions; and Khoten alone, one author states, has three and a half millions. No writer of importance estimates the inhabitants of these regions as high as thirty millions—as does R. Mont. Martin—which would be more than ten to a square mile, excluding Gobi; while Siberia (though not so well peopled) has only 3,611,300 persons on an area of 2,649,600 square miles, or 1⅓ to each square mile.

The reasons just given why the Chinese desire posterity are not all those which have favored national increase. The uninterrupted peace which the country enjoyed between the years 1700 and 1850 operated to greatly develop its resources. Every encouragement has been given to all classes to multiply and fill the land. Polygamy, slavery, and prostitution, three social evils which check increase, have been circumscribed in their effects. Early betrothment and poverty do much to prevent the first; female slaves can be and are usually married; while public prostitution is reduced by a separation of the sexes and early marriages. No fears of overpassing the supply of food restrain the people from rearing families, though the Emperor Kienlung issued a proclamation in 1793, calling upon all ranks of his subjects to economize the gifts of heaven, lest, erelong, the people exceed the means of subsistence.

It is difficult to see what this or that reason or objection has to do with the subject, except where the laws of population are set at defiance, which is not the case in China. Food and work, peace and security, climate and fertile soil, not universities or steamboats, are the encouragements needed for the multiplication of mankind; though they do not have that effect in all countries (as in Mexico and Brazil), it is no reason why they should not in others. There are grounds for believing that not more than two-thirds of the whole population of China were included in the census of 1711, but that allowance cannot be made for Ireland in 1785; and consequently, her annual percentage of increase, up to 1841, would then be greater than China, during the forty-two years ending with 1753. McCulloch quotes De Guignes approvingly, but the Frenchman takes the

rough estimate of 333,000,000 given to Macartney, which is less trustworthy than that of 307,467,200, and compares it with Grosier's of 157,343,975, which is certainly wrong through his misinterpretation. De Guignes proceeds from the data in his possession in 1802 (which were less than those now available), and from his own observations in travelling through the country in 1796, to show the improbability of the estimated population. But the observations made in journeys, taken as were those of the English and Dutch embassies, though they passed through some of the best provinces, cannot be regarded as good evidence against official statistics.

Would any one suppose, in travelling from Boston to Chatham, and then from Albany to Buffalo, along the railroad, that Massachusetts contained, in 1870, exactly double the population on a square mile of New York? So, in going from Peking to Canton, the judgment which six intelligent travellers might form of the population of China could easily be found to differ by one-half. De Guignes says, after comparing China with Holland and France, "All these reasons clearly demonstrate that the population of China does not exceed that of other countries;" and such is in truth the case, if the kind of food, number of crops, and materials of dress be taken into account. His remarks on the population and productiveness of the country are, like his whole work, replete with good sense and candor; but some of his deductions would have been different, had he been in possession of all the data since obtained.[1] The discrepancies between the different censuses have been usually considered a strong internal evidence against them, and they should receive due consideration. The really difficult point is to fix the percentage that must be allowed for the classes not included as taxable, and the power of the government to enumerate those who wished to avoid a census and the subsequent taxation.

After all these reasons for receiving the total of 1812 as the best one, there are, on the other hand, two principal objections against taking the Chinese census as altogether trustworthy. The first is the enormous averages of 850, 705, and 671 inhab-

[1] *Voyages à Peking*, Tome III., pp. 55–86.

itants on a square mile, severally apportioned to Kiangsu, Nganhwui, and Chehkiang, or, what is perhaps a fairer calculation, of 458 persons to the nine eastern provinces. Whatever amount of circumstantial evidence may be brought forward in confirmation of the census as a whole, and explanation of the mode of taking it, a more positive proof seems to be necessary before giving implicit credence to this result. Such a population on such an extensive area is marvellous, notwithstanding the fertility of the soil, facilities of navigation, and salubrity of the climate of these regions, although acknowledged to be almost unequalled. While we admit the full force of all that has been urged in support of the census, and are willing to take it as the best document on the subject extant, it is desirable to have proofs derived from personal observation, and to defer the settlement of this question until better opportunities are afforded. So high an average is, indeed, not without example. Captain Wilkes ascertained, in 1840, that one of the islands of the Fiji group supported a population of over a thousand on a square mile. On Lord North's Island, in the Pelew group, the crew of the American whaler Mentor ascertained there were four hundred inhabitants living on half a square mile. These, and many other islands in that genial clime, contain a population far exceeding that of any large country, and each separate community is obliged to depend wholly on its own labor. They cannot, however, be cited as altogether parallel cases, though if it be true, as Barrow says, "that an acre of cotton will clothe two or three hundred persons," not much more land need be occupied with cotton or mulberry plants, for clothing in China, than in the South Sea Islands.

The second objection against receiving the result of the census is, that we are not well informed as to the mode of enumerating the people by families, and the manner of taking the account, when the patriarch of two or three generations lives in a hamlet, with all his children and domestics around him. Two of the provisions in Sec. XXV. of the *Code*, seem to be designed for some such state of society; and the liability to underrate the males fit for public service, when a capitation tax was ordered, and to overrate the inmates of such a house, when the

head of it might suppose he would thereby receive increased aid from government when calamity overtook him, are equally apparent. The door-tablet is also liable to mistake, and in shops and workhouses, where the clerks and workmen live and sleep on the premises, it is not known what kind of report of families the assessors make. On these important points our present information is imperfect, while the evident liability to serious error in the ultimate results makes one hesitate. The Chinese may have taken a census satisfactory for their purposes, showing the number of families, and the average in each; but the point of this objection is, that we do not know how the families are enumerated, and therefore are at fault in reckoning the individuals. The average of persons in a household is set down at five by the Chinese, and in England, in 1831, it was 4.7, but it is probably less than that in a thickly settled country, if every married couple and their children be taken as a family, whether living by themselves, or grouped in patriarchal hamlets.

No one doubts that the population is enormous, constituting by far the greatest assemblage of human beings using one speech ever congregated under one monarch. To the merchants and manufacturers of the West, the determination of this question is of some importance, and through them to their governments. The political economist and philologist, the naturalist and geographer, have also greater or less degrees of interest in the contemplation of such a people, inhabiting so beautiful and fertile a country. But the Christian philanthropist turns to the consideration of this subject with the liveliest solicitude; for if the weight of evidence is in favor of the highest estimate, he feels his responsibility increase to a painful degree. The danger to this people is furthermore greatly enhanced by the opium traffic—a trade which, as if the Rivers Phlegethon and Lethe were united in it, carries fire and destruction wherever it flows, and leaves a deadly forgetfulness wherever it has passed. Let these facts appeal to all calling themselves Christians, to send the antidote to this baleful drug, and diffuse a knowledge of the principles of the Gospel among them, thereby placing life as well as death before them.

If the population of the Empire is not easily ascertained, a

satisfactory account of the public revenue and expenditures is still more difficult to obtain; it possesses far less interest, of course, in itself, and in such a country as China is subject to many variations. The market value of the grain, silk, and other products in which a large proportion of the taxes are paid, varies from year to year; and although this does not materially affect the government which receives these articles, it complicates the subject very much when attempting to ascertain the real taxation. Statistics on these subjects are only of recent date in Europe, and should not yet be looked for in China, drawn up with much regard to truth. The central government requires each province to support itself, and furnish a certain surplusage for the maintenance of the Emperor and his court; but it is well known that his Majesty is continually embarrassed for the want of funds, and that the provinces do not all supply enough revenue to meet their own outlays.

The amounts given by various authors as the revenue of China at different times, are so discordant, that a single glance shows that they were obtained from partial or incomplete returns, or else refer only to the surplusage sent to the capital. De Guignes remarks very truly, that the Chinese are so fully persuaded of the riches, power, and resources of their country, that a foreigner is likely to receive different accounts from every native he asks; but there appears to be no good reason why the government should falsify or abridge their fiscal accounts. In 1587, Trigault, one of the French missionaries, stated the revenue at only tls. 20,000,000. In 1655, Nieuhoff reckoned it at tls. 108,000,000. About twelve years after, Magalhaens gave the treasures of the Emperor at $20,423,962; and Le Comte, about the same time, placed the revenue at $22,000,000, and both of them estimated the receipts from rice, silk, etc., at $30,000,000, making the whole revenue previous to Kanghi's death, in 1721, between fifty and seventy millions of dollars. Barrow reckoned the receipts from all sources in 1796 at tls. 198,000,000, derived from a rough estimate given by the commissioner who accompanied the embassy. Sir George Staunton places the total sum at $330,000,000; of which $60,000,000 only were transmitted to Peking. Medhurst,

drawing his information from original sources, thus states the principal items of the receipts:

Land taxes in money,	sent to Peking,	Tls.	31,745,966 valued at	$42,327,954
Land taxes in grain,		Shih	4,230,957 "	12,692,871
Custom and transit duties,		Tls.	1,480,997 "	1,974,662
Land taxes in money,	kept in provinces	Tls.	28,705,125 "	38,273,500
Grain,		Shih	31,596,569 "	105,689,707
				$200,958,694

The *shih* of rice is estimated at $3, but this does not include the cost of transportation to the capital.[1] At $200,000,000, the tax received by government from each person on an average is about sixty cents; Barrow estimates the capitation at about ninety cents. The account of the revenue in taels from each province given in the table of population on page 264, is extracted from the *Red Book* for 1840;[2] the account of the revenue in rice, as stated in the official documents for that year, is 4,114,000 shih, or about five hundred and fifty millions of pounds, calling each *shih* a pecul. The manner in which the various items of the revenue are divided is thus stated for Kwangtung, in the *Red Book* for 1842:

	Taels.
Land tax in money	1,264,304
Pawnbrokers' taxes	5,990
Taxes at the frontier and on transportation	719,307
Retained	339,143
Miscellaneous sources	59,530
Salt department (gabel)	47,510
Revenue from customs at Canton	43,750
Other stations in the province	53,670
	2,533,204

This is evidently only the sum sent to the capital from this province, ostensibly as the revenue, and which the provincial treasury must collect. The real receipts from this province or any other cannot well be ascertained by foreigners; it is, however, known, that in former years, the collector of customs at Canton was obliged to remit annually from eight hundred thousand to one million three hundred thousand taels, and

[1] The *shih*, says Medhurst, is a measure of grain containing 3,460 English cubic inches. *China: Its State and Prospects*, p. 68. London, 1838.

[2] *Annales de la Foi*, Tome XVI., p. 440.

the gross receipts of his office were not far from three millions of taels.[1] This was then the richest collectorate in the Empire; but since the foreign trade at the open ports has been placed under foreign supervision, the resources of the Empire have been better reported. A recent analysis of the sources of revenue in the Eighteen Provinces has been furnished by the customs service; it places them under different headings from the preceding list, though the total does not materially differ. Out of this whole amount the sum derived from the trade in foreign shipping goes most directly to the central exchequer.

	Taels.
Land tax in money	18,000,000
Li-kin or internal excise on goods	20,000,000
Import and export duties collected by foreigners	12,000,000
Import and export duties on native commerce	3,000,000
Salt gabel	5,000,000
Sales of offices and degrees	7,000,000
Sundries	1,400,000
Amount paid in silver	66,400,000
Land tax paid in produce	13,100,000
	79,500,000

De Guignes has examined the subject of the revenue with his usual caution, and bases his calculations on a proclamation of Kienlung in 1777, in which it was stated that the total income in bullion at that period was tls. 27,967,000.

	Taels.
Income in money as above	27,967,000
Equal revenue in kind from grain	27,967,000
Tax on the second crop in the southern provinces	21,800,000
Gabel, coal, transit duties, etc	6,479,400
Customs at Canton	800,000
Revenue from silk, porcelain, varnish, and other manufactures	7,000,000
Adding house and shop taxes, licenses, tonnage duties, etc	4,000,000
Total revenue	89,713,400

The difference of about eighty millions of dollars between this amount and that given by Medhurst, will not surprise one who has looked into this perplexing matter. All these calculations are based on approximations, which, although easily made

[1] *Chinese Commercial Guide*, 2d edition, 1842, p. 143.

up, cannot be verified to our satisfaction; but all agree in placing the total amount of revenue below that of any European government in proportion to the population. In 1823, a paper was published by a graduate upon the fiscal condition of the country, in which he gave a careful analysis of the receipts and disbursements. P. P. Thoms translated it in detail, and summarized the former under three heads of taxes reckoned at tls. 33,327,056, rice sent to Peking 6,346,438, and supplies to army 7,227,360—in all tls. 46,900,854. Out of the first sum tls. 24,507,933 went to civilians and the army, leaving tls. 5,819,-123 for the Peking government, and tls. 3,000,000 for the Yellow River repairs and Yuen-ming Palace. The resources of the Empire this writer foots up at tls. 74,461,633, or just one-half of what Medhurst gives. The extraordinary sources of revenue which are resorted to in time of war or bad harvests, are sale of office and honors, temporary increase of duties, and demands for contributions from wealthy merchants and landholders. The first is the most fruitful source, and may be regarded rather as a permanent than a temporary expediency employed to make up deficiencies. The mines of gold and silver, pearl fisheries in Manchuria and elsewhere, precious stones brought from Ílí and Khoten, and other localities, furnish several millions.

The expenditures, almost every year, exceed the revenue, but how the deficit is supplied does not clearly appear; it has been sometimes drawn from the rich by force, at other times made good by paltering with the currency, as in 1852–55, and again by reducing rations and salaries. In 1832, the Emperor said the excess of disbursements was tls. 28,000,000;[1] and, in 1836, the defalcation was still greater, and offices and titles to the amount of tls. 10,000,000 were put up for sale to supply it. This deficiency has become more and more alarming since the drain of specie annually sent abroad in payment for opium has been increased by military exactions for suppressing the rebellion up to 1867. At that date the Empire began to recuperate. The principal items of the expenditure are thus stated by De Guignes:

[1] *Chinese Repository*, Vol. I., p. 159.

	Taels.
Salary of civil and military officers, a tithe of the impost on lands.	7,773,500
Pay of 600,000 infantry, three taels per month, half in money and half in rations	21,600,000
Pay of 242,000 cavalry, at four taels per month	11,616,000
Mounting the cavalry, twenty taels each	4,840,000
Uniforms for both arms of the service, four taels	3,368,000
Arms and ammunition	842,000
Navy, revenue cutters, etc.	13,500,000
Canals and transportation of revenue	4,000,000
Forts, artillery, and munitions of war	3,800,000
	71,339,500

This, according to his calculation, shows a surplus of nearly twenty millions of taels every year. But the outlays for quelling insurrections and transporting troops, deficiency from bad harvests, defalcation of officers, payments to the tribes and princes in Mongolia and Ílí, and other unusual demands, more than exceed this surplus. In 1833, the *Peking Gazette* contained an elaborate paper on the revenue, proposing various ways and means for increasing it. The author, named Na, says the income from land tax, the gabel, customs and transit duty, does not in all exceed forty millions of taels, while the expenditures should not much transcend thirty in years of peace.[1] This places the budget much lower than other authorities, but the censor perhaps includes only the imperial resources, though the estimate would then be too high. The pay and equipment of the troops is the largest item of expenditure, and it is probable that here the apparent force and pay are far too great, and that reductions are constantly made in this department by compelling the soldiers to depend more and more for support upon the plats of land belonging to them. It is considered the best evidence of good government on the part of an officer to render his account of the revenue satisfactorily, but from the injudicious system which exists of combining fiscal, legislative, and judicial functions and control in the same person, the temptations to defraud are strong, and the peculations proportionably great.

The salaries of officers, for some reasons, are placed so low as

[1] *Chinese Repository*, Vol. II., p. 431.

to prove that the legal allowances were really the nominal incomes, and the sums set against their names in the *Red Book* as *yang tien*, or anti-extortion perquisites (lit., 'nourishing frugality'), are the salaries. That of a governor-general is from 15,000 to 25,000 taels for the latter, and only 180 or 200 taels for the legal salary; a governor gets 15,000 when he is alone, and 10,000 or 12,000 when under a governor-general; a treasurer from 4,500 to 10,000; a judge from 3,000 to 8,000; a prefect from 2,000 to 4,500; district magistrates from 700 to 1,000, according to the onerousness of the post; an intendant from 3,000 to 4,500; a literary chancellor from 2,000 to 5,000; and military men from 4,000 taels down to 100 or 150 per annum. The perquisites of the highest and lowest officers are disproportionate, for the people prefer to lay their important cases before the highest courts at once, in order to avoid the expense of passing through those of a lower grade. The personal disposition of the functionary modifies the exactions he makes upon the people so much, that no guess can be made as to the amount.

The land tax is the principal resource for the revenue in rural districts, and this is well understood by all parties, so that there is less room for exactions. The land tax is from 1½ to 10 cents a *mao* (or from 10 to 66 cents an acre), according to the quality of the land, and difficulty of tillage; taking the average at 25 cents an acre, the income from this source would be upward of 150 millions of dollars. The clerks, constables, lictors, and underlings of the courts and prisons, are the "claws" of their superiors, as the Chinese aptly call them, and perform most of their extortions, and are correspondingly odious to the people. In towns and trading places, it is easier for the officers to exact in various ways from wealthy people, than in the country, where rich people often hire bodies of retainers to defy the police, and practise extortion and robbery themselves. Like other Asiatic governments, China suffers from the consequences of bribery, peculation, extortion, and poorly paid officers, but she has no powerful aristocracy to retain the money thus squeezed out of the people, and ere long it finds its way out of the hands of emperors and ministers back into the mass of the people.

The Chinese believe, however, that the Emperor annually remits such amounts as he is able to collect into Mukden, in time of extremity; but latterly he has not been able to do so at all, and probably never sent as much to that city as the popular ideas imagine. The sum applied to filling the granaries is much larger, but this popular provision in case of need is really a light draft upon the resources of the country, as it is usually managed. In Canton, there are only fourteen buildings appropriated to this purpose, few of them more than thirty feet square, and none of them full.

CHAPTER VI.

NATURAL HISTORY OF CHINA.

The succinct account of the natural history of China given by Sir John Davis in 1836, contained nearly all the popular notices of much value then known, and need not be repeated, while summarizing the items derived from other and later sources. Malte-Brun observed long ago, "That of even the more general, and, according to the usual estimate, the more important features of that vast sovereignty, we owe whatever knowledge we have obtained to some ambassadors who have seen the courts and the great roads—to certain merchants who have inhabited a suburb of a frontier town—and to several missionaries who, generally more credulous than discriminating, have contrived to penetrate in various directions into the interior." The volumes upon China in the Edinburgh Cabinet Library contain the best digest of what was known forty years since on this subject. The botanical collections of Robert Fortune in 1844–1849, and those of Col. Champion at Hongkong, have been studied by Bentham, while the later researches of Hance, Bunge and Maximowitch have brought many new forms to notice. In geology, Pumpelly, Kingsmill, Bickmore, and Baron Richthofen have greatly enlarged and certified our knowledge by their travels and memoirs; while Père David, Col. Prejevalsky, Swinhoe, Stimpson, and Sir John Richardson have added hundreds of new species to the scientific fauna of the Empire.

Personal investigation is particularly necessary in all that relates to the geology and fossils of a country, and the knowledge possessed on these heads is, it must be conceded, still meagre,

though now sufficient to convey a general idea of the formations, deposits, and contents of the mountains and mines, as well as the agencies at work in modifying the surface of this land. The descriptions and observed facts recorded in native books may furnish valuable hints when they can be compared with the places and productions, for at present the difficulty of explaining terms used, and understanding the processes described, render these treatises hard to translate. The empirical character of Chinese science compels a careful sifting of all its facts and speculations by comparisons with nature, while the amount of real information contained in medical, topographical, and itinerant works render them always worth examining. Large regions still await careful examination in every part of the Empire; and it will be well for the Chinese Government if no tempting metallic deposits are found to test its strength to protect and work them for its own benefit. But in mere science it cannot be doubted that so peculiar a part of the world as the plateau of Central Asia will, when thoroughly examined, solve many problems relating to geology, and disclose many important facts to illustrate the obscure phenomena of other parts of the world.

A few notices of geological formations furnished in the writings of travellers, have already been given in the geographical account of the provinces. The summary published by Davis is a well digested survey of the observations collected by the gentlemen attached to the embassies.[1]

The loess-beds, covering a great portion of Northern China, are among the most peculiar natural phenomena and interesting fields for geological investigation on the world's surface. Since attention was first directed to this deposit by Pumpelly, in 1864, its formation and extent have been more carefully examined by other geologists, whose hypotheses are now pretty generally discarded for that of Baron von Richthofen. The loess territory begins, at its eastern limit, with the foot hills of the great alluvial plane. From this rises a terrace of from 90 to 250 feet in height, consisting entirely of loess, and westward of it, in

[1] *The Chinese*, Vol. II., pp. 333–343.

a nearly north and south line, stretches the Tai-hang shan, or dividing range between the alluvial land and the hill country of Shansí. An almost uninterrupted loess-covered country extends west of this line to the Koko-nor and head-waters of the Yellow River. On the north the formation can be traced from the vicinity of Kalgan, along the water-shed of the Mongolian steppes, and into the desert beyond the Ala shan. Toward the south its limits are less sharply defined; though covering all the country of the Wei basin (in Shensí), none is found in Sz'chuen, due south of this valley, but it appears in parts of Honan and Eastern Shantung. Excepting occasional spurs and isolated spots—as at Nanking and the Lakes Poyang and Tung-ting—loess may be considered as ending everywhere on the north side of the Yangtsz' valley, and, roughly speaking, to cover the parallelogram between longs. 99° and 115°, and lats. 33° and 41°. The district within China Proper represents a territory half as large again as that of the German Empire, while outside of the Provinces there is reason to believe that loess spreads far toward the east and north. In the Wu-tai shan (Shansí), Richthofen observed this deposit to a height of 7,200 feet above the sea, and supposes that it may occur at higher levels.

The term *loess*, now generally accepted, has been used to designate a tertiary deposit appearing in the Rhine valley and several isolated sections of Europe; its formation has heretofore been ascribed to glaciers, but its enormous extent and thickness in China demand some other origin. The substance is a brownish colored earth, extremely porous, and when dry easily powdered between the fingers, when it becomes an impalpable dust that may be rubbed into the pores of the skin. Its particles are somewhat angular in shape, the lumps varying from the size of a peanut to a foot in length, whose appearance warrants the peculiarly appropriate Chinese name meaning 'ginger stones.' After washing, the stuff is readily disintegrated, and spread far and wide by rivers during their freshets; Kingsmill[1] states that a number of specimens which crumbled in the moist

[1] *Journal of the Geolog. Soc.*, London, for 1871, p. 379.

air of a Shanghai summer, rearranged themselves afterward in the bottom of a drawer in which they had been placed. Every atom of loess is perforated by small tubes, usually very minute, circulating after the manner of root-fibres, and lined with a thin coating of carbonate of lime. The direction of these little canals being always from above downward, cleavage in the loess mass, irrespective of its size, is invariably vertical, while from the same cause surface water never collects in the form of rain puddles or lakes, but sinks at once to the local water level.

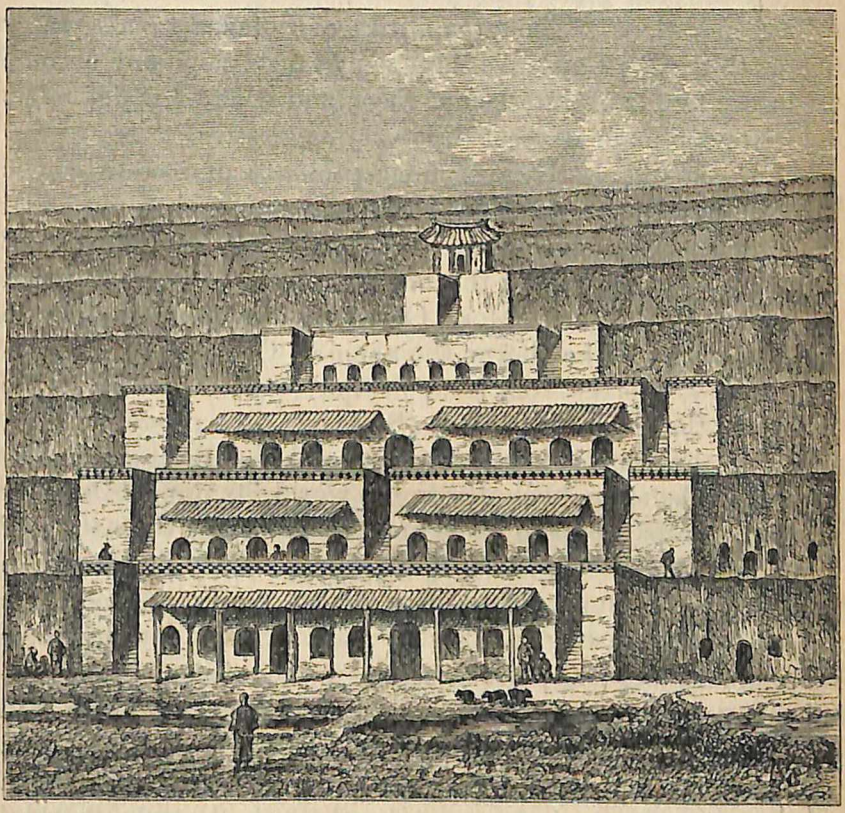
One of the most striking, as well as important phenomena of this formation is the perpendicular splitting of its mass into sudden and multitudinous clefts that cut up the country in every direction, and render observation, as well as travel, often exceedingly difficult. The cliffs, caused by erosion, vary from cracks measured by inches to cañons half a mile wide and hundreds of feet deep; they branch out in every direction, ramifying through the country after the manner of tree-roots in the soil—from each root a rootlet, and from these other small fibres—until the system of passages develops into a labyrinth of far-reaching and intermingling lanes. Were the loess throughout of the uniform structure seen in single clefts, such a region would indeed be absolutely impassable, the vertical banks becoming precipices of often more than a thousand feet. The fact, however, that loess exhibits all over a terrace formation, renders its surface not only habitable, but highly convenient for agricultural purposes; it has given rise, moreover, to the theory advanced by Kingsmill and some others, of its stratification, and from this a proof of its origin as a marine deposit. Richthofen argues that these apparent layers of loess are due to external conditions, as of rocks and débris sliding from surrounding hillsides upon the loess as it sifted into the basin or valley, thus interrupting the homogeneity of the gradually rising deposit. In the sides of gorges near the mountains are seen layers of coarse débris which, in going toward the valley, become finer, while the layers themselves are thinner and separated by an increasing vertical distance; along these rubble beds are numerous calcareous concretions which stand upright. These are then the terrace-forming layers which, by their

resistance to the action of water, cause the broken chasms and step-like contour of the loess regions. Each bank does indeed cleave vertically, sometimes—since the erosion works from below—leaving an overhanging bank; but meeting with this horizontal layer of marl stones, the abrasion is interrupted, and a ledge is made. Falling clods upon such spaces are gradually spread over their surfaces by natural action, converting them into rich fields. When seen from a height in good seasons, these systems of terraces present an endless succession of green fields and growing crops; viewed from the deep cut of a road below, the traveller sees nothing but yellow walls of loam and dusty tiers of loess ridges. As may be readily imagined, a country of this nature exhibits many landscapes of unrivalled picturesqueness, especially when lofty crags, which some variation in the water-course has left as giant guardsmen in fertile river valleys, stand out in bold relief against the green background of neighboring hills and a fruitful alluvial bottom, or when an opening of some ascending pass allows the eye to range over leagues of sharp-cut ridges and teaming crops, the work of the careful cultivator.

The extreme ease with which loess is cut away tends at times to seriously embarrass traffic. Dust made by the cart-wheels on a highway is taken up by strong winds during the dry season and blown over the surrounding lands, much after the manner in which it was originally deposited here. This action continued over centuries, and assisted by occasional deluges of rain, which find a ready channel in the road-bed, has hollowed the country routes into depressions of often 50 or 100 feet, where the passenger may ride for miles without obtaining a glimpse of the surrounding scenery. Lieutenant Kreitner, of the Széchenyí exploring expedition, illustrates,[1] in a personal experience in Shansí, the difficulty and danger of leaving these deep cuts; after scrambling for miles along the broken loess above the road, he only regained it when a further passage was cut off by a precipice on the one side, while a jump of some 30 feet into the beaten track below awaited him on the other. Difficult as

[1] *Im fernen Osten*, p. 462.

may be such a territory for roads and the purposes of trade, the advantages to a farmer are manifold. Wherever this deposit extends, there the husbandman has an assured harvest, two and even three times in a year. It is easily worked, exceedingly fertile, and submits to constant tillage, with no other manure than a sprinkling of its own loam dug from the nearest bank.



