to extract minute foreign bodies such as iron particles from the eyes and teeth. Suśruta[1] also mentions its use for extracting an arrow from the wound, if it be without barbs.

In modern times, a magnet is still used for removing a particle of iron from the eye. "Indeed, cases have occurred in which the application of an inch bar-magnet connected with four Grove's cells to the outside of the cornea has caused the foreign body to retrace its course and emerge through the wound"[2]. A fragment of iron lying in the vitreous has been removed by the Snell's electro-magnet introduced through the scleral wound behind the ciliary region. "The following plan of ascertaining whether a portion of needle be really impacted has been suggested by Marshall, and successfully carried into practice by Littlewood of Leeds. A powerful magnet is to be held upon the part for a quarter of an hour, so as to magnetise the fragment; a firmly hung polarised needle should then be suspended over it, when, if any iron is present, deflection will ensue."[3]

23. Kṣāra. Caustics or potential cautery.

Caustics were highly extolled by the ancient surgeons as the external applications are better tolerated by the weak and

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सूच्यभिसर्पणमिति सूचीपदेन लौहमात्रं व्रणच्छोपलक्षयति: तथा चायस्कान्ताभिसुखं यत् सूच्यादेर्गमनं * * * * * * *

Śaṅkara Miśra, Upaskāra.

[1] अनुलोमसमनवबद्धकर्षणमनल्प व्रणसुखमयस्कान्तेन।

Suśruta Saṁhitā, I. xxvii.

[2] Carter's Ophthalmic Surgery, 2nd ed., P. 369.

[3] Erichsen's Surgery, Vol. I, P. 343.

timid persons who are afraid of the surgeon's knife[1]; though Suśruta[2] distinctly states: "The following persons should not be treated with caustics: weak people, children, old and timid people, etc." They even give them preference to the knife for they argue that surgical diseases are radically cured by the application of the caustics, without any possibility of recurrence. Suśruta says[3]: "Of all cutting instruments and their substitutes, caustics (or vegetable alkalis) are the most important, because by means of them deep and superficial incisions and scarifications may be made, derangements of the three humours may be rectified and some diseases can be treated with special advantage."[4]

For the preparation and uses of caustics, see the Suśruta Saṁhitā, I. xi.

For the application of potential cauteries, three classes of instruments are recommended.[5]

1. Darvvī—it is to be made of wood and should resemble a spoon in appearance.

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[1] अल्पसत्वेऽबले बाले पाके चात्यर्थमुद्धते ।
दारणं मर्म्म सन्ध्यादिस्थिते चान्यत्र पाटनं ॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxix.

[2] अथनैते क्षारकृत्याः। तद्यथा दुर्व्वलबाल स्थविर भीरुसर्व्वाङ्ग शूनोदरि रक्तपित्ति-गार्भिण्यृतुमती प्रवृद्धज्वरि प्रमेहिरुक्षक्षतक्षीणतृष्णा मूर्च्छोपद्रुतक्लीबापवृत्तोद्वृत्त फलयोनयः ॥

Suśruta Saṁhitā, I. xi.

[3] शस्त्रानुशस्त्रेभ्यः क्षारः प्रधानतमश्छेद्यभेद्यलेख्य करणात्रिदोषघ्नत्वाद्विशेषक्रियावचारणाच्च ।

Suśruta Saṁhitā, I. xi.

[4] Ibid. Hoernle's Trans. Bibliothica Indica.

[5] आस्राव्य च दर्व्वीकूर्च्चशलाकानामन्यतमेन क्षारं पातयेत् ।

Suśruta Saṁhitā, IV. vi.

2. Śalākā or rods,—plain probes are mentioned for application of caustic lotions to parts of the body. But generally the ends of the probes are shaped like spoon. To this class belongs the three spoon-like probes of Suśruta and the three nail-shaped probes of Vāgbhaṭa, described before[1].

3. Kūrcca,—it is a brush-like instrument.

The application of caustics has its advantages and disadvantages; and these are to be considered in their relations to the pre-anæsthetic periods of surgery. Patients are still less terrified by their application than by surgical incisions. The real value of caustics is thus summed up by Velpeau.[2] "Nevertheless caustics possess some advantages which can not be denied them. As they do not give the idea of an operation, they shake less the minds of the patients, they are accepted with more calmness and with infinitely less effort, than the action of the knife. Mortifying the tissues step by step, they give rise to no effusion of blood, and affect less deeply the economy than the operation, properly so called. Women treated in this way do not require to remain in bed or to consider themselves as patients. The dressings require little care, and do not demand absolutely the intervention of the surgeon. The wound cleans itself very rapidly in general, and once cleaned, it proceeds speedily towards cicatrisation. Without exempting wholly erysipelas, phlebites or purulent infection as some surgeons have asserted, there is notwithstanding, some reason for supposing that they expose the patient somewhat less to these troublesome complications than the operation".

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[1] See P. 158-159.

[2] Velpeau. Cancer of the breast. Marsden's trans.

25. Agni. Actual cautery.

Suśruta says[1]: "With regard to surgical treatment, actual cautery is said to be superior to caustics, in as much as diseases treated with the actual cautery do not re-appear, and because it can cure diseases which are incurable by medicines instruments, and caustics."[2] This partiality for cauteries is one of the reasons of the gradual decadence of Hindu surgery and its total extinction in the present time. To this belief of the Hindus may be compared the following aphorism of Hippocrates[3]:—

"Those diseases which medicine do not cure, the knife cures; those which iron can not cure, fire cures; and those which fire can not cure, are to be reckoned wholly incurable".

For the application of the actual cautery the following articles are considered necessary[4]:—

1. Pippali or piper longum
2. Goat's dung
3. Teeth of a cow
4. Śara or saccharum sara
5. Probes or śalākā (see before[5])

} These are to be used for diseases of the skin.

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[1] चारादग्निर्गरीयान् क्रियासु व्याख्यातसद्दग्धानां रोगानामपुनर्भावाद्वैषजशस्त्रक्षारैरसाध्यानां तत्साध्यत्वाच्च।

Suśruta Samhitā, I. xii.

[2] Ibid. Hoernle's Trans. Biblio. Ind.

[3] The Works of Hippocrates. Syd. Soc., vol. II., p. 774.

[4] अथैमानि दहनोपकरणानि। तद्यथा पिप्पल्यजाशकृल्लोदन्त शरशलाका जाम्बवौष्ठेतर लोहाः चौद्रगुड़स्नेहाश्च। तत्र पिप्पल्यजाशकृल्लोदन्त शरशलाकास्त्वगगतानां। जाम्बवौष्ठेतर-लोहानि मांसगतानां चौद्रगुड़स्नेहाः सिरस्नायु सन्ध्यस्थिगतानां।

Suśruta Saṁhitā, I. xii.

[5] See P. 159-60.

6. Jāmvavauṣṭha[1]	Used for diseases of the muscles.
7. Different kinds of iron	
8. Honey[2]	Used for diseases of the vessels, joints and ligaments.
9. Treacle	
10. Ghee	
11. Oil	

"Both Aetius and Oribasius represent goat's dung, pounded with vinegar, as being equally efficacious as the sinapism, and applying particularly to ischiatic diseases."[3] Hippocrates says that cauterisation may be performed with boxwood spindles dipped in boiling oil.[4] In Kordofan, are used "*El kamaia.* primitive instruments used for cauterisation consisting of a piece of camel's or sheep's dung dried and impaled on a long thorn."[5]

12. Cautery knife.—This is to be used in the treatment of prolapse of the omentum in cases of abdominal injuries. The

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[1] अर्शो भगन्दरग्रन्थिनाड़ीदुष्टव्रणादिषु ।
मांसदाहो मधुस्नेह जाम्बवौष्ट गुड़ादिभि: ॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxx.

[2] मधुच्छिष्टेन तैलेन मज्जचौद्रवसाघृतै: ।
तन्नैर्वा विविधैर्लौहैर्दहेद्दाह विशेषवित् ॥

Caraka Saṁhitā, VI. xiii.

[3] Adams' Commentary on Paul. vol. iii. bk. vii. sec. xix.

[4] Hippocrates, ii. 482.

[5] Medical Practices in Kordonfan. Third Report. Wellcome Research Laboratory, Khartoum.

prolapsed part is to be ligatured well and the cautery knife used to remove the prolapse below the ligature[1].

Cautery knife was also known to the Greeks and Romans. Galen[2], speaking of cancer, says that "some use heated razor blades, at once cutting and burning". Paul[3] also mentions a sword shaped cautery in the radical cure of hydrocele.

13. Plates of copper, lead or iron.—In the application of both kinds of cauteries, plates of these metals are to be used to surround a tumour to prevent injury to the adjacent structures (Suśruta).[4]

Hippocrates[5] in the treatment of nasal polypus, says that "when that occurs we must insert a tube and cauterise with three or four irons". Celsus[6] says that this tube may be a calamus or a tube of pottery.

14. Cakradatta mentions a probe of gold for applying actual cautery to the hair follicles after the removal of the eyelashes, to prevent a recurrence of trichiasis.[7]

Albucasis similarly recommends burning the roots of hairs

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[1] उदरान्मेदसो वर्त्तिं निर्गता यस्य देहिनः।
कषायभस्मसत्कीर्णां वह्ना सूत्रेण सूत्रवित्।
अग्नितप्तेन शस्त्रेणच्छिन्द्यान्मधुसमायुतं॥

Suśruta Saṁhitā, IV. ii.

[2] Galen, xiv. 786.

[3] Paul, vi. lxii.

[4] यदल्पमूलं वपुतामसीस पट्टैः समावेष्ट्य तदायसैर्वा।
चाराग्निशस्त्राण्य सकृद्विदध्यात् प्राणानहिंसन् भिषगप्रमत्तः॥

Suśruta Saṁhitā, IV. xiii.

[5] Hippocrates, ii. 244.

[6] Celsus, vii. x.

[7] See foot-note 2, p. 66.

in trichiasis with a probe of gold. Paul[1] applies a heated olivary probe or an aural probe for the same purpose. Haly Abbas and Rhazes also describe this operation.

26. Bheṣaja or medicines.

This means such medicines as become necessary in the treatment of surgical diseases and do the work of surgical instruments to a certain extent. Suśruta gives a list of medicines,[2] required in the treatment of various kinds of inflammations, and I quote a few passages from the English translation[3] to illustrate the action of medicines in surgical practice. "Warm poultices made of the following drugs promote suppuration, namely, fruits of *sana* (*Crotalaria juncea*), *Múlaka* (*Raphanus sativus*), *Śigru* (*Moringa pterygosperma*), seasum and mustard seeds, flour of barley and wheat, kiṇva (the drugs used as a ferment in distilling spirits) and linseed. The following medicines are applied for opening abscesses, namely, *chiravilva* (*Pongamia glabra*), *agnika* (*Semicarpus anacardium*), *chitraka* (*Plumbago Zeylanica*), *danti* (*Baliopermum montanum*), *hayamáraka* (*Nerium odorum*), and the excrement of the pigeon, vulture and heron. Caustic alkalies are also very effectual in opening abscesses. Demulcent articles, such as, flour of barley, wheat or *másha* (pulse of *Phaseolus Rux.*) promote discharge from the interior of abscesses. * * * * Pastils for fumigating ulcers should be made of *śríveshtaṭka* gum of (*Boswellia Thurifera*), *sarjarasa* (resin of *Shorea robusta*), *sarala* (*Pinus longifolia*), and *devadáru* (*Cedrus*

[1] Paul viii. xiii.

[2] See Suśruta Saṁhitā, I. xxxvi.

[3] Dr. U. C. Dutt's Translation, Bibliotheca Indica. P. 151-154.

deodara); decoctions or cold infusions of astringent and unirritating barks should be used as washes for promoting granulations in ulcer. Tents for promoting granulations should be made of *soma* (*Sarcostemna brevistigma*), *amṛita* (*Cocculus cordifolias*), *aśvagandhá* (*Withania somnifera*), the plants included under the class of *kákolyádi*, and the buds of (Ficus Bengalensis)".

In treating inflammation, the Hindu surgeons used pastes to give relief to the pain and tension; warm poultices to promote suppuration; medicinal applications and incisions by knife for opening abscesses; demulcent articles to promote discharges; decoctions of drugs as corrective washes; tents of drugs and lints for introducing them into the cavities of the abscesses; decoctions in oils and clarified butter to improve the character of ulcers; pastils for fumigating sores; tents, pastes, powders and lotions for promoting granulations; drugs to repress high granulations; drainage to prevent infection, and bandages to give the part rest. This shows that the Hindus were not wholly ignorant of the antiseptic methods of treating wounds; and Suśruta enjoins that a certain incense should be kept burning in the operation room.

Of the additions to the list of Suśruta by Vāgbhaṭa, we need consider the goat's gut only.

Goat's gut.

The intestines of the goats, etc. are to be dried and prepared as materials of ligature[1]. They should be used in ligaturing fine vessels after incision by knife, evidently to check hæmorrhage.

[1] See foot note 1, P. 223.

The use of goat's gut in surgery is generally considered to have been unknown to the Greeks and Romans, as it is not mentioned in their works. But Adams points out[1] "that the strings of ancient harp were made of the guts of a sheep," and this he clearly proves from a passage in the Odyssey of Homer.

Hippocrates[2] used apolinose made of crude flax, which is also mentioned by Paul for the delegation of arteries. Rhases however describes the use of strings of harp[3] as a material for suture in the operation called gastroraphé.

Arrest of hæmorrhage.

It is generally believed and often stated in modern works on surgery that the ancients were unacquainted with the proper treatment of hæmorrhage. Suśruta however enumerates four different ways of arresting hæmorrhage after venesection; namely:

1. Sandhāna:—Contraction of the wound by astringent decoctions of Chebulic Myrobolan and the root-barks of the panchavalkala trees (five barks).
2. Skandana:—or thickening of the blood by the application of severe cold.
3. Pāchana:—or desiccating or drying up the wound by ashes.
4. Dahana:—or cauterising the veins to make them shrink[4].

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[1] See Commentary on Paul, VI. lii. vol. II, P. 345. Syd. Soc. Ed.

[2] Hippocrates, iii. 132.

[3] Rhases. Cont. xxviii.

[4] चतुर्विधं यदेतद्धि रुधिरस्य निवारणं।
सन्धानं स्कन्दनञ्चैव पाचनं दहनं तथा।

If the blood does not thicken by the application of cold, astringents should be applied; if these fail ashes should be used. By means of these three modes, the physician should endeavour to the best of his abilities to stop the bleeding, but if success be not still obtained, cautery may be resorted to as the absolute effective means[1]. To stop bleeding from an artery, he advises us to apply astringents and pressure with the fingers. Vāgbhaṭa[2] also describes these methods of arresting hæmorrhage, and advises us that if the ordinary means do not check the bleeding, the vessel must be again opened at a point in its course beyond the bleeding area, or actual cautery applied. Cakradatta also repeats these directions[3].

Vāgbhaṭa however mentions the sheep's gut amongst the accessory instruments. His commentator explains its use for

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व्रणः कषायः सन्धत्ते रक्तं स्कन्दयते हिमं ।
तथा सन्धाचयेद्भस्म दाहः सङ्कोचयेत् सिराः ॥

Suśruta Saṁhitā, I. xiv.

[1] अस्कन्दमाने रुधिरे सन्धानानि प्रयोजयेत् ।
सन्धाने सञ्यमाने तु पाचनैः समुपचरेत् ॥
कर्म्मभिरेतैस्त्रिभिर्वैद्यः प्रयतेत यथाविधि ।
असिद्धिमत्सु चैतेषु दाहः परम इष्यते ॥

Ibid.

[2] रक्ते त्वतिष्ठति क्षिप्रं स्नाय्वनौमाचरेत् क्रियात् ।
लोध्र प्रियङ्गु पत्तङ्ग माषयष्ट्याह्व गोरिकैः ॥
सृतकपालाञ्जनचौम मधौ चीरीत्वगङ्कुरैः ।
विचूर्णयेद् व्रणमुखं पद्मकादि हिमं पिबेत् ॥
तामेव वा शिरां विध्येद्यथात् तस्मादनन्तरं ।
शिरामुखं वा त्वरितं दहेत् तप्तशलाकया ॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvii.

[3] See Cakradatta, Śirāvyādhādhikāra.

ligaturing blood-vessels[1]. Suśruta says that if in venesection, or in treating wounds, excessive bleeding occurs, it should be stopped by proper means[2].

Celsus[3] advises us to fill up the wound with dry pledgets, then to apply a sponge squeezed out of cold water and to press with the hand. If not successful, cut the vessel asunder between two ligatures, or apply cautery, or try the method of revulsion. Galen[4] applies pressure by finger on the wounded vessel, or twists it moderately. If the vessel be an artery, he gives the alternative of a ligature or cutting across. Paul[5] mentions all the methods to stop the bleeding, *viz.*, pressure, styptics, ligature, escharstics, and cauteries with fire.

Albucasis[6] mentions four methods of stopping the discharge of blood from an artery :

1. By cautery.
2. By dividing the artery across.
3. By using the ligature.
4. By styptics and bandage.

Avicenna[7], Rhases[8] and others also mention these methods

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[1] अन्त्रं मेषादीनां शुष्कान्त्रं तांत्रत्ख्यातं शस्त्रच्छेदानन्तरं सूत्रसिरादिबन्धनादिषु युज्यते।

Vāgbhaṭārtha Kaumudī, I. xxv.

[2] तैस्तैर्निमित्तैर्बहुधा शोनिते प्रस्रुते भृशं।
कार्य्यं यथोक्तं वैद्येन शोनितस्थापनं भवेत्॥

Suśruta Saṁhitā, IV. i.

[3] Celsus, v. 26.

[4] Galen. Meth. Med. v.

[5] Paulus Ægineta, IV. lii. vol. II. P. 127. Syd. Soc. Ed.

[6] Albucasis. Chirrug. i. 58.

[7] Avicennæ Cantic. ii. 2., and Collig. vii. 23.

[8] Rhases. Divis i. 39; Contin. xxviii.

for arresting hæmorrhage. Thus it becomes apparent that the use of ligature for stopping bleeding was well known to the ancient surgeons and the present methods of arresting bleeding are only the revival of the old practice. Adams[1] concludes: "It appears, therefore, that the use of the ligature for stopping hemorrhages was well understood by the ancients, and had never been lost sight of even in the darkest ages."

[1] Adam's Commentary on Paul, vol. II. p. 132.

CHAPTER VI.

THE ŚASTRA OR THE SHARP INSTRUMENTS.

1. The Maṇḍalāgra or round headed knife.

It is described as a round or circular headed cutting instrument, having a length of six aṅguli. Two sub-varieties are noted —one with a circular edge and the other shaped like a razor (Dallaṇa).[1] Vāgbhaṭa[2], however, describes the blade to be shaped like the index finger when its nail points towards the palm of the hand. This would then resemble the decapitating hook of Ramsbotham.

It is said to have been principally used for the operation of cutting through and scraping[3]; so it is recommended to be used

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[1] मण्डलमिवाग्रं यस्य तत् मण्डलाग्रं तच्च द्विविधम् तथाहि—

यदग्रे मण्डलं छत्तं क्षुर संस्थानमेव वा।

मण्डलाग्रस्य जानीयात् प्रमाणन्तु षडङ्गुलम्।

Nivandha Saṁgraha, viii.

[2] मण्डलाग्रं फलि तेषां तर्जन्यन्तर्नखाकृति।

लेखने छेदने योज्यं पोथिकौ ग्रन्थिकरदिषु॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

मण्डलाग्रं, मण्डलाग्रं नाम शस्त्रं, फलि, फल प्रदेशे, तर्जन्यन्तर्नखाकृति स्यात्, अन्तः, अन्तर्हितो नखः, अन्तर्नखः, तर्जन्या अन्तर्नखः तर्जन्यन्तर्नखः, तस्येवाकृति राकारो यस्य तत् तर्जन्यन्तर्नखाकृति। तच्च पोथकौ गलग्रन्थिकादिषु, लेखने, लेखन कर्म्मणि, तथा छेदने, छेदन कर्म्मणि, योज्यं।

Vāgbhaṭārtha Kaumudī, I. xxvi.

फलीहेशे तर्जन्या अन्तर्नखस्तर्जन्यन्तर्नखस्तस्येवाकृतिर्यस्य तदेवम्।

Sarvāṅga Sundarī, I. xxvi.

[3] तत्र मण्डलाग्रकरपत्रे स्यातां छेदने लेखने च।

Suśruta Saṁhitā, I. viii.

in the operative treatment of enlarged tonsil[1]. It is also advised to be used for piercing the skull of a dead fœtus in utero to help its easy extraction by other instruments. So any other presenting part causing difficulty in the delivery of the dead fœtus, is to be cut with it. It is claimed that there is less likelihood of damaging the soft parts of the mother by this instrument than by the sharp pointed vṛddhipatra.[2]

We find that Suśruta recommends a maṇḍalāgra knife in ophthalmic practice for scraping away the membranous expansion in the operation of pterygium[3] and other ophthalmic operations,

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[1] अङ्गुष्ठाङ्गुलिसन्दंशेनाकृष्य गलशुण्डिकां ।
छेदयेन्मण्डलाग्रेण जिह्वोपरि तु संस्थिताम् ।
नोत्कृष्टश्चेव हीनश्च विभागं च्छेदयेद्भिषक् ॥

Suśruta Saṁhitā, IV. xxii.

[2] तत्र स्त्रियमाश्वास्य मण्डलाग्रेणाङ्गुली शस्त्रेण वा शिरो विदार्य्य शिरःकपालान्याहृत्य शङ्कुना गृहीत्वोरसि कक्षायां व्यपहरेदभिन्नेशिरसि चाद्यिकूटे गण्डे वा अंससंसक्तस्यांसदेशे वाङ्गं छित्वा इतिभिवाततं वातपूर्णोदरं वा विदार्य्य निरस्यान्त्राणि शिथिलीभूत माहरेज्जघनसक्तञ्च वा जघनकपालानीति ।

यद्, यदङ्गं हि गर्भस्य तस्य खजति तद्भिषक् ।
सम्यग्विनिर्हरेच्छित्वा रचेन्नारीञ्च यत्नतः ।
गर्भस्य गतयश्चिवा जायन्तेऽनिलकोपतः ।
तचानात्ममतिर्ब्बैद्यो वर्त्तेत विधिपूर्ब्बकं ॥
नोपेक्षेत हृतं गर्भं मुहूर्त्तमपि पण्डितः ।
सद्यास्य जननीं हन्ति निरुच्छ्वासं पशुं यथा ॥
मण्डलाग्रेण कर्त्तव्यं छेद्यमन्तर्व्विजानता ।
हृद्भिप्रवं हि तीक्ष्णाग्रं नारीं हिंस्यात् कदाचन ।

Ibid, IV. xv.

[3] अर्म्म यत्र वलीजातं तत्र तल्लगयेद् भिषक् ॥
अपाङ्गं प्रेक्षमाणस्य वड़िशेन समाहितः ।
मुचुण्ड्याग्रञ्च मेधावी सूचीसूत्रेण वा पुनः ॥
नचोत्थापयता क्षिप्रं कार्य्यमभ्युद्गतं तु तत् ।

such as for vascular net-work and nodules on the eyeball[1]. Cakradatta says[2] that if the pterygium extends to the black part of the eye, the membrane is to be raised by the point of a needle, transfixed by a vaḍiśa or hook, and leaving the pupil free, is to be excised, as Sivadāsa[3] explains, by the maṇḍalāgra. He also uses it to scrape away the root of any new growth in the eye[4] and to perform the operation of scratching in ophthalmic surgery[5].

शस्त्रपातभयाच्चास्य वर्त्म नो याहयेद् दृढं ॥
तत: प्रशिथिलीभूतं विभिरेव विलम्बितं ।
उल्लिखन्मण्डलाग्रेण: तीक्ष्णेन परिशोधयेत् ॥
विमुक्तं सर्व्वतश्चापि कृष्णाच्छुक्लाच्च मण्डलात् ।
नीत्वा कनीनकोपान्तं छिन्द्यान्नाति कनीनकं ॥
चतुर्भागस्थिते मांसे नाचि व्यापत्तिमर्हति ।

Suśruta Saṁhitā, VI. xv.

[1] सिराजाले सिरायास्तु कठिनास्थाय बुद्धिमान् ।
उल्लिखेन्मण्डलाग्रेण वड़िशेनावलम्बित: ॥
सिरासु पिड़काजाता या न सिध्यन्ति भेषजै: ।
अर्म्मवन्मण्डलाग्रेण तासाञ्छेदनमिष्यते ॥

Ibid.

[2] अर्म्म तु च्छेदनीयं स्यात् कृष्णप्राप्तं भवेद्यदा ।
वड़िशविद्धमुन्नम्य विभागच्चाव वर्ज्जयेत् ॥

Cakradatta, Netraroga Cikitsā.

[3] अर्म्मछेदनीयमिति मण्डलाग्रेणेति शेष: । समुन्नम्येति सूच्यग्रेणेति शेष: । सूच्यग्रेण समुन्नम्य उत्तोल्य अनन्तरं वड़िशेन विद्ध्वा मण्डलाग्रेण छेदयेदित्यर्थ: ।

Tattva Candrikā, Netraroga Cikitsā.

[4] अर्शस्तथावर्त्म नाम्ना शुक्लार्शोऽर्व्बुदमेव च ।
मण्डलाग्रेण तीक्ष्णेण मूलेच्छिन्द्याद भिषक् शनै: ॥

Cakradatta, Netraroga Cikitsā.

[5] भित्वोपनाहं कफजं पिप्पली मधुसैन्धवै: ।
विलिखेन्मण्डलाग्रेण प्रच्छयेद्वा समन्तत: ॥

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A small instrument with a broad blade and a rounded cutting tip is figured by Albucasis[1] in connection with ophthalmic work. This was the scalpel for the plastic operation on the eyelid as for trichiasis. Incisions were made by this knife on the eyelids in such a way as to enclose a leaf-shaped area which was then dissected off. The lips of the incisions were then united with three or four sutures[2]. Paul[3], quoting Aetius[4], describes the operation for pterygia :—"Having separated the eyelids, and seized upon the pterygia with a hook-like instrument, having a small curvature, we stretch it, and taking a needle having a horse-hair and a strong flaxen thread in its ear (eye ?), and a little bent at the extremity, we transfix it through the middle of the pterygium, and with the thread we bind the pterygium and raise it upwards, while with the hair we separate and saw as it were the part at the pupil away unto its extremity ; but the remainder of it at the great canthus we cut off from the base with the scalpel used for the operation by suture, but leaving the natural flesh of the canthus, lest there be a running of the eye when it is taken away. Some stretching as aforesaid with a thread, dissect away the whole pterygium with the instrument called pterygotomos, taking care not to touch the corner."

Cakradatta mentions the use of the mandalāgra for scarifying

घृतसैन्धव चूर्णेन कफानाहं पुनः पुनः।
विलिखेन्मण्डलाग्रेण प्रच्छयेद्वा समन्ततः॥

Cakradatta, Netraroga Cikitsā.

[1] Milne. Græco-Roman Surgical Instruments, Pl. ix. fig. 3.
[2] Paulus Ægineta, VI. viii.
[3] Ibid, VI. xviii.
[4] Aetius, II. iii. 60.

the tongue for bleeding in the disease called jihvākaṇṭaka (prickly tongue)[1]. He also uses it in adhijihvā or ranula and says: "The tongue is to be raised, the ranula is to be drawn up and fixed by a sharp hook, and then excised by the maṇḍalāgra. Afterwards a strong gargle is to be prescribed".[2] Pālakāpya[3] also describes it to have a length of nine aṅguli, the handle being six, and the blade three aṅguli long. The end is full-moon-shaped and it is directed to be used for scarification on the eyeball.

It seems that maṇḍalāgra of different sizes and shapes were used. For the instrument used for perforating the fœtal cranium in uterus would scarcely be thought fit for a delicate operation on the eyeball.

Soranus[4] mentions a special instrument for perforating the fœtal head. Rhases[5] directs us to open the head when the child's cranium is large and cannot be brought down. Haly

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[1] कण्टकेषु कफोत्थेषु लिखितेष्वसृजः क्षये।
पिप्पल्यादिर्मधुयुतः कार्य्यस्तु प्रतिसारणम्॥
Cakradatta, Jihvāroga Cikitsā.

लिखितेष्विति मण्डलाग्रादिना।
Tattva Candrikā, Ibid.

[2] उन्नाम्य जिह्वामाकृष्य वड़िशेनाधिजिह्विकाम्।
छेदयेन्मण्डलाग्रेण तीक्ष्णैर्लवणादिभिः॥
Cakradatta, Mukharoga Cikitsā.

[3] लेखनं मण्डलाग्रेण कर्त्तव्यं दन्तिनां भवेत्।
Pālakāpya, III. i.

पूर्णचन्द्राकृत्यायमण्डलायम् लेखनार्थमक्षी।
Pālakāpya, III. iii.

[4] Soranus, II. viii., P. 366.

[5] Rhases, Cont. xxii.

Abbas[1] also advises us to open the head when it is preternaturally large. Aetius[2] also gives a similar discription. Some authors recommend the polypus-scalpel or the phlebotome in embryotomy. The embryotome figured by Albucasis[3] is a straight two-edged blade, and we may conjecture that the maṇḍalāgra used by the Hindus for perforating the fœtal cranium was a similar instrument.

2. Karapatra or saw.

It literally means, "an instrument having the blade in the form of a hand", the fingers being represented by the teeth of the saw. Others explain, as Dallaṇa[4] points out, the name from its resemblance to a carpenter's saw. It seems that saws of various sizes were used. Suśruta mentions its length to be six aṅguli, Vāgbhaṭa[5] describes it to be ten aṅguli

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[1] Haly Abbas, Pract. ix. 57.

[2] Aetius, XVI. 23.

[3] Græco-Roman Surgical Instruments, Pl. viii. fig. 7.

[4] करपत्रमिति करवत् पत्रं करपत्रं यथा करोऽङ्गुलिभिराचितो भवति तद्वत् यत् काष्ठकैराचितं स्यात्तत् करपत्रमुच्यते। अन्ये तु करपत्राकारं करपत्राकारमेव तच्च द्वादशाङ्गुलं तन्मात्रान्तर वचनात्। ननु यदि तन्मात्रान्तरात्तद द्वादशाङ्गुलं करपत्रमुच्यते तर्हि खतन्त्रे विरोधः कुतः खतन्त्रे करपत्रस्य निर्दिष्टप्रमाणत्वात् शेषाणि तु षड़ङ्गुलानि इत्यनेन वाक्येन षड़ाङ्गुलमेव करपत्रम् स्यान्न द्वादशाङ्गुलं नैवम् तेषाम् नामाभिरेवाकृतयः प्रायेण व्याख्याता इत्यस्मात् सूत्रात् प्रायः शब्दोऽनुवर्त्तं तेतेनायमर्थः, शेषाणि प्रायेण षड़ङ्गुलानि एवं शस्त्रमानेऽन्यत्राप्यविरोधः।

Nivandha Saṁgraha, I. viii.

[5] छेदेऽस्थ्यां करपत्रन्तु खरधारं दशाङ्गुलं।
विस्तारे द्व्यङ्गुलं सूक्ष्मदन्तं खत्सरु वन्धनं॥

Aṣṭāṅgā Hṛdaya Saṁhitā, I. xxvi.

करपत्राख्यां शस्त्रमाह छेदे इत्यादि करवत् पत्र यस्य तत् करपत्रं, अङ्गुलिभि राचितो यथाकारो भवति तद्वत् यत् काष्ठकैराचितं तत् करपत्रमुच्यते। करपत्रं करात् ख्यातं। करपत्रं खरधारं, खरा, तीक्ष्णा, धारा यस्य तत्तथाविधम्, तथा दशाङ्गुलम्,

long and two aṅguli broad; while Bhoja[1] alludes to a saw, twelve aṅguli long. The edge of the instrument is described as rough and serrated; and this is the only instrument that need not have a very sharp edge.

The handle of the saw should be well formed and pegged. Its principal use is to saw a bone. Sometime it is recommended for the purpose of scraping.

Saw is frequently mentioned by the Greek and Roman authors in the descriptions of operations on the bones. Celsus[2] mentions it in describing the amputation of a gangrenous limb. With reference to fractures of the bones of the head, Paul says[3]: "But the mode of operating with saws and the instrument called chœnicides or modioli (trepans ?) is condemned by the moderns as a bad one." Evidently he means flat cranial saws. Galen[4] also mentions the "knife-shaped saws."

In modern times the saw is still used for identical purposes in surgery.

There is no mention of trephine in Hindu surgery though Jīvaka (500 B.C.) is said to have practised cranial surgery with success[5]. Pandit Vallala describes[6], in his Bhojaprabandha or

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दैर्घ्येन दशाङ्गुल परिमाणं, तथा विस्तारे द्व्यङ्गुलं, परिसरे अङ्गुलद्वयपरिमितं तथा सूक्ष्म दन्तं सूक्ष्मा दन्ताकारा दन्त यस्य तत्तथाविधं, तथा सत्सरुबन्धनं, तसरु खड्गादि मुष्टि: बन्धनं, कीलादिना बन्धनं, त्सरुश्च बन्धनञ्च ते तसरु बन्धने, शोभने त्सरु बन्धने यस्य तत्तथा-विधं। तच्च अस्थ्नां छेदे, छेदन कर्म्मनि योज्यं।

Vāgbhaṭārtha Kaumudī, I. xxvi.

[1] See foot-note 4, P. 230.
[2] Celsus, VII. xxxiii.
[3] Paul, VI. xc.
[4] Galen, XVIII. 331.
[5] See Mahāvāgga, VIII. 1.18. Sacred Books of the East. Vol. xvii.
[6] See foot-note 1, p. 60.

Annecdotes of King Bhoja, a surgical operation performed on the king. He was suffering from a severe pain in the head. Medicines did him no good, and so to give relief, surgical interference was thought necessary by two brother surgeons who happened to arrive in Dhar at that time. They are said to have administered a drug called sammohinī to render him insensible. They then trepanned the skull and removed the real cause of his complaint. They closed the opening, stitched the wound and applied a healing balm. They are then said to have administered to the king another drug called sañjibanī to accelerate the return of consciousness.

Trephine was well known to the ancient Greeks and Romans. Hippocrates[1] mentions a trephine or a saw having a circular motion, in the treatment of injuries to the head. Paul also mentions trephine, the use of which is, he says, condemned by the moderns. Sprengel[2] remarks, that "Galen was averse to the use of the trepan, though he performed the operation on the head occasionally."[3]

3. Vṛddhipatra.

This sharp cutting instrument is called vṛddhipatra from its resemblance to the leaf of a medicinal plant called vṛddhi. Two varieties of this knife are described by Vāgbhaṭa[4]—one is

[1] Hippocrates, III, 371, 374.

[2] Hist. de la Méd., 18.

[3] Adam's Commentary on Paul, VI, xc. Vol. ii., p. 436.

[4] ङ्ङिपवं क्षुराकारं छेद भेदन पाटने।
ऋज्वयसुखते शोफ गम्भीरे तु तदन्यथा।
नताग्रं पृष्ठतो दीर्घं ऋजवक्रं यथाग्रथं॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

straight throughout and it is to be used for opening pointed superficial abscesses; and the other has the end bent or curved. Again amongst the second class of curved knives, some have their ends long and therefore called dīrgha-vaktra or long-mouthed, and these are to be used for opening the deep seated abscesses, while others have their ends short and therefore called hrasva-vaktra or short-mouthed, and these are to be used for superficial abscesses that would not point. Suśruta describes them to be six aṅguli long. Dallaṇa in his commentary[1] says:—Both the varieties, one with a curved,—and this is called a kṣura or razor,—and the other with a resected point, should be seven aṅguli long; the handles and the blades should measure five and a half and one and a half aṅguli respectively." These are to be used for cutting through a part, partially or completely, and also for puncturing it.

