

## INDIA: THE ANCIENT HOME OF DISTILLATION?

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It is generally believed that the art of distillation was known to the Greeks of Alexandria before the opening of the Christian era, and later used by the Arabs for obtaining essential oils; but that the distillation of alcohol only developed in western Europe from the twelfth century A.D. In this article the author refers to the identification of certain pots as parts of stills. The pots are found in archaeological excavations in northwest Pakistan, and together with the contexts in which they occur, lead to the conclusion that the distillation of alcohol was common in that region between c. 150 B.C. and c. A.D. 350. This type of still resembles one of the two main types surviving in popular use throughout south Asia into this century. A fresh look at references to alcoholic drinks in Indian literature suggests that certain terms, hitherto not clearly understood, may refer to distillation, permitting us, in India and Pakistan, to take its history back to c. 500 B.C.

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Considering the importance of alcohol for mankind, and the diverse uses to which it is put, it is surprising that comparatively little is known of its early history or of the stages of its discovery and exploitation. There seems to be fairly general agreement that a knowledge of fermentation is so elementary and so widely diffused throughout human society that it must have been discovered at a very early date and probably in many different places. Even so, definite evidence is hard to come by. On the all-important step of the discovery of the concentration of alcohol by distillation there are widely divergent views. Forbes (1948) in one of the very few books devoted to the subject traces the discovery back to the Alexandrian Greeks at the beginning of the Christian era. At that time the process was apparently used mainly for chemical purposes. The onward development seems to have been at the hands of the Arabs who used it for the extraction of essential oils for perfumes. Although there are rare Arab references, towards the end of the first millennium, to the distillation of wine, it seems probable that for religious reasons they did not exploit it (Forbes 1948: 41). According to Forbes, distillation of alcohol for drinking seems first to have developed in Europe in the twelfth century and thereafter. He dismisses the thesis advanced by some ethnographers (Maurizio 1933) that the very wide distribution of simple stills among primitive peoples in Africa, Asia and middle America indicates the antiquity of distillation, and believes that all such modern occurrences may be traced to the recent diffusion of the technique. Thus, there appears to be an unresolved contradiction between the historical view, supplied by a critical reading of textual evidence, and the ethnographic, deriving from modern observations of primitive peoples. Because of the fugitive nature of much of



FIGURE 1. Indian tribal still from Andhra Pradesh (copyright C. von Furer-Haimendorf, 1943). This is a modern example of the type of apparatus which has been found in ancient Gandhara.

the material evidence involved, archaeology has hitherto had little to say on this question. Recently however archaeological evidence from northwest India and Pakistan has led me to re-examine the problem in the light of local textual and ethnographic evidence, and this has produced encouraging results. It leads to the conclusion that only an inter-disciplinary approach can provide a convincing hypothesis in the present state of knowledge.

Viewed in the light of textual references the Indian picture at first sight seems to coincide with Forbes's view. On the other hand the ethnographic evidence is plentiful and suggests that in South Asia distillation was certainly much older than the texts appear to indicate. When the first distilleries on European lines were established in India around 1835 there was already in many parts of the subcontinent a local cottage industry distilling spirits from a variety of fermented liquors, including unrefined sugar, palm juice, rice and the flowers of the *mahuā* tree (*Bassia latifolia*). The apparatus they used was extremely simple, consisting most commonly of a globular pot, covered by an inverted terracotta bowl with a hole cut in one side to admit a bamboo pipe connecting it to a second, receiving pot. The joints were sealed with clay and the still-head was usually covered with a wet cloth, while the receiver was stood in a basin of cold water to promote condensation (fig. 1). A second type of still is also widely reported in South Asia. Here a large pot has a smaller placed over its mouth, having perforations in its base. A small bowl is set inside the perforated pot whose mouth is in turn closed by a third pot with a rounded or conical base and filled with cold water (fig. 2). The fermented liquid is boiled in the lower pot and the steam rises through the perforations, condensing on the base of the uppermost pot and dripping down into the

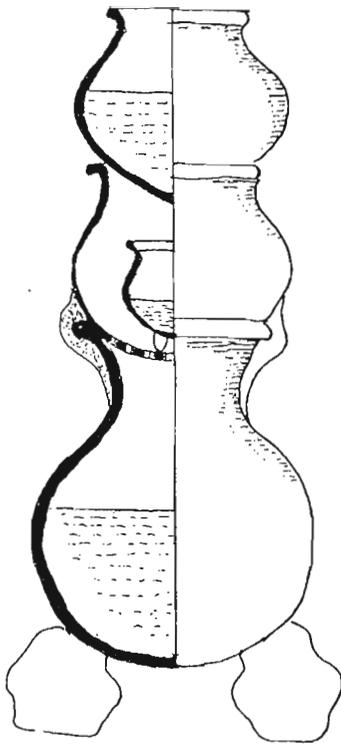


FIGURE 2. Modern Indian tribal still from Bihar (after Mahdihassan, 1972). This is an example of the vertical type of still sometimes referred to as the Mongol still.

receiving bowl. Both these methods have been recorded in South Asia among tribal groups, rural agriculturalists and specialist castes whose products are sold to an urban population.

