

THE LIQUOR FROM LUZHOU AND
THE SECRET OF THE EARTH CELLAR

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CATEGORY: COOKING, FOOD AND WINE – WINE AND SPIRITS

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LEGEND HAS IT that the first Chinese who brewed an intoxicating beverage was named Du Kang and lived during the Eastern Zhou dynasty (770-256 B.C.). Many stories are told about him, including the fact that he became famous for his brew after donating a batch to the emperor. He praised the drink, declaring that it stimulated the appetite and restored his energy, and immediately afterwards dubbed Du Kang "an immortal of wine". Moreover, it is told that a man who had taken a liking to wine visited Du Kang's wine cellar for a more thorough study. After many containers and even more words of praise, the man finally wished to pay, but was not permitted to by Du Kang, who instead asked him to pay in three years and in accordance with the drink's true value. Smelling of alcohol, the man returned to his home and fell into a deep stupor for three days. His family, who thought he had died, mourned him and allowed him to be buried. When Du Kang came three years later to collect his payment, the family accused him of murder and demanded that he pay with his own life. Instead, Du Kang responded with a smile that they should instead dig up the grave and open the coffin. They did so and the man who had been thought to be dead sat up and shouted in a high voice: "What a brew! What a brew!"

"Smelling of alcohol, the man returned to his home and fell into a deep stupor for three days. His family, who thought he had died, mourned him and allowed him to be buried. "

Several temples were built in honor of Du Kang, and his name became synonymous with the drink. Cao Cao writes in a poem that if you have a difficult time forgetting your problems and you are filled with sorrow, then only Du Kang helps.

Another tradition behind the discovery of the wine brings us back to a cook for emperor Yu of the Xia dynasty (probably around 4000 years ago), who supposedly soaked rice in a clay pot and then forgot about it. When he much later found the pot again, the rice had been transformed into wine, and when he tasted it he found that it was good and that the more he drank the happier he became. Finally, he broke out in songs of joy. Emperor Yu was also got to taste the brew and he was also very excited, and he had the cook to produce large quantities for a significant event. He soon realized the value of the brew. Even the most stubborn of opponents yielded after just a couple of drinks. But already the following day he also became aware of its disadvantages. Officials no longer had the energy to work since they had hangovers, so he quickly issued rules regarding the drinking of wine. Wine was to be served in small cups and not in soup bowls. Nobody would be allowed to drink on an empty stomach, and when people drank they were required to eat as well and participate in some sort of exercise. The latter is, perhaps, an explanation to the popular finger games that Chinese often entertain themselves with while drinking.

Texts from the Zhou dynasty (1040-56 B.C.) mention four kinds of alcoholic drinks - namely *li*, *lào*, *láo* and *chang*. More than likely, they were all fermented, and with the exception of *lào*, which was probably made from the milk of some mammal, all were made from grain, primarily millet. We know for a fact, that fermented millet drinks were utilized during the Shang dynasty (ca. 1500-1400 B.C.). Descriptions in texts and archeological finds of drinking cups in bronze and ceramics clearly point towards the Shang nobles' devotion to these drinks. Archeologists have even found what they believe to be a brewery, which can be dated to Shang.

Several types of drinking vessels from the Shang dynasty also occur in the Neolithic Longshan culture, and the existence of intoxicating beverages can clearly be dated to that time. Whether or not they go as far back as the Yangshao culture is still a controversial question among archeologists. Moreover, it works very well to drink alcohol out of a large bowl with only a spoon to help, a tradition still practiced in the city of Liuzhou in the Guangxi province.

A good yeast recipe

Already back in the Shang dynasty, they differentiated between two kinds of yeast *qu* for stronger wines and *nie* for weaker ones. It is also possible that they still made use of auto-fermentation. In Jiang Tong's Wine edict from around 300 A.D., you can read how "leftover cooked rice that is put in a mulberry garden will, after a period of time, produce heat and smells of alcohol."

