CHAPTER FOUR

FOLK KNOWLEDGE AND TECHNOLOGY

• TRADITIONAL MONGOLIAN MEDICINE
• TRADITIONAL FOLK TREATMENTS FOR ANIMALS
• FOLK ARITHMETIC AND MATHEMATICS
• ASTRONOMICAL KNOWLEDGE
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• TRADITIONAL HOUSEHOLD AND ECONOMIC KNOWLEDGE
• MONGOLIAN TRADITIONAL FOOD AND BEVERAGES
There are sources written down 3,000 years ago that say that ancient Hūnnū people and Mongols used to sterilize wounds using the pungent herbs Artemisia, thyme, and edelweiss. They produced essential volatile oils and emitted heat when they were burned, which guaranteed purity. The people of the forests and other parts of Mongolia had good medicine called Kadif. They dressed wounds with medical herbs and treated typhoid with the root-stock of rhubarb.

Old Man Tsargin twirled his beard and wafted smoke over the fainted hero Geser, after which he regained consciousness. The nomadic Mongols treated mountain-sickness with the fumes of burning hair. This type of medicine was and remains very common among the nomadic people. It has become traditional.

Every nation has specific magical ways of medical treatment or quackery. Central Asia has a severe continental climate with four seasons, in which nomadic Mongolians moved from place to place tending to their domestic animals. So their way of life and medical treatment are very peculiar. The methods of medical treatment derived from their simple lives. Like medicine in the west, there are many traditional methods of treating illnesses in Mongolia, including:

1. Bleeding and lancing
2. Moxibustion
3. Acupuncture
4. Manipulation, massage and bone-setting
5. Dom: healing spells

These methods are famous as oriental methods to treat illnesses and they have helped to cure many thousands of them. These kinds of treatments are valued highly. Medical herbs, limbs of animals, and minerals are used as natural forms of medical treatment. They are sometimes used individually and sometimes mixed with each other for medical purposes. The Mongolians’ five kinds of animals serve not only as a basis for basic necessities but also as a source of medical treatments. Mongolians combine medicine with psychological treatments and use sayings, such as mantras, shamanist charms, and prophesy. There are certain influences of Buddhism in our medical treatment, such as the use of spells and the stating of one’s requests and mantra expressions.
SOME TRADITIONAL METHODS OF TREATMENT:

DETERMINING DISEASES BY DIVINATION

This divination can determine whether or not a disease can be treated. A sutra of diagnostics reports the following: “The number of days or months the patient has suffered from the start of an illness can be added to the sum of numbers of the age of the patient in order to diagnose the patient’s illness. This sum can be multiplied by three and divided by nine. In this case there shall be appeared 3.6.0 remainders. These numbers are used for the divination. It can be divided by those numbers. If there is a three, it means the life is safe. If six appears, the patient may recover without treatment. If zero appears, there is a probable death. For example, a patient who is 44 years old, who was confined to bed in March and got treatment within 15 days:

1. 4+4=8
2. 8+3=11
3. 11+15=26
4. 26*3=78
5. 78:9=8.6

This remainder means that the patient may recover without treatment.

Divination to discover a child’s sex

Divination to discover a child’s sex while still in its mother’s womb involves taking the sum of the numbers of both ages of spouses, multiplied by four and divided by three. If the remainder is two or zero, the child is a boy. If the remainder is one, the child is a girl.

Water charms

When a child cries, the parent should take the swaddled child and, at twilight, reflect its face in a cup of water. This cup of water is passed over the head of the baby three times in a clockwise direction and three times in an opposite direction. The cup of water is then thrown in the direction of the north-west. This is called the water charm ritual.

Fire tongs’ charm

If a baby cries, the fire tongs are made hot at the moment of the appearance of the evening star. The tongs are then dipped into a pail of water which is placed near the baby. If the water hisses, we say shireg, shireg, shireg (charm, charm, charm) and wave a ladle of water over the child three times in a clockwise direction. We then wave it again over the child three times in an anti-clockwise direction, before throwing the water out of door. This is called fire tongs’ charm.

Insomnia

• You can sleep if you fumigate yourself with the smokes of blue chips of cow before you go to bed.
• If you are wakeful at night, rub your feet until they become warm, and then you will be able to sleep.

Paralysis

• If you have a facial tick, stroke your face with an agate snuff-bottle.
• If your mouth is twisted, take a piece of meat taken from the back of the thigh of a sheep and fry it with a clove of garlic in ghee. Apply some of the undercooked pieces of this meat in a compress to your mouth.

Delirium

• Your delirium will be released by drinking the milk of a red cow.
• The heart meat of a rabbit is helpful for treating insanity.

Hiccups

• It is good to treat the hiccups by drinking boiled curds.
• It is also good to apply hot sand taking from rivers between the shoulders as a compress.
• If you have the hiccups, it is better to apply a compress to your heel with a greasy cloth.

**Fatigue**
• If you are fatigued greatly it is good to boil whole bones of sheep and then bath in the broth for a week.
• You can get strength and remove your fatigue if you bathe in the warm cow’s milk.

**Fainting**
• It helps to fumigate the fainted person with the smoke of his burnt pubic hair.
• Bleed the tips of ten fingers when a person faints. If it is not successful, bleed the tips of this person’s ten toes.

**Eye-disease**
• It is good to drop an extract of the herb sympeuma on the bad eyes.
• It is very effective to look at the full moon of every month to improve one’s eye sight.
• It is good to burn and fumigate your eyes with birch’s bark, if tears are falling.

**Ear disease**
• When having sharp pain in the ear, it is good to drop breast milk into the ear.
• When having sharp pain in the ear, lancing the special part of little finger of the ear-hurting side is good.
• In case of hearing impairment, it is good to bind magnet powder in the wool and stuff the ear with it.

**Sore-nose**
• It could stop your nose bleeding if you bind your thumb and index fingers of your left arm with scarlet red thread.
• It is good to fumigate your stuffed nose with pungent plants which block up your nose.
• One can remove an ulcer from one’s nose by smearing the mixture of ghee of the mare’s fermented milk with salt.

**Sore-throat**
• It is good to rinse your mouth with the sap of the pasque ambigua when your throat is red.
• It is useful to rinse your mouth with thick extract of nettle when your throat is yellow.
• Eat the flesh of a lark when you get hoarse voice.

**Mouth-disease**
• Keeping copper in the mouth is good for healing mouth-wound.
• In case of child’s thrush, it is good to dip the child’s head into the cold water three times.
• It can help to heat hilt of a knife in a fire and compress it to blistered lips. Then we say “lick it until it hares its horn.” If you wish to lick the knife hilt, compress the blisters seven times.
• It can help to compress your lips with the brim of silver-cased cup if your lips are chapped.

**Toothache**
• There is no pain if you rinse your mouth with the stale milk of a ewe when your teeth ache.
• It is helpful to rinse your mouth with boiled and cooled sap of salex for your teeth.
• Your teeth shall be strong when you wash them with the extract of junipers needles.

**Snake’s bite**
• It can help to compress the bite with camels’ milk and also to drink the boiled milk of a mare-camel.
• It is better to apply a heated cupping vessel to the place of the bite.
It is helpful to bind the place of the bite with crop tuber.

**Dog bite**
- If a wolf or dog bites, it is necessary to drink the scraped remains of the bottom of a cooking pot into the mouth.
- If a dog bites, the hair of the dog must be burnt and then the ashes are smeared on the wound.

**Rheumatic pains**
- If you suffer from rheumatism, soak the dry pellets of sheep and cover the area that is pained with the pellets. It can help you to remove the rheumatism.
- If you mix the ashes of dung from a cow and a horse into a good consistence and cover the place of the rheumatism with it, it can help you to get rid of this condition.
- Rheumatism can be removed if you bind the rheumatic limbs with bandage that includes the leaves of the crop tuber.
- It is also helpful to remove rheumatism in the legs by applying a lotion of the ashes of the dung of a cow, camel and horse, each of which must be at least three years old, mingled with cow’s milk and mare’s fermented milk.

**Knee pain**
- Apply a lotion of worm wood Artemisia which is boiled down in the whey;
- Take a beverage of boiled yogurt with grape and sugar;
- Apply a thick mixture of the ashes of stellera on leg’s and hand’s illness.

**Leg and hand pain**
- One’s legs and hand’s pains are released by binding them with bandages of fleece-wool felt absorbed the salty milk.
- It is helpful to take an extract of walnut and to bind the growth of calcaneum with the bandage absorbed the bile of sheep and cattle.
- Place the pods of peppers under the insole, if your feet freeze.
- You can remove your rheumatic pain by covering your legs and hands with the lotion of the boiled juniper with the milk of white mare.

**Scurvy**
- You can treat your scurvy by drinking the mixture of the juice of the blooms of a wild rose with its stem’s sap.
- To heal scurvy, you can cut about four fingers of size from the point of the spring nettle and make a huušur and eat it.

**Herpes**
- It can help to remove herpes by smearing the tar or hot juice of burned salex on the herpes.
- Pressing hot brass coin on the herpes is good for healing.

**Freckles**
- You can remove your freckles by smearing raw milk of a nanny-goat.
- Freckles can be removed by smearing the mixture of an agaric (field-mushroom) and musk.

**Mange**
- If you sponge the mange with the boiled thyme, it can be removed.
- It is good to cure the mange with the pitch of millets.

**Inflammation**
- It is better to apply mixing of the sap of the cargana jubata plant with ghee on inflammations.
- Inflammations can be cured by binding a warm bandage of the liquefied sulphur.

**Sweat gland problems**
- Drinking soup of ephidra helps stopping over-perspiration.
- Smearing aftertaste of copper on the foot sole and underarm is helpful for decreasing over-perspiration malodours.
• Constantly washing your foot with radish juice helps eliminating malodour of foot.

CHILD’S ILLNESS

Infantile fever
• If a child drinks boiled agaric (field-mushroom), it can remedy child’s fever.
• The peony flower is very effective for removing infantile fever.

Diarrhea or looseness of bowels
• An infant diarrhea can be healed by eating clove of garlic cooked in a fire.
• A rice concoction can remedy the trouble when the infant suffers from the looseness of the bowels.
• It is helpful to give a child a mixture of reindeer’s curds with cow’s or ewe’s milk when the infant suffers from the looseness of bowels, or to wrap the abdomen of the infant with warm greasy black cloth.

Navel-inflammation
• It is helpful to cover the navel with its mother’s combings if fluid exudes from infant’s navel.

Stomach-upset
• It is important to hang a small flask of holding water from the cradle of the swaddled infant in order to prevent a stomach upset.

MIDWIFERY AND WOMEN’S ILLNESS

Giving birth to a child
It is better to heat up the little toe of left leg of a mother who experiences the pangs and efforts of childbirth; while the uterus is opened, the pregnant mother on her knees leans over the pannier and gives a birth to her child. This is the Mongolian method of giving birth. We believe that it keeps the mother from having a difficult birth. By leaning over the pannier and giving birth, the placenta is not pressed down onto the veins of the uterus. Nor does the mother feel the shortage of oxygen. Also, the infants do not suffer from strangulation or from crippling conditions. The vein does not enlarge. This method of giving birth is favoured by doctors and researchers.

The post-effects of child-birth
• It is helpful to place a cup upside-down on the pit of the stomach if the uterus is convulsing after child birth.
• It is helpful to take cooled extract of the seeds of fleabane when the mother suffers from fever after child birth.

Menses
• It can help to take the bile of pig or musk deer if a girl menstruates without interruption.
• It is necessary to drink the water in which amber is boiled if a girl’s menstrual periods are changing.
• It is inevitably effective to drink boiled brackish water with Artemisia, if a girl’s menses ceases.

Breast milk
• If the new mother is short of milk, it is necessary to drink the boiled tea with millet or to eat the roasted millet. It can increase the yield of milk.

Breast swelling
• Mixing vodka with the ashes of antler and drinking it can help to remove the breast swelling.

Heart trouble
• It is very good for the heart if you drink water boiled with a saiga horn.
• The juice of hawthorn is useful for healing the heart disease.

Blood pressure
• It is useful to step on the crystal salt with your bare feet when you suffer from high blood-pressure.
• You can decrease high blood-pressure if you walk on fresh green grass barefooted.

