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A Quest for Poison Trees in Indian Literature, Along with Notes on Some Plants and Animals of the Kauṭīliya Arthaśāstra

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I. POISON TREES – AN INTRODUCTION

The materia medica of Indian medicine is usually characterized as extremely rich. The number of drugs employed is very large and varied indeed. Yet, the pharmacopoeia of classical Āyurveda is restricted. Substances known in Vedic times are absent. The most famous example of these is *soma*.¹ Numerous plants used in tribal medicine have not been incorporated. Moreover, the commentators on the early texts explicitly declare that they are no longer familiar with the identity of several notorious plants, such as those composing the octad designated as the *aṣṭavarga* which consists of eight ingredients of important compound medicines. When these commentators are at a loss with regard to the identities of plants or animals, they sometimes refer to tribes, mostly the Kirātas and Śabarās, as still possessing the relevant knowledge and to be consulted on the matter. Examples are the poisonous substances listed in the Carakasamhitā (Ca.) and Suśrutasaṃhitā (Su.).²

Striking by their apparent absence from early Indian literature in general are two trees that produce extremely potent poisonous substances, which are much employed by hunters in South and Southeast Asia. Their names are *Strychnos nux-vomica* Linn. and *Antiaris toxicaria* (Pers.) Lesch.

The initial part of this paper will mainly be devoted to the first of these trees.

¹ *soma* is only mentioned in chapter 29 of the Cikitsāsthāna (Ci.) of the Suśrutasaṃhitā and in the Kāśyapasaṃhitā, in a prescription for a fumigation with *soma* as one of the ingredients (Kālpasthāna [Ka.] 1.11f.). Suśruta's *soma* is not related to the Vedic plant of that name.

² See Cakrapāṇidatta *ad* Ca. Ci. 23.11-13 and Ḍalhaṇa *ad* Su. Ka. 2.5. Compare also Su. Sūtrasthāna (Sū.) 36.10 with the comments by Ḍalhaṇa.

Strychnos nux-vomica Linn.

Strychnos nux-vomica Linn., the strychnine tree, belongs to the family of the Loganiaceae. The large genus *Strychnos* Linn., widespread throughout the tropics and subtropics, has nearly twenty representatives in India, some of which are used for medicinal purposes.

The strychnine tree is common in forests of the warmer parts of India and in those of Sri Lanka and Myanmar. In India it occurs from Bihar and West Bengal to all the more southern regions where it grows up to an altitude of about 1,200 metres (4,000 feet). The tree is evergreen in moist ecosystems, but in dry areas it may shed its leaves for a short time. It is medium-sized and can attain a height of fifteen to twenty metres. The trunk is fairly straight. The leaves are opposite, short-stalked, smooth on both sides, and oval in shape, eight to fifteen cm. long and broadly elliptic. The flowers are small, greenish white, in terminal compound cymes. The fruits are globose berries, 2.5 to 5 cm. in diameter, with a smooth hard shell of a beautiful orange to orange-brown colour when ripe. They are filled with a gelatinous pulp in which the seeds are immersed. These seeds are disc-shaped, about 20 to 25 mm. in diameter and 4 mm. thick, slightly depressed on one side and with a prominent, elevated umbilicus on the other; they are hard and leathery, ash- or greenish grey, and covered with numerous shining silky hairs. They are inodorous, but exceedingly bitter.

The seeds, called *nux vomica* or emetic nut, are very poisonous through the presence of the strongly toxic alkaloids strychnine and brucine, in addition to other minor alkaloidal constituents. These alkaloids occur not only in the seeds but also in the roots, bark and leaves, and, to a minor extent, in the fruit-pulp and fruit-shells.

The seeds are an effective poison for animals and also useful as an insecticide. Many tribals use them in the preparation of arrow- and dart-poisons.

This last point is remarkable and leads to the question whether these seeds and their toxicity have been known in India since early times. It seems improbable that hunters were unacquainted with their usefulness in killing game and that this knowledge was not transmitted to other layers of the community. References to arrows besmeared with a poisonous substance are far from rare in Sanskrit literature.

These *visadigdha* arrows and other weapons attest to the knowledge of suitable poisons. One of these may have consisted of a substance made with the seeds of *Strychnos nux-vomica*. Even more effective is *Antiaris*

toxicaria (Pers.) Lesch. Its latex is extremely toxic due to the presence of myocardial poisons, called cardenolides, and is well known as an arrow-poison in Southeast Asia, where the tree from which it is derived is called the *upas*. Its advantage is that the quarry can be consumed without any danger.³

Antiaris toxicaria (Pers.) Lesch.

Antiaris toxicaria, belonging to the small genus *Antiaris*, distributed over tropical Asia, of the family of the Moraceae, is a huge monoecious tree, reaching a height of up to 76 metres, and occurs in the Western Ghats, on the Andaman Islands, in Sri Lanka and in Myanmar. It is also found in Malaysia and Indonesia. The bark is smooth; the leaves are 10 to 20 cm. long, oblong and glossy. The male flowers are crowded on the surface of an orbicular, axillary receptacle, but the female flowers are solitary. The purple fruits resemble small figs and are intensely bitter when young; ripe fruits are reported to be edible. The latex exuding from the pierced trunk is pale yellow when fresh, later becoming dark brown and extremely bitter. In South India, where the plant is frequently met with, the poisonous property of the milky juice seems to be hardly known. The bark, however, when soaked in water and beaten, is suitable for making clothes. Formerly, the tree was well known as the “sacking tree”, the felted inner bark being extensively used for making sacks of excellent quality.⁴

Strangely enough, both trees seem to be completely absent from early Sanskrit literature.

The Appearance of *Strychnos nux-vomica* in Sanskrit Literature

The secondary literature on *Strychnos nux-vomica* is intriguing since several important sources assert straight out that it appears late in the texts.

³ On arrow-poisons and on the *Strychnos* species, see the publications of N.G. Bisset listed in my “An Annotated Bibliography of Indian Medicine”. Search the same website for *Antiaris toxicaria*, the *upas* or poison tree.

⁴ See Dymock et al. 1890-1893: III/348-355; Watt 1885-1893: I/268. On the medicinal uses of *Antiaris toxicaria*, see Muthulakshmi 2004.

The original source of this claim has still to be discovered. The earliest author to make the claim I could find is Udoy Chand Dutt in the 1877 edition of his *The Materia Medica of the Hindus*. He remarks:⁵

Nux vomica has been introduced into Hindu medicine at a recent period. There is no generally recognized Sanskrit name for it. In some recent Sanskrit compilations it is mentioned under its vernacular name *kucilā*, a term which is not to be found in standard Sanskrit dictionaries. Sāraṅgadhara and other writers give some prescriptions containing a drug named *viṣamuṣṭi*, which is generally interpreted to mean in these places nux vomica seeds; but *viṣamuṣṭi* according to the Bhāvaprakāśa has an edible fruit and is called *kareruā* in Hindi. In this work the Sanskrit term *kupilu* and its synonyms, *kulaka*, *viṣatinduka*, *markatātinduka*, etc., are said to be the Sanskrit names for *kucilā* and this translation is followed in some Hindi medical books, as for example in the treatise on the properties of drugs, compiled by Paṇḍit Keśava Prasāda Dvivedī of the Agra College. This interpretation however is not accepted in Bengal, for neither Wilson nor Sir Rājā Rādhākānta Deva has given *kucilā* as the vernacular for *kupilu*, nor does this term or any of its synonyms above mentioned, occur in any Sanskrit medical prescription. In our account of this drug we will according to the practice of our *kavirājas* in Bengal interpret *viṣamuṣṭi* as *kucilā*.

U.Ch. Dutt adds an important remark, quoted by later authors. He says:

Nux vomica seeds produce a sort of intoxication, for which they are habitually taken by some natives as an aphrodisiac. Those who do so gradually become so far accustomed to this poison that they often come to take one seed daily, which is cut into small pieces and chewed with a packet of betel leaf.

R.N. Chopra, R.L. Badhwar and S. Ghosh⁶ add that the powdered seeds mixed with food are also largely given as a tonic to horses; feeding upon the leaves imparts a bitterish taste (characteristic of strychnine) to the milk of cows, and the people of localities where this is a custom, attribute good digestibility and tonic properties to such milk, and not without reason.

Flückiger and Hanbury write in their *Pharmacographia*:⁷

Nux vomica, which was unknown to the ancients, is thought to have been introduced into medicine by the Arabians. But the notices in their writings which have been supposed to refer to it, are far from clear and satisfactory. We have no evidence moreover that it was used in India at an

⁵ Dutt 1877: 198; the same text is found in the revised edition (Dutt 1922: 199).

⁶ Chopra et al. 1940: 699.

⁷ Flückiger – Hanbury 1879: 384.

early period. Garcia d'Orta, an observer thoroughly acquainted with the drugs of the west coast of India in the middle of the 16th century, is entirely silent as to nux vomica. Fleming, writing at the beginning of the present century, remarks that nux vomica is seldom, if ever, employed in medicine by the Hindus, but this statement does not hold good now.

The Fleming referred to is John Fleming, the author of "A Catalogue of Indian Medicinal Plants and Drugs, with their Names in the Hindustani and Sanscrit Languages", published in Calcutta in 1812 as part of the *Asiatic Researches*.⁸

In the year 1893, both George Watt and C.D. Maclean discussed nux vomica. Watt⁹ takes much from U.Ch. Dutt, but qualifies the latter's statement that the drug does not appear to have been used in early Sanskrit medicine by remarking that it is quite possible that some part of the tree may have been used by the aboriginal tribes of India from a very early date, since nowadays we find the wood used as a common tonic over very extensive tracts of country. He also says that the Muhammadans' knowledge of the uses of nux vomica seems to have been derived from the Hindus, as Makhzan-el-Adwiya concludes his description of the drug by saying that much information will be found about the drug in Hindu works. Maclean¹⁰ only remarks that the seeds were first introduced into medicine by the Arabs and that they have not been described by Sanskrit writers.

The assertion that *Strychnos nux-vomica* appears late in Sanskrit texts seems to have become a cliché in the secondary literature. Even P.V. Sharma claims in his *Āyurved kā vaijñānik itihās*¹¹ that the tree is absent from the *Bṛhattraṣī*¹² and that its introduction into medicine must therefore be of a later date. He supposes that its use has been promoted by the alchemists (*rasācāryas*).

This claim by an expert like P.V. Sharma is surprising. Actually, the state of affairs in the question we are investigating is different.

⁸ *Asiatic Researches* 11 (1812) 153-196.

⁹ Watt 1885-1893: VI.3/380.

¹⁰ Maclean 1893: 690.

¹¹ Sharma 1975a: 342.

¹² The *Bṛhattraṣī* consists of the *Carakasamhitā*, the *Sūrutasaṃhitā* and the *Aṣṭāṅ-gaḥṛdayasaṃhitā*.

II. THE EVIDENCE OF THE MEDICAL TREATISES

Perusal of the literature reveals that various Indian scholars have suggested that *Strychnos nux-vomica* may be referred to in the *Carakasamhitā*. Even K.C. Chunekar, who collaborated with P.V. Sharma as a lecturer at the Department of Dravyaguna of the Institute of Medical Sciences of Banaras Hindu University, did so in the *Glossary of Vegetable Drugs in Brhatrayā*, which he wrote together with Thakur Balwant Singh.

In regard to a controversial drug, called *kākāṇḍa*, mentioned five times in the *Carakasamhitā*, these authors write that it is a drug used entirely as an antidote to poisoning and is probably itself poisonous. They add that it has been identified variously with *kākatindu*, *mahānimba*,¹³ etc., and that *kākatinduka* is either *Diospyros montana* Roxb. known as *viṣatendū*, or *Strychnos nux-vomica* Linn., also known as *kākapīlu*, *vāyasapīlu* or *kupīlu*.

vāyasapīluka

The first to be examined among these names is *vāyasapīluka*, a word found once in the *Carakasamhitā*, in a verse from the chapter on poisons and the treatment of poisoning (Ci. 23.217).

The verse runs:

kākāṇḍarasasamyukto viṣāṇām taṇḍulīyakah |
pradhāno barhipittena tadvad vāyasapīlukah ||

Translation:

taṇḍulīyaka, together with the juice of *kākāṇḍa*, is [one of the] chief [remedies] against poisons, as is *vāyasapīluka* [together] with the bile of a peacock.

The verse does not specify, in contrast with the preceding verses, against which type of poisoning the two recipes should be employed. It is the first of two verses closing the section on poisoning by various small animals. The following verse also contains an unspecific prescription (called *pañcaśirīṣāgada*) against all kinds of poisoning. The subsequent couple of verses is on the treatment of poisoning due to the nails and teeth of quadrupeds and bipeds.

¹³ Identifications of *mahānimba* are: *Ailanthus excelsa* Roxb., *Ailanthus triphysa* (Dennst.) Alston, *Melia azedarach* Linn., *Melia dubia* Cav., and *Murraya koenigii* (Linn.) Spreng.

The plant called *tanḍulīyaka* is mostly identified as *Amaranthus spinosus* Linn.; other species of *Amaranthus* are also regarded as *tanḍulīyaka* and used as pot-herbs and medicinal plants.

The bile of animals, in particular that of a peacock, is not an unusual medicinal substance.¹⁴ The presence of this item points to a medicinal recipe for wealthy people; peacocks were a regular food at the royal table.¹⁵

Let us see what the Sanskrit commentators have to say about *vāyasapīluka*.

The edition with Jejjāṭa's commentary (Ca. [1941]) has a strange note between brackets that may be an emendation by the editor, as suggested by the title page of Ca. (1941) where the edition is described as *pūritajajjāṭaṭīkātrūṭitāmśabhāga*. This note fills up a lacuna in the manuscript ending with *-ktā* and runs: (*vāyasī kākamācīty u*)*ktā*. This emendation is not a happy one. *vāyasī* is absent from Ca. Ci. 23.217 and the preceding verses. The editor obviously borrowed the remark from Cakrapāṇi's commentary (see below), but misplaced it. Jejjāṭa's own remarks on 23.217 follow and are interesting. They differ entirely from those by Cakra. Jejjāṭa first refers to the plant *kākāṇḍa*. Though its identity is usually said to be unknown, Jejjāṭa is of the opinion that it is the same as *kākanandī*. This rare plant name is, in the form of *kākanandīkā*, found in the Madanādinighaṇṭu (6.16), where it is a synonym of *guñjā* = *kr̥ṣṇakāmbojīkā*. Another name, *kākaṇantī*, is a much more frequent synonym of *guñjā*, *Abrus precatorius* Linn., the seeds of which are poisonous because they contain the toxic protein called abrin, a ribosome-inactivating substance. An important remark follows: *saiva vāyasapīlukaḥ*. This cannot but mean that both *kākāṇḍa* and *vāyasapīluka* designate *guñjā* in Jejjāṭa's eyes, though no *nighaṇṭu* or other lexicon can be found to support this.¹⁶ We shall come across other authors who also express as their view that *vāyasapīluka* is identical with *guñjā*. Jejjāṭa, however, is the earliest of them.

¹⁴ See, for example, Ca. Ci. 7.170 (*barhipitta*) and Ca. Ci. 23.51 (*śikhīpitta*); Su. Ci. 9.26 (*śaikhīna pitta*); Aṣṭāṅgahṛdayasaṃhitā (A.h. [1939]) Ci. 20.12 (*śikhīpitta*); Aṣṭāṅgasamgraha (A.s.) Ci. 22.22.

¹⁵ See the famous rock edict of Aśoka, mentioning the daily killing of two peacocks. See also Chattopadhyay 1967 and 1993b, and Schmidt 1980.

¹⁶ Abdul Kareem (1997) gives many other names beginning with *kāka-* as synonyms of *guñjā*.

Cakrapānidatta's commentary has only the laconic and at first sight enigmatic remark: *vāyasī kākamācī*. This comment can only be meant to elucidate *vāyasapīluka*. No other plant name of the relevant group of verses has any connection with *vāyasī*, a frequently found synonym of *kākamācī*, commonly identified as *Solanum nigrum* Linn., by some authorities as *Solanum americanum* Mill. = *Solanum nigrum* auct. non Linn.¹⁷

What is Cakra's intention? Does he suggest that *vāyasa* is the same as *vāyasī* in this case, thus splitting the compound into *vāyasa* and *pīluka*, as some recent commentators do, or does he propose to regard *vāyasapīluka* as identical with *vāyasī*, a species of *Solanum*? Whatever he may have meant, it is a strained interpretation. Being a resident of Bengal, the plant called *vāyasapīluka* may not have been familiar to him. That he may have thought *vāyasa* to be a plant name is hardly imaginable.

The nineteenth-century commentator Gaṅgādhara (Ca. [1927-1933]) interprets the name as a synonym of *kākajaṅghā*, an unidentified plant also called *vāyasaṅghā* and *prācībala*.¹⁸ These three names are, however, conspicuously absent from the *Carakasamhitā*; they occur in the *Sūśrutasaṃhitā* and *Aṣṭāṅghrdayasaṃhitā*.

The translations into English of the *Carakasamhitā* are disappointing and give the impression that their authors are prejudice-ridden and blindly accept earlier opinions.

The translation by Kisari Mohan Ganguli, published by A. Chandra Kaviratna (Ca. [1890-1925]), adds the following remark between brackets to *vāyasapīluka*, which is left untranslated: "otherwise called *kākajaṅghā* or *Leea hirta* Roxb. ex Hornem". This is a now invalid synonym of *Leea aequata* Linn., which is not poisonous at all. In doing so, the translator follows in the wake of Gaṅgādhara.

The Gulabkunverba translators (Ca. [1949]) render the word as "black nightshade and tooth brush tree", i.e., *kākamācī* and *pīluka*, as Cakrapāni may have meant.

¹⁷ See, for example, Abdul Kareem 1997, s.v.

¹⁸ Four plants used as *kākajaṅghā* are *Peristrophe paniculata* (Forsk.) Brummitt = *P. bicalyculata* Nees, *Leea aequata* Linn., *Vitex peduncularis* Wall. ex Schauer, and *Abrus precatorius* Linn.

R.K. Sharma and Bhagwan Dash (Ca. [1997]) do not translate the term, adding between brackets “*kākamācī*”, thus obviously taking *vāyasapīluka* as a synonym of this plant name.

P.V. Sharma (Ca. [1983a]) renders *vāyasapīluka* as *kākapīluka* and gives in one of his Appendices (p. 724) *Diospyros montana* Roxb. as the botanical equivalent, a tree with bitter but harmless fruits. No one shares this view with him.

These facts make it clear that no consensus has been reached. Arguments for the identifications are conspicuous by their absence.

The renderings and comments of some of the Hindī translators and commentators are much more illuminating, though the translations by others are as unsatisfactory as those of the translators into English.

Śivaśarman (Ca. [1989] II/1529) renders *vāyasapīluka* as *kākajaṅghā* and *pīlu*, apparently under the influence of Gaṅgādhara.

Vinaycandra Vāsiṣṭha and Paṇḍit Jaydev Śarmā (Ca. [1954-1962]) are in doubt and comment: “*vāyasapīluka* is either *kākamācī*, called *makoy* in Hindī, or it is *kākatinduka*, called *kucilā* in Hindī.” This is important because *kucilā* is a Hindī name for *Strychnos nux-vomica*.

