

Immersion as Therapy

Archaeological and Literary Evidence on an Aspect of Medical Practice in Precolonial Sri Lanka

At the end of the last century, H.C.P. Bell, the pioneer archaeologist who had begun exploring the ruins of the ancient capital Anurādhapura, discovered what he termed a sarcophagus among the ruins of the Thūpārāma monastery.¹ Evidently Bell did not attach much significance to this discovery, and there is only a passing reference to it in a footnote in his report. Five years later, in 1901, he discovered another similar object among the ruins of the Mahāvihāra monastery and this time he ventured to give a short description of the find:

The sarcophagus was cut from an oblong block of granite, measuring 7 ft. 4 in. by 2 ft. 6 in. broad and 2 ft. high. Exteriorly all sides are carved into the semblance of ornate pilasters resting on a moulded base and supporting a heavy cornice. The longest sides bear each two pilasters in low relief, the ends one, and four others mark the corners. The hollow, 6 ft. in length, to receive the corpse, is rounded at the head and squared at the foot. In plan, the width varies from 11 in. to 1 ft. 6 in.; but its section shows adaptation to the lines of the body the depth undulating from 7 $\frac{3}{4}$ in. (head) to 10 $\frac{1}{4}$ in. (hips) and 8 $\frac{3}{4}$ in. (feet).²

Ten years later Bell came across yet another "receptacle" which had lain buried among the ruins of the monastic complex at Mihintale, a site which is situated a few miles to the east of Anurādhapura. In his description of this discovery Bell was somewhat hesitant about the use of the term "sarcophagus" and he called them "sarcophagus-like receptacles."³ Though all these three objects were found in and close to Anurādhapura, later on, two more receptacles of this type have been found at Mādirigiriya in the Polonnaruva District and at a site in the Ampāre District.⁴

Sarcophagi made of sandstone were used in ancient Greece where it was believed that this type of container facilitated the disintegration of the corpse. In Egypt, on the other hand, sarcophagi made of wood were used to preserve mummies. A passage in the Pāli Canon of the Buddhists alludes to the use of sarcophagi for the preservation of dead bodies. In the Mundaṛājavagga of the *Āṅguttara Nikāya*, a king orders a functionary

1. *Annual Report of the Archaeological Survey of Ceylon (ARASC)*, 1896, p. 2.

2. ARASC, 1901, p. 4.

3. ARASC, 1910-1, p. 20.

4. S. Paranavitana, "Medicine and Hygiene as Practised in Ancient Ceylon," *Ceylon Historical Journal*, Vol. III, 1953, pp. 123-35.

to make arrangements for the preservation of the body of his dead queen by enclosing it in a sarcophagus made of metal and filled with oil.⁵ But, as Paranavitana has remarked,⁶ it is unlikely that the granite receptacles from Sri Lanka were used as sarcophagi. It is noteworthy that there is strong evidence to suggest that there had been hospitals at the sites where these receptacles were found. The chronicle *Cūlavamsa* records that Sena II (A.D. 853-887) built a hospital at Mihintale.⁷ An inscription, datable in the ninth century, refers to this hospital, and a tenth-century inscription from the site records the allowances and land allotments assigned to the physicians.⁸ Inscriptions dated in tenth century refer to the hospitals attached to the Thūpārāma and Mādirigiriya monasteries.⁹ At Mihintale the granite receptacle had been placed within a room, paved with stones, which formed part of a building that has been identified as the monastic hospital. The fact that these receptacles have been found at the sites of hospitals seems to suggest that they were used for a therapeutic purpose.

Certain characteristic features of these receptacles, too, seem to support such an interpretation. Of the receptacles found so far, the one found at Mihintale is the better preserved. (Fig. 1) This oblong monolith of granite is 214 cm. long, 74.5 cm. wide and 57 cm. in height. In this block, a cavity meant to receive a human body has been carved out. (Fig. 3a) The full length of the cavity (AK) is 189.5 cm. That portion of the cavity designed to receive the head measures 25 cm. across at the widest point (BC) and narrows down to 18 cm. at the neck (DE). It is 48.5 cm. wide at the shoulders (FG). From this point the width of the cavity diminishes progressively till it measures 31 cm. at the feet (HJ). The lines FH and GJ running from the shoulders to the feet turn inwards by less than 1 cm. near their mid-points. These "bends" appear to be more of decorative rather than functional significance. Evidently they indicate the terminal points of the arms extended on either side of the body.

The cavity is not of uniform depth. It has been carefully scooped out to conform to the body contours. (Fig. 3b) The section meant for the head is 19.5 cm. in depth (Li) and 4 cm. above the level of the section supporting the upper part of the torso (Mm). The middle portion, designed to conform to the contours of the buttocks, is 27 cm. in depth (Nn), and the section supporting the upper part of the legs is 3 cm. higher, that is, 24 cm. in depth (Pp). From this point the depth diminishes almost imperceptibly to measure 23 cm. at Rr.

5. *Añuttara Nikāya*, ed. F. Hardy, Pali Text Society, London, Pt. III, 1958, p. 58.

6. *Cūlavamsa*, ed. W. Geiger, Pali Text Society, London, Vol. I, 1925, ch. 51, v. 72.

7. Paranavitana, *op. cit.*, p. 130.

8. ARASC, 1910-1, pp. 10-21; 1952, p. 40, n 1; *Epigraphia Zeylanica (EZ)*, ed. D. M. de Z. Wickramasinghe, London, Vol. I, 1912, p. 96, ll. B 30-2.