Facade of Dwelling in Loess Cliffs, Ling-shi hien. (From Richthofen.)

But loess performs still another service to its inhabitants. Caves made at the base of its straight clefts afford homes to millions of people in the northern provinces. Choosing an escarpment where the consistency of the earth is greatest, the natives cut for themselves rooms and houses, whose partition walls, cement, bed and furniture are made from the same loess. Whole villages cluster together in a series of adjoining or superimposed

chambers, some of which pierce the soil to a depth of often more than 200 feet. In more costly dwellings the terrace or succession of terraces thus perforated are faced with brick, as well as the arching of rooms within. The advantages of such habitations consist as well in imperviousness to changes of temperature without, as in their durability when constructed in properly selected places, many loess dwellings outlasting six or seven generations. The capabilities of defence in a country such as this, where an invading army must inevitably become lost in the tangle of interlacing ways, and where the defenders may always remain concealed, is very suggestive.

There remains, lastly, a peculiar property of loess which is perhaps more important than all other features when measured by its man-serving efficiency. This is the manner in which it brings forth crops without the aid of manure. From a period more than 2,000 years before Christ, to the present day, the province of Shansí has borne the name of Grainery of the Empire, while its fertile soil, *hwang-tu*, or 'yellow earth,' is the origin of the imperial color. Spite of this productiveness, which, in the fourteenth century, caused the Friar Odoric to class it as the second country in the world, its present capacity for raising crops seems to be as great as ever. In the nature of this substance lies the reason for this apparently inexhaustible fecundity. Its remarkably porous structure must indeed cause it to absorb the gases necessary to plant life to a much greater degree than other soils, but the stable production of those mineral substances needful to the yearly succession of crops is in the ground itself. The salts contained more or less in solution at the water level of the region are freed by the capillary action of the loess when rain-water sinks through the spongy mass from above. Surface moisture following the downward direction of the tiny loess tubes establishes a connection with the waters compressed below, when, owing to the law of diffusion, the ingredients, being released, mix with the moisture of the little canals, and are taken from the lowest to the topmost levels, permeating the ground and furnishing nourishment to the plant roots at the surface. It is on account of this curious action of loess that a copious rain-fall is more necessary in North

China than elsewhere, for with a dearth of rain the capillary communication from above, below, and *vice versa*, is interrupted, and vegetation loses both its manure and moisture. Drought and famine are consequently synonymous terms here.

As to the formation and origin of loess, Richthofen's theory is substantially as follows:[1] The uniform composition of this material over extended areas, coupled with the absence of stratification and of marine or fresh-water organic remains, renders impossible the hypothesis that it is a water deposit. On the other hand, it contains vast quantities of land-shells and the vestiges of animals (mammalia) at every level, both in remarkably perfect condition. Concluding, also, that from the conformation of the neighboring mountain chains and their peculiar weathering, the glacial theory is inadmissible, he advances the supposition that loess is a sub-aërial deposit, and that its fields are the drained analogues of the steppe-basins of Central Asia. They date from a geological era of great dryness, before the existence of the Yellow and other rivers of the northern provinces. As the rocks and hills of the highlands disintegrated, the sand was removed, not by water-courses seaward, but by the high winds ranging over a treeless desert landward, until the dust settled in the grass-covered districts of what is at present China Proper. New vegetation was at once nourished, while its roots were raised by the constantly arriving deposit; the decay of old roots produced the lime-lined canals which impart to this material its peculiar characteristics. Any one who has observed the terrible dust-storms of North China, when the air is filled with an impalpable yellow powder, which leaves its coating upon everything, and often extends, in a fog-like cloud, hundreds of miles to sea, will understand the power of this action during many thousand years. This deposition received the shells and bones of innumerable animals, while the dissolved solutions contained in its bulk stayed therein, or saturated the water of small lakes. By the sinking of mountain chains in the south, rain-clouds emptied themselves over this region with much greater frequency, and gradually the system became

[1] *China: Ergebnisse eigener Reisen.* Band I., S. 74. Berlin, 1877.

drained, the erosion working backward from the coast, slowly cutting into one basin after another. With the sinking of its salts to lower levels, unexampled richness was added to the wonderful topography of this peculiar formation.[1]

Pumpelly, while accepting this ingenious theory in place of his own (that of a fresh-water lake deposit), adds that the supply of loess might have been materially increased by the vast *mers-de-glace* of High Asia and the Tien shan, whose streams have for ages transported the products of glacial attrition into Central Asia and Northwest China. Again, he insists that Richthofen has not given importance enough to the parting planes, wrongly considered by his predecessors as planes of stratification. "These," he says, "account for the marginal layers of débris brought down from the mountains. And the continuous and more abundant growth of grasses *at one plane* would produce a modification of the soil structurally and chemically, which superincumbent accumulations could never efface. It should seem probable that we have herein, also, the explanation of the calcareous concretions which abound along these planes; for the greater amount of carbonic acid generated by the slow decay of this vegetation would, by forming a bicarbonate, give to the lime the mobility necessary to produce the concretions."

The metallic and mineral productions used in the arts comprise nearly everything found in other countries, and the common ones are furnished in such abundance, and at such rates, as conclusively prove them to be plenty and easily worked. The careful digest of observations published by Pumpelly through the Smithsonian Institution, carries out this remark, and indicates the vast field still to be explored. Coal exists in every province in China, and Pumpelly enumerates seventy-four localities which have been ascertained. Marco Polo's well-known notice of its use shows that the people had long employed it: "It is a fact that all over the country of Cathay there is a kind of black stone existing in beds in the mountains, which they dig out and burn like firewood. It is true that they have plenty of

[1] Compare Kingsmill, in the *Quar. Journal of the Geol. Soc. of London*, 1868, pp. 119 ff., and in the *North China Herald*, Vol. IX., 85, 86.

wood also, but they do not burn it, because those stones burn better and cost less.[1] This mineral seems to have been unknown in Europe till after the return of the Venetian to his native land, while it was employed before the Christian era in China, and probably in very ancient times, if the accessible deposits in Shensí then cropped out in its eroded gorges, as represented by Richthofen. The few fossil plants hitherto examined indicate that the mass of these deposits are of the Mesozoic age. The mode of working the coal mines is described by Pumpelly,[2] and was probably no worse two thousand five hundred years ago. Want of machinery for draining them prevents the miners from going much below the water-level, and a rain-storm will sometimes flood and ruin a shaft. An inclined plane seldom takes the workmen more than a hundred feet below the level of the mouth, and then a horizontal gallery conducts him to the end of the mine. Some water is bailed out by buckets handed from one level up to another at the top, and the coal is carried out in baskets on the miners' backs, or dragged in sleds over smooth, round sticks along passages too low for the coolies to do better than crawl as they work. Mr. Pumpelly found the gallery of one mine near Peking so low that he had to crawl the whole distance (six thousand feet) to see its construction, and when he emerged into daylight, with his knees nearly skinned, ascertained that the workmen padded theirs. The timbering is very expensive, yet, with all drawbacks, the coal sells, at the pit's mouth, for $2.00 down to 50 cents a ton. The mines, lying on the slopes of the plateau reaching from near Corea to the Yellow River, supply the plain with cheap and excellent fuel.

Blakiston gives an account of the manner in which coal is worked on the Upper Yangtsz', near the town of Süchau: "Having to be got out at a great height up in the cliff, very thick hawsers, made of plaited bamboo, are tightly stretched from the mouth, or near the mouth, of the working gallery, to a space near the water where the coal can be deposited. These

[1] Yule's *Marco Polo*, Vol. I., p. 395.

[2] *Across America and Asia*, pp. 291 ff.

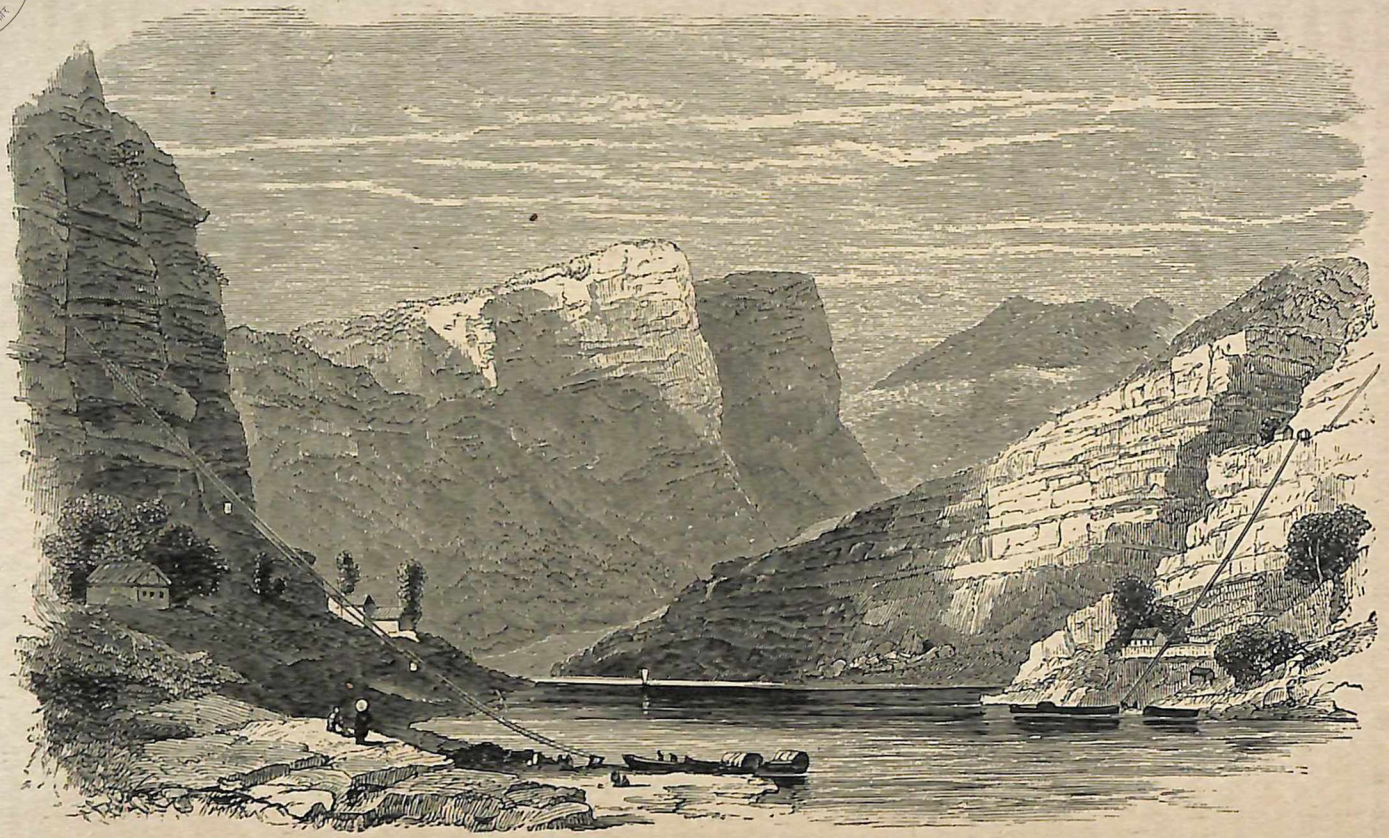
ropes are in pairs, and large pannier-shaped baskets are made to traverse on them, a rope passing from one over a large wheel at the upper landing, and down again to the other, so that the full basket going down pulls the empty one up, the velocity being regulated by a kind of brake on the wheel at the top. At some places the height at which the coal is worked is so great that two or more of these contrivances are used, one taking to a landing half way down, and another from thence to the river. The hawsers are kept taut by a windlass for that purpose at the bottom."[1] This useful mineral appears to be abundant throughout Sz'chuen Province, and is used here much less sparingly than in the east. With such inexpensive methods of getting coal to the water-courses, foreign machinery can hardly be expected to reduce its price very materially.

The economical use of coal in the household and the arts has been carried to great perfection. Anthracite is powdered and mixed with wet clay, earth, sawdust or dung, according to the exigencies of the case, in the proportion of about seven to one; the balls thus made are dried in the sun. The brick-beds (*kang*) are effective means of warming the house, and the hand furnaces enable the poor to cook with these balls—aided by a little charcoal or kindlings—at a trifling expense. This form of consumption is common north of the Yellow River, and brings coal within reach of multitudes who otherwise would suffer and starve. Bituminous, brown, and other varieties of coal occur in the same abundance and extent as in other great areas, giving promise of adequate supplies for future ages. The coal worked on the Peh kiang, in Kwangtung, contains sulphur, and is employed in the manufacture of copperas.[2]

Crystallized gypsum is brought from the northwest of the province to Canton, and is ground to powder in mills; plaster

[1] *Five Months on the Yang-tsze*, p. 265. *Annales de la Foi*, Tome IX., p. 457.

[2] *N. C. Br. R. A. Soc. Journal*, New Series, No. III., pp. 94–106, and No. IV., pp. 243 ff. Notes by Mr. Hollingworth of a Visit to the Coal Mines in the Neighborhood of Loh-Ping. *Blue Book, China*, No. 2, 1870, p. 11. *Notes and Queries on China and Japan*, Vol. II., pp. 74–76. *North China Herald*, passim. Richthofen's *Letters*, and in *Ocean Highways*, Nov., 1873. *Chinese Repository*, Vol. XIX., pp. 385 ff.



COAL GORGE ON THE YANGTSZ'. (FROM BLAKISTON.)

of Paris and other forms of this sulphate are common all over China. It is not used as a manure, but the flour is mixed with wood-oil to form a cement for paying the seams of boats after they have been caulked. The powder is employed as a dentifrice, a cosmetic, and a medicine, and sometimes, also, is boiled to make a gruel in fevers, under the idea that it is cooling. The bakers who supplied the English troops at Amoy, in 1843, occasionally put it into the bread to make it heavier, but not, as was erroneously charged upon them, with any design of poisoning their customers, for they do not think it noxious; its employment in coloring green tea, and adulterating powdered sugar, is also explainable by other motives than a wish to injure the consumers.

Limestone is abundant at Canton, both common clouded marble and blue limestone; the last is extensively used in the artificial rockwork of gardens. Even if the Cantonese knew of the existence of lime in limestone, which they generally do not, the expense of fuel for calcining it would prevent their burning it while oyster-shells are so abundant in that region. In other provinces stone-lime is burned, by the aid of coal, in small kilns. The fine marble quarried near Peking is regarded as fit alone for imperial uses, and is seen only in such places as the Altar of Heaven and palace grounds. The marble used for floors is a fissile crystallized limestone, unsusceptible of polish; no statues or ornaments are sculptured from this mineral, but slabs are sometimes wrought out, and the surfaces curiously stained and corroded with acids, forming rude representations of animals or other figures, so as to convey the appearance of natural markings. Some of these simulated petrifactions are exceedingly well done. Slabs of argillaceous slate are also chosen with reference to their layers, and treated in the same manner. An excellent granite is used about Canton and Amoy for building, and no people exceed the Chinese in cutting it. Large slabs are split out by wooden wedges, cut for basements and foundations, and laid in a beautiful manner; pillars are also hewn from single stones of different shapes, though of no extraordinary dimensions, and their shafts embellished with inscriptions. Ornamental walls are frequently formed of large slabs set in

posts, like panels, the outer faces of which are beautifully carved with figures representing a landscape or procession. Red and gray sandstone, gneiss, mica slate, and other species of rock, are also worked for pavements and walls.

Nitre is cheap and common enough in the northern provinces to obviate any fear of its being smuggled into the country from abroad; it is obtained in Chihlí by lixiviating the soil, and furnishes material for the manufacture of gunpowder. A lye is obtained from ashes, which partially serves the purposes of soap; but the people are still ignorant of the processes necessary for manufacturing it. Fourteen localities of alum are given in Pumpelly's list, but the greatest supply for the eastern provinces comes from deposits of shale, in Ping-yang hien, in Chehkiang, which produces about six thousand tons annually. It is used mostly by the dyers, also to purify turbid water, and whiten paper. Other earthy salts are known and used, as borax, sal-ammoniac (which is collected in Mongolia and Íli from lakes and the vicinity of extinct volcanoes), and blue and white vitriol, obtained by roasting pyrites. Common salt is procured along the eastern and southern coasts by evaporating sea-water, rock-salt not having been noticed; in the western provinces and Shansí, it is obtained from artesian wells and lakes as cheaply as from the ocean; in Tsing-yen hien, in Central Sz'chuen, two hundred and thirty-seven wells are worked. At Chusan the sea-water is so turbid that the inhabitants filter it through clay, afterward evaporating the water.

The minerals heretofore found in China have, for the most part, been such as have attracted the attention of the natives, and collected by them for curiosity or sale. The skilful manner in which their lapidaries cut crystal, agate, and other quartzose minerals, is well known.[1] The corundum used for polishing and finishing these carvings occurs in China, but a good deal of emery in powder is obtained from Borneo. A composition of granular corundum and gum-lac is usually employed by workmen in order to produce the highest lustre of

[1] Compare Rémusat, *Histoire de Khotan*, pp. 163 ff., where there is an extended list of Chinese precious stones drawn from native sources.

which the stones are capable. The three varieties of the silicate of alumina, called jade, nephrite, and jadeite by mineralogists, are all named *yuh* by the Chinese, a word which is applied to a vast variety of stones—white marble, ruby, and cornelian all coming under it—and therefore not easy to define. Jade has long been known in Europe as a variety of jasper, its separation from that stone into a species by itself being of comparatively recent origin. Since the third edition of Boetius, in 1647, the two minerals have been regarded as entirely distinct. Its value in the eyes of the Chinese depends chiefly upon its sonorousness and color. The costliest specimens are brought from Yunnan and Khoten; a greenish-white color is the most highly prized, a plain color of any shade being of less value. A cargo of this mineral was once imported into Canton from New Holland, but the Chinese would not purchase it, owing to a fancy taken against its origin and color. The patient toil of the workers in this hard mineral is only equalled by the prodigious admiration with which it is regarded; both fairly exhibit the singular taste and skill of the Chinese. Its color is usually a greenish-white, or grayish-green and dark grass-green; internally it is scarcely glimmering. Its fracture is splintery; splinters white; mass semi-transparent and cloudy; it scratches glass strongly, and can itself generally be scratched by flint or quartz, but while not excessively hard it is remarkable for toughness. The stone when freshly broken is less hard than after a short exposure. Specific gravity from 2.9 to 3.1.[1] Fischer (pp. 314–318) gives some one hundred and fifty names as occurring in various authors—ancient and modern—for jade or nephrite.[2] An interesting testimony to the esteem

[1] Murray's *China*, Edinburgh, 1843, Vol. III., p. 276; compare also an article on this stone by M. Blondel, of Paris, published in the *Smithsonian Report* for 1876. *Mémoires concernant les Chinois*, Tome XIII., p. 389. Rémusat in the *Journal des Savans*, Dec., 1818, pp. 748 ff. *Notes and Queries on C. and J.*, Vol. II., pp. 173, 174, and 187; Vol. III., p. 63; Vol. IV., pp. 13 and 33. *Macmillan's Magazine*, October, 1871. Yule, *Cathay and the Way Thither*, Vol. II., p. 564.

[2] *Nephrit und Jadeit, nach ihren mineralogischen Eigenschaften sowie nach ihrer urgeschichtlichen und ethnographischen Bedeutung.* Heinrich Fischer, Stuttgart, 1880. An exhaustive treatise on every phrase and variety of the mineral.

in which this stone was held in China during the middle ages comes from Benedict Goës (1602), who says: "There is no article of traffic more valuable than lumps of a certain transparent kind of marble, which we, from poverty of language, usually call jasper. . . . Out of this marble they fashion a variety of articles, such as vases, brooches for mantles and girdles, which, when artistically sculptured in flowers and foliage, certainly have an effect of no small magnificence. These marbles (with which the Empire is now overflowing) are called by the Chinese Iusce. There are two kinds of it; the first and more valuable is got out of the river at Cotan, almost in the same way in which divers fish for gems, and this is usually extracted in pieces about as big as large flints. The other and inferior kind is excavated from the mountains." The ruby, diamond, amethyst, sapphire, topaz, pink tourmaline, lapis-lazuli,[1] turquoises, beryl, garnet, opal, agate, and other stones, are known and most of them used in jewelry. A ruby brought from Peking is noticed by Bell as having been valued in Europe at $50,000. The seals of the Boards are in many instances cut on valuable stones, and private persons take great pride in quartz or jade seals, with their names carved on them; lignite and jet are likewise employed for cheaper ornaments, of which all classes are fond.

All the common metals, except platina, are found in China, and the supply would be sufficient for all the purposes of the inhabitants, if they could avail themselves of the improvements adopted in other countries in blasting, mining, etc. The importations of iron, lead, tin, and quicksilver, are gradually increasing, but they form only a small proportion of the amount used throughout the Empire, especially of the two first named; iron finds its way in because of its convenient forms more than its cheapness. The careful examination of Chinese topographical works by Pumpelly,[2] records the leading localities of iron in every province, and where copper, tin, lead, silver, and quicksilver have been observed; he also mentions fifty-two places pro-

[1] Obtained from Badakshan. Wood, *Journey to the Oxus*, p. 263.

[2] *Geological Researches in China*, Chap. X.

ducing gold in various forms, most of them in Sz'chuen. The rumor of gold-washings occurring not far from Chifu, in Shantung, caused much excitement in 1868, but they were soon found to be not worth the labor. Gold has never been used as coin in China, but is wrought into jewelry; most of it is consumed in gilding and exported to India as bullion, in the shape of small bars or coarse leaves.

Silver is mentioned in sixty-three localities by the same author; large amounts are brought from Yunnan, and the mines in that region must be both extensive and easily worked to afford such large quantities as have been exported. The working of both gold and silver mines has been said to be prohibited, but this interdiction is rather a government monopoly of the mines than an injunction upon working those which are known. The importation of gold into China during the two centuries the trade has been opened, does not probably equal the exportation which has taken place since the commencement of the opium trade. It is altogether improbable that the Chinese are acquainted with the properties of quicksilver in separating these two metals from their ores, though its consumption in making vermilion and looking-glasses calls for over two thousand flasks yearly at Canton. Cinnabar occurs in Kweichau and Shensí and furnishes most of the "water silver," as the Chinese call it, by a rude process of burning brushwood in the wells, and collecting the metal after condensation.

Copper is used for manufacturing coin, bells, bronze articles, domestic and cooking utensils, cannon, gongs, and brass-foil. It is found pure in some instances, and the sulphuret, the blue and green carbonates, pyrities, and other ores are worked; malachite is ground for a paint. It occurs in every province, and is specially rich in Shansí and Kweichau. The ores of zinc and copper in Yunnan and Sz'chuen furnish spelter, and the peculiar alloy known as white copper or argentan, containing in addition tin, iron, nickel, and lead. So much use indicates large deposits of the ores. Tin is rather abundant, but lead is more common; thirty-nine localities of the first are mentioned, some of which are probably zinc ores, as the Chinese confound tin and zinc under one generic name. Lead occurs with silver

in many places; twenty-four mines are mentioned in Pumpelly's list, and those in Fuhkien are rich; but the extensive importations prove that its reduction is too expensive to compete with the foreign.

Realgar is quite common, this and orpiment being used as paints; statuettes and other articles are carved from the former, while arsenic is used in agriculture to quicken grain and preserve it from insects. Amber and fossilized copal are collected in several localities; the first is much employed in the making of court necklaces and hair ornaments. The *fei-tsui* or jadeite is the most prized of the semi-precious stones; it is cut into ear-rings, finger-rings, necklaces, etc. Pumpelly mentions pieces of this mineral set in relics obtained from tombs in Mexico, though no locality where it abounds has yet been found in America. Lapis-lazuli is employed in painting upon copper and porcelain ware; this mineral is obtained in Chehkiang and Kansuh; jadeite, topaz, and other fine stones are most plenty in Yunnan. A few minerals and fossils have been noticed in the vicinity and shops at Canton, but China thus far has furnished very few petrifactions in any strata. Coarse epidote occurs at Macao, and tungstate of iron has been noticed in the quartz rocks at Hongkong. Petrified crabs (*macrophthalmus*) have been brought to Canton from Hainan, which are prized by the natives for their supposed medicinal qualities. Scientists have hitherto described a score or more species of Devonian shells, and recognized fragments of the hyena, tapir, rhinoceros, and stegedon, among some other doubtful vertebratæ in the "dragon's bones" sold in medicine shops; but further examinations will doubtless increase the list. Orthoceratites and bivalve shells of various kinds are noticed in Chinese books as being found in rocks, and fossil bones of huge size in caves and river banks.

There are many hot springs and other indications of volcanic action along the southern acclivities of the table land in the provinces of Shensí and Sz'chuen; and at Jeh-ho, in Chihlí, there are thermal springs to which invalids resort. The *Ho tsing*, or Fire wells, in Sz'chuen are apertures resembling artesian springs, sunk in the rock to a depth of one thousand

five hundred or one thousand eight hundred feet, whilst their breadth does not exceed five or six inches. This is a work of great difficulty, and requires in some cases the labor of two or three years. The water procured from them contains a fifth part of salt, which is very acrid, and mixed with much nitre. When a lighted torch is applied to the mouth of some of those which have no water, fire is produced with great violence and a noise like thunder, bursting out into a flame twenty or thirty feet high, and which cannot be extinguished without great danger and expense. The gas has a bituminous smell, and burns with a bluish flame and a quantity of thick, black smoke. It is conducted under boilers in bamboos, and employed in evaporating the salt-water from the other springs.[1] Besides the gaseous and aqueous springs in these provinces, there are others possessing different qualities, some sulphurous and others chalybeate, found in Shansí and along the banks of the Yellow River. Sulphur occurs, as has been noted, in great abundance in Formosa, and is purified for powder manufacturers.

The animal and vegetable productions of the extensive regions under the sway of the Emperor of China include a great variety of types of different families. On the south the islands of Hainan and Formosa, and parts of the adjacent coasts, slightly partake of a tropical character, exhibiting in the cocoanuts, plantains, and peppers, the parrots, lemurs, and monkeys, decided indications of an equatorial climate. From the eastern coast across through the country to the northwest provinces occur mountain ranges of gradually increasing elevation, interspersed with intervales and alluvial plateaus and bottoms, lakes and rivers, plains and hills, each presenting its peculiar productions, both wild and cultivated, in great variety and abundance. The southern ascent of the high land of Mongolia, the uncultivated wilds of Manchuria, the barren wastes of the desert of Gobi, with its salt lakes, glaciers, extinct volcanoes, and isolated mountain ranges; and lastly the stupendous

[1] Humboldt, *Fragmens Asiatiques*, Tome I., p. 196. *Annales de la Foi*, Janvr., 1829, pp. 416 ff.

chains and valleys of Tibet, Koko-nor, and Kwănlun all differ from each other in the character of their productions. In one or the other division, every variety of soil, position, and temperature occur which are known on the globe; and what has been ascertained within the past fifteen years by enterprising naturalists is an earnest of future greater discoveries.

Of the quadrumanous order of animals, there are several species. The Chinese are skilful in teaching the smaller kinds of monkeys various tricks, but M. Breton's picture of their adroitness and usefulness in picking tea in Shantung from plants growing on otherwise inaccessible acclivities, is a fair instance of one of the odd stories furnished by travellers about China, inasmuch as no tea grows in Shantung, and monkeys are taught more profitable tricks.[1] One of the most remarkable animals of this tribe is the *douc*, or Cochinchinese monkey (*Semnopithecus nemæus*). It is a large species of great rarity, and remarkable for the variety of colors with which it is adorned. Its body is about two feet long, and when standing in an upright position its height is considerably greater. The face is of an orange color, and flattened in its form. A dark band runs across the front of the forehead, and the sides of the countenance are bounded by long spreading yellowish tufts of hair. The body and upper parts of the forearms are brownish gray, the lower portions of the arms, from the elbows to the wrists, being white; its hands and thighs are black, and the legs of a bright red color, while the tail and a large triangular spot above it are pure white. Such a creature matches well, for its grotesque and variegated appearance, with the mandarin duck and gold fish, also peculiar to China.