The custom of taking alcoholic drinks, including the products of distillation, was certainly current among Indians in early British times, and leads one to believe that the native distilleries were then patronised not only by tribal peoples, but also by princes. Some Rajput princes jealously guarded the secret formulae of their palace stills and their products formed an important item of hospitality. About the Sikh prince Ranjit Singh, Burnes tells us, that he was 'immoderately fond' of strong drinks, and that his favourite beverage was a spirit distilled from the grapes of Kabul (Burnes 1834: I.30). However inconclusive such evidence may be, it suggests that the drinking of spirits was common among Rajputs and Sikhs in the period when direct European influence can only have been slight, and therefore that at least in the Punjab and Rajputana may be far older than that influence.

By comparison the textual evidence from India and Pakistan is not very helpful. Both the major types of still are mentioned as being in the still-room of the Mughal emperor Akbar in the sixteenth century, along with a third variety which Dr Joseph Needham (in press) has identified as a Chinese type, otherwise unrecorded in South Asia. The earliest explicit reference to

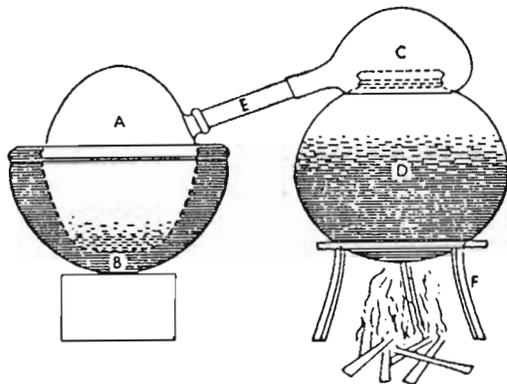


FIGURE 3. Still reconstructed from finds at Taxila, Punjab (after Marshall, 1951). This apparatus dates from 1st century B.C.-A.D.

distillation is in a medical text Bhaiṣajya Ratnāvalī of Govinda Dāsa, datable to around the seventeenth century, where it is used in the preparation of a medicinal drink known as Mritasanjivani Surā, i.e. spirits to raise the dead! Apparatus resembling the first type of still is described in the chemical text Rasaratnasamuccaya of Vāgbhaṭa (c. twelfth century), under the name of *tiryak pātana yantra*, the 'oblique falling' apparatus. Its use is for chemical purposes and there is no mention of concentrating alcohol in this context.

The paucity and lateness of references to early Indian distillation are in contrast to the explicit references to the preparation of drinks and medicines by fermentation. From the time of the R̥gveda (c. 1200 B.C.) *surā* is mentioned as an intoxicating drink, used in certain rituals alongside the more prestigious *soma* about whose nature and manufacture there is still controversy and which Wasson (1969; 1972) has identified as the product of the fly-agaric mushroom, *Amanita muscaria*. According to the commentators *surā* was a ferment of rice or barley. The Arthaśāstra (in part perhaps from the third century B.C.) gives recipes for several fermented drinks including those whose ingredients are rice, sugarcane juice, grapes and various spices. The early medicinal texts (early centuries A.D.) have sections on intoxicants and intoxication, recommending their use for certain conditions and supplying many recipes, including some to combat alcoholic remorse! They describe several categories of drink, both medicinal and other, all produced by fermentation. But there is no indication that any of the ferments were concentrated by distillation. The ingredients are again very varied and include grains, sugarcane juice, honey, grapes and other fruits, and *mahuā* flowers (which as we noticed above are still favourites of modern tribal distillers). The critical historian, basing himself on textual evidence, can hardly be blamed for concluding that while fermentation was commonplace from very early times in India, distillation was 'unknown' (the infelicitous term often used by textual scholars when they mean 'not mentioned in texts') before the twelfth century; and that it was only after the Muslim invasions that it became common. There is thus an unresolved difference between the textual evidence and the inferences which may be drawn from ethnographic observation.

