

A SURVEY OF CERAMICS IN IRAN

by

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A handwritten signature in cursive script, reading "Graham Mays", written over a horizontal line.

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Chapter 1

INTRODUCTION TO HISTORY OF CERAMICS IN IRAN

In 1971 the people of Iran celebrated their 2500 year history. Today Iran is a kingdom in western Asia. It is bounded on the north by the U.S.S.R. and the Caspian Sea. Iran's east boundries are Afganistan and Pakistan and its south is bounded by the Persian Gulf and the Gulf of Oman. The west of Iran's boundries are bound by Turkey and Iraq. The total area is 628,000 square miles (1 647 050 square kilometers).

The population of Iran is 34 million people. The capitol city is Tehran. The people of Iran, referred to as Iranians are not Arabic people, but they accept Moslem religion as their national religion.

Iranians were Indo-European people by the name of Aryen who immigrated from the northern part of Europe to Mesopotamia. The name of Persia was first used by the Greeks, who came into contact with the first Iranian Dynasty, Achmenid who ruled from 550 B.C. to 335.¹

The name was gradually extended beyond the perimeter of Pars (ancient province of the Achaemenid Dynasty) to the entire kingdom which became known as the Persian Empire. Throughout history the people of Iran have never used the name "Persia" for their homeland. They have

¹Donald, Wilber N., Iran, Past and Present, (New Jersey: Princeton University Press, 1975), p. 4.

always called "Iran (the land of Aryans).

March 21, 1935 the government of Iran officially requested other governments to adopt and use the name "Iran" instead of "Persia". However, as the name "Persia" was widely used by historians outside Iran and the country has been better known under the name Persia, many references still refer to the older name of Persia.²

The history of Persia is so massive and long, it is natural that during the space of time and changing of territories the culture has changed. The standard of language, arts, life and culture has had to change from one period to another because of many factors.

Archaeologists were the first to be interested in the study of Iranian culture. The first students of Iranian culture were mostly European. Unfortunately, very few Iranians actually had the opportunity to investigate their own culture.

The European archaeologists were interested in the roots of the culture, categories and the timing of the different artifacts found. Since the history of Iran, 2500 years, is so immense there are many statements, books and documents which are available for the study of Iranian arts and culture.

The general historical categories established are conveniently divided by the Iranian dynasties. The change over from one dynasty to another brought about many changes in costume, arts and general living standards. There are fourteen different dynasties used when referring

²Encyclopedia of Britanica "Persian" (Chicago, 1970) Vol. XVII Benton, William. editor., p. 647.

to Iran's history, established since the beginnings of the country.

The Fourteen Dynasties that Ruled Iran ³

Achaemenid	550 - 331 B.C.
Macedonian	331 B.C. - 1st Century B.C.
Parthian	250 B.C. - 226 A.D.
Sassanid	226 - 641
Umayyid	661 - 750
Abbasid	750 - 1258
Seljuk	1037 - 1231
Ilkhan	1237 - 1336
Timurid	1385 - 1550
Safavid	1502 - 1736
Zand	1750 - 1794
Ghajar	1794 - 1925
Pahlavi	1925 - Present

The art of ceramics in Iranian history is generally divided into three main categories: Prehistoric, Pre-Islamic and Islamic periods. The main emphasis when exploring Iranian art categories is the change in art conception before and after Islamic times in Iran. The artist's conception was radically changed by the introduction of Islam into Iran. Islam arrived in Iran in the late 6th Century. However, the tradition

³Voshida, Mitankumi, In Search of Persian Pottery, (New York: John Weatherhill, Inc., 1972) p. 2.

in Iranian ceramics⁴ start around the eighth millennium B.C.⁵

Prehistoric Period

Clay figures of animals, fertility gods and large storage pots with symbolic decoration were representative of the non-Islamic prehistoric ceramic development. Certain types of earthenware vessels which were being built during the prehistoric Iranian times used the coil technique. The surface of the vessels were decorated with designs painted with slip clay containing manganese, then fired in an oxidizing kiln so that the clay turned out red.⁶ The animal or bird designs on the vessels were more or less represented in a realistic manner (plate 1, 3).

The probability that the people of the prehistoric time painted pottery just to make it attractive or to compete for social prestige is a dubious assumption. Mere existence for the prehistoric people in Iran depended on laborious and often precarious processes.

The food was obtained by primitive garden-culture, or at best, small field agriculture and limited animal husbandry. The life was difficult and free time could hardly have been spent in idleness and leisure activities. The development of "magic" and symbols against disasters entered primitive art by the usage of symbolic drawings on ceramic vessels, mainly because they were ordinary objects of everyday

⁴Ceramics, ceramist, in this text used as: potter, glaze maker, painter, tile maker, break and mold maker, etc.

Pottery, potter, used just for wheel throwing objects.

⁵Braidwood, R.J. 'Agricultural Revolution', "Scientific American", Sept. 1960. pp. 2-18.

⁶Wilkinson, K. Charles, Iranian Ceramics, (New York: An Asian House Gallery, 1963) p. 2.

use.

Designs on a number of Susa⁷ bowls consist of a rather complex panel varying somewhat in proportions, but all on one basic style. They are composed of a circle, each almost a semi-circle and joined at the center of the bowl by an open-ended rectangle. This linear motif is a long recognized and obvious water symbol. The figure of the water-bird along with it serves, in effect, as a synonym. The panel is thus defined as a double lake or pool. Another popular motif was a linear stylized tree and star. (Fig. 1).

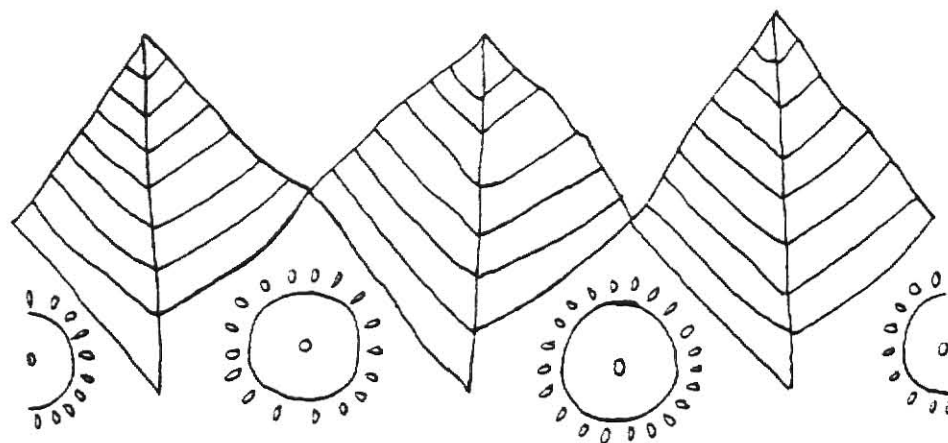


Figure 1

Detail, painted pot showing stylized tree and star. (Susa)

The patterns on Susa goblets are another example of prehistoric Iranian design. The huge-horned caprid in a panel and the procession of long-necked water birds in the wide rim panel, appears as a strong design, but here the semi-luminosity of the moon-disk within the caprid horns is

⁷Susa (SHUSHAN-SHUSN): Capital of Achaemenid and chief residence of Darius I and his successors from 521 B.C. - also see Iran map.

stylized as a simple dark and light square check. The iconographically significant variation, however, is in the border between the panels and the rim-band. (This carries an angular zig zag ancient water pictogram extended indefinitely, virtually confirming, the water value of running bands in the corresponding bands on the preceeding goblet). It would seem that these are "Hounds of Heaven" which are symbolic of rain clouds.⁸ (Fig. 2, 3, 4).

The technique of brushing was highly developed in the second millium B.C. in the gray-black ware. The Iranians were extremely inventive in making vessels and other objects in the form of animals. The northern section of Iran is where most of these animal vessels have been found. Maybe one reason is due to the climate conditions. The area is covered with forest and the ground has a high iron earthenware. Even today ceramic objects from the northern part of Iran have a close kinship with the historical figures of the second millennium. (Plate 1).

Pre-Islamic Period

The invention of vitrious glazes which were discovered by the Egyptians changed Iranian ceramics greatly. They appeared in Iran in the second millennium B.C., but they brought about the greatest change in the types of decoration and the uses of ceramics in that period.⁹

Susa was the capital of the Achaemenid Dynasty (1st dynasty).

⁸ Achernan, Phylisi. A Survey of Persian Art. "Symbols and Myth in Prehistoric Ceramics". Vol SIV. 1970. pp. 2924-2925.

⁹ Wilkinson, O.P. Cit. p. 2.



a.

- a. painted goblet with wild goat, moon and water motifs, Susa

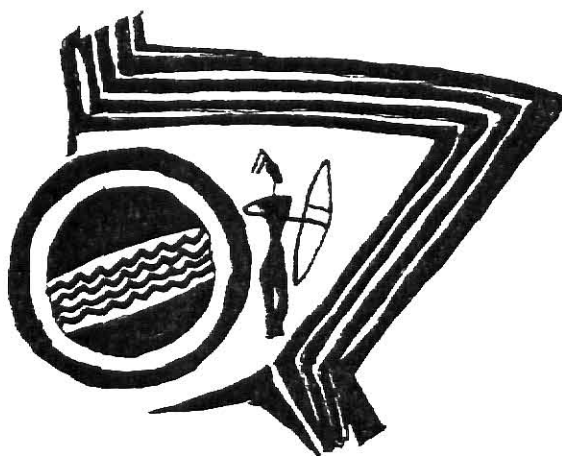
Figure 2



b.

- b. painted goblet with wild goat, moon and water motifs, Susa

Figure 3



c.

- c. detail, interior bowl, moon and horned bowman, Susa

Figure 4



Plate 1. Stag-shaped water container in terra-cotta
Gilan - height, 34.5 cm. Tenri Museum

The ancient capital is now only an archeological site near the present day city of Shiraz.

From the seventh century B.C. craftsmen in Susa and later on in the other cities started to use the alkaline glazes. The alkaline siliceous glazes are of the nature of soda-glass and are essentially composed of sand fused with some form of soda. Susa craftsmen were using alkaline glazes on the pots, low fire bricks and wall reliefs. The glazed bricks were used in the Achaemenian palaces and the lion or guardian motif figure reliefs with yellow and blue alkaline glazes were very popular at that time. (Plate 2).

The following dynasties; the Macedonian, Parthian, and Sassanid, used the clay in a sculptural manner. Later the interest shifted to



Plate 2. Wall relief, glazed bricks. 4th Century
B.C. - Susa

more permanent sculptures so the use of stone sculpture was employed again. The burnished vessels with three feet again enjoyed great popularity. Great projects utilizing fired or unfired bricks were commonly employed for constructions.

In Parthian times, the art of using molds and carvings were more popular methods among the Iranian potter. The pottery of that time was heavy appearing objects, mostly in the coil technique (Plate 4). Decoration in the form of grooves, patterns and ornamental heads was applied. Glazes, usually blue or green, but sometimes yellow or brown were often added.¹⁰ They were a hardy ware with bold decorations.

The usage of glazes on the pots was reserved for the wealthy and royalty. The actual pottery of the people, (folk pottery) was low fired earthenware and was occasionally decorated with a fine slip clay on the top. The burnishing technique on the Iranian pottery almost died during the Sassanian period. There were hardly any craftsmen even in their own land that continued the Parthian and Sassanian art of burnishing.

Islamic Period

Arab troops occupied Iran by the middle of the 6th Century. The Sassanian Dynasty had a very large and powerful army, but there was dissention within the army. The people of Iran were ready to accept the Moslem way of life and this fact greatly helped the downfall of the Sassanian Dynasty.

¹⁰ Collidge, A.R. Malcolm, The Parthians. Vol. I, (London: Thames and Hudson, 1967), pp. 89-91.

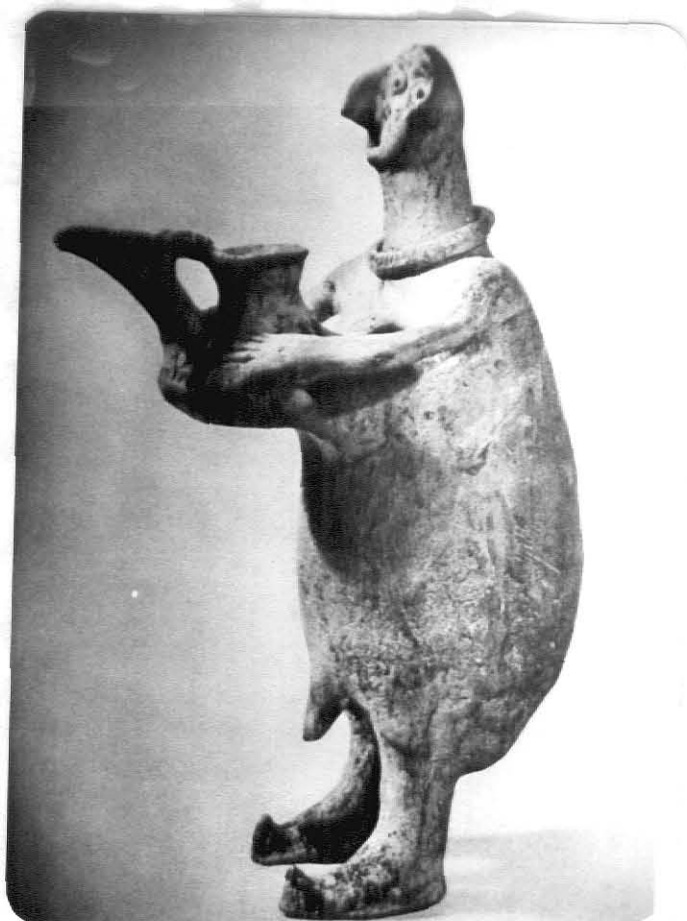


Plate 3. Terra-cotta statue of diety holding beaked jar. Luristan, Height, 39.4 cm. Yoshida, op. cit., p. 19.



Plate 4. Three-legged black pitcher: Parthian. Height, 15.1 cm. Ibid; pl 29.