Chinese books speak of several species of this family, and small kinds occur in all the provinces. M. David has recently added two novelties to the list from his acquisitions in Eastern Koko-nor, well fitted for that cold region by their abundant hair. The *Rhinopithecus roxellanæ* inhabits the alpine forests, nearly two miles high, where it subsists on the buds of plants and bamboo shoots laid up for winter supply; its face is green-

[1] Breton, *China, its Costumes, Arts*, etc., Vol. II.

ish, the nose remarkably *rétroussé*, and its strong, brawny limbs well fitted for the arboreal life it leads; the hair is thick and like a mane on the back, shaded with yellow and white tints. In this respect it is like the Gelada monkey of Abyssinia, and a few others protected in this part of the body from cold. This is no doubt the kind called *fí-fí* in native books, and once found in flocks along many portions of western China, as these authors declare. Their notices are rather tantalizing, but, now that we have found the animal, are worth quoting: "The *fí-fí* resembles a man; it is clothed with its hair, runs quick and eats men; it has a human face, long lips, black, hairy body, and turns its heels. It laughs on seeing a man and covers its eyes with its lips; it can talk and its voice resembles a bird. It occurs in Sz'chuen, where it is called *jin hiung*, or 'human bear;' its palms are good eating, and its skin is used; its habit is to turn over stones, seeking for crabs as its food. Its form is like that of the men who live in the Kwănlun Mountains."

Another large simia (*Macacus thibetanus*) comes from the same region; it lives in bands like the preceding, but lower down the mountains. A third species of great size was reported to occur in the southwestern part of Sz'chuen, and described as greenish like the *Macacus tcheliensis* from the hills northwest of Peking—the most northern species of monkey known. The former of these two may possibly be the *sing-sing* of the Chinese books, though its characteristics involve some confusion of the Macacus and baboon on the part of those writers. Two other species of Macacus, and as many of the gibbons, have been noticed in Hainan, Formosa, and elsewhere in the south.

The singular proboscis monkey (*Nasalis laivalus*), called *khi-doc* in Cochinchina and *hai-tuh* by the Chinese, exhibits a strange profile, part man and part beast, reminding one of the combinations in Da Vinci's caricatures. It is a large animal, covered with soft yellowish hair tinted with red; the long nose projects in the form of a sloping spatula. The Chinese account says: "Its nose is turned upward, and the tail very long and forked at the end, and that whenever it rains, the animal

thrusts the forks into its nose. It goes in herds, and lives in friendship; when one dies, the rest accompany it to burial. Its activity is so great that it runs its head against the trees; its fur is soft and gray, and the face black."[1]

The *Chinese Herbal*, from which the preceding extract is taken, describes the bat under various names, such as 'heavenly rat,' 'fairy rat,' 'flying rat,' 'night swallow,' and 'belly wings;'

Fi-ff and Hai-tuh. (From a Chinese cut.)

it also details the various uses made of the animal in medicine, and the extraordinary longevity attained by some of the white species. The bat is in form like a mouse; its body is of an ashy black color; and it has thin fleshy wings, which join the four legs and tail into one. It appears in the summer, but becomes torpid in the winter; on which account, as it eats nothing during that season, and because it has a habit of swallowing its breath, it attains a great age. It has the character of a night

[1] Bridgman's *Chinese Chrestomathy*, p. 469.

rover, not on account of any inability to fly in the day, but it dares not go abroad at that time because it fears a kind of hawk. It subsists on mosquitoes and gnats. It flies with its head downward, because the brain is heavy.[1] This quotation is among the best Chinese descriptions of animals, and shows how little there is to depend upon in them, though not without interest in their notices of habits. Bats are common everywhere, and seem to be regarded with less aversion than in certain other countries. Twenty species belonging to nine genera are given in one list, most of them found in southern China; the wings of some of these measure two feet across; a large sort in Sz'chuen is eaten.

The brown bear is known, and its paws are regarded as a delicacy; trained animals are frequently brought into cities by showmen, who have taught them tricks. The discovery by David of a large species (*Ailuropus melanoleurus*) allied to the Himalayan panda (*Ailurus fulgens*), also found on the Sz'chuen Mountains, adds another instance of the strange markings common in Tibetan fauna. This beast feeds on flesh and vegetables; its body is white, but the ears, eyes, legs, and tip of the tail are quite black; the fur is thick and coarse. It is called *peh hiung*, or white bear, by the hunters, but is no doubt the animal called *pi* in the classics, common in early times over western China, and now rare even in Koko-nor. The Tibetan black bear occurs in Formosa, Shantung, and Hainan, showing a wide range. The badger is quite as widespread, and the two species have the same general appearance as their European congeners.

Carnivorous animals still exist, even in thickly settled districts. The lion may once have roamed over the southwestern Manji kingdom, but the name and drawings both indicate a foreign origin. It has much connection with Buddhism, and grotesque sculptures of rampant lions stand in pairs in front of temples, palaces, and graves, as a mark of honor and symbol of protection. The last instance of a live lion brought as tribute was to Hientsung in A.D. 1470, from India or Ceylon.

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[1] *Chinese Repository*, Vol. VII., p. 90.

Many other species of *felis* are known, some of them peculiar to particular regions. The royal tiger has been killed near Amoy, and in Manchuria the panther, leopard, and tiger-cat all occur in the northern and southern provinces, making altogether a list of twelve species ranging from Formosa to Sagalien. Mr. Swinhoe's [1] account of his rencounter with a tiger near Amoy in 1858 explains how such large animals still remain in thickly settled regions where food is abundant and the people are timid and unarmed. In thinly peopled parts they become a terror to the peasants. M. David enumerates six kinds, including a lynx, in Monpin alone, one of which (*Felis scripta*) is among the most prettily marked of the whole family. Hunting-leopards and tigers were used in the days of Marco Polo by Kublai, but the manly pastime of the chase, on the magnificent scale then practised, has fallen into disuse with the present princes. A small and fierce species of wild-cat (*Felis chinensis*), two feet long, of a brownish-gray color, and handsomely marked with chestnut spots and black streaks, is still common in the southwestern portions of Fuhkien. Civet cats of two or three kinds, tree-civets (*Helictes*), and a fine species of marten (*Martes*), with yellow neck and purplish-brown body, from Formosa, are among the smaller carnivora in the southern provinces.

The domestic animals offer few peculiarities. The cat, *kia li*, or 'household fox,' is a favorite inmate of families, and the ladies of Peking are fond of a variety of the Angora cat, having long silky hair and hanging ears. The common species is variously marked, and in the south often destitute of a tail; when reared for food it is fed on rice and vegetables, but is not much eaten. Popular superstition has clustered many omens of good and bad luck about cats; it is considered, for example, the prognostic of certain misfortune when a cat is stolen from a house—much as, in some countries of the western world, it is unlucky when a black cat crosses one's pathway.

The dog differs but little from that reared among the Esquimaux, and is perhaps the original of the species. There is

[1] *Zoöl. Soc. Proc.*, 1870, p. 626.

short horns. [illegible]in their size, which is about a foot high and gentle disposi[illegible]gth; the color is a pale yellow or black, and name, *sz'-pʻm*, with coarse bristling hair, and tails curling up a c[illegible]ver the back, and rising so abruptly from the insertion that it has been humorously remarked they almost assist in lifting the legs from the ground. The hind legs are unusually straight, which gives them an awkward look, and perhaps prevents them running very rapidly. The black eyes are small and piercing, and the insides of the lips and mouths, and the tongue, are of the same color, or a blue black. The bitch has a dew-claw on each hind leg, but the dog has none. The ears are sharp and upright, the head peaked, and the bark a short, thick snap, very unlike the deep, sonorous baying of our mastiffs. In Nganhwui a peculiar variety has pendant ears of great length, and thin, wirey tails. One item in the Chinese description of the dog is that it 'can go on three legs'—a gait that is often exhibited by them. They are used to watch houses and flocks; the Mongolian breed is fierce and powerful. The dogs of Peking are very clannish, and each set jealously guards its own street or yard; they are fed by the butchers in the streets, and serve as scavengers there and in all large towns. They are often mangey, presenting hideous spectacles, and instances of *plica polonica* are not uncommon, but, as among the celebrated street dogs of Constantinople, hydrophobia is almost unheard of among them. Dog markets are seen in every city where this meat is sold; the animals are reared expressly for the table, but their flesh is expensive.

One writer remarks on their habits, when describing the worship offered at the tombs: "Hardly had the hillock been abandoned by the worshippers, when packs of hungry dogs came running up to devour the part of the offerings left for the dead, or to lick up the grease on the ground. Those who came first held up their heads, bristled their hair, and showed a proud and satisfied demeanor, curling and wagging their tails with selfish delight; while the late-comers, tails between their legs, held their heads and ears down. There was one of them, however, which, grudging the fare, held his nose to the wind as if sniffing for better luck; but one lean, old, and ugly beast,

with a flayed back and hairless tail, was seen g
ing himself from the band, though without se
himself, making a thousand doublings and win
while looking back to see if he was noticed. But the
sharper knew what he was about, and as soon as he thought
himself at a safe distance, away he went like an arrow, the
whole pack after him, to some other feast and some other
tomb."[1]

Wolves, raccoon-dogs, and foxes are everywhere common, in some places proving to be real pests in the sheepfold and farm-yard. In the vicinity of Peking, it is customary to draw large white rings on the plastered walls, in order to terrify the wolves, as these beasts, it is thought, will flee on observing such traps. The Chinese regard the fox as the animal into which human spirits enter in preference to any other, and are therefore afraid to destroy or displease it. The elevated steppes are the abodes of three or four kinds, which find food without difficulty. The Tibetan wolf (*Canis chanco*) has a warm, yellowish-white covering, and ranges the wilds of Tsaidam and Koko-nor in packs. The fox (*Canis cossac*) spreads over a wide range, and is famed for its sagacity in avoiding enemies.

The breed of cattle and horses is dwarfish, and nothing is done to improve them. The oxen are sometimes not larger than an ass; some of them have a small hump, showing their affinity to the zebu; the dewlap is large, and the contour neat and symmetrical. The forehead is round, the horns small and irregularly curved, and the general color dun red. The buffalo (*shui niu*), or 'water ox,' is the largest beast used in agriculture. It is very docile and unwieldy, larger than an English ox, and its hairless hide is a light black color; it seeks coolness and refuge from the gnat in muddy pools dug for its convenience, where it wallows with its nose just above the surface. Each horn is nearly semi-circular, and bends downward, while the head is turned back so as almost to bring the nose horizontal. The herd-boys usually ride it, and the metaphor of a lad astride a buffalo's back, blowing the flute, frequently enters into Chinese

[1] Borget, *La Chine Ouverte*, p. 147.

short horns. T ural life. The yak of Tibet is employed as a gentle dispositi and to furnish food and raiment. It is covered name, *sz'-puh si* t hair reaching nearly to the ground, and the a camel, nor used for making standards among the Persians, teristics of as fly-flaps or chowries in India; the hair is woven ary into carpets. The wild yak (*Poephagus grunniens*) has already been described. Great herds of these huge bovines roam over the wastes of Koko-nor, where their dried droppings furnish the only fuel for the nomads crossing those barren wilds.

The domestic sheep is the broad-tailed species, and furnishes excellent mutton. The tail is sometimes ten inches long and three or four thick; and the size of this fatty member is not affected by the temperature. The sheep are reared in the north by Mohammedans, who prepare the fleeces for garments by careful tanning; the animal is white, with a black head. Goats are raised in all parts, but not in large numbers. The argali and wild sheep of the Ala shan Mountains (*Ovis Burrhel*) furnish exciting sport in chasing them over their native cliffs, which they clamber with wonderful agility. Another denizen of those dreary wilds is the *Antilope picticauda*, a small and tiny species, weighing about forty pounds, of a dusky gray color, with a narrow yellow stripe on the flanks. Its range is about the head-waters of the Yangtsz' River; its swiftness is amazing; it seems absolutely to fly. It scrapes for itself trenches in which to lie secure from the cold.

Many genera of ruminants are represented in China and the outlying regions; twenty-seven rare species are enumerated in Swinhoe's and David's lists, of which eleven are antelopes and deer. The range of some of them is limited to a narrow region, and most of them are peculiar to the country. The wealthy often keep deer in their grounds, especially the spotted deer (*Cervus pseudaxis*), from Formosa, whose coat is found to vary greatly according to sex and age; its name, *kin-tsien luh*, or 'money deer,' indicates its markings. Mouse-deer are also reared as pets in the southern provinces.

One common species is the *dzeren* or *hwang yang* (*Antilope gutturosa*), which roams over the Mongolian wilds in large herds, and furnishes excellent venison. It is heavy in compar-

ison to the gazelle; horns thick, about nine i
lated to the tips, lyrated, and their points turn
goitre, which gives it its name, is a movable p
sioned by the dilatation of the larnyx; in the
much enlarged. The animal takes surprising bounds
ning. Great numbers are killed in the autumn, and their
skins, and horns are all of service for food, leather, and medicine.

Several kinds of hornless (or nearly hornless) deer, allied to the musk-deer, exist. One is the river-deer (*Hydropotes*), common near the Yangtsz' River, which resembles the pudu of Chili; it is very prolific on the bottoms and in the islands. Another sort in the northwest (*Elaphodus*) is intermediary between the muntjacs and deer, having long, trenchant, canine upper teeth, and a deep chocolate-colored fur. Three varieties of the musk-deer (*Moschus*) have been observed, differing a little in their colors, all called *shiê* or *hiang chang* by the Chinese, and all eagerly hunted for their musk. This perfume was once deemed to be useful in medicine, and is cited in a Greek prescription of the sixth century; the abundance of the animal in the Himalayan regions may be inferred from Tavernier's statement that he bought 7673 bags or pods at Patna in one of his journeys over two hundred years ago. This animal roams over a vast extent of alpine territory, from Tibet and Shensí to Lake Baikal, and inhabits the loftiest cliffs and defiles, and makes its way over rugged mountains with great rapidity. It is not unlike the roe in general appearance, though the projecting teeth makes the upper lip to look broad. Its color is grayish-brown and its limbs slight; the hair is coarse and brittle, almost like spines. The musk is contained in a pouch beneath the tail on the male, and is most abundant during the rutting season. He is taken in nets or shot, and the hunters are said to allure him to destruction by secreting themselves and playing the flute, though some would say the animal showed very little taste in listening to such sounds as Chinese flutes usually produce. The musk is often adulterated with clay or mixed with other substances to moderate its powerful odor. A singular and interesting member of this family is reared in the great park south of Peking—a kind of elk with

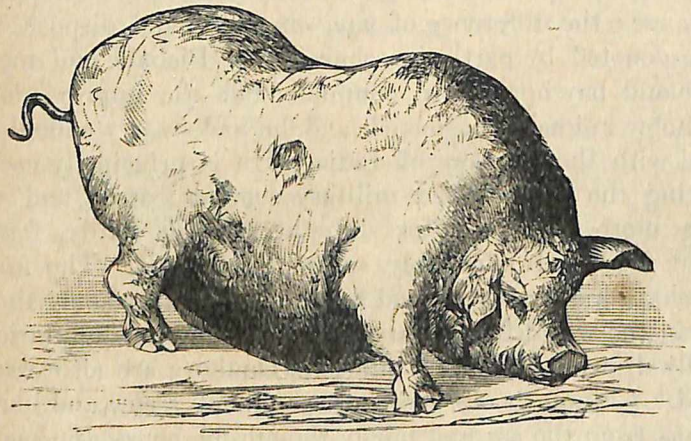
short horns. This large animal (*Elaphurus Davidianus*), of a gentle disposition, equals in size the largest deer; its native name, *sz'-puh siang*, indicates that it is neither a horse, a deer, a camel, nor an ox, but partakes in some respects of the characteristics of each of them. Its gentle croaking voice seems to be unworthy of so huge a body; the color is a uniform fawn or light gray.

The horse is not much larger than the Shetland pony; it is bony and strong, but kept with little care, and presents the worst possible appearance in its usual condition of untrimmed coat and mane, bedraggled fetlocks, and twisted tail. The Chinese language possesses a great variety of terms to designate the horse; the difference of age, sex, color, and disposition, all being denoted by particular characters. Piebald and mottled, white and bay horses are common; but the improvement of this noble animal is neglected, and he looks sorry enough compared with the coursers of India. He is principally used for carrying the post, or for military services; asses and mules being more employed for draught. He is hardy, feeds on coarse food, and admirably serves his owners. The mule is well-shaped, and those raised for the gentry are among the very best in the world for endurance and strength; dignitaries are usually drawn by sumpter mules. Donkeys are also carefully raised. Chinese books speak of a mule of a cow and horse, as well as from the ass and horse, though, of course, no such hybrid as the former ever existed.

The wild ass, or onager (under the several names by which it is known in different lands, *kyang*, *djang*, *kulan*, *djiggetai*, *ghor-khar*, and *yé-lu*), still roams free and untameable. It is abundant in Koko-nor, gathering in troops of ten to fifty, each under the lead of a stallion to defend the mares. The flesh is highly prized, and the difficulty of procuring it adds to the delicacy of the dish; the color is light chestnut, with white belly.

Elephants are kept at Peking for show, and are used to draw the state chariot when the Emperor goes to worship at the Altars of Heaven and Earth, but the sixty animals seen in the days of Kienlung, by Bell, have since dwindled to one or

two. Van Braam met six going into Peking, sent thither from Yunnan. The deep forests of that province also harbor the rhinoceros and tapir. The horn of the former is sought after as medicine, and the best pieces are carved most beautifully into ornaments or into drinking cups, which are supposed to sweat whenever any poisonous liquid is put into them. The tapir is the white and brown animal found in the Malacca peninsula, and strange stories are recorded of its eating stones and copper. The wild boar grows to weigh over four hundred pounds and nearly six feet long. In cold weather its frozen carcass is brought to Peking, and sold at a high price. A new species of

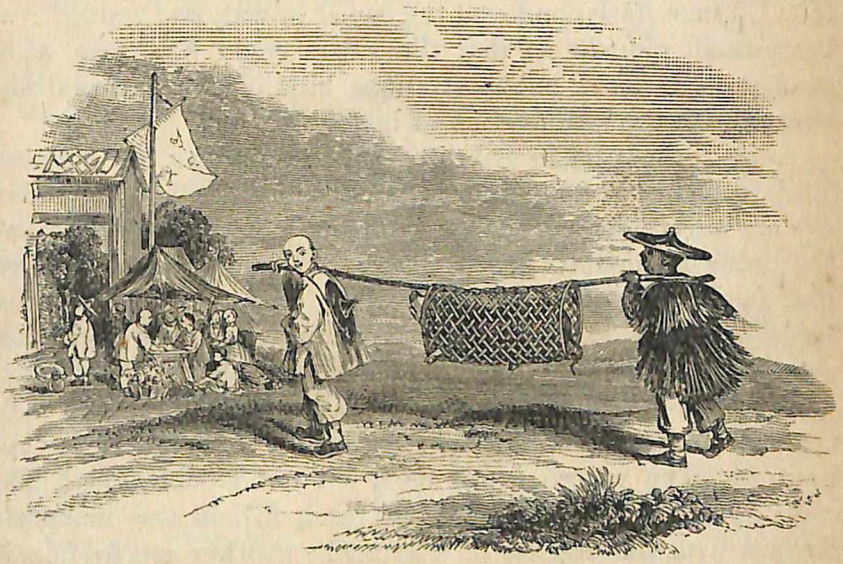


The Chinese Pig.

hog has been found in Formosa, about three feet long, twenty-one inches high, and showing a dorsal row of large bristles; a third variety occurs among the novelties discovered in Sz'chuen (*Sus moupinensis*), having short ears. Wild boars are met with even in the hills of Chehkiang, and seriously annoy the husbandmen in the lowlands by their depredations. Deep pits are dug near the base of the hills, and covered with a bait of fresh grass, and many are annually captured or drowned in them. They are fond of the bamboo shoots, and persons are stationed near the groves to frighten them away by striking pieces of wood together.

The Chinese hollow-backed pig is known for its short legs,

round body, crooked back, and abundance of fat; the flesh is the common meat of the people south of the Yangtsz' River. The black Chinese breed, as it is called in England, is considered the best pork raised in that country. The hog in the northern provinces is a gaunt animal, uniformly black, and not so well cared for as its southern rival. Piebald pigs are common in Formosa, resulting from crossing; sometimes animals of this kind are quite woolly. The Chinese in the south, well aware of the perverse disposition of the hog, find it much more expeditious to carry instead of drive him through their narrow



Mode of Carrying Pigs.

streets. For this purpose cylindrical baskets, open at both ends, are made; and in order to capture the obstinate brute, it is secured just outside the half-opened gate of the pen. The men seize him by the tail and pull it lustily; his rage is roused by the pain, and he struggles; they let go their hold, whereupon he darts out of the gate to escape, and finds himself snugly caught. He is lifted up and unresistingly carried off.

The camel is employed in the trade carried on across the desert, and throughout Mongolia, Manchuria, and northern China near the plateau; without his aid those regions would

be impassible; the passes across the ranges near Koko-nor, sixteen thousand feet high, are traversed by his help, though amid suffering and danger. In the summer season it sheds all its hair, which is gathered for weaving into ropes and rugs; at this period, large herds pasture on the plateau to recuperate. The humps at this season hang down the back like empty bags, and the poor animal presents a distressed appearance during the hot weather. In its prime condition it carries about six hundred pounds weight, but is not used to ride upon as is the Arabian species. The two kinds serve man in one continuous *kafilah* from the Sea of Tartary across two continents to Timbuctoo. The Chinese have employed the camel in war, and trained it to carry small gingalls so that the riders could fire them while resting on its head, but this antique kind of cavalry has disappeared with the introduction of better weapons.

Among the various tribes of smaller animals, the Chinese Empire furnishes many interesting peculiarities, and few families are unrepresented. No marsupials have yet been met, and the order of edentata is still restricted to one instance. Several families in other orders are rare or wanting, as baboons, spider-monkeys, skunks, and ichneumons. In the weasel tribe, some new species have been added to the already long list of valuable fur-bearing animals found in the mountains—the sable ermine, marten, pole-cat, stoat, etc., whose skins still repay the hunters. The weasel is common, but not troublesome. The otter is trained in Sz'chuen to catch fish in the mountain streams with the docility of a spaniel; another species (*Lutia swinhosi*) occurs along the islands on the southern coast, while in Hainan Island appears a kind of clawless otter of a rich brown color above and white beneath; each of these is about twenty inches long. The furs of all these, and also the sea-otter, are prepared for garments, especially collars and neck-wraps.

A kind of mole exists in Sz'chuen, having a muzzle of extreme length, while the scent of another variety near Peking is so musky as to suggest its name (*Scaptochirus moschatus*). Musk-rats and shrew-mice are found both north and south; and one western species has only a rudimentary tail; while another, the

Scaptonyx, forms an intermediate species between a mole and a shrew, having a blunt muzzle, strong fore feet and a long tail; and lastly, a sort fitted for aquatic habits, with broad hind feet and flattened tail. Tiny hedgehogs are common even in the streets and by-lanes of Peking, where they find food and refuge in the alluvial earth. Two or three kinds of marmots and mole-rats are found in the north and west (*Siphucus Arctomys*), all specifically unlike their congeners elsewhere. The Chinese have a curious fancy in respect to one beast, one bird, and one fish, each of which, they say, requires that two come together to make one complete animal, viz., the jerboa, the spoonbill and sole-fish; the first (*Dipus annulatus*) occurs in the sands of northern China, the second in Formosa, and the third along the coasts.

Many kinds of rodents have been described. The alpine hare (*Lagomys ogotona*) resembles a marmot in its habits and is met with throughout the grassy parts of the steppes; its burrows riddle the earth wherever the little thing gathers, and endangers the hunters riding over it. It is about the size of a rat, and by its wonderful fecundity furnishes food to a great number of its enemies—man, beasts, and birds; it is not dormant, but gathers dry grass for food and warmth during cold weather; this winter store is, however, often consumed by cattle before it is stored away. Hares and rabbits are well known. Two species of the former are plenty on the Mongolian grass-lands, one of which has very long feet; in winter their frozen bodies are brought to market. One species is restricted to Hainan Island. Ten or twelve kinds of squirrels have been described, red, gray, striped, and buff; one with fringed ears. Their skins are prepared for the furriers, and women wear winter robes lined with them. Two genera of flying-squirrel (*Pteromys* and *Sciuropterus*) have been noticed, the latter in Formosa and the former mostly in the western provinces. Chinese writers have been puzzled to class the flying-squirrel; they place it among birds, and assure their readers that it is the only kind which suckles its young when it flies, and that "the skin held in the hand during parturition renders delivery easier, because the animal has a remarkably lively disposition." The long, dense

fur of the *P. alborufous* makes beautiful dresses, the white tips of the hair contrasting prettily with the red ground.

Of the proper rats and mice, more than twenty-five species have been already described. Some of them are partially arboreal, others have remarkably long tails, and all but three are peculiar to the country. A Formosan species, called by Swinhoe the spinous county rat, had been dedicated to Koxinga, the conqueror of that island; while another common in Sz'chuen bears the name of *Mus Confucianus*. The extent to which the Chinese eat rats has been greatly exaggerated by travellers, for the flesh is too expensive for general use.

One species of porcupine (*Hystrix subcristata*) inhabits the southern provinces, wearing on its head a purplish-black crest of stout spines one to five inches long; the bristles are short, but increase in size and length to eight or nine inches toward the rump; the entire length is thirty-three inches. The popular notion that the porcupine darts its quills at its enemies as an effectual weapon is common among the Chinese.

No animal has puzzled the Chinese more than the scaly ant-eater or pangolin (*Manis dalmanni*), which is logically considered as a certain and useful remedy by them, simply because of its oddity. It is regarded as a fish out of water, and therefore named *ling-li*, or 'hill carp,' also dragon carp, but the most common designation is *chuen shan kiah*, or the 'scaly hill borer.' One author says: "Its shape resembles a crocodile; it can go in dry paths as well as in the water; it has four legs. In the daytime it ascends the banks of streams, and lying down opens its scales wide, putting on the appearance of death, which induces the ants to enter between them. As soon as they are in, the animal closes its scales and returns to the water to open them; the ants float out dead, and he devours them at leisure." A more accurate observer says: "It continually protrudes its tongue to entice the ants on which it feeds;" and true to Chinese physiological deductions, *similia similibus curantur*, he recommends the scales as a cure for all antish swellings. He also remarks that the scales are not bony, and consist of the agglutinated hairs of the body. The adult specimens

measure thirty-three inches. It walks on the sides of the hind feet and tips of the claws of the fore feet, and can stand upright for a minute or two. The large scales are held to the skin by a fleshy nipple-like pimple, which adheres to the base.

Among the cetaceous inhabitants of the Chinese waters, one of the most noticeable is the great white porpoise (*Delphinus chinensis*), whose uncouth tumbles attract the traveller's notice as he sails into the estuary of the Pearl River on his way to Hongkong, and again as he steams up the Yangtsz' to Hankow. The Chinese fishermen are shy of even holding it in their nets, setting it free at once, and never pursuing it; they call it *peh-ki* and deem its presence favorable to their success. A species of fin-whale (*Balænoptera*) has been described by Swinhoe, which ranges the southern coast from the shores of Formosa to Hainan. Its presence between Hongkong and Amoy induced some foreigners to attempt a fishery in those waters, but the yield of oil and bone was too small for their outlay. The native fishermen join their efforts in the winter, when it resorts to the seas near Hainan, going out in fleets of small boats from three to twenty-five tons burden each, fifty boats going together. The line is about three hundred and fifty feet long, made of native hemp, and fastened to the mast, the end leading over the bow. The harpoon has one barb, and is attached to a wooden handle; through an eye near the socket, the line is so fastened along the handle, that when the whale begins to strain upon it, the handle draws out upon the line, leaving only the barb buried in the skin. The boat is sailed directly upon the fish, and the harpooner strikes from the bow just behind the blow-hole. As soon as the fish is struck the sail is lowered, the rudder unshipped, and the boat allowed to drag stern foremost until the prey is exhausted. Other boats come up to assist, and half a dozen harpoons soon dispatch it. The species most common there yield about fifty barrels each; the oil, flesh, and bone are all used for food or in manufactures. The fish resort to the shallow waters in those seas for food, and to roll and rub on the banks and reefs, thus ridding themselves of the barnacles and insects which torment them; they are often seen leaping en-

tirely out of water, and falling back perpendicularly against the hard bottom.[1]

The Yellow Sea affords a species of cow-fish, or round-headed cachalot (*Globicephalus Rissii*), which the Japanese capture.[2] Seals have been observed on the coast of Liautung, but nothing is known of their species or habits; the skins are common and cheap in the Peking market. Native books speak of a marine animal in Koko-nor, from which a rare medicine is obtained, that probably belongs to this family.

