LHASA AND CENTRAL TIBET.*

By G. TS. TSYBIKOFF.†

AFTER a journey of twenty-two days over the sparsely-populated north Tibetan plateau, our caravan of pilgrims camped July 19th, 1900, on the banks of the San-

caravan had been formed at the Kumbum monastery in Amdo, and started April 24 on the way to Lhasa. There were about seventy persons in the party, almost all of them Amdo and Mongolian Lamas, and were quartered in seventeen traveling tents. About 200 mules transported men and baggage.

the other is a civilian, called "Nansal." They supervise the collection of taxes and decide important matters that arise between the natives; and also control the government stations between Nakchu and Lhasa. It also devolves upon them to stop Europeans bound for Lhasa and immediately to notify the central gov-

THE PALACE OF THE DALAI LAMA AT LHASA.

The palace of the Dalai-Lama, Potala, is about two-thirds of a mile west of the city, and built upon a rocky height. The foundation of the palace, tradition says, was laid by Srongzang Khan during the seventh century. The main central portion, called the "red palace," was added some time later. The palace and additions were planned to serve as a means of defense.

chu, at the northern foot of the Bumza Mountain. The

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† "M. Tsybikoff is a Buriat by birth, and a Lamaist by religion, who finished his education at a Russian university, and after having prepared himself for this journey, went quite openly, like so many other Buriat pilgrims, to Lhasa. There he remained more than twelve months, making an excursion to Taetang (or Chetang) and visiting some of the most venerated monasteries, after having previously stayed, during his journey to Lhasa, in the Mongol monasteries of Labrang and Kumbum. During his stay at Lhasa he made, moreover, a most valuable collection of books, written by all the most renowned Lama writers during the last nine centuries. This collection represents 319 volumes on philology, medicine, astronomy and astrology, history, geography, and collections of *ku-rims* (praises, prayers, and incantations, and so on). It has been presented by the Russian Geographical Society to the Academy of Sciences."—*The Geographical Journal*, London, January, 1904.

‡ The dates in this paper are old style, or twelve days behind the Gregorian calendar.

We here first met inhabitants of Central Tibet. Close to the road was a great black tent in which lived the local soldiery, an advance post on the lookout for foreigners. They had special orders to watch during the present year for P. K. Kosloff's Russian expedition, of which the authorities at Lhasa had received information as early as April.

The guards immediately approached our camp, but seeing that it was an ordinary caravan of pilgrims, the men were soon busied in making trifling exchanges to supply their wants, our men keeping a watchful eye on articles that might readily be stolen. After four short marches from here we reached the Nakchu monastery, the residence of two governors of the local nomads, appointed by the central government of Tibet. One of them belongs to the clergy and is called "Khambo,"

ernment about them, as well as about all suspicious persons. I was halted as belonging to the last category, due to the chief of our caravan, who, out of friendship to the Tibetans and possibly to shift responsibility for himself, reported that there were Buriats in the party. Although the Buriats had of late been freely admitted, yet we were each obliged to pay 5 taels (about \$4), which at once excluded us from the suspicious class and opened our way to Lhasa.

The Nakchu monastery serves also as a custom house. Here all pilgrims are obliged to pay a tax on each tent, the revenue being used for keeping the local pastures in grass. No penalty is imposed upon those who refuse to pay the toll, although an indirect punishment is inflicted by prohibiting the local residents from having anything to do with delinquents.

ANOTHER VIEW OF THE PALACE OF THE DALAI LAMA.

The palace is about 1,400 feet long and about 70 feet high in front. In the construction of this palace the Tibetans displayed their highest architectural skill. Here are found the most precious treasures of Tibet, including the golden sepulcher of the fifth Dalai-Lama, which is about 28 feet high. The treasures and apartments of the Dalai-Lama are in the central portion of the temple palace. The remainder of the building serves as quarters for various attendants or followers of the Dalai-Lama, including a community of 500 monks, whose duty it is to pray for the welfare and long life of the Dalai-Lama.

