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CHURNS AND CHURNING
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CHURNS AND **CHURNING** (Pers. *kara-sāzī*), devices and associated techniques for processing milk into butter. The populations of Persia and Afghanistan are major consumers of dairy products, which, with bread, constitute the basis of their traditional diet. Milk is rarely consumed in raw form but is processed in various ways, depending both on the nature of the animals from which it comes and on ethnic and regional traditions.

There are three distinct ways in which milk is normally processed. In the first it is heated, pressed, and squeezed dry to make cheese (*panīr*). Cheese making is, however, uncommon in the Persian world, except in a few regions where it has become a specialty. These regions include Ṭāleš and Gāleš in the Alborz mountains, where almost the entire output of sheep's and goat's milk is made into cheese (Pour-Fickoui and Bazin, pp. 93-94), and eastern Afghanistan, especially Nūrestān (Balland, pp. 17-19). In most pastoral areas, however, cheese making in the true sense is either completely unknown (among many groups of Turco-Mongol origin; Planhol, pp. 9-12) or seldom practiced; M. Rouholamini (1967, p. 82) has estimated the proportion of milk set aside for making cheese among the tribes of Fārs at 5 percent.

The other two methods of processing milk begin with conversion of the milk into yogurt (Pers. *māst*, Pashto *māstē*; on methods of producing yogurt in northern Persia, see Bazin and Bromberger, pp. 33-35; in Khorasan, Pâpoli-Yazdi, pp. 97-100; in the Zagros, Digard, pp. 195-98; in the region around Kermān, Stöber, pp. 86-87; in the Pamirs, Dor, pp. 249-52). Curds (Pers. *kašk*, Pashto *korot*) and various derived products can then be produced from the

yogurt by means of a series of operations (heating, filtering, salting, drying), depending on regional traditions. Alternatively the yogurt can be churned to separate butter (Pers. *kara*, *maska*, Pashto *kuč*) from buttermilk (Pers. *dūḡ*, Pashto *šlōmbē*). Most of the butter is then heated to convert it into clarified butter, or ghee (Pers. *rowḡan*, Pashto *ḡōṛī*). Most of the buttermilk is consumed as a beverage; the remainder is transformed into curds and related products by the methods used to process yogurt.

Whereas the conversion of yogurt into curds seems deeply rooted in the technological traditions of the Turco-Mongol populations, having arisen in a culture based on herding camels (the milk of which is not suitable for making butter), processing into butter, buttermilk, and curds seems more closely connected with Persian populations. It probably resulted from the insertion of the butter-making step into the Turco-Mongol sequence of operations for producing curds (Balland, p. 17; Kisban, p. 525). It is incontestable that making butter from yogurt by means of churning is most common among herders in Persia and Afghanistan, including Turco-Mongol groups that have adopted it fairly recently.

In the Persian world a wide variety of churns and churning procedures is known. Furthermore, there is no systematic correspondence between the type of churn and the material from which it is made, on one hand, and the actual churning motion, on the other. For example, the skin bag can be used either open and stationary or closed and in motion. Churns of wood or pottery are equally adaptable to different methods of operation. It is convenient here to treat first the forms and materials of the containers. A more satisfactory typological framework can then be constructed on the basis of churning procedures.

Containers: forms and materials. 1. Skin bags (Figure 39/3, 4). The most commonly used churns among nomads in the Persian world are goatskin bags (Pers. *mašk*, *ḵīk*, Pashto *gaṛčka*), which are large enough to permit the processing of 10-12 kg of yogurt and water, which is added in varying proportions. In some regions, for example, the central and southern Alborz, even larger bags are made from the skins of calves or cows (Ferdinand, p. 152; Hourcade and Tual, p. 51; Sotūda, p. 119). The preparation of these bags requires careful flaying of the animals; in some instances the skins are treated to facilitate removal of hair follicles (for Nūrestān, see Edelberg and Jones, p. 84), then tanned by immersion in a solution (among the Baḵtīārī, for example; Digard, p. 114). Finally, the openings are sewn or tied, except for those through

which the bags are filled and emptied or in which a stick is moved up and down to churn the milk. These skin bags, which are easy to carry and can be made without complex equipment, are part of the customary baggage of nomads and also of many sedentary groups (Figure 40; see below).