इद्विपवाख्यां शस्त्रमाह इद्विपवमित्यादि इद्विपवं नाम शस्त्रं, क्षुराकारं, क्षुराकृति, क्षुरस्य लोमच्छेदकः शस्त्रविशेषो नरसुन्दराणां। तच्च इद्विनालौषध इक्षस्य पवसदृश फलकत्वात् इद्विपवाख्यं लभते। तद् इद्विपवं नाम शस्त्रं छेद्दे भेदने पाटने च कर्म्मणि योज्यमिति ऋज्वयमित्यादिना विषय विशेषे इद्वि पवस्याकार भेद उच्यते। यत् इद्विपवं ऋज्वयं सरलायभागं, आयतायमित्यर्थः। तत्, उन्नते, उत्किने, शोके, शोथे, योज्यं। गम्भीरे, भेद आदि धातुस्थे शोफे, तथा तदन्यथा, अनुन्नते च शोफे, यत् पृष्ठतः, पृष्ठदेशे नतायं वक्रीभूतायभागं, कुञ्चितायमित्यर्थः। तत् इद्विपवं शस्त्रं यथायथं दीर्घ ह्रस्व वक्रं, दीर्घ सुखं, ह्रस्व सुखं वा योज्यं। यथायथमिति गम्भीरे शोके दीर्घवक्रं, अनुन्नते च शोके ह्रस्ववक्रमित्यर्थः। अत्र द्विविधं इद्विपव शस्त्रयुक्तम्, द्वे अपि सप्ताङ्गुल प्रमाणे, द्वयोरपि अर्द्धपञ्चाङ्गुल हस्तं कार्यं साडाङ्गुलायं फलमिति। भेदनः, भेदं, एकस्मिन् शारीरदेशे शस्त्रमावगाह्य अपर दिशा शस्त्रायस्य निष्कायनं भेदनं। पाटनं, विदारणं फाड़न इति लोके।

Vāgbhaṭārtha Kaumudī, I. xxvi.

[1] इद्विपवमिति, इद्वेः पचमिव इद्विपवं तच्च द्विविधं एकं अञ्चितायं, द्वितीयं प्रयतायं, द्वे अपि सप्ताङ्गुल प्रमाणे द्वयोरपि अर्द्ध पञ्चाङ्गुलं हस्तं कार्यं साडाङ्गुलम् फलम् इति अनयोर्भाग्ये अञ्चितायं इद्विपवं क्षुरमाहुः।

Nivandha Saṅgraha, I. viii.

One form of the vṛddhipatra resembles in shape the razor used by the barbers,—not the English razor that has now become common in Bengal, but the country-made razors which are still used by the barbers in the North-West Provinces.

Suśruta recommends the use of razor, scissors and pinchers for shaving the parts before operation; for "the hairs", he says, "prevent the healing up of the wound rapidly"[1]. He again uses vṛddhipatra as a knife and observes:—"If bitten by spiders whose bites are amenable to treatment, the area of the wound should at once be excised out by the vṛddhipatra, and then actual cautery applied by the red-hot jāmvavauṣṭha probe till the patient requests for its withdrawal"[2].

Suśruta uses the vṛddhipatra knife for the removal of the scrotal tumour and says[3]: "The scrotal tumour is to be well fomented and bandaged. The patient should then be cheered up, and leaving the testicles intact, underneath the median raphe, the tumour should be excised by vṛddhipatra knife. The fatty tisues being

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[1] रोमाकीर्णो व्रणो यस्तु न सम्यगुपरोहति।
क्षुरकर्तरीसन्दंशै तस्मात्रोमाणि निर्हरेत्॥

Suśruta Saṁhitā, IV. i.

[2] साध्याभिराभिलुताभिर्दष्टमात्रस्य देहिनः।
वृद्धिपत्रेण मतिमान् सम्यगादंशमुद्धरेत्॥
जाम्बवौष्ठेनाग्नि तप्तेन दहेदाकर वारणात्।

Ibid, V. viii.

[3] स्निग्धं चावेष्ट्य पट्टेन समाश्वास्यातु मानवं।
रचेत् फलं सेवनीञ्च वृद्धिपत्रेण दारयेत्॥
मेदसस्तः समुद्धृत्य दद्यात् कासीससैन्धवे।
वन्नीयाच्च यथोद्दिष्टं।

Ibid, IV. xix

removed, powdered ferri sulphas and rock salt are to be dusted over the wound and proper bandages applied."

Vṛddhipatra was also used by the ancient veterinary surgeons. Joyadatta Suri writes[1]: "The knife known as vṛddhipatra is shaped like a kṣura or razor. It is three aṅguli long and should be used by the wise to incise a suppurated abscess". In Pālakāpya[2], we find that "it is ten aṅguli long; the handle being six aṅguli and the blade four aṅguli long and three aṅguli broad. It is used for scission and excision". He uses it also in opening a sinus after well ascertaining its course by means of a probe[3].

Hypodermic medication:—The use of hypodermic syringe was not known to the Hindus. They were acquainted however with the hypodermic method of exhibition of drugs. Śārṅgadhara[4]

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[1] वाङ्क्षं हड्डिपवच्च क्षुराकारं प्रकीर्त्तितम्।
पक्वशोथादिषु प्राज्ञः पाटनं तेन कारयेत्॥
Aśvavaidyaka, XIV. v. 22.

[2] शस्त्रेण हड्डिपवेण वाऽसि(शि)तेन सि(शि)तेन वा।
शस्त्रकर्म्मणि निष्णातः सुपक्वं पाटयेद्भिषक्॥
Pālakāpya, III. iv.

हड्डिपवेण नागानां कुर्य्याच्छेदन भेदने।
Pālakāpya, III. i.

[3] अथ भिषगयन्त्राधायोक्तेन विधिना सुयन्त्रितं वारणमभिविश्वास्याऽऽश्य(शि)ल्य स्तब्धानुगतं गतिमन्तं स्वल्पसुखं नाड़ीव्रणमेषणया च विदित्वा हड्डिपवेण शस्त्रेणानुलोमं पूयप्रतिरणार्थं छेदं कुर्य्यात्॥
Pālakāpya, III. xv.

[4] प्रचयित्वा क्षुरेणाङ्गं केवलानिलपीड़ितम्।
तत्र प्रदेहं दद्याच्च पिष्टं गुञ्जाफलैः कृतम्॥
तेनाववाहुजा पीड़ा विपूची स्तब्धसी तथा।
अन्यापि वातजापीड़ा प्रशमं याति वेगतः॥
Śārṅgadhara Saṁgraha, III. xi.

directs us to scarify a part with a razor and then apply an ointment of guñjā (Abrus precatorius) in sciatica, scrofulous glands of the neck, etc. For treating a person in the state of unconsciousness caused by the derangement of all the humours, he directs us to scarify the anterior fontanelle with a razor, then to apply as much medicine as can be carried on the point of a needle to the part and rub it with fingers[1]. The medicine is to be prepared thus :—take aconite 1 pala, quicksilver 1 śāna ; mix, and put inside two sorābas or earthen basins smeared with powdered glass and placed face to face. Apply some external application over this and put it on fire for six hours. Then open the basins, take the soot collected on the upper basin and deposit it in a glass vessel quickly to prevent exposure. Caraka[2] also advises us to apply a medicinal paste on a cranial incision, shaped like

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[1] विषं पलमितं सूतः शाणिकश्चर्णयेद्द्वयम् ।
तच्चूर्णं सम्पुटे च क्षिप्त्वा काचलिप्तसरावयोः ॥
मुद्रां दत्त्वा च संशोष्य ततश्चुल्यां निवेशयेत् ।
वह्निं शनैः शनैः कुर्यात् प्रहरद्वय संख्यया ॥
तत उत्थाप्य तन्मुद्रामुपरिस्थे सरावके ।
संलग्नो यो भवेद्भूसः तं गृह्णीयाच्छनैः शनैः ॥
वायुस्पर्शो यथा नस्यात् ततः कुप्यां निवेशयेत् ।
रसः सूचीमुखेनाग्रकूप्यां निर्याति भेषजम् ॥
तावन्मात्रो रसो देयो मूर्च्छिते सन्निपातिनि ।
क्षुरेण प्रक्षिप्ते मूर्ध्नि तदङ्गुल्या च घर्षयेत् ॥
रक्त भेषज सम्पर्कान्मुर्च्छितोऽपि हि जीवति ।
तथैव सर्पदष्टस्तु मृतावस्थोऽपि जीवति ।
यदातापो भवेत् तस्य मधुरं तत्र दीयते ॥

Śārṅgadhara Saṁgraha, II. xii.

[2] विषदूषित कफसार्ः स्रोतसंरोधरूढवायुश्च ।
सृतइव त्रसेन्मर्त्यः स्यादसाध्यलिङ्गैर्हिक्कीनश्च ॥

the foot of a crow, in case of snake-bite when he becomes unconscious but his life is not completely despaired of.

4. Nakha Śastra or nail parer.

Suśruta[1] mentions its length to be eight aṅguli. Dallaṇa[2] says that its blade is two aṅguli long and one aṅguli broad. Vāgbhaṭa[3], on the other hand, describes the length to be nine aṅguli. Aruṇadatta[4] thinks it to be a double instrument, one end having a straight edge and the other an oblique one. Some explain[5] that two different kinds of nakha śastra—one with a straight and the other with an oblique edge—are directed to be used.

चर्म्मकषायाः कल्कं विल्वसमं मूर्द्धि काकपदसमा ।
क्षाल्वा कुर्य्यात् कटभीं कटुकोटफला प्रधमनञ्च ॥
Caraka Saṁhitā, VI. xxv.

[1] तत्र नखशस्त्रैषण्यावष्टाङ्गुलं सूच्यीवत्यन्ते ।
Suśruta Saṁhitā, I. viii.

[2] नखशस्त्रमिति नखानां छेदनाय शस्त्रं नखशस्त्रं तस्य फलं द्व्याङ्गुलायामम् एकाङ्गुल विस्तृतम् ।
Nivandha Saṁgraha, I. viii.

[3] वक्रर्जुधारं द्विमुखं नखशस्त्रं नवाङ्गुलं ।
सूच्यग्रशल्योद्धृतिच्छेदभेद प्रच्छान लेखने ॥
Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

[4] नखशस्त्रं नखच्छेदकं प्रसिद्धं । तच्च वक्रा ऋजूभयधारा यस्य तदेवम् । तस्येकं मुखं वक्रमन्यदृजु स्पष्टम् ।
Sarvāṅgasundarī, I. xxvi.

[5] नखशस्त्रमाह वक्रर्जुधारमित्यादि नखानां छेदनाय शस्त्रं नखशस्त्रं तत् द्विमुखं द्वि द्विः प्रकारं मुखं यस्य तद्विमुखं तथा वक्रर्जुधारं एकं वक्रं धारं अपरम् ऋजुधारं स्यात्, तथा नवाङ्गुलं उभयोमपि दैर्घ्येण नवाङ्गुलपरिमितं तच्च नखशस्त्रं शल्योद्धृत्यादौ योज्यं शल्यानां कण्टकादीनामुद्धृतिः कृदत्रण शल्योद्धृतिः प्रच्छानं चेरा इति यस्य प्रसिद्धिः लेखनं चाँचन् इति लोके ।
Vāgbhaṭārtha Kaumudī, I. xxvi.

They are principally recommended for cutting, puncturing and scarifying[1]; and also for the extraction of needles and minute foreign bodies from the soft parts.

There is no mention of a many-bladed scarificator in the surgical books of the Hindus, but its office was performed by the nakha śastra, in wet cupping, by making parallel incisions close to one another.

Paul[2] alludes to an instrument compounded of three blades joined in such a way that at one stroke, three scarifications were made; but he prefers a single scalpel for the purpose.

Pālakāpya mentions an instrument called rampaka[3], having the handle ten aṅguli and the blade three aṇguli long. It is to be used for paring the nails and cleaning the feet of the elephants.

5. Mudrikā.

It is described to be a cutting instrument of the size of the last phalanx of the index finger[4]; it is also called aṅguli-śastra or finger-knife. Vāgbhaṭa describes this instrument but not clearly. He says that the mouth of the aṅguli-śastra looks as if coming out of a ring, and the blade is half an aṅguli wide. A ring, having the size sufficient to admit the terminal phalanx of the index

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[1] द्वङ्गिपत्र नखशस्त्र मुद्रिकोपलपत्रकाह्वं धारानि छेदने भेदने।

Suśruta Saṁhitā, I. viii.

[2] Paulus Ægineta, VI. xli.

[3] रम्पकस्त्वाङ्गुलमुखो दशाङ्गुलवृत्त पादशोधनार्थं नखच्छेदनार्थं चेति।

Pālakāpya, III, xxx.

[4] प्रदेशिन्ययपर्व्वप्रदेशप्रमाणामुद्रिका।

Suśrutā Saṁhitā, I. viii.

finger, should be soldered to it. The base of the instrument has a thread tied to it[1].

It is recommended to be used for cutting through neoplasms in the throat. In its uses, Vāgbhaṭa says that it resembles the maṇḍalāgra and vṛddhipatra; and so was sometimes required for perforating the skull of a dead fœtus in the uterus of its mother[2].

Dr. Simpson of St. Andrews (1744) is said to have invented an instrument, a "ring scalpel" for opening the skull. It consists of a loop of steel, through which the finger is to be passed

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[1] कुर्य्यादङ्गुलिशस्त्रकं ।
सुद्रिकानिर्गतमुखं फलेऽर्द्धाङ्गुलायतं ।
योगतो ह्रद्विपत्रेण मण्डलाग्रेण वा समं ।
तत्प्रदेशिन्यय पर्व्वप्रमाणार्पन सुद्रिकम् ।
सूत्रवद्वं गलस्रोतो रोगछेदन भेदने ॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

कुर्य्यदित्यादिना अङ्गुलिशस्त्रकं व्यक्ति । सुद्रिका अङ्गुरीयकेण निर्गतं निष्क्रान्तं मुखं यस्य तत्तथाविधं सुद्रिकानिर्गतमुखं तथा फले फलीहृशे अर्द्धाङ्गुलायतं अर्द्धाङ्गुलमाच विस्तार अङ्गुलि शस्त्रकं अङ्गुलिनाम शस्त्रं कुर्य्यात् । तच्च योगतः प्रयोगे ह्रद्विपत्रेण मण्डलाग्रेण वा समतुल्यं भवति । लेखने च्छेदने ह्रद्विपत्रवत् योज्यं किम्वा छेदन भेदन पाटने मण्डलाग्रवत् योज्यमित्यर्थः । तदित्यादि तदङ्गुलि शस्त्रकं प्रदेशिन्यय पर्व्वप्रमाणार्पण सुद्रिकं कुर्य्यादिति योज्यं । वैद्यस्य प्रदेशिनी नाम्नी अङ्गुलि स्तस्या अग्रं यत्पर्व्व तत्तथा तस्य यत् प्रमाणं परिमाणं तदर्पणा तत् प्रवेशोपयुक्ता सुद्रिका यस्य तत्तथाविधं । सुद्रिका मुदरी आङ्टी इति वा ख्याता । तथा सूत्रवद्वं सूलदेशे सूत्रेणवद्वं तच्च गलस्रोतो गतानां रोगाणां छेदने भेदने च योज्यं ।

Vāgbhaṭārtha Kaumudī, I. xxvi.

[2] विष्कम्भौ नाम तौ मूढौ शस्त्रदारणमर्हतः ।
मण्डलाङ्गुलि शस्त्राभ्यां तत्कर्म्म प्रशस्यते ।
ह्रद्विपत्रं हि तौक्ष्ण्यार्थं न योनावचारयेत् ॥

Aṣṭāṅga Hṛdaya Saṁhitā, II. ii.

and from which protrudes a sharp pointed blade about an inch long, by which the cranium was pierced[1].

In the pseudo-Hippocratic treatise[2] a knife to fix on the thumb and dismember a fœtus in utero is mentioned. This knife is called by Turtullian[3] the "ring knife", whereby the limbs are advised to be cut off in the womb. It is intersting to point out that mudrikā also means a ring.

The veterinary surgeons still use a scalpel blade mounted on a ring[4], through which a forefinger is passed to dismember foals and calves in exactly the same way.

6. Utpalapatra.

This knife is described to have the shape of a petal of the blue lotus. The end is long, sharp and pointed. The utpalapatra is dīrgha-vaktra or long bladed, while the arddhadhāra is the hrasva-vaktra or short bladed knife[5]. It is to be used for cutting through and puncturing the parts.

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[1] Ed. Med. Essays, vol. V, Part I, P. 445.

[2] Hippocrates, I. 463.

[3] De Anima, 26.

[4] Græco-Roman Surgical Instruments, Pl. vii. fig. 1.

[5] दीर्घं ह्रस्ववक्त्रं यथायथं ।
उत्पलाध्यर्धधाराख्ये भेदने छेदने तथा ॥
Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

उत्पलपत्राख्यध्यर्धधाराख्ये शस्त्रे आह उत्पलेत्यादि उत्पलश्च अध्यर्धधारश्च ते आख्ये ययोः शस्त्रयोः ते उत्पलाध्यर्ध धाराख्ये शस्त्रे तथा, यथाक्रमं दीर्घ ह्रस्व वक्त्रे भवतः। तत्र उत्पलाख्यं दीर्घवक्त्रं, अध्यर्धधाराख्यं ह्रस्ववक्त्रमित्यर्थः। उत्पलशब्देन उत्पलपत्राख्यं शस्त्रं गम्यते तत्तान्तरदर्शनात्। तस्य फलस्य उत्पलपत्राकारत्वादुत्पलपत्रमिति संज्ञितम्। अधिकमर्धं धारा यस्य तत अध्यर्धधारं। ह्रस्तफलयोर्मध्ये फलस्यैव किञ्चिदधिक दैर्घ्यमिति वर्त्तते। तत्र अष्टाङ्गुलायतं उरसि अङ्गुल विस्तारं।
Vāgbhaṭārtha Kaumudī, I. xxvi.

In the Aśvavaidyaka, the utpalapatra and vrīhipatra knives are recommended to be used in puncturing the veins in phlebotomy[1]. "The surgeon who is practically acquainted with the methods of puncturing the veins, should use the utpalapatra and vrīhipatra knives for the purpose."

When used for puncturing the large veins the knife is recommended to be encircled with thread at a short distance from the end to prevent unnecessary injury to the vessels by plunging the the knife deeply[2].

Hippocrates similarly "gaurds his phlebotome in the surgical treatment of empyema, by having it wound round with a rag, leaving the breadth of the thumb nail at the point."[3]

Both the utpalapatra and vrīhimukha knives are thus described in the Aśvavaidyaka[4]: The "vrīhimukha knife should be six aṅguli long and half an aṅguli wide. The utpalapatra should also be similarly made."

The utpalapatra knife is recommended to be used for incising

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[1] शस्त्रेणोत्पलपत्रेण व्रीहिपत्रेण वा भिषक्।
शिरावेधविधिं सम्यग् इष्टकर्म्मा प्रयोजयेत्॥
Aśvavaidyaka, XIV. v. 23.

[2] सूत्रकेण च संवेष्य मुखं शस्त्रस्य बुद्धिमान्।
यथाप्रमाणं संस्थाप्य ततो विस्रावयेत् शिराम्॥
Ibid, XV. v. 35.

[3] Hippocrates, II. 258 Kuhn's Ed. and 1. 88 Syd. Soc. Ed.

[4] अर्द्धाङ्गुलन्तु विस्तीर्णं कुर्य्यच्छस्त्रं षडङ्गुलम्।
नाम्ना व्रीहिमुखं सम्यक् तथा चोत्पलपत्रकम्॥
Aśvavaidyaka, XIV. v. 21.

the abdominal parietis of the horse; then a tube is to be pushed through the wound in the operation of paracentesis abdominis[1].

The phlebotome used by the Greeks is nowhere described in their books; but from considerations of all the various operations to which the instrument was put bears out the fact of its being a sharp pointed, double-edged and straight lancet. The phlebotome of the Greeks might have then resembled in shape the utpalapatra of the Hindus. It was used by the Greeks for various operations besides phlebotomy, as for the opening of abscesses such as the parulis or gum boil[2], puncture of cavities containing fluid as in opening the abdomen for ascites[3], incising the tunica vaginalis as in excision of hydrocele sac[4] and for dissecting out warts[5] and sebaceous cysts[6].

It is interesting to note that Pālakāpya[7] mentions utpalapatra and describes it to be eight aṅguli long, one and a half aṅguli broad and double edged. He uses it for puncturing vessels etc.

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[1] हृदयसाधरे भागे ऊर्ध्वभागे च नाभितः।
अधोवा नाभितः कूर्थच्छेदनं चतुरङ्गुले॥
शस्त्रेणोत्पलपत्रेण वामभागे विचक्षणः।
एकमेवाङ्गुलं शस्त्रं कुक्षौचापि प्रवेशयेत्॥
वेधत्रये ततस्तस्मिन् नालिकां वस्त्रवेष्टिताम्।
प्रक्षिप्य गालयेद्वारि यावद्वैकोष्ठलाघवम्॥

Aśvavaidyaka, LII. vs. 25, 26 and 27.

[2] Paul, VI. xxvii.
[3] Ibid, VI. L.
[4] Ibid, VI. lxii.
[5] Ibid, VI. lxxxviii.
[6] Ibid, VI. xiv.
[7] व्रीहिमुखप्रमाणमुत्पलपत्रं भेदनार्थं।

Pālakāpya, III. xxx.

7. Arddhadhāra.

It is difficult to ascertain the exact shape of this knife. Some translate it as a "single edged knife,"[1] but it really means, as Dallaṇa explains, an instrument which has a sharp edge for half the length[2]. It is also called cakradhāra. Vāgbhaṭa has a variant reading—adhyārddhadhāra—which means an instrument having a sharp edge for more than half the length[3].

It is eight aṅguli long; the blade is two aṅguli long and one aṅguli wide, and the handle six aṅguli long. It is to be used for incision and division of parts of the body.

8. Sūcī or Needles.

Three needles are recommended to be used for applying sutures. They should be strongly made and rounded in shape. At one end they are flattened, grooved and pierced with an eye for the suture. The groove is said to have been intended to be the bed of the suture during stitching to prevent it from doing any harm to the tissue. In fleshy parts such as the thighs, a three ribbed needle, three aṅguli long, is advised to be used. For less fleshy parts and wounds about the joints, a similar straight needle but two aṅguli long should be employed, while for suturing the wounds of the stomach, intestines, scrotum and the vital parts of the body, preference is given to a needle curved like a bow, two and a half aṅguli long and having the pointed end

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[1] Hœrnle's Translations of Suśruta Saṁhitā, Bibl. Ind. I. viii.

[2] अर्द्धधारमिति, अर्द्ध धारा यस्य तत् अर्द्धधारं, चक्रधारमिति प्रसिद्धं तच्च अष्टाङ्गुलायतं चरमि अङ्गुल विस्तारं द्वाङ्गुलंफलं। अन्ये त्वध्यर्द्धधारमिति पठन्ति, अधिकमर्द्धं धारायस्य तत् अध्यर्द्धधारम्।

Nivandha Saṁgraha, I. viii.

[3] See foot-note 5, P. 240.

shaped like a paddy. In thickness, these needles are described to be equal to the stalk of the flower of mālatī (Jasminum grandiflorum). They should have sharp fine points and good shape[1]. The needles are also recommended to be used for extraction of foreign bodies from the soft structures and also for evacuating abscesses[2].

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[1] दीर्घेऽल्पमांसे सन्धौ च सूची हस्ताङ्गुलह्रयं।
आयता व्याङ्गुला चक्षा मांसले वापि पूजिता॥
धनुर्व्वक्रा हिता मर्म्मफलकोषोदरोपरि।
इत्येतास्त्रिविधाः सूचीस्तीक्ष्णाग्राः सुसमाहिताः।
कारयेन्मालतीपुष्पहस्तायपरिमण्डलाः॥

Suśruta Saṁhitā, I. xxv.

हस्तागूढ़ दृढ़ाः पार्श्वे त्रिस्रः सूच्योऽत्र सीवने॥
मांसलानां प्रदेशानां व्रक्षा चाङ्गुलमायता।
अल्पमांसास्थि सन्धिस्थ व्रणानां द्व्याङ्गुलायता।
व्रीहिवक्रा धनुर्वक्रा पक्वामाशयमर्म्मसु।
सा साईद्व्याङ्गुल सर्व्वा हस्तास्तुरङ्गुला॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

तिस्रणां सूचीनां विषयविशेषे आकारभेदानाह मांसलानामित्यादि 'मांसलानां' ऊर्व्वादीनां शरीर प्रदेशानां सीवनार्थं सूची, 'व्रक्षा' त्रिकोणविशिष्टा तथा चाङ्गुलमायता, अङ्गुलचयदीर्घा कर्त्तव्या, असाक्षात्सत्व मग्रभागसैव न तु सर्व्वावयवस्य। सूच्याः सर्व्वावयवस्य हि साधारणतो हस्ता कारत्वनिर्द्देशादितिगम्यं। असा अपि गूढ़ दृढ़ पार्श्वत्रं सामान्योक्त्या कथितमेव अल्पमांसलस्थान संस्थितानां, सन्ध्यस्थि संश्रितानांच व्रणानां सीवने द्व्याङ्गुलायता, अङ्गुलित्रय दीर्घा, सूचीकर्त्तव्या, पक्वाशये, आमाशये तथा 'मर्म्मसु' वस्त्यादिषु संस्थितानां व्रणानां सीवने, व्रीहि वक्रा, पाटलादि व्रीहिवन्मुखा, 'धनुर्वक्रा' धनुर्व्वद्वक्राकारा या सूची साईद्व्याङ्गुला, अर्द्धाङ्गुलाधिक द्व्याङ्गुल दीर्घा योज्येति योज्यं अत्रापि गूढ़ दृढ़ पार्श्वत्रं योजनीयं। साईद्व्याङ्गुलित्यत्रेन च्छेदः। सर्व्वत्यादि परेण सम्बध्यते॥

Vāgbhaṭārtha Kaumudī, I. xxvi.

[2] सूचीकुशपत्राटीमुखशरारीमुखान्तर्मुखविकूचकानि विस्रावणे।

Suśruta Saṁhitā, I. viii.

In modern times, the surgeons use fully curved, half-curved and straight surgical needles. Waring[1] remarks: "The shape of the needle which ought to be used for closing an incision depends upon the depth and accessibility of the wound. In deep wounds, or wounds which are not readily accessible, curved needles will be found to be most useful, while for shallow cuts straight needles will be most convenient."

Suśruta makes mention of a javamukhī needle[2] (*lit.* having the sharp end shaped like a barley corn) for passing a double ligature smeared with escharotic ointment, across the base of a tumour in opposite directions. Then by cutting through the nooses, and tying togeher the contiguous ends of the ligatures, the whole of the growth is encircled and strangled by them, exactly in the same way as in modern times a nævus is ligatured by means of a nævus needle. Cakradatta also quotes this description of the method of extirpating tumours by ligatures.

Erichsen says[3]: "When the tumour is small, an ordinary double ligature may be passed across its base, by means of a common suture needle; and the noose being cut and the thread tied on each side, strangulation will be effected. When it is of larger size, and of round shape, the most convenient method is that recommended by Liston. It consists in passing, by means

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[1] Manual of Operative Surgery. By H. J. Waring, M.S., M.B., Third edition, P. 42.

[2] अर्ब्बुदादिषु चीत्वा छित्त्वा मूले सूत्रं निधापयेत्।
सूचीभिर्यववक्त्राभिराचितं वा समन्ततः।
मूले सूत्रेण बध्नीयाच्छिन्ने चोपचरेद्व्रणम्॥

Suśruta Saṁhitā, IV. xvii.

Cakradatta, Nāḍīvraṇacikitsā.

[3] Erichsen's Surgery, Vol. II, P. 73.

of long nævus needles, fixed in wooden handles, and having their eyes near their points, double whipcord ligatures in opposite directions beneath the tumour; then cutting through the nooses, and tying together the contiguous ends of the ligatures until the whole of the growth is encircled and strangled by them."

There are many instances of the use of surgical needle by the Greek and Roman Surgeons. Needles of different sizes are recommended. Celsus mentions a large needle in describing the operation of suturing the abdominal parietis[1], and another, evidently a small needle, which is said to have been used in the treatment of staphyloma of the cornea[2]. The needles were either round or three-cornered. "A few three-cornered needles of Roman origin have been found, although they are rare" (Milne[3]). Paul uses a needle in suture of the upper eyelid, and other modes of operating for trichiasis[4], for the repair of wounds of the peritoneum[5], and recommends a large sized needle containing a double thread to close the peritoneum in the operation for enterocele[6].

Pālakāpya mentions sūcī or needles for stitching wounds[7]. They are eight aṅguli long, shaped like the tusk of an elephant and are either three ribbed, or four ribbed, or round, smooth and

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[1] Celsus, VIII, xvi.

[2] Ibid, VII. vii.

[3] Græco-Roman Surgical Instruments, P. 75.

[4] Paulus Ægneita, VI. viii.

[5] Ibid, VI. lii.

[6] Ibid, VI. lxv.

[7] सूची सेवनार्थं। अष्टाङ्गुलं नागदन्ताकृति। त्रिधा चतुरस्रा वा दृढा समाहिता यथा शलाका व्रणे वर्त्मविशुद्ध्यर्थम्।

Pālakāpya, III. xxx.

strong. He reserves curved three-cornered needles for fleshy parts and round needles for skin, veins, nerves and arteries[1].

Caraka recommends the use of leeches, knife and needles for extracting blood from the piles[2]. He also advises us to use needles for pricking the patches of leprous spots[3] before the application of leeches for extracting blood.

9. Kuśapatra.

It is a form of knife resembling in shape the leaf of a kuśa grass (Poa cynosuroides)[4]. The instrument should be six aṅguli long (Suśruta) ; the blade measuring two aṅguli (Vāgbhaṭa)[5]

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[1] याःसूच्यस्त्रिविधाः प्रोक्ताः शस्त्राध्याये संस्थिताः।
नागदन्ताकृतिर्ह्यत्ता त्रिकोणा चेति निश्चयात्॥
अस्थ्यावृतं नागदन्तया मांसजं च त्रिकोणया।
त्वक्स्नायु धमनीस्थं च शिराजं चैव वृत्तया।
आहार्य्यं सर्व्वयन्त्राणां सूचा सीवनमिष्यते॥

Pālakāpya, III. i.

[2] जलौकोभिः तथा शस्त्रैः सूचीभिर्वा पुनः पुनः।
अवर्त्तमानं रुधिरं रक्तार्शोभ्यः प्रवाहयेत्॥

Caraka Saṁhitā, VI. ix.

[3] प्रच्छितमल्पं कुष्ठं विरेचयेद्वा जलौकाभिः।

Ibid, VI. vii.

[4] कुशपत्रमिति, कुशपत्रतुल्यं कुशपत्रं तन्मानमाह :—
अङ्गुलैरुच्चकं विद्यादङ्गुलं फलमुच्यते।
वृत्तं स्यात् त्र्यङ्गुलं मध्ये कुशपत्रस्य लक्षणम्॥

Nivandha Saṁgraha, I. viii.

[5] कुशाटी वदने स्याद्ये द्व्यङ्गुलंस्यात्तयोः फलं॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

कुशाटीवदने द्वे शस्त्रे, स्याद्ये विस्रावण विषये योज्ये। तयोः कुशाटी वदनयोः फलं द्व्यङ्गुलं, अङ्गुलद्वयं परिमितं स्यात्।

Vāgbhaṭārtha Kaumudī, I. xxvi.

and the handle four aṅguli, but according to Bhoja, the handle is three aṅguli long. It is to be used for draining pus from abscess. The handle has a ring like ornamentation, about one aṅguli in diameter. Another variant reading describes the blade, the ring, and the handle to have the lengths of two, three, and two aṅguli respectively. This would make the total length of the instrument to be seven aṅguli; so evidently there is some lapsus calami in the second reading.

Cakradatta uses kuśapatra as a bleeding lancet and says[1]: "Out of the twelve vessels that lie on the sides and underneath the tongue, select the two large bluish vessels on either sides of the tongue, raise them up by vaḍiśa or hook and puncture them by the kuśapatra knife and then, after bleeding, apply a paste of treacle and ginger to the wound". In the Yogaratnākara[2], the author advises us to adopt this method of bleeding, in the treatment of tumours in the neck.

Pālakāpya mentions kuśapatra and describes it as being shaped like a kuśa grass[3]. It is nine aṅguli long—the handle being

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[1] जिह्वाया: पार्श्वतोऽधस्तां शिरा द्वादश कीर्त्तिता:।
तासां स्थूलशिरे द्वे तु शने: शनै:॥
वड़िशेनेव संगृह्य कुशपत्रेण बुद्धिमान्॥
Cakradatta, Galaganda Cikitsā.

[2] जिह्वाध: पार्श्वयोर्मूलाच्छिरा द्वादश कीर्त्तिता:।
तासां स्थूले शिरे द्वे च च्छिन्द्यात्ते च शने: शने:।
वड़िशेनेव संगृह्य कुशपत्रेण बुद्धिमान्।
स्रुते रक्ते व्रणे तस्मिन् दद्यात्तस गुड़माद्रकम्॥
Yogaratnākara, P. 321.

[3] नवाङ्गुलं कुशपत्रं। षड्वाङ्गुलं हस्तं। चतुरङ्गुलम् पत्रं। अध्यार्धाङ्गुलविस्तृतमुभयतो धारं। कुशपत्राकृति गम्भीरपाकभेदनार्थं षड़ङ्गुलं हस्तम् अध्यार्धाङ्गुलं पत्रं।
Pālakāpya, III. xxx.

five or six aṅguli and the blade four aṅguli long. The blade is one and a half aṅguli wide and is sharp-edged on both sides (*i.e.*, double-edged). It is used for incising deep abscesses.

10. Āṭīmukha.

This instrument is described to have the shape like the beak of the jalavardhanī bird or āṭī[1] (Turdus ginginiamus),—a bird living in the marshes. It is six aṅguli long; the blade measuring two and the handle four aṅguli. So it is of the same size as the kuśapatra to which it also resembles in function. Bhoja is of opinion that its blade is one and the handle seven aṅguli long.

11. Śarārīmukha.

This instrument is a pair of scissors resembling the face of the long beaked bird called śarārī. Dallaṇa describes two varieties of the bird, one with white shoulders, and the other with a red head. It is the former kind which is referred to here[2]. Suśruta describes its length to be ten aṅguli[3], while Dallaṇa mentions the length to be twelve aṅguli.

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[1] आटीमुखमिति, आटी जलवर्द्धनी नाम पक्षिविशेषः तन्मुखवन्मुखं यस्य तत् आटीमुखं तथाचोक्तं :—

द्वन्तं सप्ताङ्गुलं विद्यात् तस्याग्रे फलमिष्यते।
आटीमुख प्रकारं हि फलमङ्गुष्ठमायतम्।

Nivandha Saṁgraha, I. viii.