After losing half a day here, the caravan left the monastery, situated on the left bank of the small river Dre-chu,* and 7 miles away approached the left bank of the Nakchu. In the rainy season, when the river runs deep and swift, it is impossible to cross without boats, which evidently the native nomads can

enter a pass where we come to the first agricultural settlement of Central Tibet. It is more civilized here. The Pondo-chu is crossed by pedestrians over a bridge. In the rainy season baggage is taken across in skin boats, while animals ford the stream. On the right side of this swift river stands the castle Pondo-dzong.

and Kalmuks, who are Russian subjects. Many of these pilgrims made notes on Tibet, but thus far only the report of Zayaeff (eighteenth century) and the diary of the Kalmuk Baza-bakshi have been published. It must be borne in mind that having penetrated a forbidden country in the guise of an ordinary pilgrim,

A VIEW OF THE PALACE OF THE DALAI LAMA FROM THE WEST.

The unequal distribution of wealth and the subservience of poverty to wealth are conspicuous throughout Tibet. There is such little commerce that labor is very cheap, the most expert weaver of native cloth receiving about 8 cents and board per day, while an unskilled woman or man laborer earns only 2 or 3 cents. The highest salary is paid to the Lamas, the prayer readers, who receive 10 cents a day for incessant reading. A house servant almost never receives pay beyond food and meager clothes.

not build. Thence the caravan reached the broad Sunshan Valley, bounded on the north by Mount Samtan Kansar. From this valley, across the low crest of Chog-la, the road enters the Dam Valley, inhabited by descendants of Mongols brought into Tibet by the Khoshot Gushi Khan, in the middle of the seventeenth century. They are at present practically assimilated with the Tibetans, although some still use Mongol felt tents, and have not forgotten how to milk the mares and to make kumys. Mongol words have disappeared from their language, except official titles and some special technical terms. The Dam Mongols are subject to the Manchu Amban, who resides at Lhasa. Their occupation is cattle raising.

From Dam across Lani-la, or "double range," we

* Chu = river in Tibetan.

Twenty-seven miles farther on the journey we reached Penbu, or Penyul, one of the most thickly populated regions of Tibet. Caravans have from here a choice of two roads—one, without crossing the ridge, along the right bank of the U-chu, and the other straight across the high ridge of Go-la. About ten miles from the top of the ridge lies the capital of Tibet, Lhasa, which we entered August 3, 1900, after three months' journey from Kumbum.

Central Tibet—that is, the two provinces of U (Wei) and Tsang—has not been visited by Europeans since 1845, at least the principal part of it, although the literature on Tibet in general has increased every year. No Russian traveler entered the country either before or certainly after the prohibition. But for the last thirty years Tibet has been annually visited by Buriats

obliged to pose before the natives as one in search of salvation in the holy land, and constantly in danger of suspicion as other than a pilgrim, the amount of information gathered under such circumstances could not have been great. I was well aware that several years ago an Indian penetrated Central Tibet and established connections with a certain ecclesiastic in Tashilhunpo, that through this lama's servant he received books at Calcutta, and that both lama and servant were executed at Lhasa for daring to allow the admission of a foreigner.

Tibet is truly a land of mountains, and the natives aptly call it "Snowland." In the region we traversed while in Tibet there are two snow mountains, Samtan-Kansar on the eastern end of the Nyan-chu-tangla and the crest of Kar-la on the southwestern side of the cir-

A STREET SCENE IN LHASA.

The houses are of stone or of unburnt brick, cemented with clay. The windows are without panes, or hung with cotton curtains, though in winter oiled native paper serves as protection from the cold. The houses have no chimneys. The principal fuel is dry manure of horned cattle and yaks.

cular lake, Yamdok. The mountains that did not reach the snow line were nearly all treeless and their tops bare.

The upper lands of the river valleys are narrow and unfit for cultivation, but the middle and lower portions are wider and enable the industrious Tibetans to grow cereal crops. The steep and rocky mountains are the source of many swift streams during the rainy season, but most of them dry out when the rains cease. Many streams and springs, however, collect water at each rainfall in numerous irrigating ditches that keep the water mills busy.

The year may be divided into two seasons, rainy and dry. In 1900 the dry season commenced in Lhasa on September 13, when the last rain of the year fell. October and November were entirely dry. The first snow fell December 7, but melted the next day. It snowed once in January, in February three times, in March four times. The first thunder was heard on March 14, and twice in April. The snow melted in the valleys immediately after falling, but remained for a time on the mountains. The first considerable rain fell on May 5, then on May 7, June 8, July 17, August 13, and twice early in September. These rains were generally late in the evening or at night, in squalls and large drops, and in May and June were frequently accompanied with hail. The clouds generally moved from west to east.