9. Kiribatvehera inscription, *EZ*, Vol. I, pp. 153-61; Mādirigiriya pillar inscription, *EZ*, Vol. II, pp. 25-33.

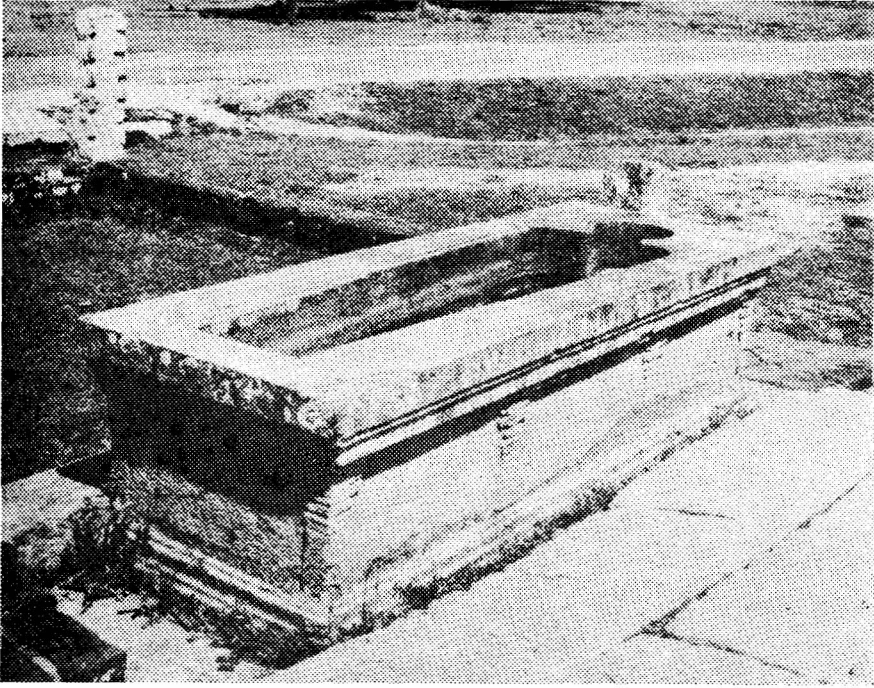


Fig. 1 Bath for immersion therapy found at Mihintale.



Fig. 2. Bath for immersion therapy found at the Thūpārāma monastery

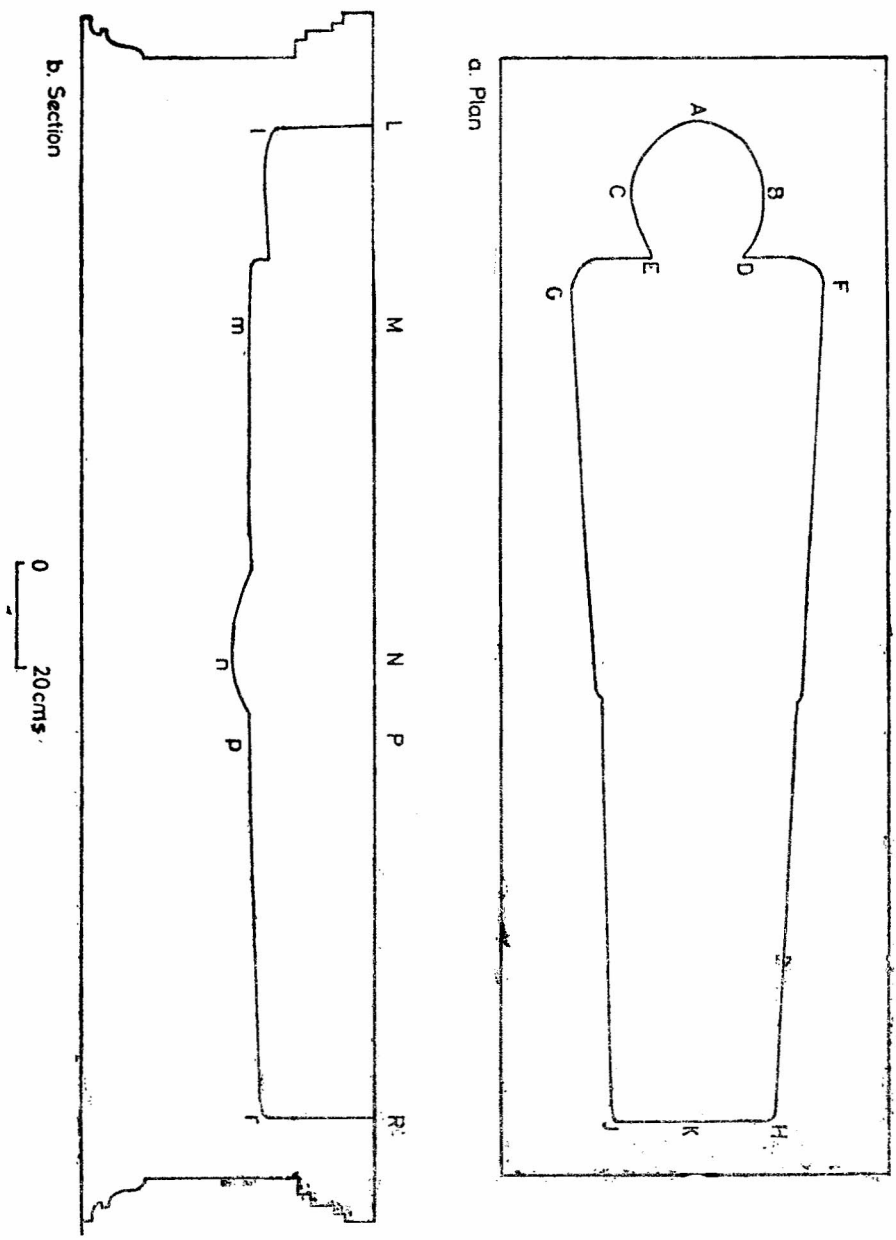


Fig. 3. Plan and section of immersion bath at Mihintale.