This imperfect account of the mammalia known to exist in China has been drawn from the lists and descriptions inserted in the zoölogical periodicals of Europe, and may serve to indicate the extent and richness of the field yet to be investigated. The lists of Swinhoe and David alone contain nearly two hundred species, and within the past ten years scores more have been added, but have not exhausted the new and unexplored zoölogical regions. The emperors of the Mongol dynasty were very fond of the chase, and famous for their love of the noble amusement of falconry; Marco Polo says that Kublai employed no less than seventy thousand attendants in his hawking excursions. Falcons, kites, and other birds were taught to pursue their quarry, and the Venetian speaks of eagles trained to stoop at wolves, and of such size and strength that none could escape their talons.[3] Ranking has collected[4] a number of notices of the mode and sumptuousness of the field sports of the Mongols in China and India, but they convey little more information to the naturalist, than that the game was abundant and comprised a vast variety. Many species of accipitrine birds are described in Chinese books, but they are spoken of so vaguely that nothing definite can be learned from the notices. Few of them are now trained for sport by the Chinese, except a kind of sparrow-hawk to amuse dilettanti hunters in showing their skill in catching small birds. The fondness for sport in the wilds of Manchuria which the old emperors

[1] *Chinese Repository*, Vol. XII., p. 608.
[2] Ibid., Vol. VI., p. 411.
[3] Yule's *Marco Polo*, Vol. I., p. 353.
[4] *Wars and Sports of the Mongols and Romans.*

encouraged two centuries ago has all died out among their descendants.

Within the last fifteen years a greater advance has been made in the knowledge of the birds of China than in any other branch of its natural history, perhaps owing somewhat to their presenting themselves for capture to the careful observer. The list of described species already numbers over seven hundred, of which the careful paper of the lamented Swinhoe, in the *Proceedings of the Zoölogical Society* for May, 1871, gives the names of six hundred and seventy-five species, and M. David's list, in the *Nouvelles Archives* for 1871, gives four hundred and seventy as the number observed north of the River Yangtsz'. The present sketch must confine itself to selecting a few of the characteristic birds of the country, for this part of its fauna is as interesting and peculiar as the mammalia.

Among birds of prey are vultures, eagles, and ernes, all of them widespread and well known. One of the fishing-eagles (*Haliætus macei*) lives along the banks of the bend of the Yellow River in the Ortous country. The golden eagle is still trained for the chase by Mongols; Atkinson accompanied a party on a hunt. "We had not gone far," he says, "when several large deer rushed past, bounding over the plain about three hundred yards from us. In an instant the barkut was unhooded and his shackles removed, when he sprung from his perch and soared on high. He rose to a considerable height, and seemed to poise for a minute, gave two or three flaps with his wings, and swooped off in a straight line for the prey. I could not see his wings move, but he went at a fearful rate, and all of us after the deer; when we were about two hundred yards off, the bird struck the deer, and it gave one bound and fell. The barkut had struck one talon in his neck, the other into his back, and was tearing out his liver. The Kirghis sprung from his horse, slipped the hood over the eagle's head and the shackles on his legs, and easily took him off, remounting and getting ready for another flight."[1] Other smaller species are trained to capture or worry hares, foxes, and lesser game.

[1] *Oriental and Western Siberia*, p. 416.

The falcons which inhabit the gate-towers and trees in Peking form a peculiar feature of the place, from their impudence in foraging in the streets and markets, snatching things out of the hands of people, and startling one by their responsive screams. Much quarrelling goes on between them and the crows and magpies for the possession of old nests as the spring comes on. Their services as scavengers insures them a quiet residence in their eyries on the gate-towers. Six sorts of harriers (*Circus*), with various species of falcons, bustards, gledes, and sparrow-hawks, are enumerated. The family of owls is well represented, and live ones are often exposed for sale in the markets; its native name of 'cat-headed hawk' (*mao-'rh-tao ying*) suggests the likeness of the two. Out of the fifty-six species of accipitrine birds, the hawks are much the most numerous.

The great order of Passerinæ has its full share of beautiful and peculiar representatives, and over four hundred species have been catalogued. The night-hawks have only three members, but the swallows count up to fifteen species. Around Peking they gather in vast numbers, year after year, in the gate-towers, and that whole region was early known by the name of *Yen Kwoh*, or 'Land of Swallows.' The immunity granted by the natives to this twittering, bustling inmate of their houses has made it a synonym for domestic life; the phrase *yin yen* (*lit.* to 'drink swallows') means to give a feast. The family of king-fishers contains several most exquisitely colored birds, and multitudes of the handsome ones, like the turquoise king-fisher (*Halcyon smyrnensis*), are killed by the Chinese for the sake of the plumage. Beautiful feather-work ornaments are made from this at Canton. The hoopoe, bee-eater, and cuckoo are not uncommon; the first goes by the name of the *shan ho-shang*, or 'country priest,' from its color. Six species of the last have been recognized, and its peculiar habits of driving other birds from their nests has made it well known to the people, who call it *ku-ku* for the same reason as do the English. On the upper Yangtsz' the short-tailed species makes its noisy agitated flight in order to draw off attention from its nest. The Chinese say it weeps blood as it bewails its mate

all night long. The *Cucutus striatus* varies so greatly in different provinces that it has much perplexed naturalists; all of them are only summer visitants.

The habit of the shrike of impaling its prey on thorns and elsewhere before devouring it has been noticed by native writers; no less than eleven species have been observed to cross the country in their migrations from Siberia to the Archipelago. Of the nuthatches, tree and wall creepers, wrens, and chats, there is a large variety, and one species of willow-wren (*Sylvia borealis*) has been detected over the entire eastern hemisphere; six sorts of redstarts (*Ruticilla*) are spread over the provinces.

Among the common song birds reared for the household, the thrush and lark take precedence; their fondness for birds and flowers is one of the pleasant features of Chinese national character. A kind of grayish-yellow thrush (*Garrulax perspicilatus*), called *hwa-mí*, or 'painted eyebrows,' is common about Canton, where a well-trained bird is worth several dollars. This genus furnishes six species, but they are not all equally musical; another kind (*Suthoria webbiana*) is kept for its fighting qualities, as it will die before it yields. These and other allied birds furnish the people with much amusement, by teaching them to catch seeds thrown into the air, jump from perches held in the hand, and perform tricks of various kinds. A party of gentlemen will often be seen on the outskirts of a town in mild weather, each one holding his pet bird, and all busily engaged in catching grasshoppers to feed them. The spectacle thrush (*Leucodioptrum*) has its eyes surrounded by a black circle bearing a fancied resemblance to a pair of spectacles; it is not a very sweet songster, but a graceful, lively fellow. The species of wagtail and lark known amount to about a score altogether, but not all of them are equally good singers. The southern Chinese prefer the lark which comes from Chihlí, and large numbers are annually carried south. The shrill notes of the field lark (*Alauda cœlivox* and *arvensis*) are heard in the shops and streets in emulous concert with other kinds—these larks becoming at times well-nigh frantic with excitement in their struggles for victory. The Chinese name of *peh-ling*, or 'hundred spirits,' given to the Mongolian lark, indicates the

reputation it has earned as an active songster; and twenty-five dollars is not an uncommon price for a good one.[1]

The tits (*Parus*) and reedlings (*Emberiza*), together with kindred genera, are among the most common small birds, fifteen or twenty species of each having been noticed. In the proper season the latter are killed for market in such numbers as to excite surprise that they do not become extinct. In taking many of the warblers, orioles, and jays, for rearing or sale as fancy birds, the Chinese are very expert in the use of birdlime. In all parts of the land, the pie family are deemed so useful as scavengers that they are never molested, and in consequence become very common. The magpie is a favorite bird, as its name, *hí tsioh*, or 'joyous bird,' indicates, and occurs all over the land. Ravens, choughs, crows, and blackbirds keep down the insects and vermin and consume offal. The palace grounds and inclosures of the nobility in Peking are common resorts for these crows, where they are safe from harm in the great trees. Every morning myriads of them leave town with the dawn, returning at evening with increased cawing and clamor, at times actually darkening the sky with their flocks. A pretty sight is occasionally seen when two or three thousand young crows assemble just at sunset in mid-air to chase and play with each other. The crow is regarded as somewhat of a sacred bird, either from a service said to have been rendered by one of his race to an ancestor of the present dynasty, or because he is an emblem of filial duty, from a notion that the young assist their parents when disabled. The owl, on the other hand, has an odious name because it is stigmatized as the bird which eats its dam. One member of the pie family deserving mention is the long-tailed blue jay of Formosa (*Urocissa*), remarkable for its brilliant plumage. Another, akin to the sun birds (*Æthopyga dabryi*), comes from Sz'chuen, a recent discovery. The body is red, the head, throat, and each side of the neck a brilliant violet, belly yellow, wings black with the primaries tinted green along the edge, and the feathers long, tapering, of a black or steel blue.

[1] *Journal of the North China Branch of the Royal Asiatic Society*, May, 1859, p. 289.

The *Mainah*, or Indian mino (*Acridotheus*), known by its yellow carbuncles, which extend like ears from behind the eye, is reared, as are also three species of *Munia*, at Canton. Sparrows abound in every province around houses, driving away other birds, and entertaining the observer by their quarrels and activity. Robins, ouzels, and tailor-birds are not abundant. None of the humming-birds or birds of paradise occur, and only one species has hitherto been seen of the parrot group. Woodpeckers (*Picus*) are of a dozen species, and the wryneck occasionally attracts the eye of a sportsman. The canary is reared in great numbers, being known under the names of 'white swallow' and 'time sparrow;' the chattering Java sparrow and tiny avedavat are also taught little tricks by their fanciers, in compensation for their lack of song. The two or three proper parrots are natives of Formosa.

The family of pigeons (*Columbidæ*) is abundantly represented in fourteen species, and doves form a common household bird; their eggs are regarded as proper food to prevent small-pox, and sold in the markets, being also cooked in birdnest and other kinds of soups. The Chinese regard the dove as eminently stupid and lascivious, but grant it the qualities of faithfulness, impartiality, and filial duty. The cock is said to send away its mate on the approach of rain, and let her return to the nest with fine weather. They have an idea that it undergoes periodic metamorphoses, but disagree as to the form it takes, though the sparrow-hawk has the preference.[1] The bird is most famed, however, for its filial duty, arising very probably from imperfect observations of the custom of feeding its young with the macerated contents of its crop; the wood pigeon is said to feed her seven young ones in one order in the morning, and reversing it in the evening. Its note tells the husbandman when to begin his labors, and the decorum observed in the nests and cotes of all the species teach men how to govern a family and a state. The visitor to Peking is soon attracted by the æolian notes proceeding from doves which circle around their homes for a short time (forty or fifty or less in a flock), and

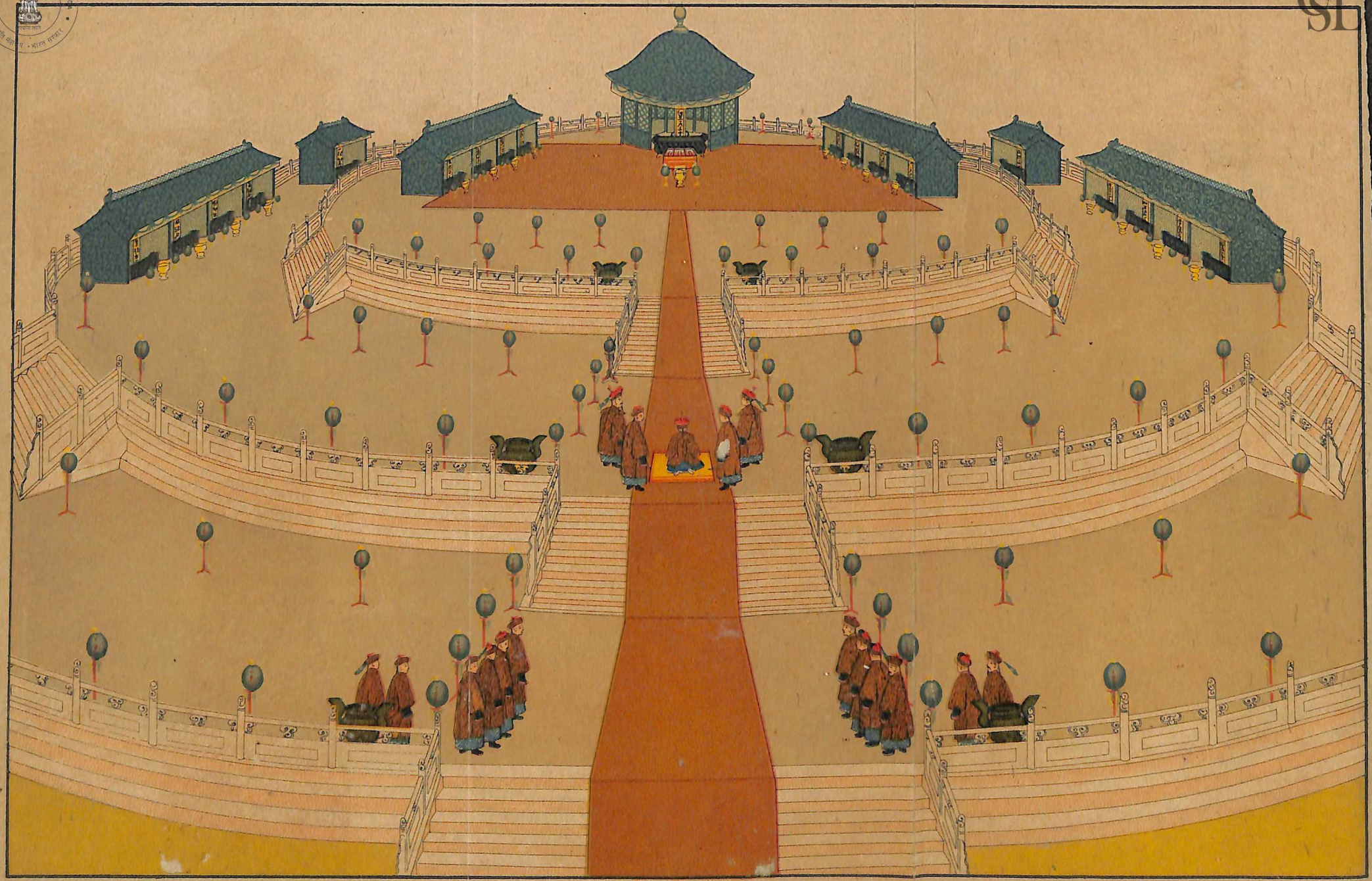
[1] *Journal N. C. Br. R. A. Soc.*, Vol. IV., 1867, Art. XI., by T. Watters.

then settle. These birds are called *pan-tien kiao-jin*, or 'mid-sky houris,' and their weird music is caused by ingenious wooden whistles tied on the rumps of two or three of the flock, which lead the others and delight themselves. Carrier pigeons are used to some extent, and training them is a special mystery. One of the prettiest sort is the rose pigeon, and half a dozen kinds of turtles enliven the village groves with their gentle notes and peculiar plumage.

No tribe of birds in China, however, equals the Gallinaceous for its beauty, size, and novelty, furnishing some of the most elegant and graceful birds in the world, and yet none of them have become domesticated for food. As a connecting link between this tribe and the last is the sand-grouse of the desert (*Syrrhaptis paradoxus*), whose singular combination attracted Marco Polo's eye. "This bird, the *barguerlac*, on which the falcons feed," says he, "is as big as a partridge, has feet like a parrot's, tail like a swallow's, and is strong in flight."[1] Abbé Huc speaks of the immense flocks which scour the plateau.

The gold and silver pheasants are reared without trouble in all the provinces, and have so long been identified with the ornithology of China as to be regarded as typical of its grotesque and brilliant fauna. Among other pheasants may be mentioned the Impeyan, Reeves, Argus, Medallion, Amherst, l'Huys, and Pallas, each one vieing with the other for some peculiarly graceful feature of color and shape, so that it is hard to decide which is the finest. The Amherst pheasant has the bearing, the elegance, and the details of form like the gold pheasant, but the neck, shoulders, back and wing covers are of a sparkling metallic green, and each feather ends in a belt of velvet black. A little red crest allies it to the gold pheasant, and a pretty silvery ruff with a black band, a white breast and belly, and a tail barred with brown, green, white, and red bands, complete the picturesque dress. Hidden away in these Tibetan wilds are other pheasants that dispute the palm for beauty, among which four species of the eared pheasant (*Crossoptilon*) attract notice. One is of a pure white, with a black tail curled up and spread

[1] Yule's *Marco Polo*, Vol. I., p. 237.



IMPERIAL WORSHIP OF SHANGTI ON THE ALTAR OF HEAVEN AT PEKING.

FROM A CHINESE PAINTING.

out like a plume, and is well called the snow pheasant. Another is the better known Pallas pheasant, nearly as large as a turkey, distinguished by ear-like appendages or wattles behind the head, and a red neck above a white body, whence its native name of *ho-ki*, or 'fire hen.' Another genus (*Lophophorus*) contains some elegant kinds, of which the l'Huys pheasant is new, and noted for a coppery-green tail bespangled with white. The longer known Reeves pheasant is sought for by the natives for the sake of its white and yellow-barred tail feathers, which are used by play actors to complete a warrior's dress; Col. Yule proves a reference to it in Marco Polo from this part of its plumage, which the Venetian states to be ten palms in length—not far beyond the truth, as they have been seen seven feet long.[1] It is a long time for a bird of so much beauty to have been unknown, from 1350 to 1808, when Mr. Thomas Beale procured a specimen in Canton, and sent others to England in 1832; Mr. Reeves took it thither, and science has recorded it in her annals. As New Guinea is the home of the birds of paradise, so do the Himalayas contain most of these superb pheasants and francolins, each tribe serving as a foil and comparison with the Creator's handiwork in the other.

The island of Formosa has furnished a second species, Swinhoe's pheasant, of the same genus as the silver pheasant (*Euplocamus*), and another smaller kind (*Phasianus formosanus*); the list is also increased by fresh acquisitions from Yunnan and Cochinchina through Dr. Anderson. This is not, however, the place where we may indulge in details respecting all of these gorgeous birds; we conclude, then, with the Medallion, or horned pheasant. It has a "beautiful membrane of resplendent colors on the neck, which is displayed or contracted according as the cock is more or less roused. The hues are chiefly purple, with bright red and green spots, which vary in intensity according to the degree of excitement."

The peacock, though not a native, is reared in all parts; it bears the name of *kung tsioh*, sometimes rendered 'Confucius'

[1] Yule's *Marco Polo*, Vol. I., p. 246—where there is an admirable wood-cut of one from Wood.

bird,' though it is more probable that the name means the great or magnificent bird. The use of the tail feathers to designate official rank, which probably causes a large consumption of them, does not date previous to the present dynasty. Poultry is reared in immense quantities, but the assortment in China does not equal in beauty, excellence, and variety the products of Japanese culture. The silken cock, the vane of whose plume is so minutely divided as to resemble curly hair, is probably the same sort with that described by some writers as having wool like sheep. The Mongols succeed very well in rearing the tall, Shanghai breed, and their uniform cold winter enables them to preserve frozen flesh without much difficulty. The smaller gallinaceous birds already described, grouse, quails, francolins, partridges, sand-snipe, etc., amount to a score or more species, ranging all over the Empire. The red partridge is sometimes tamed to keep as a house bird with the fowls. The Chinese quail (*Coturnix*) has a brown back, sprinkled with black spots and white lines, blackish throat and chestnut breast. It is reared for fighting in south China, and, like its bigger Gallic rival, is soon eaten if it allows itself to be beaten.

The widespread family of waders sends a few of its representatives from Europe to China, but most of the members are Oriental. The marshes and salt lakes of Mongolia attract enormous numbers of migratory birds in summer to rear their young in safety, in the midst of abundant food. Col. Prejevalsky watched the arrival of vast flocks early in February, and thus describes their appearance: "For days together they sped onward, always from the W.S.W., going further east in search of open water, and at last settling down among the open pools; their favorite haunts were the flat mud banks overgrown with low saline bushes. Here every day vast flocks would congregate toward evening, crowding among the ice; the noise they made on rising was like a hurricane, and at a distance they resembled a thick cloud. Flocks of one, two, three, and even five thousand, followed one another in quick succession, hardly a minute apart. Tens and hundreds of thousands, even millions of birds appeared at Lob-nor during the fortnight ending the 21st of February, when the flight was at its height. What

prodigious quantities of food must be necessary for such numbers!"[1] Wading and web-footed birds all harmlessly mix in these countless hosts, but hawks, eagles, and animals gather too, to prey on them.

Among the noticeable waders of China, the white Manchurian or Montigny crane is one of the finest and largest; it is the official insigna of the highest rank of civilians. Five species of crane (*Grus*) are recognized, and seven of plovers, together with as many more allied genera, including an avocet, bustard, and oyster-catcher. Curlews abound along the flat shores of the Gulf of Pechele, and are so tame that they race up and down with the naked children at low tide, hunting for shell-fish; as the boy runs his arm into the ooze the curlew pokes his long bill up to the eyes in the same hole, each of them grasping a crab. Godwits and sandpipers enliven the coasts with their cries, and seven species of gambets (*Totanus*) give them them the largest variety of their family group, next to the snipes (*Tringa*), of which nine are recorded. Herons, egrets, ibis, and night-herons occur, and none of them are discarded for food. At Canton, a pure white egret is often exposed for sale in the market, standing on a shelf the livelong day, with its eyelids sewed together—a pitiable sight. Its slender, elegant shape is imitated by artists in making bronze candlesticks. The singular spoonbill (*Platalea*) is found in Formosa, and the jacana in southwestern China. The latter is described by Gould as "distinguished not less by the grace of its form than its adaptation to the localities which nature has allotted it. Formed for traversing the morass and lotus-covered surface of the water, it supports itself upon the floating weeds and leaves by the extraordinary span of the toes, aided by the unusual lightness of the body."[2] Gallinules, crakes, and rails add to this list, but the flamingo has not been recorded.

In the last order, sixty-five species of web-footed birds are enumerated by naturalists as occurring in China. The fenny

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[1] *From Kulja to Lob-nor*, p. 116.

[2] John Gould, *Century of Birds*. London, 1831–32.

margins of lakes and rivers, and the seacoast marshes, afford food and shelter to flocks of water-fowl. Ten separate species of duck are known, of which four or five are peculiar. The whole coast from Hainan to Manchuria swarms with gulls, terns, and grebes, while geese, swans, and mallards resort to the inland waters and pools to rear their young. Ducks are sometimes caught by persons who first cover their heads with a gourd pierced with holes, and then wade into the water where the birds are feeding; these, previously accustomed to empty calabashes floating about on the water, allow the fowler to approach, and are pulled under without difficulty. The wild goose is a favorite bird with native poets. The reputation for conjugal fidelity has made its name and that of the mandarin duck emblems of that virtue, and a pair of one or the other usually forms part of wedding processions. The epithet *mandarin* is applied to this beautiful fowl, and also to a species of orange, simply because of their excellence over other varieties of the same genus, and not, as some writers have inferred, because they are appropriated to officers of government.

The *yuen-yang*, as the Chinese call this duck, is a native of the central provinces. It is one of the most variegated birds known, vieing with the humming-birds and parrots in the diversified tints of its plumage, if it does not equal them for brilliancy. The drake is the object of admiration, his partner being remarkably plain, but during the summer season he also loses much of his gay vesture. Mr. Bennet tells a pleasant story in proof of the conjugal fidelity of these birds, the incidents of which occurred in Mr. Beale's aviary at Macao. A drake was stolen one night, and the duck displayed the strongest marks of despair at her loss, retiring into a corner and refusing all nourishment, as if determined to starve herself to death from grief. Another drake undertook to comfort the disconsolate widow, but she declined his attentions, and was fast becoming a martyr to her attachment, when her mate was recovered and restored to her. Their reunion was celebrated by the noisiest demonstrations of joy, and the duck soon informed her lord of the gallant proposals made to her during his absence; in high dudgeon, he instantly attacked the luckless bird

which would have supplanted him, and so maltreated him as to cause his death.

The aviary here mentioned was for many years, up to 1838, one of the principal attractions of Macao. Its owner, Mr. Thomas Beale, had erected a wire cage on one side of his house, having two apartments, each of them about fifty feet high, and containing several large trees; small cages and roosts were placed on the side of the house under shelter, and in one corner a pool afforded bathing conveniences to the water-fowl. The genial climate obviated the necessity of any covering, and only those species which would agree to live quietly together were allowed the free range of the two apartments. The great attraction of the collection was a living bird of paradise, which, at the period of the owner's death, in 1840, had been in his possession eighteen years, and enjoyed good health at that time. The collection during one season contained nearly thirty specimens of pheasants, and besides these splendid birds, there were upward of one hundred and fifty others, of different sorts, some in cages, some on perches, and others going loose in the aviary. In one corner a large cat had a hole, where she reared her young; her business was to guard the whole from the depredations of rats. A magnificent peacock from Damaun, a large assortment of macaws and cockatoos, a pair of magpies, another of the superb crowned pigeons (*Goura coronata*), one of whom moaned itself to death on the decease of its mate, and several Nicobar ground pigeons, were also among the attractions of this curious and valuable collection.

Four or five kinds of grebe and loon frequent the coast, of which the *Podiceps cristatus*, called *shui nu*, or 'water slave,' is common around Macao. The same region affords sustenance to the pelican, which is seen standing motionless for hours on the rocks, or sailing on easy wing over the shallows in search of food. Its plumage is nearly a pure white, except the black tips of the wings; its height is about four feet, and the expanse of the wings more than eight feet. The bill is flexible like whalebone, and the pouch susceptible of great dilatation. Gulls abound on the northeast coasts, and no one who has seen it can forget the beautiful sight on the marshes

at the entrance of the Pei ho, where myriads of white gulls assemble to feed, to preen, and to quarrel or scream—the bright sun rendering their plumage like snow. The albatross, black tern, petrel, and noddy increase the list of denizens in Chinese waters, but offer nothing of particular interest.[1]

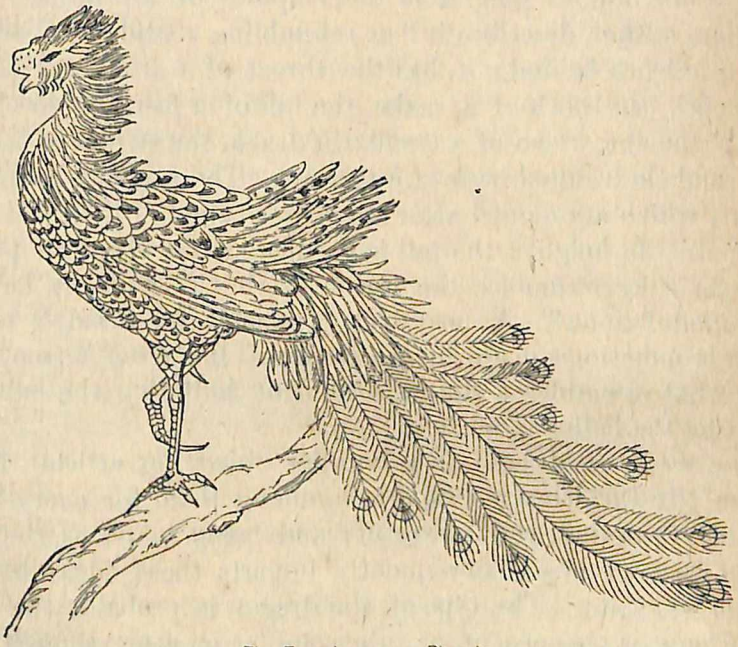
There are four fabulous animals which are so often referred to by the Chinese as to demand a notice. The *ki-lin* is one of these, and is placed at the head of all hairy animals; as the *fung-hwang* is pre-eminent among feathered races; the dragon and tortoise among the scaly and shelly tribes; and *man* among naked animals! The naked, hairy, feathered, shelly, and scaly tribes constitute the quinary system of ancient Chinese naturalists. The *ki-lin* is pictured as resembling a stag in its body and a horse in its hoofs, but possessing the tail of an ox and a parti-colored or scaly skin. A single horn having a fleshy tip proceeds out of the forehead. Besides these external marks to identify it, the *ki-lin* exhibits great benevolence of

The Ki-lin, or Unicorn.

[1] On the birds of China, see in general *Les Oiseaux de la Chine*, par M. l'Abbé Armand David, avec un Atlas de 124 Planches dessinées et lith. par M. Arnoul. Paris, 1877. R. Swinhoe, in the *Proceedings of the Scientific Meetings of the Zoölogical Soc. of London*, and in *The Ibis, a Magazine of General Ornithology*, passim. *Journ. N. C. Br. R. A. Soc.*, Nos. II., p. 225, and III., p. 287.

disposition toward other living animals, and appears only when wise and just kings, like Yau and Shun, or sages like Confucius, are born, to govern and teach mankind. The Chinese description presents many resemblances to the popular notices of the unicorn, and the independent origin of their account adds something to the probability that a single-horned equine or cervine animal has once existed.[1]

Cuvier expresses the opinion that Pliny's description of the



The Fung-hwang, or Phœnix.