Similar thoughts are expressed by Kāśīnāth Pāṇḍey and Gorakhnāth Caturvedī (Ca. [1962]). They translate *vāyasapīluka* as *makoy ke mūl*, i. e. the roots of *kākamācī*, but they acknowledge in their comments that the identity of *vāyasapīluka* is disputed (*vivādgrast*) and are of the opinion that Cakrapāṇi regarded the word as a compound and divided it into *vāyasa* and *pīluka*. They add that *vāyasapīluka* is also a name of *kucilā*, that it is uncertain which plant Caraka had in mind, and that plants like *guñjā* and *kākajaṅghā* are known as antidotes.

The most extensive comments are given by Brahmānand Tripāṭhī (Ca. [1983b]), who does not hesitate to regard *vāyasapīluka* as identical with *kucilā*. He interprets Cakra’s comment (*vāyasī* = *kākamācī*) as an indication that he divided the word into its two components. He proceeds by saying that if *vāyasapīluka* is taken as one word, as it is reasonable to do, then it must be the same as *kākādanī*. Though the latter is again a controversial name,¹⁹ he regards it as a synonym of *kucilā*, keeping in mind that *kākapīlu* is a synonym of *kupīlu*. The last name is rather generally interpreted as referring to *Strychnos nux-vomica*. Tripāṭhī

¹⁹ This plant, absent from the *Carakasamhitā*, has not been identified satisfactorily; see Singh – Chuneekar (1972) who remark that the roots, which are recommended for use, are probably more or less poisonous.

also draws attention to the fact that, though poisonous itself, *kucilā* is, after proper purification, a drug against poisoning. He further refers to A.s. Uttarasthāna (U.) 43.62.

This verse quotes Ca. Ci. 23.217 (cf. above p. 6) with some variants:

kākāṇḍayuktāḥ sarveṣāṃ viṣṇānāṃ taṇḍulīyakāḥ |
praśasto barhiṇāṇḍena tadvad vāyasapīlukāḥ ||

The reading of U. 43.62a is also known from some manuscripts of the Carakasamhitā.²⁰ *praśasta* replaces *pradhāna*, which has no importance. More interesting is that *barhipitta* has been changed into *barhiṇāṇḍa* (peahen's egg), either a genuine reading or a scribe's error under the influence of *kākāṇḍa* (cf. below p. 15).

Tripāṭhi also quotes Indu's commentary on the Aṣṭāṅgasamgraha. Indu remarks: "*kākapīlukāḥ kākapīlukaphalāni, kākapīluko guñjā*". With this interpretation he sides with Jejjāta.

In the Suśrutasaṃhitā and Aṣṭāṅgaḥṛdayasaṃhitā references to *vāyasapīluka* are absent.

Summing up, we have seen that *vāyasapīluka* may be *Strychnos nuxvomica* (*kākapīlu*), but that other identifications have also been proposed: *kākajaṅghā*, *kākatinduka*, *kākādanī*, and *guñjā*.

III. OTHER SOURCES RELEVANT TO THE IDENTIFICATION OF STRYCHNOS NUX-VOMICA

The dictionaries do not contribute to a solution. *PW* does not mention the word *vāyasapīluka*; *MW* only says that it is a particular tree, the same as *kākapīluka*.

PW says about *kākapīlu* that it is the name of several plants: (1) = *kākatinduka*, (2) = *kākatuṇḍī*, (3) a variety of *Abrus precatorius* (*śvetaguñjā*);²¹ *MW* says similarly: "(1) the plant *Diospyros tomentosa*²² (*kākatinduka*), (2) *Xanthochymus pictorius*²³ (*kākatuṇḍī*), (3) a variety of *Abrus precatorius* (*śvetaguñjā*)". *PW* adds under *kākapīluka*: "= *kākatinduka*", and *MW* "the plant *Diospyros tomentosa* (*kākatinduka*)".

²⁰ See the footnote in Ca. (p. 580).

²¹ *śvetaguñjā* is an *Abrus precatorius* with white seeds; normally, they are black and red.

²² The fruits of *Diospyros tomentosa* Roxb. are edible.

²³ This plant is now called *Garcinia xanthochymus* Hook.f. ex T. Anderson.

Thus we see that *kākatuṅḍī* has been joined to the list of names relevant to the identification of *Strychnos nux-vomica*.²⁴

This resulting list is remarkable because most of the names it contains are absent from the *Carakasamhitā*: *kākajāṅghā*, *kākatinduka*, *kākatuṅḍī*, and *kākādanī*. The only exception is *guñjā*.

kākatindu(ka), *viṣatindu(ka)* and *kākapīlu(ka)* (= *kupīlu*)

The most important among these names is *kākatinduka*. This name is frequent in the *nighaṅṭus* and other lexica. *PW* gives consistently *Diospyros tomentosa* Roxb. as its botanical equivalent, as does *MW*.

Consultation of the *nighaṅṭus* yields many synonyms of *kākatindu(ka)*. It will be important to find *kākapīlu* (= *kupīlu*) among them, which would establish that the two are identical. *nighaṅṭus* that consider the two to be identical are the *Rājanighaṅṭu* (RN) (11[*āmrādivarga*].52), Hemaçandra's *Nighaṅṭuśeṣa* (NŚ) (114), and the *Śāligrāmanighaṅṭubhūṣaṇa* (p. 597-602).

PW and *MW* remark about *kupīlu* that it is a sort of ebony tree (= *kāraskara*).²⁵

When we look for synonyms we find:

Abhidhānamañjarī of Bhiṣagārya (193): *rājīmat* = *karkaśacchada* = *kulaka* = *rājīphala* = *nalaphala* = *kākatinduka*;

Bhāvaprakāśanighaṅṭu (BhPN) (*āmrādīphalavarga* 66-68): *jaladatinduka* = *dīrghapatraka* = *kupīlu* = *kulaka* = *kākatinduka* = *kākendū* = *viṣatindu* = *markaṭatinduka*;

Dhanvantarīyanighaṅṭu (DhN) (5 [*āmrādivarga*].41): *dvitīya tinduka* = *kākatindu* = *markaṭatinduka* = *kākendū* = *kupīlu* = *kākatinduka*;

Kaiyadevanighaṅṭu (*oṣadhivarga* 400): *kākendukī* = *kākapīlu* = *kupīlu* = *sthūlabinduka*;

Madanapālanighaṅṭu (6.40): *kākapīlu* = *kupīlu* = *viṣatinduka*;

NŚ (114): *dvitīya tinduka* = *kākatindu* = *markaṭatinduka* = *kākendū* = *kākapīlu* = *kupīlu* = *kulaka*;

²⁴ *Garcinia xanthochymus* is not poisonous; its fruits have a pleasant acid flavour and are used as a substitute for tamarind.

²⁵ The ebony tree is a *Diospyros*. Both dictionaries refer to the *Bhāvaprakāśa* as referred to in the *Śabdakalpadrūma*, where *kāraskara* is said to be a *tindukaviśeṣa*. The *Bhāvaprakāśanighaṅṭu*, however, does not describe a *kāraskara*.

RN (11 [āmrādivarga].52): *anya tinduka* = *kākapīlu* = *kākāṇḍa* = *kāka-tinduka* = *kākasphūrja* = *kākabījaka*;

Śāliḡrāmanighaṇṭubhūṣaṇa (p. 597-602): *anya tinduka* = *jalaja* = *dīrgha-patraka* = *kākendu* = *kupīlu* = *kākapīlu*.

Lingering over this profusion of names is not necessary. Crucial is that *kākapīlu*, *kākatinduka*, *viṣatinduka* and *kupīlu* are synonyms.

Which are the botanical identifications found in the dictionaries and the secondary literature?

kākatindu(ka): Almost all the sources give *Diospyros tomentosa* Roxb., *Diospyros melanoxylon* Roxb., or *Diospyros montana* Roxb. The first two species yield substitutes for true ebony, which comes from *Diospyros ebenum* Koenig, but *Diospyros montana* has no black heartwood. The authorities I could find who identify *kākatindu* as *Strychnos nux-vomica* are Yādavaśarman,²⁶ Bāpālāl Vaidya,²⁷ and K.C. Chunekar and G.S. Pandey in their edition of the *Bhāvaprakāśanighaṇṭu*.²⁸

kākapīlu: see above. See also Madanādinighaṇṭu 6.17: *dvitīyā śvetakāmbojī* = *durmukhā* = *kākapīlukā*, and Indu *ad* A.s. Ci. 21.12: *kākādanī* = *kākapīlukā*.

kupīlu: usually a synonym of *kākapīlu*.

viṣatindu(ka): *MW* on *viṣatindu*: “(1) *Strychnos nux-vomica*, (2) a kind of ebony tree with poisonous fruit, *Bhāvaprakāśa*”; on *viṣatinduka*: “a species of poisonous plant, *Bhāvaprakāśa*”. *PW* (s.v. *viṣatindu*): “name of two poisonous plants: (1) = *kāraskara*, Rājanighaṇṭu, (2) = *kupīlu*, *Bhāvaprakāśa*”. It is identified as *Strychnos nux-vomica* by Bāpālāl Vaidya,²⁹ Nadkarni,³⁰ and P.V. Sharma.³¹ The *Bhaiṣajyaratnāvalī* of Govindadāsa (55.40) prescribes *viṣatinduka* against a disorder called *sparśavāta* with anaesthesia (*saṃsparśanañānavihīnatā*) as its main symptom.

None of these names occurs in the *Bṛhatṭrayī*. Another synonym, however, found several times in the *Carakasamhitā*, is *kulaka*.³² Cakrapāñi-

²⁶ See his *Dravyaguṇaviññāna* (Yādavaśarman 1950-1951: II/270).

²⁷ See his *Nighaṇṭu Ādarśa* (Bāpālāl Vaidya 1985: 60-65).

²⁸ *BhPN* p. 568.

²⁹ See Bāpālāl Vaidya 1985: 60.

³⁰ See Nadkarni 1954: 1175.

³¹ See Sharma 1997, s.v.

³² Ca. *Sū.* 27.97; *Ci.* 3.189cd; *Ci.* 17.97ab; *Ci.* 23.225cd; *Ci.* 26.156; *Ci.* 27.27; *Ci.* 27.34; *Ci.* 30.74; *Ci.* 30.259. *kulaka* is a vegetable (*śāka*), used as such or in a *yūṣa*.

datta's commentary on the Carakasamhitā says that it is the same as *kāravellaka*,³³ but that others regard it as a variety of *paṭola*.³⁴ The Dhantariyanighaṇṭu gives two meanings: *paṭolaka* and *kākatinduka*, as does the Bhāvaprakāśanighaṇṭu: *paṭola* and *kuṭṭu*.

Do these works contain other plant names that may refer to *Strychnos nux-vomica*?

kākāṇḍa(ka) and *viṣamuṣṭi(ka)*

There are two candidates to be examined. The first one is found in all three classical treatises, the other one is absent from the Carakasamhitā.

The first candidate is *kākāṇḍa(ka)*, mentioned four times in the Carakasamhitā in the chapter on poisoning (Ci. 23.49, 52, 53 and 217). A fifth time it occurs in a variant reading of Ci. 3.267.³⁵ Cakrapāṇi explains *kākāṇḍa* only at Ci. 23.49, where he reads *kākāṇḍā*, though the word ends in *-a* in the text; he remarks that it is the same as a variety of *śimbī*, i.e., a plant with pods. A related plant name is *kākāṇḍolā*, found once only in a variant reading of Sū. 27.34; Cakra, who prefers the reading *kākāṇḍomā*,³⁶ regards *kākāṇḍa* as *śūkaśimbī*. Śivadāśasena, whose comments on Sū. 27 are no longer available, but who is nevertheless quoted by Jādavaḥji Trikamji,³⁷ who had at his disposal a more complete manuscript, in his edition of the Carakasamhitā (Ca. [1941]), says that it is a pod resembling that of *śūkaśimbī*;³⁸ the variant reading of Sū. 27.34 was also known to him.

The identification of *kākāṇḍa* is hampered by the references to its (*sva*) *rasa* in three of the passages of the Carakasamhitā where it is found. This excludes the use of its seeds. The juice of the fresh wood of *Strychnos nux-vomica*, however, is also reported to be a popular remedy.³⁹

³³ Usually identified as *Momordica charantia* Linn., the bitter gourd.

³⁴ Usually identified as *Trichosanthes dioica* Roxb. or *Trichosanthes cucumerina* Linn., used as vegetables.

³⁵ *-kāṇḍīrātmaḡuptākākāṇḍaīkeṣīkā-* instead of *-kāṇḍīrātmaḡajīkeṣīkā-*. Cakrapāṇi reads *ātmaḡā* and does not mention *kākāṇḍa*.

³⁶ *umā* is a name of *Linum usitatissimum* Linn.

³⁷ See *HMLL* IB/302, n. 500.

³⁸ Cakrapāṇi explains the plant name *ṛṣabhī* (Ca. Sū. 4.7) as a synonym of *śūkaśimbī*. P.V. Sharma (1997) regards *ṛṣabhī* as identical with *kapikacchu*, *Mucuna pruriens* (Linn.) DC., in agreement with Ḍalhaṇa (*ad* Su. Ka. 7.16). *Mucuna pruriens* is a herbaceous plant bearing pods.

³⁹ Kirtikar – Basu 1935: III/1646; Chopra et al. 1956: 236; Dastur 1962: 155.

The Suśrutasaṃhitā refers to the fruit (*phala*) of *kākāṇḍa* once (Sū. 46.36). Cakrapāṇi regards it as a pod (*śimbaphala*) similar to that of *śūkaśimbī*; Dalhaṇa remarks that it is also called *aśvaka*, that it is a pod (*śimba*) resembling that of *kapikacchu*, and that its popular name is *śūkaśimbī*. The plant name *aśvaka* is unknown, except for this passage of Dalhaṇa's commentary; Bāpālāl Vaidya⁴⁰ considers it to be a synonym of *aśvakhura*, i.e., lucerne, *Medicago sativa* Linn.⁴¹

The Aṣṭāṅgahrdayasaṃhitā mentions *kākāṇḍa* once according to Singh – Chunekar 1972, s.v. (A.h. [1939] Ci. 5.20); the name *kākāṇḍakī* occurs also once (U. 24.35),⁴² as well as *kākāṇḍolā* (Sū. 6.22).⁴³

The Aṣṭāṅgasamgraha mentions *kākāṇḍa* in the verse taken from the Carakasaṃhitā that also prescribes *vāyasapīluka* (cf. above p. 10). Indu explains it as the eggs of a crow, which is not surprising because in his text the eggs of a peahen also occur. Though *kākāṇḍa* literally can mean “crow's egg”, this sense cannot be right here since the Suśrutasaṃhitā once mentions the fruits of *kākāṇḍa*.

The secondary literature is not of much assistance in identifying *kākāṇḍa*. Various and contradictory opinions are found in it.

The *Vaidyaka śabdasinḍhu* mentions two identifications of *kākāṇḍa*: (1) = *kākatinduka*, (2) = *mahānimba*, two identifications of its fruit: (1) the fruit of *śūkaśimbī*, (2) the fruit of *kākatinduka*, and two identifications of *kākāṇḍā* or *kākāṇḍī*: (1) *kolaśimbī*,⁴⁴ (2) *mahājyotiṣmatī*,⁴⁵ while *kākāṇḍolā* is regarded as (1) *kolaśimbī* or (2) *kaṭabhī*.⁴⁶ Similar entries are found in the *Āyurvedīya śabdakośa* and *Āyurvedīya viśvakośa*.

Balwant Singh and Chunekar (1972) remark, rightly so, that the *kākāṇḍa* of Caraka is a drug used entirely as an antidote to poisoning and is probably itself poisonous; it has been identified with *kākatinduka*,

⁴⁰ See Bāpālāl Vaidya 1982: 246.

⁴¹ Lucerne is a leguminous plant with pods that do not resemble those of the *Mucuna* species. Bāpālāl's choice is not happy since *Medicago sativa* is a native of Southwest Asia.

⁴² Not explained by Aruṇadatta.

⁴³ Explained as *kaṭabhī* by Aruṇadatta. *kaṭabhī* is a very controversial drug; Hemādri regards it as a *kapikacchū* without bristles (*śūka*) on its pods.

⁴⁴ Identified as *Canavalia gladiata* (Jacq.) DC. = *Canavalia ensiformis* sensu Baker by Śāligrāma in his *nighaṇṭu*.

⁴⁵ *mahājyotiṣmatī* is not referred to in the Bṛhatrayī, but *jyotiṣmatī*, mentioned in all three classical treatises, is regarded as either *Celastrus paniculatus* Willd. or *Cardiospermum halicacabum* Linn.

⁴⁶ On *kaṭabhī* cf. n. 43 above.

mahānimba and other trees (compare the *Vaidyaka śabdāsindhu*). They add that *kākatinduka* is either *Diospyros montana* Roxb. or *Strychnos nux-vomica* Linn. As the former is not poisonous at all, the latter is the best candidate in my opinion.

P.V. Sharma differs in adducing that, since various commentators say that *kākāṇḍa* resembles *ātmaguptā*, also called *kapikacchu*, it must be a related plant.⁴⁷ The common *kapikacchu* is *Mucuna pruriens* (Linn.) DC. P.V. Sharma identifies *kākāṇḍa* as *Mucuna monosperma* DC. ex Wight. He does not explain his reasons for selecting this one among the many species of *Mucuna* found in India.

The second plant name that may designate *Strychnos nux-vomica* is *viśamuṣṭi(ka)*. The name is rare in the *Bṛhatṭrayī*, but common in later works, in particular those on *rasaśāstra*. It is absent from the *Carakasamhitā*, but found once in the *Suśrutasaṃhitā*,⁴⁸ the *Aṣṭāṅgahrdayasaṃhitā*⁴⁹ and the *Aṣṭāṅgasamgraha*.⁵⁰

Cakrapāṇi identifies it with *bṛhadalambuṣā* and adds that others regard it as *parvatanimba* (= *mahānimba*). Ḍalhaṇa comments that it is the same as *drekḱā*, generally known as *rājanimba* (= *mahānimba*), and that others claim it to be either *bṛhadalambuṣā*⁵¹ or *karkoṭī*.⁵² Aruṇadatta (A. h. [1939]) and Śrīdāsapaṇḍita (A.h. [1950]), both commentators on the *Aṣṭāṅgahrdayasaṃhitā*, interpret it as *karkoṭī*, remarking that others regard it as *mahānimba*. Hemādri is silent on the matter. Candranandana equates it with *keśamuṣṭi* in his commentary on the *Aṣṭāṅgahrdayasaṃhitā* (see A.h. [1956-1957]),⁵³ while another commentator on the same work, the *Bhāṣyakāra* (Vaidya 1936: 526f.), says that it is well known under its own name (*svanāmaprasiddha*), but that, if not available, *kucilā* is taken in its place.

It is impossible to delve deeper into this complicated matter now, but I regard it as probable that *viśamuṣṭi* designates *Strychnos nux-vomica*.

⁴⁷ See Sharma 1981: 109.

⁴⁸ Sū. 38.18: an item belonging to the *surasādigaṇa*.

⁴⁹ Sū. 15.30: an item of the same *gaṇa*.

⁵⁰ Sū. 16.22: an item of the same *gaṇa*.

⁵¹ Not found in the *Bṛhatṭrayī*; *alambuṣā*, often identified as *Sphaeranthus indicus* Linn., occurs in the *Carakasamhitā* and *Aṣṭāṅgahrdayasaṃhitā*.

⁵² Regarded as a synonym of *dhāmārgava*, *Luffa cylindrica* (Linn.) M. Roem.

⁵³ Compare BhPN, *guḍūcyādivarga* 97: *mahānimba* = *keśamuṣṭi*.