Before Islam¹¹ the country of Iran was divided into three socio-economic classes; royal or wealthy, religious, and craftsmen. By the time Iran was fully occupied by the Arabs, the Islam equality revolution broke up the old Sassanian Dynasty social classes and improved the condition of the craftspeople tremendously. The reason the craftspeople gained more status was because as the people adhered more closely to Moslem beliefs (gold objects were forbidden) Iranian Moslems started to appreciate more the clay objects. The increased appreciation of the potter's art helped it to flourish.

The first Islamic pattern ware were plates using good calligraphy as decoration. Probably one of the reasons for using calligraphy was the Moslem law dictates that people must read. Education became very important and thus calligraphy on ceramics was appreciated. (Plate 5, 6).

The first Moslem Dynasty that ruled over Iran for almost a century was the Unayyad Dynasty. During that time the standard of Iranian art started to change rapidly. Since the handwriting of old Persian script had changed to Arabic script the ceramic artist could start to master a new form of calligraphy. Line started to have a great deal of design value in decorative pottery which had never been seen before.

It was the time of developing new patterns, ornaments and different types of decorations. Relief decoration which had appeared in the previous dynasties became low relief instead of high relief and almost disappeared behind the lines and figure decoration used.

¹¹ Islam - a religious faith of Moslems including belief in Allah (God) as the sole diety and Muhammed as his prophet.

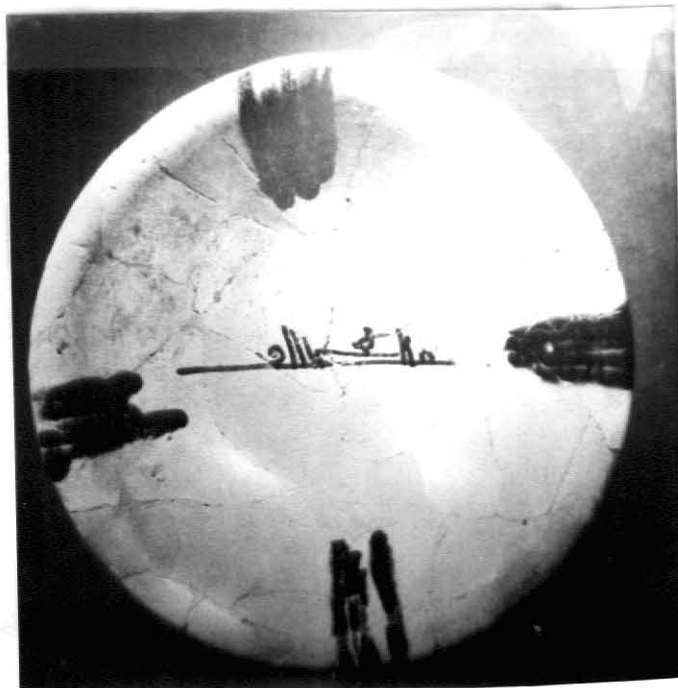


Plate 5. Bowl - opaque white glaze, green and purplish black. Nishapur, 9th Century
Wilkinson, op. cit. pl. 18.



Plate 6. Underglaze painted, Nishapur, 9th Century
Ibid., pl. 22.

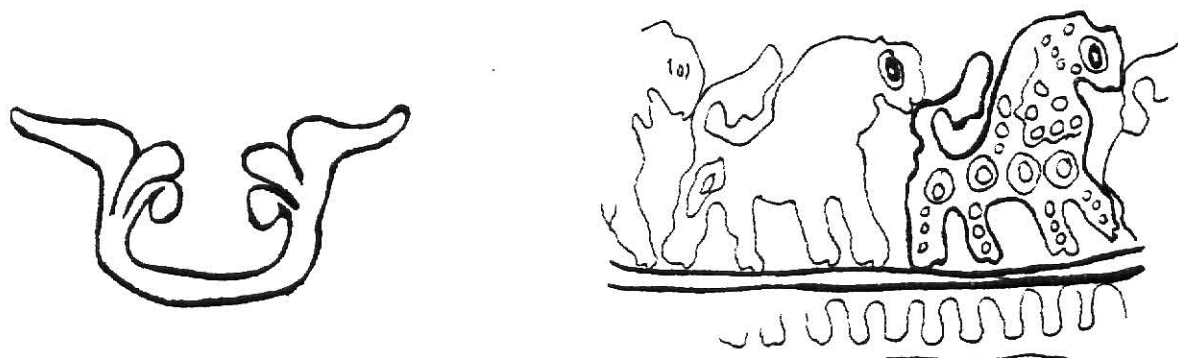


Figure 5

Motiff from Sassanian Dynasty

The basic classifications of Islamic ware are the unglazed and glazed ware. The unglazed ware was mostly used for water jugs and cooking or storage pots. There were many storage vessels which were made in buff clay. Some of the unglazed ware was decorated with relief, by either carving or stamping on the clay body.

There exists a Sassanian documentation for decorating on these objects. Large numbers of unglazed pots which have been found in Khuzistan and Nejat Rabi, (close to Tehran) proved to be important discoveries. The simple and dignified forms and the three heavy handles tie it closely to its Sassanian forebearers and the motif plus iconography likewise, continue in the Sassanian tradition.¹² (Fig. 5).

Relief decorations which had appeared in the previous dynasties became low relief instead of high relief and almost disappeared behind the lines and figure decorations used.

¹²Pope, Arthur Upham, A Survey of Persian Art, Vol. II., (London and New York: Oxford University Press, 1881), pp. 1466-1467-1470.

As most art historians agreed, Iranian ceramics in Islamic time are divided into three principal periods:

1. The Early Period from the 9th to 11th Centuries.
2. The Medieval Period from the 12th to 14th Centuries.
3. The Late Period, from the 15th to 19th Centuries.

The Early Period. Earlier wares were rather inferior unglazed vessels or alkaline-glazed pottery, glazed quartz fritwares and lead-glazed wares, a direct continuation of Pre-Islamic pottery. Their decoration was restricted to simple designs, incised or in low relief. Vessels were produced strictly for household requirements. The prevalent utilitarian attitude, however, gave way to a new artistic awareness which was due mainly to Chinese influence.

The Iranians began to adapt to some of the Arab's culture. The capital city of Iran moved to Samarra. The Umayyad (6th - 7th) and Abbasid (7th - 12th) government spread from Spain to Africa plus all of the old Sassanian territories. It was during the 9th Century that the pure Islamic principals started to diminish. The rich and elegant Abbasid Emperor was largely responsible for the changes. Probably for the first time in Iran's history of art the whole country's culture was engulfed by another culture.

Before the 9th Century the great Chinese Empire was totally unrelated, culture-wise, to the Iranians and there was no reason for any comparisons or competitions between the art.

During the early Islamic period, Islam was the largest nation in the world. They became increasingly interested in any advanced techniques that they encountered in the world. The true message of

Islam became lost in the Caliphs Court and the upper class began to collect valuable objects of art, but not those made of gold. Gold objects were still prohibited. Chinese ceramics and textiles had reached the Middle East even earlier, but from the time of the 9th Century Far Eastern influences became stronger.

The first cultural contact of the Islamic world and the T'ang China occurred. It was in Mesopotamia, at Samarra, the capital of the Abbasid's between 836 and 883 that the earliest Chinese imported ceramic wares appeared. Local imitations were also encountered at this time. Though the Chinese imported wares came both by sea and overland, they did not come in great enough numbers to satisfy the growing demand. The luxurious Caliph Court and the ruling classes of the Arab Empire wanted more of the expensive imported Chinese ware.¹³

It was largely to the credit of Abbasid Caliphs and the princes that the art of fine ceramics became important in Iran. They gave their support to local craftsmen and set up workshops in different parts of Mesopotamia. Soon the imitation of the Chinese import wares was widespread.¹⁴

The first efforts were directed to the imitation of Chinese porcelain by the Iranian ceramists. The potters that followed the Chinese style enjoyed financial success, but later as the Caliph Court began to realize that the local potter could not find the correct ingredients for true porcelain they lost their interest in the local potters

¹³Charleston, Robert J. World Ceramics, (New York 1968) p. 73

¹⁴Ibid., p. 74.

working in the Chinese style. (See next chapter also).

It was not long after the first Moslem Dynasty came to power that the economy of a ceramic family again went down. They began to lose the high respect and position in society that they had enjoyed for over a century.

The ceramists began to search intensely for a "hard-white" body with enough plasticity to make it workable on the potter's wheel. The ceramists faced difficult times because they were not able to make inexpensive Chinese wares. This failure to produce Chinese type wares was a disaster for the Iranian ceramist because the importation of Chinese ceramics started the break up between the potter and the royal families. The upper class withdrew their support and the local potters could not find anyone to buy their products. The middle to lowest classes were the only ones that bought the Iranian wares now and the prices were very low.

It is important to mention at this point that during the 9th and 11th Centuries the ceramist took on a character of an alchemist. They are recorded to have created many mysteries during that time period that still puzzle historians and scholars today.

The result of all these challenges during the 9th and 11th Centuries was four types of glaze wares. Two of these appear as copies of Chinese porcelains and stonewares. The third type was luster painting. Slip-painted pottery was the fourth type which had less Chinese influence and was more originally from Iran. The various types of glazes that developed shall be discussed.

Cobalt blue glazes: They were more common and survived in

considerable quantities. They were painted with dark cobalt on a cream white slip and then covered with a colorless glaze. This blue is sometimes varied with an emerald green which may be of superb intensity at times. Occasionally the green may be used alone. The shapes used were simple, usually broad and shallow bowls curving out into a wide rim. The foot is very low, in a number of cases, hardly more than a ring sometimes projecting from the body of the bowl less than an eighth of an inch.

The decorations are for the most part comparatively simple, but the range of motifs is quite astonishing. Geometrical figures constitute the sole ornament on one group for example, triangles with tangent half circles, and the superimposed triangles sometimes called Solomon's seal were quite common. The palm tree is especially important and the rendition ranges from an almost geometrical abstract line to a quite naturalistic effect.¹⁵ (Fig. 6).

Splash glazes: It was the prestige of China in the ninth century that stimulated the production of a class of wares characterized by polychrome glazes composed of two or more colors splashed on together. This type was directly copied from the T'ang Dynasty. Still there are some pieces that remain from Rayy or Susa which show that the potter was venturing on his own account in color.

Common shapes were large flat plates with wide rims, which usually consisted of a red body, fairly hard and relatively grained. It seems that the most common glazes were made of the combination of brown, yellow and green. (See also Chapter II).

¹⁵Pope, A.V., *OP. Cit*; p. 1483.

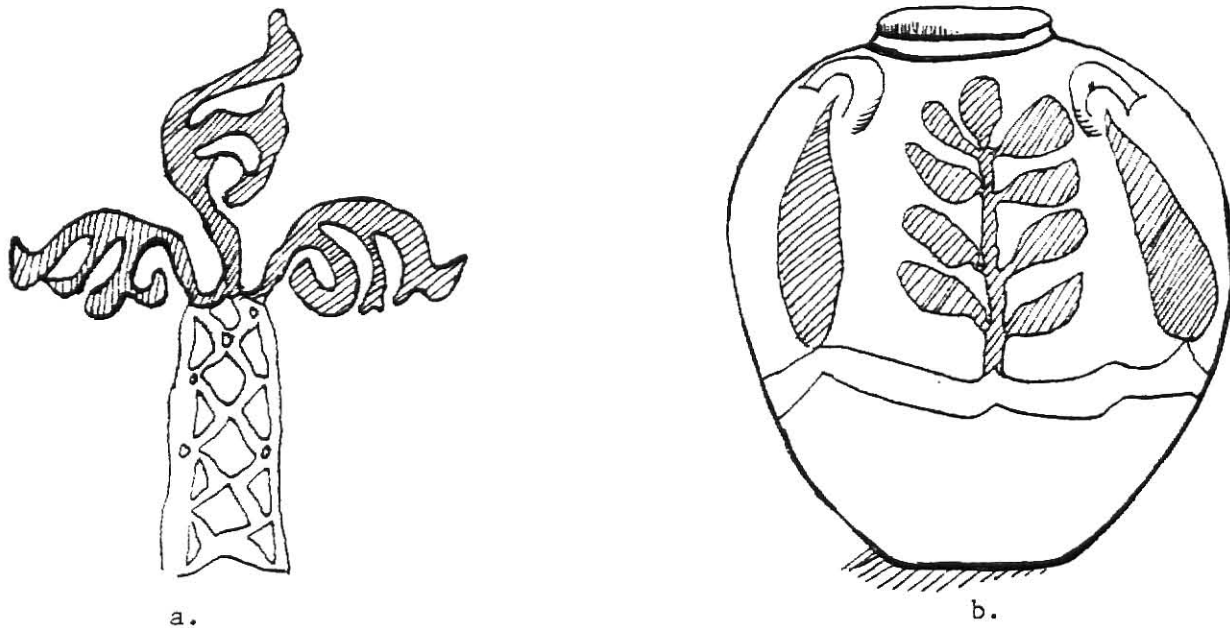


Figure 6

Cobalt painted white ware 9th and 10th Centuries

- a. artificial tree from bowl, British Museum
- b. jar from Susa, Metropolitan Museum, New York¹⁶

Luster painting: Of the new ceramic wares that were developing at that time the luster decoration was in some respects that most important. It was also the most novel; for painting in luster expands the ceramic art into a new dimension.¹⁷

However, the point is that the potters had to survive and luster painting was the way that they competed in the art of beauty with those high fire Chinese porcelains and stonewares.

Most of Iran is covered with a very plastic red earthenware clay. However, some of the body contained calcium oxide. This calcium oxide

¹⁶Ibid., p. 1484

¹⁷Ibid., p. 1487

proved to be very troublesome for the potters. When the body started to heat up and go to a higher temperature in the kiln the calcium oxide had a tendency to explode and thus crack or break the clay body. The Iranian potters work on many methods of ridding the calcium oxide from clay, but even after they diminished the amount in their clay still enough was left to cause trouble. Often some part of the decoration which the potter had spent many laborious hours to elaborately decorate would blow up.

Luster painting or "Minai" technique later on proved to be some kind of answer to the calcium oxide problem. Now for elaborate decoration the ceramist could trust the luster painting to cover some of the small holes with luster decoration over the top of the glaze and generally improve the appearance.