Arabian phœnix was derived from the golden pheasant, though others think the Egyptian plover is the original type. From his likening it to an eagle for size, having a yellow neck with purple, a blue tail varied with red feathers, and a richly feathered tufted head, it is more probable that the Impeyan pheasant was Pliny's

[1] *Chinese Repository*, Vol. VII., p. 213. Compare Yule's note, *Marco Polo*, Vol. I., p. 232. Huc, *Travels in Tartary*, etc., Vol. II., p. 246. Bell, *Journey from St. Petersburgh in Russia to Ispahan in Persia*, Vol. I., p. 216. Also Heeren, *Asiatic Nations*, Vol. I., p. 98, where there is a *résumé* of Ctesias' account of the unicorn.

type. The Chinese *fung-hwang*, or phœnix, is probably based on the Argus pheasant. It is described as adorned with every color, and combines in its form and motions whatever is elegant and graceful, while it possesses such a benevolent disposition that it will not peck or injure living insects, nor tread on growing herbs. Like the *ki-lin*, it has not been seen since the halcyon days of Confucius, and, from the account given of it, seems to have been entirely fabulous. The etymology of the characters implies that it is the emperor of all birds. One Chinese author describes it "as resembling a wild swan before and a unicorn behind; it has the throat of a swallow, the bill of a cock, the neck of a snake, the tail of a fish, the forehead of a crane, the crown of a mandarin drake, the stripes of a dragon, and the vaulted back of a tortoise. The feathers have five colors, which are named after the five cardinal virtues, and it is five cubits in height; the tail is graduated like Pandean pipes, and its song resembles the music of that instrument, having five modulations." A beautiful ornament for a lady's headdress is sometimes made in the shape of the *fung-hwang*, and somewhat resembles a similar ornament, imitating the vulture, worn by the ladies of ancient Egypt.

The *lung*, or dragon, is a familiar object on articles from China. It furnishes a comparison among them for everything terrible, imposing, and powerful; and being taken as the imperial coat of arms, consequently imparts these ideas to his person and state. The type of the dragon is probably the boa-constrictor or sea-serpent, or other similar monster, though the researches of geology have brought to light such a near counterpart of the *lung* in the iguanadon as to tempt one to believe that this has been the prototype. There are three dragons, the *lung* in the sky, the *li* in the sea, and the *kiao* in the marshes. The first is the only *authentic* species, according to the Chinese; it has the head of a camel, the horns of a deer, eyes of a rabbit, ears of a cow, neck of a snake, belly of a frog, scales of a carp, claws of a hawk, and palm of a tiger. On each side of the mouth are whiskers, and its beard contains a bright pearl; the breath is sometimes changed into water and sometimes into fire, and its voice is like the jingling of copper

pans. The dragon of the sea occasionally ascends to heaven in water-spouts, and is the ruler of all oceanic phenomena.[1] The dragon is worshipped and feared by Chinese fishermen, and their *lung-wang*, or 'dragon king,' answers to Neptune in western mythology; perhaps the ideas of all classes toward it is a modified relic of the widespread serpent worship of ancient times. The Chinese suppose that elfs, demons, and other supernatural beings often transform themselves into snakes; and M. Julien has translated a fairy story of this sort, called *Blanche et Bleue*. The *kwei*, or tortoise, has so few fabulous qualities attributed to it that it hardly comes into the list; it was, according to the story, an attendant on Pwanku when he chiselled out the world. A semi-classical work, the *Shan-hai King*, or 'Memoirs upon the Mountains and Seas,' contains pictures and descriptions of these and kindred monsters, from which the people now derive strange notions respecting them, the book having served to embody and fix for the whole nation what the writer anciently found floating about in the popular legends of particular localities.

A species of alligator (*A. sinensis*) has been described by Dr. A. Fauvel in the *N. C. Br. R. A. Soc. Journal*, No. XIII., 1879, in which he gives many historical and other notices of its existence. Crocodiles are recorded as having been seen in the rivers of Kwangtung and Kwangsí, but none of this family attain a large size.

Marco Polo's account of the huge serpent of Yunnan,[2] having two forelegs near the head, and one claw like that of a lion or hawk on each, and a mouth big enough to swallow a man whole, referring no doubt to the crocodile, is a good instance of the way in which truth and fable were mingled in the accounts of those times. The flesh is still eaten by the Anamese, as he says it was in his day. A gigantic salamander, analogous to the one found in Japan (the *Sieboldia*), has suggested it as the

[1] *Chinese Repository*, Vol. VII., p. 250. For a careful analysis of this relic of ancient lore, see the *Nouveau Journal Asiatique*, Tome XII., pp. 232–243, 1833; also Tome VIII., 3d Series, pp. 337–382, 1839, for M. Bazin's estimate of its value.

[2] Yule's *Marco Polo*, Vol. II., p. 46.

type of the dragon which figures on the Chinese national flag. Small lizards abound in the southern parts, and the variety and numbers of serpents, both land and water, found in the maritime provinces, are hardly exceeded in any country in the world; they are seldom poisonous. A species of naja is the only venomous snake yet observed at Chusan, and the hooded cobra is one of the few yet found around Canton. Another species frequents the banks, and is driven out of the drains and creeks by high water into the houses. A case is mentioned by Bennet of a Chinese who was bitten, and to whose wound the mashed head of the reptile had been applied as a poultice, a mode of treatment which probably accelerated his death by mixing more of the poison diluted in the animal's blood with the man's own blood. It is, however, rare to hear of casualties from this source. This snake is called 'black and white,' from being marked in alternate bands of those two colors. A species of acrochordon, remarkable for its abrupt, short tail, has been noticed near Macao.

It is considered felicitous by the Buddhist priests to harbor snakes around their temples; and though the natives do not play with poisonous serpents like the Hindoos, they often handle or teach them simple tricks. The common frog is taken in great numbers for food. Tortoises and turtles from fresh and salt water are plenty along the coast, while both the emys and trionyx are kept in tubs in the streets, where they grow to a large size. An enormous carnivorous tortoise inhabits the waters of Chehkiang near the ocean. The natives have strange ideas concerning the hairy turtle of Sz'chuen, and regard it as excellent medicine; it is now known that the supposed hair consists of confervæ, whose spores, lodged on the shell, have grown far beyond the animal's body.

The ichthyology of China is one of the richest in the world, though it may be so more from the greater proportion of food furnished by the waters than from any real superabundance of the finny tribes. The offal thrown from boats near cities attracts some kinds to those places, and gives food and employment to multitudes. Several large collections of fishes have been made in Canton, and Mr. Reeves deposited one of the rich-

est in the British Museum, together with a series of drawings made by native artists from living specimens; they have been described by Sir John Richardson in the *Report of the British Association for the Advancement of Science, for* 1845. In this paper he enumerates one hundred and ninety genera and six hundred and seventy-one species, nearly all of which are marine or come out to sea at certain times. Since it was prepared great accessions to this branch have been made from the inland waters, so that probably a thousand sorts in all have been observed. The salmon and cod families are comparatively scarce, but the mackerel, goby, and herring families are very abundant. The variety of fish is so great in Macao, that if one is willing to eat all that are brought to market, as the Chinese do (including the sharks, torpedoes, gudgeons, etc.), one can have a different species every day in the year. It may with truth be said that the Chinese eat nearly every living thing found in the water, some of the hideous fishing frogs or gurnards alone excepted.

The cartilaginous fishes, sharks, rays, and saw-fish, are abundant on the sea-coast. The sturgeon is not common at the south, but in the winter it is brought from the Songari and other rivers to Peking for the imperial table, being highly prized by Chinese epicures. There is found in the Yangtsz' a singular species of sturgeon, the *yiu yü*, which lies under the banks in still water and sucks its prey into a sac-like mouth projecting like a cusp under the long snout; it has no scales, and is four feet long. Common sturgeon, weighing a thousand pounds, are caught in this river. The hammer-headed and zebra shark (*Cestracion zebra*) are seen in the markets at Macao; also huge skates, some of them measuring five feet across; the young of all these species are regarded as particularly good eating. A kind of torpedo (*Narcine lingula*) is not uncommon on the southern coast, but the natives do not seem to be aware of any electrical properties. It is said that the fishermen sometimes destroy the shark by boiling a melon and throwing it out as a bait; when swallowed, the heat kills the fish. The true cod has not been observed on the Chinese coast, but several species of serrani (as *Plectropoma susuki*, *Serranus shihpan*, *Megachir*,

etc.), generally called *shih-pan* by the natives, and garoupa by foreigners, are common off Canton, and considered to be most delicate fare. Another fine fish is the *Polynemus tetradactylus*, or bynni-carp, often called salmon by foreigners; isinglass is prepared from its skin. The pomfret, or *tsang yü* (*Stromateus argenteus*), is a good pan-fish, but hardly so delicate as the sole, many fine species of which abound along the whole coast. Besides these, two or three species of mackerel, the *Sciæna lucida*, an ophicephalus, the mullet, and the 'white rice fish' occur. The shad is abundant off the Yangtsz', and is superior to the American species; Chinese epicures will sometimes pay fifty dollars for the first one of the season.

The carp family (*Cyprinidæ*) is very abundant in the rivers and lakes of China, and some species are reared in fish-pools and tubs to a monstrous size; fifty-two species are mentioned in Richardson's list. The gold-fish is the most celebrated, and has been introduced into Europe, where it was first seen toward the end of the seventeenth century. The Chinese say that its native place is Lake Tsau, in the province of Nganhwui. The effects of domestication in changing the natural form of this fish are great; specimens are often seen without any dorsal fin, and the tail and other fins tufted and lobed to such a degree as to resemble artificial appendages or wings rather than natural organs. The eyes are developed till the globe projects beyond the socket like goggles, presenting an extraordinary appearance. Some of them are so fantastic, indeed, that they would be regarded as lusus naturæ were they not so common. The usual color is a ruddy golden hue, but both sexes exhibit a silvery or blackish tint at certain stages of their growth; and one variety, called the silver-fish, retains this shade all its life. The Chinese keep it in their garden ponds, or in earthern jars, in which are placed rocks covered with moss, and overgrown with tufts of ferns, to afford them a retreat from the light. When the females spawn, the eggs must be removed to a shallow vessel, lest the males devour them, where the heat of the sun hatches them; the young are nearly black, but gradually become whitish or reddish, and at last assume a golden or silvery hue. Specimens upward of two feet long have been noticed, and

those who rear them emulate each other in producing new varieties.

The rearing of fish is an important pursuit, the spawn being collected with the greatest care and placed in favorable positions for hatching. The *Bulletin Universel* for 1829 asserts that in some part of China the spawn so taken is carefully placed in an empty egg-shell and the hole closed; the egg is then replaced in the nest, and, after the hen has sat a few days upon it, reopened, and the spawn placed in vessels of water warmed by the sun, where it soon hatches.

The immense fleets of fishing boats on the Yangtsz' and its tributaries indicate the finny supplies its waters afford. A species of pipe-fish (*Fistularia immaculata*), of a red color, and the gar-pike, with green bones, are found about Canton; as are also numerous beautiful parrot-fish and sun-fish (*Chætodon*). An ingenious mode of taking its prey is practised by a sort of chætodon, or chelmon; it darts a drop of water at the flies or other insects lighting on the bank near the edge, in such a manner as to knock them off, when they are devoured. All the species of ophicephalus, or *săng yü*, so remarkable for their tenacity of life, are reared in tanks and pools, and are hawked alive through the streets.

Eels, mullets, alewives or file-fish, breams, gudgeons, and many other kinds, are seen in the markets. Few things eaten by the Chinese look more repulsive than the gobies as they lie wriggling in the slime which keeps them alive; one species (*Trypauchen vagina*), called *chu pih yü*, or 'vermilion pencil-fish,' is a cylindrical fish, six or eight inches long, of a dark red color; its eyes protrude so that it can see behind, like a giraffe. Some kinds of gobies construct little hillocks in the ooze, with a depression on the top, in which their spawn is hatched by the sun; at low tide they skip about on the banks like young frogs, and are easily captured with the hand. A delicious species of Saurus (*Leucosoma Chinensis*), called *pih fan yü*, or 'white rice fish,' and *yin yü*, or silver-fish, ranges from Hakodate to Canton. It is six or eight inches long, the body scaleless and transparent, so that the muscles, intestines, and spinal column can be seen without dissection; the bones of the head are thin, flex-

ible, and diaphanous. Many species of file-fish, sole-fish, anchovy, and eels, are captured on the coast. Vast quantities of dried fish, like the stock fish in Sweden, are sent inland to sell in regions where fish are rare. The most common sorts are the perch, sun-fish, gurnard, and hair-tail (*Trichinrus*).

Shell-fish and mollusks, both fresh and salt, are abundant in the market. Oysters of a good quality are common along the coast, and a species of mactra, or sand-clam, is fished up near Macao. The Pearl River affords two or three kinds of fresh-water shell-fish (*Mytilus*), and snails (*Voluta*) are plenty in all pools. The crangons, prawns, shrimps, crabs, and other kinds of crustacea met with, are not less abundant than palatable; one species of craw-fish, as large as (but not taking the place of) the lobster, called *lung hai*, or 'dragon crab,' together with cuttle-fish of three or four kinds, and the king-crab (*Polyphemus*), are all eaten. The inland waters produce many species of shells, and the new genus theliderma, allied to the unio, was formed by Mr. Benson, of Calcutta, from specimens obtained of a shopkeeper at Canton. The land shells are abundant, especially various kinds of snails (*Helix*, *Lymnea*, etc.); twenty-two species of helix alone were contained in a small collection sent from Peking, in which region all this kind of food is well known. A catalogue of nearly sixty shells obtained in Canton is given in Murray's *China*,[1] but it is doubtful whether even half of them are found in the country, as the shops there are supplied in a great degree from the Archipelago. Dr. Cantor[2] mentions eighty-eight genera of shells occurring between Canton and Chusan. Pearls are found in China, and Marco Polo speaks of a salt lake, supposed now to be in Yunnan, which produced them in such quantity that the fishery in his day was farmed out and restricted lest they should become too cheap and common. In Chehkiang the natives take a large kind of clam (*Alasmodonta*) and gently attach leaden images

[1] Vol. III., p. 445.

[2] Conspectus of collections made by Dr. Cantor, *Chinese Repository*, Vol. X., p. 434. General features of Chusan, with remarks on the Flora and Fauna of that Island, by T. E. Cantor, *Annal. Nat. Hist.*, Vol. IX. (1842), pp. 265, 361, and 481. *Journal As. Soc. of Bengal*, Vol. XXIV., 1855.

of Buddha under the fish, after which it is thrown back into the water. Nacre is deposited over the lead, and after a few months the shells are retaken, cleaned, and then sent abroad to sell as proofs of the power and presence of Buddha. The *Quarterly Review* speaks of a mode practised by the Chinese of making pearls by dropping a string of small mother-of-pearl beads into the shell, which in a year are covered with the pearly crust. Leeches are much used by native physicians; the hammer-headed leech has been noticed at Chusan.

The insects of China are almost unknown to the naturalist. In Dr. Cantor's collection, from Chusan, there are fifty-nine genera mentioned, among which tropical forms prevail; there are also six genera of arachnidæ, and the list of spiders could easily be multiplied to hundreds; among them are many showing most splendid coloring. One large and strong species is affirmed to capture small birds on the trees. Locusts sometimes commit extensive ravages, and no part of the land is free from their presence, though their depredations do not usually reach over a great extent of country, or often for two successive years. They are, however, sufficiently troublesome to attract the notice of the government, as the edict against them, inserted in another chapter, proves. Centipedes, scorpions, and some other species in the same order are known, the former being most abundant in the central and western regions, where scorpions are rare.

The most valuable insect is the silkworm, which is reared in nearly every province, and the silk from other wild worms found on the oak and ailantus in Shantung, Sz'chuen, and elsewhere also gathered; the proper silkworm itself has been met with to some extent in northern Shansí and Mongolia. Many other insects of the same order (*Lepidopteræ*) exist, but those sent abroad have been mostly from the province of Kwang-tung. Eastward of the city of Canton, on a range of hills called Lofau shan, large butterflies and night moths of immense size and brilliant coloring are captured. One of these insects (*Bombyx atlas*) measures about nine inches across; the ground color is a rich and varied orange brown, and in the centre of each wing there is a triangular transparent spot, resem-

bling a piece of mica. Sphinxes of great beauty and size are common, and in their splendid coloring, rapid noiseless flight from flower to flower, at the close of the day, remind one of the humming-bird. Some families are more abundant than others; the coleopterous exceed the lepidopterous, and the range of particular tribes in each of these is often very limited. The humid regions of Sz'chuen furnished a great harvest of beautiful butterflies to M. David, while the lamellicorn beetles and cerambycidæ are the most common in the north and central parts.

Many tribes of coleopterous insects are abundant, but the number of species yet identified is trifling. Several water beetles, and others included under the same general designation, have been found in collections sold at Canton, but owing to the careless manner in which those boxes are filled, very few specimens are perfect, the antennæ or tarsi being broken. The mole-cricket occurs everywhere. The common cricket is caught and sold in the markets for gambling; persons of all ranks amuse themselves by irritating two of these insects in a bowl, and betting upon the prowess of their favorites. The cicada, or broad locust, is abundant, and its stridulous sound is heard from trees and groves with deafening loudness. Boys tie a straw around the abdomen of the male, so as to irritate the sounding apparatus, and carry it through the streets in this predicament, to the great annoyance of every one. This insect was well known to the Greeks; the ancient distich—

> "Happy the cicadas' lives,
> For they all have voiceless wives,"

hints at their knowledge of this sexual difference, as well as intimates their opinion of domestic quiet. Again it forms the subject of Meleager's invocation:

> "O shrill-voiced insect! that with dew-drops meet,
> Inebriate, dost in desert woodlands sing;
> Perch'd on the spray top with indented feet,
> Thy dusky body's echoings harp-like ring."

The lantern-fly (*Fulgora*) is less common than the cicada. It is easily recognized by its long cylindrical snout, arched in an up-

ward direction, its greenish reticulated elytra, and orange-yellow wings with black extremities; but its appearance in the evening is far from being as luminous as are the fire-fly and glow-worm of South America. The *Peh lah shu*, or 'white wax tree' (*Fraxinus chinensis*), affords nourishment to an insect of this order called *Coccus pela*. The larvæ alone furnish the wax, the secretion being the result of disease. Sir Geo. L. Staunton first described the fly from specimens seen in Annam in 1795, where the natives collected a white powder from the bark of the tree on which it occurs. Daniel Hanbury figured the insect and tree with the deposit of crude wax on the limbs, all obtained in Chekhiang province.[1] Baron Richthofen speaks of this industry in Sz'chuen as one furnishing employment to great multitudes. The department of Kia-ting furnishes the best wax, as its climate is warmer than Chingtu. The eggs of the insect are gathered in Kien-chang and Ning-yuen, where the tree flourishes on which it deposits them, and its culture is carefully attended to. The insect lives and breeds on this evergreen, and in April the eggs are collected and carried up to Kia-ting by porters. This journey is mostly performed by night so as to avoid the risk of hatching their loads; 300 eggs weigh one tael. They are instantly placed on the same kind of tree, six or seven balls of eggs done up in palm-leaf bags and hung on the twigs. In a few days the larvæ begin to spread over the branches, but do not touch the leaves; the bark soon becomes incrusted with a white powder, and is not disturbed till August. The loaded branches are then cut off and boiled, when the wax collects on the surface of the water, is skimmed off, and melted again to be poured into pans for sale. A tael's weight of eggs will produce two or three catties of the translucent, highly crystalline wax; it sells there for five mace a tael and upward. The annual income is reckoned at Tls. 2,000,000.[2] The purposes to which this singular product are applied include all those of beeswax. Pills are ingeniously enclosed in small

[1] Hanbury's notes on *Chinese Materia Medica*, 1862; *Pharmaceutical Journal*, Feb., 1862.

[2] Baron Richthofen's *Letters*, No. VII., to Shanghai Chamber of Commerce, May, 1872, p. 52.

globes of it, and candles of every size made. Wax is also gathered from wild and domestic bees, but honey is not much used; a casing of wax, colored with vermilion, is used to inclose the tallow of great painted candles set before the idols and tablets.

The *Chinese Herbal* contains a singular notion, prevalent also in India, concerning the generation of the sphex, or solitary wasp. When the female lays her eggs in the clayey nidus she makes in houses, she encloses the dead body of a caterpillar in it for the subsistence of the worms when they hatch. Those who observed her entombing the caterpillar did not look for the eggs, and immediately concluded that the sphex took the worm for her progeny, and say that as she plastered up the hole of the nest, she hummed a constant song over it, saying, "*Class with me! Class with me!*"—and the transformation gradually took place, and was perfected in its silent grave by the next spring, when a winged wasp emerged to continue its posterity in the same mysterious way.[1]

White ants are troublesome in the warmer parts, and annoy the people there by eating up the coffins in the graves. They form passages under ground, and penetrate upward into the woodwork of houses, and the whole building may become infested with them almost before their existence is suspected. They will even eat their way into fruit trees, cabbages, and other plants, destroying them while in full vigor. Many of the internal arrangements of the nests of bees and ants, and their peculiar instincts, have been described by Chinese writers with considerable accuracy. The composition of the characters for the bee, ant, and mosquito, respectively, denote the *awl* insect, the *righteous* insect, and the *lettered* insect; referring thereby to the sting of the first, the orderly working and subordination of the second, and the letter-like markings on the wings of the latter. Mosquitoes are plenty, and gauze curtains are considered to be a more necessary part of bed furniture than a mattress.

The botany of China is rather better known than its zoölogy,

[1] Darwin, *Naturalist's Voyage*, p. 35, notices a similar habit of the sphex in the vicinity of Rio Janeiro. The insect partially kills the spider or caterpillar by stinging, when they are stored in a rotting state with her eggs.

though vast and unexplored fields, like that reaching from Canton to Silhet and Assam, still invite the diligent collector to gather, examine, and make known their treasures. One of the earliest authors in this branch was Père Loureiro, a Portuguese for thirty-six years missionary in Cochinchina, and professor of mathematics and physic in the royal palace. He gathered a large herbarium there and in southern Kwangtung, and published his *Flora Cochinchinensis* in 1790, in which he described one hundred and eighty-four genera and more than three hundred new species. The only other work specially devoted to Chinese botany is Bentham's *Flora Hongkongensis*, published in 1861. The materials for it were collected by Drs. Hinds, Hance and Harland, Col. Champion, and others, during the previous twenty years, and amounted in all to upward of five thousand specimens, gathered exclusively on the island. Since its publication, Dr. Hance has added to our accurate knowledge of the Chinese flora many new specimens growing in other parts of the Empire, whose descriptions are scattered through various publications. Père David, during his extensive travels in northern China, gathered thousands of specimens which have yet to be carefully described. The Russian naturalists Maximowitch, Bunge, Tatarinov, Bretschneider, Prejevalsky, and others have largely increased our knowledge of the plants of Mongolia, the Amur basin, and the region about Peking. The first named has issued a separate work on the Amur flora, but most of the papers of these scientists are to be found in periodicals. In very early days, China was celebrated for the camphor, varnish, tallow, oil, tea, cassia, dyes, etc., obtained from its plants; and the later monographs of professed botanists, issued since Linneus looked over the two hundred and sixty-four species brought by his pupil Osbeck in 1750, down to the present day, have altogether given immense assistance to a thorough understanding of their nature and value.

Mr. Bentham's observations on the range of the plants collected in the island of Hongkong represent its flora, in general character, as most like that of tropical Asia, of which it offers, in numerous instances, the northern limit. The damp, wooded ravines on the north and west furnish plants closely allied to

those of Assam and Sikkim; while other species, in considerable numbers, have a much more tropical character, extending with little variation over the Archipelago, Malaysia, Ceylon, and even to tropical Africa, but not into India. Within two degrees north of the island these tropical features (so far as is known) almost entirely cease, and out of the one thousand and fifty-six species described in the *Flora Hongkongensis*, only about eighty have been found in Japan; thus indicating that very few of the plants known to range across from the Himalaya to Japan grow south of Amoy. On the twenty-nine square miles forming the area of Hongkong there exists, Mr. Bentham says, a greater number of monotypic genera than in any other flora from an equal area in the world; he gives a comparative table of the floras of Hongkong, Aden and Ischia islands, about equal in extent, showing one thousand and three species growing on the first, ninety-five on the second, and seven hundred and ninety-two on the third. The proportion of woody to herbaceous species in Hongkong is nearly one-half, while in Ischia it is one to eleven; yet Hongkong has actually fewer trees than Ischia. Out of the one thousand and three species of wild plants there, three hundred and ninety-eight also occur in the tropical Asiatic flora, while one hundred and eighty-seven others have been found as well on the mainland; one hundred and fifty-nine are peculiar to the island.

Many species of coniferæ are floated down to Canton, taken from the Mei ling, or brought from Kwangsí; the timber is used for fuel, but more for rafters and pillars in buildings. The wood of the pride of India is employed for cabinet work; there are also many kinds of fancy wood, some of which are imported, and more are indigenous. The *nan muh*, or southern wood, a magnificent species of laurus common in Sz'chuen, which resists time and insects, is peculiarly valuable, and reserved for imperial use. The cœsalpinia, rose wood, aigle wood, and the camphor, elm, willow, and aspen, are also serviceable in carpentry.

The people collect seaweed to a great extent, using it in the arts and also for food; among these the *Gigartina tenax* affords an excellent material for glues and varnishes. It is boiled, and

the transparent glue obtained is brushed upon very coarse silk or mulberry paper, filling up their substance, and making a transparent covering for lanterns; it is also used as a size for stiffening silks and gauze. This and other kinds of fuci are boiled to a jelly and used for food; it is known in commerce under the name of agar-agar. The thick fronds of the laminaria are gathered on the northern coasts and imported from Japan. Among other cryptogams, the Tartarian lamb (*Aspidium barometz*), so graphically described by Darwin in his *Botanic Garden*, has long been celebrated; it is partly an artificial production of the ingenuity of Chinese gardeners taking advantage of the natural habits of the plant to form it into a shape resembling a sheep or other object.

Among remarkable grasses the zak or saxaul (*Haloxylon*) and the *sulhir* (*Agriophyllum*), which grow in the sandy parts of the desert of Gobi, should be mentioned. The first is found across the whole length of this arid region, growing on the bare sand, furnishing to the traveller a dry and ready fuel in its brittle twigs, while his camels greedily browse on its leafless but juicy and prickly branches. The Mongols pitch their tents beneath its shelter, seeking for some covert from the wintry winds, and encouraged to dig at its roots for water which has been detained by their succulent nature, a wonderful provision furnished by God in the bleakest desert. The *sulhir* is even more important, and is the "gift of the desert." It grows on bare sand, is about two feet high, a prickly saline plant, producing many seeds in September, of a nutritious, agreeable nature, food for man and beast.

The list of gramineous plants cultivated for food is large; the common sorts include rice, wheat, barley, oats, maize, sugar-cane, panic, sorghum, spiked and panicled millet, of each kind several varieties. The grass (*Phragmites*) raised along the river banks is carefully cut and dried, to be woven into floor-matting; a coarser sort, called *atap*, is made of bamboo splints for roofs of huts, awnings, and sheds. In the milder climes of the southern coasts, cheap houses are constructed of these materials. The coarse grass and shrubbery on the hills is cut in the autumn for fuel by the poor; and when the hills are well

sheared of their grassy covering, the stubble is set on fire, in order to supply ashes for manuring the next crop—an operation which tends to keep the hills bare of all shrubbery and trees.

Few persons who have not seen the bamboo growing in its native climes get a full idea from pictures of its grace and beauty. A clump of this magnificent grass will gradually develop by new shoots into a grove, if care be taken to cut down the older stems as they reach full maturity, and not let them flower and go to seed; for as soon as they have perfected the seed, they die down to the root, like other grasses. The stalks usually attain the height of fifty feet, and in the Indian islands often reach seventy feet and upward, with a diameter of ten or twelve inches at the bottom. A road lined with them, with their feathery sprays meeting overhead, presents one of the most beautiful avenues possible to a warm climate.

In China the industry and skill of the people have multiplied and perpetuated a number of varieties (one author contents himself with describing sixty of them), among which are the yellow, the black, the green, the slender sort for pipes, and a slenderer one for writing-pencils, the big-leaved, etc. Its uses are so various that it is not easy to enumerate them all. The shoots come out of the ground nearly full-sized, four to six inches in diameter, and are cut like asparagus to eat as a pickle or a comfit, or by boiling or stewing. Sedentary Buddhist priests raise this lenten fare for themselves or to sell, and extract the tabasheer from the joints of the old culms, to sell as a precious medicine for almost anything which ails you. The roots are carved into fantastic and ingenious images and stands, or divided into egg-shaped divining-blocks to ascertain the will of the gods, or trimmed into lantern handles, canes, and umbrella-sticks.