2. Wooden churns. The distribution of the wooden churn (Pens. *gūpī*) is much more limited, being confined generally to the northern zones. It is sporadically attested in northern Afghanistan and in the Persian Turkman steppe, where it seems to be a recent borrowing; it is more common in the central Alborz (Hourcade and Tual, p. 51; Pourkarim, 1970b, p. 49) and is widespread along the Persian-Turkish border, an area of transition to the vast zone encompassing the territory from the Anatolian plateau to the Caucasus, where it predominates (see Lisitsian, pl. XCI; Makal, pl. between pp. 32-33; Klaey, p. 355). One type of wooden churn is cylindrical (*tolom* in the central Alborz; see Figure 39/5); it is hollowed out of a tree trunk and provided at the base with a hole closed by a plug (*tolom-pārs*) or by a tap that permits the buttermilk to be drained off at the end of the churning operation. It is this type that predominates in the Kalārdašt and Fīrūzkūh regions (central Alborz), where it is made by the shepherds themselves from willow trunks. Its dimensions (1.5 m high and. 3 m in diameter) permit the churning of large quantities of yogurt, up to 30 kg at a time (see details and diagrams in Hourcade and Tual, pp. 53-53; Pourkarim, 1970b, p. 49). Other types of wooden churns are made from staves held together by metal bands; they are conical in form on the Turkman steppe and slightly convex in profile on the borders of Anatolia. Made by carpenters and sold in the *bāzār*s, they attest a more elaborate technology, which resembles that of cooperage and is common to many populations of central and northern Eurasia.

3. Pottery churns (Figure 39/1, 2, 6). Pottery churns are marginal in terms of geographical distribution. There are two main types, which correspond to two distinct methods of processing: narrow-necked jars and wide-mouthed vessels, the former closed during the churning process, the latter open. The first type is attested in the Kabul region, in Uzbek and Tajik settlements of northern Afghanistan (Pers. *jag*, *jak*, *ḵamcək*, Pashto *jag*, *čatəy*, *matəy*, Uzb. *dōğkōza*, Ishkashmi *ḵombo*), and in the western and central Alborz in Persia, where it is called *tolūḵ* in the Ardabīl region and Turkicized northern Ṭāleš, *nerḵe* or *nehe* in western Gīlān, and *dūšān* in eastern Gīlān and western Māzandarān. The distribution area for these pottery churns extends east as far as Soviet Central Asia and west as far as Georgia (Ferdinand, p. 156, citing Peshchereva, p. 63).

The majority of them are elongated, with a maximum height of 80 cm (Figure 39/2; cf. diagrams and photographs in Bazin and Bromberger, p. 34 and pl. IIIB; Hourcade and Tual, p. 53; Sana, appendix), and provided with handles and small side openings; the woman grasps the handle to shake the churn and occasionally inserts a stick into the opening to gauge the progress of the butter. The globular jars of eastern Gīlān (Figure 39/1) and the bell-shaped ones of the Kabul region (Ferdinand, p. 149, photograph 9) are smaller (maximum height 50 cm) and usually have protuberances on their interior walls to enhance the effect of the movements by which yogurt is transformed into butter. Whatever their forms and dimensions, these churns are made and sold by specialized potters using the wheel (women in Ṭāleš, men in Gīlān and on the Ardabīl plain; Bazin and Bromberger, pp. 75-78). The second kind of pottery churn, with an evened rim (Figure 39/6; Pers. *čarḡdēg*, *mandano*, Pashto *kaṭəy*, *manḍanū*, Roshani *parzanej*, Wakhi *purnəč*), is common in northeastern Afghanistan; the population there is in direct contact with an area stretching from northwestern India to Nepal, where this type of vessel and the associated churning technique are deeply rooted (for Afghanistan, see Ferdinand, p. 153 fig. 11; for India and Nepal, see Filliozat, p. 321; Bonnemaire and Teissier, p. 382). The container, which can also be a copper pot, is manufactured by specialized artisans in these areas as well.