Hepatitis
• It is useful for chronic liver problems to drink the whey produced from the boiled curds of ewe’s raw milk.
• Drinking the milk of a white mare can decrease liver trouble.

The secretion of bile
• A beverage of boiled birch leaves can normalize the secretion of bile.
• A drink made from the extract of leaves from an aspen tree is good for gall-stone.
• The milk of a nanny-goat is good for liver and bile troubles.

Pneumonia
• Boiling saussurea involucha in milk is good for pulmonary disease.
• Drinking a mare’s milk dipped with copper is good for healing a type of pneumonia.
• Drinking a white mare’s milk and airag helps treating a type of pneumonia.
• The extract of thyme should be covered with a lid and then later drunk. This is good for bronchitis.

Problems with the spleen
• If you place a loadstone on the front side of the spleen, iron the spleen’s back side, and wrap it closely, this can regulate spleen’s action.
• The fever of spleen can be removed by drinking the boiled juice of the herb ephedra.

Wounds
• If you mingle a piece of agarics (field-mushroom) with the powder of pearls, and smear this mixture on the wound caused by edged tools, it could be cured.
• If there is a cut on the face, the scar can be removed by applying breast milk in which pure silver has been dipped.

• The flesh of a snow-cock can cure and develop human flesh.

• It heals quickly if you sprinkle powdered conch shell on the wound.

• If you drink boiled cuscuta, it can stop your bleeding.

**Burns**
• If you wrap the burned skin with urine, there will be no scar.

• It is very helpful to smear the grease of bear, boar, or badger on the burned skin.

• It is good to smear soap suds on the burned skin.

**A bone injury**
• It is good to drink cool water mixed with the remains on the bottom of a copper, bronze or cast-iron pot to care for bone injuries.

• It is helpful to drink the boiled juice of the leaves from the extreme tips of the branches of young cedar trees. It can help to consolidate bones.

• If you drink milk-vodka with calex of the calcinated copper, your fracture will heal soon.

**The enlargement of the veins**
• The soot from the bottom of a bronze cooking pot, which had been heated seven times with the chips of cow, are mixed with water and then drunk. It can normalize one’s vein.

**Frostbite**
• The extract of field-bind-weed can help for driving out the blister and frost-bite.

• The compression of the powdered agaric (field-mushroom) can drive a blister of frost-bite.

• Cauterize the cross-point connecting the tip of the nose of the chilled person, the nape of neck, and the extremes of two ears. If you cauterize it, it can help definitely.

• Smear the fat of boar on the frozen limbs.

**Flu and colds**
• If you wear a string of garlic cloves, it can prevent you from flu and colds.

• It is important to massage aloe on the side of one’s nose, the upper portion of temples, the roof of nose between eyebrows, the nape of neck and wrists when you suffer from flu and a cold.

• The juice of icicle radish can cure whooping cough.

**Kidney and bladder trouble**
• Sand treatment: It is very important to cure kidney, hip and bladder troubles of a child. First the sand is sifted out. Then fry the refined sand at frying-pot. Lay the troubled infant down on the warm sand, then swaddle it closely and cover it with warm blanket. Let it sleep. Be wary if the infant has a fever or is weak, or if there is skin-eruption on the infant. It is totally forbidden to treat the infant with the sand treatment.

• The boiled juice of the currant diacanthum is good for kidney and bladder.

**Diabetes**
• The compression of a warm black cloth with the grease of tail-fat placed on the hypogastrium, helps to stop diabetes.

• The preparation of equal ingredients of the ashes of marmot’s head, myrobalan and crystal salt can cure an emictory child.

**The retention of urine**
• If somebody is constipated, it is necessary to cauterize two-finger-size the navel, again two-finger-size below the cauterized portion of abdomen again two-finger-size below the second cauterized portion of abdomen, again one-finger-size below the third portion of abdomen. Then the constipated person discharges its urine.
• The soup of the caudel vertebrae of goat causes urine discharge.

Gastritis
• The milk of black ewe is mingled with the milk of black cow. The mixed milk is boiled. The hot milk is good for gastritis.
• It is good to drink the boiled ragwort for gastritis.
• If you suck the pit (stone) of myrobalan, it normalizes the constipation.
• The seven jujubes are mingled with mare’s milk; it is boiled. The blends of mar’s boiled milk and mare’s cool milk are good to cure diarrheas and heartburn.
• One boiled dosage of weathered bone of dragon can cure the chronic diarrheas.

Ascarid
• The cloves of garlic is mixed with milk and boiled. Then drink it. It can purge the ascarid.

Food poisoning
• If somebody has looseness of the bowels, boiled water with salt causes vomiting. This vomit can cleanse stomach from foreign matter. Then bleed the tip of finger with lancet. It is a good treatment;
• If you boil the pits of the wild cherry’ berries and drink it, it stops the diarrheas.

Swelling
• The milk of mare-camel which grazes on saltwort can remedy swelling by discharging urine.
• Boil sour curds produced from milk-vodka distillation in the mutton soup and drink it. It has a good effect for curing the swelling in the winter.

Haemorrhoids
• Haemorrhoids never appear if you press on the bumps every morning.

Methods of defending from venomous snake and insects
• If you carry musk with yourself it can drive away snake.
• If you burn horns of cattle and fumigate the household with its smoke, it can drive away the snake.
• If a snake enters household, burn the weathered horn of a blue ram. The snake will run away by the smell of smoking.
• If snake falls into a well, it might poison the water in it. Churn the water of the well with a stick of tamarisk.
• If you burn the dried bat, it can drive away flies and mosquitos.
• The burning of thyme can drive away bugs.
TRADITIONAL FOLK TREATMENTS FOR ANIMALS

One of the most important achievements of Mongolian culture is its traditional medical treatment of domestic animals. Mongolians engaged in animal farming for many centuries and accumulated a great deal of experience that it transmitted to younger generations orally. The oriental sutra "Nei-jin" says: "The northern country is cool and cold. Cold diseases are frequently occurred. So, they cure cold diseases by cauterizing. They cure hot diseases by bleeding." It is evident that during the Hünnü period there were two popular treatments: cauterization and bleeding.

A Mongolian traditional medical treatment of the most ancient origin, which does not demand elaborate schooling, includes the Mongolian folk medical treatment of the domestic animals. Livestock breeders treat their animals (if those diseases are non-infectious) by fumigating, bathing, sweating, applying a poultice, covering with warm cloth or felt, setting bone, cauterizing, scorching, bleeding, lancing, shaking, massaging and stinting. Mongolians castrate animals skilfully according to the age of animals and seasons. The animals are treated by manual operation with surgical tools such as burning iron, lancets, pincers and tweezers. Our livestock-breeders operate animal’s skull and remove a tape-worm from the animal’s brains. They cut off outgrowth of gristles in a horse’s lips. They puncture nasal cartilage with lancet and take off the pus and cure the horse.

The folk treatment of animals includes five general types of treatments, such as bloodletting, cauterizing, acupuncture, manipulation and bone-setting. Animal manipulation is called white magic. It is greatly associated with national customs and religious ceremonies. Folk medical treatment uses plants, beast limbs, and minerals.
Some Equine Ailments

Albin
- Albin or “evil spirit” is treated with the burning mastic of larch;
- A proper treatment for evil spirit is to drench cup of ochre in the mouth of a horse.

Out of puff
- Bogtraa (convulsions) is treated by slightly slicing the second joint of the caudal vertebrae of a horse.

Strain
- If the patella of camel or horse is strained, healthy hind of the strained horse is bandaged closely above its hock until it gets numb. Then lead the horse. The horse is able to walk.

Gall
- It is cured by smearing the powdered mixing of lime, mica, oxytropis, miriophylla, peganum and burned ashes of bleached cranium of dog with the amadou on the gall of horse.

Suffering from starvation
- If a horse suffers from starvation, the right radius of the male horse bound tightly. If a horse is female, the left radius is bound tightly.
- Boil the rind of willow and drench it into mouth of horse. It can cure the ailment.

Jaw-jamming
- If horse’s jaws jams, it is helpful to lance the horse’s temple.
- It is helpful to put a leather-sack on a horse’s head and cause it to choke.
- Drench the suffering horse with cold water.

Lacrimal caruncle
- Horse suffering from lacrimal caruncle can be cured with placing the burnt pubes of the horse on its eyes.

Mountain sickness
- Have the horse suffering from mountain sickness smell a splinted stone.

Ailment from the excessive intake of salt or saline
- Smear snuff into the eyes of the horse which suffers from excessive salt.

Mange
- Sponge and bathe the stale of white camel on the mange of a horse.

Jading
- Cauterize on the pelvis and sacrum of the jaded horse.
- Bleed the vessel of the healthy nostril of a horse.

Diphtheria
- A boiled onion can cure diphtheria.

Mistrainging
- Drench one cup of cold water mixed with an amount of larch equal to the size of a walnut by boiling.

Necrobacillosis
- Smearing wolf’s bile on necrobacillosis and other ulcers is good.
- Bandage the suffering horse with good milk-vodka.

Spring catarr
- It can heal if you smear the bile of wolf on the tongue of the suffering horse.

Autumn catarr
- It is important to puncture the tail of the suffering horse with lancet. If it fails, boil seven pieces of walnuts well and pour the boiled water into the mouth of the suffering horse. It can cure the horse.

Tumour on the shoulder or chest of a horse
- First sear around the tumour, then sear cross the tumour with hot iron.

Hock strikes another hock
- Lance the leg vein.

Inside ailments of lips
- Slice slightly the ailing portion of the lips inside and cut it off. Sponge the wound with cold water.
**BACTRIAN CAMEL AILMENTS**

**Mare camel rejects its baby**
Mare camel does not suckle its baby. In this case, blow a flute, play a fiddle, whine a dog. The mare camel softens and starts suckling its baby when listens to these joyful and sorrowful melodies.

**Diarrhea**
When baby camel discharges diarrhea, cut the terminal end of its tail and dip it in warm melted ghee.

**Tabes**
It is good for the ailing Bactrian if you mix small amount of arsenics with the medium cup of vodka and drench it into the mouth of it. Then load it or cover it with warm cloth until the Bactrian exudes sweat.

**Cough**
- When Bactrian coughs, it is good to lance jugular vein or the blood vessel of its tongue.
- Boil inula and sophora, then give the camel suffering from flu. Boil nettle in bowl and give the camel the decoction of nettle.

**Mange**
When a Bactrian camel is affected with mange, it is necessary to drench one ladle of milk and one ladle of vodka and hitch for a while. The camel can get rid of mange. It is also good to smear mixture of equine fat and blood on the mange and lead it until the grease absorbs itself.

**Feet cracks**
Sponge a lotion of powdered salt on the feet cracks. Then sponge the feet cracks alternatively. It can help.

**Leucoma**
Blow vermillion through the straw to remove leucoma. It can help.

**Red patch on lips or tongue**
- Place peacock-iron as jaw-lever in the mouth of the camel, pull its tongue and scrape it until blood seeps out. Then sprinkle two ladles of powdered salt and drench water to swallow. It can cure the ailment.
- Pull the tongue and bleed several blood vessels of the base of the tongue with bodkin. It can also help.

**Inflammation of nasal mucous membrane**
The muzzle and lips of a camel can swell. If you press them you can feel a chill. In order to cure it, it is necessary to push a stick into the nostril and squeeze pus until it bleeds. Sprinkle powdered salt through the nostrils enough. If the ailment is progressing, cut off the needle like bristle under its tongue with scissors.

**Pneumonic fever**
- Drench the urine of eight years old child into the mouth of the camel with pneumonic fever.
- Drench a mixture of sweet, juniper’s needles and stale of black sheep into the mouth of the camel.

**Pressure**
- Bathe the Bactrian camel affected with pressure in the cold water.
- It can recover if you drench a mixing of water with three ladle salt into the mouth of the camel.

**Kidney-strain**
If a camel’s kidney is strained, pour water into its ears. The camel can shake its head. Then the camel can recover itself.

**Lytya**
There is a cartilaginous band on the under surface of the tongue in the camel. Cut off the cartilaginous band with sharp scissors and smear powdered salts with grease on the wound.

**Crab-yaws**
Boil a granulated sugar and garlic in the vodka and drench this decoction into the mouth of a camel to cure crab-yaws.