In Jia Sixie's agrotechnical classic, *Qimin yaoshu*, which was written during the Eastern Wei dynasty between the years 534-550, the production of wine and necessary yeasts are described. Yeast is one of the most important factors in Chinese alcohol fermentation, and since that is what gives drinks their special characteristics, a more detailed description could be interesting. The following is one of the ten recipes that is provided for making one of the eight yeasts that are described in *Qimin yaoshu*:

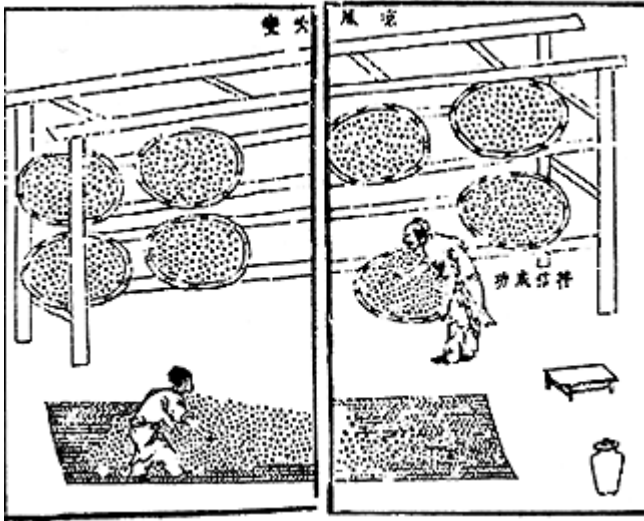
One *hu* each of steamed, of roasted, and of raw wheat are taken. The roasting of the wheat should be stopped at the point when the wheat turns yellow, and [care must be taken] not to char it. The raw wheat should be selected from the finest kinds. All of the three kinds of wheat are ground separately to a fine state. After the grinding they are mixed together.

Before sunrise on the first day of the seventh month [roughly, August], a boy who puts on black [? blue] and faces *sha ti* [the west], is sent to draw twenty *hu* of water. Nobody else is allowed to touch this water. If this is too much water, the unused portion may be discarded but it must not be used by anyone. During the mixing of the ferment and the water, the workers are to face the west. Only the very strong are to be employed for this mixing. For the caking of the ferment male children are to be employed, and they too will face west. No dirty person is to be employed, and no women are allowed near the caking. On the day in question the workers will utterly avoid the bedroom.

[The ferment is made] in a hut which is roofed with thatch [straw], not with tiles. The earth must be clean [i.e., firmly packed], and no [loose] dirt is allowed to appear. There must be no damp spots. It is then divided into squares with footpaths so that four alleys are formed. Images are made out of the ferment and are placed in the alleys. Some of the images are set to be the kings of the ferment, and there are five kings. The cakes of ferment are then arranged on the earth side by side along the footpaths. After that, one person from the owner's family is chosen to be the master of ceremonies. Neither servant nor guest may serve as the master. The kings [of the ferment] are given wine and ham in the following manner: The kings' hands are moistened and made into bowls. Wine, ham, broth and pastry are put into these bowls.

The master of ceremony then reads the sacrificial speech three times. Everyone kneels twice to the house [straw hut]. The wooden door is closed and sealed with mud to prevent the ingress of wind. After seven days the door is opened, the cakes of ferment turned over, and the door again sealed with mud. After another seven days, the cakes are piled up and the door is again sealed to prevent the wind from coming in. After another seven days the cakes are taken out [from the hut] and are put into an earthen jar the mouth of which is sealed with a cover and mud. After another seven days a hole is made in each of the cakes and they are strung together. The cakes [in strings] are exposed to the sunlight. After they are perfectly dried, they are then taken in. A cake has a size of about two and a half *ts'un* (inch) in diameter and nine-tenths of a *ts'un* in thickness.

The eight kinds of yeast described in *Qimin yaoshu* are all basically used in the same manner. Heat-treated grain and pure fresh water are used. It should be stored in a dark room, under even temperature and humidity. The yeast cakes were turned regularly to allow equal opportunity for the mold to grow on both sides. After these cakes were aired out and dried in the sun, they could be stored for up to three years, ready for use.



