to extract minute foreign bodies such as iron particles from the eyes and teeth. Suśruta¹ 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". 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."

23. KSĀRA. CAUSTICS OR POTENTIAL CAUTERY.

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

म्चिभिसर्पणिनिति म्चीपरेन लीहमातं टणबीपलचयितः तथा चायस्कानाभिसुखं ४ यत् म्चारेर्गमनं * * * * *

Śankara Miśra, Upaskāra.

Suśruta Samhitā, I. xxvii.

- ² Carter's Ophthalmic Surgery, 2nd ed., P. 369.
- ³ Erichsen's Surgery, Vol. I, P. 343.



¹ अनुलोममनववद्दकर्णमनत्य त्रणसुखमयस्तान्तेन ।

timid persons who are afraid of the surgeon's knife¹; though Suśruta² 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 says³: "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 Sainhitā, 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.

अल्यसत्तेऽवर्ते वाले पाके चातर्व्य मुद्धते । दारणं मर्मा सन्यादिस्थिते चान्यत पाटनं ॥

Aştānga Hrdaya Samhitā, I. xxix.

े अधनैते चारक्रत्या:। तदाधा दुर्ज्जलवाल स्थविर भीकसर्ज्याङ्ग श्नोदरि रक्तपित्ति-गार्भिन्यृतुमती प्रवहज्वरि प्रमिष्टोरः चतचीनत्यशा मूर्च्छीपद्रतक्षीवापव्रत्तीवृत्त फलयोनयः॥

Suśruta Samhitā, I. xi.

- ^अ शस्त्रानुशस्त्रेभ्यः चारः प्रधानतमच्छे यभेयलेख्य करणाविदोषप्रत्वाडिशेषक्रियावचारणाच । Susruta Samhitā, I. xi.
- * Ibid. Hoernle's Trans. Bibliothica Indica.
- े आखाय च दर्वींक्च शलाकानामन्यतमेन चारं पातयेत्।

Suśruta Samhitā, 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 before¹.
 - 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".



¹ See P. 158-159.

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

25. AGNI. ACTUAL CAUTERY.

Suśruta says¹: "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 Hippocrates³:—

"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 necessary⁴:—

- 1. Pippali or piper longum
- 2. Goat's dung
- 3. Teeth of a cow
- 4. Śara or saccharum sara
- 5. Probes or śalākā (see before⁵)

These are to be used for diseases of the skin.

- ¹ चारादिमर्गरीयान् क्रियास् व्याख्यातसद्दश्धानां रोगार्नामपुर्णभावाद्वेषजशस्त्रचारैरसाध्यानां तत्साध्यताच ।
 - ² Ibid. Hoernle's Trans. Biblio. Ind.

Suśruta Samhitā, I. xii.

- ³ The Works of Hippocrates. Syd. Soc., vol. II., p. 774.
- * अथेमानि दहनोपकरणानि । तदाया पिप्पल्यजाशक्कद्वोदन श्रश्यलाका जास्ववीष्टेतर लीहा: चौद्रगुड्सेहाय । तत पिप्पल्यजाशक्कद्वोदन श्रश्यलाकास्वग्गतानां । जास्ववीष्ठेतर-लोहानि मांसगतानां चौद्रगुड्सेहा: सिरस्रायु सम्यस्थिगतानां ।
 - See P. 159-60.

Suśruta Samhitā, I. xii.

- 6. Jāmvavaustha1
- 7. Different kinds of iron

Used for diseases of the muscles.

- 8. Honey²
- 9. Treacle
- 10. Ghee
- 11. Oil

Used for diseases of the vessels, joints and ligaments.

"Both Aetius and Oribasius represent goat's dung, pounded with vinegar, as being equally efficacious as the sinapism, and applying particularly to ischiatic diseases." Hippocrates says that cauterisation may be performed with boxwood spindles dipped in boiling oil. 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."

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

Aştānga Hrdaya Samhitā, I. xxx.

मधुक्छिप्टेन तैलीन मज्जबीद्रवसाष्टतै: । तप्तिवी विविधेली हैर्दे हेदाह विशेषवित्॥

Caraka Samhitā, VI. xiii.

- 3 Adams' Commentary on Paul. vol. iii. bk. vii. sec. xix.
- Hippocrates, ii. 482.
- ⁵ Medical Practices in Kordonfan, Third Report. Wellcome Research Laboratory, Khartoum,

अर्थो भगन्दरग्रियनाड़ीदृष्टत्रणादिषु । भामदाङ्घो मधन्नेष्ठ जास्ववीष्ट गुडादिभि:॥

prolapsed part is to be ligatured well and the cautery knife used to remove the prolapse below the ligature¹.

Cautery knife was also known to the Greeks and Romans. Galen², speaking of cancer, says that "some use heated razor blades, at once cutting and burning". Paul³ 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

Hippocrates⁵ in the treatment of nasal polypus, says that "when that occurs we must insert a tube and cauterise with three or four irons". Celsus⁶ 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

उदरान्मेदसो वर्त्ति निगता यस्य देहिन: । कषायमक्षस्त्कीणी वडा स्त्रेण सत्रवित् । अग्नितर्तेन शस्त्रेणिक्टन्यान्मभुसमायृतं ॥

Suśruta Samhitā, IV. ii.

- ² Galen, xiv. 786.
- ³ Paul, vi. lxii.
- यदल्पमूलं अपुताससीस पर्टः समावेष्टा तदायसैक्ता ।
 चाराग्रियस्वायः सक्तदविदध्यात् प्राणानिहंसन् भिषग्प्रमत्तः ॥

Suśruta Samhitā, IV. xiii.



⁵ Hippocrates, ii. 244.

[·] Celsus, vii. x.

⁷ See foot-note 2, p. 66.

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

26. BHESAJA 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. Susruta gives a list of medicines,2 required in the treatment of various kinds of inflammations, and I quote a few passages from the English translation3 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), Sigru (Moringa pterygosperma), seasum and mustard seeds, flour of barley and wheat, kinva (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), hayamaraka (Nerium odorum), and the excrement of the pigeon, vulture and heron. Caustic alkalies are also very offectual 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 śríveshtatka gum of (Boswellia Thurifera), sarjarasa (resin of Shorea robusta), sarala (Pinus longifolia), and devadáru (Cedrus

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



¹ Paul viii. xiii.

² See Suśruta Samhita, I. xxxvi.

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), amrita (Cocculus cordifolias), asvagandhá (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 Susruta 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. 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! "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.

Hippocrates² 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 harp³ as a material for suture in the operation called gastroraphé.

ARREST OF HEMORRHAGE.

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

- Sandhāna:—Contraction of the wound by astringent decoctions of Chebulic Myrobolan and the rootbarks of the panchavalkala trees (five barks).
- Skandana:—or thickening of the blood by the application of severe cold.
- Pāchana:—or descicating or drying up the wound by ashes.
- 4. Dahana:—or cauterising the veins to make them shrink⁴.



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

² Hippocrates, iii. 132.

³ Rhases. Cont. xxviii.

चतुर्विधं यदैतित क्विरस्य निवारणं ।
 सन्धानं स्कन्दनश्चेव 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. To stop bleeding from an artery, he advises us to apply astringents and pressure with the fingers. Vāgbhaṭa² 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.

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

त्रणः कषायः सन्धत्ते रक्तं स्वन्दयने हिमं। तथा सन्पाचयेइस दाहः सदीचयेत् सिराः॥

Suśruta Samhitā, I. xiv.

भक्तन्दमाने क्विरे सन्धानाति प्रयोजयेत्। सन्धाने भव्यमाने तु पाचनेः समुप्रचारेत्॥ कर्ल्परैतैस्त्रिभिवेंदाः प्रयतेत यथाविधि। भसिडिमत्मु चैतेषु दाइः परम इष्यते॥

Ibid.

श्रक्ते लितिष्ठिति चिप्रं साध्यनीमाचरेत् क्रियात्। लोधि प्रियङ्ग पत्तङ्ग माषयव्याङ्ग गोरिकैः॥ स्तकपालाञ्चनचीम मधी चीरीलगङ्गरेः। विचूर्णयेद त्रणसुखं पद्मकादि द्विमं पिवेत्॥ तामिव वा शिरां विध्येद्याधात् तस्मादनन्तरं। शिरासुखं वा लिरतं दहेत् तत्रम्लाक्या॥

Aştānga Hrdaya Samhitā, I. xxvii.

³ See Cakradatta, Sirāvyādhādhikāra.

ligaturing blood-vessels¹. Suśruta says that if in venesection, or in treating wounds, excessive bleeding occurs, it should be stopped by proper means².

Celsus³ 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. Galen⁴ 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. Paul⁵ mentions all the methods to stop the bleeding, viz., pressure, styptics, ligature, escharstics, and cauteries with fire.

Albucasis⁶ 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.

Avicenna7, Rhases8 and others also mention these methods

- ¹ अन्तं मेवादीनां ग्रष्कान्तं ताँइत्य्यातं शस्त्रक्केदाननतं सूक्किसादिवन्धनादिषुं युज्यते । Vägbhaṭārtha Kaumudī, I. xxv.
 - तेसेब्रिंमित्तैर्वष्ट्रधा शोनित प्रस्ते स्थं ।
 कार्यं यवीक वैदोन शोनितस्थापनं भवेत्॥

Suśruta Samhita, IV. i.

- * Celsus, v. 26.
- 4 Galen, Meth. Med. v.
- ⁵ Paulus Ægineta, IV. lii. vol. II. P. 127. Syd. Soc. Ed.
- · Albucasis. Chirrug. i. 58.
- Avicennæ Cantic. ii. 2., and Collig. vii. 23.
- 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. Adams¹ 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."

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

CHAPTER VI.

THE ŚASTRA OR THE SHARP INSTRUMENTS.

1. THE MANDALAGRA OR ROUND HEADED KNIFE.

It is described as a round or circular headed cutting instrument, having a length of six anguli. Two sub-varieties are noted —one with a circular edge and the other shaped like a razor (Dallaṇa).¹ Vāgbhaṭa², 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 scraping³; so it is recommended to be used

> मण्डलिमवायं यस्य तत् मण्डालायं तज्ञ दिविधम् तथाहि— यद्ग्रे मण्डलं इत्तं चुर संस्थानमेव वा। मण्डलायस्य जानीयात् प्रमाणन्तु षड्झुलम्। Nivandha Samgraha, viii.

मण्डलायं फले तेषां तर्जन्यन्तर्नेखाक्षति । लेखने केदने योज्यं पोधिकौ ग्रल्डिकरदिषु ॥

Aşṭānga Hṛdaya Samhitā, I. xxvi.

मण्डलायं, मण्डलायं नाम शस्त्रं, फले, फल प्रदेशे, तर्जन्यन्तर्नखाक्रति स्थात्, श्वन्तः, श्वन्तिं नखः, श्वन्तर्नखः, तर्ज्जन्या श्वन्तर्नखः तर्ज्यन्यनर्नखः, तस्येवाक्षति राकारो यस्य तत् तर्ज्जन्यन्तर्नखाक्षति। तञ्च पोथकौ गलग्रस्थिकादिष्, लेखने, लेखन कर्षाणि, तथा हेदने, हेदन कर्षाणि, योज्यं।

Vāgbhatārtha Kaumudī, I. xxvi.

फलोहे में तर्जन्या अनार्नखसर्जन्यनार्नखसस्वेवाक्रतिर्यस्य तदेवम्। Sarvānga Sundarī, I. xxvi.

⁵ तव मण्डलायकरपवे स्थातां केदने लेखने च।

Suśruta Samhitā, I. viii.

婚

in the operative treatment of enlarged tonsil¹. It is also advised to be used for piercing the skull of a dead feetus in utero to help its easy extraction by other instruments. So any other presenting part causing difficulty in the delivery of the dead feetus, 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 vyddhipatra.²

We find that Suśruta recommends a mandalāgra knife in ophthalmic practice for scraping away the membranous expansion in the operation of pterygium³ and other ophthalmic operations,

> भङ्ग छाङ्ग लिसन्दंशेनाक्षय गलग्रस्छिकां। क्टियेन्यस्डलाये ग जिङ्कोपरि तु संस्थिताम्। नोत्कष्टक्षेव हीनच विभागं च्छेदयेडियक्॥

> > Suśruta Samhitā, IV. xxii.

े तत्र स्त्रियमात्रास्य मण्डलाये गाङ्गुली शस्त्रेण वा शिरो विदार्थ शिर:कपालान्याहृत्य शङ्गुना
ग्रहोत्नोरिस कचायां व्यपहरेदिभिन्नेशिरिस चाचिकूटे गण्डे वा श्रंससंसक्तस्यांसदेशे
वाइं कित्वा द्दितिभवाततं वातपूर्णोदरं वा विदार्थ निरस्थान्त्राणि शिथिलीभूत माहरे ज्ञधनसक्तस्य
वा ज्ञधनकपालानीति ।

यदः, यदङः' हि गर्भस्य तस्य स्वजित तिङ्गषकः ।
सम्यग्विनिर्हरेन्किता रचेन्नारीश्व यवतः ।
गर्भस्य गतयश्विवा जायनेऽनिलकोपतः ।
तचानात्मितिर्वेद्यो वर्ते त विधिपूर्व्यकः ॥
नोपेचेत स्रतं गर्भं सुड्रक्तं मिप पिखतः ।
सञ्चाय जननीं इन्ति निरुक्तासं पयः' यथा ॥
मस्ख्लायं स कर्त्तं व्यं क्रियमन्तिर्वजानता ।
इडिप्रतं हि तीचायं नारीं हिंस्यात् कदाचन ।

Ibid, IV. xv.

असी यत वलीजातं तत्र तत्रागयेदः भिषक् ॥ अपाइः प्रेचमाणस्य विद्यान समाहितः । सुचुण्डाग्यद्य मेघावी स्चीन्तेण वा पुनः ॥ नचोत्यापयता चिप्रं कार्यमस्युत्रतं तु तत् ।



such as for vascular net-work and nodules on the eyeball¹. Cakradatta says² 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 vadiśa or hook, and leaving the pupil free, is to be excised, as Sivadāsa³ explains, by the mandalāgra. He also uses it to scrape away the root of any new growth in the eye⁴ and to perform the operation of scratching in ophthalmic surgery⁵.

शस्त्रपातभयाचासत्र वत्म नी याद्ययेद दृढं ॥
ततः प्रशिविलीभृतं विभिरेव विलिन्वतं ।
जिल्लाखन्मख्डलागेणः तीच्चं न परिशोधयेत् ॥
विमुक्तं सर्व्वतयापि कृष्णाच्छुकाच मण्डलात् ।
नीत्वा कनीनकोपानं क्रिन्दान्नाति कनीनकं ॥
चतुर्भागस्थिते मांसे नाचि व्यपत्तिमईति ।

Suśruta Samhitā, VI. xv.

मिराजाले सिरायास्त कठिनासाय बुहिमान् । जिल्लखेन्स्रस्डलाग्रेण विङ्गेनावलम्बित: ॥ सिरासु पिड़काजाता या न सिध्यन्ति भेषजै: । अर्मावन्स्रस्डलाग्रेण तासाञ्केदनमिष्यते ॥

Ibid.

श्वर्मा तु च्छेदनीयं स्थात् क्रण्यप्राप्तं भवेदयदा। विज्ञाविज्ञमुद्रम्य विभागञ्चाव वर्ज्ययेत्॥

Cakradatta, Netraroga Cikitsā.

अर्थाक्टेदनीयिमिति मण्डलाग्रेणेति भेष:। समुद्रम्येति स्व्यग्रेणेति भेष:। स्व्यग्रेण समुद्रम्य उत्तोल्य अनन्तरं विङ्गोन विङ्गा मण्डलाग्रेण केदयेदित्ययं:। Tattva Candrikā, Netraroga Cikitsā.

- * अर्थसायावर्त्त नामा यन्तार्शीऽर्व्य्तमेव च।

 सण्डलाये ण तीच्यो ण स्विच्छिन्दाद भिषक् शनै: ॥

 Cakradatta, Netraroga Cikitaā.
 - भिलोपनाइं कफ्रजं पिप्पली मध्सैन्ववै: ।
 विलिखेन्यण्डलायेण प्रच्छयेद्दा समन्ततः ॥



A small instrument with a broad blade and a rounded cutting tip is figured by Albucasis1 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 sutures2. Paul3, quoting Actius4, describes the operation for pterygia :-- "Having separated the eyelids, and seized upon the pterygia with a hooklike 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 mandalagra for scarifying

ष्टतसैन्धव चूर्णन कफानाहं पुन: पुन:। विलिखेन्मख्लायेण प्रच्छियेहा समन्तत:॥

Cakradatta, Netraroga Cikitsā.

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



the tongue for bleeding in the disease called jihvākantaka (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 mandalāgra. Afterwards a strong gargle is to be prescribed".² Pālakāpya³ also describes it to have a length of nine anguli, the handle being six, and the blade three anguli long. The end is full-moonshaped and it is directed to be used for scarification on the eyeball.

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

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

¹ क्रयुक्षेषु कफोल्चेषु लिखितेष्वस्त्रः चये। पिपख्यादिर्मधुयुतः कार्यन्तु प्रतिसारगम्॥

Cakradatta, Jihvāroga Cikitsā.

लिखितेषिति मखलागादिना।

Tattva Candrikā, Ibid.

उन्नास्य जिह्वामाक्षय विज्ञिनाधिजिह्विकाम्।
 ईट्येन्याग्डलाग्रेण तीच्योर्थेर्लवणादिभि:॥

Cakradatta, Mukharoga Cikitsā.

सिखनं मखलाप्रे स कत्तं व्यं दिनानां भवेत्।

Pālakāpya, III. i.

पूर्णंचन्द्राक्तत्यायमख्लायम् लेखनार्थमच्छो ।

Pālakāpya, III. iii.



^{*} Soranus, II. viii., P. 366.

⁵ Rhases, Cont. xxii.

Abbas¹ also advises us to open the head when it is preternaturally large. Actius² also gives a similar discription. Some authors recommend the polypus-scalpel or the phlebotome in embryotomy. The embryotome figured by Albucasis³ is a straight two-edged blade, and we may conjecture that the mandalāgra 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 Dallana⁴ points out, the name from its resemblance to a carpenter's saw. It seems that saws of various sizes were used. Susruta mentions its length to be six anguli, Vāgbhaṭa⁵ describes it to be ten anguli

* करपविनिति करवत् पवं करपवं यथा करोऽङ्गुलिभिराचितो भवित तहत् यत् कग्रुकै-राचितं स्वात्तत् करपवमुच्यते । अन्ये तु करपवशस्त्रं करपवाकारमेव तच डादशाङ्गुलं तन्त्रान्तर वचनात् । ननु यदि तन्त्रान्तरात्तद् डादशाङ्गुलं करपवसूच्यते तर्हि स्वतन्ते विरोधः कुतः स्वतन्ते करपवस्य निर्द्धिष्टप्रमाणावात् श्रेषानि तु षड्ङ्गुलानि इत्यनेन वाक्ये न षड्गङ्गुलमेव करपवम् स्वात्र डादशाङ्गुलं नैवम् तेषाम् नामाभिरेवाक्षतयः प्रायेण व्याखाता इत्यस्यात् स्वात् प्रायः शब्दोऽनुवर्त्तं तेतेनायमर्थं, श्रेषानि प्रायेण षड्ङ्गुलानि एवं शस्त्रमानेऽन्यचाप्यविरोधः ।

Nivandha Samgraha, I. viii.

केंदेऽस्थां करपवन्तु खरधारं दशाङ्गुलं।
 विसारे डाङ्गुलं मुक्सदलं सत्सर वसमं॥

Astāngā Hrdaya Samhitā, I. xxvi.

करपवाच्यां शास्त्रमाह केंद्रे द्रत्यादि करवत् पत्र यस्त्र तत् करपतं, चङ्गुलिभि राचितो यथाकारो भवति तहत् यत् करप्रकेराचितं तत् करपत्रसुच्यते। करपतं करात् च्यातं। करपतं खरधारं, खरा, तीच्या, धारा यस्त्र तत्त्याविधस्, तथा दशाङ्गलस्,

¹ Haly Abbas, Pract. ix. 57.

² Aetius, XVI. 23.

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

long and two anguli broad; while Bhoja¹ alludes to a saw, twelve anguli 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' mentions it in describing the amputation of a gangrenous limb. With reference to fractures of the bones of the head, Paul says³: "But the mode of operating with saws and the instrument called cheenicides or modioli (trepans?) is condemned by the moderns as a bad one." Evidently he means flat cranial saws. Galen⁴ 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 success⁵. Pandit Vallala describes⁶, in his Bhojaprabandha or

दैर्ध्येन दशाङ्गुल परिमाणं, तथा विलारे द्याङ्गुलं, परिसरे चङ्गुलदयपरिमितं तथा मूझ दल्तं मुद्या दलाकारा दल्त यस्य तत्त्रयाविधं, तथा स्वत्सक्वस्थनं, तसक खड्गादि सृष्टिः वस्थनं, कौलादिना वस्थनं, त्सक्य वस्थनञ्ज ते तसक वस्थने, शोभने त्सक वस्थने यस्य तत्त्रया-विधं। तञ्ज अस्थां केंद्रे, केंद्रन कर्मानि योज्यं।

Vāgbhatārtha Kaumudī, I. xxvi.

- ¹ See foot-note 4, P. 230.
- 2 Celsus, VII. xxxiii.
- 3 Paul, VI. xc.
- * Galen, XVIII. 331.
- See Mahāvāgga, VIII. 1.18. Sacred Books of the East. Vol. xvii.
- · 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 sammohini 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 sañjibani to accelerate the return of consciousness.

Trephine was well known to the ancient Greeks and Romans. Hippocrates 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 remarks, that "Galen was averse to the use of the trepan, though he performed the operation on the head occasionally."

3. VRDDHIPATRA.

This sharp cutting instrument is called vrddhipatra from its resemblance to the leaf of a medicinal plant called vrddhi. Two varieties of this knife are described by Vāgbhata4—one is

¹ Hippocrates, III, 371, 374.

² Hist. de la Méd., 18.

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

^{*} विश्वपतं चुराकारं केंद्र भेदन पाटने। च्छज्जयमुखते शोफ गक्षीरे तु तदन्यथा।. नतायं पृष्ठतो दीर्घ इस्तवकं यथाययं॥

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 dirgha-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. Susruta describes them to be six anguli long. Dallana in his commentary 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 anguli long; the handles and the blades should measure five and a half and one and a half anguli respectively." These are to be used for cutting through a part, partially or completely, and also for puncturing it.

हिंदिपवाख्यां शस्त्रमाह हिंद्विपविस्त्यादि हिंदिपवं नाम शस्त्रं, चुराकारं, चुराकिति, चुरस्त्र लीमच्छेदकः शस्त्रविशेषी नरसुन्दराणां। तस्र हिंदिनानीषध छचस्य प्रवसदृश्य फानक वात् हिंदिपवाख्यं लभते। तद्द हिंदिपवं नाम शस्त्रं छेदि भेदने पाटने च नक्षीण योज्यमिति च्छन्त्रयमित्यादिना विषय विशेषि हिंदि पतस्याकार भेद उच्यते। यत् हिंदिपषं च्छन्त्रयं सरलायभागं, आध्वतायमित्यर्थः। तत्, उद्भते, उिक्ति, शोके, शोषी, योज्यं। गभीरे, भेद आदि धातुष्ये शोफे, तथा तदस्यथा, अनुन्नते च शोफे, यत् पृष्ठतः, पृष्ठदेशे नतायं वक्षीभूतायभागं, कुखितायमित्यर्थः। तत् हिंदिपचं शस्त्रं यथायथं दीर्घ इस्त वक्षं, दीर्घ सुखं, इस्त वा योज्यं। यथायथनिति गभीरे शोके दीर्घवक्षं, अनुन्नते च शोके इस्तवक्षमित्यर्थः। प्रव दिविष' हिंदिपव शस्त्रयुक्तम्, दे अपि सप्ताङ्गल प्रमाणे, द्योरिप अर्द्धपद्याङ्गल हन्तं कार्थं सार्द्वाङ्गल हन्तं कार्थं सार्द्वाङ्गल हन्तं कार्थं सार्द्वाङ्गल हन्तं कार्थं सार्वाङ्गलः यं फलमिति। भेदनंः, भेदं, एकियान् शारीरदेशे शस्त्रमावगाद्य अपर दिशा शस्त्रायस्य निष्काग्रनं भेदनं। पाटनं, विदार्ग्यं फाडन इति लोके।

Vagbhatartha Kaumudī, I. xxvi.

T. VILLE

[े] इडिपविभिति, इडे: पत्रिमव इडिपवं तम डिविषं एकं पश्चिताणं, दितीयं प्रयताणं, हे प्रिप सप्ताङ्गल प्रमाणे दयोरिप पडें पश्चाङ्गकं हन्तं कार्ये साडाङ्गलम् प्रलम् इति प्रनयोद्येध्ये पश्चिताणं इडिपवं चुरमाहः।

Nivandha Sanicraha, I. viii.

One form of the vrddhipatra 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 vrddhipatra 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 viddhipatra, and then actual cautery applied by the red-hot jamvavaustha probe till the patient requests for its withdrawal"2.

Suśruta uses the vrddhipatra knife for the removal of the scrotal tumour and says3: "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 vrddhipatra knife. The fatty tisues being

Suśruta Samhitā, IV. i.

² साध्याभिराभिल्ताभिर्देष्टमावस्य देहिन:। हिंदिपवेश मितमान सम्यगादंशसुद्वरेत ॥ जाम्बष्टमाग्नि तप्तेन दहेदाकर वारणात्।

Ibid, V. viii.

3 सिन्नां चावेष्टा पहुन समायासातु सानवं। रचेत् फले सेवनीय इडिपवेण दार्यत॥ मेदसत: समुब्ल दयात् कासीससैसवे। वधीयाच ययोहिएं।

Ibid, IV. xix

¹ रोमाकीणीं वर्णो यसा न सम्यगपरोइति। चुरक र्रशसन्दं भे ससारोमाणि निईरेत॥

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

Vrddhipatra was also used by the ancient veterinary surgeons. Joyadatta Suri writes1: "The knife known as vrddhipatra is shaped like a ksura or razor. It is three anguli long and should be used by the wise to incise a suppurated abscess". In Palakāpya3, we find that "it is ten anguli long; the handle being six anguli and the blade four anguli long and three anguli broad. It is used for seission and excision". He uses it also in opening a sinus after well ascertaining its course by means of a probe3.

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. Sarigadhara4

> ¹ ब्राङ्गलं ब्रियवच चराकारं प्रकीर्त्ततम्। पक्कशीयादिष प्राज्ञ: पाटनं तेन कारयेत्॥

> > Aśvavaidvaka, XIV. v. 22.

 शस्त्रेण बंडिपत्रेण वाऽसि(शि)तेन सि(शि)तेन वा। शस्त्रकर्माण निष्पात: सपकं पाटयिद्विषक ॥

Pālakāpya, III. iv.

ब्रडिपर्वे स नागानां कुर्याच्छेदन भेदने।

Pālakāpya, III. i.

अथ भिष्णयन्त्राधायोक्तेन विधिना सुयन्त्रितं वारणमभिविश्वास्याऽऽग्र्(श्व)त्य सम्भानगतं गतिमनं खल्यमुखं नाडीत्रणमेषणया च विदिला हिंदुपतेण शस्त्रेणानुलोमं पूयप्रति,रणार्थ-चेदं क्यांत ॥ Pālakāpva, III. xv.

* प्रचिव वा चुरेगाङ्ग केवलानिलपीडितम। तव प्रदेषं ददाच पिष्टं गुझामले: क्तम ॥ तेनाववाहुजा पीड़ा विपची ग्रम्भी तथा। अन्यापि वातजापीडा प्रशमं याति वेगतः॥

Śārngadhara Samgraha, III. xi.



directs us to scarify a part with a razor and then apply an ointment of gunjā (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. The medicine is to be prepared thus:—take aconite I pala, quicksilver I śāna; mix, and put inside two sorābas or eartheu 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. Caraka² also advises us to apply a medicinal paste on a cranial incision, shaped like

विषं पलितं स्तः शाशिकथणं येइयम्।
तच्यां सम्पूटे च कवा काश्चित्तमस्तवयोः॥
सुद्रां दस्ता च संगोध्य तत्रथुद्ध्यां निवेशयेत्।
विद्धं शनः शनः कुर्यात् प्रहरदय संस्यया॥
तत उत्पाद्य तन्सुद्रामुपरि श्चे सरावके।
संलयो यो भवेडूमः तं राष्ट्रीयाक्तनैः शनः॥
वायुस्पर्शी यया नस्पात् ततः कुष्यां निवेशयेत्।
रमः स्वीमुखेलग्रस्तूष्या नियाति भेषजम्॥
तावन्यानो रसो देयो मुक्किते सिव्नपातिनि।
श्वरेण प्रकिते मुर्डि तदङ्ख्या च घर्षयेत्॥
रक्त भेषज सम्पर्कान्मुक्तितोऽपि हि जीवति।
तथेव सप्टंष्टस्त स्तावस्थोऽपि जीवति।
यदातापो भवेत् तस्य सधुरं तव दौयते॥

Śārngadhara Samgraha, II. xii.

विषद्वित कफमार्गः स्रोतसंरोधकडवायुयः। सतद्व असेन्यन्यः स्रादसाध्यसिङ्गेदिङ्गोनयः॥



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.

Suśruta¹ mentions its length to be eight aṅguli. Dallana³ says that its blade is two aṅguli long and one aṅguli broad. Vāgbhaṭa³, on the other hand, describes the length to be nine aṅguli. Aruṇadatta⁴ thinks it to be a double instrument, one end having a straight edge and the other an oblique one. Some explain⁵ that two different kinds of nakha śastra—one with a straight and the other with an oblique edge—are directed to be used.

चर्मकथायाः कल्कं विज्ञसमं मूर्डिकाकपदमसा। झला कुर्यात् कटभीं कटुकोटफला प्रथमनञ्च॥ Caraka Samhitā, VI. xxv.

1 तव नखगस्त्रेषस्थावष्टाङ्गुले मूचीवत्यने।

Suśruta Samhitā, I. viii.

² नखगस्त्रमिति नखानां केटनाय गस्त्रं नखगस्त्रं तस्त्र फलं दाङ्गुलायामम् एकाङ्गुल विसृतम्। Nivandha Samgraha, I. viii.

वक्त मुंधारं हिसुखं नखगलं नवाङ्गं।
 स्वागल्यो हतिक्वे दे दं प्रकान विखने॥

Aştānga Hrdaya Samhitā, I. xxvi.