Summarizing again, three Sanskrit plant names from the Bṛhatṭrayī may be candidates for *Strychnos nux-vomica*: *vāyasapīluka* (or *kākapīluka*), *kākāṇḍa(ka)*, and *viṣamuṣṭi(ka)*.

What has been gained so far?

The allegation that *Strychnos nux-vomica* is absent from early Sanskrit literature has been invalidated for the medical classics. The assertion that the Arabs were the first to introduce it into medicine is based on imperfect knowledge. Furthermore, it appears to be not impossible that the tree was known under different names, as very commonly happens in Sanskrit literature.

kāraskara, *kiṃpāka* and *viṣadruma* – *Antiaris toxicaria*?

A problematic plant name found in some *nighaṇṭus* and other texts is *kāraskara*. It complicates matters in the first place because one of its synonyms is *viṣatindu*, which is also regarded as a name for *kākapīlu* and *kākatinduka*, *Strychnos nux-vomica*. This embarrassing overlap means that two different trees are designated by the name *viṣatindu*. Fortunately, this is the only ambiguity; the other synonyms of *kāraskara* do not encroach upon the territory of *kākatinduka* or *kākapīlu*.

The tree called *kāraskara* is mentioned in a restricted number of *nighaṇṭus*, which is a remarkable feature in itself:

RN 9.35:

kāraskaras tu kiṃpāko viṣatindur viṣadrumaḥ |
garadrumo ramyaphalaḥ kupākaḥ kālakūtakaḥ ||

This verse is repeated in the *Śāliagrāmanighaṇṭubhūṣaṇa* (p. 600), which adds about the fruits (p. 602):

asya cāmaphalaṃ grāhi tuvaraṃ vātakṛt laghu |
śītalaṃ ca samuddiṣṭaṃ tat pakvaṃ viśadaṃ⁵⁴ guru ||
pāke ca madhuraṃ proktaṃ kaphaṃ vātaṃ pramehakam |
pittaṃ raktavikāraṃ ca nāśayed iti kīrtitam ||

Abhidhānamañjarī 1106:

viṣavṛkṣaḥ kiṅkirāto viṣaḥ kāraskaro bhavet |

Pāṇini (6.1.156) refers to *kāraskara* as a plant name.

⁵⁴ The text has *viśada*, which must be an error.

PW's and *MW*'s only remark about *kāraskara* is that it is a poisonous plant.⁵⁵ Śāligrāma regards it as *Strychnos nux-vomica*, while he does not identify the preceding item, *kākapīluka* or *kupīlu*.

The entries of the dictionaries on the synonym *kiṃpāka* are confusing. *PW* and *MW* describe the plant as cucurbitaceous. *MW* adds that it is *Trichosanthes palmata*, which has bad-tasting fruits, and that it is *Strychnos nux-vomica* according to a lexicon.

The fruits of *Trichosanthes tricuspidata* Lour. = *Trichosanthes palmata* Roxb., a member of the Cucurbitaceae, are red when ripe; on breaking them open a black smoky powder comes out.⁵⁶ Their seeds are poisonous and extracts of them show haemagglutinating activity. This plant cannot be the *kiṃpāka* of the *nighaṅṭus* as it is a large climber, not a tree.

The Rāmāyaṇa (2.66.6ab) refers to *kiṃpāka* in an intriguing context. The passage runs: *na lubdho budhyate doṣān kiṃpākam iva bhakṣayan*.

Two translations are possible: "Being bewildered, he is not aware of the bad consequences, like someone who eats a *kiṃpāka* (fruit)", and "Being greedy, he is not aware of the bad consequences, as someone who gives (someone else) a *kiṃpāka* (fruit) to eat".

The commentary by Rāma throws light on the passage and its double interpretation. Rāma himself gives as his opinion that the *kiṃpāka* is a fruit of *nimba*, *Azadirachta indica* A.Juss., which has an edible pulp (*Wealth of India*² I/507). This does not elucidate the sense of the expression. Of more interest is his quotation of the earlier commentator Kataka (p. 258a, 15):

*katakas tu: kiṃpāko viṣabhedaṣ taṃ kopādinā bhakṣayann ātmahatyādoṣaṃ
na budhyate tadvad ity artha ity āha. tatra lubdha iti nātyantaṃ samañja-
sam. dhanalobhādīnā parasya viṣabhakṣaṇaṃ kārayan yathā hatyādoṣaṃ
na budhyata iti vaktum ucitam.*

This means that Kataka considers *kiṃpāka* to be a poisonous fruit whose ingestion leads to certain death, which makes it suitable for committing suicide or murder. He prefers the second interpretation, taking *bhakṣayati* as a causative. Kataka's remarks point to *Strychnos nux-vomica* as the tree intended and its fruits, not to *Antiaris toxicaria* and its latex.

⁵⁵ *PW* and *MW* state that it occurs in the Mahābhārata and Bhāgavatapurāṇa, referring to Bhāgavatapurāṇa 5.14.12.

⁵⁶ Bāpālāl Vaidya 1982: 147f.

Aśvaghōṣa, in his *Saundarananda*, is also acquainted with the deadly fruits of the *kiṃpāka*. Verse 9.48 says, in the translation of E.H. Johnston:

Just as eating a *kiṃpāka* fruit leads to death not to nourishment, though its taste, colour and fragrance be good, so application to the objects of the senses leads the man of unbalanced mind to disaster, not to prosperity.⁵⁷

This verse can only refer to the poisonous fruit of *Strychnos nux-vomica*.

A verse from Vidyākara's *Subhāṣitaratnakoṣa* (33.1121) refers to particulars of the *kiṃpāka*:

When ripe, *kiṃpāka* fruit, though bitter and black within,
you grow red outside and pleasing to the eye;
yet, I know not what you have thereby to please the heart,
unless it be the heart of crows.⁵⁸

The characteristics of this *kiṃpāka* are exactly like those of *Trichosanthes tricuspidata*. Daniel H.H. Ingalls (1965: 545) remarks that this identification is probably correct. He refers to *Mārkaṇḍeyapurāṇa* 10.31 according to *PW* V/1296, but erroneously ascribes the following text to it: *kiṃpākavṛkṣasya dhvāṅkṣābhakṣanti netare*. In fact, *Mārkaṇḍeyapurāṇa* 10.31 reads:

tasmād yāsyāmy ahaṃ tāta tyaktvemāṃ duḥkhasaṃtatim |
trayīdharmam adharmādhyam kiṃpākaphalasaṃnibham ||

The plant referred to in this verse, whether a tree or a climber, has obviously poisonous fruits, suitable for committing suicide. It would not be *Trichosanthes tricuspidata*, and is more likely *Strychnos nux-vomica* or *Strychnos colubrina*. Ingalls' quotation which states that only crows eat its fruits conflicts with regarding *kiṃpāka* as *Trichosanthes tricuspidata*, the fruits of which are employed to get rid of crows, as Ingalls himself found out. He writes (Ingalls loc. cit.):

Kosambi write (sic) me as follows: The only local *śāstrīs* who knew anything about the *kiṃpāka* said that its fruit was the *kaunḍal* in Marathi. I then found that Nādkarni's Indian *Materia Medica* identified this *kaunḍala* with *Trichosanthes palmata*. Nādkarni (who says nothing of *kiṃpāka*) says that it is mixed with rice to poison crows when these birds get to be a nuisance.⁵⁹

⁵⁷ *Saundarananda* 9.48: *yathopayuktaṃ rasavarṇagandhavat vadhāya kiṃpākaphalaṃ na puṣṭāye | niṣevyamānā viṣayāś calātmano bhavanti anarthāya tathā na bhūṭāye ||*

⁵⁸ Translation by Ingalls (1965: 319).

⁵⁹ See Nadkarni 1954: 1238 (No. 2512).

Ingalls adds that the same fruit (i.e., the fruit of *Trichosanthes tricuspidata*) is designated in verse 38.1260 as *mahākālaphala*.

This verse runs, in Ingalls' translation (1965: 351):

Pleasing outside but black within: –
Who is not fooled by the villain
as by *kiṃpāka* fruit?

This *mahākāla* (rendered as *kiṃpāka* here) is undoubtedly *Trichosanthes tricuspidata*.⁶⁰

Of more importance is what the dictionaries have to say about another synonym of *kāraskara* (?), namely, *viṣadruma*. *PW* and *MW* regard it as a kind of poison tree, but *MW* adds: the *upas* tree.

This would mean that *Antiaris toxicaria*, the famous *upas* tree, was known in India. Will it be possible to confirm this? The other synonyms of *kāraskara* will also have to be taken into consideration.

The name *garadruma*, absent from *PW*, is explained as *Strychnos nuxvomica* in *MW*, though it is not found among the synonyms of *kākapīlu* or *kupīlu*.

ramyaphala is, according to *PW*, a particular plant, according to *MW*, *Strychnos nuxvomica*, despite its absence among the synonyms of this tree name. The name *ramyaphala* may refer to the fig-like purple fruits of *Antiaris toxicaria* which are bitter when unripe, but edible when mature. Very remarkable is that Śaligrāma, who identifies *kāraskara* as *Strychnos nuxvomica*, does not notice that his information on the fruit is incompatible with this view, but does apply to the fruit of *Antiaris toxicaria*.

MW considers *kupāka* to be a name for *Strychnos nuxvomica* again, to which the same objection as pertains to *garadruma* applies.

Finally, *kālakūṭa* is the name of a famous poison, but whether or not it may be the latex of *Antiaris toxicaria* has to wait for a closer study.

⁶⁰ Several authors and works mention *mahākāla* as the Sanskrit name for *Trichosanthes tricuspidata* (Lour.) = *T. palmata* Roxb. = *T. bracteata* (Lam.) Voigt. Cf. Bāpāl Vaidya 1982: 147f.: *mahākāla* as the Marathi name, *kiṃpāka* as the Sanskrit name; Dutt 1922: 308; Dymock et al. 1890-1893: II/70; Nadkarni 1954: 1238. The name is rather rarely found in *nighaṅṭus* and similar works. A treatise listing a series of synonyms is the *Paryāyaratnamālā* (378): *urukāla*, *mahākāla*, *kiṃpāka*, *kākamardaka*; this string is repeated in *Haricarāṣaṇa's Paryāyamuktāvalī* (17.24). *mahākāla* is employed in prescriptions expounded in the *Kāmaratna* (4.79 and 5.81).

Summarizing, the result of this investigation may be that the *upas* tree, *Antiaris toxicaria*, was known in India, though it rarely appears in texts.

IV. THE PAIPPALĀDASAṂHITĀ

An interesting question to which the next part of this paper will be devoted is whether *Strychnos nux-vomica* may also be designated in some cases and in particular in early or rather early times by the name *pīlu*, without the specifying *kāka-* before it.

My interest in this problem was aroused by reading Arlo Griffiths' dissertation, entitled "The Paippalāda Saṁhitā of the Atharvaveda, Kāṇḍas 6 and 7. A New Edition with Translation and Commentary" (Leiden 2004 [Griffiths 2009]). One of the hymns of the seventh *kāṇḍa* attracted my attention. This hymn (7.19) is devoted to the *pīlu* tree, identified by Griffiths as *Careya arborea* Roxb.

It occurred to me that, since the hymn presupposes a large tree whose ripe fruits harbour poisonous seeds, the strychnine tree, which produces fruits of this character, could be meant.

The identification of the *pīlu* tree of the Paippalādasamhitā as *Careya arborea* is improbable since, though a large tree, it does not possess the type of seeds stipulated by the hymn.

Paippalādasamhitā (PS) 7.19.3 runs:

*yayāhus *tṛṣṭam kaṭukam apagūḍham phale kulam |*
tasyai hiranyakeśyai namaḥ kṛṇmo arātaye ||

Griffiths translates:

She by whom, they say, a harsh, sharp pit is hidden away in [its] fruit,
to her, the golden-haired Arāti, do we bring homage.

Some comments on this verse are necessary. The *pīlu* tree is associated with evil in the form of a demonic being called Arāti, also referred to in PS 7.19.4; this evil being is known from Vedic literature. Another being, egg-eating (*aṇḍāda*) and fetus-spoiling (*garbhadūṣaṇa*), called Arāya, is referred to in PS 7.19.5 as a source of evil to be defeated by the *pīlu* tree; it, too, is a member of a group of demonic beings like those attested in the Paippalādasamhitā.

The pit (*kula*) is a seed, as is clear from the use of this word in this sense in the Carakasamhitā.⁶¹ The word *trṣṭa* is more problematic, but commonly, according to Griffiths, associated with poison in Vedic texts.

This indicates that a tree with poisonous seeds is described. This certainly did not escape Griffiths's notice. He therefore took recourse, understandably, to Watt who, in his *A Dictionary of the Economic Products of India*,⁶² remarks, without naming his source, that the seeds of *Careya arborea* are said to be more or less poisonous. Watt, however, also quotes the Reverend A. Campbell who says that the fruit is eaten by the Santals⁶³ and adds from another source, not named, that they are also consumed in the Punjab.⁶⁴ R.B. Mohanty and M.K. Rout (2003) report that the leaves are used as fodder in Orissa and is claimed to enhance the milk production of cattle. The later secondary literature rarely refers to a poisonous character of the seeds.⁶⁵ James A. Murray is one of the few who give information on this matter. He remarks in his *The Plants and Drugs of Sind* that Endlicher says that, although the fruit is eaten, the seeds are suspicious.⁶⁶ This Endlicher is probably Stephan F.L. Endlicher, a botanist who lived from 1804 to 1849; among the number of books he wrote the quoted remark may be from his *Enchiridion botanicum*, published in 1841. Several authors mention that the root, bark and leaves are employed to kill fish, but the fruit is only referred to in that context by S.P. Agharkar.⁶⁷ Conclusive investigations on this issue are not known to me.

Careya arborea can thus be discarded rather safely as a possible identification of the *pīlu* of the Paippalādasamhitā.⁶⁸

It may even be argued that *pīlu* rarely designates this tree, despite entries in the authoritative dictionaries. Both *PW* and *MW* give as the first identification of *pīlu* *Careya arborea*. It is still enigmatic to me whence this information stems. The tree is almost nowhere called *pīlu* in works on the Indian flora and Indian materia medica; the only exception is the

⁶¹ Ca. Ci. 1.1.75: *akulaka*; Cakrapāṇidatta: = *anasthan*.

⁶² Watt 1885-1893: II/157.

⁶³ Bodding 1925-1940, however, does not mention *Careya arborea* as used by the Santals in their medicine or as a tree with edible fruits.

⁶⁴ McCann (McCann n.d.: No. 8), probably relying on Watt (see his Preface), also mentions that the fruits are eaten in the Punjab and given to cattle.

⁶⁵ McCann, probably relying on Watt again, remarks that the seeds are regarded as poisonous. A similar statement is found in Pandey 2001: 320.

⁶⁶ Murray 1881: 194.

⁶⁷ Agharkar 1953: 245.

⁶⁸ The tree is not mentioned in Chopra et al. 1940.

work of Kirtikar – Basu (1935). The most common name is always *kumbhī*, an appropriate appellation. The name derives from a peculiar cavity within the fruit, at its apex, which makes it resemble a *kumbha*, a water-jar. “Belegstellen” where *pīlu* must be interpreted as *Careya arborea* are not easily discovered, but may be found by means of a careful study of the relevant context.

The second identification given in the standard dictionaries is *Salvadora persica* Linn. This is not a large tree, but more usually a shrub, and has no connection whatsoever with the *pīlu* of the Paippalādasamhitā. No parts of it are poisonous. It is well known as one of the trees that yield tooth sticks (*dantakāṣṭha*), though some Dharmasāstra works (VS 61.4) forbid the use of this particular tree for the purpose (cf. below p. 39f. and n. 121).

Usually, the *pīlu* of Sanskrit literature is a *Salvadora* species, either *Salvadora persica* Linn. or *Salvadora oleoides* Decne. Both resemble each other and can be used for the same purposes. The main difference is the colour of the fruits. Whether one of the two may be the *bṛhatpīlu* distinguished in some of the *nighaṅṭus* cannot be decided; there is no clear-cut difference in the size of the trees themselves, but the dimensions of the fruit may be decisive in this respect.⁶⁹

Careya arborea Roxb. is a large deciduous tree, found throughout a large part of India. The simple and stalked leaves are alternate, oval and dentate, crowded at the end of branches. The sessile, showy flowers with four sepals, four petals and many stamens are large and pinkish or yellowish white, clustered at the end of branches in short spikes; they usually appear in April, generally when the tree is destitute of leaves. The green fruits are ovate berries of the size of an apple (ca. 8 cm.), contain many seeds embedded in fleshy pulp, and have a peculiar and unpleasant smell. They are surmounted by an enlarged mouth having a depressed pit at the vertex within the calyx-teeth and the remains of the style. The thick and exfoliating grey bark with shallow cracks is used by a sect of *sādhus* to cover their bodies and on account of this the sect is known as *Kumbhapaṭiā*. The moistened bark gives out a mucilage.

Salvadora persica Linn., on the other hand, is a small, thick-stemmed and soft-wooded evergreen tree or shrub, found in low and arid land. The trunk is generally crooked and the bark deeply cracked. The numerous

⁶⁹ Cf. RN 11.63: *anyaś caiva bṛhatpīlur mahāpīlur mahāphalaḥ | rājapīlur mahāvṛkṣo madhupīluḥ śaḍāhvayajāḥ ||*. This *pīlu* is called *mahāphala*; the name *madhupīlu* precludes that it is *Careya arborea*. Kamat (2006: 13) regards the *bṛhatpīlu* as *Salvadora oleoides*.

spreading branches are pendulous at their extremities. The opposite leaves are entire, oval, smooth and shining on both surfaces. The numerous small, greenish yellow flowers appear in terminal compound panicles. The plant is flowering and fruiting nearly all year. The fruits are globose, minute, smooth berries, red when ripe, with an aromatic smell and taste, not unlike garden cress.

Salvadora oleoides Decne. resembles *S. persica* closely and is found in the same type of ecosystem. Its leaves are linear-lanceolate. Its flowers are greenish white. The fruits are also similar, but yellow when ripe.

The confusion about the identity of *pīlu* created by the dictionaries is well illustrated in the etymological Sanskrit dictionaries of Manfred Mayrhofer, who opted for *Salvadora persica* in the first version (Mayrhofer 1956-1980: II/295f.), but for *Careya arborea* in the later version (Mayrhofer 1986-2001: II/138f. and III/326).

In summary, we see that the dictionaries and the secondary literature are of no avail in establishing the identity of the Paippalāda *pīlu*, which must be some other tree.

The identity of the *pīlu* is unfortunately not elucidated by the plant called *pīluparṇī*.⁷⁰ The plants adduced in *PW* and *MW* do not possess leaves resembling those of *Careya* or *Salvadora*. Another species, regarded as *pīluparṇī* in the literature, *Maerua oblongifolia* (Forsk.) A. Rich., has similar leaves, but completely different properties. In general, the ending *-parṇī* after a plant name does not even unambiguously indicate that the leaves of such a plant are similar to those of the plant designated in the first part of the compound. Balwant Singh and Chuneekar give as an example *mūlakaparṇī*, a synonym of *śigru*, *Moringa oleifera* Lam., which does not mean that the leaves of *śigru* resemble those of *mūlaka*, *Raphanus sativus* Linn., but that “its root and root-bark are like *mūlaka* ... in taste ... and medicinal properties”.⁷¹

The word *pīlu* is rare in Vedic literature. It is absent from the Ṛgveda. The adjective *pīlūmat* is found once in the Śaunakīya recension of the

⁷⁰ *PW* gives three plants: “(1) *Sansevieria zeylanica* Willd., (2) *Momordica monodelpha* Roxb. [an old name for *Coccinia grandis* (Linn.) Voigt = *Cephalandra indica* Naud.], (3) ein bestimmtes Heilkraut”. *MW* mentions *Momordica monodelpha* and adds that it is also a certain drug.