Drying yeast. From "Tiangong kaiwu", Ming.

A dark and airtight room meant an absence of short wavelength light, that is deadly to microbacteria, and also aided the growth and development of trapped spores from fermentative and biodegrading microorganisms, such as *Aspergilli*, *Rhizopa* and possibly a few other yeast cultures. Based on what we know about the level of technological development at that time, where the text mentions shutting out air or wind, this was probably only to counteract drafts. The clay that was smeared onto the walls of the room, made it possible to maintain a more constant temperature and humidity level. Although this no doubt also protected against drafts, it probably did not hinder a proper airing. It is also possible that microorganisms within the clay on the walls and floor had a beneficial effect on the yeast cakes. Under such ideal conditions for incubation, maximum capacity would be developed and the entire cake would be permeated with the microorganisms' mold. Drying in the sun probably killed off the outer mycelium layer, but left the inner portion of the cake active for a long time to come. The leaves of *Artemisia* and *Xanthium*, which are mentioned in some of the recipes, protected against undesirable side effects, or perhaps they were quite simply a graft of relatively pure colonies of fermentative microorganisms in their uncultivated forms.

In some recipes, the benefits of letting a cat be shut into the room were also mentioned, maybe for protection against mice. While the strict purity regulations no doubt had ritual significance, they were undoubtedly also preventing the development of undesired mold fungi.



Washing the rice.

As long as you had a good quality yeast, the actual brewing was simple to perform. In *Qimin Yaoshu*, about forty different alcoholic drinks are mentioned, not including various medicinal wines and elixirs. The basic production principles are very similar. Various kinds of grains are steamed - such as gluten-rich and ordinary varieties of millet, rice, foxtail or broomcorn millet or *Setaria* - sometimes shelled, until it is all well cooked.

The grain is then spread out to cool, after which it is poured into the water where the yeast has already been dissolved. The function of the yeast is to produce enzymes, which break down the starch in the grain into simple classes of sugar, converting them to alcohol and carbon dioxide. All that remains of the grain kernels are the husks, called flowing ants, *fuyi*. This far in the fermentation process one adds grain that has cooled down. These additions can be repeated nine or ten times and are called *tou*, "throw-ins". Once the alcohol in the liquid is so concentrated that the grain can no longer be transformed, the brew is ready. The mixture of liquid and untransformed grain is called *laozao*, undecanted wine, and *qingjiu*, "clarified" wine, when it is drained. The most important part of a successful batch is to maintain optimal temperature, which facilitates reproduction and normal functions among microorganisms. Mostly, brewing was conducted during the cool part of the year. In *Qimin yaoshu* the recommended period was the time between when the leaves fell off the mulberry trees until the end of winter. This might be explained by the fact that there were more ways to keep a batch warm than to cool it down. It was possible to cover with fabrics and silk wadding or to place straw and hay around the pots. Another alleged method was to fill up a clay pot with hot water, seal it well, then cook it up again to get it as hot as possible before placing it in the fermenting mixture.

Towards stronger drinks

In *Qimin yaoshu*, however, there is no mention of distillation, which leads one to believe that the process was not yet known. Most likely, freeze distillation was discovered first, and by accident. Perhaps a container with brew had been standing in the cold and frozen and someone had discovered the purer alcohol, which, of course, has a much lower freezing point than water.

There are several sources from the seventh century that describe an "outfrozen" wine, which was donated to the Tang court as a tribute from tribes in Turfan. In the *Bowuzhi*, (appr. "Comprehensive Treatise on the Investigation of Things"), Zhang Hua (290 A.D.) mentions a wine that lasts as long as ten years, and when people drink it, they become intoxicated for several days. Could this have been what Du Kang was experimenting with? This sounds stronger than ordinary wine; perhaps the freeze refinement can be dated back as far as third century.