- * नखम्स्त्रं नखच्छेदनं प्रमित्तं। तच वक्षा स्जूयधारा यस तदेवस्। तसेकं मुखं वक्षमन्यद्रज् स्पष्टम्। Sarvāngasundarī, I. xxvi.
- 5 नखशस्त्रभाह वक्ष नृंधारिम यादि नखानां छिदनाय श्रस्तं नखशस्त्रं तत् हिमुखं हि हिं: प्रकारं मुखं यसा तहिमुखं तथा वक्ष नृंधारं एकं वक्षं धारं श्रपरम् स्टनुधारं सात्, तथा नवाङ्गुलं उभयोमिप देळेण नवाङ्गुलपिसितं तञ्च नखशस्त्रं शल्खोङ्गुलादौ योज्यं शल्खानां कण्टकदौनामुङ्गृति कहरणं शल्खोङ्गृतिः प्रच्छानं चेरा इति यसा प्रसिद्धिः लेखनं भौचन् इति लोवे।

 Vāgbhaṭārtha Kanmudī, I. xxvi.

They are principally recommended for cutting, puncturing and scarifying¹; 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 sastra, in wet cupping, by making parallel incisions close to one another.

Paul² 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 rampaka³, having the handle ten aŭguli and the blade three anguli long. It is to be used for paring the nails and cleaning the feet of the elephants.

5. MUDRIKA.

It is described to be a cutting instrument of the size of the last phalanx of the index finger⁴; it is also called anguli-sastra or finger-knife. Vāgbhaṭa describes this instrument but not clearly. He says that the mouth of the anguli-sastra looks as if coming out of a ring, and the blade is half an anguli wide. A ring, having the size sufficient to admit the terminal phalanx of the index

Suśruta Samhitā, I. viii.

Pālakāpya, III, xxx.

¹ विज्ञिपत नखशस्त्र सुद्रिकोपलपदकार्ड धारानि केटने भेटने।

² Paulus Ægineta, VI. xli.

[ै] रम्पकस्त्राङ्गुलसुखी दशाङ्गुलहत्त पादशोधनार्थं नखक्रेदनार्थं चेति।

^{*} प्रदेशिन्यगपर्वप्रदेशप्रमाणामुद्रिका।

finger, should be soldered to it. The base of the instrument has a thread tied to it¹.

It is recommended to be used for cutting through neoplasms in the throat. In its uses, Vāgbhaṭa says that it resembles the maṇdalāgra and vṛdidhipatra; and so was sometimes required for perforating the skull of a dead fœtus in the uterus of its mother².

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

> कुर्यादह् लियस्वतं । सुद्रिकानिर्गतसुखं फलिल्डीङ्ग्लायतं । योगतो हिडिपवेण मच्छलायेण वा समं। तत्प्रदेशिन्यय पर्व्वप्रमाणापन सुद्रिकम्। स्ववडं गलस्रोतो रोगर्वेदन भेदने॥

> > Aştānga Hrdaya Samhitā, I. xxvi.

कुर्यदित्यादिना महुलिशस्त्रकं त्यिका। सुद्रिका महुरीयकेण निर्गतं निष्कृत्नं सुसं यस्य तत्त्रयाविधं सुद्रिकानिर्गतसुखं तथा फर्ले फली हुँ शे महाहुलायतं महें हुँ मान विसार महुलि शस्त्रकं महुलिनाम शस्त्रं कुर्यात्। तम्र योगतः प्रयोगे हिंहपवेण मण्डलारेण वा समतुल्यं भवित। लेखने च्हे देने हिंहपववत् योज्यं किम्बा केदन भेदन पाटने सम्बलायवत् योज्यिक्तिय्यं। तदित्यादि तदहुलि शस्त्रकं प्रदेशिन्यय पर्व्यप्रमाणापण सुद्रिकं कुर्यादिति योज्यं। वैद्यस्य प्रदेशिन्यय पर्व्यप्रमाणापण सुद्रिकं कुर्यादिति योज्यं। वैद्यस्य प्रदेशिनी नाम्बी महुलि सस्त्रा अर्थ यत् पर्वे तत्त्वया तस्य यत् प्रमाणं परिमाणं तदर्पणा तत् प्रवेशोपयुक्ता सुद्रिका यस्य तत्त्वयाविधं। सुद्रिका सुदरी मान्दरी इति वा स्थाता। तथा सुनवहं सूलदेशि सुने एवहं तम्र गलसोतो गतानां रोगाणां केदने मिदने च योज्यं।

Vāgbhaṭārtha Kaumudī, I. xxvi.

विकामी नाम ती स्दी शस्त्रदारणमहतः। सम्छलाङ्गुलि शस्त्राभ्यां ततकर्म प्रशस्ति। हिंद्रपतं हि तीच्यार्यं न योनाववारयेत्॥

Aştanga Hrdaya Sambitā, II. ii.

and from which protrudes a sharp pointed blade about an inch long, by which the cranium was pierced¹.

In the pseudo-Hippocratic treatise² a knife to fix on the thumb and dismember a fœtus in utero is mentioned. This knife is called by Turtullian³ 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 ring⁴, 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 knife⁵. It is to be used for cutting through and puncturing the parts.

दीर्घ इस्ववक्तं यथायथं।

उत्पनाध्यई धाराख्ये भेदने ईदने तथा॥

Aştanga Hrdaya Samhitā, I. xxvi.

उत्पल्पताख्यध्यवैधाराख्ये शास्त्र बाह उत्पल्लियादि उत्पल्ख कथ्यवैधारख ते कास्त्र्ये ययो: शस्त्रयो! से उत्पलाध्यवै धाराख्ये शस्त्र तथा, यथाक्रम' दीर्घ इस वक्ते भवतः। तच उत्पलाख्यं दीर्घवक्रं, कथ्यवैधाराख्यं इस्त्रवक्तिस्त्रयः। उत्पल्पक्रस्टेन उत्पलपताख्यं शस्त्रं गस्यते तत्त्वात्त्रर्द्धनात्। तस्त्र फलस्त्र उत्पलपतकारत्वाद्रत्यलपतिनित संज्ञितम्। क्षितमवै धारा यस्त्र तत् कथ्यवैधारं। इन्तफलयोर्भेष्ये फलस्त्रिव किखिदेधिक देख्यं मिति वर्षते। तच कथ्यव्यव्यातं उरिष्ठ कर्ष्टु विस्तारं।

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

² Hippocrates, I. 463.

³ De Anima, 26.

^{*} Græco-Roman Surgical Instruments, Pl. vii. fig. 1.

In the Aśvavaidyaka, the utpalapatra and vrīhipatra knives are recommended to be used in puncturing the veins in phlebotomy¹. "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."

Both the utpalapatra and vrīhimukha knives are thus described in the Aśvavaidyaka⁴: 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

- े शस्त्रेचीत्पलपतेच ब्रीहिपतेच वा भिषक्। श्रिराविधविधि सम्बग् दृष्टकर्म्मा प्रयोजयेत्॥ Asvavaidyaka, XIV. v. 23.
- म्तकेण च संवेध्य सुखं शस्त्रस्य वृद्धिमान्।
 यथाप्रमाणं संस्थाप्य ततो विस्तावयेत् शिराम्॥

Ibid, XV. v. 35.

- ³ Hippocrates, II. 258 Kuhn's Ed. and 1. 88 Syd. Soc. Ed.
- * श्रद्धां हुलन् विसीर्थे कूर्यक्तस्तं षड्हुलम्।
 नासा त्रीहिमुखं मस्यक् तथा चीत्पलपत्रकम्॥
 Asyavaidyaka, XIV. v. 21,

JEFF Indira Gandhi Nation the abdominal parietis of the horse; then a tube is to be pushed through the wound in the operation of paracentesis abdominis¹.

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 boil², puncture of cavities containing fluid as in opening the abdomen for ascites³, incising the tunica vaginalis as in excision of hydrocele sac⁴ and for dissecting out warts⁵ and sebaceous cysts⁶.

It is interesting to note that Pālakāpya⁷ mentions utpalapatra and describes it to be eight anguli long, one and a half anguli broad and double edged. He uses it for puncturing vessels etc.

इदयस्याधरे भागे ऊर्डभागे च नाभित:।
अधीवा नाभित: कुर्थेच्छेदनं चतुरङ्गुले॥
अस्त्रेणीत्पलपत्रेण वासभागे विचचण:।
एकमिवाङ्गुलं शस्त्रे कुचौचापि प्रवेशयेत्॥
वैधत्रणे ततस्तिसन् नालिकां वस्त्रविष्टिताम्।
प्रचिष्य गालयेदारि यावदैकोष्ठलाधवम्॥

Aśvavaidyaka, LII. vs. 25, 26 and 27.

- Paul, VI. xxvii.
- 3 Ibid, VI, L.
- * Ibid, VI. lxii.
- ⁵ Ibid, VI. lxxxviii.
- i Ibid, VI. xiv.
- वीहिमुखप्रमाणमुत्यलपवं भेदनायं।

Pālakāpya, III. xxx.

7. ARDDHADHARA.

It is difficult to ascertain the exact shape of this knife. Some translate it as a "single edged knife," but it really means, as Dallana explains, an instrument which has a sharp edge for half the length? 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.

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

8. Sūcī or Needles.

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 anguli long, is advised to be used. For less fleshy parts and wounds about the joints, a similar straight needle but two anguli 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 anguli long and having the pointed end

Indira Gandhi Nationa Centre for the Arts

¹ Hærnle's Translations of Suśruta Samhitā, Bibl. Ind. I. viii.

² श्राडंधारिमिति, श्राडंधारा यसा तत् श्राडंधारं, चक्रधारिमिति प्रसिद्धं तच श्रष्टाङ्गुलायतं स्त्रसि श्रिक्षां, विस्तारं द्वाङ्गुलंपालं। श्राचे लध्याडंधारिमिति पठिना, श्रीधिकमाडं धारायसा तत् श्रायां श्रीप्रकारिक Samgraha, I. viii.

[·] 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 shape¹. The needles are also recommended to be used for extraction of foreign bodies from the soft structures and also for evacuating abscesses².

देशिऽल्यमांसे ससी च स्ची बत्ताङ्गलहयं। भायता ब्राङ्गला चसा मांसले वापि पूजिता॥ धनुर्वेका हिता मर्स्मफलकोषोदरोपिर। इत्येतास्त्रिविधा: सूचीसील्याया: सुसमाहिता:। कारयेन्यालतीपुण्यवनायपरिमञ्जला:॥

Suśruta Samhitā, I. xxv.

हत्तागृढ् हट्राः पाशे निस्तः स्चोऽन सीवने ॥ मांसलानां प्रदेशानां त्रासा च्राङ्गुलमायता । श्रत्यमांसास्यि मन्धिस्य व्रणानां द्राङ्गुलायता । ब्रीहिवका धनुवेका पकामाश्यमस्येस् । सा साद्वेदाङ्गुल सर्व्या वत्तासायतुरङ्गुला ॥

Aştānga Hrdaya Samhitā, I. xxvi.

तिस्णां स्चीनां विषयविशेषे श्राकारभेदानाह मांसलानामित्यादि 'मांसलानां' कर्व्वा-दीनां शरीर प्रदेशानां सीवनायं स्ची, 'वासां' चिकोणविशिष्टा तथा चाङ्गुलमायता, श्रह्णचयदीर्घा कर्मत्या, श्रसास्त्रास्त्व मयभागसेत्रव न तु सर्व्वावयवस्ता। स्चाः सर्व्वा-चयवस्त हि साधारणतो हत्ता कारत्विह्शादितिगस्यं। श्रस्ता श्रिप गृद्ध दृद्ध पाश्रत्वं सामान्योक्त्या कथितमेव श्रत्यमांसलस्थान संस्थितानां, सन्धास्थि संशितानांच व्रणानां सीवने हाङ्गुलायता, श्रङ्गुलिहय दीर्घा, स्चीकर्मव्या, पक्षाश्रये, श्रामाश्रये तथा 'मर्यास्य' बस्यादिषु संस्थितानां व्रणानां सीवने, ब्रीहि वज्ञा, पाटलादि ब्रीहिवन्सुखा, 'धनुर्वक्रा' धनुर्वेदकाकारा या स्ची सार्बहाङ्गुला, श्रद्धाङ्गुलाधिक हाङ्गुल दीर्घा योज्येति योज्यं श्रमापि गृद्ध दृद्ध पाश्रत्वं योजनीयं। सार्बहाङ्गुलिखनोन च्छेटः। सर्व्वत्यादि परिण सम्बध्यते॥

Vāgbhaṭārtha Kaumudī, I. xxvi.

म्पीक्षपपाटीमुखपरारीमुखान्तमुखिच्यूचनानि विसावणे ।

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."

Susruta makes mention of a javamukhī needle² (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 says³: "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

Susruta Samhitā, IV. xvii. Cakradatta, Nādīvraņacikitsā.

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

श्रुव्यादिषु चीत् चिष्य मृखी स्वं निधापयेत्। म्चीभिर्यवनक्वाभिराचितं वा समन्ततः। मृखी स्वेन वश्रीयाच्छित्रं चीपचरिद्रश्रणम्॥

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 parietis¹, and another, evidently a small needle, which is said to have been used in the treatment of staphyloma of the cornea². The needles were either round or three-cornered. "A few three-cornered needles of Roman origin have been found, although they are rare" (Milne³). Paul uses a needle in suture of the upper eyelid, and other modes of operating for trichiasis⁴, for the repair of wounds of the peritoneum⁵, and recommends a large sized needle containing a double thread to close the peritoneum in the operation for enterocele⁶.

Pālakāpya mentions sūcī or needles for stitching wounds⁷. They are eight anguli long, shaped like the tusk of an elephant and are either three ribbed, or four ribbed, or round, smooth and

¹ Celsus, VIII, xvi.

² Ibid, VII. vii.

³ Græco-Roman Surgical Instruments, P. 75.

^{*} Pa ilus Ægneita, VI. viii.

⁵ Ibid, VI. lii.

^{*} Ibid, VI. lxv.

[ृ] स्वी सेवनार्थं। अष्टाङ्गुलं नागटन्ताक्रति। चास्ता चतुरसा वा दृढ़ा समाहिता यथा यलाका वने वस्मविध्रत्यर्थम्।

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

Caraka recommends the use of leeches, knife and needles for extracting blood from the piles². He also advises us to use needles for pricking the patches of leprous spots³ 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 anguli long (Suśruta); the blade measuring two anguli (Vāgbhaṭa)⁵

या:म्चिस्त्रिविधा: प्रोक्ता: शस्त्राध्याये संस्थिता:। नागदन्ताक्तिर्वं ता विकीणा चेति निषयात्॥ ष्रस्थ्यात्रितं नागदन्तया मांसजं च विकीणया। लकसायु धमनीस्थं च शिराजं चैव वृत्तया। ष्राहार्थं सर्व्ययनाणां म्चा सीवनिमध्यते॥

Pālakāpya, III. i.

जलौकोिभः तथा शस्त्रैः स्चौभिर्वा पुनः पुनः।
 श्वर्भमानं किथरं रक्तार्शीभ्यः प्रवाहयेत्॥

Caraka Samhita, VI. ix.

अ प्रिक्टितमल्प सुष्ठ विरेचयेदा जलीकाभि:।

Ibid, VI. vii.

कुश्रपविति, कुश्रपवितृष्यं कुश्रपवि तन्मानमाहः :—
 श्रहुलैक्चकं विद्यादङ्गुलं फलसुच्यते ।
 हन्तं स्प्रात् व्यङ्गुलं मध्ये कुश्रपवस्य लच्चम् ॥

Nivandha Samgraha, I. viii.

° कुशाटी वदने यात्रे दाङ्गुलंस्यात्त्रयोः फलं॥

Aşṭāṅga Hṛdaya Samhitā, I. xxvi.

कुमाटीवदने हे भस्ते, सान्ये विसावण विषये दोज्ये। तयो: कुमाटी वदनयो: फलं इ.इ.सं, पाइलहर्य परिमितं स्प्रात्।

Vägbhatartha Kaumudī, I. xxvi

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

Cakradatta uses kuśapatra as a bleeding lancet and says¹: "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 vadiśa 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 Yogaratnākara², 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 grass³. It is nine anguli long—the handle being

Yogaratnākara, P. 321.

[े] जिल्लाया: पार्श्वतीऽधसां शिरा दादश कीर्तिता:।

तासां स्थूलशिरी क्षणे विध्यात् ते तु शने: शनै:॥

बिङ्शिणेव संग्टस्य कुशपविण बुिज्ञमान्॥

Cakradatta, Galaganda Cikitsā.

श्रीतिकाधः पार्श्वयोर्म्लाच्छिरा द्वादश कीर्तिताः। तासां स्थूली शिरे दे च च्छिन्दात्ते च शनैः शनैः। विश्वियोव संग्रह्म कुश्यप्रवेश वृद्धिमान्। सृते रक्ते व्रशे तिसान् ददातस गुड्माद्रकम्॥

व नवाङ्गलं कुशपतं। पञ्चाङ्गुलं इत्तं। चतुरङ्गुलम् पतं। अध्याधाङ्गलिक्तृत-सुभयतो धारं। कुशपत्राकृति गन्धीरपाकभेदनार्थ घड्डुलं इत्तम् अध्याधाङ्गलं पतं।

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

10. Атімикна.

This instrument is described to have the shape like the beak of the jalavardhanī bird or āṭī¹ (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? Suśruta describes its length to be ten auguli³, while Dallaṇa mentions the length to be twelve auguli.

¹ आटी मुखिमित, आटी जलवर्डनी नाम पिचिविशेष: तम्मुखवन्मुखं यसा तत् आटी मुखं तथाची तं :-

> हनं सप्ताङ्गुलं विद्यात् तस्राये फलिम्बिते। श्राटीसुख प्रकारं हि फलमङ्गुष्टमायतम्।

> > Nivandha Samgraha, I. viii.

² शरारीमुखिमिति, दीर्घवयुः पिविविशेषः स दिविधः धवलकासः रक्तशीर्षय धवलकासस्य शरारीति संज्ञा तन्मुखवन्मुखं तसा शस्त्रसा लोके कर्त्तरीति संज्ञा ताश्च दादशाङ्गुलां चलत्यलासां कुर्यात्।

Ibid.

³ दशाङ्गला शरारीमुखी सा कर्त्तरीति कथते।

Suśruta Samhitā, I. viii

It is recommended to be used for evacuating abscess¹, 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 hairs².

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 claws³. It is said to be six aŭguli long and one and a half aŭguli broad⁴. It seems that the curvature of the blade varied widely; and Vāgbhaṭa describes a variety called

¹ साव्ये श्रार्थासाविकूर्विके।

Astānga Hrdaya Samhitā, I. xxvi.

सावे विसावनविषये कर्माणि शरार्थास्या विकूर्धके दे शस्त्रे योज्य:। तच शरार्थास्य शरारीमुखं शरारी दीर्घचञ्च: पचिविशेष: तस्त्र मुखवदास्यं यस्त्र तत् शरार्थासंत्र, तच चलत्फलं दशाङ्गुलं दीर्घे कार्यः।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

² सायु सूचा कचच्छेदे कर्त्तरी कर्त्तरीनिभा।

Aşţānga Hṛdaya Samhitā, I. xxvi.

कर्त्तरीशस्त्रमाह सायित्यादि कर्त्तरीनामशस्त्रं कर्त्तरीसदृशं तच स्नायुच्छेदने स्चावेश-च्छेदने च योज्यं। कर्त्तरी काटारी इति यस्य प्रसिष्ठि:।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

अचनमुखिमिति मध्यमुखं तक्षचणमाह— अष्टाङ्गुलप्रमाणेन जिङ्गाचारिण चाष्टुतम्। शस्त्रमन्तमृखं नाम चन्द्राङं इव चोद्गतं।

Nivandha Samgraha, I. viii.

क तददन्तर्भुखं तस्य फलमध्यद्वमङ्गुलं॥

Aşṭāṅga Hṛdaya Samhitā, I. xxvi

arddhacandrānan¹ or "half-moon faced" seissors in which the blades are curved like the half-moon. It has the length of eight anguli, the blade measuring one and a half anguli. 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 delivery². 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 seissors. 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

अपरंच विद्यावण शस्त्रमाह तहित्यादि तहत् कुशाटीवदनवत्, अन्तर्मुखं अन्तर्मुखं नाम शस्त्रं सार्ये योज्यं तस्य अन्तर्मुखस्यफलं अध्यर्डमङ्गलं स्थात्। आधि अधिकं अर्डे अध्यद्धं। सार्डेकमङ्गलमित्यर्थः।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

े अर्ड चन्द्राननं चैत तथाध्यद्वाङ्गलं फली ॥

Aşṭāṅga Hṛdaya Samhitā, I. xxvi.

यन्तर्भुखस्य प्रकारभेदमाष्ट्र यर्डचन्द्राननमित्यादि एतत् यन्तर्भुखं, यर्डचन्द्राननं यर्ड-चन्द्राकारमुख्य भवति, तदिप तद्दत्, कुशाटीवदनवत् सात्ये योज्यं। तच फले यर्डाङ्गुलं यर्डाङ्गुलपिरमाण फलमित्यर्थः। यर्डचन्द्राकारमुखलात् अस्य शस्त्रस्थापि यर्डचन्द्राननमिति संज्ञीत वीष्यं।

Vāgbhatārtha Kaumūdī, I. xxvi.

² अध्वाईचन्द्रेण शस्त्रेणैव सतगर्भस्य वाहुयुगलं सञ्जिदा वाह्रनि:सारयेत्। Hārīta Samhitā, III, li. wooden handle¹. According to Suśruta, the length of the instrument is six anguli. But others describe it as eight anguli long, the blade and the handle measuring three and five anguli respectively². 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.

Caraka³ 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

विक् चंकिमित चय: कूर्चा यस तत् विक् चंकिम् तच तन्त्रान्त्रस् :—

क्षेत्रुं जानि तथाष्टी च शस्त्रं कार्यः चिक् चंके ।

फलेरन्तमुंखाकारेवङ्ग लेरन्तितं विभि: ।

एकेकस्य फलस्रेषामन्तरं ब्रीहिसिस्मितम् ।

इन्तं पञ्चाङ्ग लायामं कार्यं क्चकश्चितम् ॥

Nivandha Samgraha, I. viii.

Caraka Samhitā, VI. vii.

¹ निकृर्धकमिति तयः कृची यस तत् तिकृर्षकम्। कृचीः कृँची इति लोके। Vāgbhaṭārtha Kaumūdī, I. xxvi.

स्थिरकठिनमण्डलानां स्विन्नानां प्रकरप्रणाङ्गीभः।
 क्चें विधिहतानां रक्तोत्क्वे शोऽपनेतव्यः॥

other, khaja. The kūrcca¹, 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, Cakradatta² uses needles, rough leaves, etc. "The khaja³," Vāgbhaṭa continues, "consists of eight rounded needles having the sharp ends half an aṅguli long. It is to be introduced

म् जूर्चीवर्त्त पीठस्थाः सप्ताष्टी वा सुवन्धनाः। संयोज्य नीलिका व्यङ्ग कीम् भातेषु जुड्ने॥

Aşţānga Hṛdaya Samhitā, I. xxvi.

सम्प्रति कूर्बाख्यं शस्त्रं लचित्तमाह सर्व्वत्यादि ता: स्चः सर्व्वएव इत्ताः वर्त्तुलाः तथा चतुरङ्गुलाः चतुरङ्गुलदीर्घाः कूर्वः द्वयुच्यते । ताः स्चः पुनः कीट्याः ? इत्तेकपीठेस्थाः इत्ते वर्गुले एकिसन् पृष्टे संस्थिताः, एकं इत्ताकार काष्ठफलकं परिविध्य स्थिता द्रत्यर्थः । तथा सप्तसंस्थिका अष्टसंस्थका वा, तथा शोभनं रज्ज्वादिकृतं वन्यनं यासां तास्त्रथाविधाः सुवन्यनाः । स् कृर्चः नीलिकादिषु रोगेषु कुट्टने कुट्टनार्थे संयोज्यः प्रयोज्य इत्यर्थः । कुट्टनं अंगच्डान दित लोके । नीलिकादयो वत्यमाणा केश्यातः किशानां पतनं ।

Vāgbhatartha Kaumūdī, I. xxvi.

² अवगादपदश्चेव पुच्छियता पुन: पुन:।

Cakradatta, Kşudraroga Cikitsā.

अवगादपदिमिति गम्भीरपदं यथास्यात् तथा:मूचीनखरञ्जन्यादिभि: पुच्छियता * * *
Tattva Candrikā, ibid.

अर्बाङ्गलंमुंखेर्व र्वत्तरप्टाभि: कर्छके: खज:। पासिस्थां, मध्यमाणेन त्राणाचेन हरेट्छक्॥

Astānga Hrdaya Samhitā, I. xxvi.

खजसंज्ञकशस्त्रमाह अर्जाङ्गलमुखैरित्यादि अर्जाङ्गलप्रमाणं मुख येषां ते अर्जाङ्गलमुखा सैवर्जाङ्गलमुखे: वते: वर्त्तुले: अष्टाभि: अष्टमंत्व्यके: कर्र्यः क्षतं अस्त्रं खज उच्यते। तेन खजाव्येन शस्त्रेन पाणिभ्यां हसाभ्यां मध्यमाण्न आलोडामाणेन प्राणात् नासिकाया अष्टक्रको हरेत्, निर्हरेदित्यर्थ:।

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 feetal eranium.

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 also1. "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." Paul2 opens the vessels in the nostrils with the reed called typha.

14. KUTHĀRIKĀ.

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 wood¹. Vāgbhaṭa says² 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 aṅguli³. It is recommended to be used for puncturing vessels in the following manner⁴:—"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

Aṣṭāṅga Hṛdaya Saṁhitā, I. xxvi.

कुठारिका संज्ञकं शस्त्रमाह पृथ्रित्यदि कुठारी पृथु: स्यात्। कठारिका नामशस्त्रं पृथु: स्यूलम्लं स्वादित्यर्थ:। तथा गोदन्तसहशाह्यां हुलानना गवां दन्त: गोदन्त सत्त्रहशं तुल्याकारं अर्डाङ्गलायतं आननं सुखं यस्याः सा तथा विध्या तया कुठार्था कर्इदस्ख्या अस्यूषं उपरिस्थितां सिरां विश्येत्। तर्इं वामहस्तेनोज्ञीकत्य कुठार्थासुखं शिरोपरि संस्थाय दिचनाङ्गुष्ठतर्ज्ञनीस्यां कुठारिकामसक्तमभिहत्य सिरां विश्येत्।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

अ कुठारिकेति कुठारतुल्या कुठारिका:— कुठारिकाया वन्नं स्थात् साईसप्ताङ्गुलायतं। फलमर्ज्वाङ्गुलायामं गीदनसदृशं समम्॥

Nivandha Samgraha, I. viii.

* तथा मध्यमयाङ्गुल्या वैद्योऽङ्गुष्ठ विसुक्तया। ताङ्येदुत्थितां जाला स्पर्शादवाङ्गुष्ठ पीड़नै:॥ कुठाय्यां लचयेन्मध्ये वामहस्त ग्रहीतया। फलोट्टे शे सुनिष्कस्यं शिरां तदच मोचयेत्॥

Aşţānga Hrdaya Samhitā, I. xxvii.



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

१ पृथु: कुठारी गोदन्तसदृशार्डाङ्गुलानना। तयोर्डद्रस्था विध्येदुपर्थस्यां सिरां स्थितां॥

forcibly from the under surface of the thumb". Cakradatta¹ also advises us to use it in a similar manner. To open the veins in fleshy parts, Vāgbhaṭa recommends the vrīhimukha knife, while the kuṭhārīkā is advised to be used in venesection on bony structures.²

Pālakāpya³ 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."

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

> वामइसोन विन्यसा कुठारीमितरेण तु। ताङ्येनाध्यमाङ्गुष्टाङ्गुष्टविष्टसमुत्ताया॥

> > Cakradatta Śīrāvyādhādhikāra.

मांसले निचिपेट्टे भे बीहासंत्र ब्रीहिमावकम् । यवार्डमस्यासुपरि शिरां विध्वन् कुठारिकाम ॥

Aşţānga Hrdaya Samhitā, I. xxvii.

³ कुठाराक्षति कुर्य्यात् । कुठारी शस्त्रपक्तिरनार्ये । वस्तरनाक्षति वस्तरनां दशाङ्गुलम् । एकेकमध्यर्वाङ्गुलमुखम् । एवमेतानि च वीख्यपि यथायोगं प्रक्रनार्ये ।

> कुठाराक्रतिशस्त्रेण ततसं प्रच्छयेद्विषक्। नातिगाढ़ंन चलघुंन घनं विरलंन च॥

> > Pālakāpya, III. iii.

^{*} 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."

15. VRĪHIMUKHA.

It is described as a kind of trocar², the sharp end being pointed and shaped like a grain of paddy. It is six anguli long, the handle being two and the blade four anguli (Bhoja). But Vāgbhaṭa³ describes the length of the blade to be one and a half anguli.

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

Nivandha Samgraha, I. viii. * तथाध्यर्डाहुलं फले।

वीहिवकं * * *

Aşṭānga Hṛday Samhitā, I. xxvi,

 उदकोदिरिणस्तु वातहरतैलाभ्यक्तस्थोणोदकस्वित्रस्य स्थितस्याप्तै: सुपरिग्टहीतस्याकचात्-परिवेष्टितस्थाधी नाभेर्व्यामतयतुरङ्गुलमपहाय रोमराज्या ब्रीहिमुखेनाङ्ग्ष्टीदर प्रमाणमवगादं विध्येत्॥

Suśrutā Samhitā., IV. xiv.

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

वीहिमुखिमित बीहिमुखिमिव मुखमस्य बीहिमुखं तत्र भोज:— शस्त्रं त्रीहिमुखं कार्यमङ्गलानि षड़ायतम्। हाङ्गलं तस्य वन्तं स्प्रात् तत्फलं चतुरङ्गलम्। तन्मुखं त्रीहिविसारं तनुसंगृदकस्यकम्॥

hold him under the axilla. Then the abdomen is to be tapped by the vrīhimukha knife at a point, four anguli distant on the left side from the median line, underneath the navel." Vāgbhaṭa¹ 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 anguli. Cakradatta² 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 anguli 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 anguli.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

सजले जठरे तैलैरभ्यक्तस्यानिलापहै:।
स्वित्रस्योत्पान्वना कचमुदरे परिवेष्टिते॥
वडिक्ट्रोदितीस्थाने विध्येदङ्गुलमाचकम्।
निधाय तिस्त्राङ्गीच सावयेर्डमभ्यसः॥
चथास्य नाङ्गीमाक्षय्य तैलीन लवणीन च।
अथास्य वडा च वेष्टयेद वाससीदरम्॥

Aştānga Hrdaya Samhitā, IV. xv.