⁷¹ Singh – Chuneekar 1972: 398.

Atharvaveda (18.2.48), where it qualifies the middlemost heaven. The second occurrence is at 20.135.12.⁷²

The question to be discussed further is whether or not *Strychnos nuxvomica* Linn. is a proper candidate for the referent of the word *pīlu*.

As to its characteristics, it is suitable. Moreover, one would expect it to be mentioned in later Sanskrit literature. Its presence in Vedic literature, however, is more problematic. The Paippalādasamhitā is a text that originated in Northwestern India, where the tree does not grow nowadays. I do not know whether this was also the case in Vedic times. Climate changes and/or deforestation may have altered the situation. A very early commercial route between the northern and southern parts of India has to be assumed if the tree was absent from the North. The seeds of *Strychnos nuxvomica* pose no problem in themselves. They are usually dried and are easily transportable.

The solution of the problem is not possible in the present state of our knowledge.⁷³

V. VARIOUS SANSKRIT SOURCES

Other works known to mention *pīlu* have been examined by Renate Syed in her thesis “Die Flora Altindiens in Literatur und Kunst” (Syed 1990). She concludes that in all the places she studied a *Salvadora* is meant. This conclusion may be premature and contestable in a number of cases.

pīlu – *Salvadora persica* or *Careya arborea*?

The texts examined by Syed are:

(1) Atharvaveda 20.135.12:

tvam indra kapótāya chinnapakṣāya vāñcate |
śyāmākam pakvām pīlu ca vār asmā ākr̥ṇor bahūh ||

You, o Indra, provided for the staggering pigeon whose wings were clipped much ripe millet and *pīlu*-fruit, [and you provided] water for it (transl. Griffiths 2009: 437).

⁷² See on these passages Griffiths 2009: 435-438. Whitney’s translation (1905) of Atharvaveda 18.2.48 is: “Watery is the lowest heaven, full of stars (? *pīlu*) is called the middlemost; the third is called the fore-heaven, in which the Fathers sit.”; for 20.135.2 see below.

⁷³ The interesting fact remains that the seed of *pīlu* is called *kula* in the Paippalādasamhitā, a term used as a synonym of *Strychnos nuxvomica* in later Indian literature.

O Indra, der Taube, deren Flügel abgeschnitten waren und die sich schwankend bewegte, hast du reife Hirse⁷⁴, *pīlu* und reichlich Wasser gegeben (transl. Syed 1990: 443).

Syed may well be right in regarding this *pīlu* as *Salvadora persica*; its fruits are sweet, edible, and easily procurable in dry regions of India. However, it can also be *Salvadora oleoides*, whose fruits are also sweet and edible, and sometimes fed to cattle. *Salvadora oleoides* is found in the arid parts of the Punjab and western India. Less probable is that the fruits of *Strychnos nux-vomica* are meant, though many birds are said to be fond of their pulp that contains only small amounts of toxic alkaloids. These fruits would not have been easily procurable.

(2) *Harṣacarita* 3 (p. 95; from the description of the region named Śrīkaṇṭha):

*pade pade karabhapālibhīḥ ... (drākṣālatāmaṇḍapaiḥ |) ... pīlu⁷⁵pallava-
prasphoṭitaiḥ ... (dāḍimīnām) vanair (vilobhanīyopanīrgamaḥ).*

At every step are groups of young camels. (The exits are made attractive by vine-arbours and pomegranate orchards;) arbours, ablaze with *pīlu* sprays ... (transl. Cowell – Thomas 1897: 80).

Rundherum waren Wälder, in denen die *pīlu*-Schößlinge aufbrachen, versehen mit Kamelgruppen ... (transl. Syed 1990: 443).

The translations of *pīlupallavaprasphoṭita* are not very accurate. The meaning is clearly that these trees have begun to bloom; the flowers are present in loose panicles, but the trees cannot be ablaze with them as their colour is greenish white or greenish yellow. In this case the *pīlu* may be *Careya arborea*, occurring throughout India, a tall tree and not a shrub as *Salvadora*,⁷⁶ and with showy flowers (cf. above p. 26). Its leaves are a favourite fodder for camels.

(3) *Harṣacarita* 8 (p. 235; from the search after the mendicant Divākaramitra):

nirbhayabhūrībhuruṇḍabhuḥjyamānapākakapilapīlavah ...⁷⁷

⁷⁴ The usual identification of *śyāmāka* is *Echinochloa frumentacea* Link = *Panicum frumentaceum* Roxb. This kind of millet, cooked in water like rice, is consumed mostly by the poorer classes; the grains are also used for feeding cage birds (*Wealth of India*² III/125f.).

⁷⁵ Commentary: *pīlur vṛkṣabhedāḥ*.

⁷⁶ Syed regards also this *pīlu* as *Salvadora persica*. Sharma (1975b) thinks that *pīlu* designates this tree wherever it is found in Bāṇa's works.

⁷⁷ Commentary: *bhuruṇḍāḥ pakṣibhedāḥ; pīluphalam sraṃsikam*. Several *nighaṇṭus* mention *sraṃsī* as a synonym of *pīlu*: BhPN, *āmrāḍīphalavarga* 128; NŚ 139; Kaiyadevanighaṇṭu, *oṣadhivarga* 452; Soḍhalanighaṇṭu (SN), *nāmasaṃgraha* 575cd.

The *bhurunḍas* were fearlessly eating the ripe brown-red fruit of the *pīlu* trees ... (transl. Cowell – Thomas 1897: 234).

Furchtlos verzehren die zahlreichen *bhurunḍa*'s die reifen, braunroten *pīlu*-(Früchte) ... (transl. Syed 1990: 443).

The *bhurunḍa* / *bherunḍa* bird

The *bhurunḍa*, also called *bhāraṇḍa*, *bhāruṇḍa* and *bherunḍa*,⁷⁸ is mentioned in the Mahābhārata:

MBh 3.170.43cd and 47cd = MBh (B) 3.173.48ab and 52cd:

sālāvṛkāṇām pretānām bhurunḍāṇām ca sarvaśaḥ ||

...

sarvam āsīj jagad vyāptam tasminn astre visarjite ||

Hyanas, ghosts, *bhurunḍas* ... filled up all the universe when that weapon was launched (transl. van Buitenen 1975: 551).

MBh 3.198.35a-d ≈ MBh (B) 3.207.36a-d:

*urunḍā*⁷⁹ *vāmanāḥ kubjāḥ sthūlaśīrṣās tathaiva ca* /
*klībās cāndhās ca jāyante badhirā*⁸⁰ *lambacūcukāḥ*⁸¹ /

People are born stunted,⁸² dwarfish, hunchbacked, large-headed, impotent, blind, deaf, drooping, and stammering [...] (transl. van Buitenen 1975: 620).

MBh 6.8.11 ≈ MBh (B) 6.7.12 (from a description of the country of the Uttarakurus):

bhāruṇḍā nāma śakunās tikṣṇatunḍā mahābalāḥ /
*te nirharanti hi*⁸³ *mṛtān darīṣu prakṣipanti ca* ||

⁷⁸ See on this bird: Hopkins 1915: 20; Mayrhofer 1956-1980: II/496 and 1986-2001: III/368, s.v. *bhāraṇḍa*; Stache-Rosen 1977. Stache-Rosen (p. 492, n. 34) refers to a monograph and an article in Kannada: Devulu Narasimha Sastri, *Bheruṇḍeśvara*, Mysore Insurance Company (year unknown), and M. Hanumantha Rao, Gaṇḍabheruṇḍa, in: *Savinēnapu*. Festschrift for Prof. T.S. Venkannaya, Mysore 1970, p. 651-659. She discusses several images of Gaṇḍabheruṇḍa, coins, inscriptions, etc., in her article. A particular gesture of dancers, called after *bheruṇḍa*, is described in Nandikeśvara's *Abhinayadarpaṇa*, v. 203.

⁷⁹ MBh (B): *bheruṇḍā*.

⁸⁰ MBh (B): *badhirā jāyante*.

⁸¹ MBh (B): *'tyuccalocanāḥ*.

⁸² It is not clear why van Buitenen rendered *urunḍa* as "stunted". Nilakaṇṭha: *bheruṇḍāḥ* = *bhayānakāḥ*.

⁸³ MBh (B): *tān nirharantīha*.

MBh 12.91.21cd = MBh (B) 12.89.22cd (see also MBh 12.94.36cd = MBh [B] 12.93.37cd):

bhāruṇḍasadr̥śā hy ete nīpatanti pramādyataḥ ||⁸⁴

MBh (B) 12.169.9-10ab (≈ MBh 12.163.9):

*samantato dvijaśreṣṭhās tatrākūjanta vai tadā |
manuṣyavadanāś cānye bhāruṇḍā iti viśrutāḥ ||
bhūliṅgaśakunāś⁸⁵ cānye sāmudrāḥ parvatodbhavāḥ |*

Another work referring to these birds is the Pañcatantra.⁸⁶ The Viṣṇusmṛti (VS) is acquainted with Vedic mantras called the Bhāruṇḍas.⁸⁷

Further sources mentioned by Valentina Stache-Rosen (1977) are: the Parāśarasamṛti⁸⁸ and the Śatruñjayamāhātmya,⁸⁹ some other Jain works,

⁸⁴ Commentary by Nilakaṇṭha: *bhāruṇḍa* = *gṛdhra*.

⁸⁵ E. Washburn Hopkins (1915: 20) associates the *bhāruṇḍas* with the *bhūliṅga* birds of the Mahābhārata who also have a human voice and are reckless, even picking the lion's teeth. The relevant verses (MBh 2.41.19-21; MBh [B] 2.44.28-30; also quoted by Dave 1985: 362) are: *bhūliṅgaśakunīr nāma pārśve himavataḥ pare | bhīṣma tasyāḥ sadā vācaḥ śrūyante 'rthaviḡarhitāḥ || mā sāhasam itīdam sā satataṃ vāśate kila | sāhasaṃ cātmanāṭīva carantī nāvabudhyate || sā hī māmsārgalam bhīṣma mukhāt siṃhasya khādataḥ | dantāntaravilagnaṃ yat tad ādatte 'lpacetanā ||*. The commentator Nilakaṇṭha calls the *bhūliṅga* a *bīlāsāyī pakṣivīśeṣaḥ*; he explains *māmsārgala* as: *daṃṣṭrāntaralagnasya māmsasya bahir-nirgatabhāgaṃ ullolam*. Dave brings forward that *siṃha* does not denote a lion here, but a crocodile; he does so because he regards the *bhūliṅga* as the African plover, Pluvianus aegyptius, commonly known as the crocodile bird. This bird owes its name to its frequent association with the Nile crocodile from the body of which it picks out parasites; as the monster is sunning itself on the bank with its mouth agape, the bird boldly enters it to draw out the leeches sticking to the jaws. It also renders another service to the crocodile, in that, being a very wary bird, it flies off with warning cries at the approach of danger; the crocodile taking the warning then slips into the water. It will be readily seen that for Dave the leeches are the *māmsa* and the warning cry of the birds the *mā sāhasam* cry of the Mahābhārata story. It is probable, according to Dave, that in former times the plover frequented the Sind coast or the estuary of the Indus river, or else that the ancient Indians heard of the bird's habits from the seafaring merchants of ancient India. However, this suggestion is fanciful and unconvincing. A bird called *bhūliṅga*, mentioned in the Paesi-kahāṇaya, cannot be the same as the *bhūliṅga*, if this is indeed an aquatic bird, but reminds one more of the carnivorous *bheruṇḍa*, according to Bollée 2005: 69f.

⁸⁶ Pañcatantra, *aparīkṣitakāraka* (5), *bhāruṇḍapakṣikathā* (13).

⁸⁷ VS 56.3 (13). Jolly (1880: 185) says in a footnote to his translation that Bhāruṇḍa is the name of certain *sāmans*, twenty-one in number, which begin with Ṛgveda 10.16.6 (see Nandapaṇḍita's commentary); cf. MBh (B) 1.70.39, quoted below in n. 103.

⁸⁸ Dave (1985: 397) quotes from Pārāśarasamṛti 6.7: *bheruṇḍacāśabhāsāś ca parāvata-kapīñjalau*.

⁸⁹ See Weber 1858: 31 (referred to in Stache-Rosen 1977: 491). The *bhāruṇḍas* are called *khilapakṣinaḥ*, translated as "Wüstenvögel" by Weber (loc. cit., n. 1).

specifically the Sūtrakṛtāṅga⁹⁰ and the Uttarādhyayana,⁹¹ the Kathāsaritśāgara,⁹² Brahmapurāṇa,⁹³ Brahmāṇḍapurāṇa⁹⁴ and Śivapurāṇa,⁹⁵ and the Yaśastilakacampū,⁹⁶ as well as some lexica: Hemacandra's Anekārthasamgraha,⁹⁷ the Viśvaprakāśa⁹⁸ and the Dvirūpakośa.⁹⁹ Left unmentioned by her is the Padmapurāṇa.¹⁰⁰ The Medinīkośa mentions a goddess and a Yakṣiṇī called Bheruṇḍā.¹⁰¹

Additional material on the *bheruṇḍa*, in particular in Jain works, is found in a book by Willem B. Bollée;¹⁰² K.N. Dave in his work on birds in

⁹⁰ Sūtrakṛtāṅga 2.2.70: "(There are monks) who are always waking like the fabulous bird Bhāruṇḍa" (transl. Jacobi 1895: 378).

⁹¹ Uttarādhyayana 4.6: "Be always watchful like a *bhāruṇḍa* bird" (transl. Jacobi 1895: 19). In a footnote Jacobi adds that each of these birds has two necks and three legs.

⁹² See Tawney 1924-1928: II/219, n. 2, and III/60-63: the "overhearing" motif.

⁹³ Brahmapurāṇa 164.3-37: a story about King Pavamāna's conversation with a *cicēka* bird named Bheruṇḍa; this bird says that nobody is afraid of it and that it is not afraid of anybody.

⁹⁴ Brahmāṇḍapurāṇa 3.4.19.4, according to Stache-Rosen 1977: 492, n. 31, and 3.4.24.49: *vikarṇākhyas ca daityendras camūbhartā mahābalaḥ | bheruṇḍapatanārūḍhaḥ praçaṇḍayuddham ātanot ||*.

⁹⁵ Śivapurāṇa 2.5.49.12 (for the beginning of the sentence, cf. 2.5.49.3cd-4a: *mahēśvarāt punarjātaḥ śukro vedanidhīr muniḥ || dadarśa ...*): *aghoram ghoradaityaghaṇam ghoraghoṣam vanaspatim | bhasmāṅgam jatilaṃ śuddham bheruṇḍaśatasevitam ||*.

⁹⁶ Yaśastilakacampū 1.144.4 according to Stache-Rosen 1977: 492, n. 28.

⁹⁷ Anekārthasamgraha 3.188c: *bheruṇḍau bhīṣaṅkaghau* (compare the quotation in Dave 1985: 397).

⁹⁸ Viśvaprakāśa p. 45, v. 32cd: *bheruṇḍo devatābhede pakṣiṇo bhīdi ceṣyate*. Dave quotes from the same work: *bheruṇḍo bhīmadarśanapakṣiṇo bhīdi* (Dave 1985: 397).

⁹⁹ Stache-Rosen (1977: 493, n. 38) refers to the Dvirūpakośa of Śrīharṣa, ed. Ranganathaswami, Vizagapattam 1896, v. 151.

¹⁰⁰ See Dange 1986: 127 (referring to Ādi 4.2-12).

¹⁰¹ Medinīkośa 13.34cd.

¹⁰² See Bollée 2005: 70 with notes 1-2. Bollée refers to his own book of 1995 (p. 167), to Kapadia 1962, to Haribhadra's Āvassayanijjuttī (one pair of the bird has three legs: *tesim jugalassa tinni pāyā*), to the Paṇṇavaṇāsutta (1.78: the *bhāruṇḍa* is called a *cammapakkhī*), and to Hemacandra's Triṣaṣṭīśālākāpuruṣacarita (10.11.347). The *bhāruṇḍas* are mentioned in the story about Kumāranandin and Nagila (10.11.333-387): "Embarked with Kumāranandin, after he had gone a long way on the ocean-path, the old man said: 'Look here, please. On the shore of the sea at the foot of a mountain one can see a fig tree. Cling to this when the boat passes underneath. The *bhāruṇḍas*, three-legged birds, will come here from Pañcaśaila. While they are asleep, bind yourself firmly with a cloth to the middle foot of one of them and hold on with a tight grip. At daylight, you will reach Pañcaśaila by the *bhāruṇḍas* flying up. Later the boat will perish in the whirlpool and, if you do not cling to the fig tree, you also will perish in the same way, alas!" (transl. Johnson 1962: 286). Kapadia (1962: 81-83: *bhāruṇḍa/bhāruṇḍa*), in his turn, refers to further passages where the *bhāruṇḍa* is mentioned: Śīlāṅka Sūri's com-

Sanskrit literature also refers to several additional sources.¹⁰³ A treatise left unmentioned so far is the Vasudevahiṇḍi.¹⁰⁴

K.N. Dave defends his view that three kinds of *bheruṇḍa* are to be distinguished: (1) the two-faced type, which may be the dodo,¹⁰⁵ (2) the bearded vulture, *Gypaetus barbatus* (L.), and (3) the adjutant stork, *Leptoptilos dubius* (Gmelin 1789).¹⁰⁶ The fruit-eating *bheruṇḍas* of Bāṇa's *Harṣacarita* are out of tune with carnivorous vultures and storks,

mentary on the *Sūyagaḍa Nijjutti* (v. 108), *Mahānīsiha* 9.693, *Nāyādhammakahā* 1.5, *Ovavāya* s. 27, and *Pajjosavaṇākappa* s. 118.

¹⁰³ Additional sources as given by Dave are: Hemacandra's *Deśināmamālā*: *bheruṇḍo citrakah* (this quotation by Dave is not from the *Deśināmamālā*, but from the commentary; the text itself has at 6.108: *bheruṇḍo dīvī bhoyabhoiyā bhāḍīgāmapavaresu | ahīyārisambale bhollayaṃ ca bhāruṇḍayammi bhoruḍao ||*, and the commentary runs: *bheruṇḍo citrakah, bhoo bhāḍīh, bhoio grāmapradhānah, bhollayaṃ prabandhapravṛttaṃ pātheyam, bhoruḍo bhāruṇḍapakṣī. yathā: aṇutitthaṃ kayabhoyā ekkamuhīhavia bhollayaṃ leha | bhōiyabheruṇḍā domuhaboruḍayāna pecchaha avāyaṃ ||*); MBh (B) 1.70.39: *bhāruṇḍasāmagītābhīr atharvaśirasodgataih | yatātmabhih suniyataih śuśubhe sa tadāśramah ||*; *Matsyapurāṇa* 6.16f. (on *dvimūrdhan śakuni* belonging to the progeny of Danu): *danuḥ putrasatam lebhe kaśyapād baladarpitam | vipracittih pradhāno 'bhūd yeśāṃ madhye mahābalaḥ || dvi-mūrdhā śakunīś caiva tathā śaṅkuśīrodharaḥ | ayomukhaḥ śambaraś ca kapiśo vāmanaś tathā ||*, and 6.35f. (*bheruṇḍa* as a son of Jaḍāyus): *sampātīś ca jaḍāyus ca aruṇasya sutāv ubhau | sampātīputro babhrus ca śighragaś cāpi viśrutah || jaḍāyusaḥ karnikārah śatagāmī ca viśrutau | sāraso rajjuvālaś ca bheruṇḍaś cāpi tatsutāḥ ||*; *Nāradapurāṇa* 3.77.88: *bheruṇḍā vāyasā ḡrdhrā haṃsādyaḥ pakṣijātayaḥ* (3.77.85-90: "May these be destroyed: ... all those different types of beings which desire to attack us during twilight, by day or by night"); *Nighaṇṭuratnākara*: *galeśuṇḍa pakṣivīśeṣa* (I have not been able to find the passage on the *galeśuṇḍa* although the index called *Vaidyakaśāstrāntila pāribhāṣika śabdāmṇā kośa* for vol. 1 of the *Nighaṇṭuratnākara* [p. 55] says: *galeśuṇḍa pakṣivīśeṣa*); *Parīśiṣṭaparvan* of Hemacandra 2.2408: *velādhara bhāraṇḍah*; *Riṣṭasamuccaya* of Durgadeva 176a: *giddhūlāya bhārayaḍo (ḡrdhrolūka bhāraṇḍa)* (translation by Gopani: "[It is not good, if one of these is seen, namely,] a vulture, an owl, a *bhāraṇḍa* (a fabulous bird) ..."; *Śabdārthacintāmaṇi*: *bhāraṇḍa uttarakurudeśajaśakunapakṣin*).