[2] शरारीमुखमिति, दीर्घचञ्चुः पक्षिविशेषः स द्विविधः धवलस्कन्धः रक्तशीर्षश्च धवलस्कन्धस्य शरारीति संज्ञा तन्मुखवन्मुखं तस्य शस्त्रस्य लोके कर्त्तरीति संज्ञा ताञ्च द्वादशाङ्गुलां चलत्पलासां कुर्य्यात्।

Ibid.

[3] दशाङ्गुला शरारीमुखी सा कर्त्तरीति कथ्यते।

Suśruta Saṁhitā, I. viii.

It is recommended to be used for evacuating abscess[1], etc. Suśruta mentions karttarī as a synonym but Vāgbhaṭa counts it as a separate instrument. He describes karttarī as a pair of scissors used by the barbers for clipping hair and is said to have been necessary for dividing the nerves, ligaments and fine hairs[2].

12. Antarmukha.

Suśruta describes another variety of scissors, used principally for evacuating abscesses. It is so named, for its straight cutting edges are within its curved claws[3]. It is said to be six aṅguli long and one and a half aṅguli broad[4]. It seems that the curvature of the blade varied widely; and Vāgbhaṭa describes a variety called

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[1] स्राव्ये शरार्य्यास्याविकूर्च्चिके।

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

स्रावे विस्रावनविषये कर्म्मणि शरार्य्यास्या विकूर्चके द्वे शस्त्रे योज्यः। तत्र शरार्य्यास्य शरारीमुखं शरारी दीर्घचञ्चुः पक्षिविशेषः तस्या मुखवदास्यं यस्या तत् शरार्य्यास्या, तत्र चलत्फलं दशाङ्गुलं दीर्घं कार्य्यं।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

[2] स्नायु सूक्ष्म कचच्छेदे कर्त्तरी कर्त्तरीनिभा।

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

कर्त्तरीशस्त्रमाह स्नायित्यादि कर्त्तरीनामशस्त्रं कर्त्तरीसदृशं तच्च स्नायुच्छेदने सूक्ष्मकेशच्छेदने च योज्यं। कर्त्तरी काटारी इति यस्य प्रसिद्धिः।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

[3] अन्तर्मुखमिति मध्यसुखं तल्लक्षणमाह—
अष्टाङ्गुलप्रमाणेन जिह्मधारेण चायुतम्।
शस्त्रमन्तर्मुखं नाम चन्द्रार्द्ध इव चोद्गतं।

Nivandha Saṁgraha, I. viii.

[4] तदन्तर्मुखं तस्य फलमध्यर्द्धमङ्गुलं॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

arddhacandrānan[1] or "half-moon faced" scissors in which the blades are curved like the half-moon. It has the length of eight aṅguli, the blade measuring one and a half aṅguli. This is also to be used for letting out pus from abscesses.

Hārīta, however, mentions a śastra, called also arddhacandra or half-moon, but he recommends its use for excising the prolapsed arms of a dead fœtus to effect its delivery[2]. This instrument can not but be a knife, for it seems difficult to cut off the arm, even of a fœtus, with a pair of scissors. Moreover, antarmukha has never been credited with the power of excising the arm.

13. Trikūrccaka.

It has been translated in English as a thin-edged sharp instrument or trocar. Wise, Dutt and Hoernle agree to mean by it a trocar. But it can be better explained if we understand by the term an instrument consisting of three needles fixed on a round

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अपरञ्च विस्रावण शस्त्रमाह तद्वदित्यादि तद्वत् कुशाटीवदनवत्, अन्तर्मुखं अन्तर्मुख नाम शस्त्रं स्राव्ये योज्यं तस्य अन्तर्मुखस्यफलं अध्यर्धमङ्गुलं स्यात्। आधि अधिकं अर्द्ध अध्यर्द्धं। सार्द्धैकमङ्गुलमित्यर्थः।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

[1] अर्द्ध चन्द्राननं चैत तथाध्यर्द्धाङ्गुलं फले ॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

अन्तर्मुखस्य प्रकारभेदमाह अर्द्धचन्द्राननमित्यादि एतत् अन्तर्मुखं, अर्द्धचन्द्राननं अर्द्धचन्द्राकारमुखञ्च भवति, तदपि तद्वत्, कुशाटीवदनवत् स्राव्ये योज्यं। तच्च फले अर्द्धाङ्गुलं अर्द्धाङ्गुलपरिमाण फलमित्यर्थः। अर्द्धचन्द्राकारमुखत्वात् अस्य शस्त्रस्यापि अर्द्धचन्द्राननमिति संज्ञेति बोध्यं।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

[2] अथवार्द्धचन्द्रेण शस्त्रेणैव मृतगर्भस्य बाहुयुगलं सञ्छिद्य बाह्वनिःसारयेत्।

Hārīta Saṁhitā, III, li.

wooden handle[1]. According to Suśruta, the length of the instrument is six aṅguli. But others describe it as eight aṅguli long, the blade and the handle measuring three and five aṅguli respectively[2]. The distance between the edges is the breadth of a grain of rice. The end of the handle is ornamented with a circular metallic plate as a ring.

It is recommended to be used for evacuating abscesses and for draining blood from the nasal polypus.

Caraka[3] mentions an instrument called kūrcca and says:—"After fomenting and thus softening the rounded nodules (of leprosy) which are fixed and hard, by heated stones and fumigations through tubes, they are to be injured by the kūrcca and the blood that oozes out, should be wiped away."

Two other instruments are described by Vāgbhaṭa as being constructed on a similar principle. One is named kūrcca and the

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[1] विकूर्चकमिति चयः कूर्चा यस्य तत् विकूर्चकम्। कूर्चः कूँची इति लोके।
Vāgbhaṭārtha Kaumūdī, I. xxvi.

[2] विकूर्चकमिति चयः कूर्चा यस्य तत् विकूर्चकम् तच्च तल्लान्तरम् :—

अङ्गुलानि तथाष्टौ च शस्त्रं कार्य्यं चिकूर्चकं।
फलैरन्तर्मुखाकारैरङ्गुलैरन्वितं विभिः।
एकैकस्य फलस्यैषामन्तरं व्रीहिसम्मितम्।
हस्तं पञ्चाङ्गुलाभं कार्य्यं रुचकभूषितम्॥

Nivandha Saṁgraha, I. viii.

[3] स्थिरकठिनमण्डलानां स्विन्नानां प्रस्तरप्रणाडीभिः।
कूर्चैर्विघट्टितानां रक्तोत्क्लेशोऽपनेतव्यः॥

Caraka Saṁhitā, VI. vii.

other, khaja. The kūrcca[1], he describes as an instrument "consisting of seven or eight rounded sharp needles, four aṅguli long, nicely bound together by a cord and tightly fixed on a circular wooden handle." He mentions its use in the operation of scratching to cure baldness and the brown and black spots on the face. For scarifying a bald spot, Cakradatta[2] uses needles, rough leaves, etc. "The khaja[3]," Vāgbhaṭa continues, "consists of eight rounded needles having the sharp ends half an aṅguli long. It is to be introduced

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[1] कूर्चोवृत्तैक पीठस्थाः सप्ताष्टौ वा सुबन्धनाः।
संयोज्य नीलिका व्यङ्ग कैश शातेषु कुट्टने॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

सम्प्रति कूर्चाख्यं शस्त्रं लचयितुमाह सप्तेत्यादि ताः सूच्यः सर्व्वएव वृत्ताः वर्त्तुलाः तथा चतुरङ्गुलाः चतुरङ्गुलदीर्घाः कूर्चः इत्युच्यन्ते। ताः सूच्यः पुनः कीदृशाः? वृत्तैकपीठेस्थाः वृत्ते वर्त्तुले एकस्मिन् पृष्टे संस्थिताः, एकं वृत्ताकार काष्ठफलकं परिवेष्य स्थिता इत्यर्थः। तथा सप्तसंख्यका अष्टसंख्यका वा, तथा शोभनं रज्ज्वादिकृतं बन्धनं यासां तास्तथाविधाः सुबन्धनाः। स कूर्चः नीलिकादिषु रोगेषु कुट्टने कुट्टनार्थे संयोज्यः प्रयोज्य इत्यर्थः। कुट्टनं आँचड़ान इति लोके। नीलिकादयो वक्ष्यमाणा कैशशातः केशानां पतनं।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

[2] अवगाढ़पदञ्चैव पुच्छयित्वा पुनः पुनः।

Cakradatta, Kṣudraroga Cikitsā.

अवगाढ़पदमिति गम्भीरपदं यथास्यात् तथा:सूचीनखरञ्जन्यादिभिः पुच्छयित्वा * * *

Tattva Candrikā, ibid.

[3] अर्द्धाङ्गुलमुखैर्वृत्तैरष्टाभिः कण्टकैः खजः।
पाणिभ्यां मध्यमाङ्गेन घ्राणात्तेन हरेदसृक्॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

खजसंज्ञकशस्त्रमाह अर्द्धाङ्गुलमुखैरित्यादि अर्द्धाङ्गुलप्रमाणं मुखं येषां ते अर्द्धाङ्गुलमुखा तैरर्द्धाङ्गुलमुखैः वृतैः वर्त्तुलैः अष्टाभिः अष्टसंख्यकैः कण्टकैः कृतं शस्त्रं खज उच्यते। तेन खजाख्येन शस्त्रेन पाणिभ्यां हस्ताभ्यां मध्यमाङ्गेन आलोड्यमानेन घ्राणात् नासिकाया असृक्रक्तं हरेत्, निर्हरेदित्यर्थः।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

into the nostrils and turned to and fro with both hands to bleed the nasal polypi."

The Greeks and Romans used a similar instrument for identical purpose. It was called katiádion, measuring a blade of grass, and was used for opening abscesses of the womb and tonsils, drawing blood from the inside of the nose and perforating the fœtal cranium.

In India, the practice of drawing blood from the nasal polypus by blades of grass is still in vogue; and Aræteus mentions it as a common mode of scarification in ancient Greece also[1]. "On the next day we are to abstract blood from the inside of the nostrils, and for this purpose push into them the long instrument named Katiádion, or the one named Toryne, or in want of these we must take the thick quill of a goose, and having scraped the nervous part of it into teeth like a saw, we are to push it down the nostrils as far as the ethmoid cells, then shake it with both hands, so that the part may be scarified by its teeth. Thus we shall have a ready and copious flow of blood; for slender veins terminate there and the parts are soft and easily cut. The common people have many modes of scarification, by rougher herbs and dried leaves of the bay, which they introduce with the fingers and move strongly." Paul[2] opens the vessels in the nostrils with the reed called typha.

14. Kuṭhārikā.

It is a small instrument shaped like an axe, so called from its resemblance to kuṭhāra, an axe which is still used in India

[1] Extant works of Aræteus, P. 460.

[2] Paul, vol. II. Sec. lx.

for cutting wood[1]. Vāgbhaṭa says[2] that "the base of the blade is thicker and broader than the end and is fitted to a handle, seven and a half aṅguli long. The blade which is shaped like the tooth of a cow, has the width of one aṅguli." Bhoja describes the width of the blade to be a half aṅguli[3]. It is recommended to be used for puncturing vessels in the following manner[4]:—"Hold the handle with the left hand and put the blade on the vessel resting on a bone. Raise the instrument a little upwards and then strike over the thick base of the blade with the downward strokes of the middle or index finger, when let go

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[1] For figure of Kuṭhāra as used in Ancient India, see Pl. xxii in Ferguson's Tree and Serpent Worship.

[2] पृथुः कुठारी गोदन्तसदृशार्द्धाङ्गुलानना।
तयोर्ऋदण्डया विध्येदुपर्य्यस्थ्नां सिरां स्थितां॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

कुठारिका संज्ञकं शस्त्रमाह पृथुरित्यादि कुठारी पृथुः स्यात्। कुठारिका नामशस्त्रं पृथुः स्थूलमूलं स्यादित्यर्थः। तथा गोदन्तसदृशार्द्धाङ्गुलानना गवां दन्तः गोदन्त स्तत्सदृशं तुल्याकारं अर्द्धाङ्गुलायतं आननं मुखं यस्याः सा तथा विधया तया कुठार्य्या ऋदण्डया ऋस्थ्नां उपरिस्थितां सिरां विध्येत्। तद्दण्डं वामहस्तेनोचीकृत्य कुठार्य्यामुखं शिरोपरि संस्थाप्य दक्षिणाङ्गुष्ठतर्ज्जनीभ्यां कुठारिकामस्तकमभिहत्य सिरां विध्येत्।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

[3] कुठारिकेति कुठारतुल्या कुठारिका:—

कुठारिकाया दन्तं स्यात् सार्द्धसप्ताङ्गुलायतं।
फलमर्द्धाङ्गुलायामं गोदन्तसदृशं समम्॥

Nivandha Saṁgraha, I. viii.

[4] तथा मध्यमयाङ्गुल्या वैद्योऽङ्गुष्ठ विमुक्तया।
ताड़येदुत्थितां ज्ञात्वा स्पर्शादूर्वाङ्गुष्ठ पीड़नैः॥
कुठार्य्या लघयेन्मध्ये वामहस्त गृहीतया।
फलोर्द्धे शे मुनिष्कम्पं शिरां तद्वच मोचयेत्॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvii.

forcibly from the under surface of the thumb". Cakradatta[1] also advises us to use it in a similar manner. To open the veins in fleshy parts, Vāgbhaṭa recommends the vrīhimukha knife, while the kuṭhārikā is advised to be used in venesection on bony structures.[2]

Pālakāpya[3] mentions the kuṭhāra and describes its shape to be like an axe. It is to be used for excision and scarification. He describes another śastra called vatsadanta (*lit.*, the calf's tooth); it is ten aṅguli long; and the mouth of the instrument is one and a half aṅguli broad. It is also to be used for excision.

"Bleeding from the jugular vein, he (Albucasis) describes much in the same way that it is now practised by veterinary surgeons, namely, by placing a sort of scalpel bent at the point, which he calls fissorium, upon the vein, and striking the instrument with a hammer or some such body. He gives drawings of variously shaped lancets for opening the veins of the arm."[4]

"Ferriers bleed with a fleam, which, though apparently a clumsy method of operating, is certainly safer than the lancet in

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[1] वामहस्तेन विन्यस्य कुठारीमितरेण तु।
ताड़येन्मध्यमाङ्गुल्याङ्गुष्टविष्टब्धमुक्तया॥

Cakradatta Śirāvyādhādhikāra.

[2] मांसले निचिपेद्वैद्यो व्रीहास्यं व्रीहिभावकम्।
यवाद्यस्थ्यासुपरि शिरां विध्यन् कुठारिकाम्॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvii.

[3] कुठाराकृति कुर्य्यात्। कुठारो शस्त्रपच्छेदनार्थं। वत्सदन्ताकृति वत्सदन्तं दशाङ्गुलम्। एकेकमध्यर्द्धाङ्गुलमुखम्। एवमेतानि च त्रीण्यपि यथायोगं प्रच्छनार्थं।

* * * * *

कुठाराकृतिशस्त्रेण ततस्तं प्रच्छयेद्भिषक्।
नातिगाढं न च लघु न घनं विरलं न च॥

Pālakāpya, III. iii.

[4] Albucasis Chirrug. ii. 97; also see Adam's Commentary on Paul, VI. lx. 323.

unknown hands." "In bleeding with a fleam, the near side is most convenient. In skilful hands, there is no occasion for a blood stick, as the fleam may be struck with the right hand if it is made broad and round at the back. It also may be made much smaller and neater than that generally employed". There is a drawing of such an improved fleam which much resembles in appearance the kuṭhārī of the Hindus. "A fleam is rather more convenient instrument in bleeding, either from the arm or thigh, as the vein is somewhat apt to roll when a lancet is used."[1]

15. Vrīhimukha.

It is described as a kind of trocar[2], the sharp end being pointed and shaped like a grain of paddy. It is six aṅguli long, the handle being two and the blade four aṅguli (Bhoja). But Vāgbhaṭa[3] describes the length of the blade to be one and a half aṅguli.

It is advised to be used for paracentesis abdominis in abdominal dropsy. Suśruta says:[4] "The friends of the patient should

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[1] White's Compendium of the Veterinary Art, 1851, 18th ed. P. 342.

[2] व्रीहिमुखमिति व्रीहिमुखमिव मुखमस्य व्रीहिमुखं तच्च भोजः—

शस्त्रं व्रीहिमुखं कार्य्यमङ्गुलानि षडायतम्।
द्वाङ्गुलं तस्य हत्तं स्यात् तत्फलं चतुरङ्गुलम्।
तन्मुखं व्रीहिविस्तारं तनुसंगूढकण्टकम्॥

Nivandha Saṁgraha, I. viii.

[3] * * * तथाध्यर्द्धाङ्गुलं फले।
व्रीहिवक्त्रं * * *

Aṣṭāṅga Hṛday Saṁhitā, I. xxvi,

[4] उदकोदरिणस्तु वातहरतैलाभ्यक्तस्योष्णोदकस्निग्धस्य स्थितस्याग्नेः सुपरिगृहीतस्याकचात्-परिवेष्टितस्याधो नाभेर्व्यामतस्यतुरङ्गुलमपहाय रोमराज्या व्रीहिमुखेनाङ्गुष्ठोदर प्रमाणमवगाढं विध्येत्॥

Suśrutā Saṁhitā., IV. xiv.

hold him under the axilla. Then the abdomen is to be tapped by the vrīhimukha knife at a point, four aṅguli distant on the left side from the median line, underneath the navel." Vāgbhaṭa[1] advises us to surround a broad bandage round the abdomen before tapping it by the instrument, which he recommends to be introduced up to one aṅguli. Cakradatta[2] refers to works on surgery for the surgical treatment of ascites. A small incision is directed to be made before the puncture.

In the Aśvavaidyaka, for this operation, the utpalapatra knife is recommended; an incision four aṅguli long is directed to be made above or below the navel of the horse, and then the end of the knife is to be plunged into the abdominal cavity up to one aṅguli.[3] The vrīhimukha is also advised to be similarly used.[4]

Hippocrates speaks of evacuating the fluid in paracentesis abdominis with an instrument which Camper thinks must have been a kind of trocar.[5]

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[1] सजले जठरे तैलैरभ्यक्तस्यानिलापहैः।
स्निग्धस्वेदाम्बुना कक्षमुदरे परिवेष्टिते॥
वङ्क्षणद्वीदितीयस्थाने विध्येद्दङ्गुलमात्रकम्।
निधाय तस्मिन्नाडीञ्च स्रावयेदमथासः॥
अथास्य नाडीमाकृष्य तैलेन लवणेन च।
व्रणमभ्यज्य वद्वा च वेष्टयेद्वाससोदरम्॥

Aṣṭāṅga Hṛdaya Saṁhitā, IV. xv.

[2] जातं जातं जलं स्राव्यं शास्त्रोक्तं शस्त्रकर्म्म च।

Cakradatta, Udaracikitsā.

[3] See foot-note, 1. p. 242.

[4] See foot-note. 4. p. 241.

[5] See the Commentary on Paul. By Adams, vol. II, P. 338.

It is also to be used for puncturing the vessels in phlebotomy (Vāgbhaṭa)[1] especially in the fleshy parts of the body.[2] Cakradatta uses vrīhimukha in phlebotomy and says: "The sharp end of the vrīhimukha should be kept under the palm between the thumb and index finger and is to be thrust into the seat of puncture."[3]

Suśruta directs us to use it in tapping the hydrocele:[4] "Then the hydrocele is to be wrapped round with a bandage. The fluid is next to be drained by tapping it with a vrīhimukha on the lower part of the scrotum, little externally to the suture." Similar directions are given in the Yogratnākara.[5] Cakradatta also gives a similar discription.[6]

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[1] व्रीहिवक्त्रं प्रयोज्यञ्च तत्सिरोदरयोर्वेध्ये:।

Aṣṭāṅga Hṛdaya Saṁhitā. I. xxvi.

व्रीहिमुखाख्यं शस्त्रं आह व्रीहिवक्त्रमित्यादि व्रीहेर्वक्त्रमिव वक्त्रं यस्य तत् व्रीहिवक्त्रं। व्रीहिमुखं यत्शस्त्रं तत्सिरानां व्यधे व्यधने तथा उदरस्य जलोदरस्य व्यधे स्रावणार्थं योज्यं।

Vāgbhaṭārtha Kaumudī. IV. xxvi.

ताड़यन् पीड़येच्चैनां विध्येद् व्रीहिमुखेन तु।

Aṣṭāṅga, Hṛdaya Saṁhitā, I. xxvii.

[2] मांसले नि:चिपेद्देशे व्रीहास्यं व्रीहिमाचकम्।

Ibid.

मांसलेष्ववकाशेषु यवमाचं शस्त्रं निदध्यादतोहन्त्येष्वर्द्धयवमावं व्रीहिमावं वा व्रीहिमुखेन।

Suśrutā Saṁhita. IV. viii.

[3] ततो व्रीहिमुखं व्यध्यप्रदेशे न्यस्य पीड़येत्।
अङ्गुष्ठतर्ज्जनीभ्यस्तु तलप्रच्छादितं भिषक्॥

Cakradatta Śirāvyādhādhikāra.

[4] See foot note 5. P. 123.

[5] संस्वेद्य मूत्रप्रभवं वस्त्रखण्डेन वेष्टयेत्।
सीवन्या पार्श्वतोऽधस्ताद्विध्येत् व्रीहिमुखेण वै॥

Yogaratnākara.

[6] संस्वेद्य मूत्रप्रभवां वस्त्रपट्टेन वेष्टयेत्।
सीवन्या: पार्श्वतोऽधस्ताद्विध्याद्व्रीहिमुखेण वै॥

Chakradatta Vṛddhi Cikitsā.

Paul describes the operation but he recommends a sharp-pointed knife or lancet instead of a trocar. He says: "Wherefore we must make the patient stand erect; or if this can not be done, we must cause him to be seated; * * * . We give orders to the assistants standing behind to press with their hands and push downwards the swelling to the pubes. Then taking a sharp-pointed knife or lancet, if dropsy be among the intestines, in the perpendicular line of the navel, and about three fingers' breadth distance from it we divide the hypogastrium as far as the peritoneum."[1] Celsus mentions that some perform it at a spot four fingers' breadth below the navel in the left side, and recommends us to use a perforator, the point of which should be about the size of the third part of a fingers' breadth.[2] Vegetius, the veterinary surgeon, recommends paracentesis for the dropsy of cattle.[3] The Arabic authors Avicenna,[4] Serapion,[5] Albucasis,[6] Haly Abbas,[7] and Rhases,[8] give similar descriptions.

In modern times, we perform the operation in the same way. "It is necessary in certain conditions to tap the abdomen in order to withdraw fluid which has accumulated there and this is usually done by means of a special trocar and canula. The site for tapping is selected, the usual spot being in the middle line, half-way between the umbilicus and the pubes. A

[1] Paulus Ægineta, Bk. VI. l. Syd. Soc. Ed.
[2] Celsus. vii. 15; ii. 10.
[3] Vegetius. Mulom. iii. 25.
[4] Avicenna, iii. 14; iv. 13.
[5] Serapion. iv. 7.
[6] Albucais: Chirrug. ii. 54.
[7] Haly Abbas, Pract. ix. 41.
[8] Rhases, Cont. xix.

small puncture about one-third of an inch long is made with the knife at the spot selected. The trocar and canula to which the rubber tubing is attached, are then thrust through the abdominal wall into the peritoneal cavity."[1]

The Greeks did not describe the operation of tapping the hydrocele. They always preferred the open incision to puncture. Paul uses a knife for making the skin incision, but when the tunica vaginalis is laid bare, he divides it through the middle with a lancet for bleeding.[2] Some of the Arab authors mention the operation of puncturing the scrotum for hydrocele. If the patient be timid, and do not choose to submit to open incisions, Albucasis advises the surgeon to let out the water either with a scalpel or the instrument used for tapping in dropsy. He states, however, that the water will collect again after this operation.[3] Rhases also describes this operation.[4]

In modern times, trapping for hydrocele is still practised. "When trapping a hydrocele the patient should be sitting up in a chair * * * . The scrotum, having been cleansed, is grasped from behind by the left hand * * * . A spot, free from any large veins, is selected on the anterior and lower part of the swelling, and the trocar and canula introduced with sharp stabbing movement."[5]

Pālakāpya[6] describes vrīhimukha as shaped like a grain of paddy and recommends it for scission and excision of muñja.

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[1] Operations of General Practice. By Corner and Pinches. P. 109, 2nd ed.

[2] Paulus Ægineta, VI. lxii.

[3] Albucasis. Chrug. ii. 62.

[4] Rhases. Cont. xxiv.

[5] Operations of General Practice, P. 145.

[6] स्रवणं पाटनं चैव कुर्याद्व्रीहिमुखेण तु ।

Pālakāpya, III.

16. Ārā or awl.

It is a long sharp needle in handle, so called from its resemblance to the shoe-maker's instrument known as awl. "It has a total length of sixteen aṅguli, with a sharp end of the size of a sesamum seed. The handle is tapering like a cow's tail and is equal in circumference to the young stem of Dūrvā (Unodon Dactylon)" (Bhoja)[1]. Suśruta mentions its length to be six aṅguli. Vāgbhaṭa describes the length to be one aṅguli, the basal half being round, and the terminal half, four cornered and sharp pointed. The terminal part is introduced into the inflammatory swellings to confirm the diagonosis of suppuration. It is also to be used to drain the congested blood vessels in the matrix of the nails as a result of traumatism[2].

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[1] आरेति, आरेव आरा असिः चर्म्मकाराणां शस्त्रं। तत्र तल्लान्तरम् :—

आरा द्व्यष्टाङ्गुलयामा कर्त्तव्या तु विशाम्पते।
तिलप्रमाणन्तु फलं तस्याः कार्य्यं समाहितं।
दुर्व्वाङ्कुरपरीणाहं वृत्तं गोपुच्छसन्निभं।

Nivandha Saṅgraha, I. viii.

[2] व्यधने कर्णपालीनां युथिका मुकुलानना।
आरार्द्धाङ्गुल वृत्तास्या तत्प्रवेशो तथोर्द्धतः॥
चतुरस्रा तया विध्येच्छोथं पक्वाम संशये।
कर्णपालीच्च वहलां वहलाया न च शस्यते॥
सूत्रा विभागगुषिरा व्याङ्गुला कर्णवेधनी।

Aṣṭāṅga Hṛdya Saṁhitā. I. xxvi.

सम्प्रति कर्णपालि व्यधन योग्यानि शस्त्राणि वक्तुमाह व्यधने इत्यादि कर्णपालीनां कर्णलतानां व्यधने व्यधनविषये यूथिका यूथिका नाम शस्त्रं योज्यं। कीदृशी? मुकुलानना मुकुलवत् प्रकृतत्वात् यूथिका मुकुलवत् आनन मुखं यस्याः सा तथाविधा। आरेत्यादि अर्द्धाङ्गुलं परिमान वृत्त वर्त्तुलं आस्यं मुख यस्याः सा तथा अर्द्धाङ्गुलवृत्तास्या, तथा स एव अर्द्धाङ्गुलप्रमाणः प्रवेशः प्रवेशन यस्याः सा तथाविधा तत् प्रवेशा तथा ऊर्द्धतः वृत्तार्द्धाङ्गुलादुपरिष्टात् तथा अर्द्धाङ्गुल परिमाणैव चतुरस्रा चतुष्कोणा सा आरा कथ्यते।

It is also said to have been used for perforating a thick lobule of the ear, though for this purpose another instrument called karṇa-vedhanī or ear-perforator—a needle specially meant for perforating the lobules of the ears,—is mentoined. It is three aṅguli long, having a slit or eye in the three-fourths of its length. The barbers used a similar needle to perforate the ears on the ceremony of tonsure.

For piercing the lobule of the ear, another instrument is mentioned. It is called jūthikā, from its end resembling in shape the conical bud of jūthikā flower (Jasminum Auriculatum).

Suśruta uses ārā or pāṇimantha to perforate the bone in diseases of the medullary canal caused by the obstructed and deranged air[1]. He next introduces one end of a tube open at

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एतेन आराया: फल' एकाङ्गुलपरिमितमिति फलति तव प्रथमार्द्धाङ्गुल' ह्रस्वमपरार्द्धाङ्गुल' चतुरस्र' तयोरुभयभागयोर्मध्ये अयस्थयतुरस्रो भाग: प्रवेशयोग्य इति सूचित'। तथा आरया पक्काम संशये अयं शोथ: पक्व आमोवेति संशये सति तादृश' शोथं विधेयत्, तथा वहलां अतिमांसलां कर्णपालीञ्च तया विधेयदिति योज्यं। वहलामित्यन्तेन च्छेद:। वहलाया-मित्यादि वहलाया: अतिमांसलाया: कर्णपाल्या: व्यधने कर्णवेधनी नाम्नी सूची च शस्यते। कीदृशी? त्रिभागशुषिरा, त्रिभाग: शुषिरं शून्यं यस्या: सा तथाविधा त्रिभागशुषिरा तथा वाङ्गुला अङ्गुलत्रयदीर्घा। न केवलमारा वहलाया: कर्णपाल्या व्यधने शस्यते अपि तु कर्णवेधनी नाम्नी सूची च शस्यते इत्यर्थ:। कर्णवेधनीं सूचीं अस्मद्देशीया नरसुन्दरा कर्णवेधनार्थं व्यवहरन्ति। अतोऽपं वाहुल्यवर्णनेति।

Vāgbhaṭārtha Kaumūdī. I. xxvi.

[1] निरुद्धेऽस्थनि वा वायौ पाणिमन्थेन दारिते।
नाड़ीं दत्वास्थनि भिषक् चूषयेत् पवनंवली॥

Suśruta Samhitā. IV. iv.

निरुद्धे इत्यादि। वलवान्मांसं शस्त्रेण विपाट्य अस्थि पाणिमन्थेन अराशस्त्रेण विद्ध्वा तत्र रन्ध्रे द्विमुखीं नाड़ीं प्रणिधाय सुखमारुतं चूषणेन लवनापकर्षणं करणीयमिति।

Nivandha Saṁgraha. IV. iv.

both ends into the canal through the hole in the bone, while through the other end the surgeon sucks out the air by his mouth.

For perforating the ears of the elephants, a similar needle is recommended by Pālakāpya. It is known as karmāra or nālī.

17. Vetasapatraka.

It is a long sharp cutting instrument shaped like the leaf of the rattan (Calamus Rotang). Its edge is finely serrated and very sharp. The blade and handle are equal in length, measuring four aṅguli. Bhoja says: "The blade is one aṅguli wide"[1]. It is said to have been used for puncturing vessels in phlebotomy[2].

18. Vaḍiśa or sharp hook.

In shape it is described to resemble the ordinary fish-hook. Bhoja describes the total length to be six aṅguli, its hook being half an aṅguli and its handle five and a half aṅguli long. The end is bent; the curvature varies and may be shaped like a half-moon[3].

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[1] वेतसपत्रमिति, वेतसपत्रमिव वेतसपत्रमव भोजः—

तीक्ष्णमङ्गुल विस्तारं चतुरङ्गुलायतं।
अङ्गुलानि तु चत्वारि ह्रस्वं कार्यं विजानता॥

Nivandha Saṁgraha, I. viii.

[2] वेतस व्यधने।

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

वेतसपत्रादि शस्त्रमाह वेतसमित्यादि वेतस वेतसपत्र नामशस्त्रं सिरादीनां व्यधन कर्म्मणि-योज्यं। वेतसपत्रवद्ह्रस्वत्वासस्य वेतस वेतसपत्र वेत्ति संज्ञा।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

[3] वड़िशमिति वड़िशतुल्यं वड़िशं मत्स्यवेधनीमाहुः। तत्र तल्लक्षणं :—

वड़िशे चापि कर्त्तव्ये प्रमाणे तु षड़ङ्गुले।
स्यानतन्तु तयोरेकमेकं नात्यायतं भवेत्।

Suśruta says[1] : The end of the hook is sharply edged and is said to have resembled the new leaf of Java (Hordeum vulgare).

It is recommended by Suśruta[2] to be used for extraction of foreign bodies, *e.g.*, the extraction of stone from the urethra. Its use is also mentioned for transfixing the membranous expansion in the operation for pterygium[3] and for fixing and dragging the uvula and tonsil before the performance of any operation on these parts[4]. Cakradatta[5] mentions its use for fixing a growth, before its excision by the knife.

अर्द्धापद्माङ्कुलं ह्यन्तं शिषं कार्य्यं मुखं तयोः।
अर्द्धचन्द्राकृति वक्त्रं कार्य्यं नात्यानतस्य तु।
खानतं नामयेत् तत्र वड़िशञ्चाभिषग्वरः।
ह्यन्तायोरन्तरं स्याद् यावदर्द्धाङ्कुलं मतं।

Nivandha Saṁgraha, I. viii.

[1] वड़िशोदन्तशङ्कुयाननाग्रे तीक्ष्णकण्टक प्रथमयवपत्रमुखे।

Suśruta Saṁhitā, I, viii.

[2] यदृच्छया वा सुचमार्गप्रतिपन्नामन्तरासक्तां शुक्राश्मरीं शर्करां वा स्रोतसा अपहरेत् एवं चाशक्यं विदार्य्य वा नाड़ीं शस्त्रेण वड़िशेनोद्धरेत्।

Suśrutā Saṁhitā, IV. vii.

[3] यहणीशुण्डिकार्म्मादेर्वड़िशः सुनताननः॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi

वड़िशशस्त्रमाह यहणे इत्यादि सुष्ठु नतं अङ्कुशवत् नमस्कृतं आननं मुखं यस्य स तथाविधः सुनताननः वड़िशं मत्स्यवेधनवत् वड़िशीनाम शस्त्रं स्यात्। स च शुण्डिकार्म्मादेर्यहणे योज्यं। आदिपदेण उपजिह्विकादे परिग्रहः।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

[4] पिड़कामुत्तमाख्याञ्च वड़िशेनोद्धरेद्भिषक्।
उद्धृत्य मधुसंयुक्तैः कषायैरवचूर्णयेत्॥

Suśruta Saṁhitā, IV. xxi.

[5] उत्तमाख्यान्तुपिड़कां संक्षिप्य वड़िशोद्धृताम्।

Cakradatta, Śukradoṣa Cikitsā.

It was also used for fixing any growth in the eye, previous to its excision by the maṇḍalāgra[1]. For this purpose the Greeks used the vulsellum (myzon). Aetius says: "If there is a large and malignant excrescence in the angle of the orbit, the enlarged part must be seized with vulsella and cut off."[2]

Evidently vaḍiśa was used on many occasions when in modern times we use the dissection forceps to steady a part before excision.

Vaḍiśa is described in the Aśvavaidyaka[3] to have been similarly used during the operation of pterygium in horses.

Pālakāpya[4] mentions vaḍiśa which is described as eight aṅguli long, the end being rounded like a wheel. It is to be used for raising the membranes of the eye globe.

Sharp hooks were used by the Greeks and Romans, for similar purposes. The use of the sharp hook for fixing the pterygium is mentioned by Celsus[5], Aetius[6], Paul[7] and Albucasis[8].

Its use in the excision of the tonsil is mentioned by Paul[9]. After the patient being placed in the proper position, he narrates: "We take a hook (tenaculum) and perforate the

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[1] See foot notes 1, 2 and 3, P. 227.

[2] Aetius. vi. 74.

[3] चितौ निपात्य तुरगं ततोनेत्रं प्रसारयेत्।
क्षतकर्म्मा भिषग्विद्वान् वड़िशेनाचिवर्त्म नि॥

Aśvavaidyka, XXX. v. 32.