Briefly, the luster technique depends on a double firing. After the vessel is covered with a slip, a transparent glaze and fired, then it is painted with a thin coat of certain metallic salts such as salt peter. It is refired in a muffle kiln at a low temperature and produces the desired metallic appearance.

Luster painting is divided into three categories. The first is plain gold on a white ground. The second, is the solid monochrome or polychrome ruby or carmine luster, chiefly on a white ground. The third category is a polychrome luster mostly in yellow, brown and olive on a white background.

The Iranian potter realized that luster was the only way except massive decorations to increase the price of their wares. The luster made the ceramics seem more precious to the buyers. It seems likely that the plain gold luster was the first to be developed. It is believed that the ceramists were the ones that developed the idea that Moslems could

handle gold luster ware instead of the actual pure gold vessels. (Moslem law forbids the faithful to obtain goldware).

Luster technique was often used on the pots and tiles for decoration. Elaborate floral motifs appear in the ornament; leaves with bands of cross hatching, and floral sprays all rather naturalistically rendered, but combined with the three-lobed acanthus leaf: the Sassanian paired wings, and various patterns applied on cobalt painted bowls.¹⁸

Slip decoration: The last type of 9th and 11th Century ceramic decoration was slip painted pottery. It was used mainly in the northern part of Iran. Potters used Kufic script more as a general decoration. The technique consisted of applying a fine slip clay which was white during the green ware stage and later on after the pot dried, to decorate the body with other types of slip colors. After the bisque firing a brown transparent type of glaze was applied over the slip decoration. Nishapor and Smargand were the major cities for this kind of ware. (Plate 7). Smargand later became part of Russia.

The same technique was used in "Sari" which is another city in the north and is surrounded by forests with a very humid climate. Potters were using animal and bird designs in large proportions which would cover the entire interior of the ware as their form of decoration.

The way of decorating a pot needs to be discussed. The climatic and geographical differences are largely responsible for the differences in decoration from one part of Iran to another part. Nishapor ceramics, for example, utilized highly sophisticated stylized line, calligraphy and

¹⁸ Ibid., pp. 1488-90.

abstract motifs. Sari people, who dwelt in the tropical Caspian Sea areas used natural motifs such as animals, birds and trees.

Medieval Period. The Medieval Period of Iranian ceramic ware started from the late 11th Century up to the 14th Century. It is usual to divide this period into two parts. The separation is due to the disastrous Mongol invasion in 1220 by Genghis Khan.

The Mongols were ruthless barbarians. The Mongol invasions occurred over a period of years. Khurasan's major cities were destroyed in the first invasion by Genghis Kahn (1220). The other cities subsequently fell over a period of years of attack and this process turned the flourishing Iranian civilization towards a nomadic society. The people virtually took refuge in the desert. During this period learning and culture diminished almost to the point of oblivion. The grandson of Genghis Kahn, Hulagu, destroyed the Assassin fortress in 1256 and captured Baghdad in 1258, putting the last of the Abasid caliphs to death. Hulagu thus became the head of the new "provincial dynasty". After that the territories were governed by autonomous princes until 1335.

Around the early 11th Century new pottery centers developed in the north and northwestern mountainous areas of Iran, in the Caspian Sea area and in the areas of Azerbarjan, Kurdistan and Mazandaran. The technique of Sgraffito began to develop. On the other hand, the sgraffito was a continuation of the slip painted ware which was used before this period.

The carving which evolved in this technique is reminiscent of the earlier ware which was strongly influenced from the metalworkers who used to work in the Sassanian style. There were three types of sgraffito

ware which were produced:

1. Simple sgraffito produced in Amal.
2. Champléve (Garrus district of western Iran which has long been known as Gabri as it was thought to have been associated with Zoroastrian fire worshippers who were called Gabri)

Plate 8.

3. Zanzan ware (Aghkand).

The three types of sgraffito have some slight differences between them. The first type was decorated after the potter made his ware on the wheel and then applying thick white slip on the top. Later when the clay reached the leather-hard stage he started to incise his pattern on top. The second type, champléve, involved applying the design and carving off the slip. Usually massive areas of slip were cut off in this process. The third type of sgraffito involved the area already being carved, but not covered with glaze.

The Medieval Period saw the Iranian potter in full control of nearly every kind of Iranian ceramic technique in which he was interested save porcelain as the exception. There was never the passion for elegance of finish, nor the cool and scientific investigation into glazes and their resources which so absorbed the Chinese potter. However, in this period the Iranian ceramist attained a greater variety of brilliance in colors than did his Chinese counterparts. The Iranian potter knew a fresher, more vital color combinations, more varied and imaginative composition schemes, and more types of surface enrichment than the Chinese. His decorative employment of human, animal and foliate forms has never been surpassed.



Plate 7. Bowl with man and horse. Nishapur 11th Century
Height 9 3m., Tenri Museum.

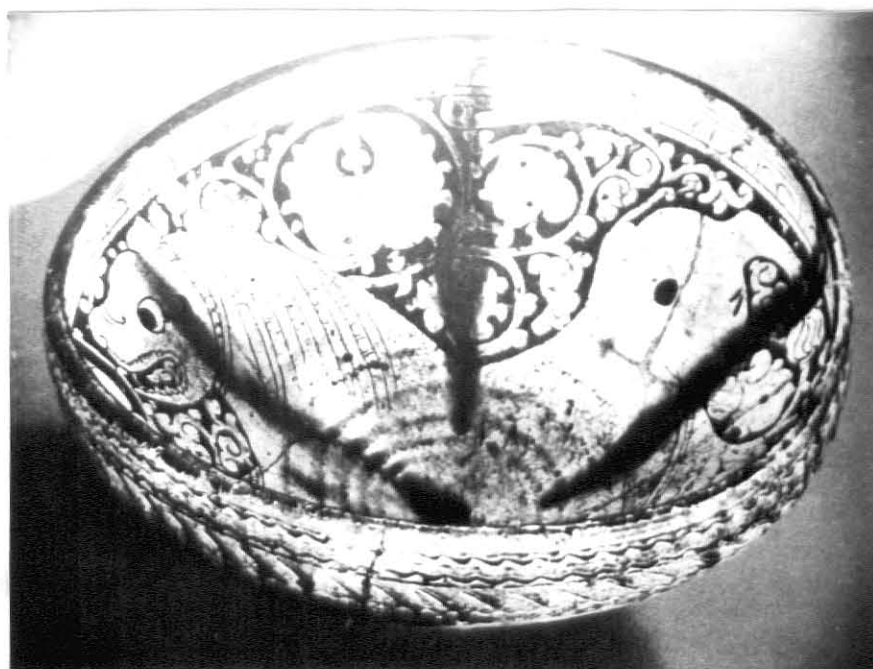


Plate 8. Bowl, champlevé technique, white engobe, Gabri
ware, 12th Century, Wilkenson, op. cit., pl. 35.

Pottery takes on an important place in the arts of this time. Old types and themes are continued, but their uses are extended and new wares are devised. Almost at the very beginning of the Seljug Period ceramists started to create costly luxury wares whose utility was a minor factor, but the luxury wares served the people in the art of beauty.

Metalwork, mural painting, stucco decoration had already provided models and continued to influence the potter, but to a lesser degree. The illuminator and the miniature painter were the all-important artists of this time. Architecture made new demands that led to some brilliant activity for once more, as in the Achaemenid days, the architect called on the ceramist who responded with new triumphs. From partial enrichment of buildings, they went to the total ceramic decoration in the form of glowing incrustations of pattern and color that are without parallel in the history of architecture.

Seljug was the 7th Dynasty that ruled Iran (1037 - 1231). Fine ceramic ware from this period can be divided into seven categories.

1. white ware
2. ware with colored monochrome glazes
3. ware with carved decoration and polychrome glazes
4. silhouette painted ware
5. underglaze - painted ware
6. luster-painted ware
7. overglaze - painted ware which is called Minai' and dark blue (Lajuardy) type ware

I. White ware: It was not the only time in Iran's history that ceramist started to imitate the Chinese masterpieces of porcelain. Although it is true that their efforts during this period were more successful than in previous times they still could not create true porcelain because of the lack of the necessary equipment such as high fire kilns, Kaolin and the knowledge of preparing these materials.

The more interesting efforts were imitations of the Sung white porcelain known as tiny ware. Potters made a white very hard, thin body which is almost semi-translucent. They did not have recourse to simple clay, but used a new composite paste of powdered quartz and alkaline frit. The glaze was also made of a similar alkaline frit. They made small holes in the body of the piece and filled them with clear glaze which then could give a true porcelain effect at least. (Plate 14). To these, moreover, a contemporary document is further witness, "Al-Biruni (first half of the eleventh century) who is famous among historians of that era writes, "There are made here (in Afganistan, part of old Iran) from pure pebbles, together with a mixture of clays, such vessels, (imitation porcelain), but they are Nabataean (poor quality) and coarse, not genuine."¹⁹

The type of decoration which they used on these white wares consisted mainly of incised floral designs which were employed with very fine lines. Occasionally, finely drawn Naskhi type writing carved or incised into the body were seen. The production of white wares is attributed to Rayy and Kashan, the two great Iranian ceramic centers which

¹⁹ Ibid., p. 1514.

later on were destroyed by the Mongol invasion and recovered in the next generation.

II. Monochrome: The monochrome styles and techniques in the ceramic art in Iran were now rapidly expanding. New ideas of enrichment were being devised, new color combinations perfected, and the greatest calligraphers and graphic artists were in the service of the potters.

The usage of monochrome glazes was the result of this expanding. The color scheme ranges from turquoise blue through different shades of blue and green to aubergine, purple and dark brown. Usually they used human and animal figures with slip decoration and covered it with monochromatic blue or other colors.

III. Lagabi wares: They were introduced by different glazes either by raised or incised lines. The term "lagabi" (painted) in the 19th Century by ceramic dealers does not have any author.

IV. Silhouette-painted ware wasn't a new method. It was used before in the northern part of Iran and again after a century re-introduced by Rayy and Kashan potters. Black slip that was carved into was widely used. Symmetrical patterns of human or animal figures were more common in this style.²⁰

V. Underglaze: The underglaze painted wares seem to have been developed first in Kash. It was a continuation of slip painted ware. This type of decoration was more practical than slip painted ware. However, during

²⁰ Cooper, Emmanuel. A History of Pottery (New York: St. Martin's Press, 1972) p. 124.

Seljug Period ceramists began to have some prestige in the community because of more appreciation by the people for the art. There was no longer the need for the ceramist to continue the Chinese imitations. The main reason for slip painting was to cover the earthenware red body that they used, but now the potter did not try to cover the color of the clay. He now felt free to use the direct black, blue and turquoise pigment on the body and later on to cover the whole body with blue or turquoise transparent glaze.

The combination of black underglaze and turquoise color glaze seems later on to become an interesting media for the potter to use and it became the favorite of the people. It was very popular.

VI. Luster ware: Now again the ceramists used luster painting which allowed him to go a step farther in decoration. In this time period he used luster painting as one decorative element besides that of underglaze and glaze decorations. The greatest difference between these medieval luster wares and those of the earlier period is that while on the earlier examples the decoration was painted in luster, on the later wares the background was lustered, thus leaving the space open for the decoration. (See Kashan on Chapter III). Plate 9.

VII. Overglaze: It is not clear if the overglaze technique was first used in jewelry making as enamel (Minai) and then introduced to the ceramists or if the potter started to discover the new technique for himself. However, Minai is a technique in which the colors, usually blue, green, brown, black, dull red, white and gold, are painted over the glaze and fired by a second firing at low temperature. The use of



Plate 9. Bowl - overglaze painted, Kashan,
12th Century. Pope. op. cit.

gums made the overglaze stationary and not run. By using the "Mina'i" technique they could draw very fine lines (Plate 10).

The type of patterns created are close relatives to miniature painting and it is very likely that the best examples were painted by the same artists who illuminated the manuscripts.

Lajuardi (literally meaning - "dark blue") type are one kind of Mina'i examples which instead of any drawings, the potter simply covered some part of the pot with Mina'i and used it as the background. The range of colors were limited to black, red and white.

Rayy was a production center for the Mina'i wares. Kashan and Saltanabad were more active on the Lajuardi type of ceramics. The new rulers of Iran, the Khanids II, who were themselves Mongols, brought with them a new taste nurtured from the Far Eastern styles. This was clearly manifested on the vessels coming from the Sultanabad regions.

Sultanabad which is a city close to Kashan is closely related in ceramic style to the realistic Kashan style. The ware which was produced by the Sultanabad name were from many villages around the present city of Sultanabad (for example, Zulfabad, Asadana, etc.). In general, the body of a sandy, gritty earth, seems to be a little coarser than the Rayy variety. The ware consists mostly of bowls and are usually painted over with a brownish, greenish-grey ground slip. Plant motifs or flower patterns were their favorite and rarely did they use human figures.

The Later Period (15th - 19th Centuries). By the end of the 14th Century the "golden age" of Iranian ceramics was on the decline. The disaster of the Mongol invasion and later on Timur Lanhg destroyed the large cities such as Rayy and Nishapur. Good examples of architecture



Plate 10. Bowl, Mina'i ware, opaque turquoise with polychrome overglaze, 13th Century d. 73.4 inches, Wildenson op. cit., pl. 63.

were not destroyed and the craftsmen were allowed to survive, but many buildings and people were destroyed. The people became convinced that they had lost favor with God. They decided to develop new philosophical and religion schools. They built many new buildings that were religious centers such as Mosque, Madrasah, Mausalea and many others. The craftsmen were employed to decorate the buildings and they did so under Moslem law with simplicity in the decorative art used at all times.

Since 16th Century there have been six dynasties in Iran. The present one is the Pahlavi Dynasty. Ceramic history in art and technique during the Timurid, Safavid, Afshar, Zand, Ghajar Dynasties did not develop very much except during the Safavid Period. Mainly the Iranian art was limited to the palaces and some religious centers because there were many wars during these dynasties.

It was during the Safavid Dynasty that the capitol of Iran moved to Isfahan. The city of Isfahan later developed to be a major art center in Iran. Isfahan is not far from Kashan and Rayy which were also art centers.