During the Tang dynasty (618-907), contacts with the Turkish and Mongolian peoples were frequent, and the concept of "sweating" up the wine is found in the literature. One could buy *alaji* in wine shops. *Halaji* or *alaji* comes from the Mongolian *araki*, which was the name of the distilled drink that the Mongols made from fermented mare milk, so-called *koumiss*. Franciscan monk Vilhelm of Ruysbroek mentioned this in his notes from a trip to Mongolia in the 13th century. The Mongolian distillation pan, which has a collection bowl inside, is somewhat more primitive than the Chinese model, which has a drain pipe coming out of the pan. The Chinese model appears to be a modification of the so called Mongolian, but it is just as possible that the latter was originally a Chinese discovery, that was later abandoned for the more efficient model with a drain pipe. Perhaps the "outfrozen" alcohol was an inspiration for Taoist alchemists who had long experimented with the extraction of various essences. "Outfrozen" alcohol must have struck them as extremely *yin*, and perhaps they had set out to discover its opposite, extreme *yang*, by using heat.

Unfortunately, it is impossible, based on the literary sources, to determine with certainty when the first successful distillation of alcohol occurred. There are not very many concordant accounts, and the unclear terminology makes the problem very difficult to solve. For example, two different drinks are frequently mentioned, *shaojiu*, burned brew, and *huojiu*, fire brew. But since we know that these drinks were usually heated up prior to drinking, we cannot be certain as to what "burned" or "fire" is referring to. Making things even more difficult is the fact that today the general term *niang*, meaning to brew, is used to describe all kinds of alcohol production. Even the general term *jiu* is confusing, since it is used to describe beer, wine, rice wine and spirits.



A Chinese distillery of spirits.

In Zhu Gong's *Beishan jiujiing* (the Northern Mountain's wine classic), written in 1117, during the Song dynasty, there is a detailed description of the distillation technique. Several researchers consider the detailed descriptions to be an indication that the technique was known significantly earlier, dating the technique to the seventh century. This could very well be. Theoretically, all the items necessary for alcohol distillation already existed during the Yangshao culture, but one could just as well imagine that the reason for such a detailed description was that it was a novelty. The oldest archeological find that has been made of a distillation apparatus occurred in 1975 when one made of copper was found. It was subsequently dated to sometime between the years 1161 and 1189, from the Jin dynasty.

A passage in Li Shizhen's classic medical text *Bencao gangmu*, says the following:

The production of burnt wine (*shaojiu*) is not an old art. The technique was first developed under the Yuan dynasty [1271-1368, ed. note]. Strong wine (*nongjiu*) is mixed with sediments (*zao*) and placed in a distillation pan. Once it steams (*zheng*), the steam rises and a jar is used to gather the condensation drops (*dilu*). All kinds of brews that have turned sour can be used. Today, gluten-rich rice - or regular table rice, ordinary millet or some other gluten-rich millet variety - is steam boiled, then mixed together with yeast (*qu*), fermented (*niang*) in vats (*yong*) for seven days before distillation. This drink is clear as water and has a very strong taste. This is the "dew" of the brew, i.e. distilled spirit.

According to Li Shizhen, it is also apparent that *shaojiu* is synonymous with *huojiu* and *alaji*, that were mentioned above.

All of this would be quite clear if he did not later on, in a comment regarding a quote from Meng Shen's nutrition therapeutic *Shiliao bencao*, contradict the information about the technique being first discovered during the Yuan dynasty. Meng Shen also says that grapes can ferment into wine, and Li Shizhen also says that if one wishes to make this drink stronger, one may proceed in the same way as with *shaojiu*. He further maintains that it was this drink that emperor Wen of the Wei dynasty was referring to when he spoke about intoxication from grape brews as lighter and more pleasant than those from grain. He also says that they already had adopted this method when Turfan was conquered during the Tang dynasty.