**Rep patch**
Boil limonite with vitriol and sponge the decoction on the red patch.

**Indigestion of allium polyrrhizum**
Bouillon (strong broth) and milk of white mare are good for curing the ailment.

**Indigestion of ephedra**
Pour bowls of fermented milk of mare and broth in the mouth of the suffering camel.

**Indigestion of nettle**
The treatment is the same as ephedra indigestion.

**To be chilled or frozen**
When a camel is chilled at summer time, it is better to lay the camel down on the heaps of sheep droppings and cover it with felt and drench certain amount of milk-vodka into the mouth of the camel.

**Gall on the back**
Cleanse the gall with cold water and sponge it with the decoction of valerian and peganum several times.

**Protuberance**
There is protuberance on the roof of camel’s mouth, because of its bad tending. The protuberance of the palate is sliced with sharp knife. Do it several times.
**AILMENTS OF BOVINE ANIMALS**

**Splenitis**
When you press the loin, it falls in. If you lance the hollow to two fingers thick, it can cure the ailment.

**Rinder-pest**
- Boil the snake’s slough and drench the decoction into the mouth of cattle.
- Drench vodka into the mouth of cattle and rug it until cattle sweats.
- Pound and boil the root of couch, administer the decoction to the ailing cattle.
- Mix old ashes with water in a good consistency and boil and cool it. Administer it to the ailing cattle instead of water. Boil the root of astragalus in water and cool it. Administer medicine to the ailing cattle to drive away the fever.

**Volvulus**
Boil and cool granulated sugar in water, administer the decoction to the ailing cattle or administer the infusion of white flour to the ailing cattle.

**Cattle-lice**
Burn vermillion, wormwood, fat, grain, boar’s fat and sulphate and fumigate cattle or sheep infected with lice with burning smoke.

**Calf’s diarrhea**
Dip the apex of the tail of the suffering calf into the boiled ghee.

**Parasitic worms**
The parasitic worms cause itching of the cleft of cattle’s hoofs. In order to treat this ailment, slit the cleft and remove the bots. Then let cattle stand on fresh lawn or muddy place.

**Mange**
The four legs of the manged cattle are sealed by rope. It is covered with felt. Burn old sackcloth under a pannier and smoke the manged cattle from the pannier.

**Retention of the placenta**
Mushroom soup can help to remove the retainable placenta.
THE AILMENTS OF SHEEP AND GOAT

Wolf-bite
There is a wound of wolf-bite. There are plants which grow in the Gobi called 'jishingarmuu'. If you burn it and treat the wound with the ashes of this plant, it cures the wound.

Giddiness
There are two types of sheep giddiness. One is called water and another is called blood. There are also other giddiness such as marrow-giddiness, viscera giddiness and leg giddiness. It is very important to distinguish them. The herb of sophora is good for curing this illness. Odontites and inula can cure a blood fever. In order to find the location of the bed-sore in the skull of sheep, you should press on it, and you will feel warmness, thinness and softness of the skull. There are tape worms. This location is cauterized by the hot iron and punctured by fleam. The tape worms are picked by pincers and tweezers. If an animal moves irregularly or turns anti-clockwise and its tears are trickling down, then it is water giddiness. Locate a bed-sore and cover it with soaked felt. Then cauterize it with a hot iron and puncture the skull and pick tape-worms. Then cap the hole with a felt, boil two kinds of plants, tactram and commitphora mukuk. Admit the ailing sheep the decoction of these boiled plants. Then apply a warm compression of the fried salt in the ghee on the spot of the ailment.

The giddy sheep mostly moves irregularly anti-clockwise, it is blood giddiness. The treatment of blood giddiness is the decoction of zod, oxtongue (plant), and red sandal wood. Admit the ailing sheep the decoction and lance the cripto-vein under the lower-eye-lid of the ailed sheep. A sheep ailed with marrow-giddiness, leaps toward either east or west, prances, runs away and swaggers which is a symptom of marrow-giddiness.

Anthrax
In order to treat it is necessary to diagnose whether anthrax or not. First wash the wool and its yolk of a sheep, find out a carbuncle. This locates in the upper portion of forelimbs. This sore is brown pigment of thumb size. This is the carbuncle of the anthrax. The beetles (tsokh and yamaan khorkhoi, khar khorkhoi) can find out this carbuncle easily. It is said that they suck this carbuncle.

Tabs
Tabs is a grub which emanciates a sheep. This grub comes from wormwood Artemisia and enters the nostrils of animal, penetrates into the brains of animals. This grub turns into tabs. If it enters viscera, it multiplies into various forms. Some of them are thicker than a hair, and longer than fingerspan. The decoction of the powdered arsenic with succulent nettles is good for treating tabs.

Mange
The oil distilled from the barks of cedar and pine is called as black oil by Mongolians. This oil is smeared on the mange of sheep or goat.

Colostration or colostric congestion
When a baby lamb is chilled, its colostrums are congealed. It is called colostration or colostric congestion. The four legs are grasped by the hands and its back is warmed up on the warm fire, colostric congestion can be removed. The pellets made from the pounded bistort can remove the trouble.

Carbuncled
The whey can cure a carbuncled sheep.

Poisoning from insect-eating
The mash of the plain salted tea and the ashes of blue chips of cow and flour can remove the poison.

Blockade of nose
While a drought occurs, the nose of sheep is blocked. In this case push a stick into the nose slightly and then clean the nose. Then drench salted plain tea into the nostrils.

Lamb-diarrhoea
Do not let it suckle its mother, admit the lamb the plain tea and mash of bistort. It can stop the diarrhoea.

Goat plague
Boil water in a copper vessel and produce verdigris. Then drench this decoction into the mouth of the ailing goat.

Kid’s thrush
• If there is eruption on the mouth of kids, the decoction of boiled barks of larch and pine is helpful.
• If you deposit the barks of larch in the hot embers and smoulder them, this smouldered ashes can cure the inflammation.
• Dip oats in the salted plain tea and sponge the eruption with it.
FOLK ARITHMETIC AND MATHEMATICS

The knowledge of arithmetic and mathematics were very popular among the Mongolians from an ancient time like another peoples. This could be divided into oral arithmetic and written mathematics. The Mongolian herders gather and relate epics and resolve various arithmetic problems and guesses, which sharpen their wit and expand the universal knowledge. Let’s take an example.

• The oldman Yerentei has ninety nine sons and ninety nine sons have ninety nine sons. Ninety nine sons of ninety nine sons have nine sons each. Each nine sons of the ninety nine sons have three sons each and each three sons have two sons. Each two sons of each three sons have one son. How many sons shall be the total?

• There are 22 parallel burrows. There are also two foxes and 22 field voles. The two foxes said “Let’s play.” Each can enter the burrow one by one. The seventh numbered vole fills the orifice with earth. All voles agreed to this suggestion of the foxes. In which burrow the sly fox can enter without getting the number seven and eaten all the voles?

• A female sheep always bears a female lamb from its lambing age. Each of its offspring bears a female lamb when it reaches the proper age. What is the population of these sheep after ten years?

In oral arithmetic there is a system of calculating integers and fractions, pluses and minuses, as well as determining arithmetic terms. Let us take another example:

\begin{align*}
\text{Good thumb archer,} \\
\text{Never misses the visible enemy;} \\
\text{All famous archers,} \\
\text{Never misses the invisible enemy;} \\
\text{By taking eight enemy soldiers} \\
\text{Who are hidden behind a spur,} \\
\text{Shot with twenty arrows} \\
\text{From twenty fathoms;} \\
\text{To the eight skins of the sheep,} \\
\text{Behind the pairs of eyes,} \\
\text{The number of shots} \\
\text{Are multiplied by two numbers;}
\end{align*}

The number of skins
Are the same as the sum of numbers multiplied;
The number of skins
Show the number of missed arrows.
Resolve this problem:
How many arrows have scored a hit?
How many skins were hit?
How many arrows missed their target?
Who can tell it?

If you resolve this problem by traditional methods, the number of scores is 12, the number of hit skins is 8, and the number of missed arrows is also 8. This problem demonstrates that the archer shoots not only visible things but also invisible things at his enemy. It means that the herder must calculate the degree of the penetration of the shots. This kind of mathematical knowledge is the root of traditional Mongolian mathematics. Mongolians received this knowledge from the Hünnü. They used it to build buildings, dig channels, calculate the calendar as well as to calculate the positions of the stars, durations of day and night, the timing of the four seasons, the date of the next eclipse of the sun and the moon, and the beginning of the spring (or vernal) and autumnal equinox.

Another traditional method of mathematics is counting. There is a popular concept of counting:

\begin{align*}
\text{The number is a good word,} \\
\text{But it expresses something endless;} \\
\text{The armour is good clothing,} \\
\text{But it is not for a wedding.} \\
\text{Our oral literature says so.}
\end{align*}

The Mongolians identify over 60-digit-numbers, and consider them as both practical and abstract numbers. These numbers have their roots in the ancient sutras from the eighteenth century.

The Mongolian Abacus

It is a device to aid in counting. It is called mokhlig or sampin. Mokhlig consists of bundles of hair. It was used by children to learn how to count. Later, a wooden frame was introduced and the bundles of hair were replaced with wooden beads. These beads were made of wood, bones and horns.
Occurrence of the stars

The moon and planets move above almost every livestock breeder’s head. Each herder knows the motions of the moon and the planets. Our ancestors used to prognosticate the weather conditions by the motions of the moon and the stars. The Pleiades are invisible in summertime. But they look visible on the 21st of the month at the beginning of autumn, 19th of the month of mid-autumn, and on the 17th of the last month of autumn; they are visible again on the 15th of the month at the beginning of winter and on the 11th of the last month of winter; and visible on the 9th of the month at the beginning of spring and on the 7th of the month in the middle and on the 5th of the last month of spring. They look visible by decreasing 2 days. Then they are visible on the third of the first month of summer. Then they are invisible till the autumn.

Mongolians observed the changes occur in the weather while the moon and Pleiades visit or look visible while they visit.

If the Pleiades appear above the moon, the weather breaks, even natural calamity occurs that year. If the moon appears above the Pleiades, then the weather will be pleasant. Particularly, the intersection of the moon and the constellation Orion on the 15th of the first month of winter is very important. Our ancient astrologers paid great attention to this moment. According to this information, it is a significant matter to include on a calendar. This moment is understood as testing visibility. The visibility and movements of the moon and the Pleiades were like a calendar for ancient nomadic people: later, this served as the basis for the modern Mongolian calendar. This observation became a criterion for proving things to be true. There is a saying among the Mongolians: “If you do not remember the date, look at the moon and the Pleiades’ visibility. When the moon and the Pleiades are visible, there are a myriad of stars.” Mongolians have the saying, “When Orion produces stars, the Pleiades produce yearlings.”

Counting the twelve-year cycles

There are rock drawings which were done 2,000-4,000 years ago. There are Bronze Age coins. On Hünnü era tombs were find animal figures representing the twelve-year cycles. There are also similar sources about naming years, months, days, and hours by using animal names. This is a very old tradition starting from the Hünnü people who are Mongolian ancestors. Based on the recurrence of the sun,
moon and planetary motions, Mongolians drew up a table of sixty cycles, periods, years, months, days and nights. They reckon twelve as the basic type and increase and decrease it in order to make it compute time and date correctly. Then they composed a table of the sixty cycles and use it for their everyday lives.

According to the Mongolian chronicles, 60 years equals to one jaran (epoch) and twelve years is one period. The year of this epoch is called using animal types, such as mouse, ox, tiger, rabbit, dragon, snake, horse, sheep, ape, hen, dog, and boar. The year is divided into months. They are also named according to animals. The traditional month is divided into two parts, identifying the beginning and the end, each of which consists of 15 days. The month consists of four weeks. One khonog lasts twelve hours, and each khonog is named by the twelve animals. One hour according to the old almanac is equal to the present two hours. The khonog is divided into sixty parts or chinlür. A chinlür is 6 breaths (amisgal). A single breath or amisgal consists of 67 moments; the moment consists of 707 dens. This breath is approximately four seconds.

There are greater and lesser months. The great months consist of 30 days; lesser months consist of 29 days. The Mongolian Lunar New Year falls on the end of the winter month or at the beginning of spring. The commemoration of this day has an ancient origin.