The tapering culms are used for all purposes that poles can be applied to in carrying, propelling, supporting, and measuring, for which their light, elastic, tubular structure, guarded by a coating of silicious skin, and strengthened by a thick septum at each joint, most admirably fits them. The pillars and props of houses, the framework of awnings, the ribs of mat-sails, and

the shafts of rakes are each furnished by these culms. So, also, are fences and all kinds of frames, coops, and cages, the wattles of abatis, and the ribs of umbrellas and fans. The leaves are sewed into rain-cloaks for farmers and sailors, and thatches for covering their huts and boats, pinned into linings for tea-boxes, plaited into immense umbrellas to screen the huckster and his stall from the sun and rain, or into coverings for theatres and sheds. Even the whole lot where a two-story house is building is usually covered in by a framework of bamboo-poles and *attap*—as this leaf covering is called, from its Malay name—all tied together by rattan, and protecting the workmen and their work from sun and rain.

The wood, cut into splints of proper sizes and forms, is woven into baskets of every shape and fancy, sewed into window-curtains and door-screens, plaited into awnings and coverings for tea-chests or sugar-cones, and twisted into cables. The shavings and curled threads aid softer things in stuffing pillows; while other parts supply the bed for sleeping, the chopsticks for eating, the pipe for smoking, and the broom for sweeping. The mattress to lie upon, the chair to sit upon, the table to eat on, the food to eat, and the fuel to cook it with, are also derivable from bamboo. The master makes his ferule from it, the carpenter his foot-measure, the farmer his water-pipes, irrigating wheels, and straw-rakes, the grocer his gill and pint cups, and the mandarin his dreaded instrument of punishment. This last use is so common that the name of the plant itself has come in our language to denote this application, and the poor wretch who is *bambooed* for his crimes is thus taught that laws cannot be violated with impunity.

The paper to write on, the book to study from, the pencil to write with, the cup to hold the pencils, and the covering of the lattice-window instead of glass are all indebted to this grass in their manufacture. The shaft of the soldier's spear, and oftentimes the spear altogether, the plectrum for playing the lute, the reed in the native organ, the skewer to fasten the hair, the undershirt to protect the body, the hat to screen the head, the bucket to draw the water, and the easy-chair to lounge on, besides cages for birds, fish, bees, grasshoppers, shrimps, and

cockroaches, crab-nets, fishing-poles, sumpitans or shooting-tubes, flutes, fifes, fire-holders, etc., etc., are among the things furnished from this plant, whose beauty when growing is commensurate to its usefulness when cut down. A score or two of bamboo-poles for joists and rafters, fifty fathoms of rattan ropes, with plenty of palm-leaves and bamboo-matting for roof and sides, supply material for a common dwelling in the south of China. Its cost is about five dollars. Those houses built over creeks, or along the low banks of rivers and sea-beaches, are elevated a few feet, and their floors are neatly made of split bamboos, which allow the water to be seen through. The decks, masts, yards, and framework of the mat-sails of the small boats of the islanders in the Archipelago are all more or less made of this useful plant. Throughout the south of Asia it enters into the daily life of the people in their domestic economy more than anything else, or than any other one thing does in any part of the world. The Japanese supply us with fans neatly formed, ribs and handle, from a single branch of bamboo, and covered with paper made from mulberry bark, while their skill is shown also in the exquisite covering of fine bamboo threads woven around cups and saucers.[1]

In ancient times the date palm was cultivated in China, but is now unknown. The cocoanut flourishes in Hainan and the adjacent coasts, where its fruit, leaves, and timber are much used. A great variety of utensils are carved from the nut-case, and ropes spun from the coir, while the cultivators drink the toddy made from the juice. The fan palm (*Chamærops*) is the common palm of the country, two species being cultivated for the wiry fibres in the leaf-sheaths, and for their broad leaves. This fibre is far more useful than that from cocoanut husks, as it is longer and smoother, and is woven into ropes, mats, cloaks, and brushes. The tree is spread over the greater part of the provinces, one of their most ornamental and useful trees. Another sort (*Caryota*) also furnishes a fibre employed in the same way, but its timber is more valuable; sedan thills are made of its wood. Still another is the talipot palm (*Borassus*), from

[1] Compare Yule's *Marco Polo*, Vol. I., p. 271; A. R. Wallace, *The Malay Archipelago*, pp. 87–91, American Ed.

whose leaves a material for writing books upon was once produced, as is the case now in Siam.[1]

Several species of Aroideæ are cultivated, among which the *Caladium cuculatum*, *Arum esculentum*, and *Indicum* are common. The tuberous farinaceous roots of the *Sagittaria sinensis* are esteemed; the roots of these plants, and of the water-chestnut, are manufactured into a powder resembling arrow-root. The sweet-flag (*Calamus*) is used in medicine for its spicy warmth. The stems of a species of Juncus are collected and the pith carefully taken out and dried for the wicks of water-lamps, and the inner layers of the pith hats so generally worn in southern China.

The extensive group of lillies contains many splendid ornaments of the conservatory and garden, natives of China; some are articles of food. The *Agapanthus*, or blue African lily, four species of *Hemerocallis*, or day lily, and the fragrant tuberose, are all common about Canton; the latter is widely cultivated for its blossoms to scent fancy teas. Eight or ten species of Lilium (among which the speckled tiger lily and the unsullied white are conspicuous) also add their gay beauties to the gardens; while the modest Commelina, with its delicate blue blossoms, ornaments the hedges and walks. Many alliaceous plants, the onion, cives, garlic, etc., belong to this group; and the Chinese relish them for the table as much as they admire the flowers of their beauteous and fragrant congeners for bouquets. The singular red-leaved iron-wood (*Dracæna*) forms a common ornament of gardens.

The yam, or *ta-shu* (*i.e.*, 'great tuber'), is not much raised, though its wholesome qualities as an article of food are well understood. The same group (*Musales*) to which the yam belongs furnishes the custard-apple, one of the few fruits which have been introduced from abroad. The Amaryllidæ are represented by many pretty species of Crinum, Nerine, and Amaryllis. Their unprofitable beauty is compensated by the plain but useful plantain, said to stand before the potato and sago palm as producing the greatest amount of wholesome food, in propor-

[1] See also in *Notes and Queries on C. and J.*, Vol. III., pp. 115, 129, 139, 147, 150, 170.

tion to its size, of any cultivated plant.[1] There are many varieties of this fruit, some of them so acid as to require cooking before eating.

That pleasant stomachic, ginger, is cultivated through all the country, and exposed for sale as a green vegetable, to spice dishes, and largely made into a preserve. The Alpinia and Canna, or Indian shot, are common garden flowers. The large group of Orchideæ has nineteen genera known to be natives of China, among which the air plants (*Vanda* and *Ærides*) are great favorites. They are suspended in baskets under the trees, and continue to unfold their blossoms in gradual succession for many weeks, all the care necessary being to sprinkle them daily. The true species of Ærides are among the most beautiful productions of the vegetable world, their flowers being arrayed in long racemes of delicate colors and delicious fragrance. The beautiful Bletia, Arundina, Spathoglottis, and Cymbidium are common in damp and elevated places about the islands near Macao and Hongkong.

Many species of the pine, cypress, and yew, forming the three subdivisions of cone-bearing plants, furnish a large proportion of the timber and fuel. The larch is not rare, and the *Pinus massoniana* and *Cunninghamia* furnish most of the common pine timber. The finest member of this order in China is the white pine (*Pinus bungiana*), peculiar to Chihlí; its trunk is a clear white, and as it annually sheds the bark it always looks as if whitewashed. Some specimens near Peking are said to be a thousand years old. Two members of the genus *Sequoia*, of a moderate size, occur near Tibet. The juniper and thuja are often selected by gardeners to try their skill in forcing them to grow into rude representations of birds and animals, the price of these curiosities being proportioned to their grotesqueness and difficulty. The nuts of the maiden-hair tree (*Salisburia adiantifolia*) are eaten, and the leaves are sometimes put into books as a preservative against insects.

The willow is a favorite plant and grows to a great size, Staunton mentioning some which were fifteen feet in girth;

[1] From calculations of Humboldt it was estimated that the productiveness of this plant as compared with wheat is as 133 to 1, and as against potatoes, 44 to 1.

they shade the roads near the capital, and one of them is the true Babylonian willow; the trees are grown for timber and for burning into charcoal. Their leaves, shape, and habits afford many metaphors to poets and writers, much more use being made of the tree in this way, it might almost be said, than any other. The oak is less patronized by fine writers, but the value of its wood and bark is well understood; the country affords several species, one of which, the chestnut oak, is cultivated for the cupules, to be used in dyeing. The galls are used for dyeing and in medicine, and the acorns of some kinds are ground in mills, and the flour soaked in water and made into a farinaceous paste. Some of the missionaries speak of oaks a hundred feet high, but such giants in this family are rare. "One of the largest and most interesting of these trees, which," writes Abel, "I have called *Quercus densifolia*, resembled a laurel in its shining green foliage. It bore branches and leaves in a thick head, crowning a naked and straight stem; its fruit grew along upright spikes terminating the branches. Another species, growing to the height of fifty feet, bore them in long, pendulous spikes."

The chestnut, walnut, and hazelnut together furnish a large supply of food. The queer-shaped ovens fashioned in imitation of a raging lion, in which chestnuts are roasted in the streets of Peking, attract the eye of the visitor. The Jack-fruit (*Artocarpus*) is not unknown in Canton, but it is not much used. There are many species of the banian, but none of them produce fruit worth plucking; the Portuguese have introduced the common fig, but it does not flourish. The bastard banian is a magnificent shade tree, its branches sometimes overspreading an area a hundred or more feet across. The walls of cities and dwellings are soon covered with the *Ficus repens*, and if left unmolested its roots gradually demolish them. The paper mulberry (*Broussonetia*) is largely cultivated in the northern provinces, and serves the poor with their chief material for windows. The leaf of the common mulberry is the principal object of its culture, but the fruit is eaten and the wood burned for lamp-black to make India-ink.

Hemp (*Cannabis*) is cultivated for its fibres, and the seeds furnish an oil used for household purposes and medicinal prep-

arations; the intoxicating substance called *bang*, made in India, is unknown in China. The family Proteaceæ contains the *Eleococca cordata*, or *wu-tung*, a favorite tree of the Chinese for its beauty, the hard wood it furnishes, and the oil extracted from its seeds. The *Stillingia* belongs to the same family; this symmetrical tree is a native of all the eastern provinces, where it is raised for its tallow; it resembles the aspen in the form and color of the leaf and in its general contour. The castor-oil is cultivated as a hedge plant, and the seeds are used both in the kitchen and apothecaries' shop.

The order Hippurinæ furnishes the water caltrops (*Trapa*), the seeds of which are vended in the streets as a fruit after boiling; one native name is 'buffalo-head fruit,' which the unopened nuts strikingly resemble. Black pepper is imported, not so much as a spice as for its infusion, to be administered in fevers. The betel pepper is cultivated for its leaves, which are chewed with the betel-nut. The pitcher plant (*Nepenthes*), called pig-basket plant, is not unfrequent near Canton; the leaves, or ascidia, bear no small resemblance to the open baskets employed for carrying hogs.

Many species of the tribe *Rumicinæ* are cultivated as esculent vegetables, among which may be enumerated spinach, green basil, beet, amaranthus, cockscomb, broom-weed (*Kochia*), buckwheat, etc. Two species of Polygonum are raised for the blue dye furnished by the leaves, which is extracted, like indigo, by maceration. Buckwheat is prepared for food by boiling it like millet; one native name means 'triangular wheat.' The flour is also employed in pastry. The cockscomb is much admired by the Chinese, whose gardens furnish several splendid varieties. The rhubarb is a member of this useful tribe, and large quantities are brought from Kansuh and Koko-nor, where its habits have lately been observed by Prejevalsky. The root is dug by Chinese and Tanguts during September and October, dried in the shade, and transported by the Yellow River to the coast towns, where Europeans pay from six to ten times its rate among the mountain markets.[1] The Chinese consider the rest

[1] Compare Yule's *Marco Polo*, Vol. I., p. 197.

of the world dependent on them for tea and rhubarb, whose inhabitants are therefore forced to resort thither to procure means to relieve themselves of an otherwise irremediable costiveness. This argument was made use of by Commissioner Lin in 1840, when recommending certain restrictive regulations to be imposed upon foreign trade, because he supposed merchants from abroad would be compelled to purchase them at any price.

The order *Ilicinæ*, or holly, furnishes several genera of Rhamneæ, whose fruits are often seen on tables. The Zizyphus furnishes the so-called Chinese dates[1] in immense quantities throughout the northern provinces. The fleshy peduncles of the Hovenia are eaten; they are common in the southeastern provinces. The leaves of the *Rhamnus theezans* are among the many plants collected by the poor as a make-shift for the true tea. The fruit called the Chinese olive, obtained from the Pimela, is totally different from and is a poor substitute for the rich olive of the Mediterranean countries.[2]

The Leguminosæ hold an important place in Chinese botany, affording many esculent vegetables and valuable products. Peas and beans are probably eaten more in China than any other country, and soy is prepared chiefly from the Soja or Dolichos. One of the modes of making this condiment is to skin the beans and grind them to flour, which is mixed with water and powdered gypsum, or turmeric. It is eaten as a jelly or curd, or in cakes, and a meal is seldom spread without it in some form. One genus of this tribe affords indigo, and from the buds and leaves of a species of Colutea a kind of green dye is said to be obtained. Liquorice is esteemed in medicine; and the red seeds of the *Abrus precatorius* are gathered for ornaments. The Poinciana and Bauhinia are cultivated for their flowers, and the Erythrina and Cassia are among the most magnificent flowering trees in the south.

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[1] The application of this name to the jujube plum by foreigners, because the kind cured in honey resembled Arabian dates in color, size, and taste when brought on the table, is a good instance of the manner in which errors arise and are perpetuated from mere carelessness.

[2] Compare Dr. H. F. Hance, in *Journal of Botany*, Vol. IX., p. 38.

The fruits are, on the whole, inferior in flavor and size to those of the same names at the west. Several varieties of pears, plums, peaches, and apricots are known; it is probable that China is the native country of each of these fruits, and some of the varieties equal those found anywhere. Erman[1] mentions an apple or haw which grows in "long bunches and is round, about the size of a cherry, of a red color, and very sweet taste," found in abundance near Kiakhta. There are numerous species of Amygdalus cultivated for their flowers; and at new year the budding stems of the flowering almond, narcissus, plum, peach, and bell-flower (*Enkianthus reticulatus*) are forced into blossom for exhibition, as indicating good luck the coming year. The apples and quinces are generally destitute of that flavor looked for in them elsewhere, but the *lu-kuh*, or *loquat*, is a pleasant acid spring fruit. The pomegranate is chiefly cultivated for its beauty as a flowering plant; but the guava and Eugenia, or rose-apple, are sold in the market or made into jellies. The rose is a favorite among the Chinese and extensively cultivated; twenty species are mentioned, together with many varieties, as natives of the country; the Banks rose is developed and trained with great skill. The Spiræa or privet, myrtle, Quisqualis, Lawsonia or henna, white, purple, and red varieties of crape-myrtle or Lagerstrœmia, Hydrangea, the passion-flower, and the house-leek are also among the ornamental plants found in gardens. Few trees in any country present a more elegant appearance, when in full flower, than the Lagerstrœmias. The Pride of India and Chinese tamarix are also beautiful flowering trees. Specimens of the Cactus and Cereus, containing fifty or more splendid flowers in full bloom, are not unusual at Macao in August.

The watermelon, cucumber, squash, tomato, brinjal or egg-plant, and other garden vegetables are abundant; the tallow-gourd (*Benincasa cerifera*) is remarkable for having its surface covered with a waxy exudation which smells like rosin. The dried bottle-gourd (*Cucurbita lagenaria*) is tied to the backs of children on the boats to assist them in floating if they should

[1] *Travels in Siberia*, Vol. II., p. 151.

unluckily fall overboard. The fruit and leaves of the papaw, or *muh kwa*, 'tree melon,' are eaten after being cooked; the Chinese are aware of the intenerating property of the exhalations from the leaves of this tree, and make use of them sometimes to soften the flesh of ancient hens and cocks, by hanging the newly killed birds in the tree or by feeding them upon the fruit beforehand. The carambola (*Averrhoa*) or tree gooseberry is much eaten by the Chinese, but is not relished by foreigners; the tree itself is also an ornament to any pleasure grounds.

Ginseng is found wild in the forests of Manchuria, where it is collected by detachments of soldiers detailed for this purpose; these regions are regarded as imperial preserves, and the medicine is held as a governmental monopoly. The importation of the American root does not interfere to a very serious degree with the imperial sales, as the Chinese are fully convinced that their own plant is far superior. Among numerous plants of the malvaceous and pink tribes (*Dianthaceæ*) remarkable for their beauty or use, the *Lychnis coronata*, five sorts of pink, the *Althæa Chinensis*, eight species of Hibiscus, and other malvaceous flowers may be mentioned; the cotton tree (*Salmalia*) is common at Canton; the fleshy petals are sometimes prepared as food, and the silky stamens dried to stuff cushions. The *Gossypium herbaceum* and *Pachyrrhizus* afford the materials for cotton and grasscloth; both of them are cultivated in most parts of China. The latter is a twining, leguminous plant, cultivated from remote antiquity, and still grown for its fibres, which are woven into linen. The petals of the *Hibiscus rosa-sinensis* furnish a black liquid to dye the eyebrows, and at Batavia they are employed to polish shoes. The fruits of the *Hibiscus ochra*, or okers, are prepared for the table in a variety of ways.

The *Camellia Japonica* is allied to the same great tribe as the Hibiscus, and its elegant flowers are as much admired by the people of its native country as by florists abroad; thirty or forty varieties are enumerated, many of them unknown out of China, while Chinese gardeners are likewise ignorant of a large proportion of those found in our conservatories. This flower is

cultivated solely for its beauty, but other species of Camellia are raised for their seeds, the oil expressed from them being serviceable for many household and mechanical purposes. From the fibres of a species of Waltheria, a plant of the same tribe, a fine cloth is made; and the *Pentapetes Phœnicia*, or 'noon flower,' is a common ornament of gardens.

The widely diffused tribe Ranunculiaceæ has many representatives, some of them profitable for their timber, others sought after for their fruit or admired for their beauty, and a few prized for their healing properties. There are eight species of Magnolia, all of them splendid flowering plants; the bark of the *Magnolia yulan* is employed as a febrifuge. The seed vessels of the *Ilicium anisatum*, or star-aniseed, are gathered on account of their spicy warmth and fragrance. The *Artabotrys odoratissimus* and *Unona odorata* are cultivated for their perfume. Another favorite is the *mowtan*, or tree pæony, reared for its large and variegated flowers; its name of *hwa wang*, or 'king of flowers,' indicates the estimation in which it is held. The skill of native gardeners has made many varieties, and their patience is rewarded by the high prices which fine specimens command. Good imitations of full-grown plants in flower are sometimes made of pith paper. The Clematis, the foxglove, the *Berberis Chinensis*, and the magnificent lotus, all belong to this tribe; the latter, one of the most celebrated plants in Asia, is more esteemed by the Chinese for its edible roots than reverenced for its religious associations. The *Actæa aspera* is sometimes collected, as is the scouring rush, for cleaning pewter vessels, for which its hispid leaves are well fitted.

The groups which include the poppy, mustard, cabbage, cress, and many ornamental species, form an important portion of native agriculture. The poppy has become a common crop in all the provinces, driving out the useful cereals by its greater value and profit. The leaves of many cruciferous plants are eaten, whether cultivated or wild; and one kind (*Isates*) yields a fine blue dye in the eastern provinces; the variety and amount of such food consumed by the Chinese probably exceeds that of any other people. Another tribe, Rutaceæ, contains the oranges and shaddocks, and some very fragrant shrubs, as the

Murraya exotica and *paniculata*, and the *Aglaia odorata*; while the bladder-tree (*Koelreuteria*) is a great attraction when its whole surface is brilliant with golden flowers. The *whampe*, *i.e.*, yellow skin (*Cookia punctata*), is a common and superior fruit. The seeds of the Gleditschia, besides their value in cleansing, are worn as beads, "because," say the Buddhists, "all demons are afraid of the wood;" one name means 'preventive of evil.' Two native fruits, the *lichi* and *lungan*, are allied to the Sapindus in their affinities; while the *fung shu*, or Liquidambar, and many sorts of maple, with the *Pittosporum tobira*, an ornamental shrub, may be mentioned among plants used for food or sought after for timber.

These brief notices of Chinese plants may be concluded by mentioning some of the most ornamental not before spoken of; but all the beautiful sorts are soon introduced into western conservatories by enterprising florists. In the extensive tribe of Rubiacinæ are several species of honeysuckle, and a fragrant Viburnum resembling the snowball. The Serissa is cultivated around beds like the box; the *Ixora coccinea*, and other species of that genus, are among common garden shrubs. The seeds of two or three species of Artemisia are collected, dried, and reduced to a down, to be burned as an actual cautery. The dried twigs are frequently woven into a rope to slowly consume as a means of driving away mosquitoes. From the *Carthamus tinctoirus* a fine red dye is prepared. The succory, lettuce, dandelion, and other cichoraceous plants, either wild or cultivated, furnish food; while innumerable varieties of Chrysanthemums and Asters are reared for their beauty.

The Labiatæ afford many genera, some of them cultivated; and the Solanaceæ, or nightshades, contain the tomato, potato, tobacco, stramony, and several species of Capsicum, or red pepper. It has been disputed whether tobacco is native or foreign, but the philological argument and historical notices prove that both this plant and maize were introduced within half a century after the discovery of America, or about the year 1530. The Chinese dry the leaves and cut them into shreds for smoking; the snuff is coarser and less pungent than the Scotch; it is said that powdered cinnabar is sometimes mixed with it.

Among the Convolvulaceæ are many beautiful species of Ipomea, especially the cypress vine, or *quamoclit*, trained about the houses even of the poorest. The *Ipomea maritima* occurs, trailing over the sandy beaches along the coast from Hainan to Chusan and Lewchew. The *Convolvulus reptans* is planted around the edges of pools on the confines of villages and fields, for the sake of its succulent leaves. The narcotic family of Apocyneæ contains the oleander and Plumeria, prized for their fragrance; while the yellow milkweed (*Asclepias curassavica*) and the *Vinca rosea*, or red periwinkle, are less conspicuous, but not unattractive, members of the same group. The jasmine is a deserved favorite, its clusters of flowers being often wound by women in their hair, and planted in pots in their houses. The *Olea fragrans*, or *kwei hwa*, is cultivated for scenting tea.

In the eastern provinces the hills are adorned with yellow and red azaleas of gorgeous hue, especially around Ningpo and in Chusan. "Few," says Mr. Fortune, "can form any idea of the gorgeous beauty of these azalea-clad hills, where, on every side, the eye rests on masses of flowers of dazzling brightness and surpassing beauty. Nor is it the azalea alone which claims our admiration; clematises, wild roses, honeysuckles, and a hundred others, mingle their flowers with them, and make us confess that China is indeed the 'central flowery land.'" [1]

A few notices of the advance made by the Chinese themselves in the study of natural history, taken from their great work on materia medica, the *Pun tsao*, or 'Herbal,' will form an appropriate conclusion to this chapter. This work is usually bound in forty octavo volumes, divided into fifty-two chapters, and contains many observations of value mixed up with a deal of incorrect and useless matter; and as those who read the book have not sufficient knowledge to discriminate between what is true and what is partly or wholly wrong, its reputation tends greatly to perpetuate the errors. The compiler of the *Pun tsao*, Lí Shí-chin, spent thirty years in collecting all the information on these subjects extant in his time, arranged it in a methodical manner for popular use, adding his own observations, and pub-

[1] *Wanderings in China.*

lished it about 1590. He consulted some eight hundred preceding authors, from whom he selected one thousand five hundred and eighteen prescriptions, and added three hundred and seventy-four new ones, arranging his materials in fifty-two books in a methodical and (for his day) scientific manner. But how far behind the writings of Pliny and Dioscorides! The nucleus of Lí's production is a small work which tradition ascribes to Shinnung, the God of Agriculture, and is doubtless anterior to the Han dynasty. His composition was well received, and attracted the notice of the Emperor, who ordered several succeeding editions to be published at the expense of the state. It was, in fact, so great an advance on all previous books, that it checked future writers in that branch, and Lí is likely now to be the first and last purely native critical writer on natural science in his mother tongue.

The first two volumes contain a collection of prefaces and indices, together with many notices of the theory of anatomy and medicine, and three books of pictorial illustrations of the rudest sort. Chapters I. and II. consist of introductory observations upon the practice of medicine, and an index of the recipes contained in the work, called the *Sure Guide to a Myriad of Recipes;* the whole filling the first seven volumes. Chapters III. and IV. contain lists of medicines for the cure of all diseases, occupying three volumes and a half, and comprising the therapeutical portion of the work, except a treatise on the pulse in the last volume.

In the subsequent chapters the author carefully goes over the entire range of nature, first giving the correct name and its explanation; then comes descriptive remarks, solutions of doubts and corrections of errors being interspersed, closing with notes on the savor, taste, and application of the recipes in which it is used. Chapters V. and VI. treat of inorganic substances under water and fire, and minerals under Chapters VII. to XI., as earth, metals, gems, and stones. Water is divided into aerial and terrestrial, *i.e.*, from the clouds, and from springs, the ocean, etc. Fire is considered under eleven species, among which are the flames of coal, bamboo, moxa, etc. The chapter on earth comprises the secretions from

various animals, as well as soot, ink, etc.; that on metals includes metallic substances and their common oxides; and gems are spoken of in the next division. The eleventh chapter, in true Chinese style, groups together what could not be placed in the preceding sections, including salts, minerals, etc. In looking at this arrangement one detects the similarity between it and the classification of characters in the language itself, showing the influence this has had upon it; thus *ho*, *shui*, *tu*, *kin*, *yuh*, *shih*, and *lu*, or fire, water, earth, metals, gems, stones, and salts, are the seven radicals under which the names of inorganic substances are classified in the imperial dictionary. A like similarity runs through other parts of the *Herbal*.

Chapters XII. to XXXVII., inclusive, treat of the vegetable kingdom, under five *pu*, or 'divisions,' viz.: herbs, grains, vegetables, fruits, and trees; which are again subdivided into *lui*, or 'families,' though the members of these families have no more relationship to each other than the heterogeneous family of an Egyptian slave dealer. The lowest term in the Chinese scientific scale is *chung*, which sometimes includes a genus, but quite as often corresponds to a species or even a variety, as Linneus understood those terms.

The first division of herbs contains nine families, viz.: hill plants, odoriferous, marshy, noxious, scandent or climbing, aquatic, stony, and mossy plants, and a ninth of one hundred and sixty-two miscellaneous plants not used in medicine, making six hundred and seventy-eight species in all. In this classification the habitat is the most influential principle of arrangement for the families, while the term *tsao*, or 'herb,' denotes whatever is not eaten or used in the arts, or which does not attain to the magnitude of a tree.

The second division of grains contains four families, viz.: 1, that of hemp, sesamum, buckwheat, wheat, rice, etc.; 2, the family of millet, maize, opium, etc.; 3, leguminous plants, pulse, peas, vetches, etc.; and 4, fermentable things, as bean curd, boiled rice, wine, yeast, congee, bread, etc., which, as they are used in medicine, and produced from vegetables, seem most naturally to come in this place. The first three families embrace thirty-nine species, and the last tweny-nine articles.

The third division of kitchen herbs contains five families: 1, offensive pungent plants, as leeks, mustard, ginger; 2, soft and mucilaginous plants, as dandelions, lilies, bamboo sprouts; 3, vegetables producing fruit on the ground, as tomatoes, egg-plants, melons; 4, aquatic vegetables; and 5, mushrooms and fungi. The number of species is one hundred and thirty-three, and some part of each of them is eaten.

The fourth division of fruits contains seven families: 1, the five fruits, the plum, peach, apricot, chestnut, and date (Rhamnus); 2, hill fruits, as the orange, pear, citron, persimmon; 3, foreign fruits, as the cocoanut, lichí, carambola; 4, aromatic fruits, as pepper, cubebs, tea; 5, trailing fruits, as melons, grape, sugar-cane; 6, aquatic fruits, as water caltrops, water lily, water chestnuts, etc.; and 7, fruits not used in medicine, as whampe. In all, one hundred and forty-seven species.