² जातं जातं जलं सार्थं शास्त्रीतां शस्त्रकर्मा च।

Cakradatta, Udaracikitsā.

- ³ See foot-note, 1. p. 242.
- * 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 (Vāgbhata)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."

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

वीहिवत्तं प्रयोज्यच तत्सिरोदरयोवंध्ये:।

Aṣṭāṅga Hṛdaya Samhitā. I. xxvi.

त्रीहिसुखाख्यं शस्त्रं आह त्रीहिवक्कमित्यादि त्रीहर्वक्कमिव वक्कं यस्त्र तत् त्रीहिवक्कं। त्रीहिसुखं यत्शस्त्रं तत्सिरानां व्यवे व्यवने तथा उदरस्त्र जलोदरस्त्र व्यवे सावणार्थे योज्यं।

Vāgbhaṭārtha Kaumudī. IV. xxvi.

ताड़यन् पौड़येचैनां विध्ये द ब्रीहिमुखेन तु।

Astānga, Hrdaya Samhitā, I. xxvii.

² मांसले नि:चिपेद्देशे ब्रीहास्वं ब्रीहिमानकम्।

Ibid.

मांसलेष्यवकाशेषु यवमाचं शस्त्रं निदध्यादतोह्रनेष्यद्वयवमावं ब्रीहिमावं वा ब्रीहिमुखेन। Suérutā Samhita, IV. viii.

> ततो ब्रीहिसुखं व्यध्यप्रदेशे न्यस्य पौड़येत्। चङ्गप्रतर्ज्ञनीयस्त तलप्रच्छादितं भिषक्॥

Cakradatta Śīrāvyādhādhikāra.

- See foot note 5. P. 123.
- संस्वेदा सूतप्रभवं वस्त्रखर्ण्डेन वेष्टयेत् ।
 सीवन्या पार्श्वतोऽचसाविध्येत् त्रीहिसुखेण वै ॥

Yogaratnakara.

संस्वेदा मूलप्रभवां वस्त्रपट्टेन वेष्टयेत्।
 सीवन्याः पार्श्वनोऽधसादिध्यादौहिसुखेण वै॥

Chakradatta Vrddhi Cikitsa.



Paul describes the operation but he recommends a sharppointed 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

Paulus Ægineta, Bk. VI. l. Syd. Soc. Ed.

¹ Celsus. vii. 15; ii. 10.

Vegetius. Mulom. iii. 25.

^{*} Avicenna, iii. 14; iv. 13.

⁵ Serapion. iv. 7.

^{*} Albucais : Chirrug. ii. 54.

⁷ Haly Abbas, Pract. ix. 41.

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."

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."

Pālakāpya⁶ describes vrīhimukha as shaped like a grain of paddy and recommends it for scission and excision of muñja.

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

² Paulus Ægineta, VI. lxii.

³ Albucasis. Chrug. ii. 62.

^{*} Rhases. Cont. xxiv.

⁵ Operations of General Practice, P. 145.

स्वण' पाटन' चैव कुर्याद्वीहिमखेण तु ।

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 anguli, 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 anguli. Vāgbhaṭa describes the length to be one anguli, 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 traumatism².

- चारित, चारित चारा चिस: चर्माकाराणां मखं। तत्र तन्त्रान्तरम्:— चारा ह्यष्टाङ्गुल्यामा कर्त्तत्या तु विशाम्यते। तिलप्रमाणन्तु फलं तस्त्रा: कार्य्ये समाहितं। दुर्व्वाङ्गुरपरीणाहं बन्तं गीपुच्छसित्रमं। Nivandha Samgraha, I. viii.
- व्यधने कर्णपालीनां युधिका मुकुलानना। श्वाराडाङ्गल बत्तास्या तत्प्रविशो तथोर्ड्वतः॥ चतुरसा तया विध्येच्छोयं पकाम संश्ये। कर्णपालीञ्च वहलां वहलाया न च शस्यति॥ मुचा विभागग्रिषरा व्यङ्गला कर्णवेधनी।

Aşṭānga Hṛdya Samhitā. I. xxvi.

सम्प्रति कर्णपालि व्यथन योग्यानि शस्त्राणि वक्तुमाह व्यथने इत्यादि कर्णपालीनां कर्णलतानां व्यथने व्यथनविषये यूथिका यूथिका नाम शस्त्रं योज्यं। कीटशी? मुकुलानना सुकुलवत् प्रकृतलात् यूथिका मुकुलवत् श्राननं मुखं यस्याः सा तथाविधा। श्रारत्यादि श्रद्धां इलं परिमानं इत्तं वर्त्तुलं श्रास्यं मुखं यस्याः सा तथा श्रद्धां इलहत्तास्या, तथा स एव श्रद्धां इलप्रमाणः प्रवेशः प्रवेशनं यस्याः सा तथाविधा तत् प्रवेशा तथा कर्द्धां इलाद्दिशत्वाद्धां इलाद्दिशत्वाद्धां स्वाद्धां इलाद्दिशत्वाद्धां व्यवद्धां सा स्वादा कथाते।

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 anguli 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 air¹. He next introduces one end of a tube open at

एतेन चारायाः फलं एकाङ्गलपरिमितिमिति फलित तत प्रथमार्डाङ्गलं इत्तंमपरार्डाङ्गलं चतुरसं तथोक्मयमागयोर्भध्ये चयख्यतुरस्तो भागः प्रवेशयोग्य इति मूचितं। तथा आरया पक्ताम संशये अयं शोधः पक्त आमोविति संशये सित ताहशं शोधं विधेत्, तथा वहलां चित्तां कर्णपालीच तथा विधेतित योच्यं। वहलामित्यन्तेन च्हेदः। वहलाया-मित्यादि वहलायाः चितमां सलायाः कर्णपाल्याः व्यथने कर्णवेधनी नास्ती मूची च शस्त्रते। कौहशी ? विभागप्रविरा, विभागः प्रविरं य्त्यं यस्याः सा तथाविधा विभागप्रविरा तथा त्राङ्गला चङ्गलतयदीर्घा। न केवलमारा वहलायाः कर्णपाल्या व्यथने शस्त्रते चिप तु कर्णवेधनी नास्ती मूची च शस्त्रते इत्यर्थः। कर्णवेधनी स्वीं चस्रस्त्रेशीया नरसुन्दरा कर्णवेधनार्थं व्यवहरित । चत्रीऽपं वाहुल्यवर्ण्यति।

Vāgbhaṭārtha Kaumūdī. I. xxvi.

निरुचेऽस्थिनि वा वाशी पाणिमस्थेन दारिते। नाड़ीं दलास्थिनि भिषक् चुषयेत् पवनंवली॥

Suśruta Samhitā. IV. iv.

निरुद्धे दत्यादि। त्वङमांसं शस्त्रेण विपाट्य अस्य पाणिमत्येन अराशस्त्रेण विद्वा तत्व रन्ध्रे दिसुखीं नाड़ीं प्रणिधाय सुखमारुतं चूषणेन लवनापकर्षणं करणीयमिति। 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 anguli. Bhoja says: "The blade is one anguli wide". It is said to have been used for puncturing vessels in phlebotomy².

18. Vapiša or sharp hook.

In shape it is described to resemble the ordinary fish-hook. Bhoja describes the total length to be six anguli, its hook being half an anguli and its handle five and a half anguli long. The end is bent; the curvature varies and may be shaped like a half-moon³.

¹ वितसपत्रमिति, वितसपत्रमित वितसपत्रमित भोज:— तीत्र्यमङ्गल विसारं चतुरङ्गलायतं। अङ्गलानि तु चलारि छन्नं कार्यं विजानता॥

Nivandha Samgraha, I. viii.

² वेतसं व्यधने।

Aştānga Hrdaya Samhitā, I. xxvi.

वेतसपतादि शस्त्रमाह वेतसमित्यादि वेतसं वेतसपतं नामशस्त्रं सिरादीनां व्यथन कर्माण-योज्यं। वेतसपतवद्दन्तरत्नासस्य वेतसं वेतसपतं वेत्ति संज्ञा।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

विज्ञिमिति विज्ञितुल्यं विज्ञिमं मत्साविधनीमाहः । तत तन्त्रान्तरं :— ।
विज्ञि चापि कर्त्तं यो प्रमाणे तु षड्ङ्गले ।
स्तानतन्तु तयोरिकमिकं नात्यायतं भवेत ।

Susruta says¹: 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 Suśruta² 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 pterygium³ and for fixing and dragging the uvula and tonsil before the performance of any operation on these parts⁴. Cakradatta⁵ mentions its use for fixing a growth, before its excision by the knife.

अर्डापचाङ्गुलं इन्तं शेषं कार्यं मुखं तयो:। अर्डचन्द्राकृति वक्नं कार्यं नात्यानतस्य तु। खानतं नामयेत् तव विद्याचिभिषस्वरः। इन्ताययोरन्तरं स्याद् यावदर्जाङ्गुलं मतं।

Nivandha Samgraha, I. viii.

विङ्शोदन्तशङ्खानतांग्रे तीः चाक्रस्य प्रथमयवपत्रमुखे।

Suśruta Samhitā, I, viii.

यडच्छ्या वा सुत्रमार्गप्रतिपद्मामन्तरासक्तां ग्रुक्ताग्रमरीं भर्करां वा स्रोतसा अपहरेत् एवं चामक्ये विदार्थ्य वा नाड़ीं भर्त्वेण विडिमीनोडिरेत।

Suśrutā Samhitā, IV. vii.

गहणेश्रस्डिकामीदिर्वेड्गि: सुनतानन:॥

Aştānga Hrdaya Samhitā, I. xxvi

विष्यसम्माह गर्हें इत्यादि सुष्ठु नतं श्रङ्गणवत् नसक्ततं श्राननं सुखं यस स तथाविध: सुनतानन: विष्यं मत्स्वविधनवत् विष्योनाम शस्त्रं स्पात्। स च ग्रस्थिकामीदिर्गहणे योज्यं। श्रादिपदिण उपजिह्निकादे परिग्रह:।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

पिड़कामुत्तमाख्याञ्च विड्मिनोटुरिङ्गिषक् । उङ्गत्य मध्संयुक्तै: कषायरवैच्णियेत् ॥

Suśruta Samhitā, IV. xxi.

उत्तमाख्यानुपिड़कां संक्रिय बड़िशोड़ृताम्।

Cakradatta, Śukradosa Cikitsā

婚

It was also used for fixing any growth in the eye, previous to its excision by the mandalāgra¹. For this purpose the Greeks used the vulsellum (myzon). Actius 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."

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

Vadiśa is described in the Aśvavaidyaka³ to have been similarly used during the operation of pterygium in horses.

Pālakāpya⁴ mentions vadiśa which is described as eight anguli 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 Celsus⁵, Aetius⁶, Paul⁷ and Albucasis⁸.

Its use in the excision of the tonsil is mentioned by Paul.

After the patient being placed in the proper position, he narrates: "We take a hook (tenaculum) and perforate the

Aśvavaidyka, XXX. v. 32.

Palakapya, III. xxx.

¹ See foot notes 1, 2 and 3, P. 227.

² Aetius. vi. 74.

वितौ निपाल तुरगं ततोनेवं प्रसारयेत्।
कतकमी भिष्विदान् विष्णेनाचिवर्कं नि॥

विष्यं चक्रायमष्टाङ्गुलप्रमाण्यमः पटलोडरनार्थं चेति ।

⁵ Celsus. VII. vii.

⁶ Actins. Tet. ii, iii, 60.

⁷ Paul. VI. xviii.

³ Albucasis. Chirrug. ii, 16.

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 ŚANKU OR TOOTH-SCALER.

Its head is half an anguli 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.

Vāgbhaṭa³ 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

Nivandha Samgraha, I. viii.

एकधारं चतुष्कोणं प्रवृद्धाकृति चैकतः। दल्लीखनकं तेन शोधग्रीइल्श्यकंरान्॥

Astānga Hrdaya Samhitā, I. xxvi.

दन्तलेखन अस्त्रमाइ एक धारमित्यादि एका घारा यस्य तत् एकधारं चलार: कोणा यस्य तत् चतुष्कीणं कोण: कोणा इति यस्य प्रसिद्धिः तथा एकतः एकदेशात् प्रवहा वर्षनशीला आकृतिः आकारो यस्य तत्त्वधाविधं प्रवहाकृति दन्तलेखनं दन्तलेखनाख्यं अस्त्रं स्यात् तेन दन्तसेखनाख्येन अस्त्रेण दन्तर्थकरान् दन्तिविद्धान् अर्कराज्यान् लेखयेत् कर्ययेदित्यर्थः। इन्तालिख्यने अनेनेति दन्तलेखनं दन्तर्थकरा पाथरि इति लोके।

¹ See foot note 1. P. 265.

एवं हि क्रियते एतौ दश्श्रङ्गुर्विजानता। श्रङ्गु वच सुखं तस्य कार्यमङ्गाङ्गुलायतम्॥ चतुरस्यं समञ्जेव तीच्याधारं समाहितं। हत्तायं तस्य कर्तव्यं शस्त्रं त्रीहिसुखाक्रति। कुपालिकां शर्करांञ्च दलस्थालेन शोधयेत्॥

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.

भस्तेष दन्तवैद्भे दन्तम्लानि शोधयेत्।

श्रहिंसन् दल्तमूलानि शर्करासु इरेट भिषक्।

Suśruta Samhitā, IV. xxii.

² See foot note 2. P. 280.

उद्दृत्याधिकदन्तन्तु ततोऽग्निमवचारयित् ।
 क्रिमदन्तक-वचापि विधि: कार्य्यो विजानता ॥

Suśruta Samhitā, IV. xxii,

* चलसुङ्ग्य च स्थानं विदहेच्छु विरस्र च।

Ibid.

यन्दनमधिजायेत नाड़ी तंदन्तमुद्धरेत्। किला मांसानि श्रस्त्रेण यदि नोपरिजीभवेत्॥ शोधियता दहेदापि चारेण ज्वलनेन वा। भिनन्य पेचिते दन्ते हनुकास्थि गतिष्ठवं॥ समूलं दशनं तस्यादृद्धरेद भग्नमस्थि च॥ उद्गतेतृत्तरे दन्ते सग्रले स्थिरवस्मने॥



Pālakāpya¹ mentions the extraction of tooth of the elephant by means of enīpada which is an iron bar, thirty-two anguli long and equal to the tooth in circumference.

Paul says²: "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 teeth³—a circumstance which throws some light on the state of manners" is well known.

20. ESANT OR SHARP PROBES.

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

Pālakāpya, III. xviii.

इतिश्रदहुलायतदश्नपिताहेन लीहदर्ग्हे न । एनीपदेन कुर्याटुइर्ग्गं तयो: सम्यक् ॥ ब्रीहिसुखेन च पिरशोध्य सर्वससा दलस्लेषु । उणोदकधौतेषु मधुसपिं: पूर्गं दयात् ॥

² Paul. VI. xxviii.

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

विविधानिषणां विद्यान्मदीश्च कठिनामिष । उद्विदेस दुनिर्नालेलीं हानां वा शलाक्या ॥ गम्भीरमांसगे देशे पार्श्व लीहशलाक्या । एष्टं विद्याद त्रणं नालेविपरीतमतो भिषक ॥

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-worms¹. Susruta² describes them to be eight anguli 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 anguli 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

¹ एषगी गण्ड्पदाकारमुखी।

Suśruta Samhita, I. viii.

²ंतन नस्त्रशस्तेषस्यावष्टाङ्ग्ले।

Ibid.

³ गतेरन्वेषये श्रच्णा गण्ड्पदमुखेषयौ।

Astānga Hrdya Samhitā, I. xxvi.

एषाण्यस्य शस्त्रमाह गतिरित्यादि एषणीनाम शस्त्रं गतेः नाड़ीत्रणसा पूयादिपथसा अन्देषणे श्रम्थवैचणे योज्यं। सा चैषनी श्लाणा कोमलस्पर्शा, तथा गस्ड्पदसुखा, महीलता सुखाकार सुखा च भवति।

Vāgbhaṭārtha Kaumūdī, I. xxvi.

- See page 155-7.
- क्रयदुर्वलभीक्षां नाड़ीमर्क्यात्रिताच या।
 चारस्त्रेण तां किन्दान्न तु शस्त्रेण बुदिमान्॥



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. Cakradatta¹ also describes this operation; evidently he copies it from Suśruta. In the Yogaratnākara² 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,

एषखा गितमिन्छ चारस्वानुसारिणीम्।

स्वौं निदध्याङ्गयने तथोङ्गस्याग्र निर्हरेत्॥

स्वस्रान्नं समानीय गाढ़वन्धं समाचरेत्।

ततः चार वलं बीत्य स्वमन्यत् प्रवेशयित्॥

चाराक्षं मितमान् वैद्यो यावङ्गच्छिद्यते गितः।

भगन्दरेऽप्येष विधिः कार्यः वैद्येन जानता॥

श्रब्बुंदादिसु चोत्चिष्य सूखे स्वं निधापयित्।

स्वौभिर्याववक्षाभिराचितं वा समन्ततः।

स्वी स्वेण वश्लीयाच्छिङ्गे चोपचरिङ्गः॥

Suśruta Samhitā, IV. xvii.

- ¹ These verses are quoted in the Cakradatta, Nādivraṇa Cikitsā.
- 5 Also quoted in the Yogaratnākara, P. 346.
- अदनार्थेऽपरा स्चौमुखा मूलनिविष्टखा।

Astānga Hrdaya Samhitā, I. xxvi.

अपरमध्येषणी यस्त्रमाह । भेदनार्थं दलादि भेदनार्थं नाड़ीत्रणानां गतिभेदनथं अपरा पूर्व्याकाया एषण्या अन्या स्चीमुखा स्चाकार मुखा स्प्रात् तथा सूली सूलदेशे निविष्टं, स्विनवैश योग्यं खं किंद्रं यस्त्राः सा मुलनिविष्टखा सिच्छिद्रसूलिमिल्थं: । अस्त्रा एषण्यासूली किंद्रकरणं चारकस्विनवस्त्रनार्थं। तेन प्रभिन्न दारनिष्काशितेन दृढ्वस्त्रेन चारस्त्रेण नाडीत्रणः प्रकाश्चर्ते ।

Vāgbhatārtha Kaumūdī, I. xxvi.

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 pain². 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 surgeons⁴. 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

Aştānga Hrdaya Samhitā. I. xxvi.

श्लाका गम्बं अङ्गुलि गम्बञ्चाह तासीत्यादि दिसुखा, दिदारा, सुखे, सुखप्रदेशे कुरवका कृति:, रक्तिक्छीपुण्य सुकुलकारा, तासी, तासमग्री, श्लाका, श्लाका शस्तं स्प्रात्। तथा श्लाकया लिङ्गनाशं, कफोत्थं पटल संज्ञकं चच्चरीग विशेषं विध्येत्। विध्येदित्यकेन च्हेद:।

¹ Hippocrates. 'De Fistulis'.

² Celsus. vii. 4.

³ Albucasis. Chirrug. ii. 80.

^{*} Lancet. vol. 1. 1845, new series.

तासी शलाका दिसुखा सुखे कुरवकाक्ति:।
 लिङ नागं तथा विध्येत्॥

the operation of cataract. Suśruta¹ 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 anguli long respectively.

- श्लाका कर्कशायलं खरा दोषपरिभुति'।
- त्रणं विश्वालं स्थुलाभा तीच्या हिंसादनेकथा॥
 जलास्नावन्तु विषमा क्रियासङ्गमथास्थिरा।
 करोति वर्जिता दोषैस्तस्मादिभिर्हिता भवेत्॥
 स्थाङ्गुलायता मध्ये सूत्रेण परिवेष्टिता।
 सङ्गुष्ठ पर्व्वसमिता वक्तयोर्म्युक्तला कृति:॥
 तासस्मसी शातकीसी श्रलाका सगदनिन्दता।

Suśruta Samhitā, VI. xvii.

- 2 Celsus, VII, viii.
 - क्थरा सही च कर्त्तव्या व्रणानामेषणी भवेत्। वृत्ता गण्डुपदमुखी प्रमाणे तिंभदाङ्गुली ॥ मुवर्णदृष्यतामाणामायसी ग्रङ्गजाऽपि वा। दन्तास्थिवेनुदारुणामेषणी दारुणा भवेत्॥

Pālakāpya, 1II. i.

एषणी दशाङ्गुला विंशत्यङ्गुला विंशदङ्गुला यथायोगमञ्जनशलाकाकृति सुखतः स्रच्छा समा चैवमितास्त्रिस एषण्यः प्रमाणतः कार्याः।

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 says1: "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

> श्री भिके लिङ्गाशे त कमी वच्चामि सिड्ये। नचेदर्डेन्द्धमाम्बविन्द्रम्ताक्षतिः स्थिरः॥ विषमो वा तनुर्माध्ये राजिमान्वा वहप्रभ: । दृष्टिस्थो लवाते दोष: सरुजा वा मलोहित:॥ सिम्धसिन्नस्य तस्याय काले नात्यसभौतले। यन्त्रितस्योपविष्टमा स्वानामां प्रयतः समं॥ मतिमान् ग्रुक्तभागी दी क्रिशास्त्रकास्त्रपाङ्गतः। उन्मौल्य नयने सम्यक् शिराजाल विवर्ज्जिते॥ नाधी नोईच पार्श्वाभ्यां किटे दैवक्रते ततः। श्रालाक्या प्रयत्नेन विश्वस्तं यववज्ञया ॥ मध्य प्रदेशिन्यङ्ग ष्ठस्थिरहस्त ग्रहौतया। दिचियोन भिषक् सव्यं विध्येत सव्येन चेतरत ॥ वारिविन्हागमः सम्यक् भवेच्छब्दस्या व्यघे। संसिच विद्यमावना योषित्सन्येन कोविद:॥ स्थिरे दोषे चले वापि खं दयेदचि वाह्यत:। सम्यक् शलाकां संस्थाप्याभ्यङ्गेर निलानाशनै:॥ श्लाकाग्रेण तु ततो निर्म्भिखेह्रष्टिम्खलं। विध्यती योऽन्य पात्र उत्त्रासं कहा नासिकाप्रटं॥ उक्तिइनेन हर्ते व्यो दृष्टिमन्द्रलजः कपः। निर्भ दव घर्मांग्रर्थंदा दृष्टि: प्रकाशते॥ तदासौ लिखिता सम्यग् ज्ञेया याचापि निर्व्यथा। ततो इष्टेषु रूपेषु श्रलाकामाहरेक्टनै:॥



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

> ष्ट्रतेनाभ्यज्य नयनं पस्त्रपट्टेन बेष्टयेत्। ततो ग्टेहे निरावाधे श्यौतोत्तान एव च॥

soaked with ghee (melted butter) and bandaged properly."

Vagbhata also discribes the operation similarly.

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

अय साधारणे काले ग्रहमंभोजितातानः। देश प्रकाश पूर्व्या भिषग् जानुच पीठग:॥ यान्त्रितस्योपविष्टस्य स्त्रिज्ञाचस्य मुखानिलै:। अङ्ग सदिते नेवे हशौ हडोत्प्रतं मलम् ॥ खनासां प्रे चमाणस्य निष्कम्पं मिर्घ धारिति। क्रियादहाङ्गलं मुका तदहाईमपाङ्गतः॥ तर्जनीमध्यमाङ्गर्षे: श्लाकां नियलं धृताम । दैविच्छद्रं नयेत् पात्रादृईमामस्ययन्निव ॥ सव्यं दिचणहसीन नेवं सब्येन चेतरत। विध्येत् मुविडे शब्द: स्यादरुक चाम्बलवस्ति: ॥ सान्वयद्रातुरं चानु नेतं सन्येन सेचयेत। श्लाकायासतीऽयेग निर्लिखेन्ने चमग्डलं ॥ अवाधमान: शनकैनीमां प्रतिनृदंसत:। उच्छित्रनाचापहरेद दृष्टिमण्डलगं कपम। स्थिरे दोषे चले चापि खे दयेदचिवाह्यत:॥ अय दृष्टेषु इपेषु श्लाकामाहरेक्हनै:। वृताझुतं पिचुंदत्त्वा वड्डाचं शाययेत्तत:॥ विद्वादन्धेन पार्वेन तमुत्तानं दयोर्व्यधे। निवाते श्यनेऽभ्यक्तशिरः पादं हितेरतम्॥

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 antiinflammatory 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 mals 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.

Mesue. De Aegr. oculi, 15.

^{*} Albucasis. Chirrug, Il. 23.

⁵ Rhazes. Ad mansor.

the mouth of a snake ¹. The blade is said to be half an anguli 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 dhais with a piece of split bamboo.

मर्पासत्र प्राणकर्णार्थक्टेदनेऽईाङ्गुलं फंली॥

Aştānga Hṛdaya Samhitā. I. xxvi.

सर्पासं नाम शस्त्रमाह । सर्पासं इत्यादि सपासं नाम शस्त्रं नासिका कर्णार्शसां छेदने योज्यं तच फले अङ्गुलाईपरिमितं अडाङ्गुलपरिमित फलकमित्यर्थः । अस्य सर्पसुखसद्दश सुखलात् सर्पास्त्रमिति संज्ञा ।

Vāgbhaṭārtha Kaumūdī. I. xxvi.



Paul. VI. xxv.

See foot-note 4. P. 65.

PRATUDA.

Susruta 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 says²: "The vrddhipatra is to be held at the junction of the handle and the blade; and all instruments used for incision should be held similarly. The vrddhipatra and mandalāgra, 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.

प्रतुरैर्दारयेत्वैन' मर्ग्याघात' विवर्ज्ययेत्।
 सिपंधान जरत्कूपे सतत' वा निवासयेत्॥

Suśruta Samhitā, VI. liii.

विषासथयोग ग्रहण समासीपाय: कर्म्मस वल्यते। तत इिंदिपचं इल्फलसाधारणे भागे ग्रह्मीयाद्वेदनान्येवं सर्व्वाणि। इिंदिपचं मण्डलाग्रञ्च किञ्चिद्तानपाणिना लेखने वहुगोऽवचार्यं इल्ताग्रे विस्नावणानि। विशेषेण वालव्रद्वसुकुमार भीर नारीणां राज्ञां राजपुचाणाञ्च तिकूर्मकेन विस्नावयेत्। तल प्रच्छादित वल्तमङ्गुष्ठ प्रदेशिनीभ्यां बीहिसुखं। कुठारिकां वामहस्त्वस्तामित-रहस्त मध्यमाङ्गुल्याङ्गुष्ठ विष्ठव्ययाभिहन्यात्। आराकरपत्रेषण्यो मूले। श्रेषाणि तु यथायोगं ग्रह्मीयात्।

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), Eryārūka (Cucumis Utillissimus), and Karkarūka (Cucumis Melo).

े केंद्र भेदेन लेखायें ग्रस्तं वन फलान्तरे। तर्ज्यंनी मध्याङ्गुष्टेग्यं स्तीयात् सुसमाहित:। विस्नावणादि वन्ताये तर्ज्यन्यङ्गुष्ठके न च। तल प्रकृत वन्तायं ग्राष्ट्यं ब्रीहिसुखं सुखे। सुलेखाहरणार्थानि किया सीस्वयंतीऽपरं॥

Astānga Hrdaya Samhitā. I. xxvi.

र्श्वादिषु च कर्मप्यमुपदिशेत्। सुवहंश्वतीष्यक्षत योग्यः कर्मस्ययोग्यो भवति। तत प्रथमलालावृ कालिन्दकत्रपुषेन्वाक्षककार्कक प्रभतिषु द्वेद्य विशेषान् दर्भग्रेद्वत्क तंनपरिकर्तनानि चोपदिशित्।
हित विस प्रसेवक प्रभतिषुदकपङ पूर्णेषु भेद्य योग्यां। सरोसि चर्मास्थातते लेख्यसः।
स्त प्रश्विरास्त्पलनालेषुच विध्यसः। ष्रशोपहत काष्ठवेश नलनालीग्रुष्कालावुमुखेष्वे स्वस्य।
पनश्विस्वीविल्लफलमञ्चस्तपग्रदनेष्वाहार्थस्य। मध्विद्यरोपलिते शाक्रलीफलके विसाव्यसः।
स्वाधनवस्त्रान्तयोर्थं दुचर्मान्तयोय सीव्यस्त्रः। पुलस्य पुक्षवाह्रप्रत्यङ्ग विशेषेषु वन्धयोग्यां।
सदुमांसपेशीषूत्पलनालेषु च कर्णसन्धिवन्धयोग्यां। सदुषु मांसखक्षेष्वग्रिचारयोग्यां। उदक

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 Salmali 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 ANUSASTRA.

The anusastra means substitutes for cutting instruments.

They are the following 1:—

1. Bamboo. 2. erystal. 3. glass. 4. ruby. 5. leeches. 6. fire. 7. caustics. 8. the nails. 9. leaves of Goji (Elephantobus Scaber), 10. Sephālikā (Nyctanthe Arbortristris), and 11. Sākhā (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. Вамвоо.

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.

Ibid.

इतेषु दोषेषु यथानुपूर्व गस्यौ भिषक् से भ समुख्यिते तु ॥ खित्रस्य विस्नापनमेव कुर्यादङ्ग एलो होपलवेग दस्है:।

अभ्यज्य स्वेदियला च विग्रनाद्या तत: श्नै:।
 विम्नापनार्थं सङ्गीयात् तलिनाङ्ग छकेन वा ॥

Ibid. IV. xviii.

[े] अनुभस्त्राणि तु त्वकसारस्प्रिटककाचकुरुत्रिन्दजलीकाग्निचारनखगोजीभेषालिका-भाकपव करीरवालाङ्गुलय इति । Susruta Samhitā, I. viii.

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 layers¹. 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 Samhitā.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

Hārita Samhitā, II.I lvi.

Suśruta Samhitā, III. v.

विभग्नच नरं हडा विश्वख्छे न वस्त्रयेत्। स्चयेन्नवनीतनैरख्यच्य वेष्टयेत्॥

[ै] तस्मात्समस्त्रगानमविषोपहृतमदीर्घे व्याधिपीडितमवर्षश्रितकं निःसृष्टाष्ट्रपुरीषं पुरुषम-बहन्त्यामापगायां निवद्वं पञ्चरस्यं सुञ्चवल्कलकुश्रश्रसादीनामन्यतमेनाविष्टिताङ्गमप्रकाशे देशे कोषयेत् सम्यक् प्रकुथितचोष्टुत्य ततो देहं सप्तरानादृशीर वालवेस वल्कल कृचीनामन्यतमेन श्रनै: श्रनैरवघष्यं स्त्रगादीन् सर्व्वानेव वाह्याभ्यन्तराङ्गप्रत्यङ्ग विशेषान् स्रयोक्तान् लच्चयेचच्छा ।

the thoroughly decomposed body, it should be slowly rubbed with a brush made either of Uṣīra (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.