**Mongolian ger is understood as a solar clock**

Mongolian ger is constructed according to Mongolian astronomic knowledge. It is a very peculiar dwelling of the world. The frame of the ger is constructed to apply appropriate direction of the sun to civil life. It is possible to say that ger was the solar clock of the nomadic Mongolians. The traditional ger was elaborated since ancient time through the thirteenth century and its present form displays the influence of the solar clock. The nave of the crown’s frame is connected with eight bars connected to the rim of the crown of ger and divided into four parts at 90 degrees. The nave is called small wheel. The rim of the crown is divided into twelve parts at 30 degrees. These are equal to the hands of the clock.

The cross-barred crown has portions. They are linked to the solar clock. One day is divided into morning, lunch, midday, afternoon, sun slanting and dusk. Every trellised wall has 14 cross-barred heads (the upper part); the total numbers of cross-barred heads of walls are 56. There are four spikes which are fixed on the lintel of the door. They are 60 pieces of total spokes. The holes on the rim of crown are 60. The space between the holes on the rim and cross-barred heads of the trellised wall is at the angle of 6 degree. These are equal to the minute-hand of the clock. The sun radiates through the crown ger; this portion of the radiation is calculated well. When Mongolians erect their gers, their doors look a bit south-east. If we divide the circle of the ger into twelve parts, with the space between each point being 30 degrees, then the resulting form is similar to the diagram of the Kidan Zodiac.
It is very interesting for the people who lead a sedentary life that Mongolians put horse pellets which are on a string of horse-tail hair and then hang this on the spoke of ger as a tool to predict the weather. Judging by its shrinkage and expansion we can say whether it will be rainy or dry. It means that Mongolians understood the weather and how to predict it.

Mongolian livestock breeders say that the sky shall be clear if yaks climb up to the mountain top, or if there is more glow in a rainbow as seen at sunset. If it is humid, if salt is damp, or if there is bluer colour in the spectrum, then the weather shall be unpleasant. If a stag bellows late, the autumnal withered grass will grow fresh and the winter in that year will be very pleasant.

If marmots hibernate early, antelopes appear in the highland, the crests of grass turn brown, or there is an accumulation of suet of rabbits and roe kidneys, then the winter shall be very severe. If the trees are in a leaf age before the ground is green, if plants are in bloom before their adult age, or if Argali (ovis ammon) of Mongolia and roe deer are grazing on the steppes, then these are symptoms of natural calamity or drought. Our livestock breeders observe natural phenomena, the change of the seasons, the appearance of severe climate, the appearance and movement of animals, and plants, planets and other objects as a basis for predictions about the weather. This became a long century tradition. That is why there are many maxims in our vocabulary, such as:

- The more graupel, the more probability of heavy blizzard
- The more cross-eye, the more probability of blindness
- If the sun is surrounded with a halo
- There will be rain
- If the moon is surrounded with a halo
- There will be a chill
- There is a dust-devil before raining
- There is a crow before a wolf kill
- Thundering clouds have no rain
- Notorious women have no weddings
- The horizon of a frosty sky is rose red
- The cheeks of a damsel is rose-red
Mongolians pay attention to all measurements in detail. There is a saying that one must measure seven times but cut once.

The measurement of time

<table>
<thead>
<tr>
<th>Mongolian terms</th>
<th>Present name</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jaran (60 cycle)</td>
<td>Year</td>
<td>60</td>
</tr>
<tr>
<td>Jil (twelve months, year)</td>
<td>month (days)</td>
<td>365-366</td>
</tr>
<tr>
<td>Uliral (season)</td>
<td>month (days)</td>
<td>90-91</td>
</tr>
<tr>
<td>Sar (month)</td>
<td>days</td>
<td>30</td>
</tr>
<tr>
<td>Doloo khonog (week)</td>
<td>days</td>
<td>7</td>
</tr>
<tr>
<td>Khonog (night)</td>
<td>time</td>
<td>12</td>
</tr>
<tr>
<td>Tsag</td>
<td>time</td>
<td>2</td>
</tr>
<tr>
<td>Moch</td>
<td>minute</td>
<td>24</td>
</tr>
<tr>
<td>Khuvi</td>
<td>minute</td>
<td>1</td>
</tr>
<tr>
<td>Amisgal</td>
<td>second</td>
<td>4</td>
</tr>
</tbody>
</table>

The maximum of the time for Mongolians is the jaran or epoch. The next is the year (identified by the mouse, ox, tiger, rabbit, dragon, snake, horse, sheep, ape, hen, dog and boar). The smallest measurement of the time of Mongolians is the breath. In our ancient calendar, the division of 24 particles or 60 chinlüür is important; each is divided into 6 breathes; the breath is divided into 707 dense; the measurement of time is divided and subdivided into very small units. There are also approximations of time. The calculation of the time of day or night is connected with the motions of the constellations.

We divide the day into dawning, sun rising, lunch, afternoon, sun setting, dusk or twilight, appearance of the constellation Orion, and the appearance of Ursa Major’s slanting. These moments mark times to make tea, to have a tea, to fill a tobacco tin, to take a nap, and to give a hint.

Metric unit of capacity

<table>
<thead>
<tr>
<th>Names</th>
<th>Approximate measurement (litre)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ing</td>
<td>207.9 litre</td>
</tr>
<tr>
<td>Achaa</td>
<td>103.54 litre</td>
</tr>
<tr>
<td>Khuu</td>
<td>51.77 litre</td>
</tr>
<tr>
<td>Suulga</td>
<td>10.35 litre</td>
</tr>
<tr>
<td>Shin</td>
<td>1.039 litre</td>
</tr>
<tr>
<td>Bitüü</td>
<td>0.1 litre</td>
</tr>
<tr>
<td>Khuvi</td>
<td>0.01 litre</td>
</tr>
</tbody>
</table>

The maximum unit of capacity is the in (broad gauge). The minimum unit of capacity is the khuvi (narrowest-gauge). These measurements are out-dated nowadays. But in ancient times, our Mongolians used various measurement devices, such as vessels, including a mare’s or cow’s milk-skin, a pot, pail, kettle, tankard, ladle, cup, bowl, or spoon; fractional measurements were made with sacks, pots, cups, ladles, handfuk and pinch; measurements of length, width and height included the fathom, cubit and finger-span. Even today, we Mongolians commonly use such terms as Mountain-sized, ox-sized, or sheep-sized.
There were the following weightings:

<table>
<thead>
<tr>
<th>Name</th>
<th>Approximate number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sii</td>
<td>0.37 mg</td>
</tr>
<tr>
<td>Khuu</td>
<td>3.37 mg</td>
</tr>
<tr>
<td>Lii</td>
<td>37.30 mg</td>
</tr>
<tr>
<td>Phun</td>
<td>0.37 g</td>
</tr>
<tr>
<td>Tsen</td>
<td>3.73 g</td>
</tr>
<tr>
<td>Lan</td>
<td>37.30 g</td>
</tr>
<tr>
<td>Jin</td>
<td>596.81 g</td>
</tr>
</tbody>
</table>

There was a weight designated as püü which was equal to 16.3 kilograms. Tsen, lan, jin, and püü are used seldom today. A steel-yard (dens) was a lever with a short arm for weighted things and a long graduated arm on which a single weight moves. Balance consists of a beam and pans or scales. Mongolians used two types of scales for trade and life. Between the tenth and thirteenth centuries, steel-yards were used for weighing silver, coin, precious metal, while hand-balance was used for weighing other things. When the ancient capital city of Karakorum was excavated, there are certain archaeological findings, including the find of the smallest weight of the balance, 445 gram. The biggest weight of the balance they found is 2,600 gram. There is a big difference between weights. This means that measuring was more accurate than today. These weights were cast in the smelting-works which had existed in the vicinity of the ancient Karakorum.

Traditional measuring instruments
### Length measurement

Once the following measurements were used:

<table>
<thead>
<tr>
<th>Name</th>
<th>Approximate length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sii</td>
<td>0.003 mm</td>
</tr>
<tr>
<td>Khuu</td>
<td>0.032 mm</td>
</tr>
<tr>
<td>Lii</td>
<td>0.32 mm</td>
</tr>
<tr>
<td>Phun</td>
<td>3.2 mm</td>
</tr>
<tr>
<td>Jamkh</td>
<td>3.2 cm</td>
</tr>
</tbody>
</table>

There are measurements of *khuruu* or finger-distance, across the width one finger (2 cm), *barim*-distance across four fingers (10 cm), *sööm*-distance between the tips of the outstretched index finger and the thumb (14-19 cm), *töö*-distance from the end of the thumb to the end of the middle finger when fingers are extended. *Töö* (Mongolian span) is /15-22 cm/. There are also measurements by foot. *Alkham* (step) is 80-160 cm. *Altsam* (stride) is 160-176 cm. There are also measurements by pasture distances of animals.

<table>
<thead>
<tr>
<th>Name</th>
<th>Approximate distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheep-pasture</td>
<td>1-2 km</td>
</tr>
<tr>
<td>Cattle-pasture</td>
<td>2-2.5 km</td>
</tr>
<tr>
<td>Calve-pasture</td>
<td>1 km</td>
</tr>
<tr>
<td>Lamb-pasture</td>
<td>0.5-1 km</td>
</tr>
<tr>
<td>Horse-pasture</td>
<td>4-5 km</td>
</tr>
<tr>
<td>Day's distance</td>
<td>90 km</td>
</tr>
<tr>
<td>Day and night</td>
<td>120-130 km</td>
</tr>
</tbody>
</table>

*Khuruu-2cm*  
*Mukhar sööm 10-15cm*  
*Barim (Alga daram) - 10cm*  
*2 khuruu*  
*Jamkh-3.2cm*  
*Üzüür tokhoi 40cm*  
*Mukhar többoi 30cm*  
*Khuruu-2cm*  
*Sööm 14-19cm*  
*Töö 15-22cm*  
*Khuruu-2cm*  
*Mukhar többoi 30cm*  
*Barim (Alga daram) - 10cm*  
*Mukhar többoi 30cm*  
*Üzüür tokhoi 40cm*  
*Mukhar többoi 30cm*  
*Khuruu-2cm*  
*Sööm 14-19cm*  
*Töö 15-22cm*  

A *ödrin gazar* (day’s distance) means a destination that is reached by riding camel or horse during one day. *Khonogiin gazar* (day and night distance) means a destination which to be passed a night. We also say *jilijn gazar* (year distance). This is destination to reach by riding within a year. *Nüüdlin gazar* (distance moving to another place) is a destination to reach by moving. *Saakhaltin gazar* (distance to reach the neighbouring village) is 1-2 km. *Khol saakhalt* is 3-5 km (two ger villagers able to see each other). *Kharaa khürekh gazar* is the distance a herder can see, about 5 km; *mod gazar* is 1.06 km, *beer gazar* is 7.4 km, *örtöö gazar* is 30 km. 3 metres is called *jan* and 0.32 metre is called *chii*. Mongolians also measure the distance by speed, such as a distance of shooting arrow, *tatlaga* (place out of 11-12 fathoms), *khom* (7 fathoms) a distance to sprinkle grains or to split a stone. We also gauge the depth of water by horse or camel, which is able to disappear or water is able to spread over the back of a horse, water is reachable the stirrups. We also gauge the depth of snow by horse’s belly; we say the snow is able to clog the knees of horse or fetlock-sized snow; herd’s hoof-sized snow or hare-foot-sized or bird-foot-sized snow. There were many measurements if you look up the old books. For example a size is like top of hair or like barley-sized.
Area measurement

If we put our traditional area measurement into metric system:

<table>
<thead>
<tr>
<th>Mongolian names</th>
<th>Unit</th>
<th>Approximate size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khaash khaasaa örtöö</td>
<td>1 km</td>
<td>900 km²</td>
</tr>
<tr>
<td>Khaash khaasaa saakhalt</td>
<td>1 km</td>
<td>0.64 km²</td>
</tr>
<tr>
<td>Nomadic villagers in vicinity</td>
<td>1 m</td>
<td>2000 m²</td>
</tr>
<tr>
<td>Geriin buirin chinee</td>
<td>1 m</td>
<td>20 mm²</td>
</tr>
<tr>
<td>Khaash khaasaa ald</td>
<td>1 m</td>
<td>2.6-2.8 m²</td>
</tr>
<tr>
<td>Khaash khaasaa alkham</td>
<td>1 m</td>
<td>0.64 m²</td>
</tr>
<tr>
<td>Khaash khaasaa tohoi</td>
<td>1 cm</td>
<td>1600 cm²</td>
</tr>
<tr>
<td>Khaash khaasaa töö</td>
<td>1 cm</td>
<td>400 cm²</td>
</tr>
<tr>
<td>Khaash khaasaa sööm</td>
<td>1 cm</td>
<td>320 cm²</td>
</tr>
<tr>
<td>Khaash khaasaa jamkh</td>
<td>1 cm</td>
<td>10.24 cm²</td>
</tr>
</tbody>
</table>

The following names for the area measurement were used as well:

<table>
<thead>
<tr>
<th>Mongolian names</th>
<th>Unit</th>
<th>Approximate size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Khuvaarí</td>
<td>hectare</td>
<td>92160.9 hectare</td>
</tr>
<tr>
<td>Ür</td>
<td>hectare</td>
<td>0.9 hectare</td>
</tr>
</tbody>
</table>

We, Mongolians, say a *khaash khaasaa* area is partial; *khaash khaasaa* means square. *Urt* means length, *örgön* means broad; *örtöö* is relay, *saakhalt* is vicinity. *Ald* is fathom, *alkham* is step or pace.