One reason most archaeologists and art historians were more interested in Kashan and Rayy ceramics rather than the ceramics of Isfahan was because they generally felt that there was more originality to be found in Rayy and Kashan. The pictorial art in ceramics was lost during the late period and could only be seen in the King's palaces. There were numbers of cities such as Kirman on the south and Daghasan (Kubachi ware) in the north which were a very long distance from the capital. These cities produced some very exceptional wares. It is hard to see any female faces for decorating and they used mostly scenes such as hunting, polo (an old

Iranian game) or famous Iranian stories.

Isfahan school of ceramics used mostly floral patterns and abstract lines to embellish their ceramics. It seems clear, however, that under the influence of Chinese Ming Porcelain, imitation of blue and white started in Iran, probably as early as the late 14th Century. It has been mentioned in historical sources that the cobalt ore for the Chinese Ming blue and white was imported from Iran. (Plate 11).

Since the European countries were closer to Iran than China was, the Dutch, therefore, placed orders with Iranian potters to produce blue and white ware in a Chinese style. These wares, because they were imported from Gambroon (modern Bender Abbas) were called "Gambroon ware".

Most archaeologists divided the later period into two divisions: Safavid and Ghajar pottery. However, the most distinguishable ware fall into five main types of the so called "Kubachi wares, Gambroon wares, Late Luster-Painted pottery, Polychrome Painted wares and miscellaneous wares." During the Safavid Period which is during the Renaissance in Iranian art history some other ceramic centers developed such as Yazd, Zarand, Mashhad, and Shiraz plus Tabriz.

Architecture both exterior and interior during the Safavid Dynasty is well known among historians for its beauty especially in Isfahan. "Most of the ceramic workshops in Isfahan used to (and still do) produce well designed ceramic tiles and parts of columns for exterior and interiors of the buildings. They learned the art of tile making from Kashan and then developed their own designs. This type of tile working is known as "Mo-argh" and is somehow similar to mosaic work except it has a finer technique. (Plates 12, 13).



Plate 11. One of the examples which brought to Iran by (Shah-Abbas) Safavid Dynesty for encouraging of potters. Photograph by writer. Tehran Musam.



Plate 12. A piece of cut tile (Mo-argh) which is used in blow plate design.



Plate 13. A section of (Mo-arth) tile work. 20th Century, Isfahan.

Safavid ceramists used to cooperate well with the architects in the design and building of some particular tile work. This type of work was one of the big advantages that the Iranians discovered from using earthenware bodies. The covering of whole domes with the tiles against the blue skies became a magnificent style and was widely used during this period.

Generally, designers of the buildings were very rigid and conservative using the accepted mode of design which was abstract lines, geometrical patterns, floral and calligraphic designs and other elaborate methods of decoration. For each type of decorative element ceramists studied many years in workshops under the masters.

During the Safavid Dynasty the religious scholars strove for intense conservatism in religion. This had a great effect on the arts and through some misunderstanding concerning the "Shia" sect the arts diminished greatly for a long period.

The second element of ceramic decline was the break down of the economics in the country during the last Chajar Dynasty. But still there were many workshops throughout the country during that time and many fine ceramic wares were produced such as white ware, polychrome, luster ware from Kashan, overglaze (Mianí), and most of it was sold to the city people.

With such an ancient tradition in pottery, surpassing in antiquity and a continuity continuing all over the country, the Iranian wares challenged the Far East in beauty and variety. It is not surprising that Iran has kept alive the ceramic art. The poverty, disorders and social problems of the nineteenth and twentieth centuries; the breaking down of economic life and the demoralization from the intrusion of tasteless manufactured wares of Europe have been more devastating to Iranian art than was

the Mongol invasion. The Mongol barbarians learned to appreciate the Iranian arts more than did the self-satisfied commercial west.

Ceramics skill is still employed in Isfahan, Kirman, Mashad, Hamedan, Kashan and many other cities of present day Iran. The potters are still avidly practicing their trade. They have no wealthy or discriminating clientele. What is made must be made quickly and cheaply.

However, the pots, flasks and bottles are of good shape. The glazes are as a rule not very varied or brilliant, but some are excellent, particularly the yellow and dark blue glazes. For a very small amount of money one can purchase a beautifully designed ceramic object that has easily stroked patterns and figures reminiscent of the olden times.

The potters still are proud of their crafts, respect the ancient traditions and resent tasteless demands that are being put upon them. With a little encouragement they would again produce wares that if not worthy of the inspired products of earlier times, an attainment which present conditions do not permit, would still be attractive and ceramically sound. They would perhaps occasionally achieve real beauty. (Plate 14).

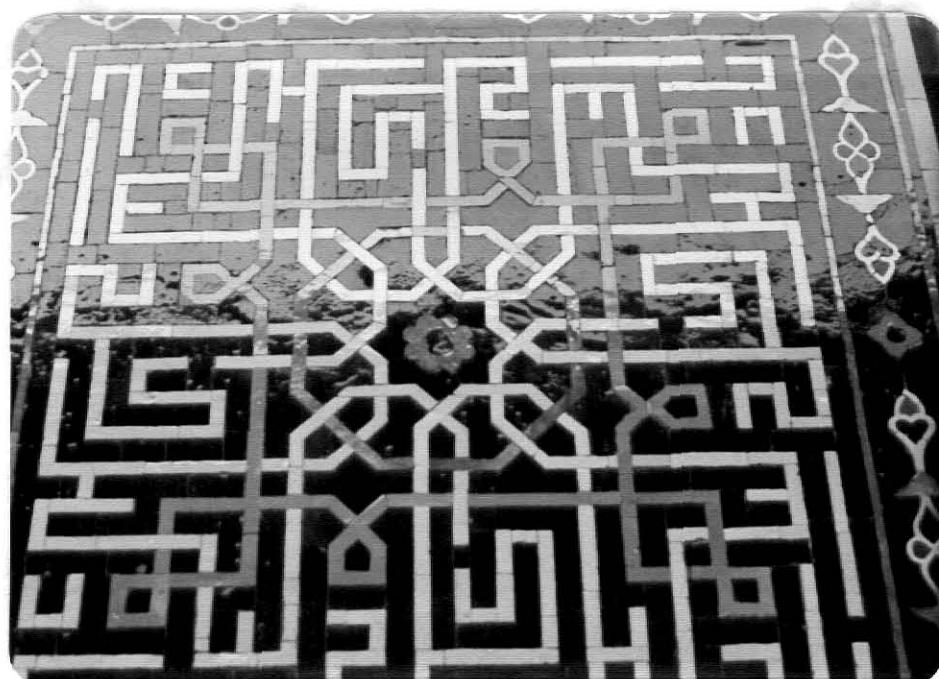


Plate 14. A contemporary tile work, abstract calligraphy design, Tehran.

Chapter II

TECHNICAL ASPECTS

Throughout the centuries, low-fire earthenware has been representative of Middle East ceramics. A great variety of colors may be found on the Middle East's ceramic ware, which are mainly due to the use of alkaline glazes. Elaborate patterns, ornaments and geometrical designs are also characteristic of the Islamic arts.

Since early times, Iranian potters were avid followers of low fire pottery. As we have indicated in previous sections (early and medieval period, Chapter I), there have been many attempts during a long course of time to improve the ceramic science in Iran. These endeavors started during the Seventh Century because the Iranian ceramicist desired to imitate the Chinese wares and this continued through the 10th Century. Later, during the seventeenth and eighteenth centuries, the European ceramicist went through the same processes, but because of the rise of the industrial age in Europe and the major improvement of the science of chemistry they achieved more.²¹

Fuel was another important consideration concerning low fire ware. The fuel used consisted mainly of wood and bushes. Iran is mostly dryland and for this reason potters had a difficult time obtaining enough cheap fuel for their kilns. This lack of fuel is one reason that the

²¹M. Will Theu, Porcelain and Pottery (New York: Knopf, 1974), pp. 12-14.

Iranian potters did not develop high fire ware. Also the Persian kilns did not give a sufficiently high temperature to fire anything but low fire ware.²² In addition, those requiring Kaolin and fire clay were not readily available from the Iranian terrain. The small amount of useable clay in the Middle East contrasts with conditions in China, Korea and Japan where vast amounts of stoneware clay ready to use right out of the ground are available.²³

In this chapter we will discuss four major areas. They are body, glaze composition, kiln design and stages of processing.

Body Composition

There are two types of low fire bodies which potters commonly are using in Iran: A. earthenware body

B. stone paste body

A. The earthenware body usually serves for several different purposes such as tile making, ordinary thrown pottery, coil-formed and clay hoops (which are used for the supports in the underground water supply channels). Because of the very long time that the low fire earthenware bodies have been used in Iran the potters have learned by experience how to control the cracking, warpage, shrinkage and other physical problems of their type of clay.

²²E. Hans Wulff, The Traditional Crafts of Persia, "Their Development, Technology and Influence on Eastern and Western Civilizations", (Massachusetts Institute of Technology: The M.I.T. Press, 1966), p. 150.

²³Frederick, L. Olsen, The Kiln Book, (California: Keramos Books, 1973), p. 32.

Hoop makers (large cylinder forms for underground water tunnels), who are working with large portions of slab clay usually prefer to work with a mixture of clay and chaff or clay and horse manure. Tile makers are also adding 10 to 20 percent sand to clay bodies to avoid the shrinkage. During the leather hard stage the tile makers will put the tiles into a steel tile mold with a lid on the top, then the top is beaten with one stroke of a heavy hammer. This process creates a pressure which makes the clay denser, therefore, the tile has less tendency to shrink and warp.

Iranian potters are also using one type of white earthenware which is prepared in pottery workshops. This type of body which is used for fine ceramics ware, in most cases, is composed of extremely fine quartz pebbles or flint and pure earthenware clay. A simple formula for white bodies usually consists of 10 to 30 percent flint and 60 to 90 percent light brown earthenware. This type of body has a better working quality and also less shrinkage involved than the previous clay body described. Alkaline glazes have also less of a tendency to crack and chip on this white type of body. In earthenware bodies, after firing, the water absorption still is very high and only the type which the potters are using in northern Iran is not very porous. The northern body contains a high iron content which after firing the body turns into a semi-mature state.

B. Stone paste body: The second type of clay which some potters are using in Iran is stone paste body. The potters were not interested until Medieval times in this type of body. The first use of the stone paste occurred when the potters tried to produce porcelain. Pulverized

quartz pebbles and alkaline glaze frit, added to the clay, produced a fused, very hard, semi-transparent surface after firing similar to what became known during the 18th Century in Europe as soft paste porcelain.²⁴ This type of body vitrified in a low temperature and fused with the alkaline glazes very well. Borax which was used in alkaline glazes as a flux was introduced during the ninth century. Since Iran has abundant deposits of borax and was also supplying Europe during the Middle Ages this type of flux was widely used in Iranian ceramics.²⁵ (Plate 15).

Today, however, the Iranian potters do not have enough chemical knowledge for developing the old traditional formula for a porcelain body. They still are producing the same type ware with a somewhat lower quality which is known today as stone paste ceramics. (Plate 16).

Stone paste body is composed of 70 to 80 percent white quartz or flint, 10 to 20 percent of an extremely fine clay, (so fine that modern ceramists would call it bentonite) and 10 percent frit of the same, for glaze composition. This type of body is not very plastic and it requires good wedging. Usually stone paste potters throw forms in sections and they are joined during the leather-hard stage.

Glaze Composition

Iranian low fire glazes which present day potters use consist of

²⁴Wulff, o.p., cit., p. 146.

²⁵Ibid.

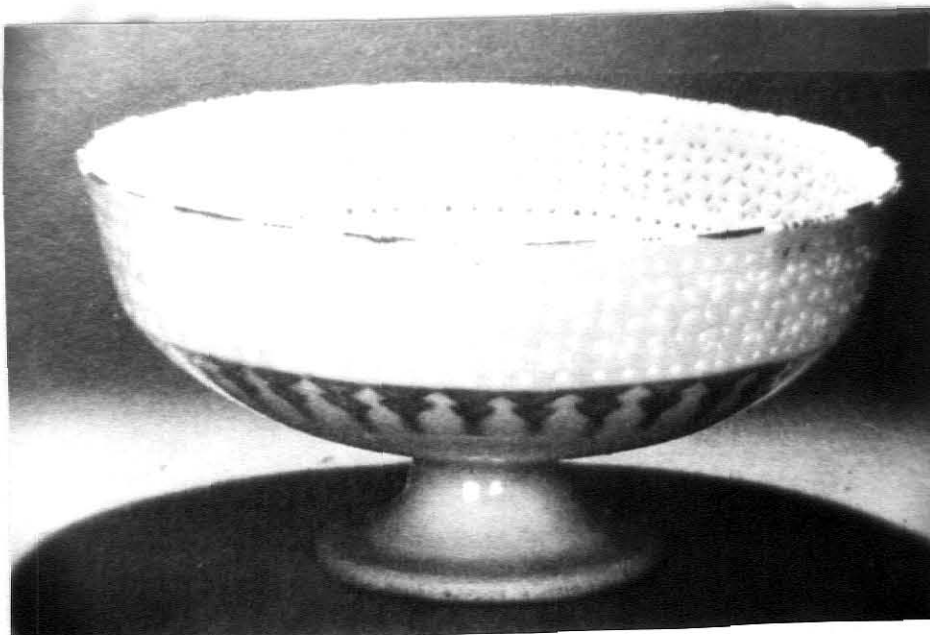


Plate 15. Bowl - soft-paste porcelain, Gambroon ware, 17th Century diameter 19.4 cm. Victoria and Albert Museum.



Plate 16. Contemporary stone-paste body, underglaze design covered with clear glaze, Lajin writer's collection.

three major materials:²⁶ flint (quartz, silica) SiO_2 , potash feldspar (K_2O , Al_2O_3 , 6SiO_2) and lead in the form of Litarge (PbO), red lead oxide (Pb_3O_4) or white lead "lead carbonate, 2PbCO_3 , $\text{Pb}(\text{OH})_2$ ".²⁷

The sources for silica are flint from pebbles on dry river beds (collectors must have enough experience to distinguish quartzite pebbles from limestone) or it comes from quartz mines (Tabriz, Mashad, Kashan).

The sources of potash are the salt plants in the desert. There are numbers of potash burning places located in "Qum" and this city is known for these furnaces and also the best quality potash.