What it tastes like

Today there are hundreds of different Chinese schnapps varieties. The so-called *baijiu*, white brew, or *baigar*, the white dry, are distillates made from grain that has fermented in a solid form, hereafter referred to as mash, unlike those made from liquid forms such as grape wines and other fruit juices. The alcoholic strength varies between 55 and 65 percent. They are divided up into groups according to their characteristics. It is primarily the different fermentation methods that create the various characteristics, the largest groups being *qingxiang*, *jiangxiang* and *nongxiang*. Those that may ferment in clay vats obtain a light and transient aroma and are called liquor with *qingxiang*, a light bouquet. An example of this is *Fenjiu* from Shanxi. The kind of mash made with yeasts that have been prepared under high temperatures, which also requires a larger amount of yeast than normally, ferments at a higher temperature. This yeast becomes very dark and gives the distillate a very special character that is comparable to the taste of soy, and is consequently called liquor with *jiangxiang*, soy bouquet. A typical example of liquor with this taste is *Maotai* from Guizhou.



**Sampling
of baigar, "white dry", i.e.
a distillate made
from fermented grain.**

Liquors that are fermented in earth cellars are affected by bacteria in the ground. This creates very special esters, acids and oils which are highly aromatic. Such liquor is called *nongxiang*, strong bouquet. These earth cellar produced so called great ferment spirits are mainly made in the Sichuan province. The three best ones are considered to be *Mianzhu daqu*, *Wuliangye* from Yibin and *Luzhou laojiao daqu*. I shall describe the latter in more detail - partly because the production process is absolutely unique, and partly for subjective reasons. These include its full-flavored aftertaste, its freshness and its light sweetness - in short, because it is very good and pleasant to drink.

The Liquor from Luzhou

In Luzhou, situated a short distance up the Yangzi River from Chongqing, several qualities are produced. The most prestigious of these is the specially fermented *tequ*, followed by *touqu* and *erqu*. All of these are made with so-called great ferment, *daqu*. The division into these categories is a recent one, occurring perhaps in the 20th century.

Earlier, all were known as *Luzhou daqu*. According to Chinese connoisseurs, their most unique characteristic, other than their robust bouquet, are the extremely long aftertaste that is reminiscent of a fresh apple. *Tequ* is also the model for all distillates with a strong bouquet, and the term *Luxiang*, i.e. Lu taste, is often used as a synonym for *nonxiang*.



Luzhou is situated in the province of Sichuan, a short distance up the Yangzi River from Chongqing.

Tequ is a handicraft product with a several hundred-year-old tradition. A great deal of experience and skill is required in order to master the complicated technique. It is made all year round, but since the quality of raw materials and the temperatures both change, it is difficult to maintain an even quality. Moreover, various cellars have different bacterial flora, which make the mashes taste different. This explains why liquor made at the same time might taste so different. For example, liquor from one cellar can be full-flavored, have a pleasant aroma and a satisfyingly long aftertaste but not be sweet enough, while liquor from another cellar can have enough sweetness but not such good aroma, etc. In order to develop a standardized final product, distillates are stored, tasted and rated on a scale from one to twenty. Those which receive more than 16 points are considered *tequ*, those between ten and sixteen are *touqu*, and those under ten are *erqu*.

It is uncertain how far back the production of *Luzhou daqu* goes. Zhang Wentao, 1764-1814, a poet who highly appreciated intoxicating beverages and who no doubt drank many a toast during his travels, wrote in a poem during a trip up the Yangzi in 1792: "of everything that I have tasted, Luzhou is the best."

The oldest earth cellar still in existence today is more than three hundred years old. In the chronicles of the Lu hundred, *Luxianzhi*, in the food products section under the heading Spirits, you can read that two types of alcoholic beverages were made here. One was made only out of *gaoliang* (i.e. Indian millet or durra) and wheat and called *baishao*, i.e. white burnt, and another type was made of *gaoliang* and wheat and called *daqu*. It also

says that at the end of the Qing dynasty (1644-1911) there were more than three hundred households manufacturing alcohol, including ten that had old cellars. The best, clearest and strongest liquor was made by those who had the oldest cellars.