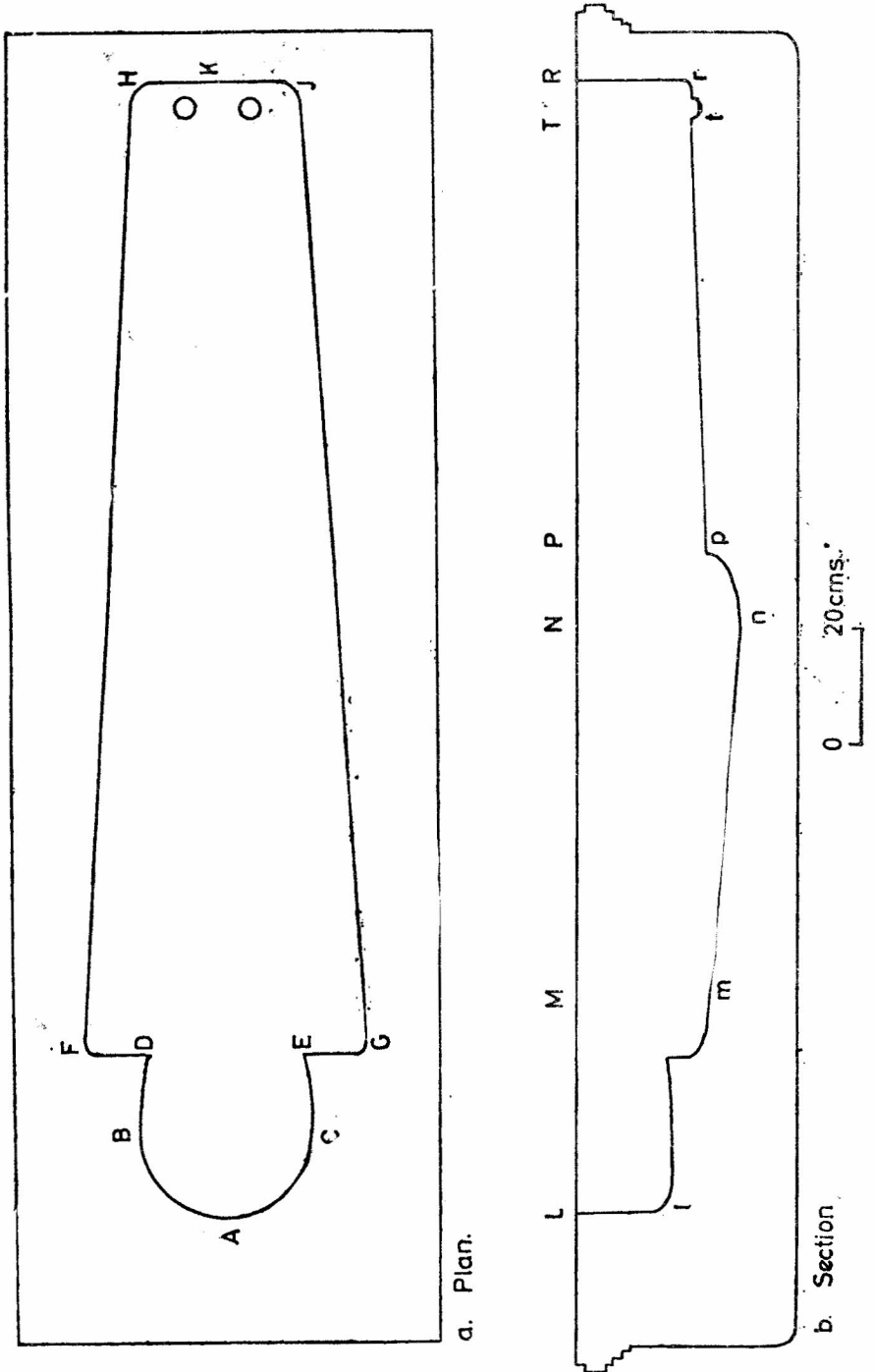


Fig. 4. Plan and section of the immersion bath at the Thūpārāma.

The receptacle found within the premises of the Thūpārāma monastery is carved out of a monolith measuring 220 cm. in length, 72 cm. in width and 38 cm. in height. (Fig. 2) In this receptacle, too, the total length of the cavity is 189.5 cm. However, the shape (Fig. 4a) and the measurements of the cavity of this receptacle differ slightly from those of the receptacle from Mihintale. At its widest point the width of the portion meant to receive the head is 29.5 cm. (BC). It narrows a little to measure 28 cm. at the neck (DE). The width at the shoulders (FG) is 46 cm. which is slightly less than the corresponding measurement of the receptacle from Mihintale. The lines FH and GJ are straight and converge slightly so that the width at the feet (HJ) is 28 cm. which, again, is less than the corresponding measurement from Mihintale.

In the receptacle from the Thūpārāma the section of the cavity meant to receive the head (See Fig. 4b) is 18 cm. in depth (LI) and 6 cm. higher than the level of the section supporting the shoulders (m). From this point onwards the depth of the cavity is gradually increased till it measures 26 cm. at point 'n' where it supports the buttocks. Then there is an abrupt rise in level by 2 cm. and the depth continues to diminish very slightly till it measures 23 cm. at Rr. An interesting feature noticeable in this receptacle is that there are two small depressions, about 1 cm. in depth, for the heels. It may be suggested that these depressions were scooped out by the stonecutter, but it is also possible that they represent the results of wear through continuous use for a long period of time.

It will have been evident from the details given above that, while there are certain specific features peculiar to each receptacle, both receptacles are exactly of the same length and had been constructed to conform to the contours of the body. It is clear that the cavities had been carefully carved out to ensure the comfort of the person using the receptacle. The uniformity in the length of the cavity suggests that the stonecutters were guided by certain canons and that these receptacles were meant for public rather than individual use. These characteristics lend further support to the suggestion made earlier that these receptacles would have been used for a common form of therapy that was popular in the period of the Anurādhapura kingdom.