Temperature observations were recorded at dawn, 1 P. M., and 9 P. M. for two hundred and thirty-five days. The average morning temperature was 41.45 deg. F.; 1 P. M., 58.33 deg. F.; 9 P. M., 48.65 deg. F. December was the coldest month, with an average morning temperature of 18.3 deg. F.; noon, 34.5 deg. F., and evening, 26.8 deg. F.; and June was the warmest month, with average morning temperature 58.6 deg. F.; noon, 73 deg. F., and evening 63.3 deg. F. The large rivers are entirely free of ice in winter, but the small ones are covered by a thin crust. The soil freezes only at the surface.

The total population of Tibet has been estimated from the fantastic 33,000,000 down to 3,500,000, or even 2,500,000. The most reliable evidence indicates that Central Tibet has not more than about 1,000,000 inhabitants. Reliable statistics of the whole population were not obtainable, but it is certainly not very great, for the many narrow river valleys between high, rocky mountains are unfit for agriculture and could not sustain many inhabitants. Besides, the numerous unmarried ascetic ecclesiastics of both sexes, and epidemics of smallpox and other fatal diseases against which the Tibetans are almost defenseless, not only retard an increase, but would appear to gradually decrease the country's growth. More than 10 per cent. of the population of Lhasa and neighboring monasteries died of smallpox in 1900. Further evidence of the limited Tibetan population appears from the fact that only about 20,000 monks from all the monasteries in the vicinity gather at the so-called "great Monlam of Lhasa." This, remember, in the center of Lamaism, where the principal sanctuaries and the higher Tszanite schools are located, which to a considerable extent are supported by the government. The native Tibetans call themselves Bo(d)-pa, and it is also customary to refer to people according to the names of particular regions. Thus the inhabitants of Tsang are called "Tsang-pa," etc. The floating population of the cities is composed of Chinamen, Nepalese, Kashmiris, and Mongols.

Most of the Chinamen, especially the emigrants from Ssu-ch'uan, are employed in the garrison camps of the large cities, while those engaged in commerce transact their small trade with the local inhabitants, principally the women.

The Nepalese and Kashmiris, about equal in numbers, are merchants almost exclusively, though a few of the former are artisans. According to tradition the Nepalese were for a long time the architects of the temples, the sculptors of the Buddha statues, and the ikon painters of Tibet, and they are still the most expert cloth dyers, and are skillful as gold and silver smiths, from small trinkets to the gilt roofs of temples. The Buddhist Nepalese, in distinction from the ruling caste, Gurka, in their kingdom, are called Bā(1)-bo. They avoid marriage with Tibetans, for such ties mean death in their native land, and they therefore remain permanently in Tibet. The Kashmiris, on the contrary, always marry Tibetans, whom they first convert to Mohammedanism, and rear their children in that religion.

In administrative matters the Chinamen are responsible directly to the Amban, who resides and officiates at the southwest end of the city, near the ruins of the old city wall. The Nepalese and Kashmiris are subject to their elders, who serve as deputies in affairs before the central government of Tibet, with its jurisdiction. The Mongols, about 1,000 of them, are all monks, and only temporary residents, about 15 per cent of their number changing annually. They are distributed over the various monasteries according to their parishes. The Russian subjects among them in 1900 numbered 47, being Buriat Lamas from the region across the Baikal, with one Kalmuk from the Astrakhan government. They are subject to the monastery regulations.

The social classes are the nobility, the clergy, and the peasantry. The nobility consists of the descendants of former rulers of separate principalities and descendants of the fathers of Dalai Lamas and Panchens, who are invested by the Manchu court with the rank of prince of the fifth degree.

The princes, together with the monasteries and their parishes, are large land owners, and the peasants are

serfs to them. The central government, or the Dalai Lama, owns, of course, more land and serfs than the classes named.

There is apparently no distinct military caste. Military service accompanies the privilege of special land grants, but we could not secure detailed information about it.