¹⁰⁴ This work contains a story called "The journey of Cārudatta", in which a group of merchants is instructed by the caravan leader to kill the goats they have been riding and to slip into their hides so that the *bhāruṇḍa* birds mistake them for raw meat and carry them off to *Ratnadvīpa* (see Jagdishchandra Jain's Introduction to his translation p. 48 and his translation p. 290-298). Jagdishchandra Jain refers to Haribhadra's commentary on the *Āvassaya*, as Bollée does, and gives a summary of the story found there (together with the gist of a similar story by Śaktideva in *Kathāsaritsāgara* 2.218f.). He also refers to the commentary on the *Uttarādhyayana* (18.251f.). Finally, he draws attention to comparable stories about the bird *Rukh*, also called *Seemurgh*, in the "Arabian Nights". The daring (*dhr̥ṣṭa*) birds with iron beaks (*ayastuṇḍa*) of the *Buddhacarita* (14.14) may be related to the *bheruṇḍas*.

¹⁰⁵ Dave's defense of this improbable suggestion will convince no one.

¹⁰⁶ Dave 1985: 397-399. See the descriptions (and the corresponding colour plates) of these birds in Ali – Ripley 1983: 314-316 (no. 188) and 105-107 (no. 67).

and the dodo has never roamed on India's soil, which makes Dave's suggestions inapplicable to the case under discussion.

Dave also suggests that a bird mentioned in the commentary on the Vessantarajātaka, where it is called a *hatthiliṅgasakuna*, may be the adjutant stork because it is characterized as a bird capable of taking away small children.¹⁰⁷ He argues that this stork readily swallows a leg of mutton or a dead cat entire, and would strike at any living thing it can swallow at a gulp. In the Bakajātaka this bird is said to be ready to attack a lamb or kid. A second argument in support of this identification is, in his view, the 12 to 15 inch pendent pouch of the bird that resembles the trunk as the characteristic mark (*liṅga*) of the elephant (*hastin*). Dave is in doubt, however, and adds that also the bearded vulture was formerly reputed to carry off small children.

In the context of Harṣacarita 8, the colour of the *pīlu* fruits is important: *Salvadora persica* has red fruits, and those of the closely related *Salvadora oleoides* are yellow. The colour *kapila* throws some doubt on Syed's identification because it means reddish brown, monkey-coloured; this also excludes the fruits of *Careya arborea* and *Salvadora oleoides*, but not those of *Strychnos nux-vomica*, which can indeed have this hue.

The second point is the fearlessness of the *bhurunḍa* birds. Is there no danger around or are they not afraid of the fruits? The latter would point to the fruits of *Strychnos nux-vomica* with their poisonous seeds. The large size of *bhurunḍas* is also in favour of *Strychnos nux-vomica*, the fruits of which are a delicacy to large birds, hornbills for example. An objector might argue that the reference to two completely different *pīlu* trees in one and the same literary work is not very attractive, but a poetic mind like that of Bāṇa cannot be expected to describe nature with the accuracy expected of a scientist. The option that *nirbhaya* is a fixed characteristic of the *bherunḍa* birds in this instance, as it is actually sometimes observed, appears inappropriate because it is followed and not preceded by the qualification *bhūri*.

Let us continue with the survey of the sources adduced by Syed for her identification of *pīlu* as a *Salvadora*.

¹⁰⁷ Jagdishchandra Jain (cf. Vasudevahiṇḍi p. 291) also mentions this huge bird called *hatthiliṅga* referred to in the Jātaka commentary and adds that it is described as possessing the strength of five elephants. According to him, a *hatthiliṅga* also figures in the Dhammapada commentary where Queen Sāmavati, wearing a red cloak, is mistaken by this bird for a piece of meat.

pīlu – *Salvadora Persica* or *Careya arborea* (continued)

(4) MBh 2.47.4 = MBh (B) 2.51.4:

aśvāṃs tittirikalmāśāṃs triśataṃ śukanāsikān |
uśtravāmīs triśataṃ ca puṣṭāḥ pīluśameṅgudaiḥ ||

(Der König von Kamboja gab als Tribut) 300 papageiennasige Pferde der Tittiri- und der Kalmāśa-Rasse sowie 300 Kamelstuten, wohlgenährt durch *pīlu*, *śamī* und *īṅguda* (transl. Syed 1990: 443).

(The Kāmboja gave as tribute ...) horses, gray and dappled, three hundred of them, with beaklike noses, and three hundred camel mares fed with dates, *śamī*, and *īṅguda* nuts (transl. van Buitenen 1975: 116).

The leaves of both *Salvadora persica* and *Salvadora oleoides* are still used as camel fodder, but *Careya arborea* is also a good fodder tree,¹⁰⁸ which makes the identification of this *pīlu* difficult. The reason for van Buitenen's rendering *pīlu* as "date" is an enigma; this meaning is not recorded in the dictionaries. The leaves of *īṅguda*, *Balanites aegyptiaca* (Linn.) Delile, are not a good fodder for horses because this drought-hardy tree is spiny; they are eaten by cattle, sheep and goats. Its fruits are erroneously called nuts by van Buitenen; they contain a stone-like kernel and their pulp is edible, but they are not used as food for camels. The pods of *śamī* are used as fodder for livestock (cf. below p. 38f.).

The verse MBh 2.47.4 gives rise to more problems. Horses with noses like those of parrots or beaklike noses may not exist. *tittiri* and *kalmāśa* are not names of particular races (*kula*) of horses, as Syed assumes. A breed called *taittila* is described in the Śivatattvaratnākara (7.13.34-37) as an *upakula* of *saindhava*, not of *kāmboja* horses; it is also mentioned in Someśvara's *Mānasollāsa*, and Nakula's *Aśvaśāstra* calls it *taittika*. I think, agreeing with van Buitenen on this point, that *tittiri* and *kalmāśa* are colour names, not names of breeds. This is confirmed by the commentator Nīlakaṇṭha who explains *tittiri* as *tittiripakṣivac citra*, i.e., of a variegated or spotted colour as the *tittiri* bird, a partridge. *kāmboja* horses, on the contrary, are well known and usually found at the head of lists of horse breeds.¹⁰⁹

(5) MBh 3.174.23cd = MBh (B) 3.177.23cd:

bilveṅgudāḥ pīluśamīkarīrāḥ sarasvatītīraruhā babhūvuh ||

bilva, *īṅguda*, *pīlu*, *śamī* and *karīra* were growing on the banks of the Sarasvatī.

¹⁰⁸ See *Wealth of India*² III/275.

¹⁰⁹ See on these lists Misra 1982: 185-187.

Both species of *Salvadora*, *S. persica* and *S. oleoides*, do not need much water and are in particular found in the dry and arid regions of India, on saline lands and in coastal regions just above the high-water mark.¹¹⁰ *Aegle marmelos* (*bilva*) is found in dry deciduous forests, *Balanites aegyptiaca* (Linn.) Delile (*iṅguda*) in the drier parts of India. *Prosopis cineraria* (Linn.) Druce (*śamī*) also grows in dry and arid regions, as does *Capparis decidua* (Forsk.) Edgew. (*karīra*).¹¹¹ The plant community described in the above verse is typical of arid regions, which makes it unlikely that *pīlu* designates *Careya arborea* here, a tree occurring sporadically throughout the greater part of India except in very dry areas.¹¹²

The presence of the described community of trees on the banks of the Sarasvatī is remarkable. This river, now lost in the sands of the desert, flowed on to the sea in ancient times.¹¹³

(6) MBh 8.30.35-36a ≈ MBh (B) 8.44.31cd-33a:

pañca nadyo vahanty etā yatra pīluvanāny api |
śatadruś ca vipāśā ca ṛtīyerāvati tathā |
candrabhāgā vitastā ca sindhuṣaṣṭhā bahirgatāḥ ||¹¹⁴
āraṭṭā nāma te deśāḥ ...

Dort, wo die fünf Flüsse fließen, dort gibt es auch *pīlu*-Wälder: Śatadru, Vipāśā, als dritte die Irāvati, Candrabhāgā und Vitastā und als sechstes die Sindhu, hervorgekommen (aus dem Himālaya), dort liegen die Gengen *Āraṭṭā* ... (transl. Syed 1990: 444).

Syed's view that these *pīlu* forests are composed of *Salvadora persica* is not convincing in view of the many rivers mentioned in this region. It may well be that *Careya arborea* is meant, with the proviso that forests of this usually sporadically present tree do exist.

(7) Bṛhatsaṃhitā (BS) 29.11ab:

āmraiḥ kṣemaṃ bhallātakair bhayaṃ pīlubhis tathārogyam |¹¹⁵

Mangos point to safety; Semecarpus to danger; walnuts to healthiness (transl. Kern 1913: I/269).

One should infer the happiness of mankind from mangoes; danger, from Bhallātaka; health, from Pīlu (transl. Bhat 1981: 284).

¹¹⁰ *Wealth of India*¹ IX/193-194.

¹¹¹ Van Buitenen translates *karīra* as "thorns" (1975: 560).

¹¹² *Wealth of India*² III/274.

¹¹³ See on the Sarasvatī, for example, Murthy 1980.

¹¹⁴ Variants in MBh (B): *uta* instead of *api*, *ṛtīyairāvati*, *bahir gireḥ*.

¹¹⁵ No remark on *pīlu* is found in Bhaṭṭotpala's commentary.

Kern's rendering of *pīlu* as "walnut" is remarkable. He does not mention a source for this identification, but it reminds one of the *pīlu* fruits from the North mentioned by Cakrapāṇidatta in his commentary on the *Carakasamhitā*.¹¹⁶

(8) BS 53.63ab:¹¹⁷

pūrvottareṇa pīlor yadi valmīko jalam bhavati paścāt ¹¹⁸

If an ant-hill is stationed north-east of a Pīlu-tree, there will be water to the west (transl. Kern 1913: II/32 [54.63ab]).

Ein Ameisenhaufen nordöstlich eines *pīlu* deutet auf Wasser westlich davon hin (transl. Syed 1990: 444 [54.63ab]).

If there be an ant-hill to north-east of a Pīlu tree, there would be water ... to the west of the tree (transl. Bhat 1981: 511 [54.63ab]).

(9) BS 53.65:

pīlor eva prācyām valmīko 'to 'rdhapañcamair hastaiḥ |
dīśi yāmyāyām toyam vaktavyam saptabhīḥ puruṣaiḥ ||

Should the ant-hill stand on the eastern side of the Pīlu-tree, then it may be predicted that in a southerly direction there is water, at 7 m. l., at a distance of four cubits and a half (transl. Kern 1913: II/32 [54.65]).

If the ant-hill be to the east of the Pīlu tree, there would be water 4 cubits and a half to the south at a depth of 35 cubits (transl. Bhat 1981: 512 [54.65]).

(10) BS 53.75:

pīlusametā badarī hastatrayasammite dīśi prācyām |
vīmśatyā puruṣāṇām aśoṣyam ambho 'tra sakṣāram ||

On the east side of a jujube combined with a Pīlu, water will be found, never drying, but brackish, at 20 m. l. (transl. Kern 1913: 32 [54.75]).

If the jujube tree is combined with a Pīlu tree, there will be an inexhaustible supply of brackish water 100 cubits below to the east of the tree at a distance of three cubits (transl. Bhat 1981: 514 [54.75]).

¹¹⁶ See Cakrapāṇidatta *ad* Ca. Sū. 2.4, 27.145cd-146ab; Ka. 7.20cd; Si. 7.63. The *pīlu* fruits from the North may be those of the walnut tree, *Juglans regia* Linn., called *giri-pīlu* in a number of sources. It has rarely been observed that the *pīlu* of the *Carakasamhitā* may not be the ordinary tree of that name in all instances where it appears. An awkward point remains: the *Carakasamhitā* and Cakrapāṇi are acquainted with the walnut tree under the name *akṣota*. Cf. further p. 58f. below.

¹¹⁷ See Shastri 1969, Appendix IV: "Dakārgala or the art of exploring under-ground water-springs".

¹¹⁸ Bhaṭṭotpala only makes clear that the *pīlu* is a tree; the same applies at 53.65 and 75.

The verses on water veins and the other trees mentioned in the same context point to the *pīlu* as a desert tree. It may therefore be a *Salvadora*. Certainty cannot be reached, for the presence of underground water is not a requirement for this tree. Termites, on the other hand, need water and the presence of their buildings (*valmīka*) indicates its presence under the surface of the soil.

(11) Śārṅgadharapaddhati 205:

*karabhadayite yat tat pītaṃ sudurlabham ekadā madhu vanagataṃ tasyā-lā-
bhe virauṣi kim utsukā |*

*kuru paricitaiḥ pīloḥ pattrair dhṛtiṃ marugocarair jagati sakale kasyāvāptiḥ
sukhasya nirantaram ||*

Weshalb klagst du, Kamelweibchen, voll von Sehnsucht darüber, daß du nicht länger das süsse Wasser, das du im Walde getrunken, erlangen kannst? Gib dich mit den in der Wüstenei allein erreichbaren Blättern des *pīlu* zufrieden! Wer in der ganzen Welt kann Glück in ununterbrochener Folge genießen? (transl. Aufrecht 1873: 88f.).

Here the *pīlu* is a tree growing in arid regions, which means that it is a *Salvadora*.

(12) Subhāṣitaratnaḥ 17.512cd:

*dattvā pīluṣamīkarīrakavalān svenāñcalenādarād
āmṛṣṭaṃ karabhasya keśarasatābhārāvalagnaṃ rajah ||*

Liebevoll rieb sie (die Gattin) den dick anhaftenden Staub von dem Mähnenhaar des Kamels mit dem Saume ihres eigenen Gewandes ab, nachdem sie ihm einige Händevoll *pīlu*, *samī* and *karīra* gereicht hatte (transl. Syed 1990: 443).

[Her husband has returned across the trackless desert;
the mistress of the household looks upon his face
with eyes unsteady from her tears of joy.]
She offers to his camel palm and thornleaf
and from its mane wipes the heavy dust
with the hem of her own garment, tenderly (transl. Ingalls 1965: 187).

Ingalls remarks in his notes (1965: 505): “*pīlu*: the desert palm; *samī*: the thorny *Prosopis spicigera*; ... *karīra*: the common desert thorn”. The *samī*, *Prosopis cineraria* (Linn.) Druce = *P. spicigera* Linn., is indeed a tree with branches bearing conical spines; it is found in dry and arid regions of India. The *karīra*, *Capparis decidua* (Forsk.) Edgew., is not thorny; it is a shrub or small tree with scanty small leaves found only on young shoots. It may be that Ingalls had *Capparis spinosa* Linn. in mind, the leaves of which are relished by sheep and goats. The reasons

for the interpretation of *pīlu* as a desert palm are completely obscure to me.

The leaves of *pīlu*, *śamī*, i.e., *Prosopis cineraria* (Linn.) Druce = *P. spicigera* Linn., and *karīra*, i.e., *Capparis decidua* (Forsk.) Edgew., are suitable as camel fodder. Both *Salvadora persica* and *Careya arborea* can be the *pīlu* of this verse.

(13) Manusmṛti 2.45:

*brāhmaṇo bailvapālāśau kṣatriyo vātakhādirau |
pailavaudumbarau vaiśyo daṇḍān arhanti dharmataḥ ||*

The staff of a *vaiśya* Vedic student should be of *pīlu* or *udumbara* wood.

(14) Vāsiṣṭhadharmasūtra 11.54:

... *audumbaro vā vaiśyasya*

... and a *Vaiśya*'s [staff should be] of *udumbara* wood (transl. Olivelle 1999: 279).¹¹⁹

(15) Gautamadharmasūtra 1.22-23:

bailvapālāśau brāhmaṇadaṇḍau. āśvatthapailavau śeṣe.

A Brahmin's staff is made of wood-apple or *Palāśa* wood, and those of the other two of banyan and *Pīlu* wood, respectively (transl. Olivelle 1999: 79).¹²⁰

(16) VS 61.4:

na ca kovidāraśamīpīlupippaleṅgudaguggulujam

(A householder must not use for cleaning his teeth) ... nor (the twigs of) the *kovidāra* (*yugapattra*), *śamī*, *pīlu* (*guḍaphala*), *pippala* (holy fig-tree), *īṅguda*, or *guggula* trees ... (transl. Jolly 1980: 197).¹²¹

¹¹⁹ The *pīlu* is omitted.

¹²⁰ The *Āpastambadharmasūtra* (1.2.38) does not mention the *pīlu*, the *Baudhāyanadharmasūtra* (1.3.15) does not specify any tree. See Bühler's note on his translation of *Manusmṛti* II.45 (1886: 38) for more parallels.

¹²¹ The rules about trees and other plants suitable for making toothsticks vary. The VS recommends the banyan, *asana*, *arka*, *khadira*, *karañja*, *badara*, *sarja* (= *śāla*), *nimba*, *arimeda*, *apāmārga*, *mālatī*, *kakubha*, and *bilva* (VS 61.15). Ca. Sū. 5.73cd-74ab recommends *karañja*, *karavīra*, *arka*, *mālatī*, *kakubha*, and *asana*. A.s. Sū. 3.12cd-13ab enumerates as suitable *vaṭa*, *asana*, *arka*, *khadira*, *karañja*, *karavīra*, *sarja*, *arimeda*, *apāmārga*, *mālatī*, and *kakubha*.

The ban on the *pīlu* has not yet been elucidated and is remarkable because this tree in particular is used for making toothsticks over a very wide area of Asia and Africa. Syed observes:

Das Verbot war nötig, um den Baum zu schützen, wurde er doch für zu wertvoll angesehen, um ihn ständiger Plünderung zu überlassen.¹²²

She does not explain why the *pīlu* was regarded as valuable; it is questionable whether this was actually the case. Syed adds in a footnote:

Auffallend ist, daß die Zweiglein all derjenigen Bäume nicht als Zahnstocher verwendet werden durften, die gutes, zur Herstellung von Möbeln, Götterbildern etc. brauchbares Holz lieferten. Diese wertvollen Bäume sollten unversehrt bleiben, das tägliche Abbrechen von vielen Zweiglein hätte ihnen geschadet.¹²³

VI. THE ARTHAŚĀSTRA: *PILU* AND SOME OTHER PLANTS AND ANIMALS

An important source mentioning *pīlu* a number of times in an unusual context has still to be examined in order to investigate which kind of tree may be meant. This treatise is the famous Kauṭīlīya Arthaśāstra (AŚ). To that purpose the relevant passages will be studied in detail.