When the glaze maker has a supply of potash, he adds it to the quartz which is made before (see also stages of processing). There is a traditional formula for making a glaze frit which the potters are still using. The formula is fifty-five pounds of ground quartz which is mixed thoroughly with 65 pounds of potash and half a pound of magnesium oxide for making a clear glaze frit.

Lead is another major plus for low-fire glazes which are obtained mostly from red lead oxides or by litarge and occasionally white lead. Interestingly enough, potters today are quite interested in obtaining old car batteries for their lead source. By the oxidizing of leads (which involves crushing and cleaning) in a small oxidizing furnace, the potter can obtain a pure lead oxide. In the oxidizing furnace there is a flat dish shaped refractory above the fire box. The furnace is heated until the dark red color is reached. A piece of metal is then placed

²⁶ Ibid., p. 160.

²⁷ Daniel Rhodes, Clay and Glazes for the Potters, (Philadelphia, Chilton Book Co., 1973), p. 130-131.

above the refractory dish and it is constantly skimmed off with a scraper until all of the metal has changed into the form of the oxide. The lead oxide which is collected in the bottom flat dish is taken out and after complete grinding is ready to use.

There are also some metal oxides which are used for a colorant. For a white milky color the metal oxide tin (SnO_2) is used. For example, the potter would start with three parts lead and afterwards he could add in the same furnace two parts of tin oxide. Today, for opaque white glazes, ceramists usually prefer to purchase pre-made glazes which are imported from Europe and usually are Coleminite glazes.

Copper oxide (CuO) is used for the main turquoise color in alkaline glazes and green in the lead glazes. The same oxidizing process is used as mentioned previously only in a copper oxidizing furnace. Usually ceramists buy scraps and lathe shavings from the copper smiths as their main source of material. Iron oxide mostly in the form of red oxide (ferric) Fe_2O_3 and sometimes in the form of black (ferrous) FeO are used for glaze color. Small amounts of iron, up to 2 percent, give pleasing than, honey color, or amber. Higher percentages of iron will give deep amber, brown or red-brown, depending on the amount used. There is no need for the Iranian potter to produce iron oxide, as the blacksmith collects it around his anvil from hammer scale and there is an ever abundant supply.

Gold (Au) is used "occasionally", for lusterware and also for a beautiful red to purple hue. The metal gold has to be dissolved in a mixture of nitric, sulphuric and hydrochloric acids. This mixture is produced by the use of a "alembic" (still). The center of alembic is

the retor, a glass flask containing, pyrites or yellow nitric- salt- saltpeter deposits and pure salt peter.²⁸ (Fig. 7).

This mixture has to be heated indirectly by a flame, then by vaporizing the chemical the acid will develop in the form of aqua regia, the form by which the gold will then dissolve.

Other oxides which are used by potters are cobalt oxide, mined in Kashan and Qum, manganese oxide (MnO_2) and antimony oxide (Sb_2O_3) in the form of Aurapigment.²⁹ A mineral known as "Siyah-galam" consists of 85 percent chromite, 10 percent manganese and 5 percent magnesium silicate, which is also used for black outlines on the ceramic wares.

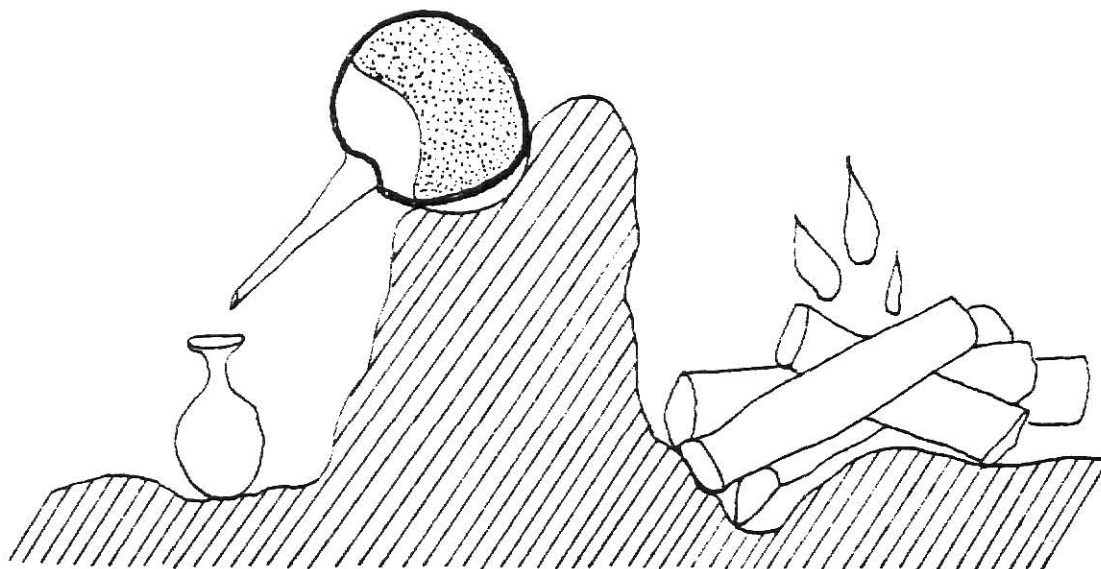


Figure 7

Simple form of Alembic (still)

²⁸Wulff, o.p. cit., p. 163.

²⁹Ibid.

Kiln Design

Iranian ceramic kilns are almost always fired to low fire temperatures. There is a range in cones from cone 012 up to cone 1. Kilns are built of earthenware sundried or kiln fired bricks. The interior and exterior of the kilns (particularly for the pottery kilns) are covered with a mixture of mud and chaff for better insulation. There are many other types of well designed and high fire kilns that may be found in Iran, but most in this category belong to private industry and their categories are out of the context of this paper. Before oil was used as a fuel for the kiln, most Iranian kilns were updraft kilns. A cylindrical brick construction, raised about eight feet (2.5 m.) above the ground and covered with mud, was a common sight. Stairs on one side led to the top of the kiln. Inside were circular shelves, one above the other, built of brick and covered with mud. Such a kiln would hold sixteen medium size jars and a large kiln could hold thirty. This type of kiln usually was loaded from the top and the firebox was located in the bottom of the kiln. (Fig. 8).

The updraft kiln was in operation over a long period of time because it gave a satisfactory firing for the low-fire lead base glazes. Updraft kilns in low temperature firings (especially when beginning the firing), have less of a smoke problem than does the downdraft operation. Because of the presence of carbon in the kiln the lead glazes will turn to black color. Even the Kashan potters used to remove the bark from the wood they used to achieve a smoke-free flame.

The northern type of kiln in operation today are built around the forest and still are operating with wood using a type of updraft design. (Fig. 9). Kilns found in Central and Southern Iran operate

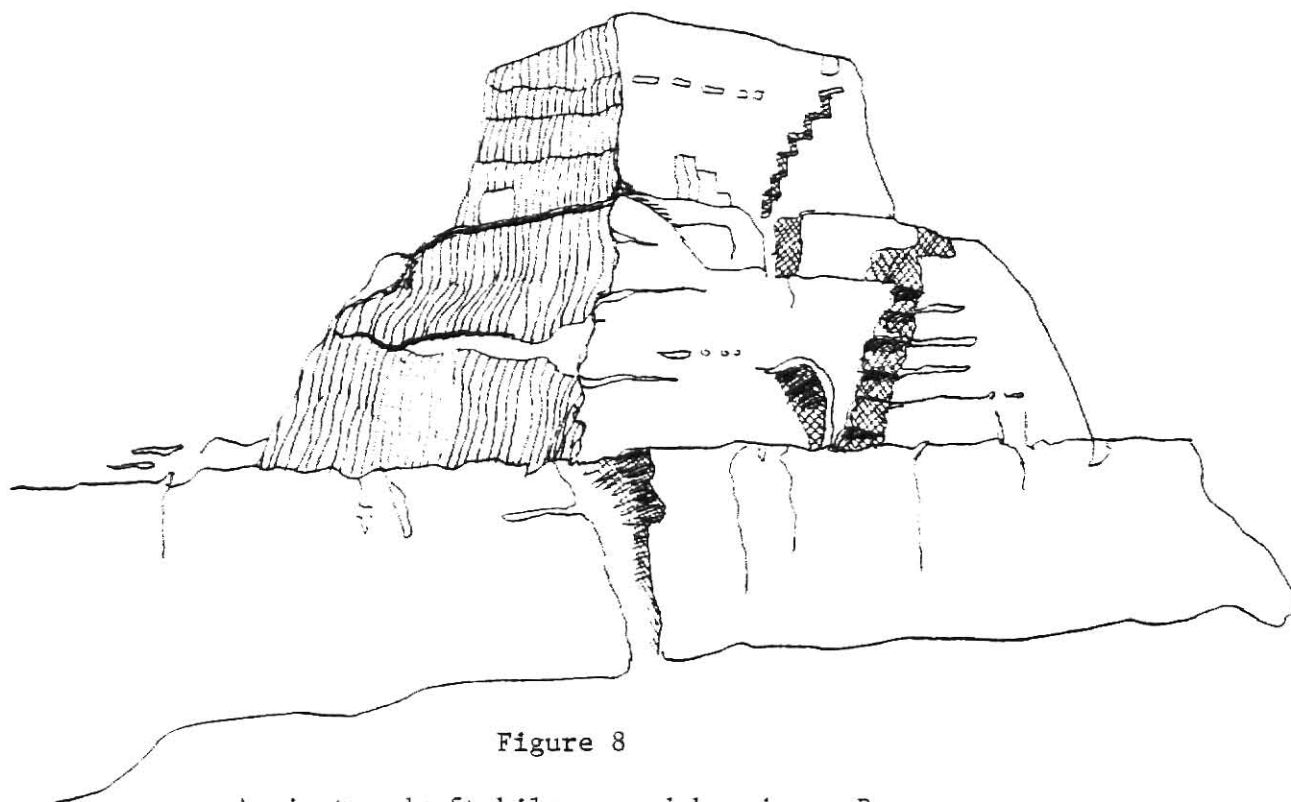


Figure 8

Ancient updraft kiln - wood burning - Rayy

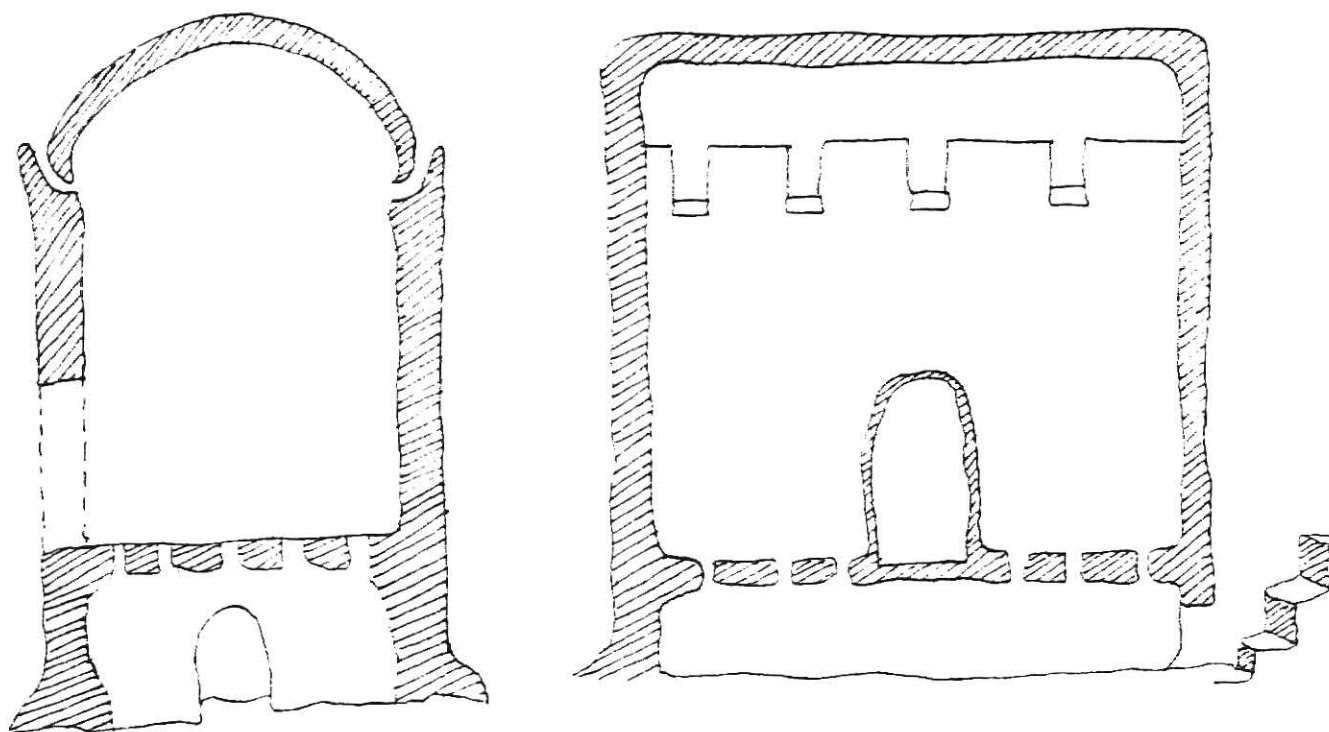


Figure 9

Updraft kiln - wood burning - Gilan

with oil fuel and of a downdraft design. Downdraft kilns are usually built in one or two chambers. They all have only one firebox which is in the middle lower section of the kiln. The firing chambers are circular with a dome above. This dome is usually 10 feet in diameter and twelve feet in height. In the middle of the dome there is a hole approximately two feet diameter in the center. This hole will shut during firing procedure. There are also four flues in the bottom corner of the kiln floor. (Fig. 10).

The upper section of the kiln is used for a drying chamber. The kiln usually is loaded from above (from the hole in the center of the roof), and unloaded from the door in the front of the kiln. When the fire is started the potter usually (because of the smoke) leaves the hole above the kiln chamber open so that the kiln is actually acting like an updraft kiln. When heat starts to build up inside the kiln the chamber hole is shut. The heat then goes above the chamber and it turns back into the bottom of the kiln, by the flue and is then directed into the drying chamber before spent heat is vented to the outside atmosphere. For a larger operation, potters often build this type of kiln with two or three individual chambers. (Fig. 11).

