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DISTILLATION ASSEMBLY OF POTTERY  
IN ANCIENT INDIA  
WITH A SINGLE ITEM OF SPECIAL CONSTRUCTION

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Sir John Marshall recovered a distillation assembly of pottery at Taxila of about 300 A. D. which he interprets as meant for obtaining pure water.<sup>1</sup> On the basis of other considerations it has been interpreted that it was used for distilling alcohol.<sup>2</sup> The ancient Aryans used beer by fermenting barley and so did the Assyrians. Beer has a short storage life and the idea of distilling beer to recover concentrated alcohol must have occurred early enough. The Aryans used *soma* as the fresh extract of ephedra as a non-intoxicant energizer, but for alcoholic drink they had beer and distilled liquor called *surā*, referred to in Vedic and later literature.<sup>3</sup> In India the flowers of *Bassia latifolia*, called *Mahua*, are rich in fermentable sugars. But they contain also a toxic principle which causes diarrhoea, so that anything like Mahua-wine, like grape-wine was not possible. But *Mahua* flowers could be used as distillate containing alcohol and then freed from the toxic glucoside.

Now, one can conceive the simplest distillation assembly of pottery with items used for domestic purposes, as in Fig. 1. A large pot *d* can contain the fermented mash which can be boiled over a fire. Over the large pot *d* will be placed a second pot *c* smaller than the first, with holes made in the bottom for alcohol vapours to pass freely upwards. Within the second pot, *c* will be placed as the third item, a still smaller pot, *a* to receive the distillate. On the

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1. Sir John Marshall, *Taxila*, (1951), Vol. III, fig. s 129 and 192a.

2. (a) S. Mahdihassan, 'The earliest distillation units of pottery in Indo-Pakistan', *Pak. Archaeology*, (1972) 159; (b) S. Mahdihassan, 'Stages in the development of practical alchemy', *J. Asiatic Soc. Pak.*, *Dacca*, 13 (1968) 356, fig. 5.

3. Om Prakash, *Food and drink in ancient India*, (Delhi, 1961).

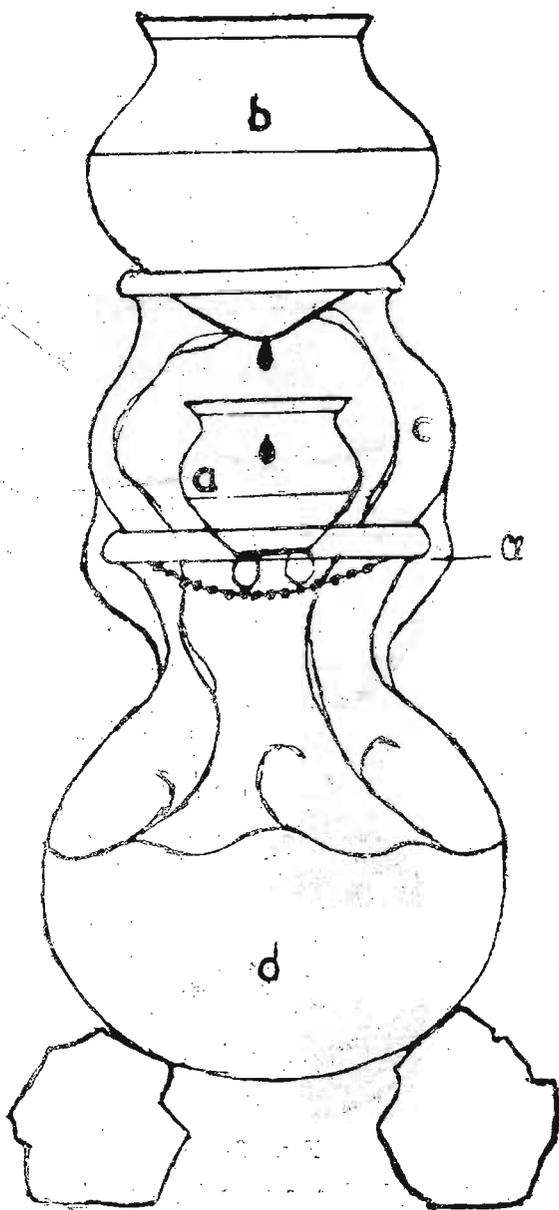


Fig. 1

A distillation assembly of pots of common domestic use as found among the hill tribes of Bihar, India. Pot *c* was made porous by drilling holes. *Cl.* is clay which seals the connection between pots *d* and *c*.