Classical works on Indian medicine throw valuable light on the therapeutic use of baths in the treatment of disease. Indian medical theory was based on the central concept of the three humours, wind (*vāta*), bile (*pitta*) and phlegm (*ślesma* or *kapha*), the disturbance of which was supposed to cause disease. Though therapeutic baths were used in a variety of situations, they were considered to be primarily a therapy for wind-based diseases. In the section on fomentation (*svedādhyāya*), which forms the fourteenth chapter of the Sūtrasthāna division of the *Carakasamhitā*, immersion (*avagāha*) is mentioned as the fifth of the thirteen types of

fomentation described in this work. "Immersion-fomentation is that fomentation carried out through immersion in a vessel filled with a boiled preparation made from wind-destroying substances or with milk, oil, ghee, essence of meat or hot water."¹⁰ The same therapy is recommended in the Vātavayādhicikitsitādhyāya, the section on wind-based diseases which forms the twenty-eighth chapter in the Cikitsitasthāna division of the same work.¹¹ Immersion in heated cow's urine, buttermilk, whey, vinegar, and herbal preparations from the leaves of the *bilva* (Sin. *beli*, *Aegle marmelos*) and *vadari* (*Zizyphus vulgaris*) plants was recommended for the treatment of haemorrhoids.¹² In such situations application of heat was used as a form of therapy, but in the treatment of fever (*javara*) immersion appears to have been used as a means of lowering high body temperatures. In the third chapter of the Cikitsitasthāna division, Caraka recommends immersion in cooled herbal preparations, alcohol, milk, ghee, whey, water, gruel made from husk (*tusodaka*) and sour gruel made from boiled rice that had fermented (*āranāla*) which, owing to their "cold touch" (*śitasparśa*), are said to be effective in the treatment of *dāha* associated with fever.¹³ The term *dāha* carries the meanings "heat" as well as "burning sensation" but, on considering the context, the first of these meanings seems preferable. Caraka also recommends immersion therapy for the treatment of poison but does not elaborate on the exact manner in which it was to be carried out.¹⁴

The *Suśrutasaṃhitā* lists four types of fomentation, and fomentation with liquids (*dravasveda*) is the fourth. Immersion was the main form of therapy within this group. The text gives only a terse description of this therapeutic practice, but it is noteworthy that, unlike the *Carakasamhitā*, it uses the term *droni* to refer to one type of vessel recommended for use in immersion therapy: "Fomentation should be applied by immersing the patient in a vessel or a *droni* filled with a heated preparation made from wind-removing substances. Similarly, fomentation may also be applied by immersion in heated milk, essence of meat, vegetable stock, oils, vinegar, ghee, fat or

10. *Carakasamhitā*, ed. R. Buddhadāsa, Colombo, 1960, Sūtrasthāna 14-20. The dating of the Indian medical treatises has been a subject of much controversy. The Bower MS., ascribed by popular agreement to the fourth century A. D., contains passages which agree with both the *Carakasamhitā* and the *Suśrutasaṃhitā*. But while the Bower MS. refers to Susruta by name, there is no mention of Caraka. Neither does the *Suśrutasaṃhitā* refer to Caraka. Both the *Carakasamhitā* and *Suśrutasaṃhitā* were translated into Arabic in about the eighth century. However, according to the Chinese translation of the Buddhist Tripitaka, Caraka was the personal physician of King Kaniska. See A. M. Macdonell, *A History of Sanskrit Literature*, London, 1913, pp. 535-6.

11. *Carakasamhitā*, Cikitsitasthāna, 28-34

12. *Ibid.* 14-29

13. *Ibid.* 13-157-8

14. *Ibid.* 23-15. Verses from a medical text cited by C. S. Mudannāyaka (*Sarpa Veda Poti*, pp. 41-2) prescribe immersion therapy for snake-bites. (See *A Note on Ancient Hospitals with Special Reference to that at Mihintale*, Archaeological Department, 1964, p. 6) However, this practice was not recommended in the classical Sinhalese medical texts. See *infra* pp. 45-6.

urine."¹⁵ The term *droni* denotes "vat, trough, tub" as well as "a canoe hollowed out of a log."¹⁶ It reminds one of, and indeed is applicable to, the type of receptacle discovered in Sri Lanka. Suśruta recommends immersion in a specially prepared oil called the *Bālataila* as a therapy for all wind-based diseases, which evidently included certain abdominal ailments.¹⁷ Immersion therapy was also recommended for those ailments of the bile which had been complicated by disturbance of both wind and phlegm.¹⁸ Suśruta agrees with Caraka in recommending immersion as a form of therapy for haemorrhoids and immersion in cold herbal preparations for fever.¹⁹ Certain uses of immersion therapy mentioned by Suśruta, though not by Caraka, included the treatment of skin diseases (*kustha*) and immersion as a prophylactic measure. For skin diseases Suśruta recommends immersion in a decoction made from the *khadira* (*Acacia catechu*) plant.²⁰ He further recommends immersion for the treatment of the fracture of ribs. After a soft pad had been placed over the fracture and bound, the patient was to be made to rest in a bath (*droni*) filled with oil.²¹

In his *Astāngahṛdaya-saṃhitā*, Vāgbhata, a later writer,²² agrees with previous texts in recommending immersion therapy for wind-based diseases, haemorrhoids and fever. He also prescribed its use in the treatment of strangury (*mūtrakṛcchrā*) resulting from the disturbance of wind and bile. Immersion was also used as part of post-operative care in the surgical treatment of the bladder and the stomach. After surgical treatment, the patient was placed in a bath (*droni*) filled with oleaginous preparations (*sneha*) which included substances like ghee and oil extracted from *tila* (*Sin. tala*, *Sesamum indicum*) seeds.²³

It is evident from the preceding discussion that in classical Indian medical practice immersion therapy was used in the treatment of a variety of ailments. Several different forms of this therapy were known. It was primarily a method of fomentation or application of heat. On the other hand, immersion was used as a means of lowering body temperature. Evidently immersion was also considered to be a means of facilitating

15. *Suśrutasaṃhitā*, ed. R. Buddhādāsa, Colombo, 1962, *Cikitsasthāna*, 32-13

16. For the meanings of *droni* and *doni*, see Monier Williams, *A Sanskrit-English Dictionary*, Oxford, 1872, p. 441 and T. W. Rhys Davids and William Stede, *The Pali Text Society's Pali-English Dictionary*, London, 1959, p. 331.