As previously mentioned, approximately ninety percent of the downdraft kilns operate with oil. Today, there are three types of burners which potters use for firing. They are plate burner, oil pressure burner and forced air burners.

Plate burner. The fact that oil has a high combustion level and is free of sooty ashes makes it a popular fuel and it can be easily used with a natural draft. Some oil burners are built by putting a metal plate in

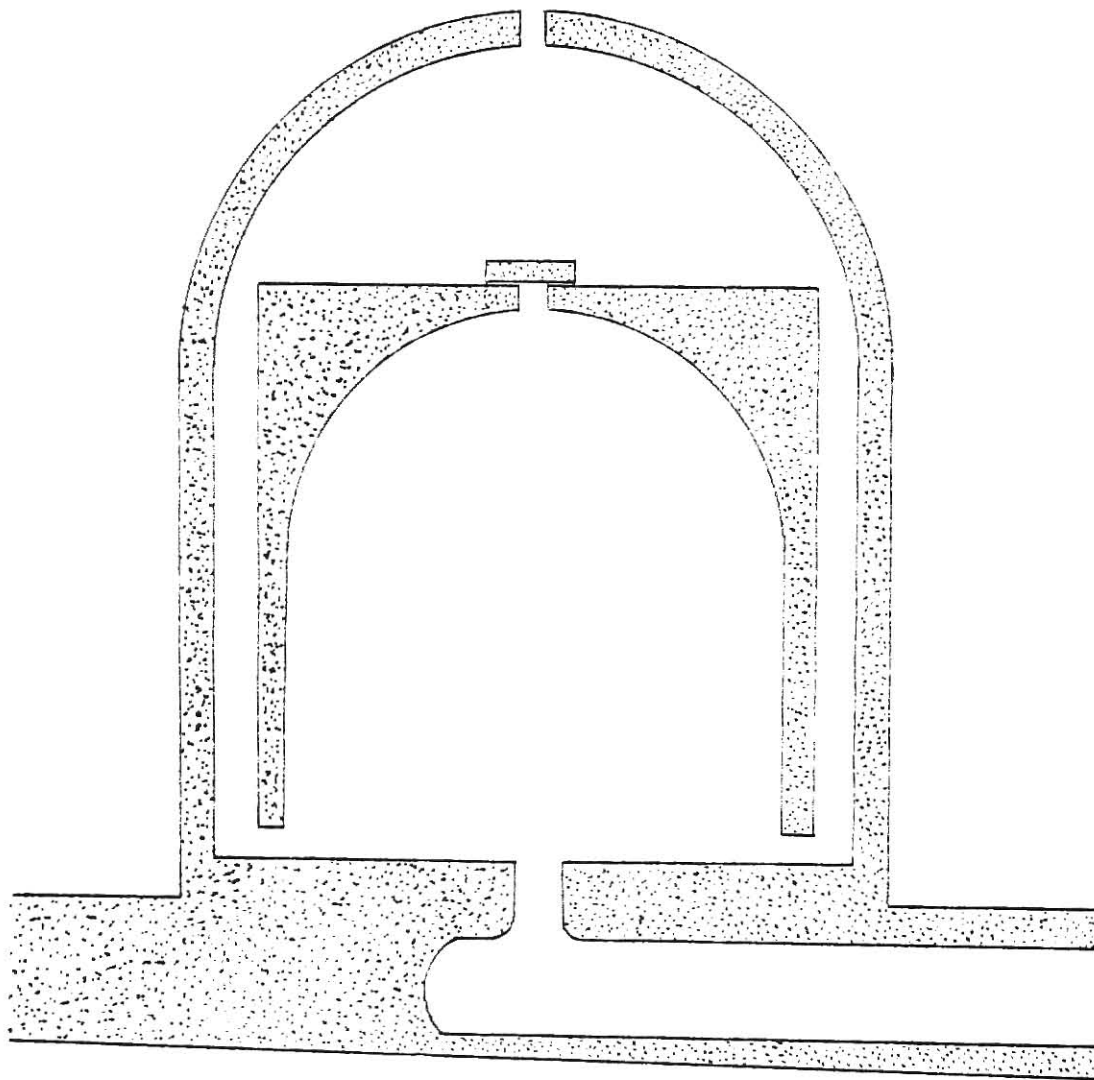
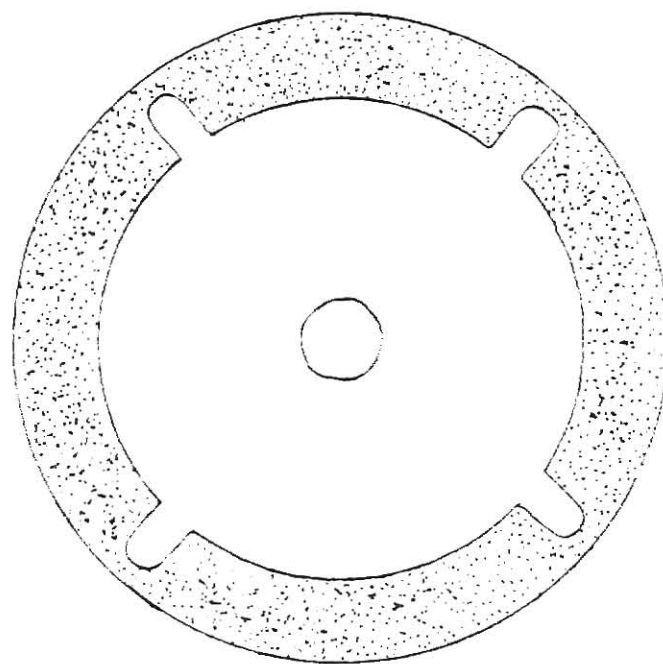


Figure 10



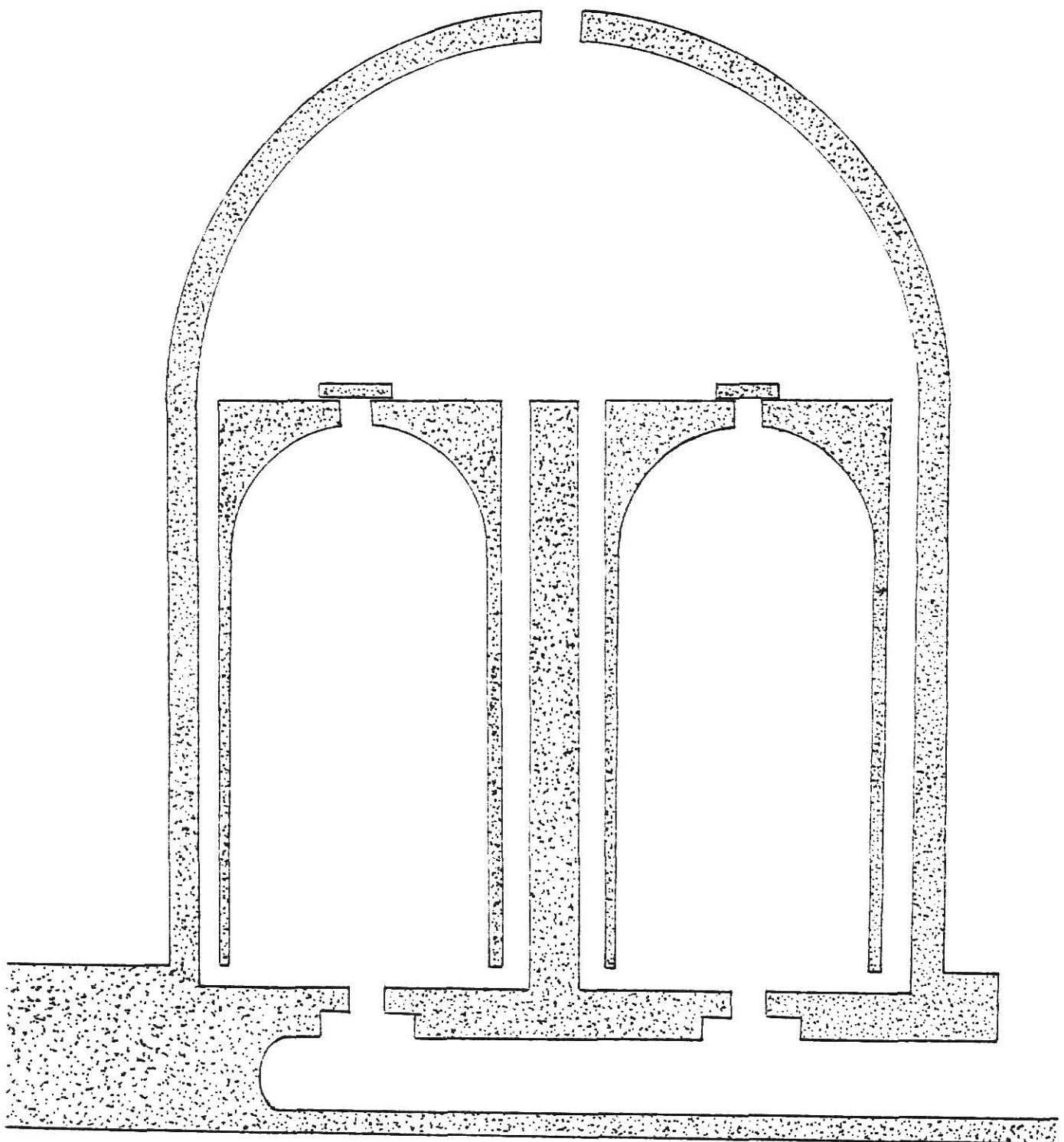


Figure 11

Double chamber - downdraft oil burning kiln with a large drying area
Isfahan

the fire box. This method has worked very well, particularly when the plate obtains the proper temperature. The problem with this type of burner is that it causes a great deal of smoke, especially when the kiln is not at a hot enough temperature. (Fig. 12).

Oil pressure burner. A second type of burner called oil pressure burner is used by potters who produce the finer quality wares. It consists of two cylinders (small and large in diameter) which are joined to each other at the top and bottom completely. There is an area of approximately three inches that is left hollow between the two cylinders. (Fig. 13).

There are some holes drilled on the upper sides of the inner cylinder. The burner is elevated from the ground by four pieces of metal for a stand. The oil container has to be placed at least 5 to 10 feet above the burner which is then able to build up enough pressure. By the use of a pipe from the container, the oil is vaporized into a gas as a result of the hot atmosphere around the burner. The gas then comes out of the holes from the inside of the second cylinder. This gas will burn in the fire box by means of a natural draft.

The oil pressure burner was examined by the writer in 1972 for a low fire, 3 cubic foot kiln. The kiln was built-up on the same down-draft oil burner design as was mentioned previously. This type of burner designed for the kiln was made of cast iron pipes and a plate in the bottom. There was also a pipe joining the bottom of the burner which ended by the faucet control. (Fig. 14).

To start the burner, there must be present a fast burning liquid such as alcohol which must be poured into the bottom plate and ignited with a match. It takes about 5 to 10 minutes for enough heat to build