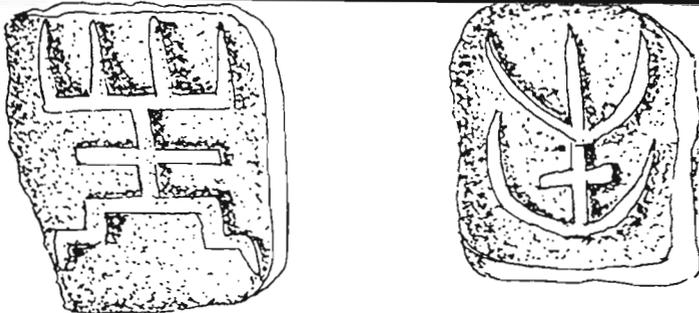


FIGURE 4. Examples of Kushan royal monograms stamped on receivers from Shaikhan Dheri, North West Frontier Province, Pakistan (1st–3rd centuries A.D.).

It is on this paradoxical situation that I believe archaeology may be able to throw some light. In his excavations at Taxila, now in Pakistan, Sir John Marshall (1951: 420) discovered, some fifty years ago, a group of vessels which he reconstructed as apparatus for condensing water. The apparatus consisted of an iron tripod and a group of terracotta vessels—a globular pot, covered by an inverted bowl or cowl, having a short spout on one side, and joined by a terracotta tube to a receiver in the form of a distinctive pot, entirely enclosed except for a short wide spout on the domed top. Marshall supposed that the receiver would have been placed in a basin of water to assist condensation (fig. 3). After making this bold reconstruction he hesitated to express a view on the actual use to which the apparatus may have been put. Others, less cautious, have since not failed to see its obvious suitability for the distillation of alcohol (Ray 1956: 80; Mahdihassan 1972: 164). If we accept this conclusion it would provide evidence of distillation in ancient India in the first century B.C.–A.D. But so long as the Taxila evidence remained unique it could scarcely be sufficient basis for so major a conclusion.

Plentiful supporting evidence, however, was discovered in the Cambridge–Peshawar Universities collaborative excavations at Shaikhan Dheri, Charsada, in 1963, although it barely finds any mention in the preliminary report (Dani 1966). Shaikhan Dheri, the second city of Charsada, was founded by the Indo-Greeks soon after 200 B.C. and occupied until the fourth–fifth century A.D. From the first century A.D. the city was ruled by the Kushans who had followed the Greeks into northwest India from Afghanistan and Central Asia. The ancient name of the city was Pushkalavati and it was the capital of the Gandhara region. In one part of the excavated area large numbers of characteristic receivers were found, occurring without a break from c. 150 B.C. to the end of the occupation. More than a hundred examples were recovered in an area of 350 sq. m. From the first century B.C. some of the receivers were marked during manufacture with a stamped impression. One of the earliest marks took the form of a wine jug. With the arrival of the Kushans the stamped marks are generally monograms similar to those found on the Kushan coins and generally regarded as royal insignia (fig. 4). The custom of stamping pottery with decorative or auspicious marks, and more

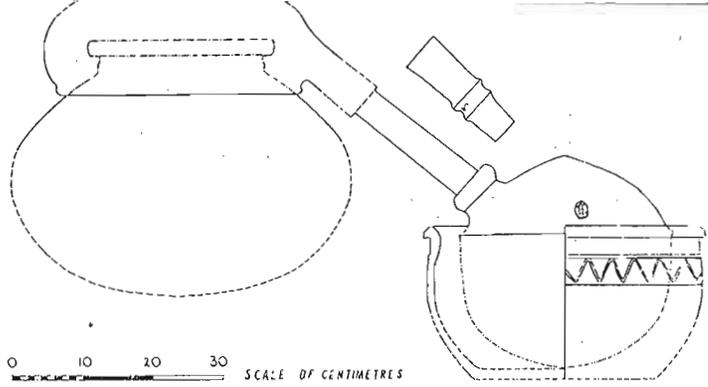


FIGURE 5. Still reconstructed from finds at Shaikhan Dheri. The receivers here occur repeatedly from 2nd century B.C.—4th century A.D.

rarely with royal marks, goes back in India to the third century B.C., but no comparable series has hitherto been recorded. One is at once reminded of the common practice of stamping the handles of the amphorae used in the Mediterranean world for the carriage and export of wine from Rhodes and elsewhere during Greek and Hellenistic times. It seems reasonable to infer a similar role for the stamped marks on these receivers in the Gandhara region.