Hoernle¹ says: "Probably it will come as a surprise to many as it did to myself, to discover the amount of anatomical know-ledge 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 Susruta, 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

Heernle. 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 the 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."

"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."

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. Śārnīgadhara² 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 people³.

Twelve kinds of leeches are described4; six of them are poisonous and six, non-poisonous.

काचकूष्यां विनिविष्य ताच मृहस्त्रसुद्रया। विलिष्य परितो वज्ञां सुद्रां दत्ता च शौषयेत॥

Sārngadhara Samgraha, II. xii.

³ नृपा श्रवालस्थिवर भौकदुर्व्वलनारी सुकुभाराणामनुग्रहार्थं परमसुकुारोऽयं श्रीणितावसे च नोपायोऽभिहितो जलौकस:॥

Suśruta Samhitā, I. xiii.

जनमासामायुरिति जनायुका जनमासामोक इति जनीकसः। ता दादण तासां सिवधाः स्ट्रां तावत्य एव निर्व्विधाः। तत सिवधाः क्षणा कर्जुरा अनगार्द्दा इन्द्रायुधा सासुद्रिका गोचन्दना चित। तास्त्रज्ञनचूर्णवर्णा पृथुश्चिराः क्षणा। विस्तिनत्यवद्यायता विद्रोज्ञत-कृष्टिः कर्जुरा। रोमणा महापार्था क्षणसुख्यलगर्दा। इन्द्रायुधवद्र्श्वराजिभियितिता इन्द्रायुधा। ईषदसितपौतिका विचिव पुष्पाक्षतिचिवा सासुद्रिका। गोवष्यवद्धीभागे विधामृताक्रतिरणुसुखी गोचन्दनेति। ताभिर्द्देष्टे पुरुषे दंग्री अयुष्रतिसावं कण्डमूर्च्छा

¹ History of Medicine. Neuberger. P. 181.

The poisonous leeches are :-

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

ज्वरीदाहर्व्हाईर्मदः सदनमितिलिङ्गानि भवन्ति। तत्र महागदः पानालेपननस्य कर्म्मादियूप-योज्यः। दन्द्रायुधादष्टमसाध्यमित्येताः सिविषाः सिविष्तित्सिता व्याख्याताः। श्रय निर्व्विषाः। कपिला पिङ्गला शङ्गसुखी सूषिका पुग्डरीकसुखी साविरकाचिति। तत्र मनःशिलारिञ्जता-भ्यामिव पार्श्वाभ्यां पृष्ठे स्निग्धसुद्भवर्षां कपिला। किश्चिद्रक्ता इत्तकाया पिङ्गाग्रगाच पिङ्गला। यक्तवर्षां श्रीष्ठपायिनी दीर्घतीच्यसुखी शङ्गसुखी। सूषिकाक्तित वर्णाऽनिष्टगन्मा च सूर्षिका। सुद्भवर्षां पुग्डरीकतुल्यवका पुग्डरीकसुखी। श्रिग्धा पद्मपतवर्णाष्टादशाङ्गलप्रमाणा साविरका साच पश्चर्षे। द्रत्येता श्रविषा व्याख्याताः।

तासां प्रयहणमार्द्रचर्म्मणानीक्वा प्रयोगेर्ग्यहीयात्। अधैनां नवे महित घटे सरसाड़ा-गोदकपद्मनावाप्य निद्ध्यात्। भन्यार्थे चासासूपहरै चौवलं बह्न्रसीदकांय कल्दां-यूणीकित्य श्रयार्थे त्रणमीदकानि च प्रवाणि। द्वाहान्न्याहाचान्यज्ञलं भन्यञ्च द्यात्। सप्तरावात् सप्तरावाच घटमन्यं संक्रामयेत्। भवित चाव।

स्यूलमध्याः परिक्रिष्टाः पृथ्यो मन्दविचेष्टिताः।

• अग्राहिस्कोऽल्पपायिन्यः सविषाय न पूजिताः॥

श्रथ जलीकोऽवसेकसाध्यव्याधितसुपवेश्य संवेश्य वा विकल्य चास्य तमवकाशं सद्दीमयचूर्णेर्ययक्तः स्रात्। ग्रहीताय ताः सर्पपरजनीकल्कोदक प्रदिग्धगातोः सलिलसरकमध्ये
सुह्रक्तिस्थताविगतक्कमा ज्ञाला ताभीरोगं याहयेत्। स्व्ययकार्द्रपिनुम्नोतावच्छनां कला
सुखमपाडण्यादरग्रह्नुन्ये चौरविन्दुं शोणितविन्दूं वा ददाच्छस्वपदानि वा कुर्वीत ययेवमिष न
ग्रह्मीयात्तदान्यां ग्राह्मीत्। यदा च निविशतेऽश्रमुरवदाननं कलोन्नस्य च स्कन्यं तदा
जानीयाद ग्रह्मीति ग्रह्मनीं चार्द्रवस्नावच्छनां धारयेत् सेचयेष्व। दंशे तोदकन्द्रप्रादुर्भावैर्व्यानीयाच्छुडिमयमादत्त इति ग्रह्माददानामपनयेत्। अय ग्रीणितगन्धेन न सुचेग्सुखमस्याः
सैन्यवचूर्णेनाविकरित्। अय पतितां तस्डुलकर्म्डनप्रदिग्धगात्नीं तैललवणाम्यक्तमुखीं वामहस्ताङ्गुष्ठाङ्गुलीभ्यां ग्रहीतपुच्छां दिचणहत्ताङ्गुष्ठाङ्गुलीभ्यां भनैः भनैरनुलोममनुमार्च्यदासुखाद्दामयेतावद्यावत्सस्यग्वान्तिङ्गानीति। सम्यग्वान्ता सिललसरकन्यस्ता भोकृकामा सती
चरेत्। या सौदिति न चेष्टते सा दुर्व्यान्ता तां पुनः सम्यग्वान्ति। द्रव्यान्ताया व्याधिरसाध्यद्वन्द्रमदो नाम भवति। श्रथ सुवन्तां पूर्ववत् सिन्नद्रध्यात् शोणितस्य च योगायोगानवेचा
जलीकोत्रणान्यभुनावघद्येच्छीताभिरिङ्गि परिषेचयेवभीत वा त्रणं काषाय मधुर स्निग्धश्रातैयः
प्रदेष्टैः प्रदिद्यादिति।

- 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. Pingalā or twany;—it is of a reddish-brown colour, has a round body and moves quickly.
- 3. Sanku-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 lotusleaf 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.



जलीकसन्तु सुखिनां रक्तस्रावाय योजयेत् । दुष्टाम्बुमत्स्रा भेकाहि श्वकोधमलोइवाः । रक्ताः श्वेता स्रश्नं क्रणायपलाः स्थूलिपिच्छलाः ॥ द्रन्दायुधविचिवोर्ड्वराजयो रोमश्राय ताः । सविषा वर्ज्जयेत्ताभिः कर्ग्डुपाक ज्वरस्रमाः ॥ विषिपत्तासनृत् कार्यं तत्र ग्रुडाम्बुजाः पुनः । निर्व्विषाः श्वेवलस्थावा झत्ता नीलर्डराजयः ॥

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 पृष्ठासन्बद्धाः किञ्चित पौतदराय याः॥ ता अध्यसम्यग् वसनात् प्रततञ्च निपातनात्। सीदनी: सलिलं प्राप्य रक्तमत्ता इति त्यजित ॥ अयेतरा निशाकल्क युत्ते उम्मसि परिप्रता:। अवन्तिसीमे तक्रेवा पुनयाश्वासिता जले॥ लागयेद वृतस्त्साङ्ग शस्त्र रता निपातनै:। पिवन्तीक्त्रहत स्तन्धा कादयेन्सद्वाससा ॥ संप्रताङ्गष्ट ग्रहासाज्यलीका दृष्टभोगितम्। आदत्ते प्रथमं हंस: चीरं चीरोदकादिव॥ दंशस्य तोदे कर्डां वा मोचयेदामयेच ताम । पट्तैलात्तवदनां युच्य कण्डन रुचिताम् ॥ रचन् रक्तमदाद् भुय: सप्ताइं वा न पातयेत्। पूर्ववत् पटुता दा श्रं सम्यग् वान्ते जलोकसाम्। क्समोऽतियोगामात्युर्वा दुर्व्वान्ते सब्धता मदः॥ अखवाखन ता: स्थाया घटे सत्साख्गिर्भिन। लालादिकोय नामार्थं सविषा: सुमलदन्वयात्॥ अग्रडी सावयेहंशान् हरिट्रा गुड़माचिके:। श्तधीताज्यपिचवसतो लेपाय शीतला: ॥

Astanga Hrdaya Samhitā, 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.

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, Susruta gives a list of leaves to be used according to the nature of the wound and season of the year³:—

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

मंशोध्योत्त्रयतः कार्यं शिरयोप कुश तथा।
 काकोडुम्बरिका गोजीपवैविद्यावयेदस्टक् ॥

Suśrutā Samhitā, IV. xxii.

उ एरख्ड भूर्ज्ञपूतीक हरिद्राणान्तु वातजि । पत्रमायवलं यच काग्रमरी पत्रमेव च ॥ पत्राणि चीरहचाणामीटकानि तथेव च । दूषिते रक्तपित्तास्यां व्रणे दद्याद्विचच्छाः ॥ पाठामूर्व्यागुडूचीनां काकमाचीहरिद्रयोः । पत्रच ग्रकनाशाया योजयेत् कफजे वर्षे ॥



See Page 199-202, and 204-5.

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 (Cisam-phelos Hexandra), Mūrvā (Sansevieria Zeylanica), Guḍueī (Tinospora Cordifolia), Kākamācī (Solanum Nigrum), Haridrā (Curcuma Longa) and Śuknāśā (Oroxylum Indicum).

For similar purpose Caraka¹ 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 injury² (Suśruta) Caraka recommends lotus leaves and plantain leaves as coverings to the bleeding piles,³ Cakradatta⁴ mentions the use of

Caraka Samhitā, VI. xiii.

भिन्नं नेतमकर्माख्यमभिन्नं लम्बते तु यत् । तिन्नविश्य यथास्थानमन्याविद्वशिरं शनै: । पीड्येत् पाणिना सम्यक् पद्मपतान्तरेण तु ॥

Suśruta Samhita, IV. ii.

कदलीदलेरभिनवै: पुष्कर प्रवेश शीतजलिसकौ:।
 प्रच्छादनं सुडुम्मेंड्रिटं प्रद्योतपलदलेश॥

Caraka Samhitā, VI. ix.

गोजीशिकालिका पतेर्द्यः संलिख्य लेपयेत्।
 चारिय वाक्यतं तिष्ठेद यन्वदारं पिधाय च॥



कदम्बार्जुननिम्बानां पाटल्याः पिप्पलस्य च । व्रथ प्राच्छादने विहान् प्रवास्त्रकंस्य चादिशेत् ॥

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. Sivodāsa also mentions the use of such leaves for rubbing the eyelids in the pillva disease. Suśruta mentions the use of rough leaves for scratching any part.

Paul⁴ 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. Caraka⁵ calls them the soft variety, the metallic ones being called the hard probes. These shoots are to be used for superficial sinuses. Susruta directs us to use the young shoots

1 विष्टष्य चो जुम्बरशाकगोजी-पत्रैभूष' चौद्रयुतै: प्रलिम्पेत्।

Cakradatta, Granthyarvuda Cikitsā.

वर्कावलेखं वहुशस्तदच्छी शितमी चर्णम्। पुत्रः पुनर्विरेकच पिल्बरी गातुरो भजित्॥

Cakradatta, Netraroga Cikitsā.

वर्लावलेखिमिति। कर्कश्याबीटकादि पवेण वर्ल्मघर्षणम्।

Tattva Candrikā. Ibid.

चौमं भ्लोतं पित्तं फीनं यावस्कां ससैन्यवं।
 कर्कणानि च पताणि लेखनार्थं प्रदापयेत्॥

Suśruta Samhitā, IV, i.

- · Paul, III. xxii.
- · 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.

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, advises us to introduce a tube of Eraṇda (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.

नाड़ी त्रणान् श्ल्यगर्भानुन्धार्युत्सङ्गनः शनै:। करिरवालांगुलिभिरेषण्या वैषयेङ्गिषक्॥ नेचवर्कागुराभ्यासनाद्यीऽवक्ताः शशीणिताः। नुख्योदकनै: अन्त्ये: करीरैरेषयेऽन्त्ताः॥

Suśruta Samhitā, IV. i.

अभग्नांचिलतान्दन्तान् सरकानदयीड्वेत्। तक्षस्य मनुष्यस्य शौतैरालिपयेडिहः॥ सिकान्द्रभिस्ततः शितैः सन्धानीयैक्पाचरेत्। उत्पालस्य च नालेन चीरपानं विधीयते॥

Susruta Samhito IV. iii.

अजीर्षं कोष्पपानीयं सिन्धु पौला वमित् सुधो:। वमनं पायित्वा च जानुमाचासने स्थितम्॥ कष्टमेरख्डनालेन स्प्रशन्तं वामयिद्विषक्। खलाटं वमत: पुंस: पात्रौं हो च प्रवीधये०॥

Śārngadhara Samgraha, 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 anguli and the circumference equal to that of the little finger. Susruta directs us to use a straight and plain branch of such trees as have an astringent, or sweet, or bitter, or sour taste¹. 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

तचादी दन्तपवन हादशाङ्गुल मायतं। किता परिणाह मञ्जयितमञ्जणं॥ अयुग्मयिय यचापि प्रत्ययं शक्तभूमिञं। अवेद्वैयर्ज्ञ दीषच रसं वीर्यच योजयित्॥ कषायं मधुरं तिकं कठुकं प्रातकत्थितं। निम्बय तिकके श्रेष्ठ: कषाये खदिरसाथा। मधुको मधुरे श्रेष्ठ: करञ्जः कठुके तथा॥

Suśruta Samhitā, IV. xxiv

वीद्र त्योष विवर्गातं सतैलं सैत्यवेन च। चूर्णन तेजीवत्याय दलावित्यं विशोधयेत्॥ एकैकं घष्येद्दलं स्टुना कूर्चकेन च। दल्लशोधन चूर्णेन दल्तमांसन्यवाधयन्॥



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

श्वक वीर्थं वटे दीप्तिः करझे विजयो भवेत् ॥ प्रचे चैवार्थसम्पत्तिर्वद्थां मध्रोध्वितः । खिदि सुखसीगन्धां विश्वेत विपुलं धनम् ॥ उदुम्बरे तु वाक्सिद्विरावेत्वारोग्यमेव च । कदम्बे तु प्रतिमेधा चम्पके च इदामितः ॥ शिरीपे कीर्त्तिमीभाग्य मायुरारोग्यमेव च । अपामार्गे प्रतिमेधा प्रजाशिक्तम्बाध्वितः ॥ दाडिम्यां सुन्दराकारः ककुभे कुटजे तथा। जातीतगरमन्दारेदुं:स्वप्रच विनश्चति ॥

Bhāva Prakāśa, I. i.

गुवाकसालहिन्ताली कीतकच हहत्तृण। खर्जुरं नारिकेरच सप्तैते त्यणराजका:॥ त्रणराज ससुत्पन्नं यः कुर्य्याद दन्तधावनम्। नरसान्द्राल योनिः स्वाद्यावङ्गङ्गात प्रस्नति॥

Ibid.

अवादिदगलतालोष्ट जिह्नारोग समुद्भवि॥ अधास्त्रपाके श्वासेच कासहिका वसीषु च। दुर्व्वलो जीर्ण भक्तय सूर्च्छात्तींमदपीड़ित:॥ श्रिरोक्गार्त्तलृषित: यान्त; पानक्रमान्वित:। अर्द्दिती कर्णयुलीच दन्तरोगोच मानव:॥

Suśruta Samhitā, IV. xxiv

श्रापिथितायं द्वी काली कषायं कटुतिक्तकम् ।
 भचयेद्दलपवनं दल्तमां सात्यवाधयन् ॥
 निइन्ति गन्धवेरस्यं जिह्वादन्तास्यजं सलम् ।
 निष्कृष्य कविमाधत्ते सयो दलविशोधनम् ॥

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

After cleansing the mouth with water after meals, I'Tsing ordains² "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 continues³: "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-kāṣtha 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

Suśruta Samhitā, I. xxvii.

¹ सदुना वा दन्तधावनकूर्चकेनापहरेत्।

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 Tsang-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 Nagarguna. 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."

Тоотн-Ріск.

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. 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. "After eating they cleanse their teeth with a wilow stick, and wash their hands and mouth."

JIHVA NIRLEKHANA OR TONGUE SCRAPER.

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

- ¹ दलालरगतं चात्रं शोधनेनाहरेक्हनै:।
- कुथादनाहतं ति मुखसानिष्टगन्यतां ॥
 - Suśruta Samhitā, I. xlvi.
- प्रवं भूका समाचामिट्रूचग्रहण पूर्वकम्। भोजने दललग्रानि निर्द्धत्याचमनं चरेत्॥ दलालरगतं चात्रं शोधनेनाहरेत् शनै:। कुश्चादिन्हितं तिह्न सुखस्थानिष्ट गन्धताम्॥ दललग्रमनिर्हार्थे लीपं मन्येत दलवत्। न तव वहुश: कुश्चाद यवं 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 anguli long and must be pliant and polished"¹. Caraka² mentions tongue-scraper of copper, lead or brass. Bhāvamisra³ 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 Caraka⁵ also advises

> जिह्वानिर्लेखनं रीप्यं सीवर्णं वार्चमेव च। तन्मलापहरं शलं मृदुश्चलं व्याङ्गलं ॥

> > Suśruta Samhitā, IV. xxiv.

मुवर्णकृष्यताक्षाणि वपुरीतिमयानि च। जिल्लानिर्लेखनानि स्वरतीच्यान्यस्जूनि च॥ जिल्लामुलगतं यच मलसुच्चासरीधि च। सीगन्धं भजते तेन तसाज्जिल्लां विनिर्लिखेत॥

Caraka Samhitā, I. v.

जिह्वानिर्लेखनं हैमं राजतं तासजं तथा॥
पाटितं सदु तत् काष्ठं सदुपतमयं तथा।
''तत्काष्ठं'' दन्तशोधनयोग्यं काष्ठम्।
दशाङ्गुलं सदु सिन्धं तेन जिह्वां लिखेत् सुखम्।
तिज्जह्वा सलवैरस्य दुर्गस्य जड़ता हरम्॥

Bhāva Prakāśa, I. i.

पापोपश्मनं केश्नखरोमापमार्ज्जनं ॥ हर्षेलाघव-सीभाग्य-करमुत्साह वर्डनं । वासवारं स्त्रावर्ष तेत्रोवल विवर्डनं ॥

Suśruta Samhitā, IV. xxiv.

तवादित एव नीचनखरोसा

पौष्टिकं ब्रष्यमायुष्यं ग्रचिरूपविराजनम् ।
 केग्रमञ्जनखादीनां कल्पनं संप्रसाधनम् ॥

Ibid.

us to shave regularly, that is thrice in a fortnight. Bhāvamisra says that this practice conduces to health, beauty, longevity and purity, and should be observed every fifth day². Razor is mentioned in the Rgveda³ and in the Kaṭhopaniṣad of the White Yayu. In the Śatapatha Brāhmaṇa, we find the method of shaving well described. "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 read⁶:—"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.

¹ वि: पचस्य केश्रम्यालोमनातान् संहारयेत्।

Carakas Samhitā, I. viii.

- ² पश्चरावात्रख सम्युकेशरोमाणि कर्त्तवेत्।
- क्रेश्यस्य नखादीनां कर्तनं सस्प्रसाधनम्।
 पौष्टिकं धन्यसायुष्यं शौचकान्तिकरं परम्॥
 "सस्प्रसाधनम्" शोभाजनकम्॥

Bhāva Prakāśa, I. i.

- ³ सं न: शिशीहि भुरिजोरिव चुरंराखरायो विमोचन।
 Rgveda, 8 M. 4 S, 5 A, 7 A, 16 V.
- चूरस्य धारा निश्चिता दुर्ल्यय दुर्गम्पथस्तत् कवयो वदन्ति ।

Kathopanisad, 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.....

Indira Gendhi Nationa Centre for the Arts

- 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."

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 Persius⁴ and Juvenal⁵ 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" Prosper Alpinus (16th century) "found the custom still prevalent among the Egyptian women" "The custom survived in France, and Italy in the 16th century".

· Keśa Prasadhani or Comb.

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



¹ Macdonnel's Sanskrit Literature, p. 164.

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

³ Hippocrates, Ran. 516, Lys 89, 151.

^{*} Persius, iv. 37.

⁵ Juvenal, vii. 114.

⁶ Sentonius, xxii.

⁷ Medicina Aegyptiorum, 111. xv.

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

louse and dandruff. Bhāvamiśra advises us to comb the hair every day to keep it clean, as it stimulates the growth of hair. Caraka 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 prolonged⁴. For an account of the looking-glass of the ancient Hindus, see Mitra's Indo-Aryans⁵.

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

Suśruttā Sambitā, IV. xxiv.

केशपांशे प्रकुर्व्वीत प्रसाधन्या प्रसाधनम् । केश प्रसाधनं केश्यं रजीजन्तु मलापहम् ॥

Bhāva Prakāśa, 1. i.

³ साध्वेश: प्रसाधितवेशो * *

Caraka Samhita, I. viii.

चादर्शालीकनं प्रीक्तं साङ्ख्यं कान्तिकारक्य।
 पौष्टिकं बल्यमायुष्यं पापलक्की विनामक्य॥

Bhāva Prakāśa, I. i.

¹ किश्प्रसाधनी किश्या रजीजन्तु मलापहा।

⁵ The Indo-Aryans Vol. 1, p. 240,

nor cold; therefore they should be worn during the rains¹. Caraka says that pure dress conduces to longevity, happiness and fortune².

USNISA OR HEAD DRESS.

Suśruta³ 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

- कोशियौर्णिक वस्त्रञ्च रक्तवस्त्रत्यवेव च। वातश्चेष इरन्ततु शीतकाली विधारयेत्॥ "कोशियं" पद्मावरं चसरवस्त्रञ्च। मध्यं मुश्रीतिन्यत्तन्नं कषायं वस्त्रसुच्यते। तज्ञारयेदुःखकाली तवापि लघु शस्यते॥ कषायज्ञीकटौ इति लोके, कषाय रागरकं वा। शक्तल् ग्रभदं वस्त्रं शीतातप निवारणम्। केनचोष्यत्रच्या शोतन्तत्त् वर्षामु धारयेत्॥
- Bhāva Prakāśa, I. i. काम्य यशस्त्रमायुष्यमलच्मीप्त प्रहर्षेयम् । श्रीमत पारिषदं शसं निर्मालान्तरधारयम् ॥

Caraka Samhitā, I. v. Bhāva Prakāśa, I. i.

- पवित्र केशसुर्शीषं वातातपरजीऽपष्टं। Sufruta Samhitā, IV. xxiv.
- उच्चीघं क्वान्तिकत्केग्यं रजीवात कपापहम्।
 सघुतच्यस्थते यस्याद गुरु पिनाविरोगकत्॥

Drava I I ak

The Indo-Aryans, Vol. 1, 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 eyes¹. Caraka² advises us to use it as it protects us from the sun, rain &c. Bhāvamiśra³ 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 sculptures⁴. It is still commonly used in India.

YASTI OR STICKS.

Caraka⁵ 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". It

- वर्षानिलरजीयकं हिमादीनां निवारणं। वस्य चच्चवा भीजस्यं शङ्करं क्ष्मधारणं॥
 - Suśrota Samhita, IV. xxiv.
- इतिर्विधमनं वत्यं गुप्तावरणशङ्करम्। घर्मानिलरजोऽन्वृत्रं क्वचधारणमुच्यते॥
- Caraka Samhitā, I. v.
- क्वस्थ धारणं वर्षातपवात रजोऽपहम्। हिमशं हितमक्षीय माङ्गल्यमपि कौर्तितम॥
 - Bhāya Prakāśa, I. i.
- * See Indo-Aryans, 1, p. 266.
- खलतः संप्रतिष्ठानं शतुषाञ्च निम्दनं।
 अवष्ठभनमायुष्यं भयम् दिख्धारणम्॥
- Caraka Samhitā, I. v.
- धनः सरीसपत्याल विषाणिभ्योभयापहं।
 यमख्वलन दोषत्रं स्थविरेच प्रशस्ति॥
 सत्तीत्माहवलस्थैर्य धैर्यवीर्य विवर्षनम्।
 व्रवस्थारसं॥

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

UPANAHA OR SHOES.

The ancient Hindus used two kinds of shoes, made of wood and leather. The wooden pādukā is recommended to be used before and after dinner². 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. Bēsides the advantages mentioned above, shoes are very comfortable to the travellers and prevent many diseases of the feet⁴. 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

- Bhava Prakaéa, I. i.
- श्रीत पाइकारीहणाडुर्थात् पूर्वे भीजनतः परम्। पाइरोग हरं वर्षा चच्चष्यवादणी हित्स्ा।

Bhāva Prakāša, I. i.

चत्तुष्यं स्पर्धनिहतं पादयोर्व्यसनापद्मम् ।
 वत्त्यं पराक्रममुखं बष्यं पादचधारणम् ॥

Caraka Samhitā, I. v.

पृत्दरोगहरं हष्यं रचीन्नं प्रीतिवर्धनं। सुखप्रचारमीजस्यं सदापादतधारणं। अनारोग्य मनायुष्यं चचुषोरूपवातकृत्। पादास्थामनुपानद्वाां सदा चंक्रमणं नृष्णं॥

Suśruta Samhitā, IV. xxiv.

उपानद्वारणं नेत्रमायुष्यं पादरीगृहत्। सुखप्रचारमोजस्यं वृष्यच्च परिकौर्त्तितम्॥ पादाभ्यामनुपानद्वाां सदा चंक्रमणं नृषाम्। अनारोग्य मनायुष्यमिन्द्रियम् मद्दष्टिदम्॥

Bhāva Prakā'a, 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 lining¹. Hiuen Tsiang² 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.

VYAJANI AND CAMARA. THE FAN.

The fan was used for airing the patients to drive away flies. 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". 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. For diagrams of the ancient fan, see Indo-Aryans.

Caraka directs us to use a kulā or fan to winnow corn, prepared from the kāśa (Saccharum Spontamum) to resuscitate a still-born child⁸.

Suśruta Samhitā, IV. xxiv.

Ibid, I. xix.

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. 1, p. 123-6.

वालव्यजन मीजस्यं मचिकादीनपोहित ।
 शोषदाह यमस्वेद मुच्छान्नो व्यजनानिल: ॥

[•] व्यज्येत वालव्यजनैत्रंगं नच विवद्दयेत्।

See Indo-Aryans, vol. II, p. 267-70.

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

[ै] तथा संक्षेणविहतान प्राणान् पुनर्तमत क्षणकपालिकाय्पेण चैनमभि:निधानीयाद-धचेष्टं स्वात् यावत् प्राणानां प्रयागमनं तत्तत्त्वक्रमिवकुर्यः॥

Bhāvamiśra¹ 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 says² 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 Bhiksus 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."

व्यजनस्यानिसी दाह स्वेदमुक्ति श्रमापहः।
 ताल्द्वैनभवी वातस्त्रिदीषश्मको मतः॥
 वंश्रव्यजनजसूष्यो रक्तपित्तप्रकोपणः।
 चामरो वस्त्रमभूतो मादूरो वेवजस्रथा॥
 एते दीषजिता वाताः सिग्धा हृद्याः सप्जिताः।

Bhāva Prakāśa, I. i.

Rājavallabha.

वालव्यजनगुण:—िबदीषश्मनलम्। लञ्जलस्य ॥ वंशव्यजनगुण:—क्वलम्।
 चण्णलम्। वायुपित्तकारिलस्य ॥ वेववस्त्रमशूरपुच्छव्यजनगुण:—िवदीषनाणिलम्।
 वालव्यजनगुण:—तेजस्तरलम्। मिक्कादि निवारकलस्य।

⁸ 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, Suśruta¹ 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 (Nymphæa Stellata) and Patala (Bignonia Snaveolens).

Suśruta mentions seven means of purifying polluted water², viz.,

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

Suśruta Samhitā, I. xlv.

² तत्र सप्तकलुषस्य प्रसाधनानि भवन्ति । तद्यथा । कतकगोभिदकविषयस्थिणैवालम्ल-वस्ताणि सुक्तामणियेति । पञ्चनिचेपणानिभवन्ति । तद्यथा । फलकं व्यष्टकं सुञ्जवलय उदकमश्विकाणिकाश्वेति । सप्तणौतिकरणानि भवन्ति । प्रवातस्थापनसुदकप्रचेपणं यष्टिकाः स्नामणं व्यजनं वस्त्रोद्वरणं वालुका प्रचेपणं शिकावलम्बनश्चेति ।

¹ व्यापन्नानामग्रिकथनं स्थातपप्रतापनं तप्ताय:पिग्ङसिकतालीष्टाणां वा निर्व्वापनं प्रमादनच कर्त्तर्थं नागचम्पकीत्पलपाटलापुष्पप्रस्रतिभिथाधिवासनमिति ।

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

- 1. Phalaka or planks as of Sālmali 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. Sikya 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 cloth². 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.

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

श्राङ्गं पुन: प्रधानं तटुपाददीताश्रयुजि मासि ग्रविग्रक्रवित तपटैकदेशच्युतमथ वा इर्म्यातलपरिश्वष्टमत्यैक्वा ग्रविभिर्भाजनैग्र्यं हीतं ।

Suśruta¹ 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-strainer³.

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.

Ibid.

व्यापन्नं वर्जयितित्यं तीयं यदाप्यनार्त्वं । दोषसञ्जननं द्ये तन्नाददीताहितन्तु तत् ॥ व्यापन्नं सिललं यस्तु पिवतीहा प्रसाधितं । श्रययुं पास्त्र्रोगञ्च लग्दोषमविपाकतां ॥ श्रासकासप्रतिग्यायग्र्लगुल्मीदरानि च । श्रन्यान् वा विषमान् रोगान् प्राष्ट्रयात् चिप्रमेवच ॥

Suśruta Samhitā, I. xlv.

² The way of Buddha, p. 53.

³ l'Tsing, ch. x.

^{&#}x27; सौवर्षे राजते सन्मये वा पावे निदध्यात् तस्मार्व्वकालस्ययुज्जीत तस्यालाभे भीसम्।

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)."