The fifth division of trees has six families: 1, odoriferous trees, as pine, cassia, aloes, camphor; 2, stately trees, as the willow, tamarix, elm, soapberry, palm, poplar, julibrissin or silk tree; 3, luxuriant growing trees, as mulberry, cotton, Cercis, Gardenia, Bombax, Hibiscus; 4, parasites or things attached to trees, as the mistletoe, pachyma, and amber; 5, flexible plants, as bamboo; this family has only four species; 6, includes what the other five exclude, though it might have been thought that the second and third families were sufficiently comprehensive to contain almost all miscellaneous plants. The number of species is one hundred and ninety-eight. All botanical subjects are classified in this manner under five divisions, thirty-one families, and one thousand one hundred and ninety-five species, excluding all fermentable things.

The arrangement of the botanical characters in the language does not correspond so well to this as does that of inorganic substances. The largest group in the language system is *tsao*, which comprises in general such herbaceous plants as are not used for food The second, *muh*, includes all trees or shrubs; and the bamboo, on account of its great usefulness, stands by itself, though the characters mostly denote names of articles made of bamboo. No less than four radicals, viz., rice, wheat, millet, and grain, serve as the heads under which the esculent grasses

are arranged; there are consequently many synonymes and superfluous distinctions. One family includes beans, and another legumes; one comprises cucurbitaceous plants, another the alliaceous, and a fourth the hempen; the importance of these plants as articles of food or manufacture no doubt suggested their adoption. Thus all vegetable substances are distributed in the language under eleven different heads.

The zoölogical grouping in the *Pun tsao* is as rude and unscientific as that of plants. There are five *pu*, or divisions, namely: insect, scaly, shelly, feathered, and hairy animals. The first division contains four families: 1 and 2, insects born from eggs, as bees and silkworms, butterflies and spiders; 3, insects produced by metamorphosis, as glow-worms, mole-crickets, bugs; and 4, water insects, as toads, centipedes, etc. The second division has four families: 1, the dragons, including the manis, "the only fish that has legs;" 2, snakes; 3, fishes having scales; and 4, scaleless fishes, as the eel, cuttle-fish, prawn. The third division is classified under the two heads of tortoises or turtles and mollusks, including the star-fish, echinus, hermit-crab, etc. The fourth division contains birds arranged under four families: 1, water-fowl, as herons, king-fishers, etc.; 2, heath-fowl, sparrows, and pheasants; 3, forest birds, as magpies, crows; and 4, wild birds, as eagles and hawks. Beasts form the fifth division, which likewise contains four families: 1, the nine domesticated animals and their products; 2, wild animals, as lions, deers, otters; 3, rodentia, as the squirrel, hedgehog, rat; and 4, monkeys and fairies. The number of species in these five divisions is three hundred and ninety-one, but there are only three hundred and twenty different objects described, as the roe, fat, hair, exuviæ, etc., of animals are separately noticed.

The sixteen zoölogical characters in the language are not quite so far astray from being types of classes as the eleven botanical ones. Nine of them are mammiferous, viz.: the tiger, dog, and leopard, which stand for the carnivora; the rat for rodentia; the ox, sheep, and deer for ruminants; and the horse and hog for pachydermatous. Birds are chiefly comprised under one radical *niao*, but there is a sub-family of

short-tailed gallinaceous fowls, though much confusion exists in the division. Fishes form one group, and improperly include crabs, lizards, whales, and snakes, though most of the latter are placed along with insects, or else under the dragons. The tortoise, toad, and dragon are the types of three small collections, and insects are comprised in the sixteenth and last. These groups, although they contain many anomalies, as might be expected, are still sufficiently natural to teach those who write the language something of the world around them. Thus, when one sees that a new character contains the radical *dog* in composition, he will be sure that it is neither fowl, fish, nor bug, nor any animal of the pachydermatous, cervine, or ruminant tribes, although he may have never seen the animal nor heard its name. This peculiarity runs through the whole language, indeed, but in other groups, as for instance those under the radicals man, woman, and child, or heart, hand, leg, etc., the characters include mental and passionate emotions, as well as actions and names, so that the type is not sufficiently indicative to convey a definite idea of the words included under it; the names of natural objects being most easily arranged in this manner.

Between the account of plants and animals the *Herbal* has one chapter on garments and domestic utensils, for such things "are used in medicine and are made out of plants." The remaining chapters, XXXIX.–LII., treat of animals, as noticed above. The properties of the objects spoken of are discussed in a very methodical manner, so that a student can immediately turn to a plant or mineral and ascertain its virtue. For instance, the information relative to the history and uses of the horse is contained in twenty-four sections. The first explains the character, *ma*, which was originally intended to represent the outline of the animal. The second describes the varieties of horses, the best kinds for medical use, and gives brief descriptions of them, for the guidance of the practitioner. "The pure white are the best for medicine. Those found in the south and east are small and weak. The age is known by the teeth. The eye reflects the full image of a man. If he eats rice his feet will become heavy; if rat's dung, his belly will grow long; if his teeth be rubbed with dead silkworms, or black plums, he

will not eat, nor if the skin of a rat or wolf be hung in his manger. He should not be allowed to eat from a hog's trough, lest he contract disease; and if a monkey is kept in the stable he will not fall sick."

The third section goes on to speak of the flesh, which is an article of food; that of a pure white stallion is the most wholesome. One author recommends "eating almonds, and taking a rush broth, if the person feel uncomfortable after a meal of horse-flesh. It should be roasted and eaten with ginger and pork; and to eat the flesh of a black horse, and not drink wine with it, will surely produce death." The fourth describes the crown of the horse, the "fat of which is sweet, and good to make the hair grow and the face to shine." The fifth and succeeding sections to the twenty-fourth treat of the sanative properties and mode of exhibiting the milk, heart, lungs, liver, kidneys, placenta, teeth, bones, skin, mane, tail, brains, blood, perspiration, and excrements.

Some of the directions are dietetic, and others are prescriptive. "When eating horse-flesh do not eat the liver," is one of the former, given because of the absence of a gall-bladder in the liver, which imports its poisonous qualities. "The heart of a white horse, or that of a hog, cow, or hen, when dried and rasped into spirit and so taken, cures forgetfulness; if the patient hears one thing he knows ten." "Above the knees the horse has *night-eyes* (warts), which enable him to go in the night; they are useful in the toothache;" these sections partake both of the descriptive and prescriptive. Another medical one is: "If a man be restless and hysterical when he wishes to sleep, and it is requisite to put him to rest, let the ashes of a skull be mingled with water and given him, and let him have a skull for a pillow, and it will cure him." The same preservative virtues appear to be ascribed to a horse's hoof hung in a house as are supposed, by some who should know better, to belong to a horseshoe when nailed upon the door.[1] The whole of this extensive work is liberally sprinkled with such whimsies, but the practice of medicine among the Chinese is vastly

[1] *Chinese Repository*, Vol. VII., p. 393.

better than their theories; for as Rémusat justly observes, "To see well and reason falsely are not wholly incompatible, and the naturalists of China, as well as the chemists and physicians of our ancient schools, have sometimes tried to reconcile them."

Another work on botany besides the *Herbal*, issued in 1848, deserves notice for its research and the excellence of its drawings. It is the *Chih Wuh Ming-shih Tu-kao*, or *Researches into the Names and Virtues of Plants*, with plates, in sixty volumes. There are one thousand seven hundred and fifteen drawings of plants, with descriptions of each, arranged in eleven books, followed by medical and agricultural observations on the most important in four books. One of its valuable points to the foreigner is the terminology furnished by the two authors for describing the parts and uses of plants. Rémusat read a paper in 1828, 'On the State of the Natural Sciences among the Orientals,' in which he indicates the position attained by Chinese in their researches into the nature and uses of objects around them. After speaking of the adaptation the language possesses, from its construction, to impart some general notions of animated and vegetable nature, he goes on to remark upon the theorizing propensities of their writers, instead of contenting themselves with examining and recording facts. "In place of studying the organization of bodies, they undertake to determine by reasoning how it should be, an aim which has not seldom led them far from the end they proposed. One of the strangest errors among them relates to the transformation of beings into each other, which has arisen from popular stories or badly conducted observations on the metamorphoses of insects. Learned absurdities have been added to puerile prejudices; that which the vulgar have believed the philosophers have attempted to explain, and nothing can be easier, according to the oriental systems of cosmogony, in which a simple matter, infinitely diversified, shows itself in all beings. Changes affect only the apparent properties of bodies, or rather the bodies themselves have only appearances; according to these principles, they are not astonished at seeing the electric fluid or even the stars converted into stones, as happens when aerolites fall. That animated beings become inanimate is proven

by fossils and petrifactions. Ice enclosed in the earth for a millennium becomes rock crystal; and it is only necessary that lead, the *father* of all metals (as Saturn, its alchemistic type, was of gods), pass through four periods of two centuries each to become successively cinnabar, tin, and silver. In spring the rat changes into a quail, and quails into rats again during the eighth month.

"The style in which these marvels is related is now and then a little equivocal; but if they believe part of them proved, they can see nothing really impossible in the others. One naturalist, less credulous than his fellows, rather smiles at another author who reported the metamorphosis of an oriole into a mole, and of rice into a carp; 'it is a ridiculous story,' says he; 'there is proof only of the change of rats into quails, which is reported in the almanac, and which I have often seen myself, for there is an unvaried progression, as well of transformations as of generations.' Animals, according to the Chinese, are viviparous as quadrupeds, or oviparous as birds; they grow by transformations, as insects, or by the effect of humidity, as snails, slugs, and centipedes. . . . . The success of such systems is almost always sure, not in China alone either, because it is easier to put words in place of things, to stop at nothing, and to have formulas ready for solving all questions. It is thus that they have formed a scientific jargon, which one might almost think had been borrowed from our dark ages, and which has powerfully contributed to retain knowledge in China in the swaddling-clothes we now find it. Experience teaches that when the human mind is once drawn into a false way, the lapse of ages and the help of a man of genius are necessary to draw it out. Ages have not been wanting in China, but the man whose superior enlightenment might dissipate these deceitful glimmerings, would find it very difficult to exercise this happy influence as long as their political institutions attract all their inquiring minds or vigorous intellects far away from scientific researches into the literary examinations, or put before them the honors and employments which the functions and details of magisterial appointments bring with them." [1]

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[1] *Mélanges Orientales, Posthumes*, p. 215.

This last observation indicates the reason, to a great degree, for the fixedness of the Chinese in all departments of learned inquiry; hard labor employs the energy and time of the ignorant mass, and emulation in the strife to reach official dignities consumes and perverts the talents of the learned. Then their language itself disheartens the most enthusiastic students in this branch of study, on account of its vagueness and want of established terms. When the vivifying and strengthening truths of revelation shall be taught to the Chinese, and its principles acted upon among them, we may expect more vigor in their minds and more profit in their investigations into the wonders of nature.

CHAPTER VII.

LAWS OF CHINA, AND PLAN OF ITS GOVERNMENT.

The consideration of the theory and practice of the Chinese government recommends itself to the attention of the intelligent student of man by several peculiar reasons, among which are its acknowledged antiquity, the multitudes of people it rules, and the comparative quiet enjoyed by its subjects. The government of a heathen nation is so greatly modified by the personal character of the executive, and the people are so liable to confound institutions with men, either from imperfect acquaintance with the nature of those institutions, or from being, through necessity or habit, easily guided and swayed by designing and powerful men, that the long continuance of the Chinese polity is a proof both of its adaptation to the habits and condition of the people, and of its general good management. The antiquity and excellence of such a government, and its orderly administration, might, however, be far greater than it is in China, without being invested with the interest which at present attaches to it in that Empire in consequence of the immense population, whose lives and property, food and well-being, depend to so great a degree upon it. What was at first rather a feeling of curiosity, gradually becomes one of awe, when the evil results of misgovernment, or the beneficent effects of equitable rule, are seen to be so momentous.

The theory of the Chinese government is undoubtedly the patriarchal; the Emperor is the sire, his officers are the responsible elders of its provinces, departments, and districts, as every father of a household is of its inmates. This may, perhaps, be the theory of other governments, but nowhere has it been sys-

tematized so thoroughly, and acted upon so consistently and for so long a period, as in China. Two causes, mutually acting upon each other, have, more than anything else, combined to give efficiency to this theory. The ancient rule of Yau and Shun [1] was strictly, so far as the details are known, a patriarchal chieftainship, conferred upon them on account of their excellent character; and their successors under Yu of the Hia dynasty were considered as deriving their power from heaven, to whom they were amenable for its good use. When Chingtang, founder of the Shang dynasty, B.C. 1766, and Wu Wang, of the Chau, B.C. 1122, took up arms against the Emperors, the excuse given was that they had not fulfilled the decrees of heaven, and had thereby forfeited their claim to the throne.

Confucius, in teaching his principles of political ethics, referred to the conduct of those ancient kings both for proof of the correctness of his instructions and for arguments to enforce them. The large number of those who followed him during his lifetime furnishes some evidence that his countrymen assented to the propriety of his teachings. This may account for their reception, illustrated as they were by the high character the sage bore; but it was not till the lapse of two or three centuries that the rulers of China perceived the great security the adoption and diffusion of these doctrines would give their sway. They therefore turned their attention toward the embodiment of these precepts into laws, and toward basing the institutions of government upon them; through all the convulsions and wars which have disturbed the country and changed the reigning families, these writings have done more than any one thing else to uphold the institutions of the Chinese and give them their character and permanence. Education being founded on them, those who as students had been taught to receive and reverence them as the oracles of political wisdom, would, when they entered upon the duties of office, endeavor to carry out, in some degree at least, their principles. Thus the precept and the practice have mutually modified, supported, and enforced each other.

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[1] 2357 and 2255 before Christ.

But this civilization is Asiatic and not European, pagan and not Christian. The institutions of China are despotic and defective, and founded on wrong principles. They may have the element of stability, but not of improvement. The patriarchal theory does not make men honorable, truthful, or kind; it does not place woman in her right position, nor teach all classes their obligations to their Maker; the wonder is, to those who know the strength of evil passions in the human breast, that this huge mass of mankind is no worse. We must, indeed, look into its structure in order to discover the causes of this stability, inasmuch as here we have neither a standing army to enforce nor the machinery of a state religion to compel obedience toward a sovereign. A short inspection will show that the great leading principles by which the present administration preserves its power over the people, consist in a system of *strict surveillance* and *mutual responsibility* among all classes. These are aided in their efficiency by the geographical isolation of the country, a remarkable spirit of loyal pride in their own history, and a general system of political education and official examinations.

These two principles are enforced by such a minute gradation of rank and subordination of offices as to give the government more of a military character than at first appears, and the whole system is such as to make it one of the most unmixed oligarchies now existing. It is like a network extending over the whole face of society, each individual being isolated in his own mesh but responsibly connected with all around him. The man who knows that it is almost impossible, except by entire seclusion, to escape from the company of secret or acknowledged emissaries of government, will be cautious of offending the laws of the country, knowing, as he must, that though he should himself escape, yet his family, his kindred, or his neighbors will suffer for his offence; that if unable to recompense the sufferers, it will probably be dangerous for him to return home; or if he does, it will be most likely to find his property in the possession of neighbors or officials, who feel conscious of security in plundering one whose offences have forever placed him under a ban.

The effect of these two causes upon the mass of the people is to imbue them with a great fear of the government, both of its officers and its operations; each man considers that safety is best to be found in keeping aloof from both. This mutual surveillance and responsibility, though only partially extended throughout the multitude, necessarily undermines confidence and infuses universal distrust; while this object of complete isolation, though at the expense of justice, truth, honesty, and natural affection, is what the government strives to accomplish and actually does to a wonderful degree. The idea of government in the minds of the uneducated people is that of some ever-present terror, like a sword of Damocles; and so far has this undefined fear of some untoward result when connected with it counteracted the real vigor of the Chinese, that to it may be referred much of their indifference to improvement, contentment with what is already known and possessed, and submission to petty injustice and spoliation.

Men are deterred, too, as much by distrust of each other as by fear of the police, from combining in an intelligent manner to resist governmental exactions because opposed to principles of equity, or joining with their rulers to uphold good order; no such men, and no such instances, as John Hampden going to prison for refusing to subscribe to a forced loan, or Thomas Williams and his companions throwing the tea overboard in Boston harbor, ever occurred in China or any other Asiatic country. They dread illegal societies quite as much from the cruelties this same distrust induces the leaders to exercise over recreant or suspected members, as from apprehensien of arrest and punishment by the regular authorities. Thus, with a state of society at times on the verge of insurrection, this mass of people is kept in check by the threefold cord of responsibility, fear, and isolation, each of them strengthening the other, and all depending upon the character of the people for much of their efficiency. Since all the officers of government received their intellectual training when commoners under these influences, it is easy to understand why the supreme powers are so averse to improvement and to foreign intercourse—from both of which causes, in truth, the monarch has the greatest reason to

dread lest the charm of his power be weakened and his sceptre pass away.

There is, however, a further explanation for the general peace which prevails to be found back of this. It is owing partly to the diffusion of a political education among the people —teaching them the principles on which all government is founded, and the reasons for those principles flowing from the patriarchal theory—and partly to their plodding, industrious character. A brief exposition of the construction and divisions of the central and provincial governments and their mutual relations, and the various duties devolving upon the departments and officers, will exhibit more of the operation of these principles.

Although the Emperor is regarded as the head of this great organization, as the fly-wheel which sets other wheels of the machine in motion, he is still considered as bound to rule according to the code of the land; and when there is a well-known law, though the source of law, he is expected to follow it in his decrees. The statutes of China form an edifice, the foundations of which were laid by Lí Kwei twenty centuries ago. Successive dynasties have been building thereon ever since, adding, altering, pulling down, and putting together as circumstances seemed to require. The people have a high regard for the code, "and all they seem to desire is its just and impartial execution, independent of caprice and uninfluenced by corruption. That the laws of China are, on the contrary, very frequently violated by those who are their administrators and constitutional guardians, there can, unfortunately, be no question; but to what extent, comparatively with the laws of other countries, must at present be very much a matter of conjecture: at the same time it may be observed, as something in favor of the Chinese system, that there are substantial grounds for believing that neither flagrant nor repeated acts of injustice do, in point of fact, often, in any rank or station, ultimately escape with impunity."[1] Sir George Staunton is well qualified to speak on this point, and his opinion has been corroborated

[1] *Penal Code*, Introduction, p. xxviii.

by most of those who have had similar opportunities of judging; while his translation of the *Code* has given all persons interested in the question the means of ascertaining the principles on which the government ostensibly acts.

This body of laws is called *Ta Tsing Lüh Lí*, *i.e.*, 'Statutes and Rescripts of the Great Pure Dynasty,' and contains all the laws of the Empire. They are arranged under seven leading heads, viz.: General, Civil, Fiscal, Ritual, Military, and Criminal laws, and those relating to Public Works; and subdivided into four hundred and thirty-six sections, called *lüh*, or 'statutes,' to which the *lí*, or modern clauses, to limit, explain or alter them, are added; these are now much more numerous than the original statutes. A new edition is published by authority every five years; in the reprint of 1830 the Emperor ordered that the Supreme Court should make but few alterations, lest wily litigants might take advantage of the discrepancies between the new and old law to suit their own purposes. This edition is in twenty-eight volumes, and is one of the most frequently seen books in the shops of any city. The clauses are attached to each statute, and have the same force. No authorized reports of cases and decisions, either of the provincial or supreme courts, are published for general use, though their record is kept in the court where they are decided; the publication of such adjudged cases, as a guide to officers, is not unknown. An extensive collection of notes, comments, and cases, illustrating the practice and theory of the laws, was appended to the edition of 1799.

A short extract from the original preface of the *Code*, published in 1647, only three years after the Manchu Emperors took the throne, will explain the principles on which it was drawn up. After remarking upon the inconveniences arising from the necessity of aggravating or mitigating the sentences of the magistrates, who, previous to the re-establishment of an authentic code of penal laws, were not in possession of any fixed rules upon which they could build a just decision, the Emperor Shunchí goes on to describe the manner of revising the code:

"A numerous body of magistrates was assembled at the capital, at our command, for the purpose of revising the penal code formerly in force under the late dynasty of Ming, and of

digesting the same into a new code, by the exclusion of such parts as were exceptionable and the introduction of others which were likely to contribute to the attainment of justice and the general perfection of the work. The result of their labors having been submitted to our examination, we maturely weighed and considered the various matters it contained, and then instructed a select number of our great officers of state carefully to revise the whole, for the purpose of making such alterations and emendations as might still be found requisite. Wherefore, it being now published, let it be your great care, officers and magistrates of the interior and exterior departments of our Empire, diligently to observe the same, and to forbear in future to give any decision, or to pass any sentence, according to your private sentiments, or upon your unsupported authority. Thus shall the magistrates and people look up with awe and submission to the justice of these institutions, as they find themselves respectively concerned in them; the transgressor will not fail to suffer a strict expiation of his crimes, and will be the instrument of deterring others from similar misconduct; and finally both officers and people will be equally secured for endless generations in the enjoyment of the happy effects of the great and noble virtues of our illustrious progenitors."

Under the head of General Laws are forty-seven sections, comprising principles and definitions applicable to the whole, and containing some singular notions on equity and criminality. The description of the five ordinary punishments, definition of the ten treasonable offences, regulations for the eight privileged classes, and general directions regarding the conduct of officers of government, are the matters treated of under this head. The title of Section XLIV. is "On the decision of cases not provided for by law;" and the rule is that "such cases may then be determined by an accurate comparison with others which are already provided for, and which approach most nearly to those under investigation, in order to ascertain afterward to what extent an aggravation or mitigation of the punishment would be equitable. A provisional sentence conformable thereto shall be laid before the superior magistrates, and, after receiving their approbation, be submitted to the Emperor's final decision. Any

erroneous judgment which may be pronounced, in consequence of adopting a more summary mode of proceeding in cases of a doubtful nature, shall be punished as wilful deviation from justice." This, of course, gives great latitude to the magistrate, and as he is thus allowed to decide and act before the new law can be confirmed or annulled, the chief restraints to his injustice in such cases (which, however, are not numerous) lie in the fear of an appeal and its consequences, or of summary reprisals from the suffering parties.

The six remaining divisions pertain to the six administrative boards of the government. The second contains Civil Laws, under twenty-eight sections, divided into two books, one of them referring to the system of government, and the other to the conduct of magistrates, etc. The hereditary succession of rank and titles is regulated, and punishments laid down for those who illegally assume these honors. Most of the nobility of China are Manchus, and none of the hereditary dignities existing previous to the conquest were recognized, except those attached to the family of Confucius. Improperly recommending unfit persons as deserving high honors, appointing and removing officers without the Emperor's sanction, and leaving stations without due permission, are the principal subjects regulated in the first book. The second book contains rules regarding the interference of superior magistrates with the proceedings of the lower courts, and prohibitions against cabals and treasonable combinations among officers, which are of course capital crimes; all persons in the employ of the state are required to make themselves acquainted with the laws, and even private individuals "who are found capable of explaining the nature and comprehending the objects of the laws, shall receive pardon in all offences resulting purely from accident, or imputable to them only from the guilt of others, provided it be the first offence."

The third division, of Fiscal Laws, under eighty-two sections, contains rules for enrolling the people, and of succession and inheritance; also laws for regulating marriages between various classes of society, for guarding granaries and treasuries, for preventing and punishing smuggling, for restraining usury, and

for overseeing shops. Section LXXVI. orders that persons and families truly represent their profession in life, and restrains them from indulging in a change of occupation; "generation after generation they must not vary or alter it." This rule is, however, constantly violated. Section XC. exempts the buildings of literary and religious institutions from taxation. The general aim of the laws relating to holding real estate is to secure the cultivation of all the land taken up, and the regular payment of the tax. The proprietor, in some cases, can be deprived of his lands because he does not till them, and though in fact owner in fee simple, he is restricted in the disposition of them by will in many ways, and forfeits them if the taxes are not paid.

The fourth division, of Ritual Laws, under twenty-six sections, contains the regulations for state sacrifices and ceremonies, those appertaining to the worship of ancestors, and whatever belongs to heterodox and magical sects or teachers. The heavy penalties threatened in some of these sections against all illegal combinations under the guise of a new form of worship presents an interesting likeness to the restrictions issued by the English, French, and German princes during and after the Reformation. The Chinese authorities had the same dread lest the people should meet and consult how to resist them. Even processions in honor of the gods may be forbidden for good reason, and are not allowed at all at Peking; while, still more, the rites observed by the Emperor cannot be imitated by any unauthorized person; women are not allowed to congregate in the temples, nor magicians to perform any strange incantations. Few of these laws are really necessary, and those against illegal sects are in fact levelled against political associations, which usually take on a religious guise.

The fifth division, of Military Laws, in seventy-one sections, provides for the protection of the palace and government of the army, for guarding frontier passes, management of the imperial cattle, and forwarding despatches by couriers. Some of these ordinances lay down rules for the protection of the Emperor's person, and the disposition of his body-guard and troops in the palace, the capital, and over the Empire. The

sections relating to the government of the army include the rules for the police of cities; and those designed to secure the protection of the frontier comprise all the enactments against foreign intercourse, some of which have already been referred to in passing. The supply of horses and cattle for the army is a matter of some importance, and is minutely regulated; one law orders all persons who possess vicious and dangerous animals to restrain them, and if through neglect any person is killed or wounded, the owner of the animal shall be obliged to redeem himself from the punishment of manslaughter by paying a fine. This provision to compel the owners of unruly beasts to exercise proper restraint over them is like that laid down by Moses in Exodus XXI., 29, 30. There is as yet no general post-office establishment, but governmental couriers often take private letters; local mails are safely carried by express companies. The required rate of travel for the official post is one hundred miles a day, but it does not ordinarily go more than half that distance. Officers of government are allowed ninety days to make the journey from Peking to Canton, a distance of twelve hundred miles, but couriers frequently travel it in twelve days.

The sixth division, on Criminal Laws, is arranged in eleven books, containing in all one hundred and seventy sections, and is the most important of the whole. The clauses under some of the sections are numerous, and show that it is not for want of proper laws or insufficient threatenings that crimes go unpunished. The books of this division relate to robbery, in which is included high treason and renunciation of allegiance; to homicide and murder; quarrelling and fighting; abusive language; indictments, disobedience to parents, and false accusations; bribery and corruption; forging and frauds; incest and adultery; arrests and escapes of criminals, their imprisonment and execution; and, lastly, miscellaneous offences.

Under Section CCCXXIX. it is ordered that any one who is guilty of addressing abusive language to his or her father or mother, or father's parents, or a wife who rails at her husband's parents or grandparents, shall be strangled; provided always that the persons so abused themselves complain to the magis-

trate, and had personally heard the language addressed to them. This law is the same in regard to children as that contained in Leviticus XX., 9, and the power here given the parent does not seem to be productive of evil. Section CCCLXXXI. has reference to "privately hushing up public crimes," but its penalties are for the most part a dead letter, and a full account of the various modes adopted in the courts of withdrawing cases from the cognizance of superiors, would form a singular chapter in Chinese jurisprudence. Consequently those who refuse every offer to suppress cases are highly lauded by the people. Another section (CCCLXXXVI.) ordains that whoever is guilty of improper conduct, contrary to the spirit of the laws, but not a breach of any specific article, shall be punished at least with forty blows, and with eighty when of a serious nature. Some of the provisions of this part of the code are praiseworthy, but no part of Chinese legislation is so cruel and irregular as criminal jurisprudence. The permission accorded to the judge to torture the criminal opens the door for much inhumanity.

The seventh division contains thirteen sections relating to Public Works and Ways, such as the weaving of interdicted patterns of silk, repairing dikes, and constructing edifices for government. All public residences, granaries, treasuries and manufactories, embankments and dikes of rivers and canals, forts, walls, and mausolea, must be frequently examined, and kept in repair. Poverty or peculation render many of these laws void, and many subterfuges are often practised by the superintending officer to pocket as much of the funds as he can. One officer, when ordered to repair a wall, made the workmen go over it and chip off the faces of the stones still remaining, then plastering up the holes.

Besides these laws and their numerous clauses, every high provincial officer has the right to issue edicts upon such public matters as require regulation, some of them even affecting life and death, either reviving some old law or giving it an application to the case before him, with such modifications as seem to be necessary. He must report these acts to the proper board at Peking. No such order, which for the time has the force of law, is formally repealed, but gradually falls into obliv-

ion, until circumstances again require its reiteration. This mode of publishing statutes gives rise to a sort of common and unwritten law in villages, to which a council of elders sometimes compels individuals to submit; long usage is also another ground for enforcing them.