(1) The first passage is AŚ 2.12.8, where *pīlu* forms part of a number of plant materials and other substances employed in the extraction of metals from their ores. The identity of this *pīlu* is not easy to determine. P. Sensarma regards it is *Careya arborea*.¹²⁴ The wood of that tree is said to be a moderately good fuelwood; that of *Salvadora oleoides* and *Salvadora persica* is not a good fuel. Another tree may be meant here. The wood of *Strychnos nux-vomica* is close-grained, hard and heavy.

Gaṇapati Śāstrī remarks in his *Śrīmūlā* (*ŚM*) that *pīlu* is the tree called *guḍaphala* (I/202,2). This name, though absent from the early medical classics, is simply a rather common synonym of *Salvadora persica*, probably because its fruits are sweet.

(2) The second passage from the same chapter is AŚ 2.12.9, where the ashes (*kṣāra*) of the *pīlu* are said to give softness (*mārdava*) to the metal extracted.

¹²² Syed 1990: 446.

¹²³ Syed 1990: 446, n. 2.

¹²⁴ Sensarma 1998: 50.

(3) AŚ 13.1.16:

pīlwikhādanena karakayoṣṭryā gardabhīkṣīrābhimanthanēti dhruvopakāriṇa iti.

ŚM (III/183):

pīlvityādi. dhruvāpakāriṇo ye parasya nityāpakartārastān, pīlwikhādanena pīluṛkṣaviśeṣaphalaṃ tiktaraśaṃ tasya vikhādanena bhakṣaṇena – yathā pīlubhakṣaṇaṃ tiktarasatvād udvejakaṃ tadvat parasevanam iti kathanenety arthaḥ, karakayā tiktaraśaḥ śākabhedāḥ karakā tayā, uṣṭryā tiktaraśa oṣadhībhedā uṣṭrī tayā tābhyaṃ saha param udvejakatvena dharmeṇopamāyety arthaḥ, gardabhīkṣīrābhimanthanena paropasarpaṇasya tatsamānatvā kathanenety arthaḥ.

J.J. Meyer (1926: 615):

[...] die, die beständige Dienste erwiesen haben, (sollen aufgestachelt werden) mit dem “Zerkauen der Pīlufrucht”, dem “Wasserkrug”, dem “weiblichen Kamel” und dem “Buttern der Milch einer Eselin”.

Kangle (1972: 476):

(He should stir up) ... those who constantly oblige, by the eating of the *pīlu*-fruit, the hail, the female camel and churning of the she-donkey's milk.

Shamasastri (1960: 425):

(They should characterise the enemy) as eating a piece of the wood of *pīlu* (Careya-Arborea), or as churning the milk of a she-camel or a she-donkey (for butter) to those who are rendering to him valuable help.

This is a difficult passage from the chapter on “Instigation to Sedition”. The word *dhruvopakāriṇaḥ* is an emendation suggested by J.J. Meyer (1926: 615, n. 2) and adopted by Shamasastri and Kangle. The manuscripts have *dhruvāpakāriṇaḥ*, “constantly doing harm”, a reading adopted by Gaṇapati Śāstrī. For my part, I am not sure that the correction is necessary.

The *pīlu* meant here cannot be Careya arborea or a *Salvadora*. The fruits of these trees are not bitter; *Salvadora* fruits are even sweet. They do not constitute a source of trouble and are unsuitable for stirring up people to whatever action. They do not belong to edibles called *khādyā*, which need chewing.

J.J. Meyer remarks in a footnote (loc. cit.):

Die Frucht des *pīlu*, d.h. der Careya arborea dient zum Fettmachen von Tieren¹²⁵ und wird, wie es scheint, zerkaut und weggespuckt. Oder dient Pīluholz besonders zur Reinigung der Zähne? Solches Holz wird nach

¹²⁵ See MBh 2.47.4, already dealt with above, p. 35.

dem Gebrauch als magisch gefährlich sorgfältig weggetan. Der Wasserkrug endet als verachteter Scherben, einerlei wie viel des erquickenden Segens er getragen hat, und das Kamel wird nur tüchtig ausgenutzt und schlecht behandelt. Die Butterung der Eselsmilch führt zu keinem Ergebnis, ebensowenig der Dienst bei solch einem Landesherrn.

Kangle explains in a note (Kangle 1972: 476):

pīlu is a kind of fruit which apparently provides no nourishment, but is only a source of trouble; so is *upakāra* conferred on this king.

This interpretation is completely wrong.

The other items are also hard to interpret. Kangle comments (loc. cit.):

karakā “hail” is understood as a kind of bitter vegetable in Cs, as a water-jug by Meyer. A hail-stone may signify harmfulness or uselessness. — *uṣṭryā*: this also is a kind of bitter plant according to Cs. One may understand the female camel as being useless for purposes of milk. — *gardabhī*- etc. apparently signifies great effort with no return.

Gaṇapati Śāstrī remarks on *pīlu* that the fruit of a particular tree is meant with a bitter taste, without specifying which tree he has in mind.¹²⁶ Neither *Salvadora persica* and *oleoides* nor *Careya arborea* bear such fruits, which makes Gaṇapati’s interpretation hard to understand. The extremely bitter seeds of *Strychnos nux-vomica*, however, may be intended, which makes this passage of the *Arthaśāstra* of great significance for a solution of the question raised in this investigation.

Kangle’s suggestion about *karakā* as identical with a bitter vegetable mentioned in the *Carakasamhitā* is unintelligible, for *karakā* as a plant name is absent from that treatise. The word *karaka* may mean a water-vessel, as Meyer takes it, but the dictionaries indicate that it also denotes various plants,¹²⁷ while another *karaka* means tax or tribute. The text, however, does not mention *karaka* but *karakā*, unknown as a plant name.

Kangle’s remark about *uṣṭrī* as referring to a bitter vegetable mentioned in the *Carakasamhitā* has no basis. The word is absent from that text in this sense.¹²⁸ Compounds with *uṣṭra* as the first member are not rare at

¹²⁶ Cf. the quotation from the *Śrīmūlā* above, p. 41.

¹²⁷ *PW* and *MW* (valid names added): *Bauhinia variegata* Linn., *Butea monosperma* (Lam.) Taub. = *Butea frondosa* Koenig ex Roxb., *Capparis decidua* (Forsk.) Edgew. = *Capparis aphylla* Roth, *Mimusops elengi* Linn., *Pongamia pinnata* (Linn.) Pierre = *Pongamia glabra* Vent. = *Derris indica* (Lam.) Bennet, and *Punica granatum* Linn.

¹²⁸ *PW* does not give *uṣṭrī* as a plant name. It is a plant name found in a *nighaṇṭu* according to *MW*.

all as plant names, but I have not come across an *uṣṭrī* so far. The name *uṣṭrikā*, however, as well as *karabhā*, are synonyms of *vṛścikālī*,¹²⁹ a plant described as bitter and found in all three works forming the Brhattrayī. It is variously identified as *Pergularia daemia* (Forsk.) Choiv. = *Pergularia extensa* (Jacq.) N.E.Br. = *Daemia extensa* R.Br. = *Asclepias daemia* Forsk., *Tragia involucrata* Linn. and *Girardinia diversifolia* (Link) Fries = *Girardinia heterophylla* Deene. = *Urtica diversifolia* Link.

Shamasastry omits *karakā* in his translation and is of the opinion that *pīlu* wood is intended.

(4) AŚ 14.1.15:

*śārikākapotabakalākāleṇdam arkākṣīpīlukasnuhikṣīrapīṣṭam andhīkara-
ṇam aṅjanam udakadūṣaṇam ca.*

ŚM (III/216):

*tatra śārikā gorāṭī, bakaḥ kahvaḥ, balākā bisakaṇṭhikā. arko 'rkaparṇākhya-
ṣadhīḥ, akṣī vṛkṣabhedo vibhūtakaparakārah, snuhīḥ samantadugdhā.*

J.J. Meyer (1926: 641):

Mist der Predigerkrähe, der Taube, des Reiher und des Kranichs, zusammengeknetet (*pīṣṭa*) mit *Calotropis gigantea*, *akṣhi*, *pīluka* und der Milch der *Euphorbia antiquorum* gibt eine Augensalbe, die blind macht, und ein Mittel, das Wasser zu vergiften.

Kangle (1972: 496):

The dung of the *śārikā*, the pigeon, the heron and the crane, kneaded with the milk of *arka*, *akṣī*, *pīluka* and *snuhi* plants is a blinding eye-salve and a polluter of water.

Shamasastry (1960: 443):

The ointment prepared by mixing the excretion of *śārikā* (maina), kapota (pigeon), baka (crane), and *balākā* (a kind of small crane), with the milk of *maṅkāshī* (*hyperanthera morunga*),¹³⁰ *pīluka* (a species of *careya arborea*) and *snuhi* (*euphorbia*), causes blindness and poisons water.

The Hindī translation of Vāchaspati Gairola (Gairola 1962: 906-907) has the same as Kangle.

¹²⁹ RN 9.7-9.

¹³⁰ *Hyperanthera moringa* Vahl is (according to Hooker 1875-1897) a no longer valid name for *Moringa oleifera* Lam., which has no latex.

Gaṇapati Śāstrī interprets *arka* as a plant called *arkaparṇa* or *arkaparnā*, which names are not recorded.¹³¹ Furthermore, he is obviously of the opinion that *akṣi* is related to the tree called *akṣa* or *vibhātaka*, *Terminalia bellirica* (Gaertn.) Roxb. (a tree without a latex), but this idiosyncratic view is found nowhere else. The author of the *Śrīmālā* does not identify *pīluka*.

J.J. Meyer interprets *arka* as *Calotropis gigantea* (Linn.) R.Br. ex Ait.f., but *Calotropis procera* (Ait.) Ait.f. is also employed as *arka*.¹³² He connects *kṣīra* with *snuhi* only. His identification of this plant as *Euphorbia antiquorum* Linn. is too specific; several species of *Euphorbia* possessing a milky sap are used as *snuhi*.¹³³

Meyer remarks in a footnote (1926: 641, n. 3):

Statt *aṅka* setze ich auch hier *arka*. Für das folgende *akṣīpīluka* möchte man *akṣībapīluka* vermuten, da ja in dem vorhergehenden Augengiftmittel [see AŚ 14.1.13] *akṣība*¹³⁴ und *pīluka* ebenfalls nebeneinander vorkommen. Aber *akṣī* kehrt dann in den Zeilen 10 und 19 ebenfalls vor *pīluka* and 411, 9 vor *gulgulu* wieder. So wird wahrscheinlich *akṣī* "Auge" der Name einer besonderen Pflanze sein.

Kangle (cf. his translation quoted above) assumes that *akṣi* and *pīluka* are plants with a milky sap; whatever *akṣi* may be, *pīlu(kā)* (*Salvadora* sp.) is without a latex. Unfortunately, Kangle gives no footnotes.

Shamasastri is wrong in regarding *Careya arborea* as a tree with a milky sap. He seems to leave out *arka* in his translation.

The major problem with this passage is the interpretation of *akṣīpīluka*, a word occurring three times in chapter thirteen. The solution of Kangle and Gaṇapati Śāstrī cannot be the right one: a plant called *akṣi* is unknown and *pīlu* is not poisonous. Therefore I propose an emendation: *ḍa* instead of *lu*; these *akṣaras* resemble each other in the script of the manuscripts of the *Arthaśāstra*. The correct reading must be *akṣīpīḍaka*, the name of a plant of disputed identity, found twice in the chapter

¹³¹ *PW* and *MW* regard *arkaparṇa* and *arkapatra* as *arka* or its leaf, and *arkapatrā* as *Aristolochia indica* Linn. A plant called *arkaparnā*, of unknown identity, occurs in the *Suśrutasaṃhitā* (Ka. 8.106).

¹³² Meyer obviously follows *PW* and *MW* which only mention *Calotropis gigantea*.

¹³³ Used as *snuhi* are *Euphorbia nerifolia* Linn., *Euphorbia nivulia* Buch.-Ham. and *Euphorbia royleana* Boiss.; see Abdul Kareem 1997: 61f.

¹³⁴ Not identified by J.J. Meyer. The *Carakasamhitā* mentions *akṣīva* twice: Sū. 4.11(15) as a member of the *krimighna* group of ten drugs (Cakrapāṇi remarks: either *abdaka* or *śobhāñjana*) and Ci. 3.267 (not the same as *śobhāñjana*, which is separately mentioned in the same recipe).

concerned with poisoning of the Carakasamhitā (Ci. 23), in the vicinity of *vāyasapīluka*.

This plant is known under a series of related names: *akṣapīḍa*,¹³⁵ *akṣa-pīḍā*,¹³⁶ *akṣipīḍa*,¹³⁷ *akṣipīḍaka*,¹³⁸ *akṣipīḍā*,¹³⁹ *akṣipīḍākhya*,¹⁴⁰ *akṣipīḍika*,¹⁴¹ and *akṣipīḍikā*.¹⁴²

A number of authorities regard *akṣipīḍa* as a synonym of *yavatiktā*,¹⁴³ variously identified as *Andrographis paniculata* (Burm.f.) Wall. ex Nees, *Canscora decussata* Schult. et Schult.f., *Centaurium roxburghii* (G.Don) Druce, and *Ipomoea grandiflora* Roxb. Several sources consider *yavatiktā* to be a synonym of *śaṅkhinī* or interpret *akṣipīḍa* as *śaṅkhinī*.¹⁴⁴ This brings no relief because the identity of *śaṅkhinī* is very controversial. It is identified as *Canscora decussata* Schult. et Schult.f., *Clitoria ternatea* Linn., *Ctenolepis cerasiformis* Naud., *Euphorbia dracunculoides* Lam., and *Mukia maderaspatana* (Linn.) M.Roem.

An unequivocal identification cannot be reached.

arka yields a milky juice, as does *snuhī*. It may be for that reason that Avadheś Nārāyaṇ Siṃha, in his book on the plants of the Arthasāstra, identifies *akṣi* as an *Euphorbia*, namely *Euphorbia dracunculoides* Linn., though this plant is more commonly called *saptalā* and is not known for its latex, in contradistinction to many kinds of *Euphorbia*.¹⁴⁵ He remains with the problem that the tree mentioned as *pīlu* does not possess a latex.

(5) AŚ 14.1.17:

karavīrākṣipīlūkārkaṃṛgamāraṇīyogo madanakodravakvāthayukto hasti-karnapalāśayukto vā madanayogaḥ.

ŚM (III/217):

mṛgamāraṇy ośadhibhedah.

¹³⁵ Su. Ci. 9.48; Paryāyaratnamālā 113.

¹³⁶ DhN 1.256; RN 3.380f.

¹³⁷ Ca. Ci. 23.216; Tantrasārasaṃgraha 10.16 and 44.

¹³⁸ Ca. Ci. 23.215 and Ka. 11.3.

¹³⁹ NŚ 276cd: *nākulī* = *akṣipīḍā*; SN *nāmasaṃgraha* 259.

¹⁴⁰ Indu *ad* A.s. Ci. 21.21: *śaṅkhinī* = *akṣipīḍākhya*.

¹⁴¹ Śaḍrasanighaṇṭu 4.94.

¹⁴² Madanapālanighaṇṭu 2.15; Abhidhānamañjarī 51.

¹⁴³ Cakrapānidatta *ad* Ca. Ka. 11.3; Ḍalhaṇa *ad* Su. Ci. 9.48; Śaḍrasanighaṇṭu 4.94;

SN *nāmasaṃgraha* 259; DhN 1.256; RN 3.380f.

¹⁴⁴ Śaḍrasanighaṇṭu 4.94; SN *nāmasaṃgraha* 259.

¹⁴⁵ Siṃha 1989: 3-5.

J.J. Meyer (1926: 642):

[...] eine Mischung von Oleander, *akṣi*, *pīluka* (*Careya arborea*), *arka* (*Calotropis gigantea*) und *mṛgamāraṇī* (“Wildtöterin”, “Gazellentöterin”), gemischt mit einem Absud von *madanakodrava* oder gemischt mit einem Absud von “Elefantenoher” und *Curcuma zedoaria*, gibt *madanayoga* (Betäubungsmixtur).

Kangle (1972: 496):

[...] a mixture of *karavīra*, *akṣi*, *pīluka*, *arka* and *mṛgamāraṇī*, mixed with a decoction of *madana* and *kodrava*, or mixed with a decoction of *hastikarṇa* and *palāśa* is a stupefying preparation.

Shamasastry (1960: 443):

(The mixture of) the powder of *karavīra* (oleander), *akshipīluka* (*careya arborea*), *arka* plant, and *mṛgamāraṇī* (?), combined with the decoction of *madana* and *kodrava* or with that of *hastikarṇa* and *palāśa*, is termed *madana* mixture (*madanayoga*).

Sensarma (1998: 87):

When *karavīra* (*Nerium indicum* Mill.), *akṣi* (*Elaeocarpus ganitrus* Roxb.?), *pīluka* (*Careya arborea* Roxb.), *arka* (*Calotropis gigantea* [L.] R.Br. ex Ait.), and *mṛgamāraṇī* (some monocarpic plant) are mixed with the decoction of *madana* (*Xeromphis spinosa* [Thunb.] Keay) and *kodrava* (*Paspalum scrobiculatum* L.) or with that of *hastikarṇa* (*Ricinus communis* L.) and *palāśa* (*Butea monosperma* [Lam.] Kuntz), a type of *madanayoga* is made. This can cause psychological disorder.

Meyer is right in considering *karavīra* as the oleander, *Nerium oleander* Linn. Sensarma’s *Nerium indicum* Mill. is an invalid synonym of the same shrub. According to my above suggestion (cf. p. 44) the plant called *akṣipīḍaka* is mentioned here again, which means that *pīlu* is absent.

The identity of the plant called *mṛgamāraṇī* is unknown. Its name suggests a poison used by hunters. It would be attractive to see here at last a name for the poison tree, *Antiaris toxicaria*, but the female form of the word indicates that it probably designates a herb. The remark of Sensarma that a monocarpic plant is meant is only a guess.

Meyer remarks rightly in a footnote on “Elefantenoher” und *Curcuma zedoaria* (1926: 642, n. 3): “oder *hastikarṇapalāśa* als ein Wort: *Butea frondosa*, deren Saft den bengalischen Kino liefert”.

Sensarma is of the opinion that *akṣi* denotes *Elaeocarpus sphaericus* (Gaertn.) K.Schum. = *Elaeocarpus ganitrus* Roxb.; however, the stones of the fruits of this tree are commonly called *rudrākṣa*, never *akṣi*.

It is indeed erroneous to split up *hastikarṇapalāśa*¹⁴⁶ into *hastikarṇa* and *palāśa*. A plant called *hastikarṇa* without a following *palāśa* is absent from the Arthaśāstra, while *hastikarṇapalāśa* is found several times in post-classical medical treatises.¹⁴⁷ P.V. Sharma identifies it as *Butea superba* Roxb., others as *Leea macrophylla* Roxb. ex Hornem. The plant called *hastikarṇa* occurs in the classical medical treatises¹⁴⁸ and is also identified as *Butea superba* by P.V. Sharma and as *Leea macrophylla* by Balwant Singh and Chunekar. P. Sensarma is the only one to consider *hastikarṇa* to be a name of *Ricinus communis* Linn., probably borrowing this identification from Bāpālāl Vaidya's *Nighaṇṭu ādarśa* (Bāpālāl Vaidya 1985). *Butea monosperma* (Lam.) Taub., *palāśa*, is consistently called *Butea monosperma* (Lam.) Kuntz. by this author.