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.

Bhāvamiśra says²: "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 says³: "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

Bhāva Prakāśa, I. i



¹ I'Tsing. ch. vi.

शैपनं वृद्यमायुष्यं स्नान मोजो वलप्रदं। कस्डुमलयमःस्वेदतन्द्रा टड्दाह पापनृत्॥ वाह्यय सेकः शौताद्यं कसान्तर्याति पीड़ितः। नरस्य स्नातमावस्य दीष्यते तेन पावकः॥ शौतेन प्यसा स्नातं रक्तपित्तप्रशान्तिकृत्। बदेवीणेन तोयेन वल्यं वातकपापहम्॥ शिरः स्नानमवत्त्र्य मत्युणेनास्त्रुना सदा। वातक्रेष प्रकोपेत हितन्तक प्रकीत्तंतम्॥

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. Bhāvamiśra² 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.

See foot-note 2, P. 65.

अलपावन्तु तास्रस्य तदभावे स्रदोहितम्। पिवतं शीतलं पात्रं गिठतं स्प्रिटिकेन यत्॥ काचेन रचितनाइत्तया वैदृश्यं सक्षवसः।

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 travelling¹."

DINNER SERVICE.

Suśruta² 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.

Suśruta Samhita, I. xlvi

¹ I'Tsing, ch. vi.

श्रुतं कार्णायसे देयं पेया देयातु राजते ॥

फलानि सर्व्यभत्यांय प्रद्याहैदलेषु च ।

•पूरिग्रष्कप्रदिग्धानि सीवर्णेषु प्रकल्पयेत् ॥

प्रद्रवाणि रसां येव राजतेषूपहारयेत् ।

कटूराणि खडां येव सर्व्यान् शैलेषु दापयेत् ॥

द्यात्तासमये पात्रे सुशीतं सुश्रतं पयः ।

पानीयं पानकं मय' स्वययेषु प्रदापयेत् ॥

काचस्मटिकपावेषु शीतलेषु श्रमेषु च ।

दयाहैद्र्यंपावेषु रागषाडवसङ्कान् ॥

पुरसादिमले पावे सुविसीर्णे मनोरमे ।

सट: सुपीदनं द्यात् प्रदेशंय सुसंस्कृतान् ॥

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 Prakāśa¹ 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 service 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

शायसी काचपाते च भोजनं सिडिकारकम्। शाय पाग्डुहरं वल्यं कामलापहसुत्तमम्। शिलीये स्टल्पये पाते भोजनं श्रीनिवारणम्। दाकद्वते विशेषिण क्चिदंश्लेणकारितु। पातं पत्रमयं क्चां दीपनं विषपापनत्॥

Bhava Prakāśa, I.i.

SPOONS.

I'Tsing says¹: "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 Caraka² mentions it as one of the things necessary for the sick room. It is also mentioned in the Mohāvagga³: "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 Aśvavaidyaka⁶

² चोपन्यस्तभाङ्गार प्रतिग्रहाणि।

प्रतिग्रहां यीपचारयेत्॥

Caraka Samhitā, I. xv.

- 3 Sacred Books of the East. VIII. i. ll.
- * Beal's Records, vol. l. Introduction, xxviii.
- ⁵ See Page 36 and foot-note 1, P. 34.
 - परेशे लोमशे नित्यं लोमान्यतपाद्य वैध्येत् ।
 प्रमाणार्थेञ्च पातेण रक्तं रहज्ञाति वृद्धिमान् ॥

Aśvavaidyaka, XV. verse 30

¹ I'Tsing. chexvi.

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 Rgveda for preparing the Soma juice. And their use in pharmacy was wellknown 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 child³. Suśruta also recommends it⁴. "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

उल्खलसुतानामविद्दिंद्र जल्गुल:॥

यचिति लं गरहे गरह उल्खलक युज्यसे।

Rgveda, 1 M. 28 S. 1 &, 2 R.

सा चेदावीभि: संक्षिश्यमाना न प्रजायेतायेनां ब्रूयात् उत्तिष्ठमूषलमन्यतरञ्ज राज्जीव्यानेनेतदुः दूखलं धान्यपूर्णं महर्म्मुहरिधजिहि सहर्मुहरवजृश्यस्य चंक्रमस्य चान्तरान्तरा द्रत्येवसुपदिश्यन्यके ।

Caraka Samhitā, IV. viii.

² See foot-note 6, P. 172.

³ See P. 39, and foot-note 1, P. 40.

कालातीतस्थाविनि गर्म विभिषतः सधान्यसुदृखलंभूषलीनाभिज्ञन्यादिषमी वा यानासनी सेवित ।

is to be of the height of the knee and the latter three aratnis (cubits) long¹."

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 $i\gamma\delta\eta$, and the Roman pila; and the pestle (musar) is the same as the Greek $K\delta\pi\alpha\nu\nu$, and the Roman pilum"²

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

In the Mahāvagga³ 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 Rgveda⁴. The purpose of straining and filtering solid and liquid medicines respectively is mentioned to have been served by two or



Schol. on Katy. 1.3.3.6. footnote, Satapatha Brāhmaṇa (Sacred Books of the East, 1.1.4.8.)

² Cunningham's Bhilsa Topes, p. 207.

³ Mohāvāgga VI. 9. 2.

^{*} Rgveda, 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 Mohāvagga¹: "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 times². 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 navel³. Besides these, leather vessels containing cold water are also directed to be used for reducing the temperature in dilirium tremens.⁴

Rgveda, 3m. 31s. 16 Rk-

त्रंयुं दुइन्ति इसिनी भरिवैर्भध्वः पुनन्ति धारया पविवै:॥

Ibid, 3m, 36s, 7Rk.

अस्थिराजत तासानि भाजनानि च सब्बंश: । वारिपृषानि तात्यस्य गुलस्योपरि निचिपेत ॥

Suśruta Samhitā, VI. xlii.

* हमराजत कांस्थानां पात्राणां शीतवारिभि:।
पूर्णानां हिमपूर्णनां हतानां प्रवनाहताः।।

¹ Mohāvagga VI. 10. 1.

² मध्य: पुनाना: कविभि: पविवैर्द्युभिर्हिन्वंत्यक्रुभिर्धनुवी: ॥

Heat is directed to be applied to the patient's body in various ways1:—

- I. Tāpasveda:—palm of the hand, brass dish, sand, cloth, potsherd &c. are the means mentioned for applying heat to the body.
- II. Usnasveda:—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 vessel containing hot decoctions. The vessel is to be surrounded by a piece of

तत ताप-स्वेद:। पाणि कांस्यकन्दकपाल वालुकावस्त्रे: प्रयुच्यते भयानस्यचाङ्गतापो वहुश: खादिराङ्गारे दिति । उण-स्वेदस्तु कपाल पाषाणिष्टकालो ह-पिण्डानियवर्णानिङ रासि हेदस्त द्वर्यवर्गते राद्रालक्षक परिवेष्टितमङ्ग-प्रदेशं स्वेदयेत्। सांस रस प्रयोदिष धान्यास्वातहर प्रवभङ्ग काय पूर्णां वा कुभीमनुततां प्राइत्योक्षाणं ग्टङीयात्। पार्ध छिद्रेण वा कुभीमाधी-मुखेन तस्य सुख्मिसस्थाय तिस्नान् छिद्रे हस्ति ग्रण्डाकारां नाड़ीं प्रणिधाय तम् स्वेदयेत्।

मुखोपविष्टं स्वभऽक्तं गुरु प्रावरणावतं।
है कियुण्डिकया नाद्या स्वेदयेदात-रोगिणं॥
मुखा सर्व्वाङ्गगा हेग्रषा नच क्रियाति मानवं।
व्यामाईमावा विवंका हस्ति हस्त समाक्रतिः॥
स्वेदनाणे हिता नाड़ी कैलिखी हस्ती युण्डिका।

उपनाह स्वेदस्तु वातहरम् जककौरस्त पिष्टैर्लवण प्रगादैः सुस्त्रिः सुखीणेः प्रदिश्च स्वेदयित्। एवं काकोल्यादिभिः सुरमादिभिक्तिलातसी मर्थप कल्कैः क्रणरा पायसीत्कारिका-भिर्वेसवारैः शाल्लगैर्व्वातनुवस्त्रावनकैः स्वेदयित्।

द्रव स्वेदस्तु-वातहर द्रत्यकाथ पूर्ण कोण कटाई द्रोग्यां वावगाद्य स्वेदयेत् । एवं पयोमांस-रस-वृष-तेल-धान्यास्त्र-ष्टत-वसा सूर्वेश्ववगाहेत सुखोर्णः कषायै: परिविश्वेदिति ।

Sukruta Samhitā, IV. xxxii,

[े] चतुर्त्विध: स्वेट्सद यया। तापस्वेट उपास्वेद उपनाहस्वेदोद्रव स्वेट इति। अत्र सर्वेद्देद विकल्पावरोध: ॥

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 anguli 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. (Śārngadhara¹).

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.

अथवा वातनिर्नाणिद्रव्यकाषरसादिभि:।
उर्णेर्घटं प्रचित्रा पार्शे किद्रं विधाय च ॥
विसुद्रास्यं विखण्डाश्च धातुजां काष्ठजां तथा।
घड्डुलास्यां गीपुच्छां नाड़ीं युञ्जात् विह्निकां॥
सुखोपविष्टं स्वस्थकः गुरुपावरणावतस्॥
इसीयस्थिकया नाडा। स्वेदयेहातरोगिणमः॥

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 says¹: 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.

Cakradatta² describes the four methods of applying heat, Bhāvamiśra also describes them similarly³. Hārita, however, mentions seven methods of heat-application⁴.

- मोवर्ण राजतं वाि तासमायसञ्च दारुजम् । कोष्ठकं तच कुर्व्वोतोच्छाये घट्चिंगदङ्गलम् ॥ श्रायामिन तदेवस्था बतुष्कं मस्त्रणं तथा । नामि: षड्डलं यावन्यप्र: काथस्य धार्या ॥
 - Śarngadhara Samgraha, III. ii.
- े तके. सैकतपाणिकां खवमने: स्वेदोऽधवाङ्गारकः लेपादातहरे: सहास्रलवणसेहै: सुखोण्णैर्भवेत्। एवं तप्तपयोऽस्वृतातश्मनकाधादिमेकादिभि-सप्तेस्तोयनिषेचनोडववहदायै: श्रिलादै: क्रमात्॥ Cakradatta, Svedādbikāra.
- स्तेदयतुर्व्विध: प्रोक्तसापीषस्वेदसंजित:।
 उपनाहो द्रव: स्वेद: सर्व्वे वातार्तिहारिण:।
 तापस्वेद उपास्वेदय ताथां संजित:।
 Bhava Prokāśa, I. i.
- स्वेद: सप्तविव: प्रोक्तो लोष्टस्वेदो वाय्यस्वेदोऽग्रिज्वालास्वेद: ।
 घटस्वेदो जलस्वेदो पलस्वेदो वालुकास्वेदञ्च ।
 Harita Samhita, V. iv.

BALANCE OR MĀNADANDA.

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. Alberuni¹ 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 himself². 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 pupil³.

Bhavamiśra4 recommends us to use collyrium as it improves the visual power and cures many diseases of the eye. It is

Suśrutā Samhitā, IV. xxiv.

सीवीरमञ्जनं नित्यं हितमत्त्रीसती भजित्। लोचने भवतत्त्रीन मनोज्ञे मृत्त्र्यदर्शने । "सीवीरं" वेत सुरमा इति लोके प्रसिद्धम्। स्वोतोऽञ्जनं मतं येष्ठं विग्रुडं सिन्धुसम्प्रवम्॥



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

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

प्रचलं विश्वदं कान्तममलोज्ज्वल मण्डलं।। निवमञ्जन संयोगाद्मविज्ञामल तारकं।

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 silver¹.

He also mentions a piece of bamboo for storing collyrium²
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

हष्टे: कण्डूमलहरं दाहक्रेद रजापहम्। ऋश्योरपात्रहञ्जैव सहनेमारुतातपी॥ नेवेरोगा न जायने तस्मादञ्जन माचरेत्।

''त्रोतीऽञ्जनं'' क्षणासुरमा इति लोके प्रसिष्ठं ॥ ''विग्रहं'' शोधनं विनापि । ''सिन्धुसर्ग्युवृक्'' सिन्धुनाम पर्व्वतसाच सन्धवम् ।

> राबी जागरित: श्रानः छहितो भुक्तवांस्रथा। ज्वरातुर: शिरस्राती नाज्धीरञ्जनमावरीत्।

> > Bhāva Prokāśa, I. i.

See foot-note 3, P. 67.

कुञ्जकाशोकशालामिपयङ्गनिलनीत्पलै: ॥ पुष्पैईरेखकुश्वाह्वापथ्यामलक संयुते: । सिर्पि मेधुयतैयुर्णवस्त्रामवस्त्रिते: ॥

Suśruta Samhitā, VI. xvii.



recommended. For storing oil, Drehavala? 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 patient3. 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 pietorua. To apply oleaginous errhines, Suśruta4 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. Heyne⁵ (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"

> सैन्धवोपहितं युझ्यात्रिहितं वेशुग्रश्वरं। मेदोयकदृष्टतञ्चाजं पिप्रख्यः सेन्धवं सधु॥ रसमामलकञ्चापि पक्वं सम्यङ् निधापयेत्। कोग्री खदिरनिस्प्राणि तदत् चुद्राञ्चनं हितं॥

See foot note, 4. P. 67.

Suśrnta Samhitā, VI. xvii.

[े] तत उपसंस्कृतशरीर: प्रात: प्रातकत्थाय पाणियुद्धिमात्र' चीट्रेण प्रतिसंस्टच्यीपयुत्जीत। Susruta Samhitā, IV. x.

^{*} वामहल प्रदेशिन्य योन्नामितनालायाय विश्वह स्रोतिस दिच्या हस्तेन से हमुणान तर्प रजत सुवर्ण तासस्त्पाव ग्रितिनामन्यतम यं ग्रात्या पिचना वा सुखीणां स्रोहमद्रुतमासिचेद् व्यवच्छिन्न-धारं यद्यानेवेन प्राप्नीति।

⁶ Dr. Heyne's Indian Tracts,

DROPPER.

The Hindus used a tent of cotton as a drop conductor. Cakradatta¹ 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 anguli 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 Mahāvagga² 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".

KHAL OR ELLIPTICAL MORTAR OF STONE AND PESTLE.

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

Cakradatta, Āsotaneyānfana Adhikāra.



¹ निवातस्थस्य वाभेन पाणिनोन्मीख्य लोचनम् । युक्तीप्रलब्ब्यान्थेन पिनुवन्धां कनीनिकं। दश् दादश वा विन्दृन् दाङ्गुलादवसेचवीत्।

Mahāvagga vi. 3.2.

⁵ Cunninham Cunningham's Bhilsa Topes, p. 206.

elliptical mortar is generally used when the medicines require to be thoroughy 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 sandamsa 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. Albutt1 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. Osler2 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 Jones³ "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



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

Oslar and Mcrae's System of Medicine.

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

the scholars. Macdonell1 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 maintains3 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.

^{. *} Antiquity of Hindu Medicine, p. 61.

as well as how many absurd formulas still figure in some continental pharmacopæas, 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 says1; "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 It is no doubt unsatisfactory to find that such medicine." 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 eranial 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

Suśruta Samhitā, III. vii.

देइस्रोत्पत्तिरस्जो देइस्रोनेव धार्यते। रक्तं जीवस्य चाधारसस्माद्रचेदस्ग्वधः॥

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

याभिरिदं शरीरमाराम इव जलहारिणीभि: केदार इव च कृष्णाभिरपिस्रद्यति-ऽमुग्टचातेचाकुञ्चन प्रसारणादिमिर्व्विशेषै:। दुमपत्रसेवनीनामिव च तासां प्रतानासासां नाभिर्मुलं तत्य प्रसरन्त्युईमधिस्यिकं च।

the distinction between the artery and vein, 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.

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),

विस्ता द्रवता रागयलनं विलयसया।

भूग्यादिपञ्चभूतानामेते रक्ते गुणाः सृताः॥

•रक्के दुष्टे भवेच्छोयो रक्तमख्लमेव च।

•व्याःदाहय पाकय कख्डूच पौड़कोद्गमः।

हद्दे रकाङ्कः नेचलं शिराणां पूर्णता तथा।

गाताणां गौरवं निद्रा मेही दाहय जायते॥

Sārngadharā Samgraha, III. xii. Bhāva Prakāśa, I. ii.

1 इन्द्रगीपप्रभं ज्ञेयं प्रकृतिस्थसमंहतम्।

Sārngadhara Samgraha, III. xii.

गूढ़ा: समस्थिता: सिन्धा रोहिन्य: ग्रह्मोिणतम्।

Aştānga Hrdaya Samhitā, II. iii.

सप्तीत्तरं मर्साशतं।

Suśruta Samhitā, III. vi.

tin, and zine; the sulphuret of iron, copper, mercury, antimony and arsenie; the sulphate of copper, zinc and iron; and carbonates of lead and iron¹". 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 trees³. 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.

² For the bibliography of the Ayurvedic 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; 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". 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. The position of the heart was well-known and its function as a profeelling organ is

यावत्यस्तु सिराः काये सम्भवित्त श्ररीरिणां।
 नाभ्यां सर्व्वा निवज्ञासाः प्रतन्वन्ति समन्ततः॥
 नाभिस्थाः प्राणिनां प्राणाः प्राणान्नाभिर्वपाश्चिता।
 सिराभिराहता नाभियक्रनाभिरिवारकैः॥

तासां सूलिसुरायलारिश्रत्तासां वातवाहिन्यो दश पित्तवाहिन्यो दश कफवाहिन्यो दश दश रज्ञवाहिन्या ।

Suśruta Samhitā, III. vii.

तस्यान्तरेण नाभेस्तु ज्योति:स्थानं ध्रुवं सृतं। तदा धमति वातस्तु देहसीनास्य वर्धते॥

Ibid. III. iv.

- ² A course of lectures on the Principles and Practice of Medicine delivered at Calcutta Medical College. By Francis, 1868.
- भातुस्तु खलु रसवहायां नाड्यां गर्भनाभिनाड़ी प्रतिवद्वा साख मातुराहाररस्व
 वौर्थ्यमभिवहति । तेनोपस्नेहेनास्याभिविद्वर्भवित ।

described in the ancient books1. In the later Tantras the origin of the nerves from the spinal cord and the brain is distinctly stated2. 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

Suśruta Samhitā, I. xiv.

दे दे तिर्ध्वक्गते नाडौँ चतुर्व्विशति संख्या।
 मैसदर्खेस्थिता: सर्वे स्वे मिषगणाइव॥

जत्यमूलमधः शाखं हचाकारं कलिवरं। यथात्रत्यदले तहत् गरीरे नाड्यस्थिताः॥

[े] स रस: इत्युच्चते । तस्य च हृदयं स्थानं स हृदया बतु व्विश्वतीः स्थमनीरनुप्रविश्वोर्डगा दश दश चाधीगामिन्ययतस्रसिर्व्यग्गा: कृत्सं श्रीरमहरहस्तर्पयति वर्डययि धारयति यापयति जीवयति चाहष्टहेतुकेन कर्मगा ।

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

working even at the present time. Adams says¹ 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 heen 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 homeopathy need be mentioned here to complete the list. 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 Reveda2 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. 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 (osadhadhāraka). 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.

भीमानं शंयीर्भमकाय मूनवे विधातु गर्म वहतं गुभस्ततौ ॥

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". 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



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

Neuberger's History of Medicine, P. 3.

Ayurveda 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 alabu yantra of the Hindus corresponds to the description of the cucurbitula of the Greeks, and both the terms mean a gourd. A śriga is the horn; aŭguli yantra or mudrikā is the finger or ring-knife; yoni-vraneksana is the diopter or vaginal speculum; ankuśa 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 hydrophohia, Paulus quotes Rufus who pronounces it to be s

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 Sainhitā, and it may be thus translated: "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 Scostris as recorded by Diodorus Seculus² in prehistoric times; the connection of the Phænician traders as proved by the articles of merchandise,—cinnamon, aloes, onyx, agate, ebony, tin and ivory³ diamond, gold and

Suśrutā Sāmhitā, V. vi.

भंपमुना यदिवाद्यें रिष्टं तस्य विनिर्द्धिग्त्॥ वस्यत्यकस्माद योऽभीच्यां यत्नादृष्टापि वा जलं। जलवासन्तृविद्यानं रिष्टं तमापिकौर्नितं॥

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. 1. 57. ("India sends Ivory"), Lonsdale and Leo's trans.; Horace, odes 1. 31.

embroidered work1 the commercial enterprises of the ships of Solomon (992 B. C.) from Ezion-Gaber² 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 Pococke3 that Pythagoras, who is generally considered to be the founder of the healing art amongst the Greeks4 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 Bergal, 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

[·] See the Origin and Growth of the Healing Art-Bedroe, 162.



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

² I. King. ix. 27; xii, p. 22.

³ India in Greece.

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 Asoka. "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. Hippocrates the Great, who was contemporary and kinsman of Ktesias the court physician to the king of Persia, mentions:—Sesamum Indicum (Tila); Nardostachys Jatamans in

¹ Lalitvistaram. Mitter's ed. ch. 1.

² Journal of Education, Vol. viii, p. 176.

³ Pratt's Flowering Plants, Vol. 1, p. 67.

^{*} Galen ; Comment, in libr. de artic. iii.

(Jatāmāinsī); Beswillia Thurifera (Kunduru); Zinziber Officinale (Śrngavera); 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, Colebrooke¹ asserts that "the Hindus were teachers and not learners". Cunningham² says: "Indians have the advantage in point of time; and I feel satisfied that the Greeks borrowed much of their philosophy from the East" Weber³ remarks that "there is no ground whatever to suppose that Susruta 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.

⁵ 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 Sugrat or Buqrat, the Arabic corruption of the Greek Hippocrates, and that Kasi 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 Pańca-sidhāntica or the collection of the five old treatises on astronomy,

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

viz., Paulisa, Romaka, Vasistha, 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 Rsis-how much more than an astrologer who is a Brahman". 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 Indian1, 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". "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."

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. 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 India4 remarks as

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

² Ibid, p. 73.

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

^{*} 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 r. 303". The Arabs also translated "Indian works on snakes (sarpavidya), on poison (vi-avidya).....on the veterinary art1......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 wihāra?) 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, aseribed 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 Lucknow². 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 1. c., pp. 287, note, and 284 note, 302). The name by that of an author of a book on drinkables, may be identified with Atri, mentioned as a medical author by Weber, 1. c. p. 288."

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 Bedræ, 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	Devadāru²
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.
Nuv mosebata	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	.Tintidī.
Trifolia	
Myrobalani	
Turpeth or Convolvulus Turpethum	
Sel or Aegle marmelos	
Santalum rubrum	
Melia azadirachta	
Tembul (Piper betel)	
Faufil (Arecha catechu)	
Nux vomica	
Musa paradisiaca or plantain	
Moschos moschifera (from Thibet & Indi	a) Mṛganaoni.
Dolichos lebleb.	Alberta Maria
Orange or Citrus aurantium	Nāgaranga.
Limon or citrus medica	Mātulunga.
Pearls and other precious stones such as la	piz 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).

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).

Sriigavera (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).

Tineana (borax)—Tinkar (P)—tineal (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.

Manasilā (S)—Mansil (G).

Harital (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).

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

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

Vrana (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 (THE me-pun, or a me-bum, both meaning 'fire vessel'), in which

¹ The Thibetan Anatomical System by E. H. C. Walsh in J. R. A. S. 1916, pp. 1244-45.

paper is lit and the bowl is placed while hot over the part to be blistered; the sucking-horn (REAS hjib-ru), by which cupping by vacuum is done; the cautery (BAND lchags-me), the lancet (ES rtsa-u), for bleeding, and a golden lancet (ARD 3 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, and a description of the figures was given by the late Lama Ses-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.

If the elaborate and various instruments shown in the blockprint 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.

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 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 Susruta, 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 Shaheb²:—

"Aconitum heterophyllum ... Ativisha.

Allium cepa ... Polandu.

Acacia catechu ... Khadira.

^{&#}x27; 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 ... Guduci.

Valeriana Hardwicki ... Tagara.

Wrightia Antidysenterica ... Indrayava."

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

Acacia Arabica ... Vāvvula.

Acalypha Indica ... Muktabarşi.

Andrographis Paniculata ... Kirāta.

Aristolochia Indica ... Arkamula.

Arachia Hypogaea ... Bucanaka.

Citrus Aurantium ... Nāgaranga.

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 ... Ambashthai.

Coscinum Fenestratum ... Dāru-haridrā or darvi.

Gynocardia Odorata ... Chālmugra.

Hygrophila Spinosa ... Kokilāksa.

Anogeissus Latifolia

Embelia Ribes and E. Robusta... Vidanga.

Plantago Ovata ... Ispaghula.

Ipomæa Hederacea ... Kālādāna.

Ipomæa Turpethum ... Trivit,

Mylabris Phalerta.

Terminalia Chebula ... Haritakī,

Sesamum Indicum ... Tila.

Picrorhiza Kurroa ... Katuka.

Urginea Indica ... Vanapalāṇdu.

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 Suśruta¹.

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.

पादी निरससुष्कस्य जलेन प्रोत्य चाचिया। प्रविश्व तुत्वसीवत्वा सुष्की सीव्येत्ततः परं॥

Suśruta Samhitä, 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). 'Demoniac' (4) is the attack of evil spirits, and the 'Agada' (5, but 6 of Ayur-veda) is the medicine for counteracting poisons. By 'Children' (6, but 5 of Ayur-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

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. Takakusu¹ 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. Sâlya (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. Salya means a dart or arrow.

II. Sâlâkya (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 Salâkâ, "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.

A Record of Buddhist Practices, Ch. XXVII, pp. 222-3.

The above two divisions constitute the surgery of modern schools.

III. Kâya-kikitsâ (I-tsing's (3) treatment of the diseases of the body).

The application of the Ars Medendi (Kikitså) 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-bhritya (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. Råsåyana (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 366 APPENDIX.

metallurgic, is the discovery of the universal medicine—the elixir that was to render health permanent, and life perpetual.

VIII. Vågîkarana (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. Susruta, however, confines his own work to the classes Sâlya and Sâlâkya 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 Chirag.

Assyria-Sayce.

Aştānga Hrdaya Samhitā-Vāgbhata II (Kunte's Ed.).

Aştānga Samgraha-Vāgbhata I.

Aśvavaidyaka-Jayadatta Suri.

Atharva Veda-Whitney's Translation.

Avenzoar.

Avicenna.

Āyurvedārthadipikā—Šivo Dasa Sena.

Bhāgavat-Vyāsa.

Bhanumatī-Cakradatta.

Bhāva Prakāśa-Bhāva Miśra.

Bhilsa Topes-Cunningham.

Bhoja Prabandha-Ballala (Jīvananda Ed.).

Buddhist Jataka Stories-Rhys David.

Buddhist Records of the Western World-Beal.

Cakradatta-Cakradatta.

Cancer of the Breast-Velpeau.

Caraka Samhitā— { Agnivesa. Caraka. Dṛḍhavala.

Caturvarga-Cintāmanī—Hemādrī.

Celsus.

Chirrug.—Albucasis.

Cikitsā Sāra Samgraha—Cakradatta.

Collection-Oribasius

Commentary on Manu Samhitā-Kallūka Bhatta.

Dawn of Civilization-Maspero.

De Chirurgiens Grees.



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 Samhitā-Dutt, Hoernle and Chattopadhya.

Extant Works of Aræteus-Adams.

Flowering Plants-Pratt.

Fractures and Dislocations-Hamilton.

Galen.

Genuine Works of Hipprcrate-Adams.

Geography-Strabbo.

Græco-Roman Surgical Instruments-Milne.

Gun Shot Injuries-Longmore.

Hārita Samhitā-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-Ray.

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-Arvans-R. L. Mitra.

Industerial Arts of India-Birdwood.

Invasion of Alexander the Great-M'crindle.

Jo rnal 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.

Kathopanisad.

Kauśika Sūtra-Bloomfield.

Laghumañjusā-Nageśa Bhatta.

Lalitvistāram-Mitra.

Lancet, 1845.

Latin Translation of Suśruta Samhitā-Hessler.

Mahābhārata—Vyāsa.

Mahānila Tantra.

Mahāvāgga-S. B. E.

Mahāvamśa.

Mālavikāgnimitra—Kālidāsa.

Māna Sāra.

Manu Samhita-Manu (Jones Ed.)

Materia Medica of the Hindus-Dutt.

Medicine in Ancient India-Hoernle (J. R. A. S.)

Memoire Sur L'Inde-Reinaud.

Mesne.

Midwifery-Smellie.

Natural History-Pliny.

Nidana-Madhavakara.

Nīti Sāra-Kāmandakī (Bib. Ind.).

Nivandha Samgraha-Dallana.

Obstetric Medicine and Surgery-Barnes.

Operations of General practice-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.

Pānini-Goldstucker.

Pānini-Pāniņi.

Paulus Ægineta-Adams.

Persius.

Pract .- Haly Abbas.

Priscianus.

Principle and Practice of Medicine-Francis.

Proceedings A. S. B. 1870.

Rāj Taranginī—Kalhana (Steen's Ed).

Rāmāyana—Vālmīki,

Rasa Ratna Samuccaya—Vagbhata III.

Rasendra Cintamani.

Recentes Decouvertes-Cordier.

Records of Buddhist Religion—I'Tsing (Takakusu's Ed.).

Report of Wellcome Research Laboratory, vol. III-Balfour.

Researches in Operative Midwifery-Playfair.

Review of the History of Medicine-Wise.

Rg Veda-Maxmüller and Wilson.

Rhinoplastic Operations-Keegan Paul:

Rock Inscriptions of Aśoka.

Sankara Vijaya.

Sānkhya and Likhita.

Sanskrit Literature-Macdonell.

Sarngadhara Paddhati-Sarngadhara.

garngadhara Samgraha—Sarngadhara.

Sarva Darśana Samgraha-Mādhavācaryya.

Sarvānga Sundarī—Arunadatta.

Satapatha Brahmanas-S. B E.

Science and Art of Surgery-Erichsen.

Science of Language-Maxmüller.

Seutonius.

Siddhayoga-Vrndamādhava.

Soranus.

Surgery-Billroth.

Surgical Emergencies-Swaine.

. Suśruta Samhitā-Suśruta.

System of Medicine-Albutt and Payne.

System of Medicine-Osler and Mac Rae.

Taittiriya Brāhmana.

Tanjore Catalogue-Burnell.

Tattva Candrikā-Sivodāsa.