[4] वड़िशं चक्रायमष्टाङ्गुलप्रमाणमक्ष्णोः पटलोद्धरणार्थं चेति।

Palakāpya, III. xxx.

[5] Celsus. VII. vii.

[6] Aetius. Tet. ii, iii, 60.

[7] Paul. VI. xviii.

[8] Albucasis. Chirrug. ii, 16.

[9] Paul. VI. xxx.

tonsil with it, and drag it outwards as much as we can without drawing its membranes along with it, and then we cut it out by the root with the scalpel suited to the hand, called ancylotomus, for there are two such instruments, having opposite characters".

19. Danta śaṅku or tooth-scaler.

Its head is half an aṅguli long. It is quadrangular in shape and has a sharp edge. Suśruta [1] describes the end as slightly bent, sharp and shaped like the fresh leaf of Java. Bhoja [2] describes the end to be like that of the vrīhimukha.

Vāgbhaṭa[3] describes a similar instrument called dantalekhana or tooth-scaler. It is also quadrangular in shape, one side being sharp-edged and the opposite side little lengthened. It is

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[1] See foot note 1. P. 265.

[2] एवं हि क्रियते एतौ दशशङ्कुर्विजानता ।
शङ्कु वच्च मुखं तस्य कार्य्यमर्द्धाङ्गुलायतम् ॥
चतुरस्रं समञ्चैव तीक्ष्णधारं समाहितं ।
इत्ताग्रं तस्य कर्त्तव्यं शस्त्रं व्रीहिमुखाकृति ।
कृपालिकां शर्करांच्च दन्तस्थान्तेन शोधयेत् ॥

Nivandha Saṁgraha, I. viii.

[3] एकधारं चतुष्कोणं प्रहृद्वाकृति चैकतः ।
दन्तलेखनकं तेन शोधयेद्दन्तशर्करान् ॥

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

दन्तलेखन शस्त्रमाह एक धारमित्यादि एका धारा यस्य तत् एकधारं चत्वारः कोणा यस्य तत् चतुष्कोणं कोणः कोणा इति यस्य प्रसिद्धिः तथा एकतः एकदेशात् प्रहृद्वा वर्द्धनशीला आकृतिः आकारो यस्य तत्तथाविधं प्रहृद्वाकृति दन्तलेखनं दन्तलेखनाख्यं शस्त्रं स्यात् तेन दन्तलेखनाख्येन शस्त्रेण दन्तशर्करान् दन्तनिवद्धान् शर्कराख्यान् लेखयेत् कर्शयेदित्यर्थः । दन्तालिख्यन्ते अनेनेति दन्तलेखनं दन्तशर्करा पाथरि इति लोके ।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

recommended to be used for the extraction of sordes and tartar from the teeth [1].

The procedure of the operation of tooth-extraction is not described in detail in the medical books of the Hindus. But the operation seems to have been well known, for Suśruta distinctly advises the students to practise the operation of extraction on the fruits of Panas (Atrocarpus Integrifolia), Vimbī (Cephalandra Indica), Vilva (Ægle Marmelos) and on the teeth of the dead animals [2]. He also advises us to extract the wisdom teeth and to apply cautery to their sockets [3]. Also when a tooth becomes loose he directs us to extract it and apply cautery to the socket [4]. In the treatment of sinus caused by carious tooth, he advises us to extract the tooth, otherwise the sinus would extend down to the inferior maxillary bone [5].

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[1] शस्त्रेण दन्तवैदर्भं दन्तमूलानि शोधयेत् ।

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अहिंसन् दन्तमूलानि शर्करासमुद्धरेद् भिषक् ।

Suśruta Saṁhitā, IV. xxii.

[2] See foot note 2. P. 280.

[3] उद्धृत्याधिकदन्तन्तु ततोऽग्निमवचारयेत् ।
क्रिमिदन्तक-वच्चापि विधिः कार्य्यो विजानता ॥

Suśruta Saṁhitā, IV. xxii.

[4] चलमुद्धृत्य च स्थानं विदहेच्छुषिरस्य च ।

Ibid.

[5] यन्दन्तमधिजायेत नाड़ी तंदन्तमुद्धरेत् ।
क्षित्वा मांसानि शस्त्रेण यदि नोपरिजीभवेत् ॥
शोधयित्वा दहेदापि क्षारेण ज्वलनेन वा ।
भिनत्त्यु पेचिते दन्ते हनुकास्थि गतिध्रुवं ॥
समूलं दशनं तस्मादुद्धरेद भग्नमस्थि च ॥
उद्धृतेतूत्तरे दन्ते सशूले स्थिरवन्धने ॥

Ibid.

Pālakāpya[1] mentions the extraction of tooth of the elephant by means of enīpada which is an iron bar, thirty-two aṅguli long and equal to the tooth in circumference.

Paul says[2] : "The laminæ which unite to them (the teeth) we may remove as may appear proper, with the concave part of a specillum, a raspatory, or a file." The operation of tooth-extraction was however, not liked by the ancient Greeks as cases in which the operation proved fatal, occurred in their practice. Cælius Aurelianus, Herophilus, and Galen disapprove in general of the operation, except in extreme cases.

It would, no doubt, be interesting to know that in ancient India, the Hindus knew how to make false teeth to be used by men who have lost them either by accident or by extraction by the dentists. In 1194 A.D., Sahabuddin defeated Jayacandra in battle, "and the incident of the body of the rāja being recognised by his false teeth[3]—a circumstance which throws some light on the state of manners" is well known.

20. Eṣaṇī or sharp probes.

"The probes", says Caraka [4], "are of two kinds, the hard or

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[1] द्वात्रिंशदङ्गुलायतदशनपरिनाहेन लौहदण्डेन ।
एनीपदेन कुर्य्याद्व्रणं तयोः सम्यक् ॥
व्रीहिमुखेन च परिशोध्य सर्व्वसाम्ना दन्तमूलेषु ।
उष्णोदकघौतेषु मधुसर्पिः पूरणं दद्यात् ॥

Pālakāpya, III. xviii.

[2] Paul. VI. xxviii.

[3] Elphinstone's History of India, P. 365, 5th Ed.

[4] द्विविधामेषणां विद्यान्मृदौच्च कठिनामपि ।
उद्दिष्टैरुभिर्नालैर्लौहानां वा शलाकया ॥
गम्भीरमांसगे देशे पार्श्वे लौहशलाकया ।
एषां विद्याद् व्रणं नालैर्विपरीतमतो भिषक् ॥

Caraka Saṁhitā, VI. xiii.

metallic probes, and the soft probes such as the young stems of plants. The hard probes are required for deep sinuses in the fleshy parts and the sides of the body, while the softer varieties are used for probing the superficial sinuses". The ends of the probes are generally shaped like the head of the earth-worms[1]. Suśruta[2] describes them to be eight aṅguli long. They are to be used as probes to ascertain the direction of sinuses.[3] The blunt probes have been described before under the śalākās.[4]

The sharp probes have the shape of a needle and are six aṅguli long. The other end carries an eye through which is put one end of a caustic thread (*i.e.,* thread soaked in caustic lotion and then dried). The probe is to be used for piercing the tissues through the blind end of the sinus. The end of the thread is next to be withdrawn from the eye of the probe and a tight knot applied with the other end. The intervening bridge of tissues is thus gradually cut and the sinus opened. If the cord be found inefficient for the purpose, a second thread is to be tied similarly.[5]

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[1] एषणी गण्डुपदाकारमुखी ।

Suśruta Saṁhitā, I. viii.

[2] तत्र नखशस्त्रैषण्यावष्टाङ्गुले ।

Ibid.

[3] गतेरन्वेषणे श्लक्ष्णा गण्डुपदमुखैषणी ।

Aṣṭāṅga Hṛdya Saṁhitā, I. xxvi.

एषाख्यस्य शस्त्रमाह गतेरित्यादि एषणीनाम शस्त्रं गतेः नाड़ीव्रणस्य पूयादिपथस्य अन्वेषणे अन्यवेक्षणे योज्यं । सा चैषनी श्लक्ष्णा कोमलस्पर्शा, तथा गण्डुपदमुखा, महीलता मुखाकार मुखा च भवति ।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

[4] See page 155-7.

[5] कृशदुर्व्वलभीरूणां नाड़ीमर्म्माश्रिताच या ।

क्षारसूत्रेण तां छिन्द्यान्न तु शस्त्रेण बुद्धिमान् ॥

This method of treatment is recommended for the weak and timid patients. The needle-shaped probe is also to be used in the extirpation of new growths by means of caustic threads. Cakradatta[1] also describes this operation; evidently he copies it from Suśruta. In the Yogaratnākara[2] the verses describing the operation are also quoted. Vāgbhaṭa also mentions a needle-shaped probe for the same purpose.[3]

In treating of fistula-in-ano, Paul quotes from Hippocrates and says[4] :—"For Hippocrates directs us to pass a raw thread,

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एषणी गतिमन्विष्य चारसूत्रानुसारिणीम् ।
सूचीं निदध्याद्गत्यन्ते तथोन्नम्याग्र निर्हरेत् ॥
सूत्रसान्तं समानीय गाढ़वन्धं समाचरेत् ।
ततः चार वलं वीक्ष्य सूत्रमन्यत् प्रवेशयेत् ॥
चाराक्रं मतिमान् वैद्यो यावन्नच्छिद्यते गतिः ।
भगन्दरेऽप्येष विधिः कार्य्यः वैद्येन जानता ॥
अर्ब्बुदादिसु चोत्तिष्य मूलि सूत्र निधापयेत् ।
सूचीभिर्यावक्त्राभिराचित वा समन्ततः ।
मूलि सूत्रेण वध्नीयाच्छिन्ने चोपचरेद्व्रणः ॥

Suśruta Saṁhitā, IV. xvii.

[1] These verses are quoted in the Cakradatta, Nāḍivraṇa Cikitsā.

[2] Also quoted in the Yogaratnākara, P. 346.

[3] भेदनार्थेऽपरा सूचीमुखा मूलनिविष्टखा ।

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

अपरमन्वेषणी शस्त्रमाह । भेदनार्थं इत्यादि भेदनार्थं नाड़ीव्रणानां गतिभेदनर्थं अपरा पूर्व्वोक्ताया एषण्या अन्या सूचीमुखा सूच्याकार मुखा स्यात् तथा मूलि मूलदेशे निविष्टं, सूत्रनिवेश योग्यं ख छिद्रं यस्याः सा मूलनिविष्टखा सच्छिद्रमूलमित्यर्थः । असा एषण्यामूलि छिद्रकरणं चारक्रासूत्रनिवन्धनार्थं । तेन प्रभिन्न द्वारनिष्काशितेन दृढ़वन्धेन चारसूत्रेण नाड़ीव्रणः प्रकाश्यते ।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

[4] Paul. VI lxxviii.

consisting of five pieces, through the fistula by means of a probe having a perforation, or a double headed specillum; and to tie the ends of the thread and tighten it every day until the whole intermediate substance between the orifices be divided and the ligatute fall out". Hippocrates [1] describes minutely the apolinose and recommends it for those who from timidity avoid a surgical operation. Celsus recommends the thread to be smeared with some escharotic ointment. The process, he says, is slow but free from pain[2]. Albucasis [3] also approves of the operation according to circumstances. The operation called apolinose *i.e.*, by the ligature, is very celebrated. Ambrose Pare, Foubert, Camper, Giudo de Cauliaco and Rogerius approve of the ligature. It has been recommended by some of the modern surgeons[4]. The operation is still practised in India by the Madrasi specialists for fistula-in-ano.

Vāgbhaṭa [9] describes copper probes having the sharp ends shaped like the buds of Kuravaka (Baleria Cristata) to be used in

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[1] Hippocrates. 'De Fistulis'.

[2] Celsus. vii. 4.

[3] Albucasis. Chirrug. ii. 80.

[4] Lancet. vol. 1. 1845, new series.

[9] तास्त्री शलाका द्विमुखा मुखे कुरवकाकृतिः।
लिङ्ग नाशं तथा विध्येत् ॥

Aṣṭāṅga Hṛdaya Saṁhitā. I. xxvi.

शलाका शस्त्रं अङ्गुलि शस्त्रञ्चाह तास्त्रीत्यादि द्विमुखा, द्विधारा, मुखे, मुखप्रदेशे कुरवकाकृतिः, रक्तझिण्टीपुष्प सुकुलकारा, तास्त्री, तास्त्रमयी, शलाका, शलाका शस्त्रं स्यात्। तया शलाकया लिङ्गनाशं, कफोत्थं पटल संज्ञकं चक्षुरोग विशेषं विध्येत्। विध्येदित्यनेन च्छेदः।

Vagbhatārtha Kaumūdī I. xxvi.

the operation of cataract. Suśruta[1] describes such a probe to be eight aṅguli long, made of copper, or iron, or gold, the ends being shaped like buds. A thread is spirally twisted round the middle of the instrument for a length of a thumb's breadth, to afford a firm grasp by the surgeon's fingers. This instrument must not be rough, thick or very sharp, for then there would be a greater chance of the eye being injured more than is necessary and at many places. So also in couching of cataract, Celsus says: "Then a needle is to be applied, sharp so as to penetrate, but not too fine."[2]

Pālakāpya[3] mentions eṣaṇī in the surgical treatment of diseases of the elephants. He describes three probes,—smooth and shaped like the collyrium rods. They are recommended to be ten, twenty and thirty aṅguli long respectively.

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[1] शलाका कर्कशाशूलं खरा दोषपरिप्लुतिं ।
व्रणं विशालं स्थूलाभा तीक्ष्णा हिंसादनेकधा ॥
जलास्रावन्तु विषमा क्रियासङ्गमथास्थिरा ।
करोति वर्जिता दोषैस्तस्मादेभिर्हिता भवेत् ॥
अष्टाङ्गुलायता मध्ये सूत्रेण परिवेष्टिता ।
चङ्गुष्ठ पर्व्वसमिता वक्रयोर्म्मुकुला कृतिः ॥
ताम्रायसी शातकौम्भी शलाका स्यादनिन्दिता ।

Suśruta Saṁhitā, VI. xvii.

[2] Celsus. VII. viii.

[3] स्थिरा सृष्टी च कर्त्तव्या व्रणानामेषणी भवेत् ।
वृत्ता गण्डुपदमुखी प्रमाणे विंशदाङ्गुली ॥
सुवर्णरूप्यताम्राणामायसी शङ्खजाऽपि वा ।
दन्तास्थिवेनुदारूणामेषणी दारूणा भवेत् ॥

Pālakāpya, III. i.

एषणी दशाङ्गुला विंशत्यङ्गुला विंशदङ्गुला यथायोगमञ्जनशलाकाकृति सुखतः ग्रन्था समा चैवमेतास्विस्र एषण्यः प्रमाणतः कार्य्याः ।

Ibid, III. xxx.

The operation of couching for cataract is essentially an Indian operation; and Suśruta describes the operation minutely as follows :—

The operation of couching for cataract.

Suśruta says[1] : "Now we shall describe the treatment of cataract caused by phlegm. If inside the crystalline lens, anything is seen like a half-moon-shaped drop of water or pearl, hard, irregular

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[1] श्लैष्मिके लिङ्गनाशे तु कर्म्म वक्ष्यामि सिद्धये ।
नचेदर्द्धेन्दुधर्म्माम्बुविन्दुमुक्ताकृतिः स्थिरः ॥
विषमो वा तनुर्म्मध्ये राजिमान्वा बहुप्रभः ।
दृष्टिस्थो लक्ष्यते दोषः सरुजा वा सुलोहितः ॥
स्निग्धस्विन्नस्य तस्याथ काले नात्युष्णशीतले ।
यन्त्रितस्योपविष्टस्य स्वान्नासां पश्यतः समं ॥
मतिमान् शुक्लभागौ द्वौ कृष्णाम्बुक्ताम्बुपाङ्गतः ।
उन्मील्य नयने सम्यक् शिराजाल विवर्ज्जिते ॥
नाधो नोर्द्ध च पार्श्वाभ्यां छिद्रे देवकृते ततः ।
शलाकया प्रयत्नेन विश्वस्तं यववक्त्रया ॥
मध्य प्रदेशिन्यङ्गुष्ठस्थिरहस्त गृहीतया ।
दक्षिणेन भिषक् सव्यं विध्येत् सव्येन चेतरत् ॥
वारिविन्दुागमः सम्यक् भवेच्छब्दस्तथा व्यधे ।
संसिच्य विद्धमात्वन्तु योषित्स्तन्येन कोविदः ॥
स्थिरे दोषे चले वापि खे दयेदचि वाक्षतः ।
सम्यक् शलाकां संस्थाप्याभ्यङ्गैर निलानाशनैः ॥
शलाकाग्रेण तु ततो निर्ल्लिखेद्दृष्टिमण्डलं ।
विध्यतो योऽन्य पार्श्वं श्वास्तं रुद्धा नासिकापुटं ॥
उच्छ्रिङ्गनेन हर्त्तव्यो दृष्टिमन्डलजः कफः ।
निरभ्र इव घर्म्मांशुर्यदा दृष्टिः प्रकाशते ॥
तदासौ लिखिता सम्यग् ज्ञेया याचापि निर्व्यथा ।
ततो दृष्टेषु रूपेषु शलाकामाहरेच्छनैः ॥

or thin, striated or shinning, painful or red, caused by the deranged humours, the oleaginous applications and fomentations are to be tried first at a time when it is neither hot nor cold; then he (patient) is to be ligatured after having him seated conveniently, and should be directed to look towards his own nose. The intelligent (surgeon), then seperating the white part from the black part and the external canthus of the eye after opening it, avoiding the vascular network, and leaving the parts above and below intact, is to pass a yavamukhī śalākā (or sharp needle having its end resembling a wheat) through a natural opening on the side, steadily holding the rod with the thumb, index and middle fingers. If the operation be required on the right eye, the left hand, and if on the left eye, the right hand of the surgeon should use the needle in puncturing. A successful puncture is known by the escape of a drop of fluid and an audible sound. The experienced surgeon is to sprinkle woman's milk just after the puncture, and keeping the needle there, whether the deranged humour be movable or not, should apply fomentations externally by means of oily remedies for the deranged air. The crystalline lens is next to be scarified by the sharp end of the needle. Then keeping the needle fixed in the side of the eye, the patient should be directed to sniff so as to destroy the phlegm of the lens. The proper scarification will be indicated when the lens appears brilliant as the sun uncovered by clouds. Then the vision being clear, the needle in the side of the eye, is to be removed; and the eye is to be well

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घृतेनाभ्यज्य नयनं पक्ष्मपट्टेन वेष्टयेत्।
ततो गृहे निरावाधे शयीतोत्तान एव च॥

Suśrutā Samhitā, VI. xvii.

soaked with ghee (melted butter) and bandaged properly." Vāgbhaṭa also discribes the operation similarly.[1]

To this we may compare the account of the operation as given by Celsus. He "lays it down as a rule, that when the suffusion is small, immovable, and of the colour of sea water, or of shinning iron, and if a small degree of light can be percieved at the side, there is reason to hope well of the case. He forbids us to operate until the disease has attained a proper consistence. He directs us to place the patient opposite the operator, who is to sit on a higher seat, while the patient's head

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[1] अथ साधारणे काले शुद्धसंभोजितात्मनः ।
दीप्ते प्रकाशे पूर्व्याह्णे भिषग् जानुच पीठगः ॥
यान्तितस्योपविष्टस्य स्निग्धाचस्य सुखानिलैः ।
अङ्गुष्ठ स्पर्दिते नेत्रे दृष्टौ दृष्टोत्प्लुतं मलम् ॥
स्रवासां प्रेक्षमाणस्य निष्कम्पं मुष्टिं धारिति ।
कृष्णादर्द्धाङ्गुलं मुक्त्वा तदर्द्धाङ्गमपाङ्गतः ॥
तर्ज्जनीमध्यमाङ्गुष्ठैः शलाकां निश्चलं धृताम् ।
दैवच्छिद्रं नयेत् पार्श्वादूर्द्धमामस्थयन्निव ॥
सव्यं दक्षिणहस्तेन नेत्रं सव्येन चेतरत् ।
विध्येत् सुविद्धे शब्दः स्यादरुक चाम्बुलवस्रुतिः ॥
सान्वयन्नातुरं चानु नेत्रं स्तन्येन सेचयेत् ।
शलाकायास्ततोऽग्रेण निर्लिखेन्नेत्रमण्डलं ॥
अबाधमानः शनकैर्नासां प्रतिनुदंस्ततः ।
उच्छिञ्चनाच्चापहरेद् दृष्टिमण्डलगं कफम् ।
स्थिरे दोषे चले चापि स्वे दग्धेदचिवाच्चतः ॥
अथ दृष्टेषु रूपेषु शलाकामाहरेच्छनैः ।
घृताप्लुतं पिचुं दत्त्वा बद्धाक्षं शाययेत्ततः ॥
विद्वादन्येन पार्श्वेन तमुत्तानं द्वयोर्व्यधे ।
निवाते शयनेऽभ्यक्तशिरः पादं द्वितेरतम् ॥

Aṣṭāṅga Hṛdaya Saṁhitā, VI, xiv.

is held by an assistant. The sound eye is to be previously covered up with wool. If the left eye is affected, the operator must use his right hand, and *vice versa*. A needle which is sharp and not too slender is to be passed direct through the two coats at a place intermediate between the temporal angle and the black of the eye, and towards the middle of the cataract. When the needle has perforated far enough, which is readily known by the abscence of resistance, it is to be turned so as gradually to remove the cataract below the region of the pupil and this object being attained it is to be strongly pressed to the lower part. If it remain there the operation is completed, but if it return, it is to be cut and torn by the needle into many pieces, in which state they are easier depressed, and prove less troublesome. The needle is then to be drawn out direct and soft wool smeared with white of an egg, and other anti-inflammatory applications are to be used. Quiet, restricted diet, and soothing treatment will be proper. [1]" Paul [2], Mesue [3], Albucasis [4], Rhazes [5] and others also describe the operation of couching in similar terms. Albucasis gives figures of these needles.

The operation is still practised in India by the māls who consider themselves specialists in diseases of the eyes.

21. Sarpāsya.

Vāgbhaṭa describes an instrument having its end resembling

[1] Celsus. vi. See Adam's Commentary to Paul VI. xxi.
[2] Paul. VI. xxi.
[3] Mesue. De Aegr. oculi, 15.
[4] Albucasis. Chirrug, II. 23.
[5] Rhazes. Ad mansor.

the mouth of a snake [1]. The blade is said to be half an aṅguli long. It is advised to be used for excision of the nasal and aural polypi.

The fact that it was able to work inside the nose and the auditory canal shows that it could not have been of any great breadth, possibly less than a quarter of an inch at the most. The exact shape of the sarpāsya can not be determined with certainty. The Greeks however used for the same purpose, "a polypus scalpel, having its extremity shaped like a myrtle leaf," which was a double instrument, the other end being a scoop [2].

Gold or Silver knife.

To cut the navel cord, Caraka [3] recommends the use of a knife, made of gold, or silver, or iron. To make gold and silver knives of sharp edges seems absonous to our reason, but we must remember that to cut the navel cord, a very keen edge is not required, and even now the purpose is often served by the native dhāis with a piece of split bamboo.

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[1] सर्पास्य घ्राणकर्णार्शच्छेदनेऽर्धाङ्गुलं फलं ॥

Aṣṭāṅga Hṛdaya Saṁhitā. I. xxvi.

सर्पास्यं नाम शस्त्रमाह। सर्पास्यं इत्यादि सर्पास्यं नाम शस्त्रं नासिका कर्णार्शसां छेदने योज्यं तच्च फलं अङ्गुलार्धपरिमितं अर्धाङ्गुलपरिमित फलकमित्यर्थः। अस्य सर्पमुखसदृश मुखत्वात् सर्पास्यमिति संज्ञा।

Vāgbhaṭārtha Kaumūdī. I. xxvi.

[2] Paul. VI. xxv.

[3] See foot-note 4. P. 65.

PRATUDA.

Suśruta mentions it as a knife to be used for making scarifications on the body of a lunatic.[1]

The mode of holding the sharp instruments.

Suśruta says[2]: "The vṛddhipatra is to be held at the junction of the handle and the blade; and all instruments used for incision should be held similarly. The vṛddhipatra and maṇḍalāgra, if used for scarification, should be held with the hand raised a little; when used for evacuating abscesses, they, as well as all other instruments, should be held by the fore part of the handle. But in the case of children, old or delicate or timid persons, women, and kings and princes, abscesses should be evacuated with the trikūrccaka. The vrīhimukha is to be held with the thumb and forefinger, its handle being covered within the palm. The kuṭhārikā is to be held in position with the left hand, and struck with the middle finger when let go forcibly from the under surface of the thumb of the right hand. The ārā, karapatra and eṣaṇī should be held at their extremities.

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[1] प्रतुदैर्दारयेत्त्वेनं मर्म्मघातं विवर्ज्जयेत्।
सर्पिर्धानि जरत्कूपे सततं वा निवासयेत्॥

Suśruta Saṁhitā, VI. liii.

[2] तेषामथयोग ग्रहण समासोपायः कर्म्मसु वक्ष्यते। तत्र वृद्धिपत्रं वृन्तफलसाधारणे भागे गृह्णीयाच्छेदनान्येवं सर्व्वाणि। वृद्धिपत्रं मण्डलाग्रञ्च किञ्चिदुत्तानपाणिना लेखने बहुशोऽवचार्य्यं वृन्ताग्रे विस्रावणानि। विशेषेण बालवृद्धसुकुमार भीरु नारीणां राज्ञां राजपुत्राणाञ्च त्रिकूर्च्चकेन विस्रावयेत्। तल प्रच्छादित वृन्तमङ्गुष्ठ प्रदेशिनीभ्यां व्रीहिमुखं। कुठारिकां वामहस्तन्यस्तामितरहस्त मध्यमाङ्गुल्याङ्गुष्ठ विष्टब्धयाभिहन्यात्। आराकरपत्रैषण्यो मूले। शेषाणि तु यथायोगं गृह्णीयात्।

Suśruta Saṁhitā. I. viii.

The other instruments are to be held as required in particular cases." Vāgbhata also gives similar directions [1].

The practical training in surgical operations.

Suśruta says [2]: "Even after a pupil has mastered the whole of the medical treatises, the preceptor should instruct him practically how to perform surgical operations and how to administer oils and other medicines. However learned he may be in books, he cannot be fit for surgical practice, unless he has acquired the practical training. Therefore the preceptor should show his pupils the methods of operations, of incision, excision and division, upwards and downwards on the pumpkin, bottle-gourds, water-melons, and the three varieties of cucumbers—Trapuṣa (Cucumis Sativus), Ervārūka (Cucumis Utillissimus), and Karkarūka (Cucumis Melo).

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[1] छेद भेदेन लेख्यार्थं शस्त्रं हस्त फलान्तरे।
तर्जनी मध्याङ्गुष्टैर्गं ह्लीयात् सुसमाहितः।
विस्रावणादि हस्तायं तर्जन्यङ्गुष्ठकै न च।
तल प्रकृन्त हस्तायं याम्यं व्रीहिमुखं मुखे।
मूलेष्वाहरणार्थानि क्रिया सौकर्य्यतोऽपरं॥

Aṣṭāṅga Hṛdaya Saṁhitā. I. xxvi.

[2] अधिगत सर्व्वशास्त्रार्थमपि शिष्यं योग्याङ्गारयेत्। छेद्यादिषु स्नेहादिषु च कर्म्मपथमुपदिशेत्। सुवङ्मुतोप्यकृत योग्यः कर्म्मस्वयोग्यो भवति। तत्र पुष्पफलालाबू कालिन्दकवपुषेक्षारूककर्कारूक प्रभृतिषु छेद्य विशेषान् दर्शयेदुत्कर्त्तनपरिकर्त्तनानि चोपदिशेत्। इति वस्ति प्रसेवक प्रभृतिषूदकपङ्क पूर्णेषु भेद्य योग्यां। सरोजि चर्म्माख्याततं लेख्यस्य। मृत पशुसिरामृत्पलनालेषुच वेध्यस्य। घृणोपहत काष्ठवेणु नलनालीशुष्कालाबुमुखेष्वेष्यस्य। पनसविम्बीबिल्वफलमज्जमृतपशुदन्तेष्वाहार्य्यस्य। मधूच्छिष्टोपलिप्ते शाल्मलीफलके विस्राव्यस्य। सूक्ष्मघनवस्त्रान्तयोर्मृदुचर्म्मान्तयोश्च सीव्यस्य। पुत्तमय पुरुषाङ्गप्रत्यङ्ग विशेषेषु बन्धयोग्यां। मृदुमांसपेशीषूत्पलनालेषु च कर्णसन्धिबन्धयोग्यां। मृदुषु मांसखण्डेष्वग्निचारयोग्यां। उदक पूर्णघटपार्श्व स्रोतस्यलाबूमुखादिषु च नेवप्रणिधानवस्तिव्रण वस्ति पीड़न योग्यामिति।

Suśruta Saṁhitā, I. ix.

The operation of puncturing or tapping may be demonstrated on leather bags, bladders and pouches, filled with slush; scarifications, on stretched pieces of leather covered with hair; opening on the veins of dead animals or on stalks of water-lily; probing on worm-eaten wood, bamboo, reed, tube or dried bottle-gourd; extraction, on the pulp of jack fruit, the Bael fruit (Ægle Marmelos), Vimbī fruit (Cephalandra Indica) or on the teeth of dead animals. Evacuation on a lump of wax applied to a board of Śālmali wood (Bombax Malabaricum); sewing, on the two ends of a thick piece of cloth or soft leather; bandaging on the limbs of a dummy (human figure made of cloth and clay), bandaging the root of the ear, on a piece of soft flesh, or the stalk of a water-lily; application of cauteries, on pieces of flesh; introduction of tubes for clysters (urethral, rectal and vaginal) and wound-syringe, on the spout of an earthen vessel filled with water, or on the mouth of a bottle-gourd or similar objects."

CHAPTER VII.

THE ANUŚASTRA.

The anuśastra means substitutes for cutting instruments. They are the following[1] :—

1. Bamboo. 2. crystal. 3. glass. 4. ruby. 5. leeches. 6. fire. 7. caustics. 8. the nails. 9. leaves of Goji (Elephantobus Scaber), 10. Śephālikā (Nyctanthe Arbortristris), and 11. Śākhā (Tectona Grandis). 12. young stems of plants. 13. hair 14. finger.

These are advised to be used in case of infants or timid persons or when the proper instruments are not available.[2]

1. Bamboo.

A piece of split bamboo is said to have been used for cutting through and cutting into some parts of the body. It is still used by the native dhāis or midwives for cutting the funis.

A piece of bamboo is directed to be used for applying pressure on small boils to cure them by subsidence [3]. For the same purpose, the pressure of the thumb is also recommended [4].

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[1] अनुशस्त्राणि तु त्वकसारस्फटिककाचकुरुविन्दजलौकाग्निचारनखगोजीशेफालिका-शाकपत्र करीरवालाङ्गुलय इति।

Suśruta Saṁhitā. I. viii.

[2] भिषुनां शस्त्रभीरूणां शस्त्राभावे च योजयेत्।
त्वकसारादि चतुर्व्वर्गं छेद्ये भेद्ये च बुद्धिमान्॥

Ibid.

[3] हृतेषु दोषेषु यथानुपूर्व्वं गन्धौ भिषक् श्लेष्म समुत्थिते तु॥
स्विन्नस्य विस्रापनमेव कुर्य्यादङ्गुष्ठलोहोपलवेणु दर्व्वैः।

Ibid. IV. xviii.

[4] अभ्यज्य स्वेदयित्वा च वेणुनाद्या ततः शनैः।
विस्रापनार्थं मृद्नीयात् तलेनाङ्गुष्ठकेन वा॥

Cakradatta, Vraṇaśothā Cikitsā.

Bamboo is also mentioned to have supplied largely the materials of splints for treatment of fractures and dislocations. For this purpose it is to be split into thin layers[1]. Split bamboo is still used for the treatment of fractures by the kavirājes and might advantageously be used by the modern surgeons as a cheap and easily available material for splint.

Dissection.

It is generally supposed that the practice of dissection of the human body for anatomical studies was unknown to the ancients. But the practice of human dissection is unmistakably referred to in the Suśruta Saṁhitā.[2] Brushes made of bamboo, barks of trees, grass roots, and hairs are mentioned as instruments of dissection. "Thus a body should be secured which is complete in all the parts and which is of a person who was not more than 100 years old, nor who died from the effects of poison or of a chronic disease. Having cleared the intestines of any fæcal matter, the body should be well wrapped either in Muñja (Saccharam Munja), or grass, or barks of trees or hemp etc., put inside a cage which should be firmly fastened, in a solitary spot, in a calm river and thus allowed to decompose. After seven nights, having taken out

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[1] विभग्रञ्च नरं दृष्ट्वा वेणुखण्डेन बन्धयेत्।
सञ्चयेन्नवनीतनैरण्डपत्रैश्च वेष्टयेत्॥

Hārita Saṁhitā, II.I lvi.

[2] तस्मात्समस्तगात्रमविषोपहतमदीर्घव्याधिपीडितमवर्षशतिकं निःसृष्टान्त्रपुरीषं पुरुषमबहुन्यामापगायां निवद्धं पञ्जरस्थं मुञ्जवल्कलकुशशणादीनामन्यतमेनावेष्टिताङ्गमप्रकाशे देशे कोथयेत् सम्यक् प्रकुथितञ्चोद्धृत्य ततो दैवं सप्तरात्रादशौर वालवेणु वल्कल कूर्चानामन्यतमेन शनैः शनैरवघर्षयं स्त्वगादीन् सर्व्वानेव बाह्याभ्यन्तराङ्गप्रत्यङ्ग विशेषान् यथोक्तान् सञ्चयेच्चक्षुषा।

Suśruta Saṁhitā, III. v.

the thoroughly decomposed body, it should be slowly rubbed with a brush made either of Uśīra (Andropagon Muricatus) or hair, or bamboo, or barks of trees, examining at the same time with the eyes, every division and sub-division of the body, external or internal, beginning with the skin, as delineated in the śāstras." Animal anatomy was also thoroughly understood as each part of the body had its own distinctive name.

Hoernle[1] says : "Probably it will come as a surprise to many as it did to myself, to discover the amount of anatomical knowledge which is disclosed in the works of the earliest medical writers of India. Its extent and accuracy are surprising, when we allow for their early age—probably the sixth century before Christ—and their peculiar methods of definition.***Of the practice of such dissection in ancient India we have direct proof in the medical compendium of Suśruta, and it is indirectly confirmed by the statements of Caraka. It is worthy of note, however, that in the writings of neither of these two oldest Indian medical writers is there any indication of the practice of animal dissection."