The best known producers were Wen Yongsheng and Tian Chengsheng. One of Wen's descendants, Wen Xiaoquan, said in 1949 at the age of eighty, that the family oral tradition told how Wen Yongsheng had started up a liquor distillery in Luzhou back in 1792, and that in 1868 the family bought ten *daqu* cellars from another old distillery through one of Shu Juyuan's renters, one Mr. Rao Tiansen. He was originally from Shaanxi and had become independent after having first worked as a master for Shu Juyuan. These ten cellars had already been used by the Shu family for five generations. The six oldest, which at the end of Qing were remodeled into four, were built around 1750.

In the Luzhou area, accounts say that in the Shu family there was a military candidate who later became a military officer and during the beginning of the Qing dynasty resided in Lüeyang in Shaanxi. He apparently so liked the liquor of that area that when he moved home to his birthplace Luzhou, he brought with him not only a master and craftsmen, but even clay from Lüeyang to build cellars with. The clay that was later used for the cellars came from Yingtougou, a ditch where the clay had the appropriate color and was suitable for building a cellar with. Since the Longquan spring, which had good, fresh water, was situated in the immediate vicinity, even more cellars were built in Yingtougou. They improved upon the fermentation and production methods from Lüeyang, creating the unique Luzhou method. This tradition is supported by Shu Juyuan's notes about the rebuilding of the Longquan spring in 1807 which provides us with a good foundation for believing the information about a more than three-hundred year tradition.

Over a long period of time, there were no significant developments in technique. Times were hard in the early 1900s when unreasonable taxes were levied. The product was falsified, the level was raised by up to 80 cm above what is known as the cellar's "hat", i.e. the level that could not be exceeded, if the cellar would have the maximum effect on the mash. In 1949, there were only 234 cellars remaining in Luzhou, 53 were built between the period 1650-1911 and had been combined into just 44. The remaining 181 were built between 1912-1949. Between 1951-1955, the Sichuan province established two local, state-run liquor plants in Luzhou: Luzhou's liquor factory and Luzhou city's spirits distillery. Old cellars were remodeled and new ones were built. In 1959 there were a total of 453 cellars.



A few modern samples of *Touqū*. This, together with *Teqū*, are the two most elegant qualities of Luzhou liquor.

Workshops were expanded and laboratories were built. Both the production and the distilleries were modernized. The workers, who now perform a semi-handicraft, do not simply pass on the old traditions, but have also developed several new methods, such as "refermentation" and adding husks, bran and chaff into the mash. Attempts at accelerating the ripening of the mash have been successful and the quality has been increased in many respects. Production has increased threefold. The grain used is a gluten-rich *gaoliang* and must not be dried out or in poor condition. In order to counteract extraneous flavours during distillation, grain is selected with great care. Fresh water is used, usually spring water, which has a little sweetness and faint acidity. This favors the conversion of sugar and fermentation. The spring water has a calcium factor of 4.5, which is very suitable for the reproduction of yeast fungi. Now that production has increased, they are also using the river water from Tuojiang. This water is clean and contains few decaying organic substances, has low muddiness, iron content and degree of acidity, along with a calcium factor between 4 and 10 degrees. This is also good water for liquor manufacturing.

When it comes to the special "great ferment", wheat is used, with the same quality requirements as regarding *gaoliang*. In order to produce this yeast, a good knowledge of mold fungi is necessary along with the ability to check them. Originally, yeast was only made during the summer, but in order to take better advantage of the equipment, yeast production is now conducted the whole year around. When judging great ferment, there is an emphasis on appearance and smell. It should be covered with small white dots, and the mold mass should be evenly colored. The better the yeast, the thinner the skin around it. When it is broken apart, you should feel a strong smell of yeast and the broken surface should be completely white.