Things Indian -Art Pinjrapole-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-Sankara Miśra.

Vägbhatartha Kaumudī-Śrikṛṣṇa Senmallik.

Vägbhata L'Aştānga Hrdaya Samhitā—Cordier.

Vaidyaka Savda Sindhu-Gupta.

Vaisesika Darsana.

Vyākyā Kusumāvali-Śrīkānta Datta.

Vedārtha Prakāśa—Sāyaņa.

Veterinary Art-White.

Viena Oriental Journal, Vol XI.

Viracintamani.



Vṛddha Śārṅgadhara. Vṛhadāraṇyaka. Vṛhat Saṁhitā—Ed. Kern. Way of Buddha. Yogaratnākara—Anandāsrama Series. Zeit. Deat. Morg. Ges. T. LXIX.



ENGLISH.

A

				PAGE.
*Abdominal binder				181, 188
Abscess	233, 244, 2	249, 250, 25	1, 252, 254	279, 291
Acacia Arabica	w			360
catechu		200		39, 358
Acalypha Indica	5 8 444	***		360
Acanthobolus				207
Accessory Instrumen	nts		91, 9	4, 97, 175
Sharp Ins	truments			282
Accipitar				179
Aconitum heterophy	lum			358
Acorus calamus				39, 41
Actual cautery	X++			216,234
Actuarius				354
Adams xvi, 18, 146	, 166, 169,	170, 201, 210	, 217, 221,	224, 232,
258, 336				
Ægle marmelos		38, 40	, 268, 281,	353, 360
Æsculapius •	'		156,	329, 342
Aetius	166, 169, 20	07, 217, 228,	230, 266,	336, 346
Agallochum				346, 355
Agate			(1)	343
Aggur				355
Agila	***			355
Ahmedabad				50
Ainsle		•••		331
Akimona				355
Alberuni		vii, 10, 16	324, 334,	350, 352
Alberuni's India, Ed	ited by Sach	au, viii		LIT

374	I	NDEX					
						P	AGE.
Albucasis 108, 120, 123	, 155,	166,	218, 2	23,	228, 230,	256,	260,
261, 266, 272,							
Albutt		*					329
Alexander					62,		
Alexander Trallianus	192 13					116,	336
Alexandria					and the second		340
Alexandrian School						200	285
Albagi maurorum					4	1	359
Ali Ibn Zain							10
Allium cepa			**************************************		ar quitaent		358
Sativum			F-17.		gran, gan		39
Aloes					Douglately	11000	343
Alpina Galangala							353
Alsaharavius							201
Amber					A DELETE	346,	355
Ambergrise							355
Ambrose Pare							272
Amir Ali					and the same		57
Ammomum grani parad	isii					medie	353
elettarum	7		*		H. De		359
Amputation							231
Analecta Medica							354
Anæsthetics	***				W. C. C.	iii, 59	, 60
Anatomy					284	285,	340
Ancient India	****				107		343
Ancylotomus	7.1.						267
Andreas a Cruce					mula partic		88
Andrographis Paniculata	a				44.00 m		360
Andropogon Muricatus							284
nardus	7		•••				359
Schænanthu	ıs				- www.	41,	359
Angeissus Latifolia	1						360 -
Animal Hospital	0.95						50
Animism	15.						337
Anthocephalous Kadam	ba 📑	4				39,	292

Antiquity of Hindu	Madiain			PAGE.
Antiseptic	Medicine	en in the last of	23, 62	330, 341
Ants				144, 183
Antyllus	***		1	208, 209
Band of			154	, 190, 191
	***		THE REAL PROPERTY.	190
And Hindee Agallock Apolinose	num	111		355
Apollo	- See 1	111		210, 221
Aquilia	***	***		342
				• 355
Arabic Translation of	Sanskrit	Works		* 353
Arabic additions in G	reek Met	eria Medica	· Office	353
Arachia Hypogœa Aræteus		and the state of		360
		6	0, 116, 146,	154, 254
Archigenes			9	164
Architecture of the H	indus	***		89
Areca catechu	111			354
Arrian, vii.		- 111		Promise
Aristolchia Indica	32.5	111		360
Aristophanes	***	,, Den	rios Infinas	303
Army Surgeon, ii			approvable.	
Aroma-pipes	***			85
Arrow				198, 199
Extraction of	***			210, 213
Arrow-stem like rods	100			93
Arsenal de Chirrug				120
Artemesia Indica	111		i i	353
Artemisia sternutatoria				359
Artery, delegation of		10	distributed and	221
Ascites			122, 123, 2	
Assafœtida			Section 1997	41
Assyrian medicine			Turnel Live	
Asthma				338, 341 361
Astringent				
Astronomy				21, 222
Athens, v.				47, 348
			• • • • • • • • • • • • • • • • • • • •	

376 * INDEX.

					*	
Sant -						PAGE.
Atomic Theory					magel ?	333
Atramentum					Militeral	346
Atrocarpus					malterman.	268
Aural Probe					iksteell	219
Polypus					uniosbaren (A	278
Avenzoar					FORWARD P	169
Avicenna			166	, 16	7, 223, 260,	350, 353
Awl					95,	
Axe	11.					95, 254
Azadirachta Indica						292, 360
		D				
		В				
Babylon	***		·		************	348
Bag			84	, 85	, 121, 129,	
——defects of			***			133
Bagdad	-1.14					351
Bahram	15.				•	350
Bairotsana						356
Balance					ver sub	324
Balanites Rox						37
Baldness					anni Versera	253
Balena Cristata						272
Baliospermum montanu	m				•	219
Balsamodendron mukul						41
Bamboo 82, 83, 117,	125,	177,	194,	200.	278, 282, 2	83, 297,
509, 515, 325						
forceps					Manual Park	106
——pipe	Na.				And to the Control of the	140
tube					Shella II	129
Bane de Hippocrate	•••					89
Bandaging						281
Bandages			, , ,			94, 176
Kośa						177

				P	AGE.
Bandages Dāma		Av Salve.	17		177
Svastika					177
Anuvellita			5		177
Protolī					177
Mandala			aper		177
Sthagikā					178
Yamaka					178
Khattvā					178
Cina				201	178
Vivandhana			and all		178
Vitāna			*		178
Gophanā		***			178
Pancāṅgi		444			179
Mode of applica	tion of			179,	180
Banner bandage					178
Banyan Hospital		44			50
Barber			ners de		302
Barks, of trees	94	, 177, 189, 1	193, 195,	283,	284
Bar-Magnet					213
Barmak				351,	352
Barmekides		900		10.2	10
Barnes		***		181,	
Barnes' speculum	er.	***	1,00		119
Baron de Saey	111	****	- Attended		349
Barzouyeh	a.	2000	at Militans		350
Basdeo		···· lesane	9.111.61		350
Basella Rubra	WE IS	or the	····		292
Ватн:		300			222
——Hot	VV7	****			323
Ordinary	•••	300.0	•••		313
Medical	24		**********		313
Vapour	•••		e signal	910	322
Bathing		··· *		313,	THE RESERVE
Bdellium		ii, foot note	40 000	346,	M. Second P. Committee S.
Beal	THE RESERVE OF THE PARTY OF THE		40.00	* DI 1/3 -	

			Page.
Beal's Buddhist Record	s vii, foo	ot note 1	
317			
Bear forceps			96, 102
Bed-pan			36, 317
Bedrœ			344, 353
Bell-metal	V		64, 314, 125, 325
Bellows			328
Bench of Hippocrates			88
Beneras	211		3, 11, 32
Berberis lycium			359
Berlin			3
Berry,	1		105
Betula Bhojpatra			39
Bhagalpur		46.6	16
Bhilsa Topes		****	319, 327, 346
Bibliotheca Indica, xv			17
Bignonia Snaveolens			310
Binder			188
Binding apparatus			185
Birdwood		117	344
Bivalve Speculum	***		119, 120
Bijnor			63
Bladder Sound			125
Blankets			177
Bleeding Lancet			248
Blood-stick	***		257
Bloomfield			4
Blow			201
Blue-Jay forceps			103
Blunt Instruments			90, 96, 99
	cription of		100
hook			97, 166
Probe	•••	***	270
Board		***	86
Boil,			282 308

379

the state of the s			PAGE.
Boil, Treatment of	1100	4000-1111	182
Bone			67, 82, 83, 85, 117
——Lever			172
Boots			308
Borax		****	354
Botanical Geography			334
Bower Mss.			357
Box for ointments			82
Branch of a tree			94, 210, 295
Brass			123, 125, 300, 326, 328
Bridle ring			210, 211
British Museum		***	154
Broad Bandage			177
Bronze			82, 83
Brown		A	337
Brussels			174
Bucher-bird forceps			103
Bud shaped rods			93
Buddha Gurus	400		344
Buddhist Birth-stories			339
Missionary			345
——Text Society	***		357
Buhler		***	3
Burgess	10.1	***	12
Burnell	100		5
Butea frondosa			359
———Gunmi			360
Buqrat	•••		346

C

Cælius aurelianus Cæsalpina Sappan 269 360

		P,	GE.
Calopter			113
Calotropis Procera	***		360
Gigantiæ	***		360
Cambogia Indica	115		360
Camper	*33.	258,	
Camper Cancer of the Breast	14.5		215
- Knife	*11	217,	
Cane	***	and the second s	
Ganopy Bandage			178
Canula		122, 123, 260,	
Caps			305
Carter	1	Townspron kanat salar	213
Cases of instruments		and the second as	80
ointment sticks		Meaned by	83
Cassia fistula			353
obvata			353
lanceolata		- and all entereds	359
Cataract			273
Reclination of		and the second second second	63
operation of			273
Couching of	7		
Binder	Litt	Sign are the second	188
Cat forceps		and the second second	102
Catheters			137
Caustie		94, 213, 214, 215, 219,	
Thread		175, 270,	
Cautery		213, 216, 223, 281, 290,	
Cedrus deodara			219
Celsus	6	60, 108, 110, 112, 117, 123,	
this district of the second		164, 165, 169, 174, 199, 210,	
den arti		223, 231, 246, 260, 266, 272,	
oles and of		276, 349	P. C. III
Cephalandra Indica		en de la companya de	268
Cephalotribe	***	and the state of t	165
Chaldæ			348
			4

				PAGE.
Chamberlens				167
Chank-Shell		day or	82, 83, 85,	117, 325
Chebulic Myrobolan			with the same of	37, 41
Chemistry		****	- Things	333
Child's room				40
China root			senior july	32
Chinese Medicine		Section 1	(a) (int)	341
.Ching-Che-Chun-Ching		11	COLUMN TO	341
Chintz		in .	· right wind	304
Chœnicides		Arterior .	3.7	• 231
Cinnamon				342, 355
Circular shaped instrume	ent		Tolk of	96
Bandage	A	1	श्रावे पद्मालामा	177
Cross Bandage	***	£ 300	frequency price	177
Chest Bandage	1		244000	178
Circulation of Blood		1		332
Cissampelos Pariera		***	*either and	360
Citras medica				354
Citrus Aurantium		30	and and and	354, 360
Clement			contact of	340
Clement of Alexandria			resident de	345
Cloth 94, 177,	186, 189,	197, 304	, 309, 310,	311, 321
Cloth sieve				320
Clyster •• .	***		86, 97,	281, 342
urethral, rectal, v	aginal		growe 9	281
Cocculus cordifolias			1 - 10/2 1	220
Cold application		****	111	320
Colebrooke			a michia	346
Collection De Chirurgien	s Grees		. 5 4	88
Collyrium Probe	art mi		97,	160, 161
Pot got off	AND HOLD		10744	324, 325
Comb	918-319			303, 304
Continued sutures			and hadden	209
Convolvulas	***	***		353
Cook				48
		. * *		

					PAGE.
Copper		63.	121.	123, 125, 160, 16	1, 162,
				301, 314, 316, 32	
Probe					2, 275
Coral				6	36, 325
Cordier				12,	24, 27
Corner	1				261
Cos					347
Coscinum fenestratum					360 .
Cetton				e-thire-month) - s	177
Craniotemy				1	239
Creepers				9	4, 196
Crescent shaped cautery				Salar Salar Salar	172
Cripple					196
Crocodile					99
-forceps		1		See to directed	102
Crooke				general programme and the second	, 50
Crotalaria juncea				and the first and the	219
Crotchet				16	66, 195
Crow forceps				9	6, 103
Cruciform Instruments				91, 9	2, 100
Crystal				282, 286, 310, 31	6, 325
Csoma de Koros				THE AL	356
Cueumis Sativus				1:01	280
Colocynthis				25	359
- Utillissimus					280
Cucurbita Pepo				Mr. Carlotte	39
Cucurbitula				after	342
Cullen					337
Cupping	C. Maria		1	148, 149, 15	0, 152
-bow					386
-Instrument					97
Cunningham		-		30, 50, 319, 32	7, 346
Curcuma Longa				29	1, 292
Cureton					353
Curlew forceps				James and	103
					Centre for the Arts

.esuff				I	PAGE.
Cythescomele,			•••	J. 3. 158	3 160
		3,1115			
		D			
		D			
D.					
Daimacus				A CHARLES TO SERVICE	344
Dallvana's Commentar	y		•••	12, 17, 57	
Dandruff	•••			··· 1211•13	303
Dandy				State with the same	356
Dar Atharvaveda				This is the same than	3
Darcheeni				4	355
Darsheeni					355
Davam Non-gah				at made of	356
Dawn of Civilization					341
Dead Fœtus; Extraction	on of			white ecity	165
Decapitating hook					225
De Medicio				extende	37
De Med. Ægyptiorum				gle ampired large	153
Deedara					354
Deiudar				aned as a	354
Delivery hook				any buck sing	97
Déngue ••				raffacesoft to a	356
Depilation *				armusilining.	303
Deodara				ngu 9 les julio	354
Deer forceps					102
Dhatura alba					359
DHN	•••				
			•••	在 地位于	352
Diagnosis	***		***	Attack to the	202
Diary	•••			•••	36
Diaz	***		***		347
Dietz			• • •	345, 352,	THE RESERVE
Dilators				123,	经验的证据的
-urethral				123,	125

				PAGE.
Dilators, Rectal		9	1	24, 125
Diodorus Seculus				343
Dionysos			d 1.00. a.d.	345
Diopter			113,	120, 342
Diospyros Embryopteris		d *	son will man	39
Dioscorides			mall.	59, 346
Director				173, 174
Discription of Hindusth	an		"this lie	50•
Disenfection of rooms				147
Dislocation			Martino	194
of the neck			Mount	I94
lower jaw		2	••••	201
Dispensaries, vii			34	4, 49, 57
Dissection		***	Atteba	283
Dissection forceps	100		S Sulling	266
Distillation				• 334
Diudar	•••		- projektar n	353
Division			amoinville-	. 280
Dolichos lebleb.			-0.5	354
Dolichos Biflorus	***	***	arian patti	37
			Sandrik) au	39
Domitan			milion ² Sugge	303
Door-bed			2.00	87
Double nose-spoonbag	***	* **		85
	•••		, white	85
bandage	***		90	178
——-edged knife Dress			moitide or	244
	••••	***		304, 305
Drinking Vessel	•••	•••		106
Drinking Vessel Dropper	•••	111		314
Dropper Dropsy, 257			and all	327
Dublin	lable.	•••		260
Dung	•••			195
Dunglison		•••		216
- Pariguson	***			179

PAGE.

E

				and the second second
Eagle Forceps		470.00	in the same of	105, 202
Early History of Indi	a			6, 35, 49
*Earth		319	2, 314, 316	3, 326, 328
Earth-worm like rod		(39)	gertalion.	93, 97
Earthen Ware				312
Ear scoop				107, 164
Specillum		and the state of	hail lan	158, 164
—-cleaner		- 10	and the in	163
Perforator		· · · · · · ·		263
Ebers Papyrus		The state of the s	dead) Ne	340
Ebony			, 343, 344	, 346, 355
Edge			117 (16)	61, 69, 73
Ediet of Asoka				47
Edinburg Medical Essa			a spinot s	240
Egypt				153, 344
Egyptian women				303
				338
Physicians		<i></i>	choldra	340
Electro-magnet			-prolled	213
Elettarium Cardamomu	ım		*CHOILING	39
Elephantopus Scaber				291
Elphinstone, xiv				334, 361
Embelic Ribes		*****	and of the car	39, 360
Embryotome		A		230
Empyæma				241
Encircling bandage			200	177
Enfield				348
Enterocele			3110744	246
Epilation				105, 202
Erasistratos			•••	285.
Erichsen		106, 110,	149, 201,	213, 245
E. Robusta			*	360
Evacuation				281
49				Indira Gandhi Nationa Centre for the Arts
SOUTH STREET, CARROLL STREET, CARROLL STREET, CARROLL STREET, CARROLL STREET, CARROLL STREET, CARROLL STREET,			and the latest the same of the	di din alta

				PAGE.	
Excision	11		256,	266, 280	
Execution				68	
Extant Works of Æ	tius xvı				
Extraction	34.1. St.		- militar	281	
of foreign	bodies from the	oat	109,	197 201	
			40	199	
-	from ey	es and teeth		213	
-s-of thorn			ain.	205	
-of bone		**************************************		203, 210	
of fish bone	e from throat		marx/8 = 2	206. 297	
*		N.F	anadi	165, 226	
				238	
				244	
Extraction of stones		Lieun	nated 1	265	
tartar	from teeth		in District To	268	
Ezion-Gaber		4		344	
				We have a	
	F			A TOTAL V	
Fa Hian				arytical cor	
	•••	***		49, 317	
Falcon Forceps Fan		•••		103	
Faufil	***			308	
Fear			Ju	354	
Female catheter	***		*** -	98, 212	
Fergusson Fergusson				137	
Ferrula Assafætida			159,	255, 324	
Field-hook	**	***	••••	39	
surgery			•••	181	
Ficus Bengalensis			***	332	
Religiosa		2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		220, 292	
Fihrist				292	-
File	telander			9, 351	-
Fillet			1000	269	-
•			131	167, 190	D

			PAGE.
Filfil		444	355
Filters			309, 319
Finger .	****	83, 94, 161	, 199, 200, 208, 291
Knife			34, 94, 238
• ——guard	37.11007119	Juni Jan	97 118
Firanga roga		THOUSAND -	28, 32
Fire	et bien inves	month in	94; 290
Firroz Shaha			352
Fish-hook	****		93, 95, 264
Fish-bone, Extraction	of	remely about 1	206
forceps	100	olo2 beat	207
Fissorius	1.	14 J. A. B. W.	256
Fistula-in-ano	m	national affine	271
Five-faced instrument	in 1	ultipall inval	annous to unificat 96
Five tailed bandage	***	There were	179
Flax		140	210, 221
Fleam		***	256, 257
Fleet	***	•••	6
Flower of Barley and	Wheat	100	219
Fluxing		***	94, 212
Flügel			352
Fly-Brush	•••		308
Fœtus-Hook		****	165
Forceps	***	iv.	92, 167
Fork-tailed forceps		111	103
Foreign origin of Hin	du Medici	ne	348
Foot, sole of	Alteria	***	94, 199, 200, 202
Foubert	0		272
Four-tailed bandage		***	178
Fracture-bed		•••	86, 87, 88, 89
Fracture of nasal bone		***	117
the lower ex	tremity		193
and dislocation		•••	195
of carpal and	l metatarsa	l bones	198
France	and the		303
			Indira Gandhi Nationa Centre for the Arls

25/24/17			Section 1	PAGE.
Francis	***	be built but he	dennie den	335
Fufal	get ju	ME ETAL TRAF	31 M.L.	355
Funis			San Product	282
Fumigation				63, 144
gen vo				2
				Jan I House
Tiple States				
and the property of		G		
to the second second				
Galanga		79 31		355
Galangal			****	353
Galen x, 60, 164	, 171,	191. 218, 223,	231, 232, 2	69, 330
Galzlaff		Ji.		341
Gangrene				231
Gastroraphe				221
Gamma shaped cautery			A STATE OF THE PARTY OF THE PAR	160
Gauze				182
Genuine Works of Hip	pocrate	s xvi. 88	113, 169, 1	
Ghoom Monastery				357
Gingivitis			Mary	291
Giudo-de-Cauliaco	21.			272
Glands	i i san	DE .		
Glass				200, 236
Gloriosa Superba		120,	140, 282, 2	The state of the s
Gmelina Arborea			****	39
Goad-like rods				292
Gold 64	1 3000	66 89 89 01	117 707 1	93
161 177, 218,	273.	66, 82, 83, 84,	117, 125, 1	35, 160,
Probe				
Goldstuker	***		20.11.2	
Gossypium Herbaceum	,		****	1
Gouge				360
Gourd				The same of the same of
Granular lids	2		109, 1	The second secon
Greece			on text and	293
在这种是是一种的人的是一种的人们们	***		The state of the state of	240

Indira Gandhi Nation Centre for the Arts

and the state of the state of		- Art Trans		PAGE.
Greeco-Roman Sur	gical Instr	uments	xvi, 1	46, 147,
153,	163, 167,	174, 199, 228	, 230, 240, 2	46, 313.
Grewia Asiatica	4.0			37
Griffith			F	3
Grind stone	***			327
Gum-boil				242
Gunshot Injuries				200
Gut		One States	98, 220,	221, 222
Gynocardia ordorata	a			360
				West Tark

Н

Hahneman			*** 525	338
Hair		94	, 205, 206,	234, 304
Half-moon			200	96, 97
——probe	552x	Sep 18/1985-101	ill la de	171
Half-moon Seissor			10041960	251
Knife				251
Haly Abbas		120,	166, 219,	230, 260
Hammer		94, 96, 111,	198, 199,	256, 328
Hamilton	480.4		•••	56, 195
Hand			90, 199,	200, 203
Palm of			· med	94, 321
Happiness		•••	1117-00	212
Hammurabi	14.18.3	and and the		339
Laws of	ele els	215215	in the	339
Harp-string			u.fri	221
Hartal				355
Harun-Al-Rasid			29,	35I, 352
Haas				347
Hawk				103
Head dress	20.7	1 2		305
Headache	4		5,255 00.4	344
	The second second second second		A STATE OF THE PARTY OF THE PAR	

				PAGE.
Herculaneum	avis -	W. A. V.		v
Hermetic Books		J	10	340
Hero			- Desirients	153
Heron forceps			96,	101, 103
Herodotus				191
Herophilus			See Str. (269, 285
Hesepti			3	340
Hessler	***************************************		17	, 91, 104
Heyne		11 3051		326, 331
Hipparchus	***			348
Hippocrates	3	7, 88, 113	3, 123, 146,	159, 165,
169, 170, 173				
241, 258, 271,	272, 303,	347, 349		
Hipocratic oath		-		169, 345
Hipocratists			- Children Liber	284, 285
Hindu system of Medic	eine	· · · · · · · · · · · · · · · · · · ·	nets Taxastral	xv
Hiram				344
Hirschberg			10001500	361
Hist. De. la medicine			,	232
Historia Forcepum-et-ve	ecticun		- Andriton	166
Historian's, History of				340, 348
History of Aryan Medi	cal Science			, 29, 316
History of Hindu Chen	nistry xv			, 28, 290
History of Indian Liter	ature			
History of philosophy			annual de	548
History of Medicine			5, 286, 331,	
History of the Saraceen	S			
U: m '	4.	***		299, 308
Hærnle				
	,	916 949	17, 19, 20 5, 251, 284, 3	, 21, 22,
Homorrahage			, 201, 204, 6	221
arrest of			001 000	
Hoffman			221, 222,	337
Hook 7		165 999	7, 229, 264,	
Lithotomy		100, 221	, 229, 204,	200, 342

Centre for the Arts

				PAGE.
Hook, Delivery	***	***	and the	.97
Blunt		159	and the second	91
Hollow Instruments	****	***		91
Cylinder Banda	ige			177
Horace			511.44	343
Hordeum Vulgare			37	41, 265
Homer				221,340
Horn		66, 67, 82, 8	3, 96, 97, 1	09, 117,
THOUSE ME LOWER	119, 1	25, 148, 154,	161, 205, 8	325, 342.
Horse-hair			205,	208, 210
Probang	13.280			207
Horse's Briddle		THE RESERVE	STATE - 16	94, 210
Hospices	14. TA	17年,1845年,195		48
Hospitals			iv.	vii, 8, 34
requisities				295
Merit of erect	ing	nierin	51, 52, 5	3, 54, 55
House of mercy			To	49
Hot Application		111		320
Bath		9	perton a	323
Humoral Pathology		o inquest	\$10010,010.00g	333
Huth George		pholicult de	aninH a	23
Hyena forceps	***	amountal learned	Livery 1	102
Hydrocele		123, 205,	218, 242,	259, 261
Hydrophobia		and (med)		342
Hydroctyle Asiatica			nage, mg	39
Hygienic appliances	g cens		ampdell i	295
Hygrophila spinosa			with the	360
Hypodermic medication		S 20 (1) (1)	· · · · · · · · · · · · · · · · · · ·	235
Syringe	1167			235
Hwangati	45.051	Alls and the	-1	341

				PAGE.
Ibn Abillsaibial		***	with the	18
Iguana faced instrume	nt	J		95
Imhotpu				341
Impellent			12.1	111
Impomea Haderacea			and the	360
Impœa Turpethum	all Inc	that have been	of similar	360
India in Greece		Marine with	Make Investig	344
Indian Medicine	50.	4		29
Indian Antiquary				m back 6
Indian Antiquities	***		Shukadha	162
Indian Tracts			Sellen-	326
Indian Nelumbium				345
Indian Physicians in f	oreign cou	rt		351
Indian drugs in Greek	Meteria 1	Medica		353
Indian Rhubarb				354
Indigo				346
Indica	•		1.4	vii, 344
Indo-Aryan	***	62	, 196, 304,	
Industrial arts of Ind	ia	Townsida E	an heid I had	- 344
Inflammation				219
Instruments, Uses of	S			74
Good and	bad qualiti			73, 74
Interrupted suture				209
Intestinal obstruction,	Operation	for	IIQ	209
Introduction			20	1
Iron	61,91.	123, 160,	169 177	and the same of th
	273	, 278, 297,	315 905	210, 210,
I' Tsing	19, 20, 21	22, 23, 24,	207 202	020, 020.
	, , , , ,	, wo, wa,		
Italy				317, 358.
Itch-cloth		The state of the s	THE SHOW WHEN THE	303
Ivory	67, 82, 8	3. 117 195	904 905	182
	, 00, 0	3, 117, 125,	204, 525,	543, 344.