The houses are of stone or unburnt brick, cemented with clay. Most of those in the villages are one story high, while in the cities they are of two or three stories. The windows are without panes, or hung with cotton curtains, though in winter oiled native paper serves as protection from the cold. Fireplaces are used only for cooking. The houses have no chimneys, the smoke escaping as best it may through doors and windows, except that houses with upper stories have roof openings that somewhat alleviate the smoke nuisance, though equally a discomfort during rain. The principal fuel is dry manure of horned cattle and yaks. The clothing is of special design, made from native cloth in various colors. The poor classes wear white, the cheapest color; the richer people red and dark red, the soldiers dark blue, and yellow is used by higher dignitaries and princes. Women prefer the dark red cloth. Of course, other colors are also met with. In proportion to their means, the Tibetans dress rather elegantly. Their jewelry is of gold, silver, corals, diamonds, rubies, pearls, turquoise, and other stones.

Tsamba, or roasted barley flour, mixed with either tea or barley wine, is one of the principal foods. The commonest vegetable is the radish. The favorite dish among all classes is "tsamtuk," a soup made by boiling zamba in water and flavored with bits of radish. Tsamtuk is best when made into broth with crushed bones, but it is comparatively expensive, and only the well-to-do can afford it every day.

The Tibetans are fond of raw meat, and when entertaining they serve meat either raw or not fully cooked. The principal meats are yak, mutton, and pig. Beef is not considered good, and ass and horse meat are not used at all. The poor classes also eat fish. We did not see the Tibetans use fowl as food, although they keep chickens for the eggs. Butter is much used, serving principally to whiten or flavor tea, and melted butter is burned in lamps before the idols. Sour milk, prepared also as thib-sho, is regarded as very noble food, and in poetry indicates something pure white.

Both sexes of all classes are very fond of barley wine, and owing to its cheapness and slight intoxicating properties it constitutes the principal beverage of the poor. The men are heavy smokers of leaf tobacco in pipes, and the monks, while avoiding the pipe, consume no less tobacco in snuff. Because of the high cost of tobacco, and to reduce its strength, the laymen mix it with the leaves of the plant "shol," and the monks use the ashes of ram and goat dung for that purpose.

The principal characteristics of the Central Tibetan may be described as stupidity and flattery, doubtless explained by the economic and political conditions of the country. They are also pious through fear of losing the protection of the gods or of angering them. On this account they have frequent sacrifices, bowing and circling before their sanctuaries. They are very impressionable and superstitious, and at each new episode in their lives they seek explanation from Lama seers and prophets, and when sick they prefer to take barley grains blessed by Lamas and prophets, or to have curing prayers read to them, rather than resort to medicine, which, by the way, is less developed in Central Tibet than in Amdo or Mongolia. Despite all, the Tibetans seem to be inclined to joviality, which manifests itself in song and dance during their frequent sprees and public holidays.

In their family life polyandry and polygamy exist, and the marriage of several brothers to one woman or of several sisters to one man are regarded as ideal relations. . . . Women enjoy perfect freedom and independence and take an active part in business affairs, often managing extensive enterprises entirely unaided.

Agriculture is the chief occupation of the settled population. Barley is the standard crop, from which tsamba is prepared; then comes wheat, for wheat flour; beans for oil, and peas, used by the poorer class in form of flour, or crushed for horses, mules, and asses. The field work is done principally by "dzo" (a cross breed of yak and ordinary cattle), yaks, and asses. The principal beasts of burden are the small, hardy asses, and to some extent the ordinary horned cattle. Inhabitants of the highland regions are engaged in cattle raising, breeding yaks, sheep, and some horses. They use yaks for burden, and sheep in some places. The horse and mule are, to a certain extent, a luxury to the Tibetan, and are therefore kept only by the well-to-do. The native horses and mules are very small and homely, so that the rich people use only those imported from western China. In the stables of the Dalai Lama and Panchen there are blooded horses from India.

Commerce consists in supplying the cities and monasteries with agricultural products in exchange for articles of insignificant local manufacture and foreign import. The excess of domestic products is exported. The Tibetan has very few wants, chiefly limited to necessities, although some inclination toward objects of luxury, expensive ornaments, objects of cult and home adornment may be observed. The standard money is a silver coin valued at about 10 cents.

The unequal distribution of wealth and the subservience of poverty to wealth are conspicuous. There is such little commerce that labor is very cheap, the most expert weaver of native cloth receiving about 8 cents

and board per day, while an unskilled woman or man laborer earns only 2 or 3 cents. The highest salary is paid to the Lamas, the prayer readers, who receive 10 cents a day for incessant reading. A house servant almost never receives pay beyond food and meager clothes.