It is important to note that, even within a single linguistic area, the same lexical units can be used to designate different utensils of the types described, whether simple variants, like *nerḵe* or *dūšān*, which are sometimes round and sometimes elongated pots, or quite distinct types. One example of the latter is *tolom*, which refers to the wooden churn in the central Alborz and to the open bag used with a stick farther east (Figure 39/4), including among certain groups of Persian-speaking Afghans (Ferdinand, p. 157); it thus seems actually to be a term for the process of churning by vertical movement of a stick, rather than for a specific type of object, which confirms the validity of a classification based on operating motions.

Methods of churning. For comparison and classification of traditional methods of churning the motions used are more suitable than the forms and materials of the apparatus. Two general types of operation can be distinguished: those in which churning consists of moving the container (type A) and those in which the contents are moved with the aid of a stick (type B). The second level of classification is determined by the type of motion by which the container is agitated (shaken horizontally or rotated) or by which the stick is moved

(vertically or in a circular motion). Third is the position of the churn, which can be rested on a surface or suspended. These dimensions are combined in Table 42, which reveals the diversity of ways in which a single type of utensil can be used, even though a particular method usually predominates.

Type A. In the simplest form of churning a bag full of yogurt is rolled on the ground or in the worker's lap. This procedure is attested among nomads in eastern Afghanistan and among the Nūrestānīs and the Pāšāīs (Ferdinand, p. 154); it is sometimes used in Persia for churning small quantities of yogurt (as in the villages of the central Alborz; Hourcade and Tual, p. 51).

All pottery churns can be rested on a surface, though the exact procedure varies according to the form: Elongated churns are placed at an angle, resting on a cushion or a bundle of twigs (Figure 39/2), and are either rotated with the aid of the handle or shaken forward and back, as in the mountains of Persia along the Caspian, or from side to side, as in Afghanistan. The globular and bell-shaped jars are held vertically and moved back and forth in a horizontal plane with one hand or both.

The most common method of churning is to shake a skin suspended from a wooden tripod (Pers. *se-pāya*, Pashto *darbalē*, Baluchi *trikar*, all lit. "tripod," and Baḵtīārī *malār*; for Afghanistan in general, see Ferdinand, p. 155; for Baluchistan, see Buddruss, p. 8; for Lorestān, see Black-Michaud, p. 44; for the Papis, see Feilberg, fig. 78; for the northern slopes of the Alborz, see Bazin and Bromberger, p. 34; Hourcade and Tual, p. 53) with a horizontal motion. Less often the churn is suspended from a tent pole (Ferdinand, p. 155), the ceiling beam of a house (Desmet-Grégoire and Fontaine, p. 40), or even from the top of a folding stepladder (in the Armenian settlements of the Zagros; Van Gennep, p. 86, citing d'Allemagne). The means by which the bag is fixed varies according to regional tradition. In Persia, when the skin bag is used, two wooden bars (Baḵtīārī *arqot*) link the forefeet and the hind feet respectively and are connected by a third (Baḵtīārī *čū maškedū* < **čūb-e maškdān*), lengthwise bar (Figure 39/3; cf. Digard, pl. 196, Pâpoli-Yazdi, pl. II/1). A cord is attached to each end of this long bar, so that the entire apparatus can be suspended from the top of the tripod. Sometimes the bag is suspended by the two short bars, and the long bar is omitted (Desmet-Grégoire and Fontaine, p. 40); on the other hand, in Afghanistan the long bar is used alone, and the legs are tied together at each end. All these procedures are intended to hold the churn and to facilitate strong and regular churning movements by the operator, who can work standing up (in northern Persia and Khorasan) or

seated (among the Baḵtīārī, in Baluchistan, and in most of Afghanistan), depending on how high the skin is placed.

A method involving suspending a wooden churn, either cylindrical or with convex sides, from a tripod and agitating it horizontally is less commonly used, though it is particularly effective.

Type B. There are two main types of container in which yogurt is transformed into butter by means of the vertical motion of a stick or paddle: the open skin pouch suspended by cords from a tripod (Figure 39/4; cf. Ferdinand, p. 152; Pâpoli-Yazdi, pl. II/2) and the wooden cylinder standing on the ground, occasionally supported by a wooden frame enclosing its base (Figure 39/5; cf. Pourkarim, 1970b, p. 49). The paddle (*tolom čūb* in the central Alborz, *pīčak* in the Turkman steppe, *pārū* in Fārs) consists of a stick fitted at one end with a round or cruciform plate pierced with holes (for Fārs, see Rouholamini, p. 79). The wooden cylinder is generally covered by a lid with a hole for the paddle shaft, which helps to prevent the milk from splashing out of the container during churning.