17. *Suśrutasaṃhitā*, *Cikitsasthāna*, 5-12.

18. *Ibid.*, 32-14

19. *Ibid.*, *Uttaratantra*, 39-282-8.

20. *Ibid.*, *Cikitsasthāna*, 9-5; 24-33

21. *Ibid.*, *Cikitsasthāna*, 3-29-30.

22. I-tsing who visited India in the seventh century A. D. refers to a compendium on eight topics of medicine, and this has been indentified as a reference to the *Aṣṭasaṃgraha* or Vāgbhata. Keith has suggested that the author of the *Astāngahṛdayasaṃhitā* who also bore the same name was a later writer. Keith further observed that "there seems no reason to put him more than a century after his elder namesake." A. B. Keith, *A History of Sanskrit Literature*, Oxford, 1923, p. 510.

23. *Astāngahṛdayasaṃhitā*, ed. R. Buddhādāsa, Colombo, 1964, *Sūtrasthāna*, 17,10; *Cikitsasthāna* 1-133, 8-11-5, 11-1, 11-5, 15-71.

absorption or topical application of curative substances. Its use in the treatment of skin ailments is particularly noteworthy. Finally it is interesting to note that this form of therapy was recommended for the treatment of fracture and as part of post-surgical care. The fact that immersion in substances like oil and ghee would curtail body movements and reduce body contact with hard surfaces may have been an important consideration which led to it being recommended for use in such situations. It seems reasonable to suggest that the presence of monolithic immersion baths at sites of ancient and medieval hospitals in Sri Lanka points to the regular use of this form of therapy as recommended in classical Indian texts.

Fomentation as a form of therapy is mentioned in the Pāli Canon of the Buddhists, preserved in Sri Lanka. The Mahāvagga section of the *Vinaya Piṭaka* speaks of five types of fomentation.²⁴ But this text does not make specific reference to immersion, and the term *doni* (Skt. *droni*), which became more or less a technical term for baths used for therapeutic immersion, does not occur in this context. It is only in the *Samantapāsādikā*, the commentary on the *Vinaya Piṭaka* translated by Buddhaghosa from the original Sinhalese into Pāli in the fifth century A. D., that one finds a clear reference to immersion therapy. Interpreting the passage from the *Vinaya Piṭaka*, this text states that one of the five types of fomentation was "getting into a vessel or bath (*doni*) filled with hot water."²⁵ It is possible to suggest on the basis of this information that immersion therapy was known in Sri Lanka at least by the fifth century A. D.

Though the discovery of immersion baths at Anurādhapura, Mihintale and Mādirigiriya and the inscriptions at these sites would suggest that immersion therapy was in use in the ninth and tenth centuries, it is in medical texts written at the end of the thirteenth century that we next find references to it in Sri Lanka. Two Sinhalese medical texts, the *Yogārnnavaya* and the *Prayoga-ratnāvaliya*, both written by a monk who was the abbot of the Mayurapāda college in the reign of Bhuvanekabāhu I (A. D. 1272-84) of Dambadeniya, contain long passages devoted to careful descriptions of this therapeutic practice. It is clear from these passages, which present a contrast when compared with the brief and at

24. *Vinaya Piṭaka*, ed. H. Oldenberg, Pali Text Society, London, Vol. I, 1964, p. 205.

25. *pāṭim vā donim unhodakassa pūretvā tattha pavisitvā sedakammakaranam. Samantapāsādikā*, ed. J. Takakusu, M. Nagai and K. Mizuno, Pali Text Society, London, Vol. V, 1961, p. 1091. The term *pāṭi* appears to be a misreading for *cāṭi*. The original passage in the *Vinaya Piṭaka* on which the *Samantapāsādikā* is commenting here has the term *udakakotṭhaka*. In the *Vinaya Piṭaka*, *koṭṭhaka* is used to denote a storage tank in which water was kept for use in the bathroom (*janāghara*) or the privy (*vacchakuṭi*). (*Vinaya Piṭaka*, Vol. II, pp. 121, 142). On the other hand, the term *doni* which became a technical term for immersion baths is used in the *Vinaya Piṭaka* only to denote a small trough in which toilet clay applied on the face was moistened. (*Vinaya Piṭaka*, Vol. II, p. 120).

times incidental references in the Sanskrit medical texts, that this form of therapy was popular in Sri Lanka and that the author is presenting information on a tradition of therapy which had grown elaborate during the many centuries it had been practised. In the *Yogārṇṇavaya*, the description of immersion therapy occurs in the forty-fourth chapter which deals with fomentation.²⁶ The text recognizes only four types of fomentation: i. fomentation with an earthen pot (*ghatasveda*), ii. fomentation with a bag of cloth (*putasveda*), iii. fomentation with leaves (*patrasveda*) and iv. immersion (*avagāhasveda*). It is specifically stated that immersion was the most excellent form of fomentation.²⁷