The part of Shaikhan Dheri where the finds were made also contributes to the picture. Throughout the life of the city it took the form of an open area surrounded by houses and on the side of a main road; many shallow drinking bowls were found there. In the last period of occupation many were discovered stacked up in heaps on the ground. There was much ash scattered about, and many fragments of globular pots with sooty exteriors, some of which could well have served as one of the elements in the distilling apparatus. There were also several hearths. A single terracotta tube, made to imitate bamboo, and fragments of one or two typical cowls were also found. Putting these various elements together we can reconstruct an apparatus surprisingly similar to that postulated by Marshall (fig. 5). Reviewing the evidence from Shaikhan Dheri we conclude that it is consistent with the yard having been used as a small scale distillery and drinking shop, where the receivers, both marked and unmarked, were used in the production, storage and subsequent sale of spirits.

The distinctive receivers may well provide a clue to the extent of the practice at that date, but ethnographic observation warns that even common water pots may be used as receivers, when covered with a suitable cloth. Nonetheless, the form of the receivers appears to be deliberately adapted to their special function. The distribution of sites where they have been found is shown in fig. 6.

With the new perspective provided by archaeology we may look once more at early Indian literature and try to discover whether some of the references to drinks may not conceal implicit evidence of distillation, even

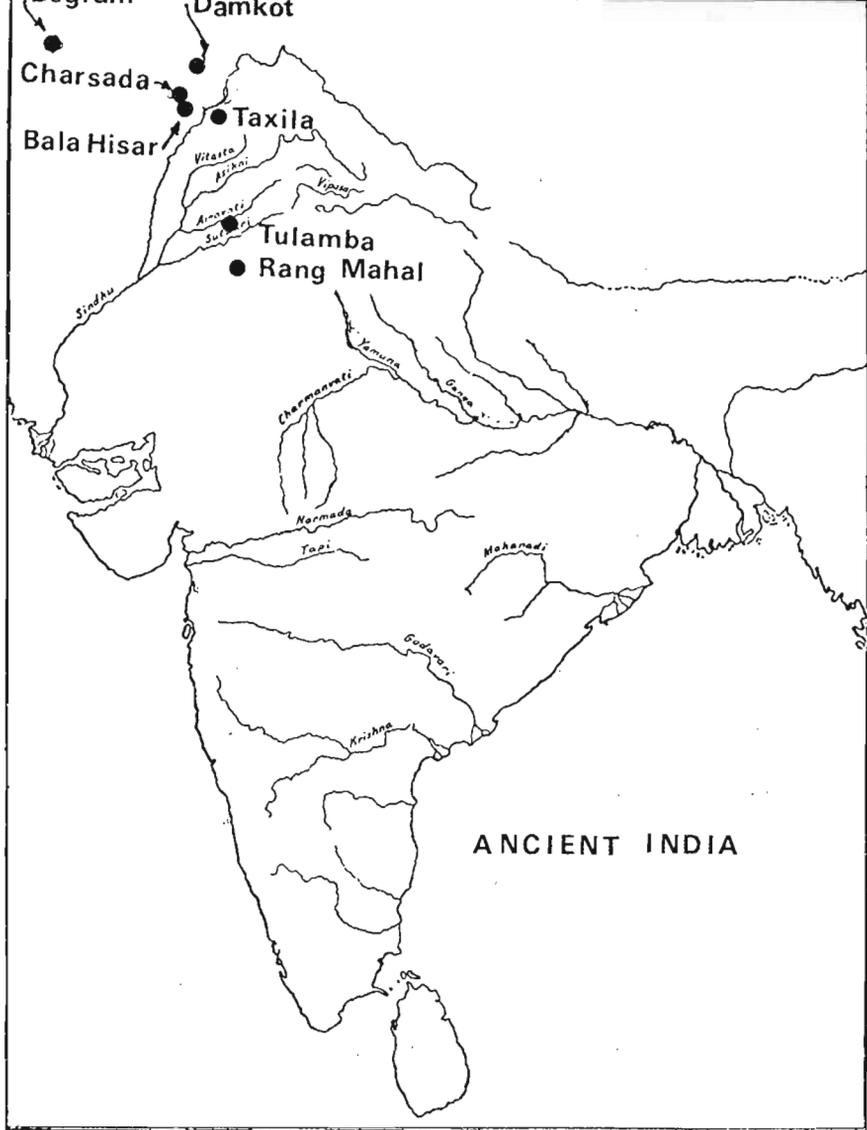


FIGURE 6. Map of sites where the distinctive receivers have been found.