The Greeks did not practise disection of the human body. "The anatomical knowledge of the Hippocratists was derive chiefly from dismemberment of animals, experience in slaughtering and sacrifices, and from the observation of surgical cases. Systematic dissection of the human body was out of the question owing to the religious precepts which strictly enjoined immediate burial, and to the superstitious horror of the dead which then prevailed. The supposition that outstanding individual investigators, upon rare occasions, did not hesitate to examine

[1] Hoernle. Osteology. Preface. iii.

human bodies or parts of bodies (particularly) bones, in order to correct prevailing opinions, is one which, if not susceptible of direct proof, is at least probable. This supposition, besides being borne out by many statements on the part of ancient writers, is the more probable since tho bodies of savages, traitors and criminals were outside the pale of religious ordinances and were therefore available, as were also accidentally obtained portions of the body, to satisfy the curiosity of scientific investigators. No one of the oft-quoted extracts from the Hippocratic writings, supposed by individual historians to refer to human dissection, is quite conclusive, whilst nowhere is there in the pathology of the day any definite trace of anatomical research upon the bodies of those dead of disease. On the other hand comparisons are frequently instituted by the Hyppocratists referring to facts acquired through zootomy or to anatomico-pathological discoveries such as might have been made in the slaughtering of beasts."[1]

The study of anatomy received its impetus from the Alexandrian School. "Herophiilus improved the technique and developed the terminology of anatomy and enriched it by valuable discoveries made in the dessection of human bodies, particularly in the knowledge of nerves, vessels and viscera, but also in that of the eye. With his works, systematic anatomical investigation may in fact be said to begin."[2]

"Like Herophilus, Erasistratos made a successful study of anatomy, even surpassing the former in knowledge of details, and in a series of observations upon the cadavers of men and

[1] History of Medicine. Neuberger. P. 150.

[2] Ibid. P. 177-8.

animals, corrected his own mistakes as well as those of others. His greatest achievement was in the study of nerves and vessels."[1]

2, 3 AND 4. CRYSTAL, GLASS AND RUBY.

These are recommended to be used for cutting through and cutting into some parts of the body.

Glass vessels for preparing medicines are often mentioned. Śārṅgadhara[2] used it for purifying mercury.

5. LEECHES.

Leeches are described to be the mildest of all means for extracting blood, and are recommended for princes, childern, women, and timid people[3].

Twelve kinds of leeches are described[4]; six of them are poisonous and six, non-poisonous.

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[1] History of Medicine. Neuberger. P. 181.

[2] काचकूप्यां विनिक्षिप्य ताच्च सदस्त्रसुद्रया।
विलिप्य परितो वक्त्रं मूद्रां दत्त्वा च शोषयेत्॥

Śārṅgadhara Saṁgraha, II. xii.

[3] नृपाश्चबालस्थविर भीरुदुर्ब्बलनारी सुकुमाराणामनुग्रहार्थं परमसुकुमारोऽयं शोणितावसे च नोपायोऽभिहितो जलौकस:॥

Suśruta Saṁhitā, I. xiii.

[4] जलमासामायुरिति जलायुका जनमासामोक इति जलौकस:। ता द्वादश तासां सविषा: षट् तावत्य एव निर्व्विषा:। तत्र सविषा: कृष्णा कर्ब्बुरा अलगार्द्दा इन्द्रायुधा सामुद्रिका गोचन्दना चेति। तास्वञ्जनचूर्णवर्णा पृथुशिरा: कृष्णा। वर्ष्मिमत्स्यवदाभुता छिन्नोन्नत-कुक्षि: कर्ब्बुरा। रोमशा महापार्श्वा कृष्णसुक्ष्मलगर्द्दा। इन्द्रायुधवदूर्द्ध्वराजिभिश्चित्रिता इन्द्रायुधा। ईषदसितपीतिका विचित्र पुष्पाकृतिचित्रा सामुद्रिका। गोवृषवदधोभागे द्विधाभूताकृतिरणुमुखी गोचन्दनेति। ताभिर्दष्टे पुरुषे दंशे श्वयथुरतिमात्रं कण्डूमूर्च्छा

The poisonous leeches are :—

1. Kṛṣṇā :—it is of the colour of black collyrium and has a broad head.

ज्वरोदाहस्कर्दिमदः सदनमितिलिङ्गानि भवन्ति। तच्च महागदः पानालेपननस्य कर्म्मादियुपयोज्यः। इन्द्रायुधादष्टमसाध्यमित्येताः सविषाः सचिकित्सिता व्याख्याताः। अथ निर्व्विषाः। कपिला पिङ्गला शङ्कुमुखी मूषिका पुण्डरीकमुखी सावरिकाचेति। तच्च मनःशिलारञ्जिताभ्यामिव पार्श्वाभ्यां पृष्ठे स्निग्धमुद्गवर्णा कपिला। किञ्चिद्रक्ता ह्रस्वकाया पिङ्गायुगाच पिङ्गला। यकृद्वर्णा शीघ्रपायिनी दीर्घतीक्ष्णमुखी शङ्कुमुखी। मूषिकाकृति वर्णाऽनिष्टगन्धा च मूषिका। मुद्गवर्णा पुण्डरीकतुल्यवक्त्रा पुण्डरीकमुखी। स्निग्धा पद्मपत्रवर्णाष्टादशाङ्गुलप्रमाणा सावरिका साच पञ्चधैं। इत्येता अविषा व्याख्याताः।

तासां प्रग्रहणमार्द्रचर्म्मणान्यैर्व्वा प्रयोगैर्गृह्णीयात्। अथैनां नवे महति घटे सरस्तड़ागोदकपङ्कमावाप्य निदध्यात्। भक्ष्यार्थं चासामुपहरेच्छैवलं वल्लूरमौदकांश्च कन्दांयूथीकृत्य शय्यार्थं तृणमौदकानि च पत्राणि। द्वाहात्त्राहाच्चान्यज्जलं भक्ष्यञ्च दद्यात्। सप्तरात्रात् सप्तरात्राच्च घटमन्यं संक्रामयेत्। भवति चात्र।

स्थूलमध्याः परिक्लिष्टाः पृथ्वो मन्दविचेष्टिताः।
अग्राहिण्योऽल्पपायिन्यः सविषाश्च न पूजिताः॥

अथ जलौकोऽवसेकसाध्यव्याधितमुपवेश्य संवेश्य वा विरूक्ष्य चास्य तमवकाशं मृद्गोमयचूर्णैर्यदरुजः स्यात्। गृहीताश्च ताः सर्षपरजनीकल्कोदक प्रदिग्धगात्रीः सलिलसरकमध्ये मुहूर्त्तस्थितावितृक्रमा ज्ञात्वा ताभीरोगं ग्राहयेत्। सूक्ष्मशुक्लार्द्रपिचुश्लोतावच्छन्नां कृत्वा मुखमपाङ्गयादगृह्णन्त्यै चीरविन्दुं शोणितविन्दूं वा दद्याच्छस्त्रपदानि वा कुर्वीत यद्येवमपि न गृह्णीयात्तदान्यां ग्राहयेत्। यदा च निविशतेऽग्रमुरवदाननं कृत्वोन्नम्य च स्कन्धं तदा जानीयाद् गृह्णातीति गृहन्तीं चार्द्रवस्त्रावच्छन्नां धारयेत् सेचयेच्च। दंशे तोदकण्डूप्रादुर्भावैर्ज्ञानीयाच्छुद्धमियमादत्त इति शुद्धमाददानामपनयेत्। अथ शोणितगन्धेन न मुञ्चेन्मुखमस्याः सैन्धवचूर्णेनावकिरेत्। अथ पतितां तण्डुलकण्डनप्रदिग्धगात्रीं तैललवणाभ्यक्तमुखीं वामहस्ताङ्गुष्ठाङ्गुलीभ्यां गृहीतपुच्छां दक्षिणहस्ताङ्गुष्ठाङ्गुलीभ्यां शनैः शनैरतुलोममनुमार्ज्जयेदासुखाद्गामयेत्तावद्यावत्सम्यग्वान्तलिङ्गानीति। सम्यग्वान्ता सलिलसरकन्यस्ता भोक्तुकामा सती चरेत्। या सीदति न चेष्टते सा दुर्व्वान्ता तां पुनः सम्यग्वामयेत्। दुर्व्वान्ताया व्याधिरसाध्यइन्द्रमदो नाम भवति। अथ सुवान्तां पूर्व्ववत् सन्निदध्यात् शोणितस्य च योगायोगानवेक्ष्य जलौकोव्रणान्मधुनावघट्टयेच्छीताभिरद्भिश्च परिषेचयेद्वमीत वा व्रणं काषाय मधुर स्निग्धशीतैश्च प्रदेहैः प्रदिह्यादिति।

Suśruta Saṁhitā, I. xii.

2. Karvūrā :—it is as long as an eel with elevated stripes across the abdomen.

3. Alagarddā :—it looks as if covered with hair and has large sides and black mouths.

4. Indrāyudhā :—or rain-bow coloured; it has rain-bow coloured longitudinal stripes on the back.

5. Sāmudrikā :—it is of dark yellow colour and has variegated flower like spots on its body.

6. Gocandanā :—it has a bifurcated tail like the scrotum of a bull and a small mouth.

The non-poisonous ones are—

1. Kapilā or the greenish one;—it has its two sides of the colour of orpiment, and on its back, it is smooth and of the colour of a green pea.

2. Piṅgalā or twany;—it is of a reddish-brown colour, has a round body and moves quickly.

3. Śaṅku-mukhī or bluish-red;—it is of the colour of the liver, sucks quickly and has a long sharp mouth.

4. Mūṣikā or rat-like;—it has the shape and colour of a rat's tail and emits a disagreeable smell.

5. Pundarika-mukhi or lotus-faced;—it is of the colour of a green pea and has a mouth liks a lotus.

6. Savarikā;—it is slimy, coloured green like a lotus-leaf and eight angulil long; it is to be used in veterinary practice.

The non-poisonous leeches generally live in meadows and fresh water. They are to be caught with a piece of wet leather and

kept in a new large earthen pot filled with mud, water, green fungi, dry flesh, etc. The water is to be changed every third day and the pot every seventh day.

To apply leeches, the patient is directed to lie down and the part is to be rubbed dry with powdered cow dung and earth. The leech is then to be smeared with a paste containing turmeric, mustard and water, to excite them, washed thoroughly with water and then applied, its body being covered with a piece of wet cloth. To fix it quickly, a drop of milk or blood is to be applied over the diseased part, scarification of which is also recommended instead. When the leech has removed the necessary quantity of blood, a small quantity of salt is advised to be sprinkled upon its head to make it drop off. Then the leech is to be put upon some powdered rice and its mouth is advised to be smeared with oil and salt.

Then it is to be stripped and put in fresh water, and should be used again, if it moved, but if languid, thrown away.

The leech-bites are to be smeared with honey, cold water and astringent substances, or poulticed.

Vāgbhaṭa also gives similar directions for the application of leeches.[1]

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[1] जलौकसस्तु सुखिनां रक्तस्रावाय योजयेत् ।
दुष्टाम्बुमत्स्य भेकाहि शवकोथमलोद्भवाः ।
रक्ताः श्वेता भृशं कृष्णाश्चपलाः स्थूलपिच्छिलाः ॥
इन्द्रायुधविचित्रौर्ध्वराजयो रोमशाश्च ताः ।
सविषा वर्ज्जयेत्ताभिः कण्डूपाक ज्वरभ्रमाः ॥
विषपित्तास्रनुत् कार्य्यं तव गुडाम्बुजाः पुनः ।
निर्व्विषाः श्यावलश्यावा ह्रस्वा नीलोर्ध्वराजयः ॥

Dr. Ray has clearly shown that "the discription of leeches as given by Rhazes agrees almost word for word with that of Suśruta (Sanasrad) in many places". He describes the parallelism at length and comes to the conclusion "of the use of a chapter of the Susruta or some such work[1]".

6 AND 7. FIRE AND CAUSTICS.

The use of cauteries in surgery has been described before under the head of the accessory blunt instuments [2].

कषाय पृष्ठास्तन्वङ्ग्यः किञ्चित् पीतदराश्च याः ॥
ता अप्यसम्यग् वमनात् प्रततञ्च निपातनात् ।
सीदन्तीः सलिलं प्राप्य रक्तमत्ता इति त्यजेत् ॥
अथेतरा निशाकल्कं युक्ते ऽम्भसि परिप्लुताः ।
अवन्तिसोमे तक्रेवा पुनर्याश्वासिता जले ॥
लागयेद घृतसृक्काङ्ग शस्त्र रक्त निपातनैः ।
पिबन्तीरूनहत स्कन्धाश्छादयेन्मृदुवाससा ॥
संपृक्ताङ्गुष्ट शुद्धास्याञ्जलीका दुष्टशोणितम् ।
आदत्ते प्रथमं हंसः चीरं चीरोदकादिव ॥
दंशस्य तोदे कण्डूां वा मोचयेद्वामयेच्च ताम् ।
पटुतैलाक्तवदनां श्लक्ष्ण कण्डन रुचिताम् ॥
रचन् रक्तमदाद् भुयः सप्ताहं वा न पातयेत् ।
पूर्ववत् पटुता दार्ढ्यं सम्यग् वान्ते जलौकसाम् ।
क्लमोऽतियोगाम्मृत्युर्वा दुर्व्वान्ते स्वस्थता मदः ॥
अन्यवान्यच ताः स्थाप्या घटे मृत्स्नाम्बुगर्भिनि ।
लालादिकोथ नाशार्थं सविषाः सुस्तदन्वयात् ॥
अगुद्वी स्रावयेद्दंशान् हरिद्रा गुड़माक्षिकैः ।
शतधौताज्यपिचवस्ततो लेपाश्च शीतलाः ॥

Aṣṭaṅga Hṛdaya Saṁhitā, I. xxvi.

[1] History of Hindu Chemistry, Introduction P. lxviii.

[2] See Page 213-9.

8 AND 14. FINGERS AND NAILS.

The uses of surgeon's fingers and nails in surgical operations has been described before[1].

9,10 AND 11. LEAVES.

Rough leaves such as those of Fig trees (Ficus Indicus), Goji (Elephantopus Scaber), Śephālikā (Nyctanthes Arbor-tristis) and Śaka (Tectonia Grandis) are recommended for scarifying abscesses if they do not heal up after repeated opening by the knife. If there is any formation of pus in the mouth or eyelids, it may be evacuated with these leaves (Susruta)[2]. These leaves are also to be used for bleeding the gums in gingivitis.

To cover the wounds, Suśruta gives a list of leaves to be used according to the nature of the wound and season of the year[3] :—

For air-deranged wounds;—use leaves of Eraṇḍa (Ricinus Communis), Bhūrjapatra (Betula Bhojpatra), Pūtika (Caesalpinia Bonducella) and Haridrā (Curcuma Longa).

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[1] See Page 199–202, and 204–5.

[2] संशोध्यैवमतः कार्य्यं शिरस्येष कुशे तथा।
काकोडुम्बरिका गोजीपत्रैर्विस्रावयेदसृक्॥
Suśrutā Saṁhitā, IV. xxii.

[3] एरण्ड भूर्ज्जपूतीक हरिद्राणान्तु वातजे।
पञ्चमाश्वत्थं यच्च काश्मरी पवनेव च॥
पत्राणि चीरवृक्षाणामौदकानि तथैव च।
दूषिते रक्तपित्ताभ्यां व्रणे दद्याद्विचक्षणः॥
पाठामूर्व्वागुडूचीनां काकमाचीहरिद्रयोः।
पत्रञ्च शुक्लनाशाया योजयेत् कफजे व्रणे॥
Ibid, IV. i.

For bile or blood-deranged wounds;—use leaves of Āśvabala (Basella Rubra), Kāśmarīpatra, (Gmelina Arborea), Vata (Ficus Bengalensis) and Kumuda (Nymphae Lotus).

For phlegm-deranged wounds—use leaves of Pāṭhā (Cisamphelos Hexandra), Mūrvā (Sansevieria Zeylanica), Guḍucī (Tinospora Cordifolia), Kākamācī (Solanum Nigrum), Haridrā (Curcuma Longa) and Śuknāśā (Oroxylum Indicum).

For similar purpose Caraka[1] recommends us to use the leaves of Kadamva (Anthocephalus Cadamba), Arjuna (Terminalia Arjuna), Nimva (Azadirachta Indica), Pātalī, Pippala (Ficus Religiosa) and Arka (Calotropis Gigantea).

The leaves of the padma or nymphæ are to be used for handling the eyeballs and the intestines, to replace them in their proper position when prolapsed by injury[2] (Suśruta) Caraka recommends lotus leaves and plantain leaves as coverings to the bleeding piles,[3] Cakradatta[4] mentions the use of

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[1] कदम्बार्জ্জুননিম্বানাং পাটল্যাঃ পিপ্পলস্য চ ।
ব্রণ প্রাচ্ছাদনে বিদ্বান্ পত্রাণ্যর্কস্য চাদিশেৎ ॥
Caraka Saṁhitā, VI. xiii.

[2] भिन्नं नेत्रमकर्म्मण्यमभिन्नं लम्बते तु यत् ।
तन्निवेश्य यथास्थानमत्याविद्धशिरं शनैः ।
पीड़येत् पाणिना सम्यक् पद्मपत्रान्तरेण तु ॥
Suśruta Saṁhitā, IV. ii.

[3] कदलीदलैरभिनवैः पुष्कर पत्रैश्च शीतजलसिक्तैः ।
प्रच्छादनं सुदुर्म्मुहुरिदं पद्मोत्पलदलैश्च ॥
Caraka Saṁhitā, VI. ix.

[4] गोजीशिफालिका पत्रैरर्शः संलिख्य लेपयेत् ।
चारेण वाक्शतं तिष्ठेद यन्त्रद्वारं पिधाय च ॥
Cakradatta, Arśa Cikitsā.

Gojī and Śephālikā leaves for scratching the piles before the application of caustics to them. He also directs us to rub the small tumours with the rough leaves before the application of various ointments.[1] Śivodāsa also mentions the use of such leaves for rubbing the eyelids in the pillva disease.[2] Suśruta[3] mentions the use of rough leaves for scratching any part.

Paul[4] mentions the use of fig leaves, for rubbing down the hard granulations of granular lids.

12. Young stems of plants.

The young shoots are described to have served the purpose of a probe. Caraka[5] calls them the soft variety, the metallic ones being called the hard probes. These shoots are to be used for superficial sinuses. Suśruta directs us to use the young shoots

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[1] विघृष्य चोडुम्बरशाकगोजी-
पत्रैर्भृशं क्षौद्रयुतैः प्रलिम्पेत्।

Cakradatta, Granthyarvuda Cikitsā.

[2] वर्त्मावलिखं बहुशस्तद्वच्छोणितमोक्षणम्।
पुनः पुनर्विरेकञ्च पिल्वरोगातुरो भजेत्॥

Cakradatta, Netraroga Cikitsā.

वर्त्मावलिखमिति। कर्कशशाखोटकादि पत्रेण वर्त्मघर्षणम्।

Tattva Candrikā. Ibid.

[3] क्षौमं श्लोतं पिचुं फेनं यावशूकं ससैन्धवं।
कर्कशानि च पत्राणि लेखनार्थं प्रदापयेत्॥

Suśruta Saṁhitā. IV. i.

[4] Paul, III. xxii.

[5] See foot-note 4. P. 269.

of the pot-herbs called Cuñca and Upādikā (Basella Rubra) as probes in sinuses on the eyelids and arround the anus.[1]

If in young people the teeth become loose as the result of some injury, the patient should be directed to live upon milk only, sucking it through the stalk of lily; and thus affording the teeth rest and a chance of being firmly fixed again.[2]

To excite emesis, Śārṅgadhara,[3] advises us to introduce a tube of Eraṇḍa (Ricinus Communis) into the throat of the patient. The vomiting is also said to have been excited by thursting a finger or a stalk of lily down the throat.

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[1] नाड़ी व्रणान् शल्यगर्भानुन्मार्ग्युत्सङ्गिनः शनैः।
करिरवालांगुलिभिरेषणा वैषयेद्भिषक्॥
नेत्रवर्त्म गुदास्यासनाड्योऽवक्राः शशोणिताः।
चुचुपोदकजैः शल्यैः करीरैरेषयेत्तु ताः॥

Suśruta Saṁhitā, IV. i.

[2] अभग्नांश्चलितान्दन्तान् सरक्तानवपीड़येत्।
तरुणस्य मनुष्यस्य शीतैरालिपयेद्दृढ़ैः॥
सिक्ताम्बुभिस्ततः शिते: सन्धानीयैरुपाचरेत्।
उत्पलस्य च नालेन क्षीरपानं विधीयते॥

Suśruta Saṁhitā IV. iii.

[3] अजीर्णं कोष्णपानीयं सिन्धु पीत्वा वमेत् सुधीः।
वमनं पाययित्वा च जानुमाचासने स्थितम्॥
कण्ठमेरण्डनालेन स्पृशन्तं वामयेद्भिषक्।
ललाटं वमतः पुंसः पार्श्वौ द्वौ च प्रबोधयेत्॥

Śārṅgadhara Saṁgraha, III. iii,

CHAPTER VIII.

HYGIENIC APPLIANCES AND HOSPITAL REQUISITIES.

Tooth-Brush.

The ancient Hindus used branches of trees as tooth-brush. They should have the length of twelve aṅguli and the circumference equal to that of the little finger. Suśruta directs us to use a straight and plain branch of such trees as have an astringent, or sweet, or bitter, or sour taste[1]. Amongst these classes of trees, the twigs of Khadira (Acacia Catechu), Madhuka (Brassia Latifolia), Nimva (Melia Azadirachta), Karñja (Pongamia Glabra) are the best. The end of the stick is to be chewed first to form a brush and the teeth are then to be rubbed with it. He recommends us to use some tooth-powder.[2]

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[1] तत्रादौ दन्तपवन द्वादशाङ्गुल मायतं।
कनिष्ठिका परिणाह मृज्वग्रथितमव्रणं॥
अयुग्मग्रन्थि यच्चापि प्रत्यग्रं शस्तभूमिजं।
अवेक्ष्यर्त्तुञ्च दोषञ्च रसं वीर्य्यञ्च योजयेत्॥
कषायं मधुरं तिक्तं कटुकं प्रातरुत्थितं।
निम्बश्च तिक्तके श्रेष्ठः कषाये खदिरस्तथा।
मधुको मधुरे श्रेष्ठः करञ्जः कटुके तथा॥

Suśruta Saṁhitā, IV. xxiv

[2] चौद्र व्योष त्रिवर्गाक्तं सतैलं सैन्धवेन च।
चूर्णेन तेजोवत्याश्च दन्तान्नित्यं विशोधयेत्॥
एकैकं घर्षयेद्दन्तं मृदुना कूर्चकेन च।
दन्तशोधन चूर्णेन दन्तमांसन्यवाधयन्॥

Ibid.

Bhāvamiśra mentions the names of other trees which may be used for the purpose,[1] and also gives us a list of trees to be avoided.[2] The use of the tooth-brush is contra-indicated in the various diseases of the mouth, ears, &c.[3] Caraka[4] advises us to use the tooth-brush twice a day.

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[1] अर्के वीर्य्यं वटे दीप्तिः करञ्जे विजयो भवेत् ॥
प्लक्षे चैवार्थसम्पत्तिर्वदर्य्यां मधुरोध्वनिः ।
खदिरे मुखसौगन्ध्यं विल्वेतु विपुलं धनम् ॥
उदुम्बरे तु वाक्सिद्धिरावेल्लारोग्यमेव च ।
कदम्बे तु धृतिर्मेधा चम्पके च दृढ़ामतिः ॥
शिरीषे कीर्त्तिसौभाग्य मायुरारोग्यमेव च ।
अपामार्गे धृतिर्मेधा प्रज्ञाशक्तिस्तथाध्वनिः ॥
दाड़िम्यां सुन्दराकारः ककुभे कुटजे तथा ।
जातीतगरमन्दारैर्दुःस्वप्नञ्च विनश्यति ॥

Bhāva Prakāśa, I. i.

[2] गुवाकस्तालहिन्तालौ केतकञ्च दृहत्तृण ।
खर्जुरं नारिकेरञ्च सप्तैते तृणराजकाः ॥
तृणराज समुत्पन्नं यः कुर्य्याद् दन्तधावनम् ।
नरश्चाण्डाल योनिः स्यादयावद्भूतान्न पश्यति ॥

Ibid.

[3] नखादेर्दगलताक्षोष्ट जिह्वारोग समुद्भवे ॥
अथास्यपाके श्वासेच कासहिक्का वसीषु च ।
दुर्व्वलो जीर्ण भक्तय मूर्च्छार्त्तोभदपीड़ितः ॥
शिरोरुगार्त्तस्तृषितः श्रान्तः पानक्लमान्वितः ।
अर्दितो कर्णशूलीच दन्तरोगीच मानवः ॥

Suśruta Saṁhitā, IV. xxiv

[4] आपोथितायं द्वौ कालौ कषायं कटुतिक्तकम् ।
भक्षयेद्दन्तपवनं दन्तमांसान्यबाधयन् ॥
निहन्ति गन्धवैरस्यं जिह्वादन्तास्यजं मलम् ।
निष्कृष्य रुचिमाधत्ते सद्यो दन्तविशोधनम् ॥

Caraka Saṁhitā, I. v.

Suśruta mentions the use of a tooth-brush to extract a fish-bone from the throat.[1]

After cleansing the mouth with water after meals, I'Tsing ordains[2] "Chew tooth-wood in the mouth; let the tongue as well as the teeth be carefully cleaned and purified." Again he says: "It is surely not seemly for any one to spend his time after meals chaffing and chattering, nor is it right to remain impure and guilty all day and night, without preparing water in a clean jar or without chewing a tooth-wood."

He continues[3]: "Every morning one must chew tooth-woods, and clean the teeth with them, and rub off the dirt of the tongue as carefully as possible. Only after the hands have been washed and the mouth cleansed is a man fit to make a salutation; if not, both the saluter and the saluted are at fault. Tooth-wood is Danta-kāṣṭha in Sanskrit—danta, tooth, and kāṣṭha, a piece of wood. It is made about twelve finger-breadths in length, and even the shortest is not less than eight finger-breadths long. Its size is like the little finger. Chew softly one of its ends, and clean the teeth with it. If one unavoidably come near a superior, while chewing the woods, one should cover the mouth with the left hand.

Then breaking the wood, and bending it, rub the tongue. In addition to the tooth-wood, some tooth-picks made of iron or copper may be used or a small stick of bamboo or wood, flat as the surface of the little finger and sharpened on one

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[1] मृदुना वा दन्तधावनकूर्चकेनापहरेत्।

Suśruta Saṁhitā, I. xxvii.

[2] I'Tsing. Records of the Buddhist Religion.—Takakusu. P. 26-7.

[3] Ibid. ch. viii. Use of Tooth-woods. P. 33.

end, may be used for cleaning the teeth and tongue ; one must be careful not to hurt the mouth. When used, the wood must be washed and thrown away.

Whenever a tooth-wood is destroyed, or water, or saliva is spit out, it should be done after having made three fillips with the fingers or after having coughed more than twice ; if not, one is faulty in throwing it away. A stick taken out of a large piece of wood, or from a small stem of a tree or a branch of an elm, or a creeper, if in the forest ; if in a field, of the paper mulberry, a peach, a sophora japonica (Huai), willow tree, or anything at disposal, must be prepared sufficiently beforehand. The freshly cut sticks (lit. wet ones) must be offered to others, while the dry ones are retained for one's own use.

The younger priest can chew as he likes, but the elders must have the stick hammered at one end *and made soft* ; the best is one which is bitter, astringent or pungent in taste, or one which becomes like cotton when chewed. The rough root of the Northern Burr-weed (Hu Tai) is the most excellent ; this is otherwise called Tsâng-urh or Tsae-urh, and strikes the root about two inches in the ground. It hardens the teeth, scents the mouth, helps to digest food, or relieves heart-burning. If this kind of tooth-cleaner be used, the smell of the mouth will go off after a fortnight. A disease in the canine teeth or toothache will be cured after a month. Be careful to chew fully and polish the teeth cleanly, and to let all the mouth-water come out ; and then to rinse abundantly with water. That is the way. Take in the water from the nose once. This is the means of securing a long life adopted by Bodhisattva *Nâgârguna*. If this be too hard to put in practice, to drink water is

also good. When a man gets used to these practices he is less attacked by sickness. The dirt at the roots of the teeth hardened by time must all be cleaned away. Washed with warm water, the teeth will be freed from the dirt for the whole of life. Tooth-ache is very rare in India owing to their chewing the tooth-wood."

Tooth-Pick.

Suśruta advises us to use sticks of grass as tooth-pick after meals to extract particles of food lodged between the teeth, otherwise these will decompose and the mouth would be smelling badly.[1] Bhāvamiśra gives similar directions but adds that if any particles of food cannot be easily extracted by the tooth-pick, one must not use any force to extract them.[2] "After eating they cleanse their teeth with a wilow stick, and wash their hands and mouth."[3]

Jihvā Nirlekhana or Tongue Scraper.

Suśruta says: "To scrape the tongue, a golden, or silver, or

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[1] दन्तान्तरगतं चान्नं शोधनेनाहरेच्छनैः।
कुर्य्यादनाहृतं तद्धि मुखस्यानिष्टगन्धतां॥
Suśruta Saṁhitā, I. xlvi.

[2] एवं भुक्त्वा समाचामेदूचग्रहण पूर्व्वकम्।
भोजने दन्तलग्नानि निर्हृत्याचमनं चरेत्॥
दन्तान्तरगतं चान्नं शोधनेनाहरेत् शनैः।
कुर्य्यादनिर्हृतं तद्धि मुखस्यानिष्ट गन्धताम्॥
दन्तलग्नमनिर्हार्य्यं लेपं मन्येत दन्तवत्।
न तत्र बहुशः कुर्य्याद् यत्नं निर्हरणं प्रति॥
Bhava Prakasa, I. i.

[3] Beal's Records of the Buddhist Religion. Trans. from Hiuen Tsiang, vol. I, p. 77.

wooden scraper is to be used. It should be ten aṅguli long and must be pliant and polished"[1]. Caraka[2] mentions tongue-scraper of copper, lead or brass. Bhāvamisra[3] also gives a similar discription. It is to be used for scraping the deposit on the tongue. It is still commonly used in India.

Razor and Shears. The Practice of Shaving.

Every one is recommended by Suśruta to have his beard shaved, hair trimmed and nails pared.[4] Caraka[5] also advises

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[1] जिह्वानिर्लेखनं रौप्यं सौवर्णं वार्क्षमेव च।
तन्मलापहरं श्रेष्ठं मृदुशुक्लं दशाङ्गुलं॥

Suśruta Saṁhitā, IV. xxiv.

[2] सुवर्णरूप्यताम्राणि त्रपुरीतिमयानि च।
जिह्वानिर्लेखनानि स्युस्तीक्ष्णान्यृजूनि च॥
जिह्वामूलगतं यच्च मलमुच्छ्वासरोधि च।
सौगन्ध्यं भजते तेन तस्माज्जिह्वां विनिर्लिखेत्॥

Caraka Saṁhitā, I. v.

[3] जिह्वानिर्लेखनं हैमं राजतं ताम्रजं तथा॥
पाटितं मृदु तत् काष्ठं मृदुपत्रमयं तथा।
"तत्काष्ठं" दन्तशोधनयोग्यं काष्ठम्।
दशाङ्गुलं मृदु स्निग्धं तेन जिह्वां लिखेत् मुखम्।
तज्जिह्वा मलवैरस्य दुर्गन्ध जड़ता हरम्॥

Bhāva Prakāśa, I. i.

[4] पापोपशमनं केशनखरोमापमार्ज्जनं॥
हर्षलाघव-सौभाग्य-करमुत्साह वर्द्धनं।
वाणवारं सजावर्णं तेजोबल विवर्द्धनं॥

Suśruta Saṁhitā, IV. xxiv.

तवादित एव नीचनखरोम्ना * *

Ibid.

[5] पौष्टिकं ह्रष्यमायुष्यं शुचिरूपविराजनम्।
केशश्मश्रुनखादीनां कल्पनं संप्रसाधनम्॥

Caraka Saṁhitā, I. v.

us to shave regularly, that is thrice in a fortnight.[1] Bhāvamiśra says that this practice conduces to health, beauty, longevity and purity, and should be observed every fifth day[2]. Razor is mentioned in the Ṛgveda[3] and in the Kaṭhopaniṣad of the White Yayu.[4] In the Śatapatha Brāhmaṇa, we find the method of shaving well described.[5] "Then (in shaving) are used a porcupine quill spotted in three places and a copper razor; that three-spotted porcupine's quill resembles the three-fold science and the copper razor resembles the Brāhmaṇa; for Brahmā is fire, and fire is of reddish (lohita) colour, hence a copper (loha), razor is used".

Again we read[6]:—"For impure, indeed, is that part of man where water does not reach him. Now at the hair and beard, and at the nails the water does not reach him; hence when he shaves his hair and beard, and cuts his nails, he does so in order that he may be consecrated after becoming pure.

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[1] वि: पक्षस्य केशश्मश्रुलोमनखान् संहारयेत्।

Carakas Saṁhitā, I. viii.

[2] पक्षरावान्नख श्मश्रुकेशरोमाणि कर्त्तयेत्।
केशश्मश्रु नखादीनां कर्त्तनं सम्यसाधनम्।
पौष्टिकं धन्यमायुष्यं शौचकान्तिकरं परम्॥
"सम्यसाधनम्" शोभाजनकम्॥

Bhāva Prakāśa, I. i.

[3] सं नः शिशीहि भुरिजोरिव क्षुरंरास्वरायो विमोचन।

Ṛgveda, 8 M. 4 S, 5 A. 7 A. 16 V.

[4] क्षूरस्य धारा निशिता दुरत्यय दुर्गम्पथस्तत् कवयो वदन्ति।

Kaṭhopaniṣad, I. iii.

[5] Śatapatha Brāhmaṇa, II. 6. 4. 5.

[6] Ibid. 111. 1.2.2.

3. Now some shave themselves all over, in order that they may be consecrated after becoming pure all over; but let him not do this. For even by shaving the hair of his head and his beard, and by cutting his nails he becomes pure; let him therefore shave only the hair of his head and his beard, and cut his nails.

4. In the first place he outs his nails, first of the right hand, for in human (practice) those of the left hand (are cut) first, but with the gods in this manner. First he cuts those of the thumb—for in human practice those of the little fingers are cut first, but with the gods in this manner.

5. He first passes (the comb) through his right whisker—for in human (practice they comb) first the left whisker, but with the gods in this manner.

6. His right whisker he moistens first with the text "may this divine water be propitious unto me".....

There upon be lays a stalk of sacrificial grass on (the hair of the whisker) with the text "O plant, protect me".....Thereto he applies the razor, with the text "O knife, injure him not".

8. Having cut off (part of the stalk and hair), he throws it into the vessel of water. Silently he moistens the left whisker; silently he lays the stalk of grass on it; and having silently applied the razor thereto and cut through (it and the hair) he throws them into the vessel of water.

He then hands the razor to the barber, and the latter shaves off the hair and beard. When he has shaved the hair and beard.....

10. He bathes.....

12. He steps out (from tha water) towards the north-east, with the text "cleansed and pure I go forth from them;".....

13. He then puts on (a linen) garment etc."

"The Atharva-veda relates how, when the ceremony of shaving off his beard was performed on king Soma, Váyu brought the hot water and Savitṛī skillfully wielded the razor."[1]

In para. 3, quoted above, we have evidence of the practice of depilation of the pubes which is here forbidden. There are six imortant rules and six minor rules of ordination for the female members or Śramaneris of the Buddhist order. One of the six minor rules is : A female must not shave the hair in any place but the head.[2] "Aristphanes, a contemporary of Hippocrates,[3] Persius[4] and Juvenal[5] refers to the depilation of the pubes as being common among certain classes, and the early Christian Fathers deplore the practice. See also the remarks of Seutonius on the conduct of Domitan"[6]. Prosper Alpinus (16th century) "found the custom still prevalent among the Egyptian women"[7]. "The custom survived in France, and Italy in the 16th century"[8].