A very interesting description, especially in terms of the quantities and degree of extraction, can be found in Sir Alexander Hosie's exemplary report from Sichuan at the

beginning of the twentieth century. He describes manufacturing of a somewhat less complicated kind of *daqu*, still it is relevant since the basic principles are the same. Hosie writes:

There is one kind of spirit, called "Ta Ch'ü Chiu," or great ferment spirit, the manufacture of which is, so far as I know, confined to Szechwan. Although it is distilled generally throughout the province, the district of Mien-chu, some 50 miles north of Ch'êngtu, holds the reputation of producing the best spirit, and it is widely advertised on the signboards of the wine shops of Ch'êngtu. I shall describe the process of manufacture as carried on in a distillery with which I am acquainted and in doing so my figures will represent the actual quantities of material and output used and obtained at one distillation.

Unhusked barley, millet (*Holcus Sorghum*, L.), and Indian corn, each weighing 880 lbs., are separately ground fine and afterwards well mixed. To this are added 133 1/3 lbs. of rice husks, and distributed evenly throughout the ground grain. The mass is then divided into three equal parts and placed in three wooden steamers over iron pots each containing about 60 lbs. of boiling well-water. After an hour's steaming the grain is removed, the contents of each steamer being piled up separately on a clean concrete floor. A hollow is made in the top of each pile, and the whole of the boiling water from each pot is poured into its respective pile. The grain must neither be too dry nor too wet before future manipulations, and the test is made by a workman taking tip a handful and rubbing it together close to his ear. If the sound is satisfactory, each pile is levelled on the floor with flat wooden spades, and allowed to remain till cool. It is then shovelled into drills and in the hollows between three and a half bricks, each weighing 12 lbs., or 42 lbs. of pulverized ferment, are spread and thoroughly mixed with the grain, which formed one pile. That is to say, 126 lbs. of ferment are required for the whole quantity under treatment. The grain is then packed in three separate concrete pits, each of which is covered with an inch-thick layer of clay mixed with paddy husks for binding purposes. It remains there for a month untouched, when it is removed and the contents of each pit spread on the floor and mixed with 176 lbs. of ground raw barley, millet, and Indian corn in equal proportions, and 26 to 27 lbs. of paddy husks. The stuff is now ready for distillation and is placed in the steamer fitted with a sloping wooden lid having a round opening at the top whereon rests the leaden condenser with its overflow pipe and draining tube. The steam rising from the grain in the steamer is condensed by the cold from the water in the condenser, and flows as spirit down the draining tube into an earthenware receiver. In two hours the whole of the spirit has passed over, and the contents of the steamer are removed and again packed in an empty pit for another month in the method described above. At the end of this month raw grain and husks are added as before, and it is again distilled. This is done a third time, but for the fourth and final distillation neither grain nor husks are added. At each of the four distillations 35 catties, or 46 2/3 lbs. of spirit are obtained, so that each pit yields 140 catties, making the total yield of the three pits in which the grain was originally packed 420 catties, or 560 lbs. That is to say, 4,224 lbs. of grain, 240 lbs. of rice husks, and 126 lbs. of ferment, of the value of under T. 60, yield 420 catties of spirit worth about T. 84, leaving a balance, of over T. 24 for fuel, labour, and profit.

This, however, represents the yield during the cooler months only, for in hot weather condensation is difficult, and a certain quantity of spirit is lost.

The distillation technique used for *Luzhou daqu* is a so-called mixed distillation with uninterrupted fermentation. Mixed distillation means that one mixes the fermented grain with fresh *gaoliang* flour and distill this together. The advantage is that the grain itself contains esters, ketones and the like. The addition of *gaoliang* flour results in a sweeter taste and a better aroma than methods that use *hongzao* for example.^[NOTE] Moreover, the added flour absorbs a portion of the soured liquid and becomes sticky.

When the mash is "redistilled" a large portion of the old mash's acids are boiled off, providing a better chance for further fermentation in the cellar. Following distillation, the fermented grain is put back along with more fresh *gaoliang* flour for continued fermentation.

"Mash stored near a cellar's floor or walls produced a stronger liquor with a more full-bodied bouquet."