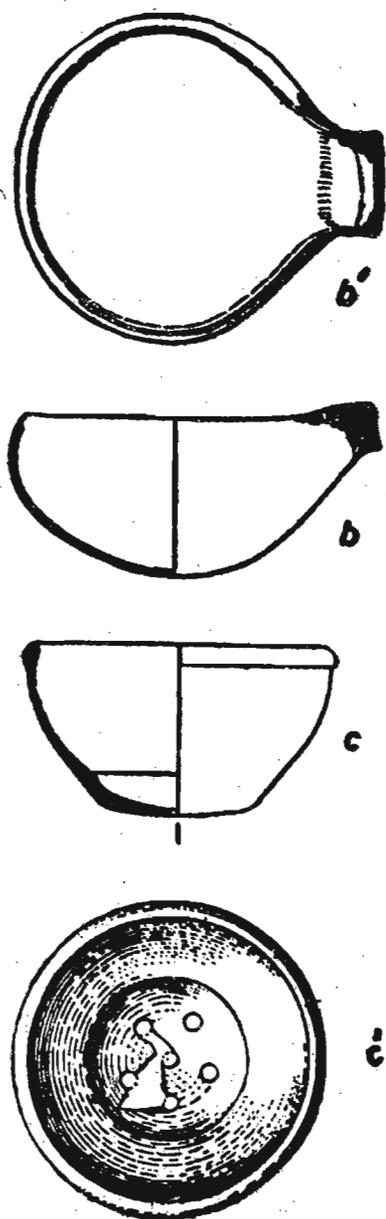


Fig. 2

Items excavated by Indian archaeologists. Pot *c* is a special construction of pottery with holes, at the bottom, for allowing free passage of alcohol vapours upwards. Item *b* is an open basin supposed to be used for washing rice but containing water. It can be placed over pot *c* for cooling alcohol vapours. The items are dated 300 B. C.

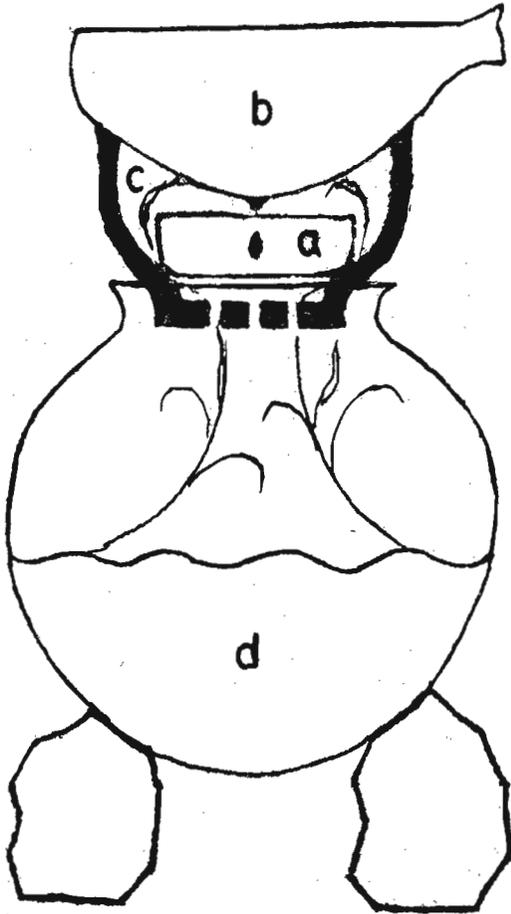


Fig. 3

A Reconstructed distillation assembly of units seen in fig. 2, showing the special role of the porous pot *c* as the only special construction.