According to the *Yogārṇṇavaya*, the baths for immersion therapy were to be made of gold, silver, copper, stone or any one of the following types of wood: *kosamba* (*Azadirachta indica*), *imbul* (*Ceiba pentandra*), *kāla* (*Butea frondosa*), *rat haṇḍun* (*Pterocarpus santalinus*) and *dada*.²⁸ It was prescribed that the cavity of the bath should be four cubits long, this cubit being taken as the length of the patient's own forearm. The cavity for the head was to be like a half-moon, twelve "inches" in width. At the shoulders the width of the cavity was to be sixteen "inches" and it was to gradually diminish till it measured twelve "inches" at the feet. The depth of the cavity was to be one cubit.²⁹ An astrologically auspicious time was selected for the immersion. After the patient was blessed by monks and Brāhmanas, sesame oil and sour milk were applied on his body, and his ears were plugged with cotton wool and a paste made from the seeds of *bālila* (*Sida acuta*) and *uṇḍu* (*Phaseolus mungo*) plants. A decoction prepared from five types of herbs, viz. *eṇḍaru* (*Ricinus communis*), *kuṇburu* (*Caesalpinia bonduc*), *titiṅga* (*Sesbania sesban*), *totila* (*Oroxylum indicum*) and *vatā* (?) was poured into the bath and, when the temperature was at an "endurable level," the patient was made to lie in the bath. Evidently, the body was not completely immersed, and the upper part of the body remained above the level of the liquid. A lotus leaf or the soft outer covering of the areca (*Areca catechu*) flower was placed on the chest of the patient and sandalwood paste dissolved in cold water was poured on to it. Cold water was sprinkled on the chest where, again, the paste of *muṅḡ* (*Phaseolus aureus*) was rubbed on. Paste of *Phaseolus mungo* seeds was applied on the navel. When beads of sweat appeared on the nose, the face, and the body of the patient he was removed from the bath and was fanned to "lower his body temperature." The procedure was repeated till the patient had completed three immersions. During the third immersion, *vālmī* (*Abrus precatorius*) and breast milk were applied on the patient. After the final immersion for the day, the patient was fed on a broth and cakes, all made from "wind-removing" substances. If the patient

26. *Yogārṇṇavaya*, ed. Kiriālle Nānavimāla, Colombo, 1942, pp. 223-5.

27. *hāma svedayen avagāhasveda utuma. Yogārṇṇavaya*, p. 223.

28. See *infra*, p. 45.

29. For an explanation of these measurements, see note 39.

was physically weak, he was to be fed on this broth and the cakes before the immersion. This was followed by a meal of boiled rice with essence of meat, *Phaseolus mungo*, milk (curd?) and a preparation of fried shrimp. No sour or bitter substances or spices were to be added to these preparations.

The text emphasises certain directions for the guidance of the physician administering immersion therapy. The body of the patient should be uniformly (*sama se*) immersed in the bath. The liquid in the bath should not be too warm or cold. The patient should not remain in the bath too long. Immersion therapy was to be administered continuously and not on alternate days. Care was to be taken to prevent seepage of water into the ears, and, if this did happen, the water was to be removed with peacock feathers. The patient was to be clothed in soft garments after the immersion.

According to this text, a course of immersion therapy appears to have consisted of five series of immersions in different types of substances. Immersion in herbal preparations described above was followed by immersion in sour substances, immersion in meat essence, immersion in milk and immersion in oil, in that order. Vinegar, leaves and juice of lime (*Citrus aurantifolia*), juice of orange (*Citrus aurantium*), and *mora* (*Euphoria longana*) were the five sour substances boiled for use for the second series of immersions. Meat of cattle, buffaloes, pigs, goats or peacocks was to be used to prepare the third series of immersions. Milk of cows, buffaloes, goats or camels could be used for the fourth series of immersions. And, for the final series of immersions, ghee, sesame oil, margosa oil or coconut oil could be used.

It is clear from the description in the *Yogārṇnavaya* that immersion therapy as practised in Sri Lanka was a complex process of treatment and that it would not have been easy to come by the materials required for this therapy. Evidently, this difficulty received the attention of the author, for he goes on to suggest alternative substances. The poor man's substitute for essence of meat was obtained by boiling raw stalks of the rice plant with old bones of cattle. Similarly, in place of milk, a decoction made from *aralu* (*Terminalia chebula*), *bālila* (*Sida acuta*), *uṇḍu* (*Phaseolus mungo*) *sirivāḍiya* (*Sida racemosa*) and *kehe* (?) was to be used after heating it with a few *padu* measures³⁰ of milk. Another such alternative preparation was obtained by boiling roots of *hela eṇḍaru* (? *Ricinus communis*) and *sāivāriya* (*Asparagus recemosus*) with "whatever milk that was available." Similarly,

30. The term *padu*, the equivalent of Skt. *prastha*, denotes a measure of grain and liquid. Unfortunately, information on the exact value of this measure is vague. The *Jātaka Atuvā Gāṭapadaya*, (ed. D. B. Jayatilaka, Colombo, 1943, p. 52) a Sinhalese gloss on the *Jātakatthakathā*, datable to about the twelfth century, suggests that it was the equivalent of *nāli*. A *nāli* of husked rice approximates to about two pounds in weight. But a commentary on the *Khaṅkāvitaraṇi* quoted by V. Sorata equates *prastha* with an eighth of a *nāli*. (*Sri Sumaṅgala, Śabdakoṣaya*, Colombo, 1956, p. 509.)

alternative preparations were prescribed in place of oil. The long list of ailments for which immersion therapy was prescribed in this text included cold, cough, hiccup, asthma (*śvāsa*), compression of the throat (*galagraha*) loss of voice (? *svrabhedā*), bodily pains such as earache, headache and hemicrania (*arddhābheka*, probably a corruption of *arddhvābhedaka*), swelling of part of the face (*mūsakamahatva*), paralysis (*paksaghāta*), strangury (*mūtrakrcchrā*), constipation (*ānāhavāta*) glandular enlargement of the abdomen (*gulma*), colic (*āmasūla*), skin diseases (*kustha*) and impotency (? *śukraghāta*), all of which were included within the category of wind-based and wind and phlegm-based diseases.