Keśa Prasādhanī or Comb.

Suśruta directs us to comb the hair to free the head from dust,

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[1] Macdonnel's Sanskrit Literature, p. 164.

[2] See I'Tsing, P. 97, Foot-note 3. Vinaya Saṁgraha. Chap. xii.

[3] Hippocrates, Ran. 516, Lys 89, 151.

[4] Persius, iv. 37.

[5] Juvenal, vii. 114.

[6] Sentonius, xxii.

[7] Medicina Aegyptiorum, III. xv.

[8] Milne, Surgical Instruments &c., p. 90-91.

louse and dandruff.[1] Bhāvamiśra advises us to comb the hair every day to keep it clean, as it stimulates the growth of hair.[2] Caraka[3] also recommends us to keep the hairs clean. The practice of combing the hair is very ancient; the Atharva-veda mentions a comb with a hundred teeth.

Looking-glass.

The looking-glass should be constantly used as thereby the complexion is said to be improved and life prolonged[4]. For an account of the looking-glass of the ancient Hindus, see Mitra's Indo-Aryans[5].

Dress.

Silk, chintz and red clothes are good for the winter, for they are said to be useful for derangement of air and phlegm. Thin silk is cooling and is efficacious for biliary disorders; so it should be used during the summer. It should be coloured twany or red. White clothes are auspicious and are neither hot

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[1] केशप्रसाधनी केश्या रजोजन्तु मलापहा।

Suśruttā Saṁhitā, IV. xxiv.

[2] केशपाशे प्रकुर्व्वीत प्रसाधन्या प्रसाधनम्।
केश प्रसाधनं केश्यं रजोजन्तु मलापहम्॥

Bhāva Prakāśa, I. i.

[3] साधूवेशः प्रसाधितकेशो * *

Caraka Saṁhitā, I. viii.

[4] आदर्शालोकनं प्रोक्तं माङ्गल्यं कान्तिकारकम्।
पौष्टिकं वल्यमायुष्यं पापलक्ष्मी विनाशनम्॥

Bhāva Prakāśa, I. i.

[5] The Indo-Aryans Vol. 1, p. 240.

nor cold; therefore they should be worn during the rains[1]. Caraka says that pure dress conduces to longevity, happiness and fortune[2].

Uṣṇīṣa or head dress.

Suśruta[3] advises us to use a cap on our head which is thus protected from injury. Bhāvamiśra says that the habitual use of some form of covering for the head stimulates the growth of hair, increases beauty of the head and protects it from dust, draughts and accumulation of phlegm. Only light caps should be used as the heavy varieties derange bile and cause diseases of the eyes.[4] For the diagrams of the various forms of turbans used by the ancient Hindus, see Mitra's Indo-Aryans.[5]

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[1] कौशेयौर्णिक वस्त्रञ्च रक्तवस्त्रन्तथैव च।
वातश्लेष्म हरन्नित्तु शीतकाले विधारयेत्॥
"कौशेयं" पट्टाम्बरं चसरवस्त्रञ्च।
मेध्यं सुशीतम्पित्तघ्नं कषायं वस्त्रमुच्यते।
तद्धारयेदृष्णकाले तवापि लघु शस्यते॥
कषायङ्कीकटी इति लोके, कषाय रागरक्तं वा।
शुक्लन्तु शुभदं वस्त्रं शीतातप निवारणम्।
नचोष्णन्नचवा शीतन्नित्तु वर्षासु धारयेत्॥
Bhāva Prakāśa, I. i.

[2] काम्यं यशस्यमायुष्यमलक्ष्मीघ्नं प्रहर्षणम्।
श्रीमत् पारिषदं शस्तं निर्म्मलाम्बरधारणम्॥
Caraka Saṁhitā, I. v.
Bhāva Prakāśa, I. i.

[3] पवित्र केशमुष्णीषं वातातपरजोऽपहं।
Suśruta Saṁhitā, IV. xxiv.

[4] उष्णीषं क्लान्तिकृत्केश्यं रजोवात कफापहम्।
लघु तच्छस्यते यस्माद् गुरु पित्तविरोगकृत्॥
Bhāva Prakāśa, I. i.

[5] The Indo-Aryans, Vol. I, p. 220.

Chatra or umbrellas.

Suśruta says: Umbrellas are useful for protecting men from the rains, draughts, glare of the sun, exposure to cold, and dust. They are auspicious and are beneficial to the eyes[1]. Caraka[2] advises us to use it as it protects us from the sun, rain &c. Bhāvamiśra[3] also describes its efficacy similarly. Umbrella is one of the insignia of royalty in India, and is always held over the heads of kings as shown in the Sanchi and Amarāvatī sculptures[4]. It is still commonly used in India.

Yaṣṭi or sticks.

Caraka[5] directs us to use a stick as a support. Suśruta says: "By using sticks, a man gains in strength, prowess and manliness. He becomes courageous, patient and forbearing. He can stand erect and is not troubled by any fear"[6]. It

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[1] वर्षानिलरजोघर्म्म हिमादीनां निवारणं।
वक्त्र चक्षुष्य मौजस्यं शङ्करं छत्रधारणं॥
Suśruta Saṁhitā, IV. xxiv.

[2] ईतेर्विघसनं वल्यं गुप्तावरणशङ्करम्।
घर्म्मानिलरजोऽम्बुघ्नं छत्रधारणमुच्यते॥
Caraka Saṁhitā, I. v.

[3] छत्रञ्च धारणं वर्षातपवात रजोऽपहम्।
हिमघ्नं हितमक्ष्णोश्च माङ्गल्यमपि कीर्त्तितम्॥
Bhāva Prakāśa, I. i.

[4] See Indo-Aryans, 1, p. 266.

[5] स्खलतः संप्रतिष्ठानं शत्रुणाञ्च निसूदनं।
अवष्टम्भनमायुष्यं भयघ्नं दण्डधारणम्॥
Caraka Saṁhitā, I. v.

[6] श्रमः शरीरपर्य्याप्त विषाग्निस्थैर्य्यभयापहं।
श्रमस्खलन दोषघ्नं स्थविरैश्च प्रशस्यते॥
सत्त्वौत्साहबलस्थैर्य्य धैर्य्यवीर्य्य विवर्द्धनम्।
अवष्टम्भकरञ्चापि भयघ्नं दण्डधारणं॥
Suśruta Saṁhitā, IV. xxiv.

protects a man from dogs, snakes &c. Bhāvamiśra[1] apparently quotes these verses from Suśruta.

Upānaha or shoes.

The ancient Hindus used two kinds of shoes, made of wood and leather. The wooden pāduka is recommended to be used before and after dinner[2]. The good effects claimed by its use are, an increase of the power of vision, strength and longevity.[3] When travelling, the upānaha or leather shoes are to be used. Besides the advantages mentioned above, shoes are very comfortable to the travellers and prevent many diseases of the feet[4]. If any one often travels barefooted, he feels out of sort, his senses fail, vision becomes impaired and his expectation of life is reduced.[5]

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[1] Bhāva Prakaśa, I. i.

[2] पादुकारोहणङ्कुर्य्यात् पूर्व्वं भोजनतः परम् ।
पादरोग हरं ह्यं चक्षुष्यञ्चायुषो हितम् ॥
Bhāva Prakāśa, I. i.

[3] चक्षुष्यं स्पर्शनहितं पादयोर्म्मलनापहम् ।
बल्यं पराक्रमसुखं ह्यं पादत्रधारणम् ॥
Caraka Saṁhitā, I. v.

[4] पादरोगहरं ह्यं रक्षोघ्नं प्रीतिवर्द्धनं ।
सुखप्रचारमोजस्यं सदापादत्रधारणं ।
अनारोग्य मनायुष्यं चक्षुषोरुपघातकृत् ।
पादाभ्यामनुपानद्भ्यां सदा चंक्रमणं नृणां ॥
Suśruta Saṁhitā, IV. xxiv.

[5] उपानद्धारणं नेत्र्यमायुष्यं पादरोगहृत् ।
सुखप्रचारमोजस्यं ह्यञ्च परिकीर्त्तितम् ॥
पादाभ्यामनुपानद्भ्यां सदा चंक्रमणं नृणाम् ।
अनारोग्य मनायुष्यमिन्द्रियघ्न मदृष्टिदम् ॥
Bhāva Prakāśa, I. i.

The Hindus wore sandals like the ancient Greeks. They also used boots, which look like the modern boots used by Europeans. Buddha gave the Bhikkhus permission to wear boots or shoes, with thick lining[1]. Hiuen Tsiang[2] says that "here (Avantī) Tathagatha gave permission to the Bhikkhus to wear kih-fu-to (boots)." For an account and figures of ancient boots used by the Hindus, see Indo-Aryans.[3]

Vyājanī and cāmara. The fan.

The fan was used for airing the patients to drive away flies.[4] Suśruta mentions the cāmara *i.e.*, the tail of the Thibetan yolk (Bos grunnius) to be used as a fan. "It soothes the inflammation of boils and also acts as a fly-brush to prevent infection of the open wound"[5]. The cāmara is also one of the insignia of royalty and as such we have many representations of it in the sculptures of ancient India[6]. For diagrams of the ancient fan, see Indo-Aryans[7].

Caraka directs us to use a kulā or fan to winnow corn, prepared from the kāśa (Saccharum Spontamum) to resuscitate a still-born child[8].

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[1] Mohāvagga, varga 13 ff 6. S. B. E. vol. xvii. p. 35.

[2] Beal's Records. of Buddhist Religion, vol. II. p. 280.

[3] Indo-Aryans, Vol. I, p. 123-6.

[4] वालव्यजन मौञ्जस्यं मचिकादीनपोहति ।
शोषदाह श्रमस्वेद मूर्च्छाघ्नो व्यजनानिलः ॥
Suśruta Saṁhitā, IV. xxiv.

[5] व्यज्येत वालव्यजनैर्व्रणं नच विघट्टयेत् ।
Ibid, I. xix.

[6] See Indo-Aryans, vol. II, p. 267-70.

[7] For diagrams, see Indo-Aryans, vol. I, p. 263.

[8] तथा संक्लेशविहतान प्राणान् पुनर्लभेत क्षत्रकपालिकायूषेण चैनमभिःनिष्पनीयाद-यच्चेष्टं स्यात् यावत् प्राणानां प्रत्यागमनं तत्तत्सर्व्वमेवकुर्य्यः ॥
Caraka Saṁhitā, IV, viii.

Bhāvamiśra[1] mentions fans made of the following materials:—palm leaf, bamboo, yolk's tail, cloth, peacock's feather and cane. He attributes peculiar properties to each fan.

Rājavallabha says[2] that "the palm-leaf fan overcomes disturbances of all the three humours, and is light and agreeable; the bamboo fan causes heat and irritablity, and promotes inordinate secretion of the two humours—air and bile; the cane, cloth and peacock's feather fans, overcome disturbances of the three humours; the hair fan is invigorating etc."

The Buddhist Bhikṣus used the palm-leaf fan. "Not unfrequently there is added a lotus-leaf shaped fan, made from a single frond, with an edging of bamboo or light wood, and furnished with a handle fashioned like the letter "S". The palm from which the leaf is taken, is also that used for the mss., namely the Talipot; hence the name Talponi given to the Bhikkhus by the early Portuguese adventurers in Burma. When he attended a meeting at which women are likely to be present, every Bhikkhu must have the fan."[3]

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[1] व्यजनस्थानिलो दाह स्वेदमूर्च्छा श्रमापहः।
तालवृन्तभवो वातस्त्रिदोषशमको मतः॥
वंशव्यजनजस्तृष्णो रक्तपित्तप्रकोपणः।
चामरो वस्त्रसम्भूतो मायूरो वेत्रजस्तथा॥
एते दोषजिता वाताः स्निग्धा हृद्याः सपूजिताः।

Bhāva Prakāśa, I. i.

[2] तालव्यजनगुणः—त्रिदोषशमनत्वम्। लघुत्वञ्च॥ वंशव्यजनगुणः—रूक्षत्वम्। उष्णत्वम्। वायुपित्तकारित्वञ्च॥ वेत्रवस्त्रमयूरपुच्छव्यजनगुणः—त्रिदोषनाशित्वम्। बालव्यजनगुणः—तेजस्करत्वम्। मक्षिकादि निवारकत्वञ्च।

Rājavallabha.

[3] The Way of Buddha, p. 53-54.

Filters.

Filters were used by the Hindus and are recommended to be made of an earthen or metallic vessel, the mouth being closed by a piece of cloth tied round its neck.

If the water be filthy, Suśruta[1] advises us to purify it by boiling it or by exposure to the sun; or by throwing hot iron balls, sand or clay balls into the water and then allowing it to cool. Such purified water should be scented with the flowers of Nāgakeśara (Mesua Ferrea), Campaka (Michelia Champaca), Utpala (Nymphœa Stellata) and Patala (Bignonia Snaveolens).

Suśruta mentions seven means of purifying polluted water[2], *viz.*,

1. Kataka phala or nirmālaya or seeds of Strychnos Potatorum.
2. Gomedaka or a kind of gems.
3. Viṣagranthi, or root of Nelumbium Speciosum.
4. Śaivālamūla or root of Vallisneria Spiralis.
5. A piece of cloth.
6. Pearls.
7. Precious Stones and crystals.

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[1] व्यापन्नानामग्निक्वथनं सूर्य्यातपप्रतापनं तप्तायःपिण्डसिकतालोष्ठानां वा निर्व्वापनं प्रसादनञ्च कर्त्तव्यं नागचम्पकोत्पलपाटलापुष्पप्रभृतिभिश्चाधिवासनमिति।

Suśruta Saṁhitā, I. xlv.

[2] तत्र सप्तकलुषस्य प्रसाधनानि भवन्ति। तद्यथा। कतकगोभेदकविषग्रन्थिशैवालमूलवस्त्राणि मुक्तामणिश्चेति। पञ्चनिर्व्वपणानिभवन्ति। तद्यथा। फलकं वाष्टकं मुञ्जवलय उदकमञ्चिकाशिक्यञ्चेति। सप्तशीतिकरणानि भवन्ति। प्रवातस्थापनमुदकप्रक्षेपणं यष्टिकाभ्रामणं व्यजनं वस्त्रोद्धरणं वालुका प्रक्षेपणं शिक्यावलम्बनञ्चेति।

Ibid.

He mentions five kinds of means for preventing contact of the water vessel with the earth[1] :—

1. Phalaka or planks as of Śālmali wood.
2. Tryastaka or octogonal tripod of wood.
3. Muñjvalaya or circular pad of Saccharine Muñja.
4. Udakamañcikā or a raised framework of cane and bamboo.
5. Śikya or a loop suspended by three strings.

He mentions seven ways of cooling water :—

1. Exposure to air.
2. Sprinkling water on the vessel.
3. Stirring the water with a rod.
4. Fanning the water.
5. Filtration through cotton fabrics.
6. Putting the vessel of water on a sand bed.
7. Suspension of the vessel in a loop.

He advises us to use rain water filtered through a broad piece of white and clean cloth[2]. In collecting water from the rivers and ponds, the Hindu females still use a kalasī or earthen vessel, the mouth being closed by a piece of cloth.

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[1] In the English translations of the Suśruta Saṁhitā, Bibliotheca Indica, Dr. Cāttopādhāya translates the passage incorrectly. He misunderstood the terms phalaka, &c. to be remedial agents, necessary in the prorification of water.

[2] गाङ्गं पुनः प्रधानं तदुपाददीताश्वयुजे मासि शुचियुक्तवित तपटेकदेशच्युतमथ वा हर्म्यातलपरिषेकमन्वैर्व्वा शुचिभिर्भाजनैर्ग्रहीतं।

Suśruta Saṁhitā, I. xlv.

Suśruta[1] deprecates impure water as injurious to the human system and advises us not to drink or bathe in such water as there is always the risk of being speedly affected with many diseases.

"It (filter) forms one of the eight sacred utensils necessary for a sramana of the Buddhist order. It is a strainer or water-dipper—an appratus for filtering the water which he drinks, so that he may not, even unwillingly, take animal life"[2]

One of the six requisites of a Bhikṣu is Parisrāvana, a water-strainer[3].

Water vessel.

To store water, Suśruta mentions vessels of gold, or silver, or earth[4].

"The clean water is kept separately from water for cleansing purposes (*lit.* 'touched' water), and there are two kinds of jars (*i.e.* kundi and kalasa) for each. Earthenware or porcelain is used for the clean jar, and the jar, for water for cleansing purposes (*lit.* touched water) is made of copper or iron. The clean water is ready for drinking at any time, and the 'touched' water for cleansing purposes after having been to the urinal.

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[1] व्यापन्नं वर्जयेन्नित्यं तोयं यदाप्यनार्तवं ।
दोषसञ्जननं ह्येतन्नाददीताहितन्तु तत् ॥
व्यापन्नं सलिलं यस्तु पिबतीहा प्रसाधितं ।
श्वयथुं पाण्डुरोगञ्च लभ्दोषमविपाकतां ॥
श्वासकासप्रतिश्यायगुल्मोदराणि च ।
अन्यान् वा विषमान् रोगान् प्राप्नुयात् क्षिप्रमेवच ॥
Suśruta Saṁhitā, I. xlv.

[2] The way of Buddha, p. 53.

[3] I'Tsing, ch. x.

[4] सौवर्णे राजते मृन्मये वा पात्रे निदध्यात् तच्चार्द्धकालमुपयुञ्जीत तस्यालाभे भौमम् ।
Ibid.

The clean jar must be carried in a clean hand, and be placed in a clean place, while the jar for the 'touched' water should be grasped by the 'touched' (or 'unclean') hand and be put in an unclean (or 'touched') place. The water in a pure and fresh jar can be drunk at anytime; the water in any other jar is called 'special water' (more *lit.* seasonable water *i.e.* water to be used at certain prescribed times, probably kâlodaka)."[1]

Bathing.

The Hindus in their daily life do not eat without having first washed themselves in a bath. They always use a bathing-sheet and this ancient practice is still followed.

Bhâvamiśra says[2] : "Bathing stimulates the appetite, virile power and strength, prolongs life, allays thirst and burning sensation, cures eczema, and washes out dirt and perspiration."

Besides the ordinary bath, there is some evidence of the use of a medical bath to cure diseases. I'Tsing says[3] : "The World-honoured One taught how to build a bath room, to construct a brick pond in an open place, and to make a medical bath in order to cure a disease. Sometimes he ordained the

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[1] I'Tsing. ch. vi.

[2] दीपनं बृंहणमायुष्यं स्नानमोजो बलप्रदं।
कण्डूमलश्रमःस्वेदतन्द्रा तृड्दाह पापनुत्॥
बाह्यस्य सेकः शीतार्दो रुक्षान्तर्याति पीड़ितः।
नरस्य स्नातमात्रस्य दीप्यते तेन पावकः॥
शीतेन पयसा स्नातं रक्तपित्तप्रशान्तिकृत्।
तदेवोष्णेन तोयेन बल्यं वातकफापहम्॥
शिरः स्नानमचक्षुष्यं मत्युष्णेनाम्बुना सदा।
वातश्लेष्म प्रकोपेतु हितन्तच्च प्रकीर्त्तितम्॥
Bhâva Prakâśa, I. i.

[3] I'Tsing, ch. xx.

whole body to be anonited with oil, sometimes the feet to be rubbed with oil every night, or the head every morning; for such a practice is very good for maintaining clear eyesight and keeping off the cold." "Bathing should always take place when one is hungry. Two kinds of benefits are derived by having meals after bathing. First, the body is pure and empty, being free from all dirt, second, the food will be well digested, as the bathing makes one free from phlegm or any disease of the internal organs. Bathing after a good meal is forbidden in the 'Science of Medicine'" (Kikitsā-Vidyā).

Drinking vessel.

Scented water is advised to be drunk out of cups made of gold, or silver, or copper, or bell-metal, or lapis lazuli or earth.[1] Bhāvamiśra[2] also mentions cups of the same materials.

"To drink from a jar holding it upright in front is no fault; but drinking in the afternoon is not permissible. A jar must be made to fit one's mouth; the top of the cover should be two fingers high; in it a hole as small as a copper chopstick is made.

Fresh water for drinking must be kept in such a jar. At the side of the jar there is another round hole as large as a small coin, two fingers higher than the drinking-mouth. This hole is used for pouring in water; two or three gallons may be put in it. A small jar is never used.

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[1] See foot-note 2, P. 65.

[2] जलपावन्तु तास्रस्य तदभावे मृदोहितम्।
पवित्रं शीतलं पात्रं गठितं स्फटिकेन यत्॥
काचेन रचितन्नद्वत्तथा वैदूर्य्य सम्भवम्।

Bhāva Prakāśa, I. i.

If one fear that insects or dust may enter in, both the mouth and the hole may be covered by means of bamboo, wood, linen, or leaves. There are some Indian priests who make jars according to this style. In taking water the inside of the jar must be first washed in order to get off any dirt or dust, and then fresh water must be poured in.

A priest who travels, carries his jars, bowl, necessary clothes, by hanging them from shoulders over his cloak, taking an umbrella in his hand. This is the manner of the Buddhist priests in travelling[1]."

Dinner service.

Suśruta[2] advises us to use different kinds of vessels for distributing the various kinds of food:—

Iron vessels for ghee or clarified butter.

Silver vessels for drinks, soups and gruels.

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[1] I'Tsing, ch. vi.

[2] घृतं कार्ष्णायसे देयं पेया देयातु राजते ॥
फलानि सर्व्वभक्ष्यांश्च प्रदद्याद्दलेषु च ।
पूरिशुष्कप्रदिग्धानि सौवर्णेषु प्रकल्पयेत् ॥
प्रेङ्खणानि रसांश्चैव राजतेषूपहारयेत् ।
कट्वराणि खडांश्चैव सर्व्वान् शैलेषु दापयेत् ॥
दद्यात्तासमये पात्रे सुशीतं सुश्रृतं पयः ।
पानीयं पानकं मद्य सन्ध्ययेषु प्रदापयेत् ॥
काचस्फटिकपात्रेषु शीतलेषु शुभेषु च ।
दद्याद्दूष्यपात्रेषु रागषाडवसङ्कान् ॥
पुरस्तादिमले पात्रे सुविस्तीर्णे मनोरमे ।
मृदः सुपीदनं दद्यात् प्रदेहांश्च सुसंस्कृतान् ॥

Suśruta Saṁhitā, I. xlvi.

Plantain leaf vessels for fruits and sweetmeats.

Gold vessels for flesh.

Stone vessels for whey.

Copper vessels for milk.

Earthen vessels for water, sherbets and wines.

Glass, crystal, lapis lazuli vessels for rājṣāḍava and saṭṭaka.

In the Bhāva Prakāśa[1] we have a detailed description on the subject—"A dinner service of gold is the best from a medicinal point of view, and it is supposed to be the best tonic for the eye. Eating out of silver is equally efficacious for promoting hepatic functions. A service of zinc improves the intelligence and appetite. Food served in brass utensils promotes wind and heat, but cures phlegmatic disorders and expells worms. The use of steel or glass vessel cures chlorosis, jaundice and intumescence. A stone or clay serviee brings on poverty. Wooden plates are good appetisers, but help the secretions of phlegmatic humour. The use of certain leaves as plates acts as an antidote against poisons. When at dinner, a water jug with a cup should be placed on the right hand. A copper vessel is the best for the purpose. The next best is an earthen pot. Vessels made of crystal and lapis lazuli are also pure and cooling".[2]

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[1] आयसे काचपात्रे च भोजनं सिद्धिकारकम्।
शोथ पाण्डुहरं वल्यं कामलापहमुत्तमम्।
शैलिये स्रग्मये पात्रे भोजनं शोनिवारणम्।
दारुजे विशेषेण रुचिदंशे प्रकारितु।
पात्रं पत्रमयं रुच्यं दीपनं विषपापनुत्॥

Bhava Prakāśa, I. i.

[2] History of Aryan Medical Science, p. 64-5.

Spoons.

I'Tsing says[1] : "As to the mode of eating in the West, they use only the right hand, but if one has had an illness or has some other reason, one is permitted to keep a spoon for use."

Spittoons.

Spittoons were commonly used by the ancient Hindus, and Caraka[2] mentions it as one of the things necessary for the sick room. It is also mentioned in the Mohāvagga[3]: "And the sethe's wife spat it out into the spittoon." Fa-Hian[4] noticed a "stone spitting vessel in this country (Kie-sha) belonging to Buddha."

Bedpans and urinals.

The bedpan and urinal were also used by the patients in ancient times. Caraka metions them to be necessary in a sick room.[5]

Pus basins.

Metallic basins marked with different measures were used for holding discharges after operations. In the Aśvavaidyaka[6]

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[1] I'Tsing. Ch. xvi.

[2] चोपन्यस्तभाङ्गार प्रतिग्रहाणि ।

* * * *

प्रतिग्रहांश्चोपचारयेत् ॥

Caraka Saṁhitā, I. xv.

[3] Sacred Books of the East. VIII. i. ll.

[4] Beal's Records, vol. l. Introduction, xxviii.

[5] See Page 36 and foot-note 1, P. 34.

[6] पदेशे लोमशे नित्यं लोमान्युत्पाद्य वेधयेत् ।
प्रमाणार्थञ्च पात्रेण रक्तं गच्छति बुद्धिमान् ॥

Aśvavaidyaka, XV. verse 30.

blood let out in the operation of phlebotomy, is recommended to be collected in a basin, so that the quantity may at once be determined.

Pestle and mortar.

Pestle and mortar are mentioned in the Ṛgveda for preparing the Soma juice.[1] And their use in pharmacy was well-known to the ancients.

Besides the pestle and mortar of pharmacy, we find mention of a large wooden pestle used in reducing dislocation by Suśruta.[2] Caraka says that two pestles and motars should be kept in a lying-in-room, the object being to allow the woman some kind of work; and then she will not lie down idly on her bed if there be any delay in the delivery of the child[3]. Suśruta also recommends it[4]. "The mortar (ulukhala) and pestle (muṣala) are to be made of very hard wood, *viz.*, both of Varana wood (Crataiga Roxburghii), or the mortar of Palāśa wood (Butea Frondosa), and the pestle of Khadira wood (Acacia Catechu). The former

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[1] उलूखलसुतानामवेद्विन्द्र जल्गुलः ॥

* * * *

यत्रिद्धि त्वं गृहे गृह उलूखलक युज्यसे ।

Ṛgveda, 1 M. 28 S. 1 &. 2 R.

[2] See foot-note 6, P. 172.

[3] See P. 39, and foot-note 1, P. 40.

सा चेदावीभिः संक्लिश्यमाना न प्रजायेताथैनां ब्रूयात् उत्तिष्ठमूषलमन्यतरञ्च गङ्गौष्वानेनेतदुदूखलं धान्यपूर्णं महर्म्मुहुरधिजहि सुहर्म्मुहुरवजृम्भस्व चंक्रमस्व चान्तरान्तरा इत्येवमुपदिश्यन्यकें ।

Caraka Saṁhitā, IV. viii.

[4] कालातीतस्याधिनि गर्भे विशेषतः सधान्यमुदूखलंभूषलेनाभिहन्याद्विषमे वा यानासने सेवेत ।

Suśruta Saṁhitā, III. x.

is to be of the height of the knee and the latter three aratnis (cubits) long[1]."

On the inner face of the left pillar in the eastern gate of Sanchi Tope, there is a beautiful representation of a kitchen scene, in which the ancient mortar and pestle are shown. "The mortar and two-handed pestle same as those in use at the present day in India. The mortar (okhli) is exactly the same as the Greek ἴγδη, and the Roman pila; and the pestle (musar) is the same as the Greek Κόπανον, and the Roman pilum"[2]

The pestle and mortar used in pharmacy was called aśmabhālam. It is still used to pulverise medicaments, and is made of iron or brass.

In the Mahāvagga[3] we find a reference to the pestle and mortar. "I allow, O Bhikkhus, the use of a chunam as a medicine by whomsoever has the itch, or boils, or a discharge or scabs, or whose body is ill smelling, and to those in health the use of dry dung, and of clay, and of coloring matter. I allow, the use, O Bhikkhus, of a pestle and mortar" (udukhalam nusalañ ka).

Sieves, strainers and filters.

There is evidence that cloth seive was used by the Hindus in ancient days, we find it mentioned in the Ṛgveda[4]. The purpose of straining and filtering solid and liquid medicines respectively is mentioned to have been served by two or

[1] Schol. on Katy. 1.3.3.6. footnote, Śatapatha Brāhmaṇa (Sacred Books of the East, 1.1.4.8.)

[2] Cunningham's Bhilsa Topes, p. 207.

[3] Mohāvagga VI. 9. 2.

[4] Ṛgveda, 10m. 71s. V 2

three layers of a piece of cloth. And we know that in the prehistoric Soma rites, it "was pressed, passed through a seive, mixed with milk, and offered as the main oblation".

The reference to a cloth sieve, we find in Mohāvagga[1]: "Now at that time the Bhikkhus who were sick had need of sifted chunam as medicine.

They told this thing to the Blessed One.

"I allow, O Bhikkhus, the use of a chunam sieve".

They had need of the chunam very fine.

"I allow, O Bhikkhus, the use of a cloth sieve".

Pavitra was used in the Vedic times[2]. It was a filter. Wilson translates it: "Trough the purifying filters".

Cold and hot applications.

To relieve colic pains, vessels made of silver, copper or precious stones, containing cold water, are directed to be placed upon the part or better upon the navel[3]. Besides these, leather vessels containing cold water are also directed to be used for reducing the temperature in dilirium tremens.[4]

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[1] Mohāvagga VI. 10. 1.

[2] मध्यः पुनानाः कविभिः पवित्रैर्युभिर्हिन्वंत्यक्तुभिर्धनुवीः ॥

Rgveda, 3m. 31s. 16 Rk.

अंशुं दुहन्ति हस्तिनो भरित्रैर्मध्वः पुनन्ति धारया पवित्रैः ॥

Ibid, 3m. 36s. 7 Rk.

[3] मणिराजत तासानि भाजनानि च सर्व्वशः।
वारिपूर्णानि तान्यस्य शूलस्योपरि निक्षिपेत् ॥

Suśruta Saṁhitā, VI. xlii.

[4] हैमराजत कांस्यानां पात्राणां शीतवारिभिः।
पूर्णानां हिमपूर्णानां दृतानां पवनाहृता: ॥

Caraka Saṁhitā, VI. xii.

Heat is directed to be applied to the patient's body in various ways[1] :—

I. Tāpasveda :—palm of the hand, brass dish, sand, cloth, potsherd &c. are the means mentioned for applying heat to the body.

II. Uṣṇasveda :—potsherds, stone, bricks, or iron balls are to be heated to redness and then water is to be sprinkled upon them. The part to be fomented is covered by a wet piece of thick lint and then the heated materials are to be applied over it. Or heat may be applied by means of a narrow vesssel containing hot decoctions. The vessel is to be surrounded by a piece of

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[1] चतुर्व्विधः स्वेदस्तद् यथा। तापस्वेद उष्मस्वेद उपनाहस्वेदोद्रव स्वेद इति। अत्र सर्व्वस्वेद विकल्पावरोधः॥

तत्र ताप-स्वेदः। पाणि कांस्यकन्दकपाल वालुकावस्त्रैः प्रयुज्यते शयानस्यचाङ्गतापो बहुशः खादिराङ्गारैरिति। उष्म-स्वेदस्तु कपाल पाषाणेष्टकालोह-पिण्डानग्निवर्णानद्भि रासिञ्चेदन्य द्रव्यैर्वातै राद्रालक्तक परिवेष्टितमङ्ग-प्रदेशं स्वेदयेत्। मांस रस पयोदधि धान्याम्लवातहर पवभङ्ग क्वाथ पूर्णां वा कुम्भीमनुतप्तां प्राङ्मुखोभाणं यन्त्रीयात्। पार्श्व छिद्रेण वा कुम्भेनाधोमुखेन तस्य मुखमभिसन्धाय तस्मिन् छिद्रे हस्ति शुण्डाकारां नाड़ीं प्रणिधाय तम् स्वेदयेत्।

सुखोपविष्टं स्वभ्यक्तं गुरु प्रावरणाहृतं।
हस्तिशुण्डिकया नाड्या स्वेदयेदात-रोगिणं॥
मुखा सर्व्वाङ्गगा ह्येषा नच क्लिश्नाति मानवं।
व्यामाईमात्रा विवक्रा हस्ति हस्त समाकृतिः॥
स्वेदनार्थे हिता नाड़ी कैलिङ्गी हस्ती शुण्डिका।

* * * * * *

उपनाह स्वेदस्तु वातहरमूलकल्कैरम्ल पिष्टैर्लवण प्रगाढैः सस्नेहैः सुखोष्णैः प्रदिह्य स्वेदयेत्। एवं काकोल्यादिभिः सुरसादिभिस्तिलातसी मर्षप कल्कैः क्षुद्रा पायसौत्कारिकाभिर्व्वेसवारैः शाल्वणैर्व्वातनुवस्त्रावनद्धैः स्वेदयेत्।

द्रव स्वेदस्तु-वातहर द्रव्यक्वाथ पूर्णे कोष्ण कटाहे द्रोण्यां वावगाह्य स्वेदयेत्। एवं पयोमांसरस-घृष-तैल-धान्याम्ल-घृत-वसा मूत्रेष्ववगाहित सुखोष्णैः कषायैः परिषिञ्चेदिति।

Suśruta Saṁhitā, IV. xxxii.

cloth to prevent the skin from being burnt. Or heat may be applied by the following device:—an earthen vessel or kalasī containing hot decoctions is to be closed; and the vessel is then to be inverted. Then a hole should be bored on its side, and a tube shaped like an elephant's proboscis is fitted to it; the vapour issuing from the tube is allowed to play on the part.

To apply vapour bath:—put the hot infusion of medicinal substances into an earthen vessel and close its mouth. Drill a hole into the side of the vessel and adapt a tube to it. The tube may be either metallic or wooden. The tube should be two hands (forearm and hand) long and made of three pieces; the end of the tube which should taper like a cow's tail must be six aṅguli long. The patient should be seated on a stool and well covered with cloth. The tube is then introduced inside the blanket, and thus the issuing vapours heat the whole body. (Śārṅgadhara[1]).

Suśruta says that the tube should be half byām (*i.e.*, the distance between the two hands when extended) long, bent thrice and shaped like an elephant's proboscis. Sometimes a large stone slab is to be heated with burning wood of Acacia Catechu. Then after removing the ashes, the patient is directed to lie upon it. A tent or cloth-cover having four doors is sometimes required for the patient to sit in, and heat is applied by burning wood outside it.

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[1] अथवा वातनिर्नाशिद्रव्यक्काथरसादिभिः।
उष्णैर्घटं पूरयित्वा पार्श्वे छिद्रं विधाय च॥
विमुद्रास्यं विखण्डाच्च धातुजां काष्ठजां तथा।
षड्ङ्गुलास्यां गोपुच्छां नाडीं युञ्जात् द्विहस्तिकां॥
सुखोपविष्टं स्वभ्यक्तं गुरुप्रावरणावृतम्॥
इक्षीयुष्ठिकया नाड्या स्वेदयेद्वातरोगिणम्॥
Śārṅgadhara Saṁgraha, III. ii.

III. Upānahasveda or poultices :—roots of medicinal plants are to be pressed and formed into a paste with mustard, sesame etc. This is to be heated, put on a thin cloth and so applied.