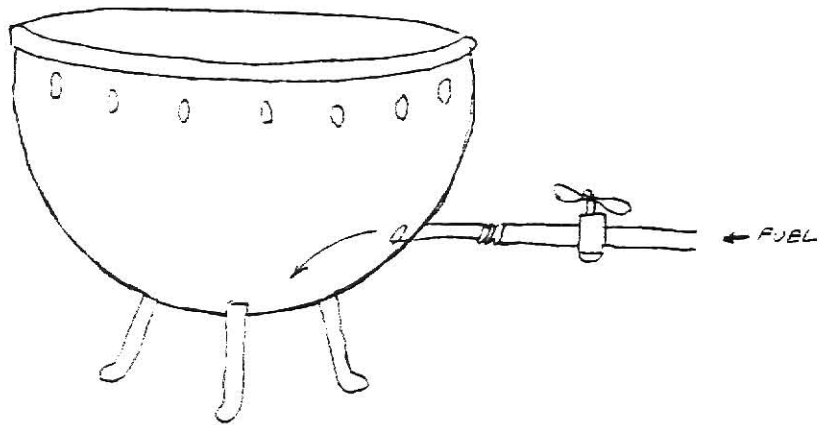


Figure 12

An illustration of a plate burner

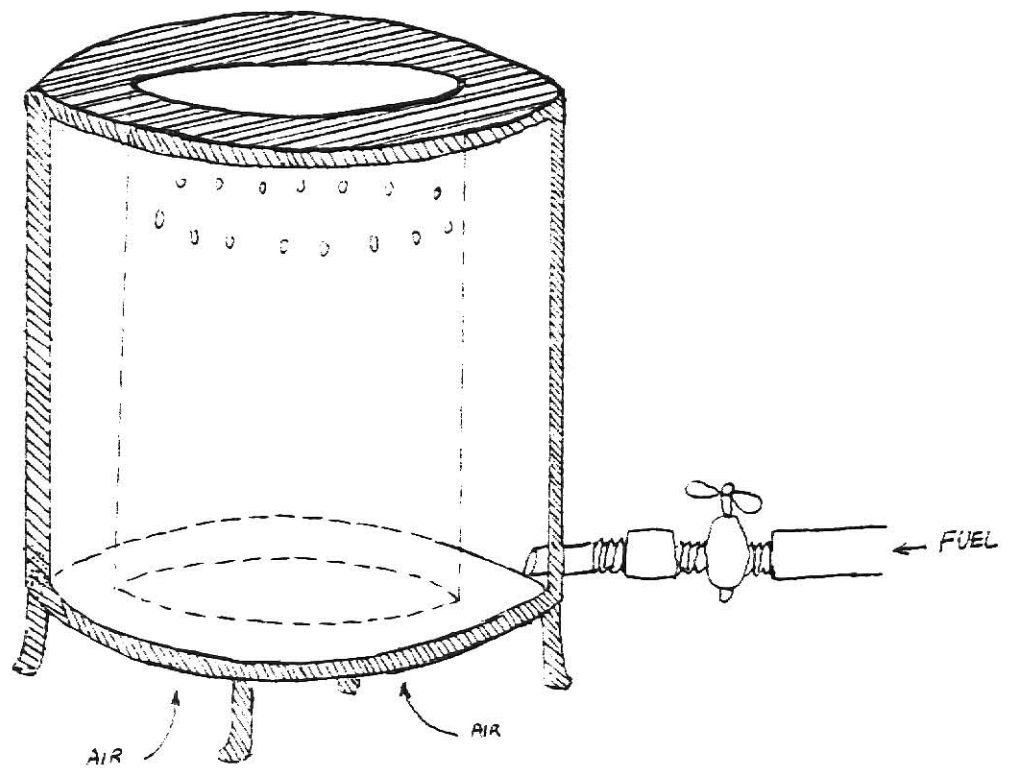


Figure 13

Oil pressure burner - cylinder form

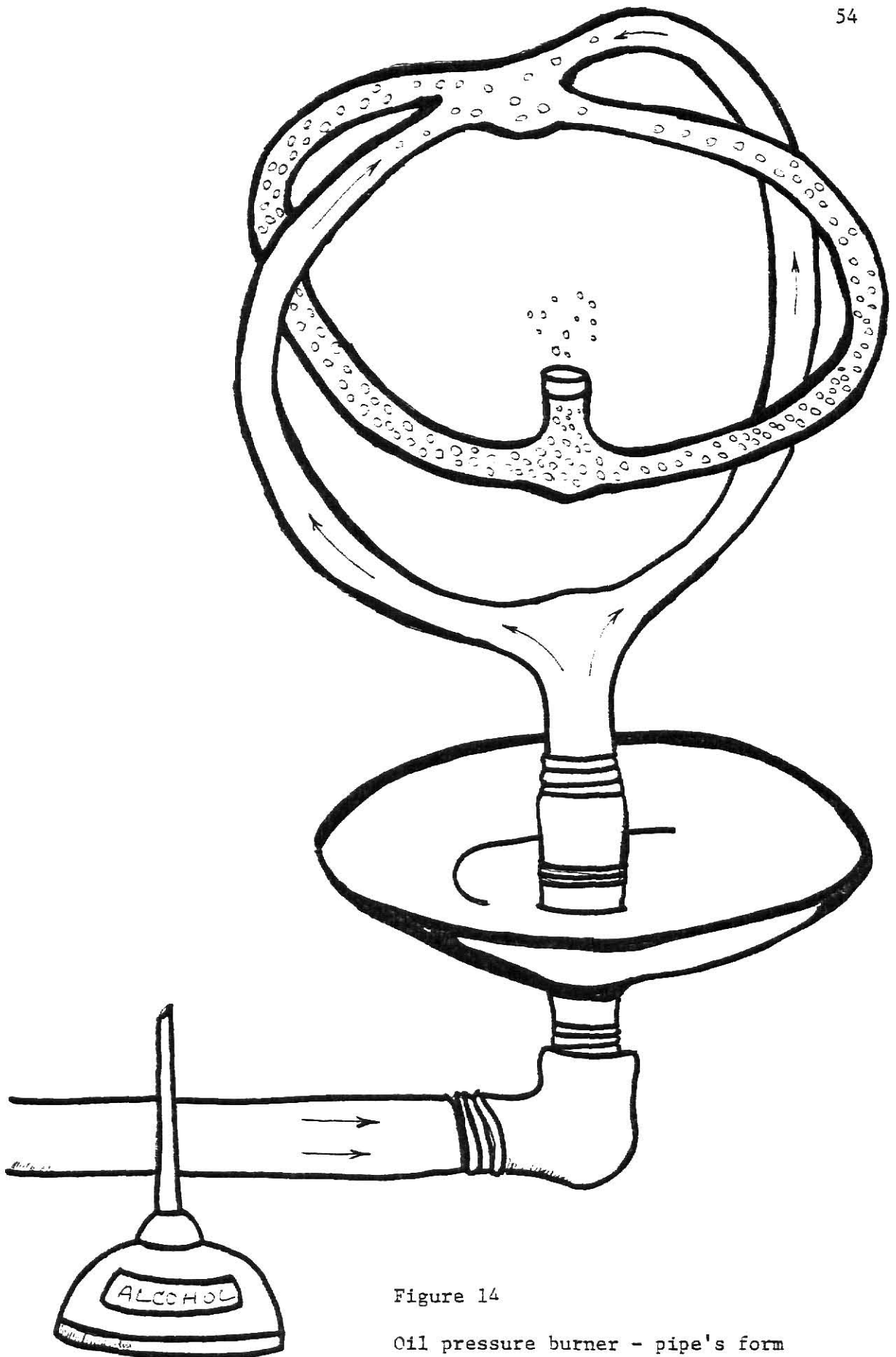


Figure 14

Oil pressure burner - pipe's form

up around the pipes to make the oil evaporate and burn easily. The only disadvantage of this burner is that the fuel has to have a high combustion level such as kerosene has. Otherwise, it is very difficult to work with.

Forced air burner. There are two types of burners which we have previously discussed that are still hard to adjust for the proper temperature. Most of these kilns have about a twenty percent waste factor. Today, many of the ceramic workshops which are located close to the city where it is possible to use electricity have changed to the forced air burner. This type of burner consists of an electric fan located behind the oil pipe. The forced air burner also gives a higher combustion level to the fuel. It also has a smoke free flame which is very helpful when the firing begins. Presently in Iranian ceramic workshops there are many variations of this burner which are designed either by the potter or industry.

Stages of Processing

For a complete understanding of the processing of ceramic ware in Iran these three major areas need to be discussed.

- I. Clay proportion and production.
- II. Glaze processing and application.
- III. Firing process.

I. The preparation of the clay has a variety of stages that directly depend on the type of clay with which the ceramists desires to work. The ordinary earthenware potter works with pure clay which is dug up from a source close to his workshop. After he has a supply of clay, it

is broken into small pieces and soaked in water. Clay has to slake in water for several days. The excess water is allowed to evaporate. The clay is then mixed with the feet and left in the sun until deep cracks appear on the clay surface. It is then brought into the workshop and stored. If the clay has to be thrown on the wheel it needs further wedging treatment. For the forming of the clay into the required shapes there are still three different methods applied. There is either the free forming, mainly with coils, throwing on the wheel or forming into molds.

If the ceramists needs a fine earthenware body, he always flakes and screens the clay through a fine sieve, sometimes through a silk screen. For additional material pebbles of flint are added to the clay. First, the potter crushes them with an iron bar, then pounds them with a stone mortar made of basalt block. The flint is granulated to the size of millet grains. The potter then grinds them very fine with a hand mill or quern. Dry grinding is used for the first stage and wet grinding for the final stages. A hand mill or quern consists of two heavy circular shapes of stone, which has one stone constant and the other one revolving by hand on the top.

Iranian pottery wheels are a disk kickwheel and they turn in a counter-clockwise direction. The wheel is usually constructed on top of the ground. (Plate 17). In Khorasan (northeast of Iran) the lower parts of the wheel, treddle and thrust bearing are often built below floor level, and the potter steps down into a pit, when he begins his work.

Potters usually have a drying area where the pot is taken after it is thrown. Handles are drawn from a roll of wet clay and attached to



Plate 17. A potter working in his studio.

the moistened and roughened surface with a mild pressure. Drying time depends on the weather conditions, but generally it takes 24 to 48 hours before a pot is dry and ready to fire.

II. Glaze preparation is mainly restricted to the larger industrial ceramic areas such as Qum and Isfahan and is usually a separate ceramic business serving the production potters in the area. Still there are many local potters that prepare their own glazes instead of purchasing the prepared glaze.

As we have mentioned in glaze composition, potters obtain the raw materials from quartz, potash, magnesium oxide and lead oxide. After the potter has collected enough flint pebbles from the river beds they bring them to the workshop and check to see that all of the stones are broken. The stones are sorted and the white ones are kept for glaze making. The brown colored stones are used in clay bodies. The white form of flint is ground and processed through the handmill (quern) several times. The quartz which is already mixed with water in the wet quern is filtered throughly with a cloth. It is then dried in the sun.

The glaze maker weighs all of the glaze frit carefully and places the frit in the frit kiln, which has a hollow hearth. After the frit mixture is heated for eight hours it is stirred with an iron ladle; when the frit is completely bubble free and melted into a clear glass, it is taken out and poured into a water pit in front of the kiln. The hot molton frit granulates upon the contact with the water. The glaze maker then collects these frit granules and pounds and grinds them for further use. Today, unfortunately because of cheap craftsmen in some workshops they are using broken pieces of glass for the frit which is mixed with

silica and red lead oxide. This type of glaze using the glass usually cracks and doesn't bind strongly with the clay. Also they have a very high viscosity.

For the glaze preparation the potter adds different types of oxide with the frit for a variety of colors. Then he adds pure white clay, potash and some grape syrup or vinegar for high suspension of the glaze particles. The solution again goes through the wet quern several times. The mixture is then poured into a vat and some gum tragacanth is added to give a better adhesion before the glaze application. The glaze is usually poured or dipped on the pottery. (Plates 18, 19).

III. The firing process depends upon the kiln dimensions and the nature of the wares. The largest kilns are used for firing the well sinker's hoops and the coil potter's wares. This type of kiln is usually fired very slowly between 13 to 14 hours. The wares are simply stacked on top of each other. Large storage pots are usually single fired because of their thick body.

The kiln temperatures range from 950° to 1020° C. which is a temperature for either bisque or glaze firing. For determining the kiln's temperature, potters place a well glazed pot in front of the spy hole. When the glaze is bubble free and the surface has turned shiny and smooth looking, the kiln is turned off. For kilns which are firing tiles mainly, the potters use pyrometric cones because of the flatness of the tiles. The kilns are usually constructed with the shelf inside and potters simply place the pots on the shelf. For the finer wares they are placed in the saggars, which are stacked one on top the other. (Plate 20).



Plate 18. Decorating the bowls with underglaze stains.

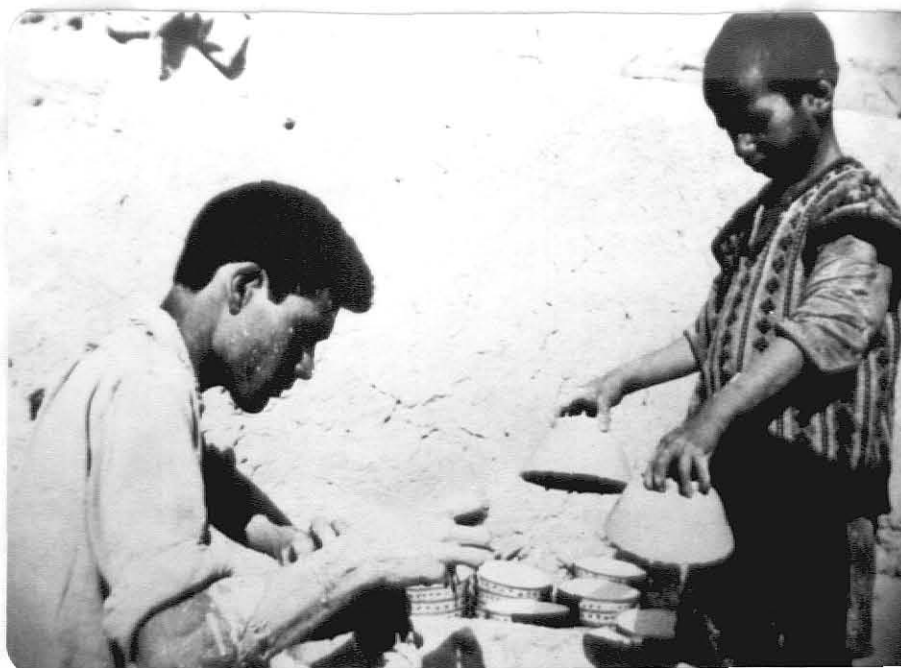


Plate 19. Glazing the bowls with clear low fire glaze.



Plate 20. Loading an updraft kiln.

Chapter III

THE CENTERS OF CERAMIC PRODUCTION

In the last few decades of the 20th Century the Iranian ceramic centers have spread to many small cities and villages throughout Iran. The cause for this shift is due mainly to three very important factors. One cause for the shift is the rapid development of cities, bringing on massive changes in zones and cost of living. Another reason for the change is due to the increase in population. The third reason is the modernization of Iran has drastically changed the structure of the society and localities because of industrial urbanization. During the 20th Century Iran has rapidly advanced into the modern world and this has naturally brought about great changes in the society.

The cities that were the ceramic centers up to a few decades ago have left behind them just a name and examples of the many fine antique ceramic pieces in most cases. A few of the old ceramic cities still exist as ceramic production areas. However, they are not as active production areas as they once were. Such cities as Nishapure and Kashan are still very active in ceramic production, but the products that are produced today have very little relationship to the ceramics produced in previous times.

In this chapter we shall discuss three areas that are known for their fine pottery production. These areas are Rayy, Kashan and Hamedan.

Rayy

This city is located in Tehran's "Ostan" (province) five and one-half miles southeast of the city of Tehran. It was not a major city during the Sassanian times, but became important later on. During the Sassanian Dynasty it was mainly settled by Christians. In 641 A.D., Rayy was captured by the Moslem Arabs. Rayy only became a major city during the Abbasaidd Dynasty (740 A.D. to 1258 A.D.). After the Abbasiad Dynasty's rule it continued to be a city of importance in the areas of politics, commerce and art under the Seljuks. In the 12th Century it was tormented and greatly weakened by the fury of rival religious sects. In 1220 it was captured and almost entirely destroyed by the Mongols and most of the inhabitants were massacred. Many of the people that survived moved to nearby Tehran, leaving only a handful in the old city and it soon fell to ruin.³⁰ (Plate 21).

Today, the city of Shah "Abdul" Azim which adjoins the ruins of Rayy has been renamed Rayy. Industrialization progressed in the area of Shab-dul-Azim (literary). Great brick-making factory areas developed because of the rich earthenware clay surrounding the city. The large numbers of tall chimneys which dot the area from the brick factories have almost become a landmark in the areas.

Pottery, which used to be a major business in this city of Rayy moved out to Qum which is approximately 147 Km southeast of Tehran. Today Qum is one of the major ceramic centers in Iran. It is hard to

³⁰ Enciclopedia Britanica, op. cit., p. 1191.
 Lockhart, 'Persian Cities', pp. 1-4 (1960).
 LeStrange, "Lands of Eastern Caliphate, pp. 214-17 (1930).