J

Journal American Oriental Society

andira Gandhi Nation Centre for the Arts

Indira Gandhi National Centre for the Arts

	INDE	Δ.		000
				PAGE.
Jackal forceps			- religion Co	102
Jacobi		V.302000	the language and	195
Jewet			10156	195
Jolly			19, 21, 22, 2	9, 331
Jones, Sir William			192, 19	3, 329
Journal Asiatic Society	y of Bengal			23, 30
Journal Royal Asiatic			6, 15,	19, 22
Joy	111	***	storidad/Lua	212
Jury mast	4		guidint) or	1,94
Justicia adhatoda			-Historian in	359
Jute			WHIT IN	189
Juvenal			antishalday as	303
	K			
Kaimonis			*** A	355
Kali				355
Kalila and Dimna, Fab	oles of	· · · · · · · · · · · · · · · · · · ·	To all distributions	351
Karaka		•••	Continuity	9
Kashmir			e well singmin	3, 5
Kassiteros	al mainting	据。1997年	m Jakk Maria an	355
Katiadion			onetus, heappy	254
Kern	with min	15 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	348	3, 351
Khrisrong Dehutsan	•••	•••	· Constraints	356
Khoraba	1.7.51			355
Kih Futo	ALC: NEW	•••	•••	308
Kitchen	·	0907	111 300	43
Superintendent		****	•	43
Kitab-Shawshoon-al-Hi	indu	111	77	17
Kitab-i-Susrud			634	18
Kite Forceps				103
Knife-Shaped saws				231
—— double edged	•••	•••		249
—— Gold	The first types	常。Light 1945年	1950019 165	278

50

				F	AGE.
Knife-Silver				Hara Sini	278
Iron					278
blades					177
Koningsberg			300	ne io F	347
Kordofan			es anditogre	. 150	, 217
Koshta			To the moids	donah	355
Koosrus				woll -	355
Koetha					355
Ktesios				344, 345	, 349
Kust				n dinin	355
And the second		L	1.00	Salest A Ne	
		L			
L' Historia du Budh In	a				12
Lac			1000000	, 83, 117	
Lama Śes-rale MGya M				9349	357
Lanman		•			3
Lancet				260	, 357
—Double-edged	***			STATE OF THE PARTY	242
Straight			•		242
Lapis-Lazuli				, 316, 325	
Lhasa				, 510, 526	357
Lead			3, 125, 160,	177 218	
Leather		, 100		184, 185	
—— Bandage		***		101, 100	184
Ligature				SHILL -	185
Shackle				deric	185
—— Binder				call bouse	188
—— Bags					188
- Bag for the head			u materior	l salai s	188
—— Band	•••		•	5,0107	189
Bottles, jar	•••			. 191	, 193
Belt			a shna	经产品的	193
Shoe				100 - 100 -	307
THE RESERVE OF THE PARTY OF THE	77 7 7 7 7 P. C.		PROPERTY OF THE PARTY OF THE PA	Contra	The the Total

							PAG	GE.
Leaves			2	253, 2	91, 292,	309,	315, 3	16
Lee						- 40		43
Leech					247,	282, 2	86, 3	50
<u> </u>	Poisonous					2 1977		87
5 119 DE	Non-Poisonous					2	87, 2	88
	Application of						2	88
110	Bite of						2	89
• Leeds							2	13
Lemon	A.11						• 3	54
Lenticul	år						19	99
Leprous	spot				***		24	17
Life of	Atisa							30
Ligature				17	6, 205,	220, 2	23, 24	15
Linen				·· bal	Ale Bri		31	15
Linum u	sitatissimum	.141					39, 35	
Linseeds		•••		11.00	EFUIT.		41, 21	
Lint	•••				***	2	20, 32	
Lion	1100			••			10	8
— For	rceps	***			19.000	96, 1		
Liston		•••					24	
	y operation				•••		8	
-	- Straps				•••	18	85, 18	
1 (40 H) 19 A 2		****	BEL BI	***	***		9	
				•	• • • • •		16	
		•••		•	öğ		16	
28 C 20 C					410		349	
		•••			al di		18	
Littlewoo	d				. ***	00 0	213	
Littré				•		88, 8	9, 169	
	tus, Extraction	of		Some	i admini		167	
Loadstone		•••	"		•••		94	are in
Longmore		•••			18	i los	200	45
		••	•••			23	3, 240	-
Lonsdale		•••	***		•••		348	The same
Looking g	lass		••		•••		304	-0

396	INDE	x.		
			PAGE.	
E THE STREET		01	304	
Louse			359	
Luffa amara	of		352	
Lucknow, Royal Libra			279	
Lunatic	***		38	
Lying-in-Room	***		Territory of the Property	
	N	1		
M Cirille			343	
MacCrindle			3, 81, 303, 330	
Macdonell		***	353	
Mace	11115	2.77	249	
Machaon		nanda in marc	959	
Macis	MS-19		212, 213, 333	
Magnet	***	***	40	
Maison Dieu of Paris		***	954	
Malabathrum	***		354	
Malatroon	***	***	100	
Mallet		***	* 359	
Mallotus Philippiensi	ıs	****	60	
Mandragora	***.		340	
Manetho	•••			
Mansil		***	355	
Marsden	***	***	215	
Marshall	•••	(d) (d) (d) (d)	• 213	
Masern	***	***	356	
Maspero	•••		341	
Massage	***	•••	35, 333	
Mussel-shell	•••		326	
Materia Medica of the	he Hindus	•••	XV, 25	
Maxmüller		***	10, 352	
McClintock		y	167	
Macrae	•••		329	
Measles	•••	100	356	
Measures	250		324	
Medical bath	••••		313	
			Indira Gandhi N	

				PAGE.
Medicina Aegyptiorum				303
Medicine				94, 219
Medicine glass			100 m	326
Medullary canal				263
Megasthenes,			xiii, 35	343, 345
Melia Azadirachta			***	354
Memphis		· · · · · · · · · · · · · · · · · · ·		340
Mesue		s many	41.0	277, 354
Mesua Ferrea				310
Metal plates			444	177
Michelia Champaka			444	310
Mr. 1 Form Womans				166
Milne xvi, 120, 13	7, 144,	153, 163, 167,	199, 228,	246, 303.
Misy	***		•••	
Modioli			and the i	231
Mohamayuri Vidya-raj	ai	77 ····	****	358 219
Moringa peterygosperm				
Mortar			318	3, 319, 327 354
Moschos Moschifera	***	•••	Annie Militario	, 205, 264
Mouth				166
Mulder				36, 68, 327
Muller	•••	***		354
Musa Paradisiaca				174
Musee de Cinquanten	aire			39, 41, 219
Mustard seed	***			361
Mylabris Phalerta		•	***	359
Myrica Sapida	• • • •	**		354
Myrobalani	***	•••		266
Myzon		and and market		atti ka sa
Tale W				
		N		
Contact of the Contact of the				245
Nævus				245, 246
Needle	***			4, 204, 291
Nail	***			

		*		PAGE.
Nail-parer			100	. 94, 237
			na stanovici.	159
shaped rod			eenteck	98, 159
Nalanda	•••		www.r	19
Nala reed				2, 83, 117
Naples Museum		V, 1	13, 120, 137,	154, 158
Nardostachys Jatamansi				41
Nasal-insufflator				116
polypus		0	252,	254, 278
Speculum	****	***		115
Natural History		- Proposition	Jana officerede	* 60
Naubehar			unga tem	351
Navel cord			Marian.	278
Nearchus				62, 344
Needle	94	, 96, 99, 2	10, 243, 253,	262, 342
Curved				245
Cautery of gold				66
Four-ribbed			raf	246
Golden				• 65
Half-curved				245
Round				246
Straight		Section.	Halmonau han	245
Three-cornered		***	The state of the s	246
shaped Probe				271
Neiching	***		alid day	341
Nerium Odorum	***			219
Neuburger	209, 2	85, 286, 8	331, 339, 340	, 347, 361
Neugebauer's speculum				119
New-born			Authorities.	202
Nooshirwan				349
Nose-spoon				84
Number of Surgical Ins	strumen	ts		90
Nurse	***/	autadia	alf to litrori	45, 202
Nutmeg		****		353
Nux moschata				Indira Gandhi

				PAGE.
Nux Vomica				354, 361
Nyctanthes Arbor-tristi	is		emolias les	291
Nymphæ Lotus	***		in lender	292
Stellata				310
和PMP。24 元 年 三				SPECIFICAÇÃO
ME TO THE RESERVE				TRUE AND THE
建设在19 14年19日	()		
Obstetric Medicine and	Surgery		Dote	181, 202
Ocimum Basilicum	****		400 (1)	39
Odyssey	***	***	***	221
Officina chirrugica vene	tiis			88
Ointment box	p.,ve 36			84
—— pots		•••		82
- sticks			and broken	83, 84
Olivary probe		•••	- ted figure	219
Onyx •	W.		and the	342, 346
Opening	***.		jesta di	281
Operations	***	6, 8, 1	5, 24, 74, 7	
Operations of General I	Practice	· Same	in Adaptin	261
Operation-table		•••	angus Aeriki	85
Operative Surgery		15 miles	- dollabaji	245
Ophelia augustifolia				359
Ophelia chiretta	***	160	111911	359
Ophir	B-485 J	R5 (0)		344
Ophthalmia			uning out of	344
Ophthalmic Surgery			****	213
Opium			177.	28, 33
Orange		****	****	354
Oribasius		116	3, 147, 154,	191, 217
Origin and Growth of t	he Healin		79 M	344
Ornamentation				69
Osler			100,505	329

Indira Gandhi Nation Centre for the Arts

				PAGE.
			100 00	103
Osprey forceps	- 111	***		6, 16, 19
Osteology, Hoernle	****			241, 284
- of the Hindus	S	***		103
Owl forceps	••••	***		
建 工作设置				trust of
		P		
				200 000
Palm		***	•••	199, 200
Panchanadapura			***	5
Panicum Dactylon			***	41
Panther forceps				102
Pao-d'aglia			***	355
Paracelsus	•••			337
Paracentesis abdominis			97, 242,	
Parulis				242
Pasha, Sir R.				150
Pātaliputra				4.9
Patient, good qualities	of		14/1914	45
Paulus Ægineta 18,	xvi, 10	5, 108, 110,	111, 112,	113, 117,
118, 120, 123,				
172, 173, 187, 1				
221, 223, 224, 2				
260, 261, 266,				
Payne				i
Peacock's feather				309
Pearl			make more	310, 354
Pebble			n thus	94, 197
Pehlevi	•••			349
Persia				349
Persius	1			303
Pestles			, 173, 318,	Description of the
Phaseolus mungo				37
		CHECK THE STREET		The state of the s

Indira Gandhi National Centre for the Arts

Market Market			PAGE.
Phaseolous Rox	4		37, 189
Philadelphous			345
Phlebotome		Sanbah	230, 241, 242
Phlebotomy		86, 186, 189,	190, 241, 259, 264
Phoska			356
Phyllanthus Emblica,			37
Physician, Qualities of	f a		52, 58
Picklock	***	photos of	91, 93, 106
Picrorhiza Kurroa			260
Pila			319
Piles			86, 205, 293
Pilum			319
Pilpay, Fables of			349
Pilpil			355
Pimpinella Anisum			359
Pincher	/	91, 92, 95,	103, 105, 234, 328
Pinches			261
Pińjrāpoles			50
Pinus • ···			354
Pinus Deodara			39, 353
— longifolia			219
		*	355
Piper betel			354, 360
cava	Alta Tal		39
cubeba.			353
Longum			39
			355
Pippul			203
Placenta Removal of			203, 208
		Mary 1 Mary	360
Plantago Ovata			354
Plantain			146, 341
Plato			167, 209, 331
Playfair			88, 89, 342
Plinthium Nileíí		V. Carlotte	60
Pliny			

				PAGE.
Plumbago Zeylanicum				39, 219
Plums				37
Plum-seed-like rod	16.35			93
Pocca	1.00			356
Pocke				356
Pococke				344
Podalarius				342
Poison, Works on		All Control of		351, 352
Poison extraction of				198
Stone				198
Polish				62
Polypus-scalpel				230, 278
Pompeii	5.0			V
Pomum somniferum				60
Pongamia glabra		in the	39	, 219, 359
Porcelain				312
Portable cases				80, 81, 82
Porus				62
Postural treatment				• 333
Potential cautery				213, 214
Potsherd				321
Poultice				219, 323
Practical Ophthalmolo	gy		1	105
Pricker				91, 155
Prickly tongue				229
Prinsep				162
Priscianus				157
Probang		A Complete		207
Probe	A 1000	95, 96, 99, 173. 2	15, 316	, 235, 293
—— Aural		23		219
— Blunt				270
—— Collyrium				160
—— Copper				272, 275
Gold			a Palenti	218, 219
Half-moon				171

Indira Gandhi Mational Centre for the Arts

Indira Gandin National Centre for the Arts

				PAGE.
Probe Hard		a de la marca	enight 7 State	293
- Jāmvovaustha				159
Nail-shaped			how walkle his	159
Needle-shaped				271
— Olivary				219
- Sarapunkha-mul				171
—— Sharp				269, 370
· — Snake's hood			substitution.	168
Soft			in animatri	A 293
Spoon-shaped				58, 215
— Swab				157
— Urethral			and the later	174
Probing				281
Prosper Alpinus	1.7		1	53, 303
Peterygium		116, 205, 226,	227, 228, 2	65, 266
Pterygotomes		War March		228
Ptolemy			344, 3	45, 348
Ptychotis ajowan				359
Punjab		Addition of the second	and the second	5
Punyaśālās			10.00	vii, 48
Pupal	2		40	355
Pus basin				317
Pusehmann	J.4 !	S. S. Carley	中的特殊	353
Pythagoras	444		344, 3	45, 348
			autometh.	
		Q		
Quadrivalve speculum				120
28 TO 28 19 18 C.				
		R		
Raisins			a sept	37
Rāmāyana			- Ard 16 To 16 To	16
Ramosbotham				225
Ranula				229
Raphanus sativus				229

			200	PAGE.
				67
	••••	666	art	269
Raspatoty		***		
Rattan	***	***		264
Razor 8	1, 94, 13	55, 233, 234,	235, 236,	300, 301
		A		12
Records of Buddhist Pra	ctices			19
Records of Buddhist Rel	ligion			297
Rectal clyster				125.
injections			With you will	125
speculum		20 J. W. 1		113
Reinaud	1.4.0			352
Relation of Hindu and .	Arabie r	nedicine	LI de melali	350
of Hindu and	Greek n	nedicine	1	343, 347
of Sanskrit an	d Persia	n medical wor	ks	349
Researches on Operative	e Midw	ifery		167
Rest-house				• 48
Retz	111 10	20.6	2000	130
Review of the History	of Medi	cine		330
Rgyud Bzhi				356
Rhabarburnum	Alexander of			354
Rhazes 9, 1		23, 166. 219,		
Many and the second of		, 2001 110,		290, 350.
Rheims	***			163
Rhinoplastic operation				118
Rhys David			mistanedal	339
Ricinus communis				291, 359
Ring knife				240, 342
Scalpel			in market	
Rods				, 155, 215
Rogerius				272
Rolleston				329
Rope			rimal tal	177
Roth				
Round headed knife		1.00		94, 225
Rovle, xv.				0 959 954

			96.1	
C. 19				PAGE.
Rubia Cordifoliatum			industria	130
Ruby				282, 286
Rufus		***		342
Ryder		.aa.1 .10.,13	***	35
				of solumnik AG
		section	Bouldist P.	
		S	Building H.	
				sein introll
Saccharam Munja			emitte	283
Sachau,			10,324,	350,351,353
Sacred Bean		***	500 200	345
Sacred Books of the Ea	st	hour policie.	ban abazil	4,11,13
Sadej	· view	dant dans	haz abadi.	354
Sahabuddin	110	a haistoffile	in independ	269
Sais		entiabilities	ritinial 2000	sentenna 341
Sajų	***	722		355
Sajiimattee				355
Sajiloon		of Medicine	gade H. st.	355
Sajimen			400	355 are
Sakhya	:::	200	artic annu	356
Sakkara	:001	E91 JUNE	6030	359
Salvinia cucullata				321
Sand		***		308
Sandals	•••	124	House wife 8	3,81,303,330
Sanskrit Literature				355
Santal			ST SUPPLY N	359
Album			Mark Day	359
Flavum	222	***		355
Rubrum				41
Saraca Indica	111	***		350
Sarad	:::	***		357
Saradaprasad Banerjee	2.00	- 		357
Saratchandra Das	111			220
Sarcostemna brevistigm	a			15
Satapatha Brahmana	12.00	自己 自己,从本。1944	A	

					PAGE.
Saunaka Sch	ool			·	3
Saussurea La	appa	er.			39
Saw			W.	73,94,96,230	,231,342
Sayce			447 1-37		341,
Sayre		***			194
~					324
Scammum I	Hippocratis			Service a	88,342
Scarae				·	350 •
Searificator					238
Scarifying		2.5	253	,254,256,279	,281,291
Schultet	111				120
Sciatica					236
Science and	Art of Surg	gery	106	,110,149,201	,213,245
Science of I					10,353
Scindaspus		9000		antivotatic	39
Scirae				Carlo -	- 350
Scissors	Yar and				4,249,250
I	Half-moon fa	aced			251
Scoop		Allegar pla			278
Scottish Na	tional Muse	eum			154
Scraping					300
Scratching	111				253,293
Scrivonius]	Largus				158
Scrotal tum					234,362
Sebaceous (Cysts			and the same	242
Sel	111				354
Semecarpus	Anacardiu	m			39
Semti					340
Senna					353
Senta					340
Serapion					0,350,354
Sesame					37, 219
Sesamum]	Indicum				37, 361
Seutonius	414				303
Sewing	***		200		281
March Control of the			and the second second	CONTRACTOR OF THE PARTY OF THE	THE RESERVE TO BE SHOULD B

Indira Gandhi Nation Centre for the Arts

		Page.
Shampooers		35
Shandana		355
Sharp Hook		264,266
— Instruments		90,94,98,225
• Mo	de of h	nolding 279
Probe		269
Shaving		300,303
Shells of fruit		82,117
Shimgveez		355
Shoes		306,307
Leather		307
Wooden .		307
Shorea Robusta		359
Short-mouthed knife		233,240
Shoulder, Dislocation of		173
strap		84,85
Sieves		319
Silk		98,177,304
Silver •	64,6	5,66,82,83,84,117,123,125,160,161, 278,299,312,314,315,325,326,328
		278,299,512,514,515,525,520,526
Simnoi		230
Simpson		23.
Sindaxar		25.
Sindh Knife		94,243
Single-edge Knife Sinus		270,293,294
Sinus		192
Sling Bandage		
Smellie,		167
Smoking		143,144
Snake-bite		150,185,199,237,344
—— charmers		198
Works on		351
hood like Rods		93,97,168
Snell		213
		Indire Gandhi Nationa Centre for the Arts
		Centre for the Arts

408

200			
			PAGE.
			355
Soda	***		50
Sodepore			292
Solanum Nigrum	•••		344
Solomon	1020		341•
Solon	***	alblos!**	66, 68
Soma	•••		120, 147, 166, 229
Soranus	diam'r.	STATE OF THE PARTY	212
Sorrow			355
Soza		memorizati 20	157, 158
Spathomele	0.00		157
Spatula Probe			163, 269, 272
Specillum	***		The second secon
Rectal			97
Vaginal	•••		04 911
Spittle	•••		00 017
Spittoons	•••		
Splints	***		193, 195, 196, 283
Spongio Somnifera	•••	***	A RESIDENCE TO LOST OF THE LABOR.
Spoon	***	100 mm	317, 328
—— gold			16, 65, 92
	***		168
shaped Probe	****		158, 160, 215
Sprengel			232
St. Andrews	4	***	239
Stahl, George Ernest	*****		0 337
Staphyloma		***	246
Steel		****	61, 161
— yard			324
Stein			24
Stems			293
St. Germain-en-Laye	•••		163
Sticks			306
Still-born			198, 308
Stone 68, 94, 19	28, 160,	162, 197, 198	
Extraction of			168
		AND DESCRIPTION OF THE PERSON	ACCOUNT OF THE PARTY OF THE PAR

190 PT			PAGE.
Stool, Operation-			 86
Strabo			 xiv 343, 344
Strainer			 312, 319
Stricture dilators			 125
Strychnos Nux Vomica		***	 359
Potatorum			 359
Studies in the Medicine	of Ancient 1	India	 5
Styptics			 223
Substitutes for cutting	instruments		 282
Sucking-horn	***		 • 357
Suction			 149
—— Apparatus			 204
Sugar			 204, 355
Sukkur	***	***	 355
Sulphuret of Arsenic			 355
Sundul			 355
Supporter Bandage			 178
Suppuration			 98, 262
Sugrat *			 347
Surat	***		 50
Surgical Emergencies		100	 207
Instruments		•••	 14
Operations		***	 14
	ctical trainin	g of	 280
Suspension Apparatus			 194
Suture		V.,	 205, 243
Sling-like			 209
varieties of			 209
—— Material		*	 208
Swabs			 93
Probes			 157
Swain			 207
Sweet cane of Scripture		•••	 346
Sword-shaped cautery			 218

				PAGE.
Sylvain				6
Sylvius			endead	337
Symon Set			warfun!	346
Syphilis	Constant L			32
System of Medicine	100			329
TRUMP OF SHAPE	, June			September 19 19
			NAME OF STREET	
P. C. Street and Street		T		September 1
Contract to the second				
Tabosheer	-	1	100	354
Tail-Bandage	Sec. As		admit signif	177
Takakusu		Se limite	ning building	19
Tamar Hind	44.			356
Tamarinds	***	****	Augas I	356
Tamarindus Indica	***		Comment of	354
Tambapani	****	4.4.		47
Tamuarin		****	No.	356
Tangore Catalogue	***			5
Tanjur	***	• • • •		• 23
Tapping	•••		aller freed a	281
Tārakeśvar	•••	•••	the second of	ix
Tashi Lama			•••	-357
Tatanagum	•••		Service Color	355
Tectonia Grandis	0.,			291
Tembul			and an or	354
Tempering	110			70
Temple-Sleep		•••	· · · · · · · · · · · · · · · · · · ·	ix
Tenaculum			A Sales	266
Tendrils			and inches?	177, 189
Tents	***		117, 175, 181,	220, 322
Terminalia Bellerica	•••		de de la contraction de la con	37
Chebula	13 130			130, 361
Teta	***.		for a supplied	340
The Authorship of C	araka Sai	nhita	al mittages	LI 5
The Invasion of Alex	xander the	Great	A Stelling Inch	xiv

Centre for the Arts

Indira GandheNational Centre for the Arts

			PAGE.
Theodoric			60
Theophrastus			343
Things Indian			50
Thomas			6.4 - 162
Thot			340
Thread			94, 175
Three faced		600	95
Throat Speculum	1 T	•••	96, 109
Thucydides			.i. vi
Tibet		54	• 356
Tibetan Block Prints	***		357
—— Surgical Instru	ments		356
Tiger Forceps		***	102
Tiger's Claws	•/••	****	99
Timæus			341
Time	***		98
Tin	10.00		63, 122, 343
Tineal			355
Tinkar			355
Tinospora Cordifolia	66.6		6 359
Tob Chini	***	•••	32
Tongue			94, 203
Scraper		•••	299, 300
Tonsil			254, 265, 266
Operation of		- 100	226
Tooth			94, 216, 268
—— False	***		269
Loose		et in a	268, 294
Wisdom		100	268
Ache	***		299
Brush	111		207, 295, 296, 299
Cleaner			298
Elevator	•11.	in on	170
Extraction	Luc No Per	200	171, 268, 269
Extractor	***	Handle.	- margaret 97

				PAGE.
Tooth Pick		USI 96	95,	297, 299
Powder	instante.	fished)	(i) amount	295
scaler		ente.co.d	70,	204, 267
——— wood	The state of	end best 12	101	297
Tootum		oregin le	101	355
Toryne		aniera I	0)	254
Tosorthros		and the		340
Toy Cart				35
Traction Hook				165
Transactions of the			-	346
Treatise on Midwife	A CONTRACTOR OF THE PARTY OF TH			167
Tree and Serpent W			159,	235, 324
Trepan				232
Trephine				231, 232
Trichiasis,			66, 105, 218,	
Trifolia				354
Trivalve Speculum			*	120
Trocar				261
Tryphala parva				354
Tryphalla				354
Tsae-urh		J		298
Tsâng-urh				298
Tube	***		121, 122, 129	13), 132
— Defects of				133, 134
Tubular Instrumen	ts			3, 96, 108
	for Ascites		•••	100
	of Cupping		and the second	148
-	for Fistula-i	n-Ano.		114
	for Fumigat	ions	en	140
	for Hydroce		The Control of	- 123
	for Inhalatio			- 140
***	for Injecti	ons in	the	O - material
	Rectun			125
	for Inspection	on of Arr	rows	. 111
	for Nose		reference to Artis	- 115

			1	PAGE.
Tubular Instruments	s for Piles		4818	I12
	for Rectal St	tricture	A Bucks	124
	for Urethra		tolete	135
	for Urethral	Stricture	termin	123
	for Uterus		*	138
	for Vagina			138
	for Wounds		more	121
Tuj			3 4 14	354
Tumbol			shoulf pay	355
Tunbol	w Ligarity of	inet has	Had to special	355
Turbans			rulter all the st	305
Turpeth		and de	of University find	354
Turtullian	P			240
Tutenagum			,,,	355
Tutia	He			355
Tuthy			Same and	355
Twine			94,	, 176
Typha				254
			# TIPE	
		N. Alberta		
	ι	J		
Umbrellas				306
Urethral Probe	distance in		136	, 174
Syringe				138
——— Tubes			•••	135
Urginea Indica,				361
Jambolana	Mg	STATE OF THE PARTY.		38
Urinal	MESI	HARLES BARY	36,	, 317
Uterine Clysters		SECTION A	***	138
- Medication,		***		139
Tube	***	radjames(44.)	135, 138,	
Uvula	said the en			265
		,		H

Vagbhata et L'Astangahrdaya Samhita

Shift of the same			PAGE.
Vaginal Clyster			138
Vaginal Speculum	All the same	atrout "	97, 119, 120, 342
Tubes	111		135, 138
Valeriana Hardwicki	State of the		360
Vānumati			17, 31
Vapour-bath	in .	- Yol	68, 182, 322
Variola			356
Vessels, Puncturing of	***		255, 264,
Vasti-yantra			36, 67, 86
Vata-Rakta		***	9
Vegetius	r thought is	hyteriolis	260
Velpeau		77.	215
Venesection			256
Verole	111		356
Veterinary Art	VIV		257, 351, 352
Virgil		Service Control	343
Visa-Vaidya		444	111, 45
Vitis Vinifera			37
Vrddha Trayi			10 01
Vullurs		•••	17
Vulsellum			200
Vulture Forceps			muline de la maria 109
Sal Carrotte	•••		.,. 100
			The market by
Hat had yet and the	100		•
ace ace at a to mak			
	117	2300	
X12 40	W		
Walsh			356
Waring			
Warts		***	245
Watanbe		**	242
Water, cooling of		***	357
Water, Impure			311
Purification of		***	312
Lumication of	That is the		310 Indiza Gandin Natio

				PAGE.
Water, Scented			****	314
Seasonable		75		313
Touched			··· Ind	312, 313
—— dipper			MAL AND LE	312
·—— Vessel			* ****	312
Vessel, Stand f	for		Contract of	311
Way of Buddha		V		309, 312
Weber			346,	348, 353
Weighing Scales			***	36
Weights				• 324
Wellcome Research La	borato	ry, Report o	f	150, 217
Wheat				219
Whetstones				36, 80
Whisker				307
White			W	257
Whitney	•••			3, 137
Willi				337
Wilson,			V, 10, 64, 320,	331, 353
Winding suture			· · · · dal	209
Wine			10 m	59
Wise			XV, 254,	330, 347
Withania Somnifera			90.50	220
Wolf Forceps				102
Woman-milk				275
Wood		68, 82, 83,	117, 123, 125,	140, 177,
		397,	300, 307, 315,	316, 328
Wooden Hand		W		196
Splints	•••			196
Woollen Threads				210 •
Wounds	•••			291, 292
Fumigation		***	97,	122, 144
Syringe	••••	•••		121, 281
Wrightia Antidysenter	rica		a Strange	360
Wustendeld		***	The second	353
Wuz	•••	•••	of situation for the	Indira 355 Nations
				Centre for Me Arts

Page				PAGE.
Xarae	EX.	X CIMID	3	50, 354
	e e rea	Y		
Yoîk's Tail				309
		Z	W	
Zanik			Tayes and	352
Zarnach			. Tantaure	355
Zeit. deut				. 23
Zingiber				355
Zinzabill ·				355
Zizyphus Jujube		in Details	100	37
Zoology				334



SANSKRIT.

A

Abānmukha	****	.E		99
Abhayā	111	:::		37
Abnus				355
A. Cattopādhyāy	:::			17
A. C. Kaviratna	4.2			9, 17
Ācūṣaṇa				75, 76
Adhamulla	-::-			32
Adhijihvā			att to	229
Adhyarddhadhāra				98, 243
Agada				2
Agastya				51, 192
Agni				94, 215
Agnidamani				359
Agnika				219
Agniveśa 8	4.4.11			22, 25, 26
Agniveśatantra				130
Agra-bakra				168
Aguru				355
Āharana	***	***		75, 76, 77
Airvvārukamukha		•••	100	92, 103
Ajakarna				359
Ajamoda				359
Ākāsa-gotta				xi
Alābu	* ***	***	•••	97
Alābu-Yantra				150, 342
Alagarddā		1		288
52		ALL THE WASHINGTON		Indira Gandhi Natio

			PAGE.
Amarāvatī			306
Ambara	4		355
Ambashthai			360
Āmlakī		2011	37.
Amoghavajra			358
Amrta	***	•••	220
Anaka			96
Āńcana	alton to		75
Anguli	1000		94, 199
Sastra			98, 238, 342
Yantra			342
Ańkuśa			165, 328, 342
—— Cautery			160
vadana		atomic and each	93
Antarmukha			78, 95, 98, 250, 251
Antarvalkala			• 193
Antiochus			47
Anuśastra	NEG PASS	25,201,361	282
Anuvellita			177
Anuyantra			98
Ārā		95, 9	8, 205, 262, 263, 279
Archæological Survey			12, 30
Arddhacandra			96, 99, 251
———mukha			171
Arddhacandrānana			98, 251
Arddhadhāra			77, 94, 243
Arddhendu		***	0.0
Arhats			945
Arjuna			202
Arka			360
Arkamūla			360
Arunadatta			24, 27, 237
Aśadhara Sallaxana	45		24, 21, 231
Āsava			11739
Aśmabhālam			Indira Gand 318
		111	Centre for the Ar

dira Gandhi Nation Centre for the Arts

				Dian
Aśmarī				Page.
Aśoka		iv	8 34 41	47, 49, 345
Aṣṭāṅga Hṛdaya Sa	mhitā 18.			
81, 86, 88, 92, 9				
112, 113, 114, 1	15, 117,	118, 119, 121	199, 197	136 141
143, 148, 151, 1				
187, 189, 190, 1				
208, 211, 214,				
244, 247, 250,				
264, 265, 267,	270. 271	. 272. 276.	278. 280.	290. 333
Aştānga Hrdayatīkā				28
Astānga Samgraha				18, 23, 24
Asthīlaśma				94, 197
Asutosh Mookerjee, l			14.5ELE	xvi
Āśvabala			1000	202
Aśvagandhā			S 100	220
Aśvakataka		4.		94, 210
Asvavaidyaka 114,	130, 158,			
Aśvins *			4	
Atarusha				359
Atasi				39, 359
Atharva Veda		1, 3, 15, 39		
Āţī	•••			249
Āṭīmukha •		1	78	, 95, 249
Āṭīvadana				98
Ativisha			The second	358
Ātreya, Punarvasu			4, 15, 18	, 21, 130
Atri				353
Aupadhenava				17
Aurabhra			(A.A.160)	17
Avabhanjanamukha	***			92, 103
Avantī		MENTAL DISA	·	308
Ayaşkānta			•••	94, 212
Ayurveda			1, 13,	22, 342
Äyurvedärthadipikä				- 7

PAGE.

Bīrājacaran Gupta

B. L. Sen	F		A Comment	5, 27
Brahmā			1, 4, 12,	22, 301
Bramhadeva		10000		17
Brāhmanas	#### P# P#		100	9
Brsavadhvaja				8
Bucanaka	- 2.	Section 1		360
Buddha	·	485 KS	ii, XI, 46,	
Buddhadāsa	***			49, 50
Buddhaghosha		4.7.4	stroit.	327
THE CHELL DOLLARS			All Parking	Glade 10
Capital Capital Control	[数 据]2日		2,008,种6。	
	C			
10.00		4		Life Link
Cacyn-nama		***	747	355
Cakradatta 29, 30, 31	, 62, 66,	67, 124, 126	5, 128, 141, 1	43, 161,
162, 164, 173, 175				
222, 227, 228, 2	29, 245,	248, 253,	255, 258,	
Cakradhāra	149		41	243
Cakrākṛti		****		96
		04, 259, 265		
Cakrapāṇidatta 7, 9, 1	0, 17, 29	, 30, 31, 62,	63, 67, 10	107,
100, 200, 2015, 2015	40 E 848		115,	149, 183
Cakratattwadīpikā	6.50%	de telle neg	100,000	31
Cāla	***			76
Cālana	•••			75
Chalmugra		•••		360
Cāmara	•••	•••	•••	308
Campaka		States toke	the 'es	310
Candana			354,	355, 359
Candracandana	****	•••		28
Candra Gupta	•••		35,	40, 344
Candrakumar Das Kav	ribhusan			L 1 31
Candrate				16
Candravarga	200	0.00	ind C	ira Gandhi 99 o entre for the Art

PAGE.

				350
Canouge		0 01 09	05 96 36	
Caraka, x, 4, 5, 7, 7, 10,	11, 18, 2	0, 21, 20,	40 149	149 144
38, 59, 65, 67, 78, 1	114, 125,	129, 139, 1	40, 142,	001 000
146, 147, 149, 152,	166, 174,	176, 179, 1	51, 191, 1	002, 202,
203, 205, 207. 209, 5	236, 246,	252, 269, 3	010, 240,	051 054
296,	300, 304	, 305, 206,	310, 318,	001, 004
Samhitā 2, 4, 7,	8, 9, 31,	34, 40, 41,	59, 65, 67	, 78, 80,
115, 126, 130, 133,	136, 139,	140, 141,	142, 143,	140, 147,
149, 151, 152, 174,	176, 179,	201, 203, 2	05, 207,	209, 217,
237, 247, 269, 292,	293, 300,	301, 304, 3	05, 306,	307, 308,
51 6 2 3 3 3 4			316,	318, 320
—— Tattva-Pradīpik	ā			10
Carma ·	***		•••	94, 183
Cāsamukha	40			-92, 103
Cashmere		***		5, 356
Caturvarga Cintāmaņi			··· absi	56
Cavya				39
Chatra	•••			306
Chedana				277,79
China		***		358
Chīna				178
Cikitsā Sāra Samgraha			Sec. 16	30, 31
Cillimukha				92, 103
Ciravilva	•••			39, 219
Citraka				39, 219
Classification of Instrum	nents			90
				e media.
				100
	D			According (A
				Tours of the
Dahana	***		80,	177, 221
Dākodara				97, 122
Dakṣa				4, 12, 341
Dallanācāryya 12, 17, 5	7, 107, 21	1, 225, 230		, 243, 249
Damadani			9	98, 31 Indira Gandhi Na
		SHIP STATE OF	EPVA ENTS	Centre for the A

PAGE.