Is the described mixture stupefying (a *madanayoga*) indeed? Poisonous ingredients are *karavīra* and *arka*. The seeds of *Butea superba* are used as a sedative and its roots contain a poisonous substance. *Leea macrophylla*, on the other hand, is not toxic at all; the leaves and fruits are eaten and the roots are medicinal.

hastikarṇapalāśa is also found at AŚ 14.1.9:

śatakardamoccidiṅgakaravīrakatutumbīmatsyadhūmo madanakodravapalālena hastikarṇapalāśapalālena vā pravātānuvāte praṇṭe yāvac carati tāvan mārayati.

J.J. Meyer (1926: 639):

Soweit der Rauch von "Hundertdreck", (dem giftigen Wassertier) *uccidiṅga*, dem Oleander, der bitteren Flaschengurke und von Fisch, wenn (sie alle zusammen) mit dem Stroh von *madanakodrava* oder den Stengeln von "Elefantenrohr (sic)" (N. verschiedener Pflanzen) und *Curcuma zedoaria* verbrannt (werden), mit dem Luftzug dahinwehend, fortgeführt wird, tötet er (was er trifft).

Kangle (1972: 495):

The smoke of *śatakardama*, *uccidiṅga*, *karavīra*, the bitter gourd and fish, with the stalks of *madana* and *kodrava* or with the stalks of *hastikarṇa* and *palāśa*, when carried forth in a breeze blowing forward, kills everything to which it blows.

¹⁴⁶ A correct interpretation of the compound is found in Siṃha 1989: 473-476. See on the plant: Bāpālāl Vaidya 1982: 89-91; Sharma 1985: 354f.; Singh – Singh 1981.

¹⁴⁷ Kāśyapasamhitā Khila 17.90 (interpreted by Hemarāja Śarmā as *bhūpalāśa*); Cakrapāṇidatta's Cikitsāsamgraha (1933), *galaganda* 2; Vidyāpati's Vaidyarahasya, *ganḍa-mālā* 12; Toḍarānanda's Āyurvedasaukhya 6.15.28.

¹⁴⁸ Su. Sū. 39.9 and 45.115; A.h. (1939) Ci. 17.27.

Shamasastri (1960: 442):

The smoke caused by burning the powder of śatakardama (?), uchchidiṅga (crab), karavīra (nerium odorum), kaṭutumbi (a kind of bitter gourd), and fish, together with chaff of the grains of madana (?) and kodrava (paspalum scrobiculatum), or with the chaff of the seeds of hastikarṇa (castor oil tree) and palāśa (butea frondosa) destroys animal life as far as it is carried off by the wind.

Sensarma (1998: 90):

The powder of śata (Asparagus racemosus Willd.), kardama, karavīra (Nerium indicum Mill.), kaṭutumbi (a kind of bitter Lagenaria siceraria [Mol.] Standl.), uccidiṅga (Cancer pagurus), and fish, together with the chaff of the grains of madana (Xeromphis spinosa [Thunb.] Keay) and kodrava (Paspalum scrobiculatum L.), or with the chaff of the seeds of hastikarṇa (Ricinus communis L.) and palāśa (Butea monosperma [Lam.] Kuntz) – this smoke destroys animal life as far as it is carried off by the wind.

Sensarma is the only author to split śatakardama into śata and kardama, groundlessly assuming śata to be an abbreviation of śatāvarī and not knowing how to interpret kardama. Meyer remarks in a footnote (1926: 639, n. 7) that śatakardama is the name of an animal living in the mud. He regards uccidiṅga, in agreement with the standard dictionaries, as an aquatic animal. The small invertebrate animal called uccidiṅga(ka) is also mentioned at AŚ 14.1.4. The symptoms of an uccidiṅga bite are described in the Carakasamhitā.¹⁴⁹ Caraka regards it as vāta-provoking; the treatment for the bite is like that for a scorpion sting.¹⁵⁰ The Gulab-kunverba team (Ca. [1941]), as well as R.K. Sharma and Bhagwan Dash (Ca. [1997]), regard it, for whatever reason, as a poisonous crab; Sensarma considers it to be the crab called Cancer pagurus which species is, however, an inhabitant of the North Sea, North Atlantic and Mediterranean.¹⁵¹ P.V. Sharma (Ca. [1983a]) leaves the word as it stands. The fact that the uccidiṅga appears to be closely related to scorpions in the Carakasamhitā makes it probable that it is a similar animal, not a crab, and not even aquatic at all. The same uccidiṅga is found in the Suśrutasaṃhitā, where it is classified as a vāyavya type of kṛta that, as implied by the name of the type, excites vāta,¹⁵² but is not associated with water at all. The uccidiṅga is also known to the Aṣṭāṅgasamgraha

¹⁴⁹ Ca. Ci. 23.153.

¹⁵⁰ Ca. Ci. 23.165, 172 and 174.

¹⁵¹ The meaning “crab” is found in *PW* and *MW* and based on some indigenous lexic; these dictionaries may be the sources of the interpretation. It is questionable that poisonous crabs occur in India. *Wealth of India*¹ (II/363-365) only records a number of edible crabs.

¹⁵² Su. Ka. 8.5-8ab.

as one of the *vāyavya kīlas*.¹⁵³ This source adds¹⁵⁴ that it bites very painfully (*abhyadhikavyatha*) with its mouth parts. The commentator Indu (*ad* A.s. U. 43.36) remarks that the Mañjarī describes it as a thin, long and elevated (*ucca*) scorpion. The genus and species cannot be determined from this description. The most dreaded poisonous scorpions of India belong to the genera *Buthus* and *Heterometrus*, the red and the black scorpions. The poison of *Buthus tamulus* Fabr. is particularly virulent and sometimes fatal to children.

Kangle refrains from explaining *śatakardama* and splits two compounds which actually form one item each: *madanakodrava* and *hastikarṇapalāśa*.

Gaṇapati Śāstrī does the same (*ŚM* III/214f.): *tatra kardamo yakṣakardamaḥ, karavīro hayamārākhya*¹⁵⁵ *oṣadhibhedah, kaṭutumbī ikṣvāku*,¹⁵⁶ *madanono*¹⁵⁷ *dhustūrah, kodravo dhānyabhedah, hastikarṇah kustumburūh*,¹⁵⁸ *palāśah kaccoram*.¹⁵⁹

Kangle, Gaṇapati Śāstrī and Sensarma split *madanakodrava* into two items, *madana* and *kodrava*. Kangle refrains from identifying *madana*, while Gaṇapati regards it as *dhustūra*, a species of *Datura*, a genus of poisonous plants. Sensarma considers it to be *Catunaregam spinosa* (Thunb.) Tiruv. = *Xeromphis spinosa* (Thunb.) Keay = *Gardenia spinosa* Thunb. The second member, *kodrava*, designates the grass *Paspalum scrobiculatum* Linn., from which the grain called kodo millet is obtained. The Arthaśāstra refers to *kodrava* also at 2.15.25 and 34¹⁶⁰ and 2.24.12.¹⁶¹ A wild (*vanakodrava*) and a cultivated form are known. *kodrava* and its synonym *koradūśa* are frequently mentioned in medical texts, while

¹⁵³ A.s. U. 43.3f.

¹⁵⁴ A.s. U. 43.36.

¹⁵⁵ *hayamāra* is indeed one of the synonyms of *karavīra*, but two other plants are also called thus: *Cascabela thevetia* (Linn.) Lippold = *Thevetia neriifolia* Juss. ex Steudel and *Wrightia tinctoria* (Roxb.) R.Br. (see Abdul Kareem 1997: 31 and 147).

¹⁵⁶ These two names belong to *Lagenaria siceraria* (Molina) Standley = *Lagenaria vulgaris* Ser.

¹⁵⁷ The most usual identification of *madana* is *Catunaregam spinosa* (Thunb.) Tirvengadam = *Randia dumetorum* (Retz.) Poir., a non-toxic plant; its fruit pulp is an excellent emetic.

¹⁵⁸ This is a name commonly applied to *Coriandrum sativum* Linn.; this identification of *hastikarṇa* is absent from *PW* and *MW*.

¹⁵⁹ This plant (*kacchora* in *PW*, *kacora* in *MW*) is a species of *Curcuma* (*PW*) or, more specifically, *Curcuma zerumbet* Roxb. (*MW*), an old name for *Curcuma zedoaria* Roscoe. Gaṇapati's remark that *palāśa* is the same as *kaccora* may derive from the Amarakośa (4.155a: *karcūro 'pi palāśo 'tha*).

¹⁶⁰ Information on the changes in the amount of pounded and boiled *kodrava*.

¹⁶¹ At AŚ 2.24.12 *kodrava* belongs to the group of crops to be sown first.

madanakodrava is rather uncommon. The name occurs once in the *Suśrutasaṃhitā* (Ci. 17.37). It is interesting to see that Ḍalhaṇa, though interpreting the word correctly himself,¹⁶² adds that others explain it as meaning *madana* and *kodrava*,¹⁶³ which makes it less remarkable that this still happens with modern authors. Those doing so are faced with a toxic *madana*. Gaṇapati takes it as a synonym of *dhustūra* in this case, which is unusual but not impossible. *dhustūra* and *dhattūra* are names for poisonous *Datura* species. If Gaṇapati had taken a look at the *Suśruta* passage referred to he would have seen that the seeds of *dhattūra* and *madanakodrava* are mentioned together. The solution is easy: the grain of *Paspalum scrobiculatum* is poisonous in general, though non-poisonous types have also been reported. The toxic principle is located to a great extent in the husk, the outer coat of the grain. After harvesting, the grain is therefore dried in the sun and then husked. It should be stored for six months before being used as food, as immature or newly gathered grains are poisonous. The chief symptoms of poisoning are unconsciousness or delirium, tremors of the voluntary muscles, vomiting, and difficulty in swallowing.¹⁶⁴

The remark that *kardama* is the same as *yakṣakardama* and the omission of *śata* are not helpful. Kangle mentions in a confusing footnote (Kangle 1972: 495, note on AŚ 14.1.9) that the *Śrīmūlā* understands *śata* and *kardama* as two plants. Actually, *yakṣakardama* is not a plant, but a fragrant compound; its ingredients are enumerated in the *Amarakośa* (2.6.133ab), *Paryāyaratnamālā* (1721-1723), Bhoja's *Cārucaryā* (p. 293) and the *Yogaratanākara* (p. 99). The word *śatakardama* itself is absent from the standard dictionaries. Certainty about its identity with *yakṣakardama* cannot be reached.

Shamasastry is not acquainted with *śatakardama*. He identifies *karavīra* as *Nerium odorum* Sol., an old name of *Nerium oleander* Linn. He also splits the compound *madanakodrava* and adds a question mark to *madana* without giving a botanical equivalent. His identification of *hastikarṇa* as the castor oil tree, *Ricinus communis* Linn., agrees with one of the options of the standard dictionaries.¹⁶⁵

¹⁶² *madotpādakāḥ kodravā madanakodravāḥ* (p. 269a,24).

¹⁶³ *anye tu vyākhyānanti – madanam kodravajam bījam ceti* (p. 469a,24f.).

¹⁶⁴ The *Rājataranṅinī* (8.2595f.) refers to the eating of *kodrava* as a food that is not without bad consequences: "Even greater misery befell *Lothana* and *Vigraha[rāja]* They ate cakes made of oats and *Kodrava* in husks and the like, and their bodies and clothes became discoloured by dirt" (transl. Stein 1900: II/204).

¹⁶⁵ The *DhN* (1.295f.) and *RN* (8.445f.) mention *hastikarṇa* as one of the names of the red type of *Ricinus communis* (*raktairāṇḍa*), not of the type with green leaves.

(6) AŚ 14.1.23:

mātrvāhakāñjalikārapracalākabhekākṣipīlukayogo viṣūcīkākarah.

ŚM (III/217):

mātrvāhakah pakṣibhedah, añjalikāra ośadhibhedah, pracalākabhekākṣipīlukā vyākhyātāh.

J.J. Meyer (1926: 642):

Eine Mischung von Fledermaus, *añjalikāra*, dem Giftreptil *pracalāka*, Frosch, *akṣhi* und *pīluka* (*Careya arborea*) bewirkt Cholera.

Kangle (1972: 497):

A mixture of *mātrvāhaka*, *añjalikāra*, *pracalāka*, the frog, *akṣi* and *pīluka* causes cholera.

Shamasastri (1960: 444):

The mixture of the powder of *mātrvāhaka* (?), *jalūka* (leech), the tail of a peacock, the eyes of a frog, and *pīluka* (*Careya arborea*), causes the disease known as *vishūchikā*.

Gairola's Hindī translation (Gairola 1962: 908) is similar to that of Kangle.

J.J. Meyer remarks in a footnote on *añjalikāra* (1926: 642, n. 6):

“An der Stirn zusammengelegte Hände machend”, etwa: der “Beter”, der “Andächtige”, wohl Name eines Tierchens. Oder ist es = *añjalikārikā* *Mimosa natans*?¹⁶⁶ *Mātrvāhakā* bedeutet wohl dasselbe als *mātrvāhinī* Fledermaus.

Shamasastri takes *bhekākṣi* as one word, meaning the eyes of a frog.

Gaṇapati Śāstrī refers to his preceding explanations of *pracalāka*, *akṣi* and *pīluka*.

Here again *akṣipīdaka* (cf. above p. 45) may be mentioned.

The item called *mātrvāhaka* is a problem to the translators and the commentator. The term is, however, not absent from some medical treatises. Sodhala mentions it in his *Gadanigraha*, in the chapter on *yonigādḥhīkaraṇa* (*kaumāra* 9.4).¹⁶⁷ Cakrapāṇidatta's *Cikitsāsamgraha* (1933) refers to a

¹⁶⁶ This may be the plant now called *Mimosa pudica* Linn.

¹⁶⁷ *Gadanigraha* 9.4: *mātrvāhacacūrṇena bhagam ālepayet sadā | maithunāni niṣeveta punaḥ kanyā bhaviṣyati ||*. The Hindī translator, Indradeva Tripāṭhī, remarks in a footnote: *varṣākāl meṃ jo lambā-lambā (lagbhag ādhā iñc kā) tāl varn kā kīṭ hotā hai jo ek dūsre ke ūpar carḥā rahā hai usko mātrvāhak yā gvālin kahte haiṃ*. He explains another insect, called *vṛṣagopa*, mentioned at *Gadanigraha* 9.7, as also indicating a *gvālin*.

mātrvāhakakīṭa (*galagaṇḍa* 37).¹⁶⁸ Ṭoḍara's *mātrmāhukīkīṭa* (Āyurveda-saukhyā 6.15.71) may have the same meaning. The *kīṭa* called *vāhaka*, mentioned in the Suśrutasaṃhitā and the Aṣṭāṅgasamgraha as a very dangerous one, of an *agni* nature, exciting all the three *doṣas*, and with a life-threatening (*prāṇanāśana*) bite, is probably related to the *mātrvāhaka*. Jain literature is also acquainted with this animal. The Uttarādhyayana (36.129) mentions it as *māivāhaya* in a list of beings with two organs of sense. Jacobi remarks in a footnote to his translation (1895: 219, n. 3) that, according to the description of the "Avakūri" (?), the larvae of the Phryganeae¹⁶⁹ seem intended, and that, according to the Jīvavicāravṛtti, they are called *cūdelī* in Gujarātī.¹⁷⁰

The item called *añjalikāra* is not known as the name of an animal or plant, but *añjalikarikā* is frequent as a plant name. The secondary literature rather often identifies it as *Mimosa pudica* Linn., which cannot be correct since this plant is a native of tropical America, naturalized in India after the arrival of the Portuguese. *MW* regards it as *Mimosa natans* Roxb., a no longer valid name for *Neptunia oleracea* Lour. A frequent synonym of *añjalikārikā* is *lajjātu*. The latter is identified as another sensitive plant, *Biophytum sensitivum* (Linn.) DC.

The word *pracalāka* occurs at two other places in the Arthaśāstra: 14.1.14, and 14.3.16. The *Śrīmūlā* explains it as meaning *mayūrabarha* (III/216), the tail-feather(s) of a peacock, as does Shamasastri, while J.J. Meyer regards it as a poisonous reptile. These differences are based on what one finds in the dictionaries.¹⁷¹

The Suśrutasaṃhitā is acquainted with a *kaphanimittaja kīṭa* (an insect or some other small invertebrate) called *pracalaka* (Ka. 8.13) and *pracalāka* (Ka. 3.5) that possesses a *damṣṭrā* and *nakha* poison. The *pracalāka*

¹⁶⁸ *granthyarbudādijil lepo mātrvāhakakīṭajah*. Śivadāsasena explains: *sukhāsādibhava-padakīṭa iti khyātaḥ*. Niścalakara remarks in his Ratnaprabhā on the Cikitsāsamgraha (1933) (*galagaṇḍa* 46): *surasādibījabhavaḥ pardakīṭa iti khyātaḥ* (variant reading for *bīja: vṛkṣa*).

¹⁶⁹ The family of the caddisflies, the Phryganeidae, belongs to the insect order Trichoptera.

¹⁷⁰ On the Jīvaviyāra of Śāntisūri see Winternitz 1920: 354. The text has been edited, translated and annotated by Guérinot (1902). Verse 15 mentions the *māivāha* as an organism with two sense organs; the commentator Ratna, pupil of Meghanandana, remarks that this animal is well known in Gujarat.

¹⁷¹ *PW* s.v. *pracalaka*: a poisonous worm-like animal; s.v. *pracalāka*: peacock's tail, snake, another poisonous animal. *MW* s.v. *pracalaka*: "a venomous reptile"; s.v. *pracalāka*: "a peacock's tail or crest, a chameleon, a snake or other venomous animal". Kṣīrasvāmin *ad* Amarakośa 2.5.32: *pracalāka* = *barha*; the same at Hemacandra's Abhidhānacintāmaṇi 4.386 and Halāyudha's Abhidhānaratnamālā 2.87.

is also known to the Aṣṭāṅgasaṃgraha (U. 43.8f.) as a *saumya kīta* that excites *kapha*. It seems probable that the Arthaśāstra employs the word in this sense.

So far, there is no trace of a *pīlu*. However, two passages from the next chapter of the Arthaśāstra refer to the tree in a remarkable context.

(7) AŚ 14.2.22:

pīlutvañmaṣīmayah piṇḍo haste jvalati.

ŚM (III/224):

piṇḍo bolākhyam bheṣajam.

J.J. Meyer (1926: 647):

Ein Ball aus dem Ruß der Rinde des *pīlu* (Careya arborea oder Salvadora persica) gemacht, flammt in der Hand.

Kangle (1972: 501):

A lump, consisting of the soot of the bark of *pīlu*, burns in the hand.

Shamasastri (1960: 448):

The ball prepared from the powder of the charcoal of the bark of *pīlu* (careya arborea) can be held in hand and burns with fire.

Sensarma (1998: 91f.):

A lump, prepared from the powder of charcoal of the bark of *pīlu* (Careya arborea Roxb.), emits fire even without ignition, and the same can be held in hand without being injured.

Gaṇapati Śāstrī's *Śrīmūlā* has no remark on *pīlu*.