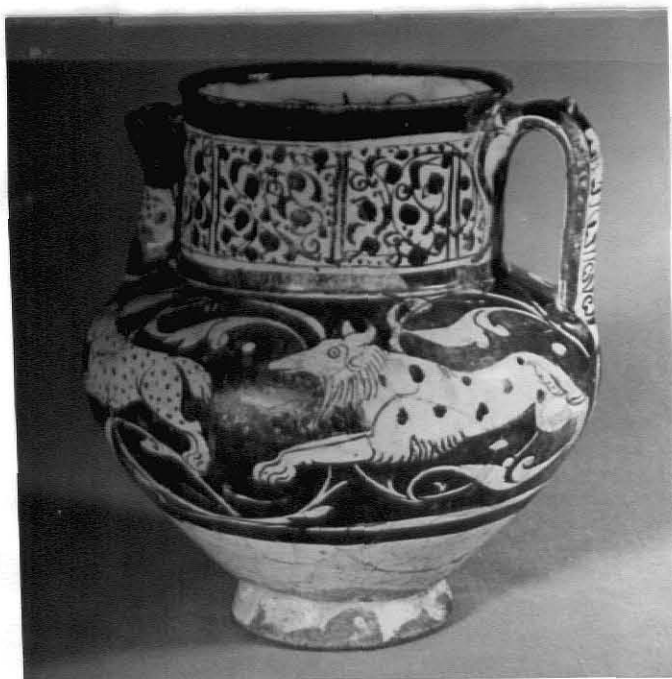


Plate 21. Ewer, overglaze painted brown, bold luster, Rayy, 12th Century, Seljuk period. Height 17.9 cm.³¹

³¹Atil, Esin, *Ceramics from the World of Islam* (Washington Smithsonian Institution, 1973), p. 77.

say that Qum is continuing Rayy's style, but their production resembles the old Rayy type. It resembles Rayy's ware much more than any of the other ceramic centers in Iran. Rayy was very famous for its polychrome glazes which were low fired and Qum is also very famous for similar wares.

Kashan

Kashan is another major ceramic center in Iran. The importance of Kashan as a pottery production center is illustrated by the language itself, for the very word for faience in Iran even today is "kashi" and the tiles are often referred to as kashani, and in various other terms relevant to ceramic manufacture, kashi, is the root word.³²

It lies on a desert and sand-ridden plain at the eastern foot of the central Iranian range, 251 Km (150 miles) south of Tehran. The population of Kashan was estimated to be 60,952 in 1964, and has remained basically stable during the 20th Century.

During present times the ceramic center in Kashan is not as large or varied as in previous times. Their production is still large and following the old traditional designs and forms.

Kashan was for many centuries well known for its (Plate 22) fine luster ware, but not many workshops today are attempting to produce it. Kashan, throughout Iranian history, was never a very important city, nor did it ever play a great political or economic role in Iran as did the cities of Isfahan (500 Km southeast of Tehran), Rayy or Hamadan.

³²Pope, O.P. cites, p. 1567.

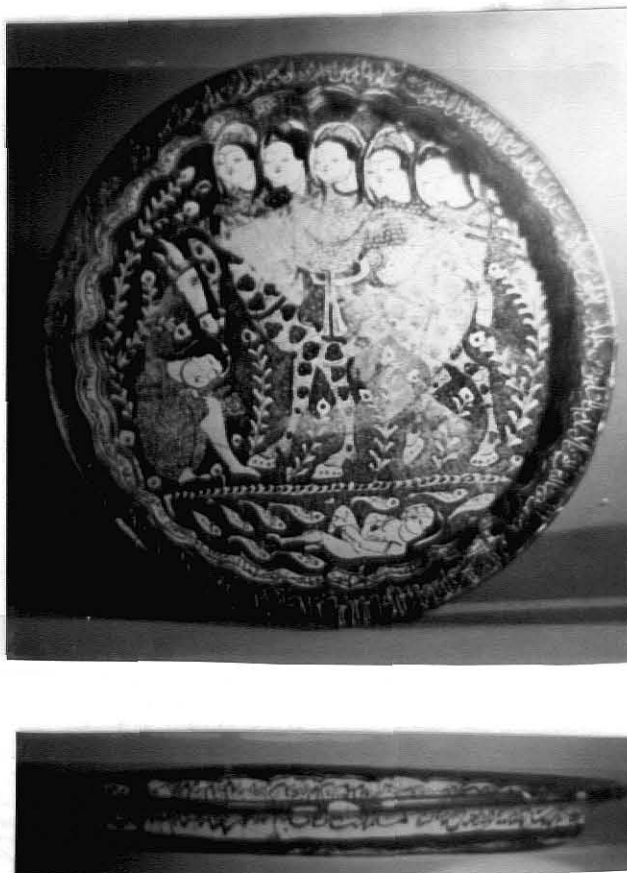


Plate 22. Plate over white glaze, painted in red luster.³³
Kashan, 12th Century, Seljuk, diameter 35.2 cm

³³ Atil, Esin, op. cit., p. 78.

Hamadan

One of the Iranian ancient cities which used to be a summer site for the Achaemenid Dynasty was the city of Hamadan. It is surrounded by high mountains and has a total population of 888,685 people. Hamadan, is a leading center of pottery production. It is even a leader among the other pottery production centers in Iran. The total number of pottery workshops in 1965³⁴ was one-hundred and ninety-two shops. Almost all of these pottery centers are producing wheel thrown objects and most of them are decorative wares, especially vases. A very low percentage of the ceramic ware produced in Hamadan is utilitarian in nature. Those that are, generally, are storage containers, unglazed cooking pots, water jugs and the like. Most of the utilitarian ware is used by the local people and not sent to other cities.

Hamadan potters occasionally work with a low fire white body which is a continuation of the old Iranian imitation porcelain. The body is not quite mature, but still utilizes a very transparent glaze with bird or floral patterns and leaves a very rich, fine quality ware. (Plate 15).

Lajin

Lajin³⁵ is a small city which is 20 miles from Hamadan with a population of 10,000. The main business in this city is pottery and the other businesses are ranching and other agriculture-related employment.

³⁴ Iran Book of Facts, 10th edition. (Tehran, Echo of Iran, 1970) p. 312.

³⁵ translation: Iran Economic Ministry publication, "Hand-Craft Center", Bulletin No. 133, August 1974, pp. 1-4.

The number of small hills in Lajin are a good document to Lajin's long pottery history because the small hills are made up of broken pots deposited there throughout the ages. This city produces many different types of pottery, all low fired and they sell very well to both the local areas and the large cities throughout Iran.

The glaze ware of Lajin usually consists of plain, non-decorated ware. The customer (usually from Hamadan) buys the undecorated pot and adds the decoration himself. This practice is a time honored tradition in all places whereby the potters (those that produce the form from clay) and the designers (the graphic designers) are usually not the same person. The reason for this is that patterns on the pottery are usually very complex and the potter feels that there is not enough time to decorate the ware himself. To design the pot was also part of the job for the people that took care of the business shops. This fact is evident today in most of the Iranian craft stores where one may view a small ceramic studio behind the counter where the pottery is usually decorated.

Today, there are 200 pottery workshops in Lajin which usually employ five people each, working in one specific area of ceramic production. The production of this type of craft workshop is usually seasonal (6-9 months a year). Each workshop produces a specific form, such as only bowls, large storage vessels or small storage vases etc.

Besides all of these local workshops in 1967 the Iranian government built a large new workshop with enough equipment so that today it employs approximately 40 craftsmen.

The education of the potters varied, of course. An estimate as to their educational background was published by the Iran Economic Ministry (August 1974). Forty-four percent of the potters are completely

illiterate, 36 percent could read and write and about 20 percent have had only an elementary education. The average salary of the potters was fifty cents to a dollar a day (1974) and highly skilled potters two to four dollars a day.

The following chart will state approximately the annual production of several of the pottery categories, the profit margin, retail price and cost of production per item. The cost of production includes the raw material (Usually the clay is free), transportation, fuel, electricity, rent and labor prices.

No. of products produced/yr.	profit	wholesale price	production cost	product
62,000	3¢	9¢	6¢	BOWL
1,177,715	45¢	75¢	30¢	LARGE CONTAINER
16,271	3¢	12¢	9¢	JARS
32,875	1¢	4¢	3¢	UNGLAZED JUGS & POTS
22,000	12¢	30¢	18¢	GIFT ITEMS

These prices are at 1973 levels and convert to \$1.00 = 70 Rials.
(Rials are Iranian currency units).

Problems and Requirements

The problems that the potter faces in his business shall be discussed in the following section of this paper.

I. The Iranian potter is somewhat dependent upon weather conditions and therefore, does not work twelve months a year. The drying stage is very dependent upon the weather because in Iran the pots are usually dried in the sun. Any type of drying device such as fans, a larger studio, ect. could solve part of this problem.

II. The old construction of the workshops, unhealthy environmental conditions inside the workshop and also very poor ventilation are causing problems for the potters. Most of the potters claim that they do not have enough capital to cover their operating costs, and cannot afford to improve their surroundings.

III. The procuring of glaze material and equipment is not feasible for many of the pottery workshops and this is causing some problems such as high glaze cost and valuable time spent in obtaining the glaze materials.

IV. Clay processing is usually done with the hands and feet in pottery studios and the potters complain that because of this method their health fails and various diseases occur.

V. It seems that there is very little business cooperation involved between the potters and the result is unnecessary price competition. Another part of this problem is that the customers and businessmen try to promote this form of unhealthy price competition.

VI. Most of the kiln designs are inadequate for the job and were built with improper technique. A number of pots, 20 percent of annual production, are ruined because of the kilns. This waste is unnecessary. Improving the kiln construction and using some sort of pyrometer or cone could possibly solve some of these problems.

VII. The type of earthenware clay which the potters use in Iran is very simply processed and they are unable to remove the CaO (Calcium Oxide). The CaO during firing produces eruptions in the clay bodies and also cracks. Again, the processing of the clay needs to be improved with better technique.

Conclusion. Besides these ceramic centers which we have discussed there are many other important centers such as Karman, Tabriz, Sary, Yazd, Shiraz and Shah-Reza, which produce fine ceramics. These centers also are famous for their other crafts (Plate 23) such as carpet weaving (Kashan and Kerman), glassblowing, metalsmithing, and other crafts. With the increasing industrialization of the country people seem to be taking a second look at their crafts and perhaps learning to appreciate the crafts and craftspeople more.

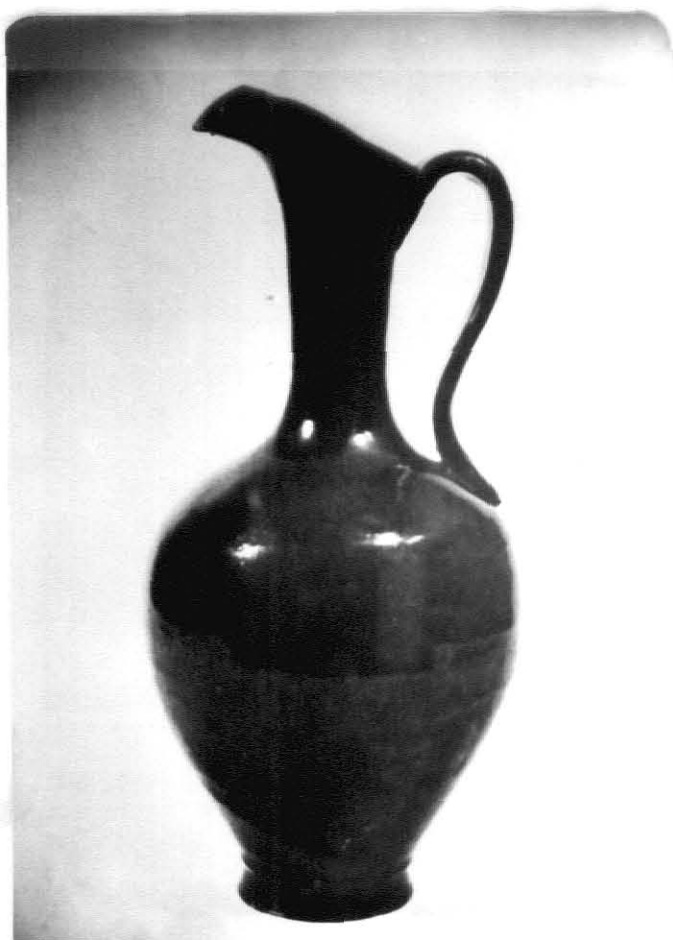


Plate 23. Water pitcher, black glaze, 20th Century Yazd.
Height 33.7 cm.

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A SURVEY OF CERAMICS IN IRAN

by

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B.F.A., University of Kansas, 1976

A MASTER'S THESIS

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requirements for the degree

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The progress of Iran in recent years has produced few studies by scholars in the area of arts and crafts. The field of ceramics in Iran especially has proved to be a worthwhile study because of the antiquity of its civilization which developed along with this craft. On account of this antiquity European archeologists have researched this field to a great extent and not enough attention has been given to ceramics as a vital and contemporary craft.

Since I have an Iranian heritage, have received part of my professional training in my homeland had have worked in shops and factories there, I feel qualified to study their ceramic development, past and present.

This essay includes three separate chapters which are the history, technical aspects and contemporary ceramic centers. The past development of this culture is stressed because every movement, experience and contemporary design has a long continuous root back into its history. The basic approach has been to investigate and research the various shapes and long-standing designs as well as the methods used in developing them. This has included also a discussion of our decline in ceramic perfection since the seventeenth century.

In the second chapter I analyze the different techniques involved in each area. I have gone into detail on the physical and chemical composition of the body and glaze, kiln design and stages of processing.

With the modernization of Iran, changes have come in the centers of ceramic production. The last chapter is related to the ceramic centers and a discussion of specific areas, particularly Rayy and Kashan for their original creations and outstanding artists. There are a

number of contemporary centers, one of which is chosen for a detailed discussion of production, potter's economy, requirements and problems.

This essay is probably the first work of its kind concerning ceramics which has been written in English by a student from Iran. I am grateful that I have had this opportunity to investigate and know more about my own native culture and arts.