*Töö* is span, *khuruui* is one joint. We also speak about measuring as sheep-lairage-sized, *ger*-site sized, crown-covering sized, saddle cloth-sized, palm-sized, nail-sized, just like nail or just like lunula, as well as just like the point of needle. We enclose a cloth in fold and cut it along the folding. It is called "*aam or square*". When the square-cloth is subdivided into triangle, then we say triangled brocade or triangled silk.
The enclosure of a wolf's mouth

With the purpose to protect the animals that spend their nights under the stars from the perils of wolves, a stone is placed between the movable arms of the fire-tongs, and the following spell is recited:

"Let's jam the snarling jaws of the Sharp-fanged, dear Mascot; May the animals on the steppe Be safe and sound"

We also bind and place the two arms of the fire-tongs between two layers of roof-covering on the southwest part of the ger, near the door. These two arms of fire-tongs are implied as the two jaws. The stone means the animals and enclosure of the wolf's mouth.

The pendent of the jade axe

It was and is still a common tradition among Mongolians to embellish a baby's rug, swaddling clothes and coats with various pendent which are deemed to be propitious for babies. These omens are precious stone, silver, copper-axe, bows and arrows, bells, models of felt-fox, shells, ankle-bones of stags, fangs of boars, and spine of fish, a tamarisk, a red caragana, or a model of a tiger. There is, also, very commonly even today, a piece of silver or a jade axe to embellish baby's coat. The purpose of this embellishment is to manipulate the angel of death. We also give our children a small axe. This is the symbol of invincibility. It is believed that the axe-shaped pendent can mislead the angel of death and protect the children from the angel of death.

The pendent of the wolf's dib

The wolf is our totem. This kind of concept is still alive among the Mongolians. If you encounter a wolf on the way to travel far, to do business or to search animals, we Mongolians believe that our aims can be achieved well. Even if a wolf attacks our domestic animals, we do not think it as a bad omen. It is regarded that the mouth of wolf can bring a good luck. The theft can bring bad luck. That is why individual Mongolians carry a wolf's dib or fang with him/her. Because there is a folk belief that it might bring a good luck or keep a baby safe. We also adorn the child with a wolf's dib.

The stiff spines of the hedgehog

There is a tradition among Mongolians that they place stiff spines of the hedgehog on the threshold or hang a bunch of hedgehog spines on the lintel over the door. They also carry the spines of the hedgehog with themselves to ward off the perils of life at home or at the lawsuit.
The whip made of an antelope’s shank

It is customary for the Mongolian child-jockeys of swift horses to carry the shank-whips of antelopes by wishing their riding-horse be swift like antelope.

The worship of a horse cranium

Mongolians show great reverence for horses and deem horses as valuable as the gem topaz; the swift horse, in particular, is held in veneration. There is a custom to venerate the cranium of the swift horse. According to this belief, there is a spirit in the cranium of the swift horse, so we place it on the top of the rock or stone-cairn. In order to do this, we stuff blue droppings of a horse in the socket of the dried cranium, pile a white grit on the cranium and say ‘khurai, khurai, khurai’. If a traveler encounters a stone-cairn with a horse’s cranium, he should dismount and add grit to the stone-cairn.

The embellishment of pail of milk with copper-arrow

The bronze-arrow was the object of worship of ancient Mongolians. They deem it as heaven’s object as it is an ancient object - dates back to the Bronze Age. They embellish the pail of milk with bronze-arrow to prevent the inflammation of the udder of animals.

To make a child blazed coney

Mongolians make their children ‘blazed coney’ when we take them out of their homes at evening or night. To make a child blazed coney means that the child’s parents or relatives mark a black stripe from pot soot on the baby’s forehead. The purpose of this is to mislead a devil or demon who might harm a baby. There are certain numbers of such kind’s of living customs.
The pendent of brachiopod’s head

This is a fossil of brachiopod of the ancient epoch. There are many fossils in Mongolia, particularly in Gobi. The fossils look like outstretched winged animals lying down. These lime stones are called by local people as outstretched winged stones. Herders collect lime stone and case it by felt and hang it on a ram’s neck, which is a very ancient custom. As birds never miscarry, it is believed that, by doing so, they can prevent from any miscarriage of domestic animals.

So our ancestors’ wish was that their domestic animals never miscarry or slink.

Lead casting

When an infant wails frequently, it is believed that the infant is frightened from something and if he/she sees the figure of that, the fear will be gone. Then the melted lead is poured into the cold water in a bucket. As a result, the lead hardens in the water and is transformed into a kind of figure. Then this figure is attached to the swaddling-cloth or sleeve of coat.

Pair of the pellets of horse

A person who is collecting cow chips can sometimes find a pair of horse pellets. This person sees this as a sign of good luck on his/her domestic animals and a wish that they might multiply. They may even place it on the upper end of the trellised wall of ger, reciting the spell for multiplication of animals.

Phallicism

It was once popular in Mongolia to make male and female phalli and deem them as a symbol of generative principle. Let’s take an example. There is a valley which is called the Valley of the Womb. There is a phallus sculpture made of granite. The local people call it the penis stone. There is another phallus which is vulva-shaped, located in the gully opposite to the valley. There was also a phallus carved from the elm trunk in the Shilin Gol Aimag of Inner Mongolia.
Mongolian ger originated and inherited from the ancient nomads, including Hūnnū people. This is a portable structure that is easy to dismantle and erect and light to transport. There is good air-circulation and very good lighting by the sun. It is possible to get an orientation of a time according the increase or decrease of the sunlight in ger.

The frame-wood of Mongol ger consists of crown-frame, spokes, trellised walls, door and pillars, and its covering also consists of crown-cover, roof-cover, under-cover of roof-cover, wall cover and door-felt or wooden door. The ger can be divided into various shapes such as quadric-sectioned, pentagram-sectioned, hexagonal and so on.

In the ger, the space can be sectioned. The north is honourable and equal to the eastern and western sides, the hearth and the door area. The ger was pitched on the cart and carried by the many oxen in ancient times. This was called a ger-cart. It was a palace for the Mongol kings and queens. The ger-cart was very popular in twelfth and thirteenth centuries.
Mongol saddle

The purpose of saddle is for riding animals. The Mongolian saddles can be divided into various types as male’s, female’s, children’s, festival’s, ordinary and pack’s. The saddles are named by their crafting technique and shapes, such as Oirad, Darkhad, Borjigin, Sambuu, and Buriad. It consists of two bows, pair of side-boards, fish-plates, arch, rim of bow, saddle-flap, buckle-guard, thongs, girth, strap, tab, cushion, silver ornaments, iron, stirrup-strap, buckle, clapper and sweat-cloth. The saddles with ornaments go by names such as the saddle with gilt-rimmed bow or saddle with silver rimmed bow, brass rimmed, bone rimmed bow. It is a taboo for Mongolians to put bows of a saddle with their tips facing down. It is also forbidden to set a saddle on the ground. It is necessary to place something under the saddle. It is also forbidden to place a saddle looking towards the door.
The trivet is used for warming the ger and cooking over a fire in the Mongolian ger. It was customary from ancient time. The trivets are divided into various types as mere-trivet, portable-trivet, basket-trivet and so on. It is placed in the centre of the ger. This mere-trivet is made of the three legs or three projections with three brackets. The bases of the projections are splayed out.

The trivet is a sacred item for hearth. So, the Mongolians venerate the trivet as a sacred element based on the hearth of the ger and place it on the most important thing when they move to another pasture land. It is taboo to put and burn the litter in the hearth fire in the trivet. There is a view that the fire-god might get into a rage if you put the litter in the fire. It is also a taboo to pour water on the fire in the trivet. If it has happened, the hearth will go to its doom. If it becomes necessity we say to the fire-god, “Please take off your legs.” Then we extinguish the fire and a trivet should definitely be left to cool off on its own.

The bridle is very important for riding a horse. The bridles are identified as single, double, and silver-topped bridles. The bridle consists of a bit, head piece, nose-band cheek-piece, brow-band, throat-strap, and reins. One should not enter a ger by tucking the bridle and halter in one’s belt or sash. There was a custom for a person who intended to arrest somebody to enter a ger by tucking his bridle and halter in a belt. Because of this, it became a taboo.

The halter is important to lead animals or hitch them to the posts. The halters are made of leather and hairs and are classified as foal’s, baby camel’s, horse’s or camel’s halters. It consists of nose-band, throat-strap and leader (throat-lash).
Whips

The whips are used for striking animals and are classified as swift-horse's, horse-catcher's and festival's. The whips are identified as cane, cornelian, willow, and sandal whips by the materials out of which they are made. By the size, whips are called as long, middle, short and child’s whips.

The length of the whip for swift horse is 20-25 cm. It has a leather loop to hold its end and hide lash which is 5-10 cm. The longest whip is made of rattan, cane and cornelian, Chinese pine, tamarisk and honey-suckle. The length of it is 90 cm and its holstered section is 12 cm. Its lash is 40 cm. The rattan whip is considered a favourable thing for the Mongolians. The stock of the Chinese pine whip is a span or span plus a half span; there is even a four-finger sized Chinese pine whip. We make a Mongolian type of quirt which is braided hide riding whip. The whip used for horse catcher is made of willow. The willow whip is light and doesn’t hurt the riding horse.

The size of the willow whip is the same with the leather whip. The whip for the swift horse is made of only tamarisk. The size of tamarisk whip is narrow. The length is from span to cubit. There is tradition to swap good whips among the close friends. This is taboo to point at somebody by whip, to strike a horse’s head with whip or enter ger holding a whip.

Tri-hobble

The tri-hobble is one of the tackles for riding horses. The tri-hobble is made of simple or double leather or hair (twined or three stranded). The tri-hobble consists of two prongs and shaft, one of the prong consists of it flat-strap, loop and pin (toggle). The pin of the tri-hobble is made of only tamarisk or birch. It is a taboo to reverse hobbling horse. In another word, it is taboo to tri-hobble two hind legs and one fore-leg of horse. There are many forbiddances concerning the tri-hobble.
Swift horse scraper

This is a tool to scrape the perspiration on swift horse. The scraper of the swift horse is made of bamboo, cypress, horn, pelican's bill and precious stone, the both edges of the scraper are blunt or smooth. The length is two spans, the half of span is handle, the handle is mostly decorated with carved pattern or brand or figures of the twelve years. The whange loop keeps a brush, honorary scarf and tail-hair of horse. When we scrape the lather on the swift horse, we do not ruffle the strand of hair, but groom the hair according its strand by starting from the atlas following the shoulder, from the side of whither following the shoulder, from the back toward the thigh and hock, from the breast along the venter. This is the practical knowledge of the horse trainers.