The interpretation of AŚ 14.2.22 is not easy at all. The term *maṣī* means soot, lampblack and a substance of the same kind employed as ink. The *Śrīmūlā* leads astray, as clearly a ball (*piṇḍa*) made of the *maṣī* of *pīlu* bark is intended. Its interpretation of the word as a medicine called *bola* cannot be correct. This medicine called *bola* is myrrh, the gum-resin derived from Commiphora myrrha (Nees) Engl. = Balsamodendron myrrha Nees,¹⁷² an inhabitant of the Somali and Arabian littorals of the Red Sea. The earliest medical text mentioning *bola* is the Aṣṭāṅgasaṃgraha.¹⁷³ Meyer's rendering of *haste jvalati* as 'it flames in the hand' does in

¹⁷² See Martinetz et al. 1988.

¹⁷³ A.s. Ci. 5.87 (5.85-92 is the recipe of a *rasāyana* ascribed to Vasiṣṭha which mentions *bolasthavira*, interpreted as *bolavṛkṣa* by Indu, as an ingredient) and 7.41 (*bolasthavira* again an ingredient in a recipe).

my opinion not convey what is meant; the emission of flames is not intended, but a feeling of burning in the hand as if it is being singed by flames. The author of the *Śrīmūlā*, however, thinks otherwise. He remarks (III/224 *ad* 14.2.19-21): *agninā gātraprajvālanam eteṣv ekaikaṃ gātre 'nuliptaṃ gātrasya pīḍāṃ vinaivāgniprajvalanasādhanam ity arthaḥ*. The nature of the *pīlu* tree is crucial in this case. The view, enunciated by Meyer and Shamasastri, that a ball made with the soot of the bark or the charcoal of *Careya arborea* is intended does not appeal, as *Careya arborea* is not a suitable tree for producing charcoal; this also applies to *Salvadora*. The wood of *Strychnos nux-vomica*, on the other hand, is hard and durable, and therefore more appropriate. This small detail may be a second indication that the *pīlu* of the *Arthaśāstra* can denote *Strychnos nux-vomica* Linn.

AŚ 14.2.22 is preceded and followed by a series of similar statements concerning substances which make the body feel as if burning with fire. The next statement (AŚ 14.2.23) says that the ball described, smeared with the muscle fat (*vasā*) of a frog,¹⁷⁴ gives the same or a stronger effect.¹⁷⁵ The fat of a frog (*maṇḍūka*) appears to be an essential ingredient in a series of prescriptions of the same kind.¹⁷⁶

A similar prescription is found at AŚ 14.2.20:

pāribhadrakatvaṇmaṣī maṇḍūkavasayā yuktā gātraprajvālanam agninā.

J.J. Meyer (1926: 647):

Ruß von der Rinde der *Erythrina fulgens*, gemischt mit Froschfett, gibt ein Mittel, die Glieder von Feuer flammen zu machen.

Kangle (1972: 500):

The soot of the bark of *pāribhadraka*, mixed with the fat of a frog, is a means of making limbs burn with fire.

Shamasastri (1960: 447f.):

When the body of a man is rubbed over with the powder of the charcoal of the bark of *pāribhadraka* (*erythrina indica*) mixed with the serum of the flesh of *maṇḍūka* (a frog), it can be burnt with fire (without giving hurt).

¹⁷⁴ Does a frog possess muscle fat? Sensarma (1998: 92) assumes *vasā* to be the serum of the flesh of the animal; he appears to have borrowed this interpretation from Shamasastri.

¹⁷⁵ There may be a difference of degree between *jvalati* and *agninā jvalati*.

¹⁷⁶ It is not without importance to realize that poisonous frogs, well known from South America, do not occur in India.

Sensarma (1998: 92)

If the body of a person is rubbed over with the powder of charcoal of *pāribhadraka* (*Erythrina variegata* Linn. var. *orientalis* [L.] Merrill) or *nimba* (*Azadirachta indica* Juss.), mixed with the serum of the flesh of *maṇḍūka* (*Rana tigrina* or *Bufo melanostictus*), the body can glow without harming the person.

The *Śrīmūlā* regards *pāribhadraka* as a synonym of *nimba* (*Azadirachta indica* A.Juss.).¹⁷⁷ The tree called *pāribhadraka* is commonly identified as an *Erythrina* species (*Erythrina variegata* Linn. = *Erythrina indica* Lam. or *Erythrina stricta* Roxb.).¹⁷⁸ This identity may help in understanding the choice made in the recipe. *Erythrina variegata* and *E. stricta* have both eye-catching flowers of a coral-red colour, which may explain the association with fire. This does unfortunately not apply to *pīlu*: *Salvadora* has inconspicuous flowers, while *Careya arborea* possesses showy flowers, but of a white, yellowish white or pink colour.

(8) AŚ 14.2.34:

pīlumayo maṇir agnigarbhaḥ suvarcalāmūlagranthiḥ sūtragranthir vā picupariveṣṭito mukhād agnīdhūmotsargaḥ.

ŚM (III/226):

pīlumayo maṇiḥ pīludārunīrmitam aliñjaram, agnigarbho 'ntargatāgniḥ, suvarcalāmūlagranthiḥ kṣumāmūlagranthiḥ, sūtragranthir vā kṣumāmūlagranthir vā, picupariveṣṭito nirasthitūlaveṣṭitaḥ.

J.J. Meyer (1926: 648):

Ein aus *pīlu* gemachtes Kügelchen, das Feuer im Innern birgt, in die Wurzeln der *suvarcalā* geknotet oder in Leinfäden geknotet und mit Baumwolle umwickelt ist, bildet ein Mittel, aus dem Munde Feuer und Rauch ausgehen zu lassen.

Kangle (1972: 501):

A ball made of *pīlu*, with fire in the interior, with a knot of the root of *suvarcalā* or with a knot of thread, encircled by cotton, is (a means of) emitting fire and smoke from the mouth.

Shamasastry (1960: 449):

By keeping in the mouth a ball-like piece of *pīlu* (*careya arborea*) or a knot of the root of linseed tree (*suvarchala*) with fire inserted within the

¹⁷⁷ Both *PW* and *MW* mention that *pāribhadraka* may be a synonym of *nimba*.

¹⁷⁸ Meyer referring to *PW* and *MW*, has *Erythrina fulgens*, though both dictionaries give *Erythrina indica* as the identity of *pāribhadra*. *Erythrina fulgens* is probably an old name for *E. variegata*.

mass of the ball and wound round with threads and cotton (*pichu*), volumes of smoke and fire can be breathed out.

Sensarma (1998: 93)

By keeping in the mouth a lump of the wood of *pīlu* (*Careya arborea* Roxb.) or a knot of the root of *suvarcalā* (*Cassia fistula* L.) with fire inserted within, and the same is entwined with threads of cotton, volumes of fire and smoke can be breathed out.

Gairola (1962: 917) does not differ from Kangle in his interpretation.

J.J. Meyer remarks in two footnotes (1926: 648, n. 2f.):

Das wird wohl heißen sollen, daß das im Mund zu haltende Kügelchen aus dem Ruß der verbrannten Rinde von *Careya arborea* (*Salvadora Persica*?) gemacht ist; denn *pīlumayo maṇiḥ* ist sehr ähnlich dem *pī-luṭvaṇmashīmayaḥ piṇḍaḥ* von 414, 7. – [*suvarcalā* ist] gewöhnlich *Ruta graveolens*; wächst nach Mahābhārata XII, 272, 4 im Wald und schmeckt bitter.¹⁷⁹ Nach den Lex. bedeutet das Wort auch eine Hanfpflanze.

Meyer adds (1926: 887):

Auch in Vish. 79,17 wird *suvarcalā* unter anderen scharfen Sachen aufgeführt und beim Totenseelenmahl verboten. Der Absud dieser Pflanze, die auch *brāhmī*, die heilige, heißt, dient auch als Sündenabfuhrmittel (Vas. XXVII,11; Vish. XLVI,23).¹⁸⁰

Kangle says in a footnote (1972: 501, note on AŚ 14.2.34):

pīlumayo maṇiḥ, i.e., a ball made of *pīlu* wood, which is hollow inside. It cannot be the lump of the soot of its bark, mentioned in s. 2.22, as Meyer thinks. — *granthi* refers to the stopper at the mouth of the ball; this *granthi* encircled by cotton (*pīcu*) burns and produces the fire and smoke coming out of the mouth.

Gaṇapati Śāstrī remarks that a small water-jar (*aliñjara*) made of *pīlu* wood is meant. However, an *aliñjara* is usually an earthen jar, better suited to the purpose of a water-container than a vessel made of wood.

The interpretations of AŚ 14.2.34 raise more problems than they solve. First, it has to be elucidated whether the *maṇi* is the same as the *piṇḍa*

¹⁷⁹ See MBh (B) 12.272.3-4 (≈ MBh 12.264.3-4): *rāṣṭre dharmottare śreṣṭhe vidarbheṣv abhavat dvijaḥ | uñchavyṭtir ṛṣiḥ kaścid yajñam yaṣṭum samādadhe || śyāmākam aśanaṃ tatra sūryaparṇī suvarcalā | tiktam ca virasaṃ śākaṃ tapasā svādūtām gatam ||*.

¹⁸⁰ VS 46.23 and Vāsiṣṭhadharmasūtra 27.11 mention *brahmasuvarcalā*, which differs from *suvarcalā*. On *brahmasuvarcalā*, of unknown identity, see Singh – Chuneekar 1972: 279-281. Olivelle (1999: 348) remarks that *brahmasuvarcalā* refers either to a variety of sunflower (*Helianthus*) or to *Clerodendrum indicum* (Linn.) Kuntze = *Clerodendron si-phonanthus* R.Br.

mentioned earlier. Opinions differ on this point. Gaṇapati's suggestion that it is an amulet of *pīlu* wood in the form of a water-jar with a stopper in its mouth and fire in its interior seems fanciful. It hinges on the meaning of *mukha*, considered to be the mouth of the jar. The meaning of *mukha*, however, is problematic. Meyer and Kangle see in it the mouth of the person holding the ball (*maṇi*). Reaching a decision is difficult and depends on the existence of amulets in the India of the Arthaśāstra which have an opening to put something inside, a sacred text written on palm leaf or some other substance, for example. This again presupposes that AŚ 14.2.34 speaks indeed of a hollow object. Though all the translators assume this to be so, it is not imperative at all to interpret *agnigarbha maṇi* as a hollow object with actual fire in it. The term *agnigarbha* may simply refer to the notion that *pīlu* wood, as in AŚ 14.2.22, possesses a fiery essence. Literally, *agnigarbha* means "pregnant with fire". Particular gems, such as the *sūryakānta*, supposed to emit solar heat, are called thus.¹⁸¹ In my opinion it is probable that the object described is employed for performing tricks since it occurs among a series of similar recipes, such as that which makes it possible to walk unscathed on burning charcoal, etc., which usually form part of *kautūhala*-works and those on *indraajāla* and *ṣaṭkarman*.

The description is vague as to the threads to be employed and in particular the *granthi*.¹⁸² Has the cotton (*picu*) to be wrapped around the *maṇi* or around the *granthi*? What is the meaning of *granthi* here and where is it located? I do not see a solution that cannot be objected to. Tying a thread around a spherical object and fixing a knot (*sūtragranthi*) is not an easy task. Even more inconceivable is a *granthi* made with the root of *suvarcalā*. In this case, *suvarcalā* should be a plant with thread-like roots.

A much better sense is obtained if we read as follows: ... *agnigarbhaḥ, suvarcalāmūlagranthiḥ* <vā> *sūtragranthir vā, picu-* ... "... pregnant with fire or a knotty root of *suvarcalā* or a knot of its threads (fibers?) [wrapped] with cotton ...".

The identity of *suvarcalā* is much disputed, and actually no satisfactory identification has been proposed. *PW*: *Ruta graveolens* = *ādityabhaktā*, Flachs = *sūryamukhīpuṣpa*. The meanings found in *MW* are *Ruta gra-*

¹⁸¹ See RN 14.57: *atha bhavati — sūryakāntas tapanamaṇis tapanajaś ca ravikāntaḥ | dīptopalo 'gnigarbho jvalanāśmā 'rkopalaś ca vasunāmā ||*. The same word is a synonym of *agnijāra* at DhN 6.21ab: *agnijāro 'gniniryāsaḥ so 'gnigarbho 'gnijaḥ smṛtaḥ |*. Finally, the plant called *tejasvinī* has *agnigarbhā* as one of its names according to RN 3.392.

¹⁸² A *granthi* denotes the knot made in the end of a string.

veolens, *Linum usitatissimum* (linseed), and *Polanisia icosandra* (hemp). Mayrhofer (1956-1980: III/489 and 1986-2001: III/518) adopts *Ruta graveolens*. Sensarma's opinion that *suvarcalā* denotes *Cassia fistula* Linn. (cf. above p. 56) appears to be an idiosyncratic view.

Whichever plant species *suvarcalā* may be, it is not *Ruta graveolens* Linn., nor *Ruta chalepensis* Linn., which are both species native to the Mediterranean region and cultivated only in Indian gardens. *Polanisia icosandra* Wight et Arn. is a no longer valid name for *Cleome viscosa* Linn., a plant considered as a candidate for the identification of *suvarcalā* in Kirtikar – Basu (1935: I/185). Balwant Singh and Chunekar (1972: 440f.) are of the opinion that two kinds of *suvarcalā* have to be distinguished since the *Suśrutasaṃhitā* classifies it in two different categories of potherbs with different properties. They think that the potherb *tilaparṇikā* of the *Carakasamhitā*¹⁸³ is the same as the second type of *Suśruta* and identify it as probably *Gynandropsis gynandra* Briquet = *Gynandropsis pentaphylla* Linn. To complicate matters further, *Āyurvedic* texts are also acquainted with a divine herb called *brahmasuvarcalā*.

VII. FURTHER REFERENCES TO *PILU*

A special kind of *pīlu*, mentioned in some lexica, has still to be discussed. This is the *pīlu* growing in mountainous regions and therefore called *giri-pīlu*.

This tree is mentioned in the following works:

Bhāgavatapurāṇa 5.14.12:

*sa yadā dugdhapūrcasukṛtas tadā kāraskarakākatuṅḍādyapuṅyadrumalata-
tāviṣodapānavad ubhayārthasūnyadraviṇāñ jīvanmṛtān svayaṃ jīvan mri-
yamāṇa upadhāvati.*

Amarakoṣa, *vanausadhivarga* 28:

*pīlau guḍaphalaḥ sraṃsī tasmīṃs tu girisambhave |
akṣotakandarālau dvau ... ||*

NŚ 139d-140ab:

*(pīlau) ... tasmīṃs tu girisambhave ||
akṣotāḥ karparālaś ca phalasneho guhāśrayaḥ |*

¹⁸³ Ca. Sū. 27.97 (*tilaparṇikā*), Cakrapāṇi: = *hulahulikā*; Ca. Ci. 3.267 (*tilaparṇī*), Cakrapāṇi: *hulhul iti khyātā*.

Kṣīrasvāmin adds to the verse in the Amarakoṣa:

*kandarāśyāstīti kandarāveṣṭanāt kandarālah, karparāla ity eke. āha ca
akṣoṭah parvatīyaś ca phalasneho guhāśayaḥ |
kīreṣṭah kandarālaś ca svādumajjo mṛducchadah ||*

DhN 5.60:

*ākṣoḍah pārvatīyaś ca phalasneho guḍāśayaḥ |
kīreṣṭah karparālaś ca svādumajjā pṛthucchadah ||*

Similarly RN 11.82:

*akṣoṭah pārvatīyaś ca phalasneho guḍāśayaḥ |
kīreṣṭah kandarālaś ca madhumajjā bṛhacchadah ||*

The *akṣoṭa*¹⁸⁴ is a tree frequently occurring in the classical medical treatises.¹⁸⁵ It is commonly identified as the walnut tree, *Juglans regia* Linn.¹⁸⁶ The remarkable fact that Kern rendered the *pīlu* of the Bṛhatsaṃhitā as walnut (cf. above p. 36f.) may be due to a confusion of this tree with the *giri-pīlu*.

VIII. CONCLUDING REMARKS AND RESULTS

The rarity of references to *Strychnos nux-vomica* Linn. in early Indian literature has not been explained so far. The fact that the tree is not rare at all in India, while the very toxic nature of the seeds cannot have passed unnoticed, raises many questions. The same applies even more strongly to *Antiaris toxicaria* (Pers.) Lesch., source of a famous arrow-poison of Southeast Asia, but mentioned only a few times in Sanskrit literature.¹⁸⁷ More examples of this intriguing phenomenon can be ad-

¹⁸⁴ Variants are: *akṣoḍa*, *ākṣoṭa*, *ākṣoḍa*.

¹⁸⁵ Cakrapānidatta rightly observes that its fruits are found in the North (*ad* Ca. Sū. 13.10); Ḍalhaṇa also remarks that its fruit is well known in the North (*ad* Su. Sū. 45.120). Aruṇadatta mentions *snehaphala* as a synonym (*ad* A.h. [1939] Sū. 6.120). Hemādri (*ad* A.h. [1939] Sū. 6.120) describes its fruit as resembling that of *madana* and with an elevated line in the middle (*madhye kiṃcid unnatarekha*).

¹⁸⁶ *PW*: "Name einer Pflanze (*parvatajapīluvrkṣa*), *Croton moluccanum*, *Aleurites triloba*"; *MW*: "a walnut (pistachio nut?), the tree *pīlu*, the tree *Aleurites triloba*"; Mayrhofer (1956-1980: I/16 and 1986-2001: III/3): "walnut". *Croton moluccanus* Willd. is an old name for *Chrozophora plicata* A.Juss., a species now subdivided into *C. prostrata* Dalz. (= *C. plicata* 3 of Hooker 1875-1897) and *C. parvifolia* Klotzsch (= *C. plicata* 2 of Hooker 1875-1897). *Aleurites moluccana* (Linn.) Willd. = *Aleurites triloba* J.R. et G.Forst. is an evergreen tree, native to the Indo-Malaysian region; the kernels of the nuts yield an oil, known as Lumbang oil, candlenut oil or Indian walnut oil. This tree is naturalized in India, but found in a wild state in South India and Assam.

¹⁸⁷ *Wealth of India*² (I/309) records *valkala* as the Sanskrit name.

duced. One of these is *Peganum harmala* Linn., a plant regarded as the source of the Vedic *soma* by some authorities. Another example is *Strychnos colubrina* Linn., a lofty, woody climber of the Deccan peninsula; its roots, bark, wood and seeds contain, as do the same parts of *Strychnos nux-vomica* Linn., the alkaloids strychnine and brucine.¹⁸⁸

These plants may be present in the lists of dangerous vegetable (and mineral) poisons (*sthāvaraviṣa*) in the classical medical works. Surprises may result from a close inspection of this material that has so far been neglected.

Strychnos nux-vomica Linn. (*kākapīlu*, *kupīlu*) is mentioned in early Sanskrit literature, though commonly regarded as being absent there and only appearing much later. Two passages from the Kauṭīliya Arthaśāstra (13.1.16 and 14.2.22) may provide evidence that also the tree called *pīlu* can designate *Strychnos nux-vomica*. The *pīlu* of the Paippalādasamhitā (7.19) remains a problem and cannot be regarded as the same tree with certainty. *Antiaris toxicaria* (Pers.) Lesch., the *upas* tree, may also be referred to in Sanskrit literature, but rarely.

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¹⁸⁸ This species may be the *latā viṣaphalā* of Aśvaghōṣa's *Buddhacarita* (12.6) and the *saviṣā latā* of the same author's *Saundarananda* (8.31).

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