(To be continued.)

ESTIMATING DISTANCES.*

By Commander WILLIAM H. BEEHLER, U. S. Navy.

THE naval officer in command of a battleship in a squadron has no problem of greater importance in the evolutions of naval tactics or at target practice than the determination of the distances of other vessels in the fleet for the distance of the target.

The inventive genius of the navy has devoted itself to inventions for determining distances, ranges, etc., and some of these instruments are admirable, but none are at all times perfectly reliable. Fiske's stadimeter is an excellent instrument, his range finder has also in practice under favorable conditions proven to be very good, but for target practice the gun itself is generally conceded to be the best range finder. But in practice and especially in a naval engagement these instruments and means will not always be available and therefore every contribution to the subject of range finding or estimating distances should be diligently considered and practised for successfully executing maneuvers and conducting target practice.

When executive officer of the U. S. S. "Montgomery" under the command of Capt. George A. Converse (at present rear-admiral and chief of bureau of ordnance) the writer was directed to carry out exercises for estimating distances. The captain sent the navigator out in the steam launch with a stadimeter to go to varying distances of from 2,000 to 4,000 yards. Upon arrival at predetermined distances the captain required the executive and divisional officers to estimate the distance of the steam launch. Gun pointers and sharpshooters were likewise all required to secretly report their several estimates of the distances of the steam launch. When this was first tried the estimates by different officers and men varied as much as 500 yards, but after a little practice the variations differed by less than 50 yards and a large percentage of the estimates were very close. This exercise was another evidence of the fact that practice makes perfect, and the great improvement in our target practice demonstrates this most forcibly. The terrible disaster recently experienced on board the "Missouri" is greatly to be deplored, but notwithstanding the appalling risks, the necessity for such target practice is too urgent to permit us to entertain the thought of restricting target practice.

The advantages of this practice of the "Montgomery" at Pensacola before the war bore good fruit subsequently in the destruction of Fort Canuelo at the bombardment of Porto Rico, May 12, 1898, where the "Montgomery" threw 314 5-inch shell from six 5-inch guns in a period of exactly five minutes, at the end of which time there was nothing left of that fort.

While in command of the U. S. S. "Monterey" in the Asiatic fleet last year (1903) the writer adopted a simple method of estimating distances by which officers and men became very expert in estimating distances were accurately.

This method consists of getting two lines of sight, one with the right and the other with the left eye. The observer simply sights with his right eye along the right forearm extended to its full extent and pointing with the right forefinger at the distant object. He then closes the right eye and sights with the left eye, holding the right arm and head rigid as before. In this case the second or left-eye line sight will point to the right of the object first sighted with the right eye, a distance equal to one-tenth of the distance that the said object is from the pointing finger of the observer's right hand. These two lines of sight intersect at the point of the forefinger of the right hand, and with lines joining the two eyes and lines joining the object with the point to which the left-eye line of sight shall have moved to the right, form two right-angled triangles which are opposite and similar.

The eyes are normally 2.75 inches apart and the right forearm fully extended will bring the point of the right forefinger 27.5 inches from the right eye; the proportion of 10 to 1 exists between the base and altitude of the smaller right-angled triangle, and the same proportion exists between the larger triangle in which the base is the estimated distance that the left-eye line of sight shall have moved to the right of the object and the altitude is the distance of the object from the intersection of these two right-angled triangles.

An example of the practical use of this method will be clearly understood. While at Chefoo the "Monterey" was required to take position 300 yards from the "Monadnock." The "Monadnock" was 55.5 feet beam and when directly astern of the "Monadnock" observer pointed at the mast of the "Monadnock" and observed that the left-eye line of sight moved to the right a distance equal to a beam and a half of the "Monadnock," a distance equal to 55.5 feet plus 27.75 or 83.25 feet, making the distance of the "Monadnock" 832.5 feet. By pointing to the port edge of the after turret of the "Monadnock," a point just 34.5 feet from the edge of the starboard rail at its greatest midship section, the distance was found to be 900 feet when the left-eye line of sight pointed to the right at a

* From Proceedings of U. S. Naval Institute.