though there are no explicit references. Over a century ago one Indian scholar wrote a paper on the occurrence of spirituous drinks in ancient India in which he maintained that 'all the liquors noticed in Sanskrit works were likewise first fermented and then distilled; none were manufactured as European wines by mere fermentation' (Mitra 1873: 18). Unfortunately he offered little evidence to support his view, and indeed its source remains unclear. The belief that distillation was known and practised anciently in India is followed by several modern Ayurvedic scholars. They identify a group of Sanskrit words,

including *parisrut* and *parisravana*, having meanings associated with trickling, with distillation. European Vedic scholars have generally favoured a different meaning for these words, involving the straining or filtering of wine. But conclusive proof is not forthcoming. Our archaeological evidence would permit us to accept the former interpretation, although it cannot offer any proof. More certainty attends a second group of words, deriving from Sanskrit *śuṅḍa*, elephant's trunk, and associated with the manufacture and sale of, and addiction to, strong drinks. These words occur in literature from c. 500 B.C. It has been pointed out that the cowl and pipe of the Taxila still, or for that matter of the modern Indian still, bear a strong resemblance to the head and trunk of an elephant. The analogy of the intoxicating rut trickling down the trunk of the elephant to the concentrated alcohol running down the pipe of the still is obvious. Even in the much later Bhaiṣajya Ratnāvalī the term *gajakumbha*, elephant's forehead, is used as a simile for a part of the distilling apparatus, and in an early nineteenth-century dictionary the term *śuṅḍa yantra*, trunk apparatus, is translated as alembic or retort. Thus there seems to be good reason to see in this group of terms, occurring from the fifth century B.C. onwards, reference to the use of stills similar to those we have described. The conclusion is that Indian literature does, after all, contain numerous references to distillation, although one could scarcely have recognised them until the archaeological evidence was available.

It is interesting to speculate on the circumstances which led to the apparent contradiction between the textual evidence and that of archaeology or modern observation. First, it must be admitted that throughout early Indian texts references to the production of alcohol, even by fermentation, are at best oblique. In the medical texts, for instance, one is told the ingredients to be added to a quantity of water for a specific recipe, and that the mixture should be sealed in a pot and buried in the fire-room for so many days. But we are not told that this is fermentation, or that the net result is alcoholic. References to the use of yeast or other fermenting agents are very rare. Second, there is a general reluctance in early Indian literature to discuss craft practices (compare, for example, iron or bronze working), particularly when these were regarded as of questionable respectability. A third reason for secrecy is that the consumption of alcohol seems to have had from the beginning a ritual and sacramental aspect, and this is preserved till today in its use in certain Tantric rituals, including its role among the five *makāras* of the Cakra *pūjā*. All these things combine to make it less probable that references to distillation should have found their way into literature, at least until some new element was introduced, such as perhaps the importation of new and technically improved apparatus during the past three centuries.

If I am right in thinking that the *śuṅḍa-śauṅḍika* words derive from the elephantine appearance of the still and were in particular associated with the fermenters and distillers of alcohol, then the series of derivative occupational caste names which survive from the Punjab, Uttar Pradesh, Madhya Pradesh, Bihar, Bengal, Assam and Orissa, may provide supporting evidence. In view of the way in which modern prohibitionist legislation in both India and Pakistan is cutting off links with their traditional occupations, there is a real

urgency in investigating this aspect of the question. I have a feeling that much important information might still be gathered by questioning such people.

To conclude: the type of still discovered at Shaikhhan Dheri between c. 150 B.C. and c. fourth century A.D. has a distribution which fully entitles us to name it the Gandharan still. Its form permits us to identify the 'elephant's trunk' associations with drinking in Indian literature from the fifth century B.C., and to see it as the direct ancestor of the village stills which, until recent years, were to be found in almost every province of India, Pakistan and Bangladesh. Dr Mahdihassan (1972), whose contribution to the discussion has been of great importance, has ventured even farther into the past and suggests that certain pottery types which are by no means rare in the peninsula of India from c. 2000 B.C. may also be regarded as the precursors of the still-head of the Gandharan type still. He may well be right, but without further research and consideration I hesitate to follow him so far. Even without this addition, the conclusion is sufficiently striking. India appears on present evidence to have been the first culture to exploit widespread distillation of alcohol for human consumption; and it may well be that the art of distillation was India's gift to the world!

#### NOTE

This article is a summary of the evidence put forward in a longer paper read at the Fourth International Conference of South Asian Archaeologists in Naples in July 1977, and to be published in the proceedings of that Conference. The author invites comments and criticisms from scholars working in allied disciplines, particularly anthropologists and chemists, on the different aspects of the problem.

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