Stirrups

A stirrup is an implement of iron whose flat bottom hangs with stirrup straps on both sides of a saddle. The stirrups can help to lift you to mount a horse. The invention of stirrups by the nomadic Mongolians is the contribution to the world tangible culture. They are classified as ordinary, festivals, swift horse's and child's irons. The stirrups are attached to the both sides of the saddle tree. The stirrup is attached to the saddle by girt strap and slot of a buckle which has a length of 55 cm and width of 3-4 cm. The stirrup can be lengthened or shortened by the girth strap and slot of the buckle. The peacock stirrups are fitted for a camel's rug saddle, and the strap of the stirrup is made of strap with a buckle. There is a tab between the cushion and rug-saddle through which saddle strap can pass and strengthen the stirrup. If the tread of iron is broad, you can feel comfortable for far journey. Length of the stirrup of Mongolian saddle is 40 cm, it is more comfortable.
Lasso

Lasso is a long rope with a running noose for catching horses. Mongolian lasso is made of the whange. The length is 8-9 or 10-12 fathom. The lasso is very popular in the western Mongolia and is one of the best adopted tools of the Mongolians dealing with a horse.

Sting

One of the importantly special tools to catch horses for riding, cutting the mane or branding then is the uurga or sting. The sting is made of birch or willow of their lightness and suppleness, straightness and strength. The length of the Mongolian sting is 3 or, 5 or, 7 fathoms. It consists of three portions: upper, middle and lower. The upper portion of the sting is made of willow; some of the stings are glued or bound, and have a notch for binding a ling at its upper end. There is also notch at the joints of the upper and lower ends of the sting. The chord of the sting is made of the neck skin of the male antelope or of the roe-buck. If those materials are not available, the chords are made of hide-strips or neck skin of goat. The chord is twisted with three strands and its one end is furnished with loop and another end is spliced. The length of chord is one fathom and ell or two fathoms, the two ends of chord are attached to the sting by making a loop. Mongolians venerate their stings and place them to the north of the ger or lean them against the roof of ger. It is a taboo to go across the sting. If you violate this forbiddance, the spirit of your horses might go down.
Horse cart

This cart is two wheeled transport vehicle used for farm purposes and for conveying heavy loads. By its material carts are called as larch or birch cart, by its made, cart is called as the cart with compositor rimmed or cart with circular rimmed wheels. The cart consists of an axel, spoke, fell or rim and frame. The two wheeled horse cart is furnished with a cabin in which passengers sit and travel. It is also furnished with a barn in which we store materials and can be turned into carriage. The enclosed seat of the cart is furnished with two poles and carried by two persons.

The harness of the horse cart

The harness consists of the collar, crupper, saddle, girth and shafts. The collar consists of felt padded wooden band to fasten shafts and to affix straps. The wooden bars of the collar can help to make the trace tight or loose if the axel of the horse is on the level to the middle of the wooden bar. The crupper can regulate the weight of load on the up or down slopes of the land. The average length of crupper is 3-4 m. If the crupper is too short, it can chafe the dock of tail. The saddle of the horse cart consists of pair of birch bars and bow, girth and slot of strap. The saddle is padded with felt and fixed to the cushion buckle. The straps of the cushion are furnished with loops and attached to the shafts.

The pad saddle has birch bows and its bars are padded with felt. There is a piece of iron through which the girth can pass and be fixed. There are two kinds of pad saddles. They depend upon the shape of horse’s back. One is flat, another is circular. The girth can regulate the weight of load.

Oxcart

Our ancestors invented a way to harness an ox to a wagon. The history of the ox-cart is old. There are over 70 cart drawings on the rock arts of ancient origin in Mongolia. The majority of them are oxcart drawings. The oxcart is composed of yoke, crupper, pad-saddle and strap securing the shafts to the pad-saddle. The role of the yoke is to join the two shafts of the cart and two ends of the throat strap. The yoke made of birch is curved slightly. The length of the yoke is 60 cm; the two holes in row at the two ends of yoke are drilled. There are four holes at the two ends of yoke. They are connected to the two shafts of the cart. The role of crupper is to regulate the weight of load on the cart. The crupper is made of hair rope.

The role of the pad-saddle is to lift the shafts of the cart, to regulate the weight of the load on the cart and not to chafe the ox-back. The pad-saddle is padded with felt. The role of the strap is to secure the pad-saddle and pull the shafts of cart. The wheels of the oxcart do not revolve on its axis, but they are made of single wood and consist of four sections of felloes. But the wheels of horse-cart revolve on its axis.
The harness of oxcart

The harness connects yoke, crupper, pad-saddle and throat strap. The yoke is made of curved birch. The two ends of the yoke are furnished with double ringed turrets. These turrets are connected with the two shafts of the cart. The length of the yoke is 65 cm. The near side of the yoke is furnished with turrets and the other side of the yoke is furnished with throat-strap. This is made of soft leather, rope, or hair cord and goes under the dew-lap into the ferret.

The length of throat-strap is around the 50 cm. One end of the strap is furnished with wooden toggle. The roles of yoke and throat strap are to regulate the weight of load. The crupper can pull and press the shafts of cart. This equalizes the weight of load. The crupper is made of the hair rope (three-braided or consists of three hair strands). The length of the crupper is three fathoms in average. The crupper can prevent the cart from pushing the animals while travelling on a down slope. It can make a pressure less severe. The pad-saddle can equalize the pressure.

Halter for ox

This halter consists of head-piece, nose-band, cheek-piece, throat strap and lash. The length of the lash is around one meter. One end of it has a noose.
**Nose-peg**

The nose-peg is a tool for leading camel, which is made of honey-suckle almond, apricot, cornel and tamarisk. One end of the nose-peg is tapered and another end of it is forked. The tapered end is furnished with a washer, which is made of piece of various hides or hoofs of goat or sheep. The wood for nose-peg is polished up and boiled in the greasy soup. The three year camels can be furnished with nose-peg. The length of nose-peg is four fingers and thumb-sized.

**Leading cord**

Leading cord is a tool to steer or train a camel and attached to a camel’s nose-peg. The length is about two fathoms. The leading cord is twisted by making strands with mixing camel’s wool with its ruffle or zogdor. One end of the leading cord is attached to the nose-peg.

**Saddle-rug**

Saddle rug is similar to the horse-saddle; it consists of the flaps like horse-saddle’s sweat flaps. The saddle rug is made of the quilted felt or rug. It is sometimes made of the leather. The two flaps are connected with shagreen, leather or felt. The saddle-rug consists of a loop for hump, cushion, stirrup, girth and slotted strap. There is a sweet-cloth under the saddle-rug. The length of gelding camel’s saddle-rug flap is 65cm, width of the saddle-rug’s seat is 40cm, the width of the saddle-rug’s thickness is 30cm. The sweet-cloth can prevent chafing of the camel’s back. The loop for hump can prevent a saddle-rug to move forward or back. The cushion gives comfort to ride a camel. The saddle-rug has only one girth.
Tools to load a pack-camel

This tool is designed to relieve the weight of load. It is called khom, which is composed of two pieces of quilted felt-rug, two bars to clasp the felt-rugs. The bar consists of two parts. The bars are made of larch or birch trees. The length of bar is 1.2-1.5 m, thickness of bar is 6 cm. There is felt-wrapping, which wraps the two humps and prevents the chafing of humps. The wrapping is soft felt called bambai which is made of quilted felt. There are two types of swifter which used tighten or keep a load in its place. The big swifter (ikh tatlag) is over 10 fathoms (they are made of leather, hemp and hair) lesser swifter (khom tatlag) is 6-7 fathoms.

Camel harnessing

The terms of horse’s or ox’s harness are almost the same, but the camel cart has high wheels. This is the difference. The camel harness has no crupper and pad-saddle like horse cart. There is a loop for fore hump which is quilt-stitched and called as khölbor. The iron-rings are attached to the both ends of the khölbor. These rings are connected with the shafts of the camel cart.
**Mongol plow**

Mongolians were engaged in agricultural farming alongside the animal husbandry since at least the Neolithic period through the Hünnû period. There are many petroglyph images of people plowing the ground. The Mongol plow is similar to the implements of the Middle East or Central Asian nomadic people. It consists of body and plow-beam, plow-share and handle. The role of the plow-share is to plow the ground. There is a soil-digger which is called share, made of iron. This iron share is used for turning over the soil. The plow-beam is made of the root or wood. The length of it is 80-100 cm; the curved part is 30-45 cm. The width of the iron share is 8-10 cm; the length of it is 13-15 cm. The width of soil to cover the sowing seeds is to be the same to the share’s plowing.

**Quern/stone hand mill**

There were horse mill, wind-mill and water-mill. They grind grain. The simplest mill was quern, which is a portable mill. The weight of it is 15-20 kg. The diameter of it is 35-40 cm. It consists of two pieces of round grind-stones. The thickness of grind-stones is 10-15 cm, the nether stone is immovable. There is a mill-eye on the centre of the nether. A wooden pin is fixed in the mill-eye. The runner, which is also punched out in the centre moves upon the immovable nether stone. The mill-stone is furnished with circular grooves which grinds grain to powder or flour. There is also receptacle brim of the runner which receives a stick. The length of the stick 15-20 cm, the runner is moved by this stick. The wheat and barley are fried in the iron cast pot. The fried wheat or barley are pestled in a mortar. They are separated from their chaffs. Then they are milled into wheat or barley flour. The mill-stone is respected by Mongolians. It is a taboo to sit on the mill-stone. They believe that the heaven might get in a rage if you sit on the mill-stone. It is forbidden to move the mill-stone anti-clockwise. It is believed that if you move it anti-clockwise, you can be giddy.
Pointed drag for clearing snow

Mongols used pointed a drag for clearing heavily drifted snow in winter. The ox draws the dalipüü and clears the drifted snow. The dalipüü consists of two straight bars and cross-piece. The assembled dalipüü looks triangle.

Kibble

Kibble is a bucket of a draw-well. This is very common in the Gobi or on the steppe to use a kibble to draw water from a well. Kibble is composed of kibble-chain and bucket, wooden handle and loop. The kibble (bucket) is made of hide; handle is made of round wood. The loop is made of twisted wool or hair. It is forbidden to drag kibble along the ground. If you drag kibble, it can make a well dirty. It is necessary to assist a person who is drawing kibble from a well. Even how you are in a hurry, it is necessary to draw one or two kibbles from well.

Trough

Trough is a long, narrow vessel for watering animals. There are two types of troughs. One is made of the hollowed trunk of big elm tree, it doesn’t crack easily. A board trough is made of boards. The thickness of the board is three fingers. There are tubs for watering lambs and kids. A traveler who waters his riding-horse or camel should fill the trough with water. It prevents trough’s crack and helps thirsty animals which come to a well.
Wooden vice

This wooden vice is used for gelding horse or camel colts. The scrotums of horse and camel colts are cut and the testicles are gripped in wooden vice; the wounds are scorched by searing iron. So we say horse colt searing or camel colt searing. In order to geld the colts, we drop a dollop of milk on the wooden vice. The searing iron is furnished with honorary scarf. After gelding, the wooden vice and searing iron are held in high esteem and stored in safe place.

Neb

This is a tool to stop sucking. During the lambing season tegs and heberlings start sucking their mothers. So put this kind of neb on their muzzles to prevent their sucking.

Muzzle

We insert muzzle into the nose of stirls. During calving season, stirls start sucking their mothers, and cause the newborn calves to starve. So we insert muzzle into the noses of stirls to prevent their sucking.
Decoy bucket

It is used for leading sable or marten into a decoy bucket. This is hanged from rock or tree, and the decoy is placed on the lid of bucket. These beasts come to eat a decoy, but failed and fell into bucket.

Marmot’s meshes

There are trap, snare and also meshes to hunt marmot. This mesh is made of strong rope, one end of it has a running-noose. The mesh is placed into the depth of burrow and its two ends are spliced and attached to a stake.

Marmot trap

Trap is traditional tool to hunt marmot everywhere. Trap consists of a pair of branches fixed on the iron ring can spring up and pair of arms can grip a beast in the branches raised from the ground. The trap is buried under a decoy-soil. There is a pole-cut trap, which is small, and can be used as a marmot trap and fox trap. There are medium-sized traps and big traps, which can be used to trap wolves. These traps are chained and fastened to a stake.
Ski

There is a rock drawing of a person on skis (Tsagaan salaa of Bayan-Olgii province). There are notes written by Rashid Al’ Addin and G. Roubruck about the Mongols sliding as if they were flying on the snow and ice. At present Uriankhai hunters and reindeer people make skis by hewing and thinning birch tree and gluing skin of argali (ovis ammon) or ibex on the under-part of ski. The ski has two sticks. The one of sticks is spade shaped.