The *Prayoga-ratnāvalīya* follows the *Yogārṇṇavaya* very closely in describing the procedure of administering immersion therapy.³¹ Some of the discrepancies between the two texts are obviously due to scribe's errors, and in most cases the readings in the present edition of the *Prayoga-ratnāvalīya* appear to be preferable. For instance, while listing types of timber suitable for making immersion baths, the *Prayoga-ratnāvalīya* gives *damba* in place of *dada* in the *Yogārṇṇavaya*. The former is certainly the correct reading since it is a reference to *Syzygium assimile* while the term *dada* does not yield a suitable interpretation. In place of *vātā* in the list of herbs for the first series of immersions in the *Yogārṇṇavaya*, this text gives *puvātā* which may be identified with *Pothos scandens* or *Rhaphidophora laciniata*. Similarly, in specifying alternatives to milk, the *Prayoga-ratnāvalīya* gives *vātakehe* (*Pandanus ceylanicus*) and here again this text is more preferable to the reading *kehe* in the *Yogārṇṇavaya*. In its list of sour substances, the *Prayoga-ratnāvalīya* gives *mōru* (whey) in place of *mora* in the other text. This text is also more specific in describing the application of *vālmī* (*Abrus precatorius*) paste dissolved in breast milk during the third immersion: it states that this preparation was to be poured into the eye sockets. In its list of ailments for which immersion therapy was recommended, the *Prayoga-ratnāvalīya* leaves out a few listed in the *Yogārṇṇavaya* like headache, indigestion and skin diseases, but adds some others like trismus (*ardita*) and rheumatic pains in the loins (*kativāta*).

There are two more texts relevant for the study of immersion therapy in medieval Sri Lanka: the *Yogarainākārāya* and the *Varayogasārāya*. Of these, the first is an extensive work in Sinhalese verse containing 4457 strophes and was written by a monk called Moṇaragammana in the sixteenth regnal year of King Bhuvanekabāhu. Some scholars hold the opinion that this was the first king by this name.³² But only the fifth

31. *Prayoga-ratnāvalīya*, ed. Kiriāllē Nānavimala, Colombo, 1943, pp. 309-11. D. M. Jayasinghe drew attention to these verses in an essay entitled "Dambadiva hā Lakdiva Āyurveda Ārogyasāhā" in *Vikramāracci Abhinandana Granthaya*, ed. W. S. Karunaratna et al., Kelaniya, 1968, pp. 310-9.

32. See, for instance, Puñcibandāra Sannasgala, *Siṃhala Sāhitya Vamsaya*, Colombo, 1964, p. 665.

king by this name who ruled from A. D. 1372 to 1408 reigned for more than fourteen years, hence it is more reasonable to date the work in this reign and to assign it to A.D. 1387.³³ The author states at the beginning of his work that he is presenting material collected from previous writings in the Āyurveda tradition. The fourteenth and fifteenth centuries saw a revival of interest in classical Sanskrit literature in Sri Lanka and, therefore, it is likely that the author did not limit his reading to previous writings in the Sinhalese language. The description of immersion therapy in the *Yogarātnākara*³⁴ agrees in most respects with the accounts in the two Sinhalese texts discussed earlier, but certain points on which it differs are noteworthy. This text varies from previous works in the description of the procedure of immersion therapy. It states that, after the patient was immersed, sandalwood paste was to be poured from a cone made from a lotus leaf or the covering of an areca flower onto the chest of the patient "in the shape of a necklace," and, on this, cold water was to be sprinkled. It further specifies that the paste of *Abrus precatorius*, dissolved in breast milk, was to be applied on the eyelids of the patient and also given to the patient to drink as he lay immersed. The list of ailments for which this text recommends immersion therapy generally agrees with the lists in the *Yogārṇṇavaya* and the *Prayoga-rātnāvaliya*, but it leaves out some like cold, asthma, indigestion, colic and glandular enlargement of the abdomen. It also lists certain additional ailments like catarrh (*pīṇas*) and sores. The most important point on which it diverges from the earlier Sinhalese tradition is in recommending immersion in cooled herbal preparations as a therapy for fever,³⁵ and here it seems to have been influenced by classical Sanskrit texts.

The *Varayogasārāya* has been popularly ascribed to the thirteenth century,³⁶ but, since it refers to the distillation of arrack and to the yaws disease or frambesia (*parangi*),³⁷ it is probably several centuries later and may be assigned to about the sixteenth century. However, it is noteworthy that its description of immersion therapy adheres very closely to the *Yogārṇṇavaya* and *Prayoga-rātnāvaliya*, using in several instances the same turn of phrase. Like these two texts, it does not prescribe immersion as a therapy for fever. The only noteworthy point on which it differs from these two texts is in its statement that immersion therapy was not suitable for the treatment of skin diseases (*kustha*).³⁸

33. It has also been suggested that this work was written in the reign of Bhuvanekabāhu VI (See *Siṃhala Viśvakosaya*, ed. D. E. Hettiaracci, Colombo, Vol. II, 1965, p. 593.) But this king ruled only for eight years, i. e. A. D. 1470-8.

34. *Yogarātnākara*, ed. D. C. S. Randunu, Colombo, 1939, vv. 4044-83.

35. *Ibid.*, vv. 1379-80.

36. Sannasgala, *op. cit.*, pp. 664-7.

37. *Varayogasārāya*, ed. Kiriālle Nānavimala, Colombo, 1944, p. 159, 217.

38. *Ibid.*, pp. 280-2.