Still, with all the tortures and punishments allowed by the law, and all the cruelties superadded upon the criminals by irritated officers or rapacious underlings and jailors, a broad survey of Chinese legislation, judged by its results and the general appearance of society, gives the impression of an administration far superior to other Asiatic countries. A favorable comparison has been made in the *Edinburgh Review*:[1] "By far the most remarkable thing in this code is its great reasonableness, clearness, and consistency, the business-like brevity and directness of the various provisions, and the plainness and moderation in which they are expressed. There is nothing here of the monstrous *verbiage* of most other Asiatic productions, none of the superstitious deliration, the miserable incoherence, the tremendous *non-sequiturs* and eternal repetitions of those oracular performances—nothing even of the turgid adulation, accumulated epithets, and fatiguing self-praise of other Eastern despotisms—but a calm, concise, and distinct series of enactments, savoring throughout of practical judgment and European good sense, and if not always conformable to our improved notions of expediency, in general approaching to them more nearly than the codes of most other nations. When we pass, indeed, from the ravings of the Zendavesta or the Puranas to the tone of sense and business in this Chinese collection, we seem to be passing from darkness to light, from the drivellings of dotage to the exercise of an improved understanding; and redundant and absurdly minute as these laws are in many particulars, we scarcely know any European code that is at once so copious and so consistent, or that is so nearly free from intricacy, bigotry, and fiction. In everything relating to political freedom or individual independence it is indeed wofully defective; but for the repression of disorder and the gentle coer-

[1] Vol. XVI., 1810.

cion of a vast population, it appears to be equally mild and efficacious. The state of society for which it was formed appears incidentally to be a low and wretched one; but how could its framers have devised a wiser means of maintaining it in peace and tranquillity?"

This encomium is to a certain extent just, but the practice of legislation in China has probably not been materially improved by the mere possession of a reasonable code of laws, though some melioration in jurisprudence has been effected.[1] The infliction of barbarous punishments, such as blinding, cutting off noses, ears, or other parts of the body, still not uncommon in Persia and Turkey, is not allowed or practised in China; and the government, in minor crimes, contents itself with but little more than opprobrious exposure in the pillory, or castigation, which carry with them no degradation.

The defects in this remarkable body of laws arise from several sources. The degree of liberty that can safely be awarded to the subject is not defined in it, and his rights are unknown in law. The government is despotic, but having no efficient military power in their hands, the lawgivers resort to a minuteness of legislation upon the practice of social and relative virtues and duties which interferes with their observance; though it must be remembered that no pulpit or Sabbath-school exists there to expound and enforce them from a higher code, and the laws must be the chief guide in most cases. The code also exhibits a minute attention to trifles, and an effort to legislate for every possible contingency, which must perplex the judge when dealing with the infinite shades of difference occurring in human actions. There are now many vague and obsolete statutes, ready to serve as a handle to prosecute offenders for the gratification of private pique; and although usage and precedent both combine to prove their disuse, malice and bribery can easily effect their reviviscence and application to the case.

Sheer cruelty, except in cases of treason against the Emperor, cannot be charged against this code as a whole, though many of the laws seem designed to operate chiefly *in terrorem*,

[1] *Chinese Repository*, Vol. IV., pp. 24–29.

and the penalty is placed higher than the punishment really intended to be inflicted, to the end that the Emperor may have scope for mercy, or, as he says, "for leniency beyond the bounds of the law." The principle on which this is done is evident, and the commonness of the practice proves that such an exercise of mercy has its effect. The laws of China are not altogether unmeaning words, though the degree of efficiency in their execution is subject to endless variations; some officers are clement, others severe; the people in certain provinces are industrious and peaceable, in others turbulent and averse to quiet occupations, so that one is likely to form a juster idea of their administration by looking at the results as seen in the general aspect of society, and judging of the tree by its fruits, than by drawing inferences applicable to the whole machine of state from particular instances of oppression and insubordination, as has been so often the case with travellers and writers.

The general examination of the Chinese government here proposed may be conveniently considered under the heads of the Emperor and his court, classes of society, the different branches of the supreme administration, the provincial authorities, and the execution of the laws.

The Emperor is at the head of the whole; and if the possession of great power, and being the object of almost unbounded reverence, can impart happiness, he may safely be considered as the happiest mortal living; though to his power there are many checks, and the reverence paid him is proportioned somewhat to the fidelity with which he administers the decrees of heaven. "The Emperor is the sole head of the Chinese constitution and government; he is regarded as the vice-gerent of heaven, especially chosen to govern all nations; and is supreme in everything, holding at once the highest legislative and executive powers, without limit or control." Both he and the Pope claim to be the vice-gerent of heaven and interpreter of its decrees to the whole world, and these two rulers have emulated each other in their assumption of arrogant titles. The most common appellation employed to denote the Emperor in state papers and among the people is *hwangtí*, or 'august sovereign;' it is defined as "the appellation of one possessing complete vir-

tues, and able to act on heavenly principles."[1] This title is further defined as meaning heaven: "Heaven speaks not, yet the four seasons follow in regular succession, and all things spring forth. So the three august ones (Fuhhí, Shinnung, and Hwangtí) descended in state, and without even uttering a word the people bowed to their sway; their virtue was inscrutable and boundless like august heaven, and therefore were they called *august* ones."

Among the numerous titles given the monarch may be mentioned *hwang shang*, the 'august lofty one;' *tien hwang*, 'celestial august one;' *shing hwang*, the 'wise and august,' *i.e.*, infinite in knowledge and complete in virtue; *tien tí*, 'celestial sovereign;' and *shing tí*, 'sacred sovereign,' because he is able to act on heavenly principles. He is also called *tien tsz'*, 'son of heaven,' because heaven is his father and earth is his mother, and *shing tien tsz'*, 'wise son of heaven,' as being born of heaven and having infinite knowledge; terms which are given him as the ruler of the world by the gift of heaven. He is even addressed, and sometimes refers to himself, under designations which pertain exclusively to heaven. *Wan sui yé*, 'sire of ten thousand years,' is a term used when speaking of him or approaching him, like the words, *O king, live forever!* addressed to the ancient kings of Persia. *Pí hia*, 'beneath the footstool,' is a sycophantic compellation used by his courtiers, as if they were only worthy of being at the edge of his footstool.

The Emperor usually designates himself by the terms *chin*, 'ourself;' *kwa jin*, the 'solitary man,' or the one man; and *kwa kiun*, the 'solitary prince.' He has been loaded with many ridiculous titles by foreign writers, as Brother of the Sun and Moon, Grandson of the Stars, King of Kings, etc., but no such epithets are known among his subjects. His palace has various appellations, such as hall of audience, golden palace, the ninth entrance, vermilion avenue, vermilion hall, rosy hall, forbidden pavilion, the crimson and forbidden palace, gemmeous steps, golden steps, meridian portal, gemmeous avenue, celestial steps,

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[1] *Chinese Repository*, Vol. IV., p. 12; *Chinese Chrestomathy*, p. 558.

celestial court, great interior, the maple pavilion, royal house, etc. To see him is to see the dragon's face; the throne is called the "dragon's throne," and also the "divine utensil," *i.e.*, the thing given him by heaven to sit in when executing his divine mission; his person is styled the dragon's body, and a five-clawed dragon is emblazoned, like a coat of arms, on his robes, which no one can use or imitate. Thus the Old Dragon, it might be almost said, has coiled himself around the Emperor of China, one of the greatest upholders of his power in this world, and contrived to get himself worshipped, through him, by one-third of mankind.

The Emperor is the fountain of power, rank, honor, and privilege to all within his dominions, which are termed *tien hia*, meaning all under heaven, and were till recently, even by his highest officers, ignorantly supposed to comprise all mankind. As there can be but one sun in the heavens, so there can be but one *hwangti* on earth, the source and dispenser of benefits to the whole world.[1] The same absolute executive power held by him is placed in the hands of his deputies and governor-generals, to be by them exercised within the limits of their jurisdiction. He is the head of religion and the only one qualified to adore heaven; he is the source of law and dispenser of mercy; no right can be held in opposition to his pleasure, no claim maintained against him, no privilege protect from his wrath. All the forces and revenues of the Empire are his, and he has a right to claim the services of all males between sixteen and sixty. In short, the whole Empire is his property, and the only checks upon his despotism are public opinion, the want of an efficient standing army, poverty and the venality of the agents of his power.

When the Manchus found themselves in possession of Peking, they regarded this position as fully entitling them to assume all imperial rights. Their sovereign thus announced his elevation in November, 1644: "I, the Son of Heaven, of the Ta-tsing

[1] The attributes ascribed to a *chakrawartti* in the Buddhist mythology have many points of resemblance to the *hwangti*, and Hardy's *Manual of Buddhism* (p. 126) furnishes an instructive comparison between the two characters, one fanciful and the other real.

dynasty, humbly as a subject dare to announce to Imperial Heaven and Sovereign Earth. Though the world is vast, Shangtí looks on all without partiality. My Imperial Grandfather received the gracious decree of Heaven and founded a kingdom in the East, which became firmly established. My Imperial Father succeeding to the kingdom, extended it; and I, Heaven's servant, in my poor person became the inheritor of the dominion they transmitted. When the Ming dynasty was coming to its end, traitors and men of violence appeared in crowds, involving the people in misery. China was without a ruler. It fell to me reverentially to accept the responsibility of continuing the meritorious work of my ancestors. I saved the people, destroyed their oppressors; and now, in accordance with the desires of all, I fix the urns of Empire at Yen-king. . . . I, receiving Heaven's favor, and in accordance with their wishes, announce to Heaven that I have ascended the throne of the Empire, that the name I have chosen for it is the Great Pure, and that the style of my reign is *Shun-chí* ('Obedient Rule'). I beg reverentially Heaven and Earth to protect and assist the Empire, so that calamity and disturbance may soon come to an end, and the land enjoy universal peace. For this I humbly pray, and for the acceptance of this sacrifice."

The present Emperor is the ninth of the Tsing dynasty who has reigned in China. *Tsing* means Pure, and was taken by the Manchus as a distinctive term for their new dynasty, alluding to the purity of justice they intended to maintain in their sway. Some of the founders of the ancient dynasties derived their dynastic name from their patrimonial estates, as *Sung*, *Han*, *Chau*, etc., but the later ones have adopted names like *Yuen*, or 'Original,' *Ming*, or 'Illustrious,' etc., which indicate their vanity.

The present monarch is still a minor, and the affairs of government are nominally under the direction of the Empress-dowager, who held the same office during the minority of his predecessor, Tungchí. The surname of the reigning family is *Gioro*, or 'Golden,' derived from their ancestral chief, Aisin Gioro, whom they feign to have been the son of a divine virgin. They are the lineal descendants of the Kin, a rude race

which drove out the Chinese rulers and occupied the northern provinces about 1130, making Peking their capital for many years. On the approach of the Mongols they were chased away to the east, and retained only a nominal independence; changing their name from Nüchih to Manjurs, they gradually increased in numbers, but did not assume any real importance until they became masters of China. The acknowledged founder of the reigning house was the chief Hien-tsu (1583–1615), whose actual descendants are collectively designated *Tsung-shih*, or 'Imperial Clan.' The second Emperor further limited the Clan by giving to each of his twenty-four sons a personal name of two characters, the first of which, Yun, was the same for all of them. For the succeeding generations he ordered a series of characters to be used by all the members of each, so that through all their ramifications the first name would show their position. Kanghí's own name was *Hiuen*, then followed *Yun*, *Hung*, *Yung*, *Mien*, *Yih*, and *Tsai*, the last and present sovereigns being both named *Tsai*. All who bear this name are direct descendants of Kanghí. Since the application of these seven generation names, eight more have been selected for future use by imperial scions.

In order still further to distinguish those most nearly allied in blood, as sons, nephews, etc., it is required that the second names of each family always consist of characters under the same radical. Thus Kiaking and his brothers wrote their first names *Yung*, and under the radical *gun* for the second; Taukwang and his brothers and cousins *Mien*, and under the radical *heart*. For some unexplained reason the radicals *silk* and *gold*, chosen for the second names of the next two generations, were altered to *words* and *water*. This peculiarity is easily represented in the Chinese characters; a comparison can be made in English with the supposed names of a family of sons, as Louis Edward, Louis Edwin, Louis Edwy, Louis Edgar, etc., the word *Louis* answering to *Mien*, and the syllable *Ed* to the radical *heart*.

The present Emperor's personal name is Tsai-tien, and, like those of his predecessors, is deemed to be too sacred to be spoken, or the characters to be written in the common form.

The same reverence is observed for the names after death, so that twelve characters have been altered since the Manchu monarchs began to reign; Hiuen-wa, which was the personal name of Kanghí, has become permanently altered in its formation. The present sovereign was born August 15, 1871, and on January 12, 1875, succeeded his cousin Tsaishun, who died without issue—the first instance in the Gioro family for nearly three centuries. At this time there was some delay as to which of his cousins should succeed to the dragon throne, when the united council of the princes was led by the mother of the deceased Emperor to adopt her nephew, the son of Prince Chun. The little fellow was sent for at night to be immediately saluted as *hwangtí*, and ere long brought in before them, cross and sleepy as he was, to begin his reign under the style of Kwangsü, or 'Illustrious Succession.'

This title is called a *kwoh hao*, or national designation, and answers more nearly to the name that a new Pope takes with the tiara than to anything else in western lands. It is the expression of the idea which the monarch wishes to associate with his reign, and is the name by which he is known to his subjects during his life. It has been called a *period* by some writers, but while it is not strictly his name, yet period is not so correct as *reign*. Usage has made it equivalent in foreign books to the personal name, and it is plainer to say the Emperor Taukwang than the period Taukwang or the reign Taukwang, or still more than to write, as Wade has done, "the Emperor Mien-Ning, the style of whose reign was Tau Kwang;" or than Legge has done, to say, "the Emperor Pattern, of the period Yungching." In such cases it is not worth the trouble to attempt strict accuracy in a matter so entirely unlike western usages.

The use of the *kwoh hao* began with Wăn-tí, of the Han dynasty,[1] B.C. 179, and has continued ever since. Some of

[1] The remark of Heeren (*Asiatic Nations*, Vol. I., p. 57), that the names by which the early Persian monarchs, Darius, Xerxes, and others, were called, were really titles or surnames, and not their own personal names, suggests the further comparison whether those renowned names were not like the *kwoh hao* of the Chinese emperors, whose adoption of the custom was after the ex-

the early monarchs changed their *kwoh hao* many times during their reigns; Kao-tsung (A.D. 650–684), for example, had thirteen in a régime of thirty-four years, which induced historians to employ the *miao hao*, or ancestral name, as more suitable and less liable to confusion. The reason for thus investing the sovereign with a title different from his real name is not fully apparent, but arose probably out of the vanity of the monarch, who wished thus to glorify himself by a high-sounding title, and make his own name somewhat ineffable at the same time. The custom was adopted in Japan about A.D. 645, and is practised in Corea and Annam.

When a monarch ascends the throne, or as it is expressed in Chinese, "when he receives from Heaven and revolving nature the government of the world," he issues an inaugural proclamation. There is not much change in the wording of these papers, and an extract from the one issued in 1821 will exhibit the practice on such occasions:

"Our Ta Tsing dynasty has received the most substantial indication of Heaven's kind care. Our ancestors, Taitsu and Taitsung, began to lay the vast foundation [of our Empire]; and Shítsu became the sole monarch of China. Our sacred ancestor Kanghí, the Emperor Yungching, the glory of his age, and Kienlung, the eminent in honor, all abounded in virtue, were divine in martial prowess, consolidated the glory of the Empire, and moulded the whole to peaceful harmony.

"His late Majesty, who has now gone the great journey, governed all under Heaven's canopy twenty-five years, exercising the utmost caution and industry. Nor evening nor morning was he ever idle. He assiduously aimed at the best possible rule, and hence his government was excellent and illustrious; the court and the country felt the deepest reverence and the stillness of profound awe. A benevolent heart and a benevolent

tinction of the Persian monarchy. Herodotus (Book VI., 98) seems to have been familiar with these names, not so much as being arbitrary and meaningless terms as epithets whose significations were associated with the kings. The new names given to the last two sons of Josiah, who became kings of Judah by their conquerors (2 Kings, 23: 34, and 24: 17), indicate even an earlier adoption of this custom.

administration were universally diffused: in China Proper, as well as beyond it, order and tranquillity prevailed, and the tens of thousands of common people were all happy. But in the midst of a hope that this glorious reign would be long protracted, and the help of Heaven would be received many days, unexpectedly, on descending to bless, by his Majesty's presence, Lwanyang, the dragon charioteer (the holy Emperor) became a guest on high.

"My sacred and indulgent Father had, in the year that he began to rule alone, silently settled that the divine utensil should devolve on my contemptible person. I, knowing the feebleness of my virtue, at first felt much afraid I should not be competent to the office; but on reflecting that the sages, my ancestors, have left to posterity their plans; that his late Majesty has laid the duty on me—and Heaven's throne should not be long vacant—I have done violence to my feelings and forced myself to intermit awhile my heartfelt grief, that I may with reverence obey the unalterable decree; and on the 27th of the 8th moon (October 3d) I purpose devoutly to announce the event to Heaven, to earth, to my ancestors, and to the gods of the land and of the grain, and shall then sit down on the imperial throne. Let the next year be the first of Taukwang.

"I look upward and hope to be able to continue former excellences. I lay my hand on my heart with feelings of respect and cautious awe.—When a new monarch addresses himself to the Empire, he ought to confer benefits on his kindred, and extensively bestow gracious favors: what is proper to be done on this occasion is stated below."

(Here follow twenty-two paragraphs, detailing the gifts to be conferred and promotions made of noblemen and officers; ordering the restoration of suspended dignitaries to their full pay and honors, and sacrifices to Confucius and the Emperors of former dynasties; pardons to be extended to criminals, and banished convicts recalled; governmental debts and arrearages to be forgiven, and donations to be bestowed upon the aged.)

"Lo! now, on succeeding to the throne, I shall exercise myself to give repose to the millions of my people. Assist me to sustain the burden laid on my shoulders! With veneration I

receive charge of Heaven's great concerns.—Ye kings and statesmen, great and small, civil and military, let every one be faithful and devoted, and aid in supporting the vast affairs, that our family dominion may be preserved hundreds and tens of thousands of years in never-ending tranquillity and glory! Promulgate this to all under Heaven—cause every one to hear it!"

The programme of ceremonies to be observed when the Emperor "ascends the summit," and seats himself on the dragon's throne, was published for the Emperor Taukwang by the Board of Rites a few days after. It details a long series of prostrations and bowings, leading out and marshalling the various officers of the court and members of the imperial family. After they are all arranged in proper precedence before the throne, "at the appointed hour the president of the Board of Rites shall go and entreat his Majesty to put on his mourning, and come forth by the gate of the eastern palace, and enter at the left door of the middle palace, where his Majesty, before the altar of his deceased imperial father, will respectfully announce that he receives the decree—kneel thrice and bow nine times."

He then retires, and soon after a large deputation of palace officers "go and solicit his Majesty to put on his imperial robes and proceed to the palace of his mother, the Empress-dowager, to pay his respects. The Empress-dowager will put on her court robes and ascend her throne, before which his Majesty shall kneel thrice and bow nine times." After this filial ceremony is over the golden chariot is made ready, the officer of the Astronomical Board—whose business is to *observe times*—is stationed at the palace gate, and when he announces the arrival of the chosen and felicitous moment, his Majesty comes forth and mounts the golden chariot, and the procession advances to the Palace of Protection and Peace. Here the great officers of the Empire are marshalled according to their rank, and when the Emperor sits down in the palace they all kneel and bow nine times.

"This ceremony over, the President of the Board of Rites, stepping forward, shall kneel down and beseech his Majesty, saying, 'Ascend the imperial throne.' The Emperor shall then

rise from his seat, and the procession moving on in the same order to the Palace of Peace, his Majesty shall ascend the seat of gems and sit down on the imperial throne, with his face to the south." All present come forward and again make the nine prostrations, after which the proclamation of coronation, as it would be called in Europe, is formally sealed, and then announced to the Empire with similar ceremonies. There are many other lesser rites observed on these occasions, some of them appropriate to such an occasion, and others, according to our notions, bordering on the ludicrous; the whole presenting a strange mixture of religion, splendor, and farce, though as a whole calculated to impress all with a sentiment of awe toward one who gives to heaven, and receives from man, such homage and worship.[1]

Nothing is omitted which can add to the dignity and sacredness of the Emperor's person or character. Almost everything used by him, or in his personal service, is tabued to the common people, and distinguished by some peculiar mark or color, so as to keep up the impression of awe with which he is regarded, and which is so powerful an auxiliary to his throne. The outer gate of the palace must always be passed on foot, and the paved entrance walk leading up to it can only be used by him. The vacant throne, or even a screen of yellow silk thrown over a chair, is worshipped equally with his actual presence, and an imperial dispatch is received in the provinces with incense and prostrations; the vessels on the canal bearing articles for his special use always have the right of way. His birthday is celebrated by his officers, and the account of the opening ceremony, as witnessed by Lord Macartney, shows how skilfully every act tends to maintain his assumed character as the son of heaven.

"The first day was consecrated to the purpose of rendering a solemn, sacred, and devout homage to the supreme majesty of the Emperor. The ceremony was no longer performed in a tent, nor did it partake of the nature of a banquet. The princes,

[1] *Chinese Repository*, Vol. X., pp. 87–98. *Indo-Chinese Gleaner*, February, 1821.

tributaries, ambassadors, and great officers of state were assembled in a vast hall; and upon particular notice were introduced into an inner building, bearing at least the semblance of a temple. It was chiefly furnished with great instruments of music, among which were sets of cylindrical bells suspended in a line from ornamental frames of wood, and gradually diminishing in size from one extremity to the other, and also triangular pieces of metal, arranged in the same order as the bells. To the sound of these instruments a slow and solemn hymn was sung by eunuchs, who had such a command over their voices as to resemble the effect of musical glasses at a distance. The performers were directed, in the gliding from one tone to the other, by the striking of a shrill and sonorous cymbal; and the judges of music among the gentlemen of the embassy were much pleased with their execution. The whole had, indeed, a grand effect. During the performance, and at particular signals, nine times repeated, all present prostrated themselves nine times, except the ambassador and his suite, who made a profound obeisance. But he whom it was meant to honor continued, as if in imitation of the Deity, invisible the whole time. The awful impression intended to be made upon the minds of men by this apparent worship of a fellow-mortal was not to be effaced by any immediate scenes of sport or gaiety, which were postponed to the following day."[1] The mass of the people are not admitted to participate in these ceremonies; they are kept at a distance, and care, in fact, very little about them. In every provincial capital there is a hall, called *Wan-shao kung*, dedicated solely to the honor of the Emperor, and where, three days before and after his birthday, all the civil and military officers and the most distinguished citizens assemble to do him the same homage as if he were present. The walls and furniture are yellow.

The right of succession is hereditary in the male line, but it is always in the power of the sovereign to nominate his successor from among his own children. The heir-apparent is not commonly known during the lifetime of the incumbent, though

[1] Staunton's *Embassy*, 8vo edition, London, 1797, Vol. III., p. 63.

there is a titular office of guardian of the heir-apparent. During the Tsing dynasty the succession has varied, but the bloody scenes enacted in Turkey, Egypt, and India to remove competitors are not known at Peking, and the people have no fear that they will be enacted. Of the eight preceding sovereigns, Shunchí was the ninth son, Kanghí the third, Yungching the fourth, Kienlung the fourth, Kiaking the fifteenth, Taukwang the second, Hienfung the fourth, and Tungchí the only son. When Kwangsü was chosen this regular line failed, and thus was terminated an unbroken succession during two hundred and fifty-nine years (1616 to 1875), when ten rulers (including two in Manchuria) occupied the throne. It can be paralleled only in Judah, where the line of David down to Jehoiachin (B.C. 1055 to 599) continued regularly in the same manner—twenty kings in four hundred and fifty-six years.

In the reign of Kienlung, one of the censors memorialized him upon the desirableness of announcing his sucsessor, in order to quiet men's minds and repress intrigue, but the suggestion cost the man his place. The Emperor said that the name of his successor, in case of his own sudden death, would be found in a designated place, and that it was highly inexpedient to mention him, lest intriguing men buzzed about him, forming factions and trying to elevate themselves. The soundness of this policy cannot be doubted, and it is not unlikely that Kienlung knew the evils of an opposite course from an acquaintance with the history of some of the princes of Central Asia or India. One good result of not indicating the heir-apparent is that not only are no intrigues formed by the crown-prince, but when he begins to reign he is seldom compelled, from fear of his own safety, to kill or imprison his brothers or uncles; for, as they possess no power or party to render them formidable, their ambition finds full scope for its exercise in peaceful ways. In 1861, when the heir was a child of five years, a palace intrigue was started to remove his custody out of the hands of his mother into those of a cabal who had held sway for some years, but the promoters were all executed.

The management of the imperial clan appertains entirely to the Emperor, and has been conducted with considerable sagac-

ity. All its members are under the control of the *Tsung-jin fu*, a sort of clansmen's court, consisting of a presiding controller, two assistant directors, and two deputies of the family. Their duties are to regulate whatever belongs to the government of the Emperor's kindred, which is divided into two branches, the direct and collateral, or the *tsung-shih* and *Gioro*. The *Tsung-shih*, or 'Imperial House,' comprise only the lineal descendants of Tienming's father, named Hien-tsu, or 'Illustrious Sire,' who first assumed the title of Emperor A.D. 1616. The collateral branches, including the children of his uncles and brothers, are collectively called Gioro. Their united number is unknown, but a genealogical record is kept in the national archives at Peking and Mukden. The *Tsung-shih* are distinguished by a yellow girdle, and the *Gioro* by a red one; when degraded, the former take a red, the latter a carnation girdle. There are altogether twelve degrees of rank in the *Tsung-shih*, and consequently some of the distant kindred are reduced to straitened circumstances. They are shut out from useful careers, and generally exhibit the evils ensuent upon the system of education and surveillance adopted toward them, in their low, vicious pursuits, and cringing imbecility of character. The sum of $133 is allowed when they marry, and $150 to defray funeral expenses, which induces some of them to maltreat their wives to death, in order to receive the allowance and dowry as often as possible.

The titular nobility of the Empire, as a whole, is a body whose members are without power, land, wealth, office, or influence, in virtue of their honors; some of them are more or less hereditary, but the whole system has been so devised, and the designations so conferred, as to tickle the vanity of those who receive them, without granting them any real power. The titles are not derived from landed estates, but the rank is simply designated in addition to the name, and it has been a question of some difficulty how to translate them. For instance, the title *Kung tsin-wang* literally means the 'Reverent Kindred Prince,' and should be translated Prince Kung, not Prince of Kung, which conveys the impression to a foreign reader that *Kung* is an appanage instead of an epithet.

The twelve orders of nobility are conferred solely on the members of the imperial house and clan: 1. *Tsin wang*, 'kindred prince,' *i.e.*, prince of the blood, conferred usually on his Majesty's brothers or sons. 2. *Kiun wang*, or 'prince of a princedom;' the eldest sons of the princes of these two degrees take a definite rank during their father's lifetime, but the collateral branches descend in precedence as the generations are more and more remote from the direct imperial line, until at last the person is simply a member of the imperial clan. These two ranks were termed *regulus* by the Jesuit writers, and each son of an Emperor enters one or other as he becomes of age. The highest princes receive a stipend of about $13,300, some rations, and a retinue of three hundred and sixty servants, altogether making an annual tax on the state of $75,000 to $90,000. The second receive half that sum, and inferior grades in a decreasing ratio, down to the simple members, who each get four dollars a month and rations. 3 and 4. *Beile* and *Beitse*, or princes of and in collateral branches. The 5th to 8th are dukes, called Guardian and Sustaining, with two subordinate grades not entitled to enter the court on state occasions. The 9th to 12th ranks are nobles, or rather generals, in line of descent. The number of persons in the lower ranks is very great. Few of these men hold offices at the capital, and still more rarely are they placed in responsible situations in the provinces, but the government of Manchuria is chiefly in their hands.

Besides these are the five ancient orders of nobility, *kung*, *hao*, *peh*, *tsz'*, and *nan*, usually rendered duke, count, viscount, baron, and baronet, which are conferred without distinction on Manchus, Mongols, and Chinese, both civil and military, and as such are highly prized by their recipients as marks of honor. The three first take precedence of the highest untitled civilians, but an appointment to most of the high offices in the country carries with it an honorary title. The direct descendant of Confucius is called *Yen-shing kung*, 'the Ever-sacred duke,' and of Koxinga *Hai-ching kung*, or 'Sea-quelling duke;' these two are the only perpetual titles among the Chinese, but among the Manchus, the chiefs of eight families which aided in set-