IV. Dravasveda or hot bath :—the patient is to sit in a tub or vessel of hot water. Iron pails or tubs are recommended to be used by patients to take bath in some infusions. Śārṅgadhara says[1]: The tub (droṇī) should be made of gold, or silver, or copper, or iron, or wood. The height and length of the tub should measure thirty-six aṅguli each. When the patient sits inside, the height of water should stand six aṅguli above the navel. A droṇī filled with oil is to be used for placing an unconscious patient in it to overcome the shock caused by fall, blows, fractures and other injuries.

Cakradatta[2] describes the four methods of applying heat, Bhāvamiśra also describes them similarly[3]. Hārita, however, mentions seven methods of heat-application[4].

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[1] सौवर्णं राजतं वापि तास्रमायसञ्च दारुजम् ।
कोष्ठकं तच्च कुर्वीतोच्छ्राये षट्त्रिंशदङ्गुलम् ॥
आयामेन तदेवस्याच्चतुर्थं मरुणं तथा ।
नाभेः षडङ्गुलं यावन्मग्नः क्वाथस्य धारया ॥
Śārṅgadhara Saṅgraha, III. ii.

[2] तत्रैः सैकतपाणिकाश्वबसनैः स्वेदोऽथवाङ्गारक-
लिंपाद्यातहरैः सहास्ललवणस्नेहैः सुखोष्णैर्भवेत् ।
एवं तप्तपयोऽम्बुवातशमनक्वाथादिभैकादिभि-
स्तप्तैस्तोयनिषेचनोऽवहहाद्यैः शिलाद्यैः क्रमात् ॥
Cakradatta, Svedādhikāra.

[3] स्वेदश्चतुर्विधः प्रोक्तस्तापोष्मस्वेदसंज्ञितः ।
उपनाह्यो द्रवः स्वेदः खल्वै वातार्तिहारिणः ।
तापस्वेद उष्मस्वेदश्च ताभ्यां संज्ञितः ।
Bhava Prokāśa, I. i.

[4] स्वेदः सप्तविधः प्रोक्तो लोष्टस्वेदो वाष्पस्वेदोऽग्निज्वालास्वेदः ।
घटस्वेदो जलस्वेदो फलस्वेदो वालुकास्वेदश्च ।
Hāritā Saṁhitā, V. iv.

Balance or mānadaṇḍa.

For weighing medicinal substances, the scales and balance are often mentioned. They mention a set of weights and measures to be used in weighing substances. Alberuni[1] describes the Hindu balance thus:—"The balance with which the Hindus weigh things, are χαρίσ τίωνξες of which the weights are immovable, whilst the scales move on certain marks and lines. Therefore the balance is called tūla. The first lines mark the unit of the weight from 1 to 5, and further on to 10; the following lines mean the tenths, 10, 20, 30, &c. In Fergusson's Tree and Serpent Worship we have a diagram of steel-yard, where a man is represented as stepping in the scale, apparently to weigh himself[2]. The ordinary balance is still in common use amongst the kavirājes of the present day.

Collyrium Pots.

The Hindus used to apply collyrium to their eyes, from a very early time. It is said to stimulate the growth of eye-lashes, brighten the lusture of the eye-balls and clean the pupil[3].

Bhāvamiśra[4] recommends us to use collyrium as it improves the visual power and cures many diseases of the eye. It is

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[1] Alberuni's India. Trans, by Sachau, vol. 1, p. 146.

[2] The Tree and Srpent Worship, the pl. lxxxiii. fig. 1.

[3] पच्चलं विशदं कान्तममलोज्ज्वल मण्डलं ॥
नेवमञ्जन संयोगादभवेच्चामल तारकं ।

Suśrutā Saṁhitā, IV. xxiv.

[4] सौवीरमञ्जनं नित्यं हितमक्ष्णोस्ततो भजेत् ।
लोचने भवतस्तेन मनोज्ञे सूक्ष्मदर्शने ॥
"सौवीरं" श्वेत सुरमा इति लोके प्रसिद्धम् ।
स्रोतोऽञ्जनं मतं श्रेष्ठं विशुद्धं सिन्धुसम्भवम् ॥

contra-indicated in patients suffering from fever, emesis, exhaustion, &c.

Suśruta mentions collyrium pots of different metals intended for different kinds of collyrium then in use —

gold	pots	for	sweet	collyrium.
silver	pots	for	acid	collyrium.
horn	pots	for	salt	collyrium.
copper & iron	pots	for	astringent	collyrium.
lapis lazuli	pots	for	sour or acid	collyrium.
bell-metal	pots	for	bitter	collyrium.

He also mentions pots of ivory, or crystal, or coral, or horn, or conch-shell, or stone, or gold, or silver[1].

He also mentions a piece of bamboo for storing collyrium[2] A bamboo is still used by the poor for keeping oil in India. For a similar purpose the wood of Khadira (Accacia Catechu) is also

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दृष्टेः कण्डूमलहरं दाहक्लेद रुजापहम् ।
अक्षीरूपावहश्चैव सहनेमारुतातपौ ॥
नैवेरोगा न जायन्ते तस्मादञ्जन माचरेत् ।

"श्रोतोऽञ्जनं" क्षणसुरमा इति लोके प्रसिद्धं ॥ "विशुद्धं" शोधनं विनापि ।
"सिन्धुसम्भवम्" सिन्धुनाम पर्व्वतस्तत्र सम्भवम् ।

रात्रौ जागरितः श्रान्तः क्षुधितो भुक्तवांस्तथा ।
ज्वरातुरः शिरस्नातो नाक्षोरञ्जनमाचरेत् ।

Bhāva Prokāśa, I. i.

[1] See foot-note 3, P. 67.

[2] कुञ्जकाशोकशालासपियङ्गुनलिनोत्पलैः ॥
पृथ्वीरेणुकृष्णाङ्गापथ्यामलक संयुतैः ।
सर्पिर्मधुयुतैश्चूर्णैवरणनाड्यामवस्थितैः ॥

Suśruta Saṁhitā, VI. xvii.

recommended[1]. For storing oil, Dṛḍhavala[2] mentions the use of vessels of stone or the horn of a lamb or iron.

Medicine Glass.

Sukti or shell of mussell was used as medicine glass. The shell of the fresh water mussels unionacea is mentioned to be used for holding a dose of medicine for administering it to a patient[3]. They generally have equivalve, though not equisided, shells which are covered externally with a smooth brown epidermis and internally by a mother-of-pearl layer. Such a shell "is said to have been formerly much used in Engliand by painters for holding their colour and so the commonest variety is termed unio pictorua. To apply oleaginous errhines, Suśruta[4] recommends us to use metallic pots or the shell of mussel. It is still used in India for feeding the babies with milk and also for administering medicines to the patient. Heyne[5] (1814) says that "according to the nature of the disender, the medicines should be taken out of gold, silver or brass vessels. But if these should not be at hand you may use iron or even earthen vessel."

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[1] सैन्धवोपहितं युञ्ज्यान्निहितं वेणुगह्वरे ।
सैदोयक्तदृतक्षाजं पिप्पल्यः सैन्धवं मधु ॥
रसमामलकक्षापि पक्वं सम्यङ् निधापयेत् ।
कोशे खदिरनिर्य्यासे तद्वत् क्षद्राञ्जनं हितं ॥

Suśruta Saṁhitā, VI. xvii.

[2] See foot note, 4. P. 67.

[3] तत उपसंस्कृतशरीरः प्रातः प्रातरुत्थाय पाणिशुद्धिमाचं चौद्रेण प्रतिसंसृज्योपयुञ्जीत ।

Suśruta Saṁhitā, IV. x.

[4] वामहस्त प्रदेशिन्य शोन्नामितनालायाश्च विशुद्ध स्रोतसि दक्षिण हस्तेन स्नेहमुष्णान् तप्तं रजत सुवर्ण तामसृत्पात्र शुक्तिनामन्यतम यं वृक्षा पिचुना वा सुखोष्णं स्नेहमद्रुतमासिञ्चेद व्यवच्छिन्न-धारं यथानेवेन प्राप्नोति ।

[5] Dr- Heyne's Indian Tracts, Ibid. IV. xl.

Dropper.

The Hindus used a tent of cotton as a drop conductor. Cakradatta[1] advises us to drop medicines into the eyes thus:—the patient should be made to lie down in a place free from draught; the surgeon is to open his eye with the left hand, while with the right, he allows 10 or 12 drops of medicine to fall from a height of two aṅguli on the eye from a tent of cotton, immersed in medicine contained in a clean vessel.

Grind-stone.

Grind-stone to pulverise medicaments is mentioned. In the Mahāvagga[2] we find a reference to it. "I allow, O Bhikkhus, the use of a grind stone, and of another stone to grind upon" (pisana-śilâ ka pisana poto ka—Buddhaghosha).

Stone and iron muller.

For similar purpose a stone slab and iron muller are necessary to make pastes and powders of medicines. On the inner face of the left piller in the eastern gate of Sanchi Topes, the kitchen scene is represented, in which "a fourth woman is seated grinding spices or condiments on the sil, or flat stone, with a bant or round muller[3]".

Khal or elliptical mortar of stone and pestle.

To prepare medicines to be exhibited to the patients, a small

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[1] निवातस्थस्य वामेन पाणिनोन्मील्य लोचनम् ।
शलाकाप्रलम्बयान्तेन पिचुवर्त्या कनीनिके ।
दश द्वादश वा बिन्दून् द्वाङ्गुलादवसेचयेत् ।
Cakradatta, Āśotanayāñjana Adhikāra.

[2] Mahāvagga vi. 3.2.

[3] Cunninham Cunningham's Bhilsa Topes, p. 206.

elliptical mortar is generally used when the medicines require to be thoroughly mixed with some excipient.

The following appliances, besides those mentioned before, become necesary in pharmacy :—

1. Iron pails of various sizes.
2. Vessels of iron, copper, silver, brass and earth for storing medicines.
3. Spoons of wood or darvi ; large metallic spoon or hata.
4. Iron sandaṁśa or pinchers.
5. Rods of wood or iron.
6. Blacksmith's bellows.
7. Ankuśa or hooks like the elephant driver's goad.
8. Iron hammer.
9. Earthen crucibles of different sizes.

CHAPTER IX.

THE CONCLUSION.

In the recent edition of the System of Medicine, Prof. Albutt[1] begins his article on the History of medicine with the following observations: "The medicine of Egypt and the East, extensive and intricate as it was, in so far as it was not Greek did not contain even the rudiments of science. To it Western medicine owes virtually nothing, and in this article at any rate, it may be disregarded". Prof. Osler[2] also speaks in the same strain: "Crude and bizzare among the primitive nations, these ideas of disease received among the Greeks and Romans a practical development worthy of these peoples. There have been systemes of so-called divine healing in all the great civilizations, but for beauty of conception and for grandeur of detail in the execution, all are as nothing in comparison with the cult of the son of Appolo, and of Æsculapius, the god of healing." "Scientific medicine, the product of a union of religion with philosophy, had its origin in a remarkable conjunction of gifts and conditions among the Greeks in the sixth centuries".

Such opinions remind us of an assertion of Sir William Jones[3] "that there is no evidence that in any language of Asia there exists one original treatise on medicine considered as science". About a century has elapsed since the time of Sir William but we see that the same misconception still prevails in the minds of

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[1] Albutt and Rolleston. System of Medicine, vol. I, p. 1.

[2] Oslar and Mcrae's System of Medicine.

[3] Discourse xi. Sir William Jone's Works, Vol. I. p. 161.

the scholars. Macdonell[1] gives us a succint account of the intellectual debt of Europe to the various branches of science and art of the Hindus but regrets that the genetic connection of Indian medicine with that of Greece can not at present be definitely settled. "The question as to whether Indian medical science in its earlier period was affected by that of the Greeks can not be answered with certainty, the two systems not having hitherto been compared with sufficient care." The European mind is quite naturally in the habit of tracing all knowledge to Greece, the fountain of all their knowledge in philosophy and science. But impartial writers are not wanting to vindicate the claims of the Hindus. So Wise remarks as follows[2] :—"Facts regarding the ancient history of medicine have been sought for only in the classical authors of Greece and Rome and have been arranged to suit a traditional theory which repudiated all systems which did not proceed from a Greecian source. We are familiar from our youth with classical history and love to recall events illustrated by the torch of genius and depicted on our memories; and it requires a thorough examination of a subject, a careful weighing of new evidence, and a degree of ingenuousness not always to be found to alter early impressions. Still candour and truth require us to examine the value of new facts in history as they are discovered, so as to arrive at just conclusions". Royle maintains[3] that "from the mixture, however, of much ignorance and absurdity with what is valuable, many will be apt to despise altogether the medicine of the East. But if it be recollected how long in Europe prevailed the influence of Galen,

[1] History of Sanskrit Literature, ch. xvi.
[2] Review of the History of Medicine. Introduction.
[3] Antiquity of Hindu Medicine, p. 61.

as well as how many absurd formulas still figure in some continental pharmacopœas, as also how comparatively recent is the time since our own was so greatly improved; some feeling of humiliation will control the pride with which we now view the medical sciences". Neuberger says[1]; "The medicine of the Indians, if it does not equal the best achievements of their race, at least nearly approaches them. and owing to its wealth of knowledge, depth of speculation and systematic construction, takes an outstanding position in the history of oriental medicine." It is no doubt unsatisfactory to find that such notions are still allowed to stand in the way of impartial conclusions by eminent men of science especially by those who write history of medicine. But it is not the fault of the historians alone, the fault lies with us for not having supplied them with adequate materials. Something has been done in this field of research by men like Wilson, Heyne, Ainsle, Royle, Dutt, Thacore Shaheb, Jolley, Hoernle and others, but it is nothing when compared to what is required to be done. To supply this want partially, we have endeavoured in this monograph to describe the surgical instruments of the Hindus, with a comparative study of the instruments of the Greek, Roman and Arab surgeons, and of the surgeons in modern times. By a careful study of this subject, we can not avoid the conclusion that the medicine of India though it was not Greek, contained the requirements of science and has a fair claim to be considered in the history of medicine. To it western medicine really owes something and so the subject has been studied and investigated thoroughly.

[1] Neuberger. History of Medicine. Trans. by Playfair. Vol. I. p. 437.

Apart from the usefulness of the study for collecting materials for the history of medicine, there are good reasons for a critical examination of the subject. The knowledge of the Hindus in medical science was by no means rudimentary. There is evidence to show that they were inferior to none in the quality or quantity of the knowledge of the science at that early age. Hoernle says:[1] "Its extent and accuracy are surprising when we allow for their early age—probably the sixth century before Christ—and their peculiar methods of definition." They practised dissection of human bodies and their anatomical studies have the mark of high order. "We have seen that they used various forms of surgical instruments. The Hindus cut for stone couched for the cataract and extracted the fœtus from the womb". They performed abdominal section, practised cranial surgery successfully and no region of the body was thought sacred to the knife. They repaired nose and ears by plastic operations, treated fractures and reduced dislocations, and were experts in performing amputations. They reduced hernia, cured piles and fistula-in-ano by surgical technique, and inoculated and vaccinated for small-pox. Field surgery was thoroughly understood and arrows were extracted with skill. They were acquainted with the circulation of the blood,[2]

[1] Hoernle's Osteology, Preface. P. iii.

[2] याभिरिदं शरीरमाराम इव जलहारिणीभिः केदार इव च कुल्याभिरुपस्निह्यते-ऽनुगृह्यतेचाकुञ्चन प्रसारणादिभिर्विशेषैः। द्रुमपत्रसेवनीनामिव च तासां प्रतानास्तासां नाभिर्मूलं ततश्च प्रसरन्त्यूर्द्धमधस्तिर्य्यक् च।

Suśruta Saṁhitā, III. vii.

देहस्योत्पत्तिरसृजो देहस्तेनैव धार्य्यते।
रक्तं जीवस्य चाधारस्तस्माद्रक्षेदसृग्बुधः॥

Bhāva Prakāśa, I. ii.

the distinction between the artery and vein,[1] the use of anæsthetics, the means of arresting hæmorrhage and the proper treatment of surgical wounds. They enumerated 107 vital parts of the body to be avoided, if possible, by the surgeon in practising his handicraft.[2]

In medicine they first propounded the humoural pathology. Though it seems fanciful in the light of modern culture, it must be admitted that no other theory has been attempted to explain the causation of disease in recent times. "They were the first nation who employed minerals internally and to them we owe the therapeutic use of mercury and arsenic in intermittents". They introduced massage, postural treatment and magnet in therapeutics. They excelled in chemistry and contrived many instruments for the preparation of chemical compounds. Atomic theory was discovered by Kaṇāda; and "they knew how to prepare sulphuric acid, nitric acid and muriatic acid, the oxide of copper, iron, lead (of which they had both the red oxide and litharge),

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विस्रता द्रवता रागश्चलनं विलयस्तथा।
भूम्यादिपञ्चभूतानामेते रक्ते गुणाः स्मृताः॥
अक्षे दुष्टे भवेच्छोथो रक्तमण्डलमेव च।
व्यथा दाहश्च पाकश्च कण्डूश्च पीड़कोद्गमः।
ह्रद्दे रक्ताक्ष नैचत्वं शिराणां पूर्णता तथा।
गात्राणां गौरवं निद्रा मेही दाहश्च जायते॥

Sārṅgadharā Saṁgraha, III. xii.
Bhāva Prakāśa, I. ii.

[1] इन्द्रगोपप्रभं श्रेयं प्रकृतिस्थसमंहतम्।

Sārṅgadhara Saṁgraha, III. xii.

गूढाः समस्थिताः स्निग्धा रोहिण्यः शुद्धशोणितम्।

Aṣṭāṅga Hṛdaya Saṁhitā, II. iii.

[2] सप्तोत्तरं मर्म्मशतं।

Suśruta Saṁhitā, III. vi.

tin, and zinc; the sulphuret of iron, copper, mercury, antimony and arsenic; the sulphate of copper, zinc and iron; and carbonates of lead and iron[1]". The processes of solution, calcination and distillation were discovered by them.

They understood the action of drugs and no less than 500 classes of medicinal agents are enumerated and arranged according to their virtues in curing diseases, and their remedial agents have been collected from the vegetable, animal and mineral kingdoms. There are 41 different forms in which the medicaments may be exhibited to the patient. We have the earliest notice respecting zoology and botanical geography in their works. They had a complete nomenclature of diseases which are described minutely as regards their ætiology, symptomatalogy, diagnosis, pathology, prognosis and treatment.

Veterinary science was well known to them, and treatises on horses and elephants—Aśvavaidyaka and Pālakāpya[2] are still extant, and will repay perusal. Even there is a treatise on the treatment of plants and trees[3]. Thus we see that the Hindu medical science must not be condemned offhand and requires a careful and sympathetic research by scholars, before it can be excluded from the history of the science.

But I must be careful not to allow my enthusiast admiration carry me too far. It is quite true that the Ayurvedic system has its faults. It has been remarked that "it consisted of erroneous

[1] Elphinistone's History of India, 8th ed. p, 160.

[2] Another book on the medicine of elephants is quoted by Alberuni. See Sachau's Preface to Indica, p. xl.

[3] For the bibliography of the Āyurvedic books, see my work "Materials, Biographical and Bibliographical, for the History of Hindu Medicine". (In the press).

doctrines founded upon a most fanciful anatomy, physiology and pathology. Much indeed could hardly be expected of a science based upon an anatomy which taught that the navel "constituted a centre from which a vascular system, including 40 principal vessels originated[1]; upon a physiology which declared that these vessels were destined to convey blood, air, bile and phlegm to all parts of the body, and upon a pathology which maintained that disease depended either upon derangements of one or more of these humours or "upon the influence of good or evil spirits".[2] It must however be remembered that this criticism refers to a theory elaborated some 3000 years before. The idea that the navel formed the centre of the vascular system apparently had its origin in the fœtal circulation[3]. The position of the heart was well-known and its function as a profeelling organ is

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[1] यावत्यस्तु सिराः काये सम्भवन्ति शरीरिणां।
नाभ्यां सर्व्वा निबद्धास्ताः प्रतन्वन्ति समन्ततः॥
नाभिस्थाः प्राणिनां प्राणाः प्राणान्नाभिर्वृपाश्रिता।
सिराभिराहृता नाभिश्चक्रनाभिरिवारकैः॥

तासां मूलसिराश्चत्वारिंशत्तासां वातवाहिन्यो दश पित्तवाहिन्यो दश कफवाहिन्यो दश दश रक्तवाहिन्यः।

Suśruta Saṁhitā, III. vii.

तस्यान्तरेण नाभिस्तु ज्योतिःस्थानं ध्रुवं स्मृतं।
तदा धमति वातस्तु देहस्तेनास्य वर्द्धते॥

Ibid. III. iv.

[2] A course of lectures on the Principles and Practice of Medicine delivered at Calcutta Medical College. By Francis. 1868.

[3] मातुस्तु खलु रसवहायां नाड्यां गर्भनाभिनाड़ी प्रतिबद्धा सास्य मातुराहाररसवीर्य्यमभिवहति। तेनोपस्नेहेनास्याभिवृद्धिर्भवति।

Suśruta Saṁhitā, III. iii.

described in the ancient books[1]. In the later Tantras the origin of the nerves from the spinal cord and the brain is distinctly stated[2]. The ancient Hindus, like the Babylonians, thought the heart to be the seat of the understanding, and the liver as the central organ of the blood. The Greeks were the most cultured nation at that age, and the knowledge of the two nations can be compared to our advantage. The Hindus did not share with the Greeks the belief that the uterus is "an animal within an animal" and that it can be attracted by pleasant smells and repelled by pungent substances"[3]. The humoural pathology was also the keystone of the Greecian system. The belief in the good and evil spirit was the only alternative to the pathologists when the microscope and the germ theory of diseases were unknown. It is highly creditable to the classical Greek physicians for banishing superstition from the practice of the art; but we know that the later Greek writers Aetius, Alexander and Paulus, and the Latin medical literature, were not free from its baneful influence. The belief in charms and miracles in the cure of diseases seems to be universal and is

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[1] स रसः इत्युच्यते। तस्य च हृदयं स्थानं स हृदयाच्चतुर्विंशतीः धमनीरनुप्रविश्योर्ध्वगा दश दश चाधोगामिन्यश्चतस्रस्तिर्य्यग्गाः कृत्स्नं शरीरमहरहस्तर्पयति वर्द्धयति धारयति यापयति जीवयति चाहृष्टहेतुकेन कर्म्मणा।

Suśruta Saṁhitā, I. xiv.

[2] हे हे तिर्य्यक्गते नाड्यौ चतुर्विंशति संख्यया।
मेरुदण्डेस्थिताः सर्व्वे सूत्रे मणिगणाइव॥
* * * *
ऊर्ध्वमूलमधःशाखं हृच्चाकारं कलेवरं।
यथाश्वत्थदलं तद्वत् शरीरे नाड्यस्थिताः॥

Tantra.

[3] Paulus Ægineta, Adam's Commentary, Vol. I. P. 636.

working even at the present time. Adams says[1] that "considering the faith which many educated persons now repose in the virtues of galvanic rings and garters, the present generation has little ground for laughing at the credulity of our forefathers, with respect to amulets and other phylacteries".

In later times, attempts have been made to substitute other theories in the place of the humoural, and we know with what results. "Paracelsus substituted an equally baseless hypothesis, that the fundamental element of the human body were three principles: sal, the solid element; quicksilver, the liquid; and sulphur, the aerial. This formula was the badge of the Paracelsist school up to the end of the 17th century." Sylvius and Willi (17th century) of the Iatro-chemical school "referred most diseases to morbid matters or "acrimonies" produced by perverted secretions, and these being sometimes too alkaline, sometimes too acid, the antithesis of acid and alkali became the badge or catch word" of their system. Friedrich Hoffman (1660-1742) constructed another system which "supposed life to be a universally diffused ether, which entering the animal body, became transformed in the brain into Pneuma or nervous fluid. "George Ernest Stahl (1660-1734) believed in the hypothesis of Animism, and "the symptoms of disease were regarded as the conscious efforts of the soul to overcome the morbid influences". William Cullen (1712-90) "propounded a new system of medicine, intended to reconcile the opposing views of his predecessors. Its main feature was the importance attached to the nervous system in the causation of disease." Lastly the "Brunonian" system of John Brown, based on

[1] Adam's Commentary on Paul.

the doctrine of stimulus, and Hahneman's theory of homœopathy need be mentioned here to complete the list.[1] Thus we see that even some of the eminent men of science indulged in fanciful theories in quite modern times.

The study of ancient Hindu medicine has an antiquarian value. It is perhaps the oldest system of medical science still extant. Fragments of Egyptian and Assyrian medicine have no doubt been unearthed. But these cannot be compared with the complete system of the medical science as preserved in the early Sanskrit works on the subject. The Hindus believe their science of medicine to be of divine origin and this belief is founded upon the fact that the existence of the medical profession can be traced back to prehistoric times. The humoural theory is mentioned in the Ṛgveda[2] which according to the consensus of opinions amongst the European savants can not be later than 2000 B.C., and possibly earlier. The Buddhists relate a story, how, in one of his former births, Buddha was born as a medicine-man. "In the Mahosadha birth the archangel Sakka came to him as he was being born, and placing some fine sandal-wood in his hand, went away. He came out from the womb holding this in his fist. His mother asked him "What is it you hold, dear, as you come?" He answered "Medicine, mother!" So because he came holding medicine, they gave him the name of medicine-child (oṣadhadhāraka). Taking the medicine they kept it in a chatty (an earthenware water-pot) and it became

[1] Medicine in modern Europe. Payne in Albutt's System of Medicine, vol. I, p. 26, 29, 34.

[2] भीमानं ग्रंथीनंमकाय मूनवे विधातु शर्म वहतं शुभस्पती ॥

Ṛgveda, i. 34, 6.

a drug by which all the sickness of the blind and deaf and others as many as came, was healed—so the saying sprang up, "This is a powerful drug"; and hence he was called Mahosadha (The great medicine-man).[1] This early date of the science amongst the Hindus is not exceptional. It is now well-known that so severe an operation as trephining the skull was often performed in the early stone age. "Trephined skulls from neolithic period have been found in most European countries, in Algiers, the Canaries, North America, Mexico, Peru and the Argentine"[2]. In the Code of Hammurabi, king of Babylon (2285-2242 B. C.), there are thirteen articles regulating medical practice. One deals with the responsibilities of a surgeon performing operations on the eye. The laws Hammurabi lay down that:—

"If a Physician cause a severe operation wound with a bronze operating knife and cure the patient, or if he open a tumour (cavity) with a bronze operating knife and save his eye, he shall have ten shekels of silver.

"If it be a freedman, he shall have five shekels.

"If it be any one's slave, his owner shall give the physician two shekels of silver.

"If the physician make a severe wound with a bronze operating knife and the patient die, or if he open a growth with a bronze operating knife and the patient lose his eye, he shall have his hands cut off.

"If a physician make a severe wound on the person of

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[1] Rhys David's Buddhist Birth Stories, vol. I, p. 67-68.

[2] Neuberger's History of Medicine, P. 3.

Āyurveda from their father became the medical attendants of the gods, to Æsculapius—the reputed son of Apollo, and his two sons Machaon and Podalarius, celebrated in the Homeric poems, is indeed remarkable. More remarkable is the belief in humoural pathology shared by the two nations, separated from each other by continents and seas, and alienated from each other by the differences in customs, manners and religion. The theory of independent origin and developement falls to the ground, especially when we consider the strange coincidence in the surgical instruments used by the two nations in performing surgical operations. Some of the instruments used by the Hindus were not only identical in structure and shape to the instruments of the Greeks, but they had even the same name. Thus for instance, the alābu yantra of the Hindus corresponds to the description of the cucurbitula of the Greeks, and both the terms mean a gourd. A śṛṅga is the horn; aṅguli yantra or mudrikā is the finger or ring-knife; yoni-vraṇekṣaṇa is the diopter or vaginal speculum; aṅkuśa is the hook; &c. Some instruments though they have different names are identical in structure and uses. Thus, the Scammum Hippocraticum or the Plinthium Nelei is the Greek counterpart of the Hindu kapātaśayana; the lithotomy binding of the yantraśatakam; the clyster of the vastiyantra; the saw of the karapatra; the needle of the sūcī; &c. Again many surgical operations are similarly described in both the systems, as for examples, the operations for stone and cataract may be cited. In the description of diseases, passages occur in books which seem to be a literal translation of one from the other. Thus in describing the symptoms of hydrophobia, Paulus quotes Rufus who pronounces it to be a

species of melancholy and then observes "Which reason accords also with those who say that they think they saw the image of the dog that bit them in water". The word "those" in the above sentence becomes clear to us when we read a similar passage in the kalpasthāna of the Suśruta Saṁhitā, and it may be thus translated:[1] "If the patient sees the image of the animal that bit him in the water or mirror, he is sure to die." Other passages might be multiplied but our limited space forbids any further quotations. All these coincidences can scarcely be accidental; and though we may not be able to trace the actual progress of medicine from India to Greece, yet the evidence in favour of its transmission is too strong to be held in doubt.

Thus the question of the relation of the medical science of the Hindus to that of the Greeks naturally suggests itself for solution. The possibility of a dependence of the either on the other can not be dismissed offhand for we have historical evidence of communication between the two nations at a very early age. We need not dwell at length upon those shoals and quagmires of historical controversies, the alleged conquest of India by Egyptian Seostris as recorded by Diodorus Seculus[2] in prehistoric times; the connection of the Phœnician traders as proved by the articles of merchandise,—cinnamon, aloes, onyx, agate, ebony, tin and ivory[3] diamond, gold and

[1] अप्सुवा यदिवादर्शे रिष्टं तस्य विनिर्दिशेत् ॥
वस्त्यत्यक्ष्माद् योऽभीक्ष्णं श्वाद्दष्टापि वा जलं ।
जलवासनुविद्यात्तं रिष्टं तमापिकौत्तितं ॥

Suśrutā Sāṁhitā, V. vi.

[2] I. ib. I. ch. 43. Nolan.

[3] Strabo. xv 37. [Quotes Megasthenes; Theophrastus quoted by MacCrindle in Ancient India as described by classical authors, p. 46; Virgil. Georg. 11. 116-17 ("India alone preduces black ebony"), Georg. I. 57. ("India sends Ivory"), Lonsdale and Lee's trans.; Horace, odes 1. 31.

embroidered work[1] the commercial enterprises of the ships of Solomon (992 B. C.) from Ezion-Gaber[2] under the guidance of the mariners of Hiram (B.C. 980-917) which brought back the gold of "ophir," its almug trees and ivory, apes and peacocks; the possibility of an Indo-Hellenic intercourse to explain the remarkable coincidences between the systems of philosophy current amongst the two nations, and which culminated in the bold theory of Pococke[3] that Pythagoras, who is generally considered to be the founder of the healing art amongst the Greeks[4] was an adaptation of the Buddhugurus, and the assertion that Greece must have been an Indian colony before. Let us rather tread on firmer grounds and we know that two Greek physicians, Ktesias (about 400 B.C.) and Megasthenes (300 B. C.) visited Northern India. Ktesias in his Indica mentions the cochineal plant, its worm and dyes, monkeys, elephant and parrot. He says that the Indians were free from headache, toothache or ophthalmia and from mouth sores or ulcers. Alexander the Great (B.C.327), so says Nearchus, employed some Hindu vaids in his camp in India to consult them in cases of snake-bites and other dangerous ailments. Megasthenes mentions ebony as growing in Bengal, and tiger, monkey and elephants are also alluded to. Strabbo mentions that Daimacus was sent to the court of Candragupta's son, but unfortunately the book he wrote about India is lost to us. Mention also should be made of the intercourse of Egypt with India under the Ptolemies and we know, that Ptolemy

[1] Birdwood's Industrial Arts of India, pp. 263-4.

[2] I. King. ix. 27; xii, p. 22.

[3] India in Greece.

[4] See the Origin and Growth of the Healing Art—Bedroe. 162.

Philadelphous sent an embassy headed by one Dionysos to the court of Pātaliputra. Another source of dessimination of Hindu learning over the Western world is the emigration of the Buddhist missionaries to the kingdoms of Ptolemies and Greek kings as proved by the edicts of Aśoka. "And the Greek Simnoi (venerable) were no other than the Buddhist sramanas (these simnoi whom Clement of Alexandria has narrated to have rendered worship to a pyramid originally dedicated to the relics of a god, were the Buddhist Arhats (venerable) sramanas).[1] The intercourse of the East and West after the Christian era is well known and will not supply us with any proof as to the indebtedness of the Greeks and Hindus to each other; though "Dietz proves that the late Greek physicians were acquainted with the medical works of the Hindus, and availed themselves of their medicaments"; but he more particularity shows that the Arabians were familiar with them, and extolled the healing art as practised by the Indians, quite as much as that in use among the Greeks.[2]

But what is more important to us as a proof of the influence of the Indian medical science upon the Greecian system is the identification of drugs of Indian origin in the meteria medica of the Greeks. For instance the Sacred Bean of Pythagoras has been identified with Utpalam or Indian Nelumbium.[3] Hippocrates the Great, who was contemporary and kinsman of Ktesias[4] the court physician to the king of Persia, mentions:—Sesamum Indicum (Tila); Nardostachys Jatamansī

[1] Lalitvistaram. Mitter's ed. ch. 1.
[2] Journal of Education, Vol. viii, p. 176.
[3] Pratt's Flowering Plants, Vol. 1, p. 67.
[4] Galen; Comment, in libr. de artic. iii.

(Jaṭāmāṁsī); Beswillia Thurifera (Kunduru); Zinziber Officinale (Śṛṅgavera); and Piper Nigrum (Marīci). Dioscorides (1st century A.D.) in his Materia Medica describes:—Agallochum, Bdellium, Ebony (Diosphynos Ebenaster), Ammomum zinziberis (Ginger), Calamus aromatious (sweet cane of Scripture), Eletteria Cardamomum (Elaci), Lycium Indicum or Russot, the product of Berbera lycium, Atramentum (Indigo), Onyx or the operculum of an Indian shell-fish, etc. In later times, we find Aetius, an Alexandrian writer of the 5th century describing Indian nuts, sandal wood, cocoanuts, etc. Symon Set mentions camphor; and Paulus Aegineta (7th century A.D.), a writer well known for his judicious condensation of the Greek medical literature, mentions Aloes, Cantharides (Mylabris Cichory), Cloves (Caryophyllum Aromaticus), Millet (Panicium Halicum), Costos (root of Auklandia Costos), Cassia (Cinnamomum Cassia), Indian stones as amulets, Malabathri or tejpāt (Laurus Cassia), Ambar, etc.

Now let us reproduce some of the conclusions arrived at by Western scholars as the result of the controversy. As regards philosophy, Colebrooke[1] asserts that "the Hindus were teachers and not learners". Cunningham[2] says: "Indians have the advantage in point of time; and I feel satisfied that the Greeks borrowed much of their philosophy from the East" Weber[3] remarks that "there is no ground whatever to suppose that Suśruta borrowed his system of medicine from the Greeks, on the contrary there is much to tell against such an idea".

[1] Transactions of the Royal Asiatic Society, vol. I.

[2] Bhilsa Topes, pp. 32-33.

[3] History of Indian Literature.