The detailed descriptions of immersion therapy in Sinhalese medical texts leave little doubt about the identification of the "sarcophagus-like receptacles" from Anurādhapura and other archaeological sites in Sri Lanka. The shape of the cavities of the immersion baths as outlined in these texts is essentially similar to the cavities of the receptacles from Anurādhapura and Mihintale described in the earlier part of this paper. Unlike the classical Indian medical works, the Sinhalese texts specify in detail the measurements of immersion baths. All the four Sinhalese texts mentioned earlier agree that the length of the cavity was to be four cubits as measured with the patient's own forearm; they also state that the width of the cavity should be twelve "inches" at the head (BC) and twelve "inches" also at the feet (HJ).³⁹ The width at the shoulders is fixed at sixteen "inches" in the *Yogārṇṇavaya* and the *Varayogasāraya*, and at thirty-two "inches" in the *Yogaratnāvāliya*. This measurement is given as twelve "inches" in the *Prayoga-ratnākaraya*, but this is obviously a scribe's error since it is further stated in the same passage that the width of the cavity should diminish from the shoulder downwards so that it would be twelve "inches" at the feet. Three of these texts are evidently describing cavities with a uniform depth of one cubit, but the *Yogaratnākaraya* specifies that the cavity for the head should be twelve "inches" in depth while the rest of the cavity should be one cubit in depth. In this respect the *Yogaratnākaraya* reflects more closely the canons followed in the construction of the baths found at the Thūpārāma and the Mihintale monasteries. It is evident from these texts that immersion baths were "custom made" for patients and it is likely that wood was the more popular material used in their construction. This may explain why only a few of these immersion baths have been found in Sri Lanka.

The immersion baths made out of stone were evidently for public use, and the study of the two examples from Anurādhapura and Mihintale shed some light on the physiognomy of man in the latter part of the period of the Anurādhapura kingdom. Evidently the stonemasons had a certain ideal of the "normal" man in making these immersion baths. It is noteworthy that, while the two baths vary slightly in respect of width, they are exactly of the same length. The fact that the bottoms of the baths were shaped to conform to the contours of the body also points to the likelihood that the baths were designed for what was considered to be the normal human figure. In this respect the bath from the Thūpārāma is particularly useful to us, for here we find depressions for the heels as well. These depressions, whether they had been so made by the stonemason or merely represent the effects of wear through constant use, help us to form a fair idea of the range of "normal" height. The depressions are about 5 cm. from the end of the cavity. The length of the cavity meant to receive the

39. The cubit (*riyan*) was equal to two spans (*viyat*) and twenty-four "inches" (*aṅgal*). In terms of English units of measurement a cubit is the equivalent of one and a half feet. (See W. Geiger, *Culture of Ceylon in Mediaeval Times*, Wiesbaden, 1960, p. 80). Thus a cubit would be approximately 45.7 cm.

head (A to DE) is 28.5 cm. Hence the minimum height of a "normal" figure, calculated on this basis, would be 156 cm. (189.5-33.5 cm.). The maximum height, calculated by allowing 5 cm. on either end, amounts to 179.5 cm. It seems reasonable to suggest on this basis that these baths were made for adults whose normal height varied between 156 and 179.5 cm.⁴⁰

While it is evident from the *Samantapāsādikā* that immersion therapy was known in Sri Lanka certainly by the fifth century A. D., the immersion baths found at Anuradhapura, Mihintale and Mādirigiriya point to it being current in medical practice in the ninth and tenth centuries. On the other hand, the four Sinhalese medical texts provide ample testimony to this form of therapy being considered an important aspect of Sri Lankan medical practice from the thirteenth to about the sixteenth century. The popularity of immersion therapy reflects the decisive influence of the classical Indian theory and practice of medicine on Sri Lanka. The theoretical basis of immersion therapy, as presented in the Sinhalese texts, was the concept of the three humours, and it was recommended for ailments arising from the disturbance of wind and phlegm. In discussions on possible ill effects of this therapy, these texts mention the possibility of disturbing the bile and recommend specific antidotes to meet such an eventuality. As in the Indian tradition, immersion was considered to be a method of fomentation and a means of facilitating absorption or topical application of medicinal substances. However, it is noteworthy that in the Sinhalese texts immersion therapy was accorded a much more important place than in the Indian medical texts. For the Sri Lankan theorists immersion was the most excellent method of heat therapy. But it appears from the complex, almost ritualistic, procedures outlined in the Sinhalese texts that this form of therapy was not merely a form of fomentation. These texts specify that cold substances were to be poured on to certain parts of the body of the patient while he lay immersed in warm liquid. Further, it is evident that the body temperature of a patient was reduced by fanning soon after an immersion, and then he was immersed again till he had completed each series of three daily immersions. Thus it would appear that immersion therapy in Sri Lanka involved the application of variable, even contrastive, temperatures on the body. On the other hand, it is remarkable that, in general, the Sinhalese texts do not seem to have recommended immersion in cooled liquids for the treatment of fever. Only the *Yogaratnākaraya* refers to this practice, and it is very likely that it was presenting material obtained from a Sanskrit text. It is also particularly noteworthy that Sinhalese medical texts specifically prohibit the use of

40. On the basis of anthropometric researches on Sri Lankans, H. Cullumbine *et al.* ("Influence of Age, Sex, Physique and Muscular Development on Physical Fitness," *Journal of Applied Physiology*, Vol. II, No. 9, 1950, pp. 488-511) give the mean height of the modern adult male as 161.3 ± 0.66 cm. and that of the female as 149.5 ± 1.36 cm.

immersion therapy in the treatment of certain ailments for which it had been recommended in the Sanskrit tradition. Such strictures against the use of this therapy in the treatment of fractures,⁴¹ distended abdomen and haemorrhoids⁴² strongly suggest that, by about the thirteenth century, Sri Lankan theorists had developed a tradition which diverged from the common heritage that they had initially shared with Indian medicine. The fact that immersion therapy was practised for more than a thousand years and so highly recommended, strongly suggests that it did possess a curative value, but any conclusion on the specific clinical significance of this medical practice has to be eventually based on a detailed scientific study of the therapeutic effects of immersion as outlined in Sri Lankan texts and of the mode of action of the substances listed in them.⁴³

R. A. L. H. GUNAWARDANA

41. *Yogārṇṇavaya*, p. 235; *Prayoga-ratnāvaliya*, p. 311; *Yogarutnākaraya*, v. 4082.

42. *Varayogasāraya*, p. 280.

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