second pot *c* will be placed a larger pot *b* to contain water. When alcohol vapours passing through the holes of pot *c*, strike the bottom of pot *b* kept cool with water, they will condense and drop into the smallest pot of the assembly, *viz.*, *a*. After some time distillation will be complete and the assembly dismantled. Such a procedure was actually found in use by some hill tribes of Bihar as illicit distillers. Such a reconstructed distillation unit has been offered before.<sup>4</sup>

By the nature of such an assembly it is impossible that any archaeological evidence could be found, for the reason that all the items used would be used in any household. But the distillers must have later thought of improving the procedure and the one item which would prove most helpful would be the pot with holes at the bottom, *c*, in the assembly. When a pot is specially made with large holes to permit passage of alcohol vapours, its use would be specified. Now, Lal excavated at Hastinapura, Meerut Dist., "a grey ware with six perforations", "type XXVII, p. 58", though he has not assigned any role to it.<sup>5</sup> In Fig. 2, the perforated pot has been shown as *c* and *c'*, seen sideways as *c* and from above as *c'*. Later on the topmost vessel for condensing alcohol vapours must have also been replaced by a basin-like construction shown in Fig. 2 as *b* and *b'*, also found by archaeologists in India. This is believed to be a vessel for washing rice. But it would be the most suitable item for cooling alcohol vapours.

At any rate, with the single special construction of the porous pot *c* alcohol distillation would become quite an efficient technique with items of pottery in domestic use. Such a reconstruction is shown in Fig. 3. Here, *d* is the pot with fermented mash. On boiling, alcohol vapours pass through the holes of the pot *c*, with its outline shown in the figure in thick black lines. Pot *c* is the only special construction. The vapours, having risen upwards strike the bottom of the open basin-like pot *b* which contains water, and whose bottom is kept cold thereby. Alcohol drops in dish *a* shown in Fig. 3 which is kept within

4. *Infra*, fn. 2 (a), p. 163.

5. B. B. Lal, 'Excavations at Hastinapura, Meerut Dist', *Ancient India*, Nos. 10/11 (1954) 58, Types XXVII and XXIV.

the porous pot, *c*. Thus, the arrangement shown in Fig. 3, is a veritable distillation assembly of pottery, constructed with two items actually excavated by archaeologists. Lal assigns pot *c*, in Fig. 2, to 300 B. C., but this date could certainly be taken much further back.

#### APPENDIX

Being interested in *Soma*, I requested my son, Dr. S. Mohsin Ali, now in Baltimore, to send me photostats of some pages of Wasson's (1) costly book on the subject. In the material received, page 138 contains the following statement :

“Reinhold F. G. Müller (2) pointed out the references to *Soma* in the Hindu medical books and concluded that fermented drinks and brandy could have been used as substitutes (of *Soma* drink), but he remarked that evidence of the process of *distillation in India before Islam had not been proved*”.

Müller has been a prominent Indologist in East Germany. How he came to such an erroneous conclusion can however be explained. First it is believed, as Taylor (3) writes, “nothing that can really be called distillation was known before the time of the alchemists”. And secondly even a Savante like Berthelot affirmed that it was Greek alchemy which the Arabs took over to countries like China and India. Thus distillation in India came with alchemy and this was brought over by Muslims. Facts however are different, as the present communication reveals.

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1. Wasson, R. G. (1968), ‘*Soma* Divine Mushroom of Immortality’.

2. Müller, R.F.G. (1954), ‘*Soma* in der Altindischen Heilkunde’, *Asiatica*, Festschrift für Fredrich Weller, Leipzig’, pp. 428-441.

3. Taylor, F.S. (1951), *The Alchemists*, p. 37.