Churning with a circular motion, which is characteristic of northeastern Afghanistan, requires a more complex apparatus (Figure 39/6). The container is placed on a cushion (Pers. *bāleštak*, Pashto *balәštak*) or a lattice of branches (Pers. and Pashto *manjīla*) held in a wooden frame (Pers. and Pashto *čāṛčōb*). The paddle (Pers. *pārak*, Pashto *mandanu*, often used for the entire apparatus), which is fitted with a spiral at one end, is inserted into two rings, or a hole in a horizontal plank, fixed to a mount (Pashto *stәn*) that is inserted into the wooden frame; it is thus maintained in a vertical position. A strap (*tasma*) wound around the paddle shaft can be pulled first on one end, then on the other, permitting alternation in the direction in which the spiral is rotated.

Purposes and effectiveness of the different procedures. In order to obtain an idea of the relative productivity of these different churning methods, it would be necessary to have comparative data on the duration and rhythm of the work, the expenditure of energy by the operator, the source of the milk, its butterfat content, and the proportion of water mixed into the yogurt at the beginning, which determines the amount of buttermilk that will be obtained. Such information is lacking, however, and it is necessary to draw more limited conclusions from the few precise data that are available. According to observers, the length of time necessary to churn the contents of one skin bag or one pottery churn holding 10-12 kg of yogurt varies between forty minutes

and two hours (Digard, p. 197; Pâpoli-Yazdi, p. 98; Rouholamini, p. 79). Churning with a paddle in a wooden cylinder seems more productive, for it permits the processing of 30 kg of yogurt in one hour (Hourcade and Tual, p. 51). Yields also vary with the type of milk: To produce 1 kg of butter requires 6 kg of yogurt made from sheep's milk but 12 kg made from goat's milk (Digard, p. 197). Finally, it must be noted that traditional churning methods leave substantial quantities of butterfat in the buttermilk; the butter itself is most often obtained in the form of flakes, which are then pressed to extract liquid and air.

Despite the variety of churning methods used in the Persian world, it is possible to distinguish generally between those characteristic of masculine and feminine workers. The two main categories of churning motion, one a jerky vertical movement with a stick, requiting a large expenditure of energy, and the other a steady movement of the container, would seem to lend themselves, both in their nature and in their symbolism, to a rigorous sexual division. Examination of the data leads to a much more subtle picture, however. Although it appears that churning by shaking a suspended skin bag (which may nevertheless require considerable strength) or moving a pottery vessel on a surface is universally a feminine task, moving a stick up and down is not restricted to men. In many regions where churning is an exclusively feminine activity women also use this method, with either a stationary churn or a suspended skin bag (for Khorasan, see Pâpoli-Yazdi, p. 98; for the Turkman steppe, see Purkarim, 1970b, p. 44; for northwestern Afghanistan, see Ferdinand, pp. 152, 156). On the other hand, where churning is a chore for either men or women and where both type A and type B procedures are used, the division of utensils according to sex does seem to conform to the principles outlined above. In Fārs, for example, women use the suspended skin to process small quantities of yogurt, whereas men churn with paddles in large open skins (Rouholamini, p. 79); in the central Alborz professional shepherds use the wooden cylinder with paddle, but in the villages women use elongated pottery churns to process small quantities (Hourcade and Tual, p. 52). In these instances it is clear that the coexistence of two procedures corresponds not only to a division of activity between the sexes but also to an economic differentiation: Butter produced by means of type A procedures is reserved for domestic consumption, whereas that obtained by means of type B procedures is destined for the market.

Distribution of types and procedures. All the main types of churns known in

Eurasia are definitely attested in the Persian world, which seems, in this as in many other respects, to be an area of contact among several cultural traditions. Because of gaps in the data, examination of the distribution map (Figure 40) of churn types does not permit recovery of an ethnohistorical process of diffusion of certain techniques, but it does suggest several hypotheses.