Walking stick

Old people over 60 or 70 use walking sticks because their legs are unsteady. The sticks are usually made of bamboo. At the upper end of stick, is made a boss, on which are carved heads of lion, snake or crocodile. Some crippled people, even though they are young, use walking sticks. There is a tradition to give a person who reaches the age of sixty or seventy-three a walking stick as a present. It is forbidden to step over the walking sticks of an old people. It is believed that if you step over elder’s sticks, your life span can be shortened.

Vanity-bag

There was custom to carry vanity-bag which is tucked in the Mongolian lady’s sash or “belt”. This bag contains tweezers, ear-pick, toothpick, nail-cleaner and small bottle of perfume or comb.
Tooth comb

This was very important thing to clean the hair. Tooth comb is made of bamboo. Mongolian women used variety of tooth combs and did not borrow them to people for hygienic reasons.

Comb

This is a tool to comb hair. The comb is a necessary thing for Mongolian women who carry it tucked into the sash of their deel. It was a custom. When Mongolian women go out, they have to comb their hair and form them into long lock in any cases. If they did not do this, it was considered a failure in life. In ancient times it is forbidden to go out of ger with one’s hair hanging loosely or without combing one’s hair. Doing so was a sign of widow.

Combs are made of wood, bamboo and horn. Mongolian women used silver cased combs inlayed with pearls, turquoise or garnet. There were also silver combs or combs inlayed with silver.

Scratcher

Most elder people had bamboo scratchers and used them to massage their rheumatism of their shoulders. They think that if they are scratched by children, children can get rheumatism from scratching. So they use bamboo scratches.

Wooden pillow

The purpose of it is to rest one’s head on the wooden pillow. The ordinary people made these pillows of elm and pine. Wealthy people made these pillows of sandalwood or Chinese pine. There were two types of pillows, one has made of solid wood. Another was made of hollowed wood. There was a custom to place one’s knotted sash under one’s head.
**Mortar and pestle**

Mortar is a strong bowl in which we crush things to pieces or powder things. The general shape and made of mortar are similar each other in various localities of Mongolia, but there are some peculiarities. The birch is hollowed first. Then it is furnished with a shape. In order to make a mortar out of the wood excrescence, we cut off the bark and dry it out. Then we blow embers of birch to the side to be hollowed. These embers bore the side of the excrescence and hollow it. Then we chisel the inside of the excrescence and smooth it. After hollowing, we furnish the mortar with two parallel iron hoops. Mongolians respect the mortar to crush a tea. It is forbidden to turn the mortar upside down. Upturning of mortar is a sign that one lives in poverty. The mortar is used for crushing tea and medical herbs. We also use it for traditional medical treatment. If a horse has an illness, we place the wooden mortar on the horse’s head and hit on the mortar. It helps to cure the ailing horse.

**Pannier**

This is a receptacle made of curved willows which are bound with thin strip of camel hide to contain and carry various things. The main purpose of pannier is to collect chips of cow. One pannier consists of 36 pieces of willows, 4 pieces of which are curved in ring or square shape and used for making a frame for joining the willows. The length of one piece is one fathom. The medium pannier is 30-40 cm, and the width is 50 cm. The smallest pannier is called sheezgii (ped). Child’s ped is called “bambóó”.

**Rake for collecting chips of cow**

This is used for collecting horse’s pellets and chips of cow. The handle is made of willow. The prongs of rake are made of bamboo. These prongs consist of nine, seven or five pieces. They are warmed up and curved slightly.
Spindle

This is the pin by which thread is twisted. This spindle originated in the period when humanity started sewing and stitching. There are many findings from the Neolithic period, Bronze Age, and in the graves of the Hünnä. There are many spinning stones and ceramic wheels. The spindle consists of rod and wheel. The wheel of spindle depends upon the thickness, medium and narrowness of the strand of thread. The length of the rod is averagely 25-30 cm and its base is thick and other end is tapered. The wheel is made of wood, stone or metal. Mongolian women respect their spindles. Some people divine by the spindle. It is believed that it is good if the rod is attached with a red thread, and person born in tiger year spells and rolls rheumatism with spindle’s rod.

Cradle

My daddy
Who carved a cradle
Out of an apple tree;
My mummy
Who nursed me
In the night of the chilly winter

This wooden cradle is the protective device of an infant. Mongolian life is a nomadic life. Our ancestors invented this cradle as a way of adjusting to the nomadic condition. It consists of a frame, a floor-board, and a base. There is great preference of symbolism. Every wood is not fit for a cradle. The cradle is made of elm, wild apple-tree, and buckthorn trees which bear berries in the sunny face of mountain. The sides of a cradle are made of apple-tree; and its rails are made of lime-tree. The rails are punched with auspicious designs or carved of the figures of sun and moon. These rails are embellished with various pendent such as bows and arrows, axe, mirror or felt-box.
Pail for milking

This is a vessel to milk used only for milking. So it bears such name. The size varies between big, medium and small. It has three girdles (girdle is made of brass, iron, silver and cork). The handle is furnished with punched stone, bronze-arrow or figure of horse. It is an ancient custom. The local people of Khövsgöl province symbolize animal milk as the water of Khövsgöl Lake and hang a punched stone of the lake from their pails for milking.

It is completely forbidden to pour anything except of milk into a pail of milk. It is forbidden to pour sable water into a pail for milk. It is taboo to place pail for milk near the dirty things. If water can be poured into the pail for milk as necessity, in that case seven white grits should be placed in the pail for milking.

Small table

The small table with flat top and propped up by four strong legs is very popular in Mongolia. There are many types of such tables. But this small table is fitted in Mongol ger. This is oblong and bow-legged table. Its height is one tokhöi (ell). This table can made of any kind of wood.

In an ancient epic there is an episode: Red sandal wood table with elephant-legs.

This kind of table is made based on a myth that the world was existing on the back of four elephants. So the myths and legends help to study the origin and shape of things.
Cask for milk-skim

 Hollow round wooden vessel to store milk-skim and cream is called орөмнii khavchig. This cask is mostly oblong. The size of it is various. The biggest is palm. The smallest is span and two fingers. It has three hoops and a lid. Cask for milk-skim is made of the buck thorn tree or elm. The livestock breeders collect milk-skim and cream in a wooden cask during summer and render these in autumn; they produce ghee and rendered cream. This is one of the important vessels. We place only milk-skim and cream in the vessel.

Birch bark cask

 This vessel made of birch bark is for storing ghee, cream, milk, honey and soured meat. The shape of it is oblong or round. The diameter of it is 25-30 cm. The height of it is 35-50 cm. there is also a smaller one, its diameter is 10-20cm. Buriad Mongols have a very good skills for making birch bark cask. Birch bark has two names in Mongolian: түйс and түйс.

Wooden keg for airag or mare’s fermented milk

 The keg is for containing airag. It consists of staves, hoops, lid and bottom. Kegs are made of birch, elm and pine. There are two types of kegs, circular and oblong. The height of keg is basically 4 төо or Mongolian span. But there is also a keg which can hold two or three pots of curd of milk. We churn the airag in the keg. We also store khoormog (fermented milk of cow or mare-camel) in the keg.
Tankard

This vessel is made of brass, copper, silver and others to contain tea. It has two types: spouted or spoutless. There is a gilded tankard. The wooden tankard is made of staves of Chinese pine, buck thorn tree, sandalwood, elm or birch and bound it with three hoops. The height of tankard is about one ell. The wooden tankard keeps tea warm. It is very suitable for Mongolian condition. The largest is called a horse-tankard. Our artisans devise various methods to make a tankard. There are many legends about them. For example: Sanjaa craftsman, made a tankard which produced the sound of plopping when the tankard with tea was tilting to one side.

Copper flask

The vessel is designed for containing tea, milk, airag and curd of milk. Flask is made of wood, brass or copper. There is an accumulation of milk-skin in the wooden flask. There are two types of flasks. One is oblong and similar to the staved pail of milk. Another flask has a spout to pour a tea. The oblong flask with a lid looks like present day’s thermos (vacuum flask). The flask is cased. This case has two significances, including keep a warm and prevent from damage.
**Hide flask**

This vessel is narrow necked and saddle-shouldered for holding airag, clotted milk, milk vodka, wine and bottom is even. It can hold 1-2 liters of liquid. In order to make a hide flask, it is necessary to dress, stitch, stamp, and apply a polish. This is a kind of crafting. Its stopper is made of birch, aspen or poplar. A well made flask can hold liquid for long time. It does not get soaked or loose its shape.

There is a stanza of folk-song:

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Oh daddy, you get soused  
In the milk-vodka of the hide flask  
Oh, daddy you rub your hands  
With glee at the money
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**Small skin**

This small skin can hold up to ten liters of airag. It is easy to carry a small skin of slinging behind the saddle. Shapes of these small skins can be square or oblong. These small skins can be made of rough hide. Our people keep milk or airag in these small skins. They get tanned.
Cup

This is a drinking vessel, which is mostly spherical. It can be divided into big, middle, small and medium dimensions. The cup is made of wood, stone, bronze, brass, copper, gold, and silver. A wooden cup is called elm cup, birch cup, cedar cup and root cup. By their purpose and shape, cups are identified as bowl for alms, skull cup, shallow cup of root, big bowl, small bowl and cup for good fortune. Cups of gold, silver, and copper can be used for the honorary guests. Cup for good fortune is used for rituals or invoking good fortune. Bowl for alms can be used for begging for food and alms, and for drinking milk-beverage.

A bowl for airag, a medium bowl, and a big bowl are cup-shaped vessels. A skull cup is used for sprinkling vodka. A broad-mouthed cup is called *delbeg*; a deep hollowed cup is called *mandal*; a hollowed wooden cup is called *savat*; a small shallow bottomed cup is called *tajsh*; a deep bottomed cup is called *tujrāga*; a cup-shaped cup is called *khuv*; and a nearly hemispherical basin is called *khul* (bowl). A narrow brimmed, shallow-bottomed cup with thickness in the middle is called *tsovkhor*.

There was a custom for every Mongolian to carry a cup in a pouch with oneself; the pouch was tucked in one’s belt or sash. The pleated pouch was called *saadag alchuur*.

Silver cased cup is a masterpiece of Mongolian silversmith. It demonstrates the exquisite workmanship both to make vessels of gold and silver. These masterpieces are the pride of Mongolian people.

It is forbidden to exchange cups with each other. There was a custom for everybody to carry a pouched or pocketed cup when they went out of their own home. It was very good tradition from the hygienic point of view. According to the Mongolian tradition, we do not treat our guests or visitor with cup which is chipped or cracked. If you do, it is a sign of non-respect. It is taboo to invert a cup. If you invert a cup, it is a sign of losing your fortune. It is also taboo to break a cup intentionally, but we do not blame a child who has broken a cup. It is unacceptable not to taste a tea which is offered from a host. There is belief that if you do not taste, the devil can taste instead of you. It is also taboo to offer a tea by pressing the brim of cup with one’s finger. If you press the brim of cup with your finger, it was a sign to arrest somebody. There are many decorous behaviours concerning cups.
Spindle-shaped cup

Wooden cup is used for holding sweets or confection for visitor. It can also hold dairy products. This is made of hollowing the roots of elm and birch.

Tray, metal dish or plate

This is metal dish with the raised edges and shallow-flat bottom and used for carrying or holding things. Wooden tray is made of the root of elm. The root is hollowed. Tray can be made of copper, brass or silver. This tray is used for feast or wedding. It is also used for high guest or honourary visitor. Guest must taste the products on the tray when it is offered to you. There is a strict custom not to use chops for dairy products.
Airag-skin

This vessel is made of hide for holding airag, clotted milk and fermented beverage. The skin consists of mouth (orifice), neck, kharaa (a bar wood on which the neck of airag-skin is fixed, the decorated piece of bar is attached to a special slat) corner, body and cords. First we remove hide’s filament; then we dehydrate it in the wind. Then we fumigate it; in such a manner it becomes white leather. We double and cut the white leather and turn the surface of white leather into the inside and place narrow strip of cloth between two leathers and piece together. The three pieces are stitched. In such a manner airag-skin is made. Airag-skin can hold 40-100 liters of milk beverage. The mare’s milk is fermented. We add some yeast to the milk and produce airag which is the fermented liquor from mare’s milk.