This new mash is called *liangzao*, or grain mash, and once it has finished fermenting, it is called *muzao*, or mother mash. Stored in old cellars for months and sometimes years at a time, it is called *wannianzao*, ten-thousand year mash. The mother mash that is not treated with fresh *gaoliang* flour is called *hongzao*, or red mash, and once it has finished fermenting, it is taken out of the cellar and called the *mianzao*, milk mash. This milk mash is then fermented into *qingzao*, or dark mash. This method is very unusual and completely unique in the world. Other methods that are unique to Luzhou include "low temperature fermentation," that the mash is stored, and the long fermentation time. The fact that "old cellar", *laojiao*, is part of the name stresses the great significance that cellars have for the fermentation of the mash and the final taste. In a report written during the 1950s, it was determined that *Tequ* was impossible to distill from mash from any of the old cellars, and that none of the newly built ones yet have produced any mash that was usable for the distillation of *Tequ*. They also said that mash stored near a cellar's floor or walls produced a stronger liquor with a more full-bodied bouquet. This proved, they believed, that the quality of the liquor was intimately connected to the age and nature of the cellar.

The secret of the cellar

So, how do you go about building a cellar and when does a cellar become old?

First of all, it is important to select a site with yellow clay. The cellar floor is then compacted with a soil stamp. The yellow clay used for the cellar's walls must be the kind from Wuduxi, a place situated ten kilometers outside of Luzhou. "Cellar drip", e.g. the yellow floor water from an old cellar, is then used to mix with the clay, which should be very fine and without sand. This mixture is then compacted and applied to the walls. The yellow clay on the cellar walls then goes through a seven to eight month period of change, during which it turns black. Then after one to one and a half years, it begins to whiten and the originally soft clay becomes hard and brittle. After 20 years, the grayish-white cellar walls have become grayish-black with red and green spots. At this point, it is starting to be considered old, but the quality of the liquor improves the older it is. That is why the oldest cellars are the most appreciated.

So what is it in the clay that makes *Luzhou tequ* so special? That mystery now appears to have been solved. After analyzing the mash from the bottom of the cellar, more acids, esters and aldehydes were found than in the mash from the middle of the cellar, while the least amount occurred in the mash in the cellar's "hat". Allegedly this is due to the fact that the combined effect of many self-reproducing fusiform bacilli and symbiotic microorganisms together produced a greater quantity of ethylhexanoate ($C_5H_{11}COOC_2H_5$) in the liquor, and this gives *Luzhou laojiao tequjiu* its special taste.

Once this secret was revealed, they started to prepare the clay manually to provide faster, more efficient fermentation. The liquor that is distilled from mash and aged in such cellars is very similar in taste to *Tequ* and the technique has spread to many different parts of China. Even if the character is somewhat different, due to artificial aging and the fact that climate changes and differences in raw materials occur from one area to another, affecting the taste, it is evident that all of them are of the Luxiang variety.

Once the distillate is finally ready, it is tapped and aged in special pots, *matan* so-called hemp pots. Aging improves the quality of the liquor, making it smoother to drink and providing it with a softer bouquet. Originally, it was only aged for half a year, but today it is aged between one and three years. The regular *daqu* liquor sold in China maintains an alcohol level of 60 percent, while a weaker 55 percent version is sold on export. It was awarded with the gold medal at the world's fair in Panama in 1917 and has been exported to the USA ever since. Mostly, however, it is exported to Southeast Asia, where it is often drunk on ice or used for mixed drinks such as Bloody Mary or with grape and orange juice and a little salt. Preferably, it should be drunk at room temperature in small cups, in order for the taste to be at its best, and should of course be enjoyed together with good Chinese food.

Note: Hongzao was discovered during the Song dynasty (960-1274) and is often used for rice wine fermentation and is a common ingredient in cooking in the Fujian province. Hongzao, "red mash", is grain fermented with "red yeast" prepared from the *Rhodoturulula* fungus. [\[Back\]](#)

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Translated into English by [Henrik Nordström](#).