The area of distribution for pottery churns seems to correspond to old nuclei of Persian population, whether settled or practicing pastoral migrations over relatively short distances and little affected by what Xavier de Planhol has called “medieval bedouinization” (1968, pp. 209-24). The use of churns of this type nevertheless seems to have originated in the distant past (in ancient Mesopotamia, for example; cf. Contenau, p. 259) and later to have become more widespread; it is, for example, attested in Sogdia in the 10-11th centuries (Ferdinand, p. 156, citing Peshchereva, p. 63).

The suspended skin bags are generally found throughout the black-tent nomadic areas and adjacent districts, extending west across Arabia and North Africa as far as the territory of the Tuaregs (Ṭawārīq). On the other hand, churning by vertical motion of the paddle in a cylindrical or conical wooden receptacle is characteristic of the northern zones of the Persian world, which form part of a vast Eurasian area extending from Tibet to western Europe. In terms of both geographical distribution and characteristic technique, churning with a paddle in an open skin thus appears to be intermediate between these two types. Although attested in some southern zones (e.g., Fārs), it is especially widespread in the frontier regions between the other two types: among the Turkman of northern Persia and Afghanistan, certain agriculturists in Khorasan, the Sangesarī on the southern edges of the Alborz, and in places along the perimeters of the Dašt-e Kavīr and the Dašt-e Lūt. The wooden churn suspended from a tripod also seems an intermediate type, between the skin bag that is shaken and the stationary cylinder, and is generally distributed along the boundary between Turkey and Persia, the respective areas where these two types predominate. Finally, churning by rotating a paddle by means of a strap links northeast Afghanistan with the Indo-Nepalese cultural area.

Modernization. The first step toward modernization of churning in Persia was also the most radical. With the technical assistance of foreign firms plants for pasteurizing milk were constructed after 1331 Š./1952, when the government passed a law requiring pasteurization. The first such plants were built on the outskirts of Tehran and most other important cities; by the end of the 1350s

Š./1970s they numbered about fifteen, and almost all included pasteurized butter among their products. They nevertheless remained largely alien to the countryside and were supplied with milk mainly from commercial dairy farms; the absence of an adequate road system and of modern storage facilities among livestock herders prevented the effective organization of collection routes among smaller milk producers (see, e.g., discussion of the pasteurization plant in Gīlān in Pour-Fickoui and Bazin, p. 97).

A much more important innovation for livestock herders was the introduction in several parts of Persia during the 1350s Š./1970s of the inexpensive hand-cranked centrifuge (*čarḵ-e šīr*). M.-H. Pâpoli-Yazdi (1983) has described the different types of such an apparatus and their relative impacts in northern Khorasan. The essentially simple and inexpensive centrifuge has not supplanted the traditional churn, but it has considerably reduced the amount of time required for making butter. Processing in a centrifuge extracts all the butterfat from the milk quickly and produces a very rich yogurt, which is then processed in a traditional churn (either shaken in a suspended container or paddled in an open utensil) for a much shorter time than was traditionally required, though yielding almost a third again as much butter. Production of the whole gamut of milk products has been simplified, for all the effort can be devoted to making butter. The need for labor has thus sharply decreased, contributing to a decisive decline in polygamy. As it is no longer necessary to heat the milk to produce yogurt, fuel requirements have also decreased, contributing to regeneration of forestlands. Above all, this technical advance has disrupted traditional social arrangements; the incomes of those who own centrifuges have increased, whereas poor families have been deprived of opportunities for employment in churning yogurt for the owners of important herds and are being forced to migrate to the towns in larger numbers. The centrifuge has spread from the urban centers to the different pastoral groups in Persia, though the figures are unfortunately not known. The device seems still to be unknown in Afghanistan.

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Figure 39. Types of traditional churns used in Persia and Afghanistan. 1. Globular pottery churn. 2. Oblong pottery churn. 3. Skin bag suspended from a tripod for churning by means of shaking. 4. Skin bag suspended from a tripod for churning by means of a stick. 5. Cylindrical wooden churn. 6. Pottery churn operated by rotating the vertical paddle in alternating directions by means of a strap.

Figure 40. Distribution of traditional churn types in Persia and Afghanistan (Sources: For Persia, various works cited in the bibliography; for Afghanistan, data from *Atlas linguistique de l'Afghanistan*).

Table 42. Methods of Churning in Persia and Afghanistan