Paddle

Airag-skin needs paddle and wooden cask. The paddle plays important role in fermenting airag and khoormog (milk beverage of mare-camel). The paddle is long-handled which is furnished with bored blade of board or bored spoon shaped blade of root. There is a portable paddle which can be assembled or dismantled. The bored paddle can stir the milk of animal and crush globe-shaped ghee (clarified butter). This accelerates the fermentation and refines the beverage. The stirring of airag and khoormog is very ancient method of the Mongolians who used the decomposition process of organic substance for their life.
Mongolian traditional food is adjusted to the condition of way of life. It can be divided into milk products, meat or meat products, and vegetable or green products. Mongolians produced over 3,000 types of food and beverages. Let's take samples.

Milk skim

This is a type of dairy product. It doesn't need much skill. It is popular among Mongolians. It is tasty and nourishing food rich in calories. Mongolians pour the milk of an ewe, nanny-goat, cow or yak into cast iron pot and boil it on a cow-dung fire. We then ladle the scalding milk into the cast-iron pot in haste until frothiness. The milk froth rises. Then we cool the scalding milk gradually. The milk froth is coated over the cooled milk, which sits overnight. The coating solidifies the thickness or thinness of the coating, which depends upon milk's creaminess.

Then we separate the milk coating or milk skim from the pot and skim the coating and fold it in a half moon shape, it is called ᠠᠷᠥᠮ (milk skim) on the wooden slab. We consume it as fresh or dry at summer or consume it in winter. We also freeze it. We produce ghee from milk skim by rendering it and make diverse food by mixing the ghee with agriphyllum, Gobi-rhubarb, sphallerocarpus gracilis, cynamorium and alpine bistort.

We also mix the ghee with the barley flour, millet and rice. Also the milk skim is mixed with cherry berries and other berries and boiled curds of ewe milk. There are varieties of dairy products such as ᠡᠨᠥᠬᠠᠰᠥᠬᠠ (mash), ᠡᠭᠠᠰᠠᠭᠠᠮᠥᠯ (jelly), ᠠᠥᠷᠥᠮᠭᠠᠧ (paste) and ᠪᠬᠠᠯᠢᠮᠠᠭ (rendered cream).
INTANGIBLE CULTURAL HERITAGE OF THE MONGOLS

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Boiled curds

Mongols milk cow, ewe or nanny goat and boil the milk gently. Then they curdle the boiled milk. Curdled milk releases whey. Then it is boiled in the whey until the whey is absorbed away. Mongols scatter the boiled curdles on the rack to dry and store them for winter use. They also mix the boiled curds with cream or milk skim and eat it. The boiled curd are a combination of all the good qualities of dairy products. They are the nourishing food. Only Mongolians make these kinds of products from milk. The boiled curds are good treatments for chronic troubles of gall and liver.

Oblong fritter

Mongolian people ferment clotted milk from cow, ewe and nanny goat and distil milk-vodka. The cheese curds are separated from the whey in a gauze sack. The separated cheese curds are called aarto. These cheese curds are squeezed in square and sliced into oblong fritters by wire and dried out on the rack. These are called süün khuruud (oblong fritters), and they can be kept for a long time. These are dainties not only for young people, but also for old people by their taste and nourishment.
Limb meal, saddle of mutton

Mongolians often make meals by boiling the limbs of large or small creatures which are then combined with fat. Plano Carpini, a thirteenth century emissary from the West, attended the celebrations associated with Güyük's accession to the throne and noted that when the Mongolian invited him to the pavilion, they treated him with salt-less dried meat with pickled onion. This is evidence that Mongolians dried meat without salt. Instead they used separate pickled onion. From ancient times the Mongolians made meals by boiling dismembered limbs or pieces of mutton and treating their honorary guests or visitors at the feasts or weddings. Such Mongolian meals are divided into those in which the whole carcass is prepared. We take off the internal organs and pluck the hair of sheep or goat carcass. Then we stew the whole carcass, cover it with the ghee, and offer it to the feast. Another type of meal consists of pieces of mutton, goat, and seared shanks. It is possible to add some limbs to the above. This is offered at the ceremonies surrounding a new ger warming, wedding, lunar month holiday and commemoration of the elder's birthday. Honorary meals consist of head, tail fat, shoulder and four long ribs, shinbones and rectum. These are used for the great feast. Other types of meals consist of a shoulder and four long ribs.

Shoulder and four long ribs

This is boiled shoulder and four long ribs. This is considered to be sacred food. It is mentioned in the historical resources that Mongolians offered this food to the French missionary Rubric in the thirteenth century.
Shin-bone preference

The shinbone is one of the preferable limbs for the Mongolians. This is a very ancient custom. If you eat to the dullness, you can be a dullard. This is a famous saying. Mongolians prefer the normal fill of a child’s tummy. Zanabazar, the first grand lama of Mongolia, used to eat only one shin-bone a day. Mongolians believe that if a mother eats a shin-bone after her delivery of baby, she can get strength easily. That is why mothers eat shin-bone’s muscles and drink its stock; Mongols wash the new-born babies with its stock. One should never break a shinbone. But if a baby’s ears ache, we boil the marrow of a shinbone and drop it into the baby’s ears. The ailing of ears stops. This is a traditional. Except for these, we let married couples hold a shinbone and stand up them toward the rising sun and utter:

Homage to the rising sun
Homage to the shinbone
Homage to the solemn bond of our four parents
We offer meat including the shinbone to the altar.

There are many things concerning shinbone in Mongolia.

Steamed dumplings *buuz*

*Buuz* is a delicate food together with *khuushuur* (meat in a fried pastry) *tsoomoi* and *byanz*. They are offered to the visitors. The filling of *buuz* consists of minced meat with fat seasoned with salt, onions, garlic, allium mongolicum and chives. We cook the dumplings in a hot steam.

Sausage of colon

There are many traditional sausages in Mongolia, including *tsagaan shavai* or sausage of colon. This is made from seasoned meat and blood and stuffed in a tube of colon (gut). But *tsagaan shavai* is sausage made of the dotted blood of horse or ox mixed with flour and salt seasoned with onion and garlic, stuffed in the colon of horse or ox. It is boiled in salty water. If you do not over-boil it, it is a soft and tasty sausage. It is necessary to slice and eat the sausage when it is lukewarm.

**HURGAN BANTAN**

*Sort of flour gruel*

*Bantan* is meat broth with very little flour pellets. This *bantan* is called *khurgan bantan* (lamb gruel), *khonin bantan* (sheep gruel) and *ükher bantan* (cow gruel). The meat of *bantan* is powdered or chipped. The flour of *bantan* is formed into tiny pellets. *Bantan* is seasoned with onion, allium mongolicum and german garlic.

The missionary Roubruck noted down that “*Mönkh Khaan was having bantan; it seemed that he had a hang-over when he entered his room”. This means that the Mongolians have had this food from ancient times. It was probably a privileged provision.
Snake shaped cake

Mongolians make diverse kinds of flour cakes, before the Lunar New Year holiday or a wedding. First, we make coiled snake shaped cake. It is an old custom. This is the test of flour and its viscosity, kneading and consistence and of rendered tallow in which cakes are boiled. It also expresses its meaning to subdue evil spirit which might enter the flour.

Patterned cakes

Patterned cake is one of the national and traditional cakes. This cake is made of good wheat flour mixed with milk, cream, ghee, brown or white sugar and nut-meg. We make the dough and knead it until it has good viscosity and consistency. Then we roll the dough into flat flour slab and cut it into oblong pieces; we then press this oblong piece upon the patterned mould. Then these cakes are boiled gently in the classified ghee on the fire of the chips of cow.

The first cake mould with swastika pattern was created by Zanabazar, the first grand lama of Mongolia. This mould is kept at the Gandan monastery which is used by the monks of Gandan monastery for making a few pieces of flour cakes every year. There is a saying:

There is no cake other than samnaa (this is a cake that is boiled).

There is no sign of honour than sambai (a gauzy piece of sacred scarf).
**AIRAG**  
*(mare’s fermented milk)*

Mongolians start tethering foals and colts on the tiger day of summer. We stop tethering foals and colts on the dog day in autumn. There is a feast for fermenting mare’s milk within three days after tethering foals and colts. There is also a feast for when we stop tethering foals and colts in autumn.

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**BOODOG** *(Sweal)*

Boodog is a delicacy in Mongolia. We treat our guests with it. In order to make boodog, a goat is choked without cutting the pit of stomach of goat. All the bones and entrails of the dead goat are removed through the neck skin. Then seasoned meat is stuffed through the neck into the boneless skin. In such manner, the hot roundish stones and seasoned meat are stuffed alternatively. The seasoned meat consists of onion, allium mongolicum and pepper. Then a bit of water is added into the boneless skin. Then we tie the neck of the boneless skin with rope of horse’s hair up tightly and place the boneless skin on hot cow dung, turning it in various directions. Those hot roundish stones roast the meat and its skin. We place it on the hot embers and wash it with water. During these periods we take vapours from the neck of the boneless skin. The taste of this meat is delicious; its stock is good for those suffering from mental fatigue. It is good for health if you roll the warm stone on your fingers balls.

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**KHORKHOG** *(Meat cooked in the rumen of sheep)*

This is also a delicacy. Meat is cooked in the rumen of a sheep or goat. The animal’s rumen disembodied and cleaned. We pour a little water into the cleaned interior and stuff the boneless meat with salt, onion, red pepper and allium mongolicum. Also hot stones are stuffed into the boneless meat seasoned with condiment. The mouth is bound with the cord of hair tightly. Then we place the meat with hot stones on a soft fire of cow dung or on hot embers, which cooks the meat. Handling the warm stones after the meal can help to remove your fatigue just like sweal, and its stock (broth) can be drunk for one’s health.
The mare’s milk is fermented by churning. This fermented mare’s milk is called airag. The airag emits a delicious smell and its taste can make your mouth water. Every Mongolian loves to drink airag. Both males and females, including children, can drink airag by the bowls, from morning to evening. A bowl for airag holds 1 to 1.5 litres of liquid. In order to make airag, we use the airag skin of the previous year. We hang the soaked airag skin from the base of the ger roof and pour milked milk of mare into the hung skin and ferment the milk with the dried yeast of the previous airag. Then we churn the milk in the skin many times. The churning accelerates the fermentation of milk. The liquid can be churned 2,000-4,000 times. If you churn many times, you can make a good blend of fermentation. Airag plays roles of quenching one’s thirst, satisfying one’s hunger, and treating one’s illnesses because its calories and nourishment. It has essential bio active constituents of and improves their metabolism. The airag treatment was and is famous for curing chronic illnesses, heart and lung troubles, stomach illnesses, rheumatism, back trouble, scurvy and dropsy.

Mongol tea

Mongolians make a tea in various ways. We boil the water for tea and add powdered tea to the boiling water and keep it on the soft fire for two minutes. Then we blend the boiling tea with milk and salt. We ladle up and pour back the blended tea in a flurry. We call tea as five dainties. They are water, salt, milk, ghee and tea. We melt ghee or fat of sheep’s tail and add millet in the cast-iron pot and fry them. Then we pour hot plain tea without dregs, blend it with milk, put the lid on the pot and keep it for a while. Then we season the boiling with salt and soda. Then we pour it into a kettle. This is called hitstei tsai or tea with various mixtures. This is thicker and oily tea. It can remove one’s fatigue and satisfy one’s hunger. Mongolian tea is called as, üisen tsai (tea in corky tub), bortstoi tsai (tea with pemmican), torguud tea, tea with ravioli, tea with nettle and so on. We have many traditions to make a tea. Let’s take an example.

Churned tea

We brew up tea blended with milk, salt, soda, ghee, and barley flour and pour it into a wooden churn and churn it 60-70 times. In this process there is a good blend of ingredients. But it cools. So we pour and boil the blended tea into the hot pot. We pour it into a kettle, warm it, and drink it. This tea is tasty and nourishing. This tea is good for health. The tea made with wild-rose is good for curing scurvy. The tea with wood bark is good for one’s heart. The tea blended with the powdered liver of wild sheep is good for the human liver.

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