Prof. Diaz of the Konnigsberg University, detects the principles of Indian medicine in the medical literature of the Greeks". "It is to the Hindus" says Wise, "we owe the first system of medicine." Royle has proved beyond doubt the indebtedness of the Greeks and Arabs to the Hindus. Haas's theory that Suśruta is the Indian adaptation of the Arabic name of Suqrat or Buqrat, the Arabic corruption of the Greek Hippocrates, and that Kāsi is an adaptation of the Island of Cos has been deservedly condemned as "an elaborate joke". Neuberger says:[1]— "The similarity between Indian and Greek medicine of the period is in its outline and in certain details so striking that it is hardly surprising that the originality of the former has frequently been questioned or even denied. The more so is this true since the dates of the more important Indian works are fixed with the greatest difficulty, and before the discovery of the most recent manuscripts they were quite indefinite.

In consideration of the outstanding independent achievements of the Indians in most branches of science and art, and of their aversion from foreign influences, the trend of opinion to-day, informed by recent discoveries is in favour of the originality of Indian medicine in its most salient features."

Another fact must here be pointed out that the Hindus always acknowledged any help they might have received from other nations for the development of their science. The striking proof of this is found with reference to the science of astronomy— the only branch of learning which seems to have been influenced by the Greeks. Varāhamihira compiled his famous Pañca-sidhāntica or the collection of the five old treatises on astronomy,

[1] Neuberger. History of medicine, Vol. I, p. 45.

viz., Paulisa, Romaka, Vaśiṣṭha, Saura, and Paitamoha. Both Weber and Kern have no doubt that Paulisa was a Greek and the name Romaka speaks for itself. But in the Hindu medical literature there is no mention of any foreign help, and the Indian medical treatises do not contain a single technical term which points to a foreign origin. It is interesting to quote the well known passage of Garga: "The Yavanas (Greeks) are Mlecchas, but amongst them the science (astrology) is well established. Therefore they are honoured as Ṛsis—how much more than an astrologer who is a Brāhmaṇ". It is a standing monument of the catholic spirit of the Hindus, and they know no better way to show their respect for the learned men of the world. To this may well be contrasted the behaviour of the Greeks towards the other nations. The doctrines of Pythagoras are pre-eminently Indian[1], but that philosopher has not a word to speak of the Hindus. In astronomy the Greeks are indebted to Babylon: Ptolemy mentions that Hipparchus worked out and improved upon the astronomical computations of the Babylonians with reference to the moon; but recent discoveries from the clay tablets have shown that the figures ascribed to Hipparchus are merely copied from the numerical values worked out in Babylon. "The discovery of the precession of the equinoxes is generally ascribed to Hipparchus. It was he indeed, who brought this fact to the Greeks, and he estimated its yearly amount as from 36 to 39 seconds, but it is certain that he learned about it in Chaldea, and that he obtained the elements of his calculations from the astronomical observations made on the lower Euphrates".[2] Paulus Aegineta

[1] See Enfield's History of Philosophy.

[2] Historian's History of the World. Vol, I, p. 596.

gives us a complete system of operative surgery of the ancients. Celsus, in the last two books of his work, has treated of the surgical operations with considerable accuracy; and though the former availed himself of the labours of the latter, Celsus is never mentioned as one of the sources of informations used by Paulus who appears to have been wholly unacquainted with his works; and Adams remarks "but when did a Greek writer ever acknowledge himself under obligation to a Roman"?

But are we to suppose that the Greeks wilfully concealed the names of the Indian physicians in their books? Surely not. The Greeks might not have known the real source of the informations which they probably received second-hand. There is historical evidence of an intercommunication between Greece and Persia from the time of Ktesias or the 4th century B. C. to the 6th century A. D. We also know of a tradition that the services of the Great Hippocrates—a kinsman of Ktesias, were required in the Persian court, but he declined the invitation. Again we know that books on ancient sciences of India were possibly made use of by the Persians in early times, and to this intercommunication may be due "the coincidences which have been observed between the science of the Greeks and that of the Hindus" (Royle).

As regards the indebtedness of the Persians to Sanskrit literature," we have positive testimony on the subject, as the Baron de Sacy, in his account of the well-known Sanskrit origin of the Fables of Pilpay, states that these were first translated in Pehlevi during the reign of the Persian king Nooshirwan, who ascended the throne in 531, and died in 579 and who is reported by historians to have encouraged learning, and to have induced Greecian philosophy at his court. The translation

were made by the physician Barzouyeh who had brought the original from India with other books, and who by more than one previous journey to that country, had acquired a knowledge of Sanskrit. He is stated particularly, to have made two journeys, one for the purpose of procuring medicaments and herbs, and the other for obtaining specimens of literature of the Hindus"[1]. "Previous even to this (A. D. 330), we hear of the Persian king Bahram visiting, in disguise, the court of Basdeo, sovereign of Canouge, to study the laws, religion and manners of the Hindus."[2]

But whatever differences of opinion there may be as regards the relation of the Greeks to the Hindoos, there is no doubt that the medical science of the Arabs was materially influenced by Hindu medicine. For we know that the medical treatises of Caraka, Suśruta and Mādhava were translated into Arabic in the beginning of the 8th century A. D., and the names of Scarac, Scirac or Xarac and Sarad occur in the Latin translations of Avicenna, Rhases, and Serapion.[3] Rāy dwells at length on the similaritry of description of leeches as written by Suśruta and Rhazes. The modern medical science of the West is principally based on the Greecian system as preserved in the books of the Arabian authors and so indirectly depends for some particulars at least upon the Indian system.

Sachau in his preface to Alberuni's India[4] remarks as

[1] Antiquity of Hindu Medicine, p. 168-69.

[2] Ibid, p. 73.

[3] Rhazes: 'De Emblico,' (Scarac Indianus), 'De Zinzibere, (Sarac) Serapion: 'De Myrobalanis' (Xarch Indus), 'De Emblicis et bellericis (Xarcha Indus); Avicenna: 'Sub Emblico' (Scirac Indum).

[4] Alberuni's India, Preface, p. xxx-xxxi.

follows:—"What India has contributed reached Bagdad by two different roads. Part has come directly in translations from the Sanskrit, part has travelled through Iran, having originally been translated from Sanskrit (Pali? Prakrit?) into Persian, and further from Persian into Arabic. In this way, *e.g.* the fables of Kalila and Dimna have been communicated to the Arabs, and a book on medicine probably the famous Caraka. *cf.* Fihrist p. 303". The Arabs also translated "Indian works on snakes (sarpavidyā), on poison (viṣavidyā).....on the veterinary art[1].....But not only were the medical books translated into Arabic we have evidence that Indian doctors practised in foreign courts. Sachau continues:[2] "Another influx of Hindu learning took place under Harun (A. D. 786-808). The ministereal family Barmak, then at the zenith of their power, had come with the ruling dynasty from Balkh, where an ancestor of theirs had been an official in the Buddhistic temple Naubehar, *i. e.*, nava vihāra—the new temple (or monastery). The name Barmak is said to be of Indian descent, meaning paramaka, *i. e.*, the superior (abbot of the vihāra?) *cf.* Kern, Geschichte des Buddhismus in Indien, ii. 445, 543. Of course, the Barmak family had been converted, but their contemporaries never thought much of their profession of Islam, nor regarded it as genuine. Induced probably by family traditions, they sent scholars to India, there to study medicine and pharmacology. Besides, they engaged Hindu scholars to come to Bagdad, made them the chief physicians of their hospitals, and ordered them to translate from Sanskrit

[1] Alberuni's India, Preface, p. xxxiv.

[2] Ibid p. xxxii.

into Arabic, books on medicine, pharmacology, toxicology, philosophy, astrology, and other subjects. Still in later centuries, muslim scholars travelled for the same purpose as the emissaries of the Barmak, *e. g.*, Almuwaffak, not long before Alberuni's time (Codex Vindobonensis, sive medici Abu Mansur liber, fundamentorum pharmacologiæ, Ed. Selignann, Vienna, 1859, pp. 6, 10, and 15, 9)."

"Harun-al-Rashid (786-809) had two Indians Manka and Saleh, as physicians at his court"[1] Manka translated the classical work on medicine, Suśruta (*cf.* Steinschneider, Wissenschaftliche Blätter, Vol. I, p. 79) and a treatise on poison, ascribed to Kânakya, from Sanskrit into Persian (see Prof. Flügel, in Zietschrift der D. M. G. xi. 148 and s. 325). A Hebrew treatise on poison, ascribed to the Indian Zanik (Kanakya) is mentioned by Steinschneider Wissenschaftliche Blätter, Vol. 1, p. 65). Alberuni mentions an Indian Kankab as astrologer of Harun-al-Rashid (Reinaud, memoire sur l' Inde, p. 315). He is likewise mentioned as a physican. Another Indian physician of Harun-al-Rashid is called Mankba (Reinaud). In the year 1381, a work on veterinary medicine ascribed to Salotar was translated from Sanskrit by the order of Firroz Shaha after the capture of Nagorecote. A copy of it was preserved in the Royal Library of Lucknow[2]. Among the Hindu physicians of the time one ابن دهن is mentioned *i.e.*, the son of DHN, director of the hospital of the Barmaks in Bagdad. This may be Dhanya, or Dhanian chosen probably on account of its etymological relationship with the name Dhanvantarī the name

[1] Prof. Dietz, quoted by Royle, p. 64.

[2] Maxmüller's Science of Language, Vol. I, p. 166.

of the mythical physician of the gods in Manu's law book and the epics (*cf.* A Weber, Indische Lithuraturgeschichte, pp. 284, 287). A similar relation seems to exist between the names Kanka, that of a physician of the same period, and Kankayana, an authority on Indian medicine (Weber l. c., pp. 287, note, and 284 note, 302). The name اطر, that of an author of a book on drinkables, may be identified with Atri, mentioned as a medical author by Weber, l. c. p. 288."[1]

For informations on the Arabic translations of Sanskrit works, see Analecta Medica by Dietz; Wustendeld's Geschichte der Arab Aerzte; Cureton, "A collection of such passages relative to India as may occur in Arabic writers"; Wilson's note to the above in J. R. A. S. old series, vi, pp. 105-115. Puschmann, p. 162; and Bedrœ, book iv. ch. 11. pp 286-299.

The Arabians added many durgs to the meteria medica of the Greeks and amongst them we find the following Indian drugs described :—

Diudar or Pinus Deodara	Devadāru[2]
Artemesia Indica	Nāgdamani.
Piper cubeba	Sugandha marica.
Cassia fistula	Suvarnakha.
Senna or Cassia obvata	Sonāmukhī.
Galangal or Alpina galangal, Roxb	Kulin-jana.
Ammomum grana paradisi.	
Macis	Mace.
Nux moschata	Nutmeg.

[1] Sachau. Ibid p. xxxii.

[2] It is described by Avicenna under its Sanskrit name, where he says that deiudar, "est ex genera abhel juniperus, que dicitur pinus Inda; et syr diudar est ejus lac" (Quoted by Royle).

Bdellium.....Guggula.

Tamarindus Indica.....Tintiḍī.

Trifolia.....Triphala.[1]

Myrobalani.....Haritaki.

Turpeth or Convolvulus Turpethum.....Trivit.

Sel or Aegle marmelos.....Vilva.

Santalum rubrum.....Candana.

Melia azadirachta.....Nimba.

Tembul (Piper betel).....Tāmbūl.

Faufil (Arecha catechu).....Khadira.

Nux vomica.....Viṣamuṣti.

Musa paradisiaca or plantain.....Kadalī.

Moschos moschifera (from Thibet & India)Mṛganābhi.

Dolichos lebleb.

Orange or Citrus aurantium.....Nāgaraṅga.

Limon or citrus medica.....Mātuluṅga.

Pearls and other precious stones such as lapiz lazuli. Borax, &c.

Rhabarburnum or Indian Rhubarb, etc.

We can trace the Arabic and Greek names of some of the medicuments to a Sanskrit source. Royle has discussed them at length, so we need give here only a synopsis of it:—

Triphalā (S)—Tryphalla (A)—Tryphalla (G)—Tryphala parva (modern).

Devadāru (S)—Deiudar(Avicenna)—Deedara (G)—Pinus deodaru.

Tvaka-kshira (S)—Tabosheer (A).

Tamālpatra (S)—Malatroon or Malabathrum (G).

Tejapatra(s), or tuj—Sadej (A).

[1] Actuarius copies from Serapion and Mesue, the use of this medicine. The very name is Sanskrit, meaning the 3 myrobalans. Serapion refers to Xarch indus or Charak, in his De Myrobalani (Royle, P. 37).

Tāmbula (S)—Tumbol (P)—Tunbol (A).

Pippalī (S)—Pippul (H)—pilpil (P)—filfil (A)—(G)—piper (E).

Śṛṅgavera (S)—Shimgveez (P)—Zinzabil (A)—Zingiber (E).

Aguru (S)—aggur (H)—Agila (M)—Pao-d'aglia (aquilia) (po)—Aod Hindee Agallochum (G).

Candana (S)—chundan (H)—Shandana (T)—Sundul (P)—Santal (E).

Kolinjana (S)—Galanga (G).

Vaca (S)—Wuz (A).

Dāvrusita (S)—Darcheeni (H)—Darsheeni (A).

Cacyn-nama (C)—Akimona (P)—Kaimanis (M)—Cinnamon.

Kuṣṭha (S)—Kooth (H)—Kust (A)—Koosrus (G)—Koshta (Sy).

Abnus—Ebony (E).

Kubara (S)—pupal (P)—fufal (A).

Sajikā (S)—Sajiimattee, sajiloon, sajii (H)—Sajimen vitri (Geber)—Soza or soda (E).

Khar, khari (S)—Kali. (A).

Kussas, missy (India)—misy (A)—misy (G).

Tincana (borax)—Tinkar (P)—tincal (E).

Ambara (S)—Kharoba (A)—Amber, Ambegrise (E).

Kassis (tin)—Kassiteros (G).

Tuttha (S)—tootum or tutia (H)—tutia (P)—tatanagum (T)—tutenagun and tutty.

Manaśilā (S)—Mansil (G).

Haritāl (S)—hartal.

Sarkarā (S)—sakkara (T)—sukkur (A)—Sugar (E).

Sandaracha (S) or sulphuret of arsenic—Zarnach (P & G).

Sphotaka (S)—phoska (B)—pocca (A. S.)—pocke (Ger).

Tintiḍi (S)—Tamar Hind (A)—Tamuarin (Fr)—Tamarinds (Italy & Sp.)—Tamarind (B)—Tamarindus India (L).

Masurikā (S)—Masern (Ger)—Measles (E).

Vraṇa (S)—verole (Fr)—variola (L).

Danga (Hindus)—Dandy—Dengue (Sp).

S—Sanskrit. A—Arabic. G—Greek. T—Tamil. P—Persian. M—Malayan. Po—Portuguese. Sy—Syriac. Ger—German. A. S.—Anglo-Saxon. H—Hindi. E—English. B—Bengali. Fr—French. L—Tatin. It—Italy. Sp—Spanish.

Not only is the influence of the Sanskrit medical works detected in the Persian, Hebrew, Arabic, Greek and Roman works on medicine, there is evidence that the Hindu system of medicine was also adopted by the Tibetans and the Chinese. In the January No. 37 of the J.A.S.B. 1835 Vol. IV, an analysis of a Thibetan work is given by Alexander Csoma de Koros. It is called "rgyud bzhi" (the tract in 4 parts). It is attributed to Sakhya. "In the time of Khrisrong Dehutsan (*i.e.* 8th or 9th century of the Christian era) a Tibetan interpreter Bairotsana (or Vairochana) having translated in Cashmere, with the assistance of physician-pandit (Davam Non-gah) presented it to the above mentioned Thibetan king." In a Note on Thibetan surgical instruments, Walsh says:[1] "The present practice of surgery in Tibet is very simple, and, as already noted, consists chiefly of cupping, cauterizing, and bleeding. The Am-chhi informed me that the only instruments used are the cupping-bow (མེ་བུད་ me-puṅ, or མེ་བུམ་ me-bum, both meaning 'fire vessel'), in which

[1] The Thibetan Anatomical System by E. H. C. Walsh in J. R. A. S. 1910, pp. 1244-45.

paper is lit and the bowl is placed while hot over the part to be blistered; the sucking-horn (ཕྱིབ་རུ *hjib-ru*), by which cupping by vacuum is done; the cautery (ལྕགས་མེ *lchags-me*), the lancet (རྩ་ཡུ *rtsa-u*), for bleeding, and a golden lancet (གསེར་ཡི་རྩ་ཡུ *gser kyi rtsa-u*) for operating on the eye.

In the journal of the Buddhist Text Society of Calcutta for 1894 three Tibetan block prints are illustrated, which contain representations of a large number of surgical instruments, some of them of an elaborate nature, including specula, saws, catheters, exploring needles, instruments for tapping hydrocele, and midwifery and other forceps. The block-prints were brought by Rai Saratchandra Das, Bahadur, from Lhasa,[1] and a description of the figures was given by the late Lama Śes-rab MGya Mtsho, the Abbot of Ghoom Monastery, near Darjeeling, who was formerly physician to the late Tashi Lama, which were explained in a paper read by Dr. Saradaprasad Banerjee.[2]

If the elaborate and various instruments shown in the block-print were ever in general use they appear to have now ceased to be used."

In the J.R.A.S. April 1907, is mentioned "a Chinese text corresponding to a part of the Bower manuscript" by Watanbe. The identified portion of the MSS. consists of the six leaves which appear in plates XLIX-LIV (Hoernle's ed). The corresponding Chinese text is contained in six translations of which the following three, correspond completely to the MSS.

[1] Journal of the Buddhist Text Society, Vol. II, Pt. III, Calcutta 1894, P. III.

[2] Ibid, pp. IX. X.

1. Mohamayuri vidya-rajui—translated by I'tsing 705 A.D.
2. „ „ „ Amoghavajra 746 to 771 A.D.
3. „ „ „ Sanghapala 516 A.D.

Again many articles are common to the Hindus and Chinese materia medica; as many aromatics (nutmeg, cloves, cinnamon and pepper), musk, rhubarb etc. And this is not at all surprising for we have evidence "that there was constant intercourse[1] between these countries even before the Christian era, by means of travellers and ambassadors; and that Buddhist priests in visiting China, took with them as presents classical Indian books. It is also worthy of note, in connexion with the chapter on this subject in Suśruta, that in A.D. 648, the Emperor of China having sent an ambassador to India, this officer met with a doctor, who told him that he was 200 years old, and that he possessed the recipe of immortality, upon hearing which, a second embassy was despatched in search of the philosophical stone" (Royle).

Even the modern medical science of Europe has been directly influenced by the Hindu system of medicine. In the materia medica used by the doctors in Europe now, we find the following curative agents—the produce of India. I quote here the list as prepared by Thakore Shaheb[2] :—

"Aconitum heterophyllum	...	Ativisha.
Allium cepa	... ...	Polandu.
Acacia catechu	... ...	Khadira.

[1] See Asiatic Journal, July 1836.

[2] History of Aryan Medical Science, P. 128.

Alhagi maurorum	...	Yavasa.
Alstonia scholaris...	...	Saptaparna.
Ammomum elettarum	...	Ela.
Andropogon nardus	...	Ushira.
Andropogon schænanthus	...	Katurina.
Artemisia sternutatoria	...	Agnidamani.
Berberis lycium ...	...	Daruharidra.
Butea frondosa ...	...	Palasha.
Cassia lanceolata ...	...	Sonamukhi.
Cucumis colocynthis	...	Indravaruni.
Dhatura alba, niger &c.	...	Dhattura.
Justicia adhatoda...	...	Atarusha.
Luffa amara ...	...	Katukoshtaki.
Linum usitatissimum	...	Atasi.
Mallotus Philippiensis	...	Kapillaka.
Myrica sapida ...	...	Katfala.
Ophelia chiretta and Ophelia augustifolia ...	...	Kirata.
Pimpinella Anisum	...	Shatapushpa.
Pongamia glabra...	...	Karanja.
Ptychotis ajowan ...	...	Ajamoda.
Ricinus communis	...	Eranda.
Salvinia cucullata	...	Undurkarnika.
Santalum album & Santalum flavum ...	...	Chandana.
Shorea Robusta ...	...	Ajakarna.
Strychnos potatorum, Strychnos nux vomica ...	...	Katakafala.
Tinospora Cordifolia	...	Guḍuci.

Valeriana Hardwicki	...	Tagara.
Wrightia Antidysenterica	...	Indrayava."

To this list may be added the following drugs from the Indian and Colonial Addendum to the British Pharmacopœa, 1898:—

Acacia Arabica ...	...	Vāvvula.
Acalypha Indica ...	...	Muktabarṣi.
Andrographis Paniculata	...	Kirāta.
Aristolochia Indica	...	Arkamula.
Arachia Hypogaea	...	Bucanaka.
Citrus Aurantium	...	Nāgaraṅga.
Azadirachta Indica	...	Nimba.
Aegle Marmelos ...	...	Vilva.
Piperbetel ...	...	Tāmbula.
Butæa Gummi.		
Cæsalpina Sappan...	...	Patanga or Bakam.
Calotropis Procera and C. Gigantiæ	...	Arka.
Gossypium Herbaceum	...	Kārpāsa.
Cambogia Indica.		
Cissampelos Pariera	...	Ambashṭhai.
Coscinum Fenestratum	...	Dāru-haridrā or darvi.
Gynocardia Odorata	...	Chālmugra.
Hygrophila Spinosa	...	Kokilākṣa.
Anogeissus Latifolia		
Embelia Ribes and E. Robusta...		Viḍaṅga.
Plantago Ovata ...	...	Ispaghula.
Ipomæa Hederacea	...	Kālādāna.
Ipomæa Turpethum	...	Trivit.

Mylabris Phalerta.		
Terminalia Chebula	...	Haritakī.
Sesamum Indicum	...	Tila.
Picrorhiza Kurroa ...	...	Katuka.
Urginea Indica ...	...	Vanapalāṇḍu.

As regards the medicines used by the Hindus, Neuberger says[1]:

"The Pharmacopia, corresponding with the fruitful nature of the land was a rich one and stamps Indian medicine with a character entirely its own, whilst nothing speaks more eloquently for its originality than the fact that of all the many medicinal plants no single one was European."

Elphinstone wonders at the knowledge of simples in which the Hindus early gave lessons to Europe and "more recently taught us the benefit of smoking Datura in asthma and the use of cowitch against worms," and "the prescribing of Nux Vomica in paralysis and dyspepsia, and the revival of the use of Croton Tiglium" (Royle). In surgery, too, the modern surgeons of Europe have borrowed the Indian method of Rhinoplastic operation first made known to European surgeons by a letter which was printed in the Gentleman's Magazine for October 1794, p. 891. In fact Dr. Hirschberg of Berlin says that "the whole plastic surgery in Europe had taken its new flight when these cunning devices of Indian workmen became known to us. The transplanting of sensible skin flaps is also an entirely Indian method." The modern method of making pockets for the

[1] Neuberger, History of Medicine, vol. I. P. 54.

testicles under the Colles' fascia after the operation for scrotal tumour (elephantiasis) can be traced back to the age of Suśruta[1].

Thus we see that it can safely be affirmed that the medical science of Europe has been, both directly and indirectly, influenced by the Hindu System of Medicine.

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[1] पादौ निरस्तमुष्कस्य जलेन प्रोत्य चाचिणी।
प्रवेश्य तुन्नसीवन्त्रा मुष्कौ सीव्येत्ततः परं॥

Suśruta Saṁhitā, IV. ii.

THE END.

APPENDIX.

I'Tsing[1] says :—

"The following are the eight sections of medical science. The first treats of all kinds of sores; the second, of acupuncture for any disease above the neck; the third, of the diseases of the body; the fourth, of demoniac disease; the fifth, of the Agada medicine (i.e. antidote); the sixth, of the diseases of children; the seventh, of the means of lengthening one's life; the eighth, of the methods of invigorating the legs and body. 'Sores' (1) are of two kinds, inward and outward. The disease above the neck (2) is all that is on the head *and face;* any disease lower down from the throat is called a 'bodily' disease (3). The 'Demoniac' (4) is the attack of evil spirits, and the 'Agada' (5, but 6 of Âyur-veda) is the medicine for counteracting poisons. By 'Children' (6, but 5 of Âyur-veda) is meant from the embrayo stage until after a boy's sixteenth year; 'lengthening life' (7) is to maintain the body so as to live long, while 'invigorating the legs *and body*' (8) means to keep the body and limbs strong and healthy. These eight arts formerly existed in eight books, but lately a man epitomized them and made them into one bundle. All physicians in the five parts of India practise according *to this book*, and any physician who is well versed in it never fails to live by the official pay. Therefore Indians greatly honour physicians and much esteem merchants, orf they do not injure life, and they give relief to others as well as benefit themselves. I made a successful study in medical

[1] A Record of Buddhist Practices, Ch. XXVII, pp. 127-8.

science, but as it is not my proper vocation I have finally given it up."

Dr. Takakusu[1] comments on the passage as follows :—

"The eight sections of Medicine which I-tsing describes are no doubt the eight divisions of the Âyur-veda. He mentions an epitomiser of these divisions, who seems to have been a famous physician and contemporary of I-tsing (or just before I-tsing). This epitomiser may be Susruta, who calls himself a disciple of Dhanvantari, one of the Nine Gems in the Court of Vikramâditya.

Prof. Wilson says in his Works, vol. iii, p. 274 :—

'The Âyur-veda, which originally consisted of one hundred sections, of a thousand stanzas each, was adapted to the limited faculties and life of man, by its distribution into eight subdivisions, the enumeration of which conveys to us an accurate idea of the subject of the Ars Medendi amongst the Hindus.

The eight divisions are as follows :—

I. Śâlya (I-tsing's (1) cure of sores).

The art of extracting extraneous substances, grass, earth, bone, &c., accidentally introduced into the human body, and by analogy, the cure of all phlegmonoid tumours and abscesses. Śalya means a dart or arrow.

II. Śâlâkya (I-tsing's (2) art of acupuncture).

The treatment of external organic affections or diseases of the eyes, ears, nose, &c. It is derived from Śalâkâ, "a thin and sharp instrument," and is borrowed from the generic name of the slender probes and needles used in operation on the parts affected.

[1] A Record of Buddhist Practices, Ch. XXVII, pp. 222-3.

The above two divisions constitute the surgery of modern schools.

III. Kâya-*ki*kitsâ (I-tsing's (3) treatment of the diseases of the body).

The application of the Ars Medendi (*K*ikitsâ) to the body in General (Kâya). It forms what we mean by the science of medicine.

IV. Bhûta-vidyâ (I-tsing's (4) treatment of demoniac disease).

The restoration of the faculties from a disorganised state induced by demoniacal possession. The art vanished before the diffusion of knowledge, but it formed a very important branch of medical practice through all the schools, Greek, Arabic, or European.

V. Kaumâra-bh*ri*tya (I-tsing's (6) treatment of the diseases of children).

The care of infancy, comprehending not only the management of children from their birth, but the treatment of irregular lactic secretion, and puerperal disorders in mothers and nurses.

VI. Agada (I-tsing's (5) Agada medicine).

The administration of antidotes—a subject which, as far as it rests upon scientific principles, is blended with our medicine and surgery.

VII. Râsâyana (I-tsing's (7) application of the means of lengthening one's life).

Chemistry, or more correctly alchemy as the chief end of the chemical combinations it describes, and which are mostly

metallurgic, is the discovery of the universal medicine—the elixir that was to render health permanent, and life perpetual.

VIII. Vâǵîkaraṇa (I-tsing's (8) methods of invigorating the legs and body).

Promotion of the increase of the human race—an illusory research, which, as well as the preceding, is not without its parallel in ancient and modern times.'

Prof. Wilson further remarks:—'We have, therefore, included in these branches all the real and fanciful pursuits of physicians of every time and place. Suśruta, however, confines his own work to the classes Śâlya and Śâlâkya or surgery; although, by an arrangement not uncommon with our own writers, he introduces occasionally the treatment of general diseases and the management of women and children when discussing those topics to which they bear relation.' (See Wilson's Works, vol. iii, p. 276.)"

List of Works Consulted.

Aetius.

Alexander Trallianus.

A l'histoire du Budh. Ind.

Analecta Medica—Dietz.

Analysis of a Tibetan work on Medicine (J. R. A. S.)—Csoma de Koros.

Anglo-Saxon Medicine—Payne.

Antiquities of Orissa—R. L. Mitra.

Antiquity of Hindu Medicine—Royle.

Archeological Survey of South India—Burgess.

Architecture of India—Ram Raz.

Aristophanes.

Arsnal de Chirug.

Assyria—Sayce.

Aṣṭāṅga Hṛdaya Saṁhitā—Vāgbhaṭa II (Kunte's Ed.).

Aṣṭāṅga Saṁgraha—Vāgbhaṭa I.

Aśvavaidyaka—Jayadatta Suri.

Atharva Veda—Whitney's Translation.

Avenzoar.

Avicenna.

Āyurvedārthadipikā—Śivo Dasa Sena.

Bhāgavat—Vyāsa.

Bhānumatī—Cakradatta.

Bhāva Prakāśa—Bhāva Miśra.

Bhilsa Topes—Cunningham.

Bhoja Prabandha—Ballāla (Jīvānanda Ed.).

Buddhist Jataka Stories—Rhys David.

Buddhist Records of the Western World—Beal.

Cakradatta—Cakradatta.

Cancer of the Breast—Velpeau.

Caraka Saṁhitā— { Agnivesa. / Caraka. / Dṛḍhavala.

Caturvarga-Cintāmanī—Hemādrī.

Celsus.

Chirrug.—Albucasis.

Cikitsā Sāra Saṁgraha—Cakradatta.

Collection—Oribasius

Commentary on Manu Saṁhitā—Kallūka Bhaṭṭa.

Dawn of Civilization—Maspero.

De Chirurgiens Grecs.

De Med. Aegyptiorum—
Dhanurveda.
Discourse xi—Jones.
Discription of Hindusthan—Hamilton.
Domitan.
Early History of India—V. Smith.
Ed. Med. Essays—Simpson.
English Translation of Suśruta Saṁhitā—Dutt, Hoernle and Chattopādhya.
Extant Works of Araeteus—Adams.
Flowering Plants—Pratt.
Fractures and Dislocations—Hamilton.
Galen.
Genuine Works of Hippocrate—Adams.
Geography—Strabbo.
Græco-Roman Surgical Instruments—Milne.
Gun Shot Injuries—Longmore.
Hārita Saṁhitā—Hārita.
Hastī-Āyurveda—Pālakāpya.
Hindu Medicine—Wise.
Hist. de la med.—Springel.
Historia Forcipum at Vecticum—Muld ?
Historian's History of the World.
History of Aryan Medical Science—Thakore Saheb.
History of Hindu Chemistry—Rāy.
History of India—Elphinstone.
History of Medicine—Neuberger.
History of Philosophy—Enfield.
History of the Saracens—Amir Ali.
History of Sanskrit Literature—Weber.
India—Alberuni-(Translated by Sachau).
India in Greece—Pocock.
Indian Antiquities—Prince) and Thomas.
Indian History—Arrian.
Indian Medicine—Jolly.
Indian Physicians at Bagdad—Wilson (J. R. A. S.).
Indian Tracts—Heynes.
Indo-Aryans—R. L. Mitra.
Industerial Arts of India—Birdwood.
Invasion of Alexander the Great—M'crindle.
Journal Asiatic Society Bengal, XXXIX 1870 and vol. XLII. 1835.
Journal Asiatique 1896.
Journal of Education, vol. VIII.
Journal Royal Asiatic Society, 1906-1907.
J. R. A. S. (Bombay Branch), vol. XX.

Juvenal.
Kaṭhopaniṣad.
Kauśika Sūtra—Bloomfield.
Laghumañjusā—Nageśa Bhaṭṭa.
Lalitvistāram—Mitra.
Lancet, 1845.
Latin Translation of Suśruta Saṁhitā—Hessler.
Mahābhārata—Vyāsa.
Mahānila Tantra.
Mahāvāgga—S. B. E.
Mahāvaṁśa.
Mālavikāgnimitra—Kālidāsa.
Māna Sāra.
Manu Saṁhitā—Manu (Jones Ed.)
Materia Medica of the Hindus—Dutt.
Medicine in Ancient India—Hoernle (J. R. A. S.)
Memoire Sur L'Inde—Reinaud.
Mesue.
Midwifery—Smellie.
Natural History—Pliny.
Nidāna—Mādhavakara.
Nīti Sāra—Kāmandakī (Bib. Ind.).
Nivandha Saṁgraha—Dallaṇa.
Obstetric Medicine and Surgery—Barnes.
Operations of General pra ctice—Corner and pinches.
Operative Surgery—Waring.
Ophthalmic Surgery—Carter.
Ophthalmology—Berry.
Oriental Magazine 1823—Wilson.
Origin and growth of the Healing Art—Bedroe.
Osteology—Hoernle.
Pāṇiṇi—Goldstucker.
Pāṇiṇi—Pāṇiṇi.
Paulus Ægineta—Adams.
Persius.
Pract.—Haly Abbas.
Priscianus.
Principle and Practice of Medicine—Francis.
Proceedings A. S. B. 1870.
Rāj Taraṅginī—Kalhaṇa (Steen's Ed).
Rāmāyaṇa—Vālmīki.
Rasa Ratna Samuccaya—Vāgbhaṭa III.
Rasendra Cintāmaṇi.
Recentes Decouvertes—Cordier.

Records of Buddhist Religion—I'Tsing (Takakusu's Ed.).
Rhases.
Report of Wellcome Research Laboratory, vol. III—Balfour.
Researches in Operative Midwifery—Playfair.
Review of the History of Medicine—Wise.
Ṛg Veda—Maxmüller and Wilson.
Rhinoplastic Operations—Keegan Paul.
Rock Inscriptions of Aśoka.
Saṅkara Vijaya.
Sāṅkhya and Likhita.
Sanskrit Literature—Macdonell.
Śārṅgadhara Paddhati—Śārṅgadhara.
Śārṅgadhara Saṁgraha—Śārṅgadhara.
Sarva Darśana Saṁgraha—Mādhavācaryya.
Sarvāṅga Sundarī—Aruṇadatta.
Śatapatha Brāhmaṇas—S. B E.
Science and Art of Surgery—Erichsen.
Science of Language—Maxmüller.
Seutonius.
Siddhayoga—Vṛndamādhava.
Soranus.
Surgery—Billroth.
Surgical Emergencies—Swaine.
Suśruta Saṁhitā—Suśruta.
System of Medicine—Albutt and Payne.
System of Medicine—Osler and Mac Rae.
Taittiriya Brāhmaṇa.
Tanjore Catalogue—Burnell.
Tattva Candrikā—Śivodāsa.
Things Indian —Art Pinjrāpole—Crooke.
Tibetan System of Anatomy (J. R. A. S.)—Walsh.
Timeas—Plato.
Treatment of the Wounded in War—Esmarch.
Tree and Serpent Worship—Fergusson.
Upaskara—Śaṅkara Miśra.
Vāgbhaṭārtha Kaumudī—Śrīkṛṣṇa Senmallik.
Vāgbhata L'Aṣṭāṅga Hṛdaya Saṁhitā—Cordier.
Vaidyaka Savda Sindhu—Gupta.
Vaiśeṣika Darśana.
Vyākyā Kusumāvali—Śrīkānta Datta.
Vedārtha Prakāśa—Sāyaṇa.
Veterinary Art—White.
Viena Oriental Journal, Vol XI.
Viracintāmaṇi.

Vṛddha Śārṅgadhara.
Vṛhadāraṇyaka.
Vṛhat Saṁhitā—Ed. Kern.
Way of Buddha.
Yogaratnākara—Anandāsrama Series.
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