				350
Canouge		0 01 09	05 96 36	
Caraka, x, 4, 5, 7, 7, 10,	11, 18, 2	0, 21, 20,	40 149	149 144
38, 59, 65, 67, 78, 1	114, 125,	129, 139, 1	40, 142,	001 000
146, 147, 149, 152,	166, 174,	176, 179, 1	51, 191, 1	002, 202,
203, 205, 207. 209, 5	236, 246,	252, 269, 3	010, 240,	051 054
296,	300, 304	, 305, 206,	310, 318,	001, 004
Samhitā 2, 4, 7,	8, 9, 31,	34, 40, 41,	59, 65, 67	, 78, 80,
115, 126, 130, 133,	136, 139,	140, 141,	142, 143,	140, 147,
149, 151, 152, 174,	176, 179,	201, 203, 2	05, 207,	209, 217,
237, 247, 269, 292,	293, 300,	301, 304, 3	05, 306,	307, 308,
51 2 2 3 3 3			316,	318, 320
—— Tattva-Pradīpik	ā			10
Carma ·	*** \\\ -		•••	94, 183
Cāsamukha	4.			-92, 103
Cashmere		***		5, 356
Caturvarga Cintāmaņi			··· absi	56
Cavya				39
Chatra	•••			306
Chedana				277,79
China		***		358
Chīna				178
Cikitsā Sāra Samgraha			Sec. 16	30, 31
Cillimukha				92, 103
Ciravilva	•••			39, 219
Citraka				39, 219
Classification of Instrum	nents			90
				e media.
				100
	D			According (A
				Tours of the
Dahana	***		80,	177, 221
Dākodara				97, 122
Dakṣa				4, 12, 341
Dallanācāryya 12, 17, 5	7, 107, 21	1, 225, 230		, 243, 249
Damadani			9	98, 31 Indira Gandhi Na
		SHIP STATE OF	EPVA ENTS	Centre for the A

and the second			PAGE.
Danga			356
Danta	ER - (15) N.	AL .11.0	94, 204
Danta-kāṣṭha	48L 621	337 411	297
lekhana	175,179	ATE MOF	98, 267
śańku	- COLUMB - 18 - 18 - 18 - 18 - 18 - 18 - 18 - 1	Life State of	70, 71, 95, 267
Dāntī	ADS THE V	(DE 1096.3E	219
Dāraņa	4.0	J. J. C	75
Dārila	ALC: UNK	uper and a	4
Dāruharidrā	teno tras	distribute.	359, 360
Darvvī	app. The	OUR RUN	214, 328, 360
Daśaratha			16
Datta:		7.11	17, 25, 219, 251, 331
Dvārusita		000 L	355
Devadāru			319, 353, 354
Dhãi			218, 282
Dhammapada			84
Dhanian			352
Dhanurveda			62
Dhanvantari			11, 12, 14, 352
Dhar		***	232
Dhattura	,		359, 361
Dhatushena	A		50
Dīrghavaktra			233, 240
Divodāsa			11
Dravasveda			323
Dṛḍhavala	5, 8,	19, 130, 13	2, 141, 182, 185, 326
Dronī	•••	•••	323
Dṛti			192
Dvīpimukha	·	Q	92, 102
Dvitāla		•••	93, 96
Dyatūha		***	99
		3	
			5-
Ekatāla		•••	93, 96
Elā		***	39, 359
			Centre for the Arts

424	INDEA.		
			PAGE.
			269
Enīpada	•		291, 359
Eranda			280
Ervārūka		***	76, 77, 79.
Esana		00 173 17	
Eșani 77, 78, 79	, 80, 95, 95,	, 99, 110, 11	4, 269, 273, 279
100 100 100 and 100 and	Con the state		
100-456 ALL			
No.	F		
the parties and			Extension of the
D l - l-two			97
Faṇībaktra			•
mikam et		***	VAROUPLIE VARANTINA
	G	PART	5.01
			conditionate the condition
Gandupadamukha	Page 1		93, 97, 98
Ganeśkṛṣṇa Garde	w	Av.	27
Ganes Sastré Tartevaid	ya ···	tendhiquida	27
Gangādhar Kaviratna	***	74.	9, 10, 20
Garbhaśańku	777		97, 165
Gayadāsa ···			17, 195
Ghatīyantra ···			97, 151
Gocandana			288
Godhāmukha			95, 99
Goji			282, 291, 292
Golomi			41
Gomedaka			310
Gophanā			178
Gophanikā			209
Grahana	with the		80
Grdhramukha			92, 95, 103
Gṛdhrapada			96
Guduei			292, 359
Guggula			41, 354
Gupta			9
2			Indica Gandhi Nationa Centre for the Arts
			The second secon

H

			The state of the s
Mr. State of the s			PAGE.
Haricandra			10
Haridrā		***	291, 292
Harikṛṣṇa Sen Mallik			28
Harināth Viśārada	W. 80 JR	45, 77, 65	10
Harīta	4, 5,	25, 90, 93,	96, 129, 231, 323
Haritakī			130, 354, 361
Haritāla			55
Hārīta Samhitā		1	04, 251, 283, 323
Harşa		•••	94, 212
Har acarita		***	12
Hastipippalī "			39
Hastyāūrveda	•••		15, 99, 130
Hata	D	,	328
Hayamāraka	***	•••	219
Hemādri		·**	28, 54
Hingu		one is of	39
Hirendranath Mukhopa	dhāya	registerati	XX
Hrasvavaktra		· cuter	233, 240
Hṛdayabodhikā			/ 38
			aniamedaeth (A)
electric periodic production of the second			inglement :
Indra			4, 12
Indravāruņī	•••		359
Indrayava			360
Indrāyudha	···		288
Inguda			39, 40
Ispaghula			360 -
	J		
Jalavardhanī			249
o thick i the constant		The second second	THE R. P. LEWIS CO., LANSING, MICH. LANSING, MICH.

54

Jambul

Indira Gandhi Atlonal

426

				PAGE.
				0.9
Jāmvavavadana			•••	
Jāmvovoustha			•••	97, 99, 159, 217, 234 86
Jānumatrāsana				
Jatila	***		***	41.
Jatukarna				4
Javamukhī				245
Śalākā	***			275
Jayacandra			7.,	269
Jayadatta Sūri				114, 158, 235
Ĵejjatāsāryya				17
Jīvaka				II, XIII, 231
Jīvānanda Vidyāsāgara	Per Vi	87		9, 17, 21, 27, 33
Jihvā				94, 203
kantaka				229
nirlekhana				299
	***			119, 120
Jonivraneksana	*			9, 28, 31
Josodānandana Sarkār	•••			263
Jūthikā	•••		•••	

K

	•	354
		39, 292
	4.	292
•••	***	92, 103
	•••	220
		360
		311, 322
		313
		28
		35, 45, 198
		333
	30	Indira Gand 352 or

Gentre for the arts

				PAGE.
Kanişka				6, 16
Kanka				353
Kankab				352
Kankamukha			92, 99	101, 103
Kankapada				96
Kankapatra				96
Kankayana			4.10	353
Kanthasalyavalokini		Angel and Street		96, 109
Kapāṭa-śayana				87, 342
Kapila			a/s	288
Karanja		4	•••	359
Karapatra .		73, 77, 94, 96	, 98, 230,	
Karapatraka				96
Karavīrakapatraka		T		96
Karkataka		•••	· · · · · · · · ·	99
Karmāra .			The Pale A	264
Karna-śodhana		115,000	decir una	163
Karna-vedhanī	***			98, 253
Kārpāsa	•••		•••	350
Kartarī				98, 250
Karvura	•••	•••		288
Kṣārapāṇi		Я		4
Kāsī			•••	347
Kaśmaripatra		•••	•••	292
Kashmir		***		313
Kassis	•••		•••	355
Katakaphala			1 - 1 - N	310
Katfala			1.12	359
Kathopanisada			*	301
Kapillaka	•••	•••	•••	359
Katuka	•••			361
Katukoshtaki		•••	•••	359
Katurina	•••	1 m. 1 m	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	359
Kātyāyaṇa	•••	of the same	•••	16
Kaumārabhṛtya	***			Indira Gandhi Nat

			PAGE.
Kauśika Sūtra	96-285-0V		gata and 4
Kāya Cikitsā			2
K. C. Sen			5, 27, 33
Kerala Putra			47
Kesaprasadhani	A 27, 10		303
Keśava			4 tarita 4
Khadira			354, 358, 30
Khaja		****	80, 98, 253
Khal		1	68, 158, 180, 327
Khallamukha			93
Khar			355
Khāranāda			128, 129
Kharijūrapatrika			99
Khatyā			178
Kikitsa-Vidya			314
Kilima			39
Kirata			359, 360
Kokilāk a			360
Kolāsthidalumukha			93, 97
Kolinjana			355
Krauñcamukha			02, 103
Krsna	Contract		8 987
Kṣāra			94, 213
Ksura			234, 235
Kubara			• 355
Kulinjana Kulinjana	•••		353
Kuliśamukha			•
Kullattha			See 4 bereitstern bei 37
Kumuda	***		292
Kumuda Kunte			94 97
			02 103
Kuraramukha Kuravaka			979.
Kuravaka Kuravakaśalā			
		•••	a to a second to the
Kūreca		S	98, 215, 252, 253
Kuśa			177, 195

Indira Gandhi National Centre for the Arts

			Down
godfie			PAGE.
Kuśapatra	•••	70, 78, 94, 9	98, 99, 247, 248, 249 355
Kussas	*4.*	***	CONTRACTOR SALTINGS AND STREET
Kuṣṭha		•••	39, 355
Kuthāra	***	****	254, 256
Kutharikā	***	70, 77, 95, 9	06, 98, 254, 256, 279
Kuṭṭana			79, 99
the same date of			
	Salatana.		4.5
		L	
			See Subbecalled 2
Laghumañjuṣā	***	•••	7
Lakṣmī ,	•••		8
Lāngoli			39
Lasuna	•••		· · · · · · · · · · · · · · · · · · ·
Latā		•••	94, 195
Lataka Miśra			
Lekhana		***	77, 79
Likhita .	/ ·		30
Lodhravali			62
Lohārṇava			62
Louhamārana-Vidhi	•••	•••	Attalion souther 02.
SHOW IN THE SHOW			
\$80.368 ·		M	
			17, 19, 29, 30, 350
Mādhaya	200	***	29
Mādhavācāryya	***		17
Madhusudan Gupta		***	: :: 15 16
Mahābhārata,	***		
Mahānīlatantra			50
Mahāvamsa	•••	***	70
Maheśvara	***		990
Mahosadha	•••		39
Maireya	•••	10 m	- 00
Makaraka	•••		

400				
				PAGE.
Makaramukha				102
Makha-deva jataka				105
				93
Mālatipuṣpavṛntāgra			•••	iii
Mālavikāgnimitra				143
Mallaka Samputa				277
Mals		A STATE OF THE PARTY OF	Carrier County	324
Mānadaṇda			S.N.	177
Mandala Mandalagra 70, 77, 79	94 98 99.	165, 225,	226, 25	27, 228,
Mandalagra 10, 11, 10	, 01, 00, 00,		30, 239,	
Man Julmaunī			W.	39
Mandukparnī				130
Mañji ṭhā Manka				352
	7			352
Mankba				39
Mānosāra Manašilā				355
Manthana	•••			80
Manusamhitā	···	v, viii, 65, 1	91, 192,	193, 353
Mārga Viśodhana		, viii, 00, 1		75, 76
				92, 102
Mārjāramukha				37, 189
Māṣa Maṣaka				191
Māsha				219
Masūradalabaktra				97
Masūradalamukha ·				93
Masurikā			•••	356
	*****			354
Mātulunga	10 00 11	e 100 0	21 208	316, 319,
Mahāvagga, ii, xi, 45,	46, 82, 11	10, 102, 20	1, 500,	320, 327
Mananahhi				354
Mrganābhi Mrganābhi				106
Mucundi			60 06	105, 106
Mucuțī Mudga		*****	00, 00,	37
AND THE RESIDENCE OF THE PARTY	OFF THE LAND			4, 96, 198
Mudgara Mudrikā	A PARTIE A	**************************************		
Mudrikā	****	11	, 94, 100	238, 342

				PAGE.
Mukha				94, 205
Muktābali				31
Muktabarşi				360
Mukulāgra				93
Mulaka				219
Muñja				283
Muñjavalaya				311
Muşala				172, 318
Mūṣika				288
Trusika				
STANCE OF STANCE				
		N		
Nādī				91, 93, 93, 108
Nāgadamani				353
Nāgakeśara				310
Nagara ·	e del e			39
Nāgaranga			***	354, 360
Nāgārjūna				16, 6I, 298
Nagorekote			***	352
Nageśa Bhatta				7
Nakha				94, 204
Nakhaśastra?				70, 77, 79, 94, 98, 237
Nālī °	111		***	264
Nāmana .			111	76
Nandimukhamukha				92, 99, 103
A STATE OF THE PARTY OF THE PAR				52
Nandipurāņa			***	30
Nārāyana	***			84, 116
Natthukaranī				35I
Nava Vihara	***		***	30
Nayapala	107	148	151. 1	196, 211, 225, 230, 233,
Nibandha Samgraha 17	950	255	257	264, 263, 264, 265, 267
237, 243, 241, 241	7, 400	, 200,	~47.5	29. 30

Nidāna

29, 30 1 Indira Gandhi National Centra for the Arts

432		100			
					PAGE.
				354, 3	60, 292
Nimba	***				14
Nimi					74, 76
Nirghātana	•••				310.
Nirmālaya	•••			35,	45, 198
Nītisāra				Marin Control	9
Nāya	***				17
Nāya Candrikā	•••		•••		ALLEY TO
					and the latest
SWICKERS OF STREET		0			
					338
Oṣadhadhāraka	•••				metry of the
422					maniand of
		P			applied.
					221
Pācana	***				28
Padarthacandrika	•••		•••		• 94
Padatala	•••		***		3
Paippalada	•••		***	ata	348
Paitāmoha Sidhyānta		100		0 005 000 0	
Pālakāpya 16, 90, 99	, 102,	122,	130, 22	9, 250, 250, 2	Control of the Contro
	47, 24	8, 256	, 261, 2	264, 266, 269,	359
Palasha		No.	***		96
Pañcabaktra	••••		•••		110
Pańcamukha	•••		•••	•••	179
Pańcangi	•••		•••		347
Pañcasidhantica	•••		***		
Pāṇimantha	•••		***		205, 262
Panini	***				7, 8
Panipadatala	•••		•••		199
Panitala	•••		•••		94
Pańjikā				-	17
Paramaka	•••			4-32-4-5	351
Parāśara				mercinolis	Indira Gandhi Na

				PAGE.
Parisrāvana			100	312
Parusa				37
Pāśa				187
Patala				310
Paṭalī				292
Pātaliputra	*			345
Pāṭana				78, 79
Patanga		Street,		360
Patañjali				7, 10, 62
Pāṭhya			6	- 28
Patta	0			94, 176
Paulisa •				348
Pavitra				320
Phalaka		•••		310
Phalavarti				175
Pīdana			38 Jun 1	75, 76
Pilindavakkha				84
Pingala .			Marie	288
Pipe *				85
Pippali			39, 216,	292, 355
Pisana paṭa			antini vilidi et a	327
Pisṣana-śilā	0.000 501		9 00 01 4	327
Piyadasi				47
Palāṇdu •				358
Pouskalāvata.		***		17
Pradhamana				76
Pradīpa				28
Prakṣālaṇa			20110	76
Pramārjana		•••	Y	76
Pratuda				279
Pravāhana	·		•••	94, 211
Pracchāna				79
Pramārjana				93
Pratoli			•••	177
Prubhurām Jībanarām				337
	THE RESERVE OF THE PARTY OF THE			Another Constitution

				PAGE.
Pundarikamukhi			· · · adia	288
Pūrana				74, 76
Puspanetra				135, 136
Pyārimohan Sengupta				31
Tyarimonan cengupu				
NAME OF THE ROOM OF THE PERSON		*** S		
		R	A PART	
Rājavallabha				309
Rajju				94, 175
Rājṣādava				316
Rājatarañginī				16, 24
Rāma				11, 16
Ramānāth Vaidya				28
Rampaka				99, 238
Ram Raz	2			39
Rasīarņava				• 28
Rasāyana				2
Rasik Lal Gupta			•	33
Ray			6, 24, 28	, 290, 350
Rgveda 1, 2, 61, 6	2, 64, 68,	80, 191, 192	, 301, 318	, 319, 338
Rjugranthi		0		209
Rjukarana			- 1 to 1	76
Rkṣamukha				92, 102
R. L. Mitra	IV	62, 192	. 193, 19	6, 304, 305
Rabi Dutta		·		. 27
Romaka			- A	348
Romapāda			San Maria	16
R. R. S.			Stephe	28
			in the	

S

Saleh ... L 352
Sāhasāṅka ... Indira Gand 10
Centre for 10

Indira Gandhi National Centre for the Arts

		PAGE.
Śaivālamula,		310
Sajika		355
Śaka		291
Śākhā		94,282,291
Śākya Muni		8
Śalākā		91,93,96,97,99,155,215,216
Śālākya Tantra		2
Sālotar		
Śalya		91
Salyanirghātanī		74,96,111,198,199
Śalya Tantra		2,14
Sādāsi :		106
Śamī		96,113
Sammohinī	7	60
Sāmudrikā		288
Samvyuhana		76
Sana		219
Sanasrad		290
Sanchi		306
Sanchi Topes		327
Sandamsa	8	80,91,92,95,96,103,104,105,106,232
Sandaracha	97	155
Sandhāna		221
Sanghapāla	919	358
Sanjibani		60
Śańkarācāryya		XIII
Śańkara Miśra		213
Śańkaravijoya		XIII
Sanketamanjari		210
Śańkha		
Śańku		97,156
Śańkumukhi		288
Saptaparna		18
Sarad		1930
Sarala		

430			PAGE.
			93,97
Śarapuńkhamukha	•••		143
Sarāba Sampuṭa			249
Śararī	111		78,95,98,249
Śararīmukha	•••		171
Śararīmukha Probe	***	A STATE OF THE PARTY OF THE PAR	99
Śārddūlamuṣṭhika			219
Sarjarasa	•••		355 •
Sarkarā			,143,144,145,147,
Śārogadhara 31,66,	68,115,12	2,128,140,142	,294,322,323,333.
	162,17	5,188,255,260	
Śārngadharapaddhati			62
	21.66	67.68.115.129	2,128,138,140,142,
Śārṅgadhara Saṅgraha	147 169 1	75 188.235.130	3,286,322,323,333.
	147,102,1	10,100,400,	32
Śārṅgadharatīkā			351
Sarpavidyā			98,168
Sarpaphanamukha	•••		98,277,278
Sarpāsya	***		39
Sarṣapa			29
Sarvadarsana Samgra	aha		27,118,225,237
Sarvānga Sundarī	•••	•••	92,103
Śaśaghātīmukha			90,94,160,225
Śastras			• 164,301
Satapatha Brāhmana			359
Satapuspa	100		316
Sattaka			47
Satyaputra			96
Saubatsika			348
*Saura Siddhīnta			288
Savarikā			303
Sāvitrī	•••		29,64
Sāyaṇa	***	***	
Sāyana's Commenta	ry,		30
S. C. Das			indira Ga 219
Sermicarpus Anacar	rdeum		Centre for the

				PAGE.
61.210-2			28	2,291,293
Sephālikā Sibadāsa		12121111111	10,30,31,6	2,227,293
		estable to		29,30,184
Siddhayoga	***			219
Sigru			April 1	311
Śikya		DESCRIPTION OF	To Taxable	II, 47,49
Silāditya				99
Simhadamstrā				25,21
. Simha Gupta	- Company (1)			92,96,101
Simhamuka				188
Śīrovasti,			-	78,79
Sīvana			CONTRACT.	221
Skandana	critical.	6 18 E	days and a	55
Skanda Purāṇa		571 EILE		20,303,318
Soma			1.00	353,359
Sonāmukhī	•			106
Sonnā	•••		and the	356
Sphotaka	•••			345
Śramana	•••			303
Śramaneris			ales Audi	92,102
Śṛgālamukha			eyelur	96
Śrībatsa,		***	Survey Saved	124
' Śrīkantha	•••	•••		219
Śrīvestaka	•••	0		1, 205, 342
Śŗṅga				355
Sriigavera				48
Śrutavimśatikoţī	•••			103, 164
Sruva	•••			178
Sthagikā	•••			94, 211
Sthīvana		77 78 7	0 94 96	98, 99, 243
Sūcī	-		ə, ə - , ə-,	98, 99, 342
Sūcīmukha ·		***		353
Sugandha Marica				326
Sukti	•••	***		LF96
Śūlī	•••		in density	50
Surat Hospital		****		- 11

PAGE.

Suśruta IX,X, 2, 5, 6, 11, 12, 13, 74, 15, 16, 18, 19, 20, 21, 22, 23, 24, 25, 28, 30, 31, 38, 42, 43, 57, 58, 59, 61, 63, 64, 65, 66, 67, 68, 69, 70, 73, 74, 77, 80, 86, 90, 91, 98, 106, 190, 111, 112, 114, 117, 118, 122, 123, 124, 126, 135, 138, 140, 143, 144, 145, 147, 148, 149, 150, 157, 161, 166, 168, 170, 171, 172, 173, 176, 179, 180, 184, 186, 188, 193, 194, 195, 197, 198, 199, 200, 201, 203, 204, 205, 206, 209, 213, 214, 215, 216, 218, 219, 220, 221, 222, 223, 226, 230, 234, 237, 245, 249, 250, 252, 257, 259, 262, 263, 265, 267, 268, 269, 271, 273, 274, 279, 280, 290, 291, 292, 293, 295, 297, 299, 300, 303, 305, 306, 307, 308, 310, 312, 315, 322, 325, 326, \$46, 350. 358.

Suśruta Samhitā 1, 2, 11, 12, 13, 14, 16, 17, 19, 31, 38, 42, 44, 57, 58, 59, 61, 63, 64, 65, 66, 67, 68, 69, 70, 73, 74, 77, 80, 86, 87, 91, 92, 100, 101, 103, 106, 107, 108, 109, 114, 117, 118, 121, 122, 123, 224, 133, 134, 135, 139, 141, 143, 145, 146, 147, 148, 149, 150, 151, 155, 161, 165, 168, 170, 172, 173, 175, 176, 178, 179, 180, 182, 185, 186, 187, 188, 190, 193, 194, 195, 196, 197, 198, 200, 201, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 216, 218, 222, 223, 226, 227, 234, 237, 238, 243, 245, 249, 257, 259, 263, 265, 269, 270, 271, 213, 274, 279, 280, 282, 283, 286, 291, 292, 293, 294, 295, 297, 299, 300, 304, 305, 306, 307, 308, 310, 311, 312, 315, 318, 320, 321, 324, 325, 326, 332, 333, 355, 336, 343, 362.

 Suvarnakha
 ...
 ...
 353

 Svastika Bandage
 ...
 ...
 91, 92, 96, 100, 101, 177

 Svenamukha
 ...
 ...
 92, 103

T

Tāgara Taittirīya Brahmaņa Tāla 360 195 91, 93, 96

				PAGE.
Tāla Yantra				106
				309
Talipot				309
Talponi	DESCRIPTION OF			854
Tamālpatra		15.44	354, 35	5, 860
Tāmbūl	September 1			5
Tanjore Library	A Principal			336
Tantras				321
Tapasveda	NAME OF	STREET, SOL		2, 102
Tarakṣumukha				308
Tathāgata		1	227, 229, 25	3, 293
Tattva Candrikā	10000	Sales par		354
Tejapatra •				346
Tejpat	the state of the s		XV, 29, 38	1, 358
Thakore Saheb				361
Tila	Tall extends	(Parties		355
Tincana		Maria de la companya		39, 40
Tinduka	salapite of	Anglish and		4, 356
Tintidī •	Arrando Lab			16
Tīsaṭa	Q0/			280
Trapușa	A Committee			95
Tribaktra			78, 95, 98, 2	51, 279
Trikurecaka	and the			110
Trimukha	位置 原生 数	to Cate (4)		354
Triphalā •	SOLUTION S		•••	6
Tripitaka .	State of			54, 360
Trivit				311
Tryastaka				324
Tūlā	Village Services			209
Tunna Sevanī				355
Tuttha				354
Tvaka-kshira				
	l	J		177
771.1 -14-		· · · ·	•••	17
Ubhalta			The non-the sec	311
Udakamañcikā				

		PAGE.
SOUTH		92
Ulūkamukha	1.00	103
Ulūkamukha Forceps		318
Ulukhala		
Umeścandra Gupta		24
Undurkarnika	jan. da	359
Unmathana		75
Unnamana		75, 76
Upānaha		307
Upānahasveda		323
Upaskara		213
Upatisso	:	49
Upaveda .		1
AND REAL PROPERTY AND ADDRESS OF THE PARTY O		91, 94, 175
Upayantra		72
Uşanas	***	
Ushira		359
Ușīra	•••	284
Usnasveda		321
Ușnīșa		305
Utkula		196.
Utpala		310, 345
Utpalapatra		77, 94, 98, 99, 240, 241, 242, 258
Utpātana		79, 345
Uttara Tantra		12, 13, 24
Uttara-Vasti		121, 135, 138, 139
		100, 100, 100

V

Vāca Vadiša Vāgbhaṭa 39, 41, 355 70, 77, 93, 95, 96, 97, 98, 98, 207, 264, 261

5, 6, 7

and the second s						
Vanhata I (IV)	1		- 4	Tests.		PAGE.
Vāgbhaṭa I (Elder)		18	8, 19, 2	0, 21. 22	2, 23,	24, 25, 31
Vāgbhaṭa II (Young	ger) 18,	19, 9	20, 21,	22, 23,	24, 2	5, 26, 28.
31, 67, 69, 73,	76, 79,	86,	88, 90,	, 96, 98	, 104,	109, 113,
114, 117, 127, 13	36, 141,	143,	, 144, 1	48, 151	, 156,	159, 160,
166, 186, 187, 18	89, 190,	195,	, 197, 1	98, 199	, 200,	201, 203,
204, 206, 211, 2	12, 214,	220,	222. 2	25, 230,	232,	237, 238,
239, 243, 247, 28	50, 252,	253,	255. 2	56, 257,	258,	259, 262,
Valley III		267	, 271,	272, 276	, 277,	280, 289
Vāgbhaṭa, III	1- 20				.:.	. 28
Vāgbhatārtha Kaum	udī 28,	67,	81, 11	8, 119,	121,	197, 203,
205, 211, 212, 22	3, 225,	231,	233, 2	237, 239,	240,	244, 247,
250, 251, 253, 25	5, 259,	263,	264, 2	65, 267,	270,	271, 272,
37.43-1		1				278
Vaidyaka	•••	*	The second			71
Vaidyakaśabdasindhu		100				24
Vairocana		100				356
Vaiśceika Darśanam				- 1	100	212
Vaisesiki		of the same		7771		9
Vājasenīya Samhitā	-	200				195
Vājīkaraņa						2
Vajramukha			****			95
Vāla		10 m		-		94, 205
Vālaprabodhikā	1		***	7	1	28
Valkala.						94
Vallāla •						60, 231
Vallija	****		***			39
Vāllūki				·	. 3	148, 151
Vāṇa	400		***		103/9	12
Vanapalāṇḍu			***			361.
Vanausadhi Darpana				20, 240		5
Vānu	1.00				REAL	30
Varāhamihira		101		A	The state of the s	347
Vartana	•••	3)	74 5
Vārttikas	•••			•••		16
Varuņa	140 g		***			Indira Gandhi Nati

56

				PAGE.
Vasistha				348
Vasistha Siddhanta			A Parker Time	348
Vasti Yantra			97, 99, 1	25, 137, 342
Vastra				94, 197
Vāsudeva				8
Vata				292
Vatsadanta			William Company	99,256
Vāvyula	100	aster 1		360
Vayasthā	in			41
Vayu •				303
Vedana				77
Vellitaka	10.1			209
Veņikā		T. I.		94, 176
Vetasa				98
Vetaspatra				95, 98, 264
Vibhītaka				37
Vi anga				39, 360
Vijayratna Sen Gupta				• 26, 27
Vikarşana		* * *		• 75
Vikramāditya				49
Vikula				196
Vilva				68, 354, 360
Vimbi				268
Vināmana				. 75
Vinaya Samgraha				• • 303
Vīracintāmaņi	•••			62
Vīrasvamī				17
Vişagranthi				310
Vişakha				46
Visamusti			•••	354
Viṣa-pāthara				198
Visavaidya				351
Viśrāvana				78
Viśvāmitra	***			, 14, 15, 51
Viśvaprakāśa	•••			10
				Indira Gandul Nati

ama/f				PAGE.
Vitāna				178
Vivarana				75
Vivartana	37	中国公司机会	No. of	75
Vrana				356
Vrana-vasti			100	97, 121
Vṛddha Sarmgadhara		•••	1	70, 71
Vṛddha Suśruta	***			14
Vrddhipatra 70, 77,	79, 94,	98, 99, 226, 2	32, 234,	235, \$41,
				279
Vrhadāranyaka				• 81
Vṛhat Samhitā			•••	72
Vrīhibaktra •				98
Vrīhimukha 7	7, 95, 9	6, 99, 123, 256,	257, 258,	259, 279
Vrkamukha				92, 102
Vrnda Mādhaba			29	9, 30, 184
Vyādhana			1	77, 78, 80
Vyāghramukha				92, 102
Vyājanī •		•••	***	308
Vyākhyā Kusumāvali	i			124
Vyāvartana				76
Vyūhana			***	74

Y

Yājñavalkya			20, 21
Yajurveda	 	19	5, 301
Yamaka			178
Yamaka-natthu-karanī	 	8	35, 119
Yantras	(9	00, 100
Yantra-Sataka	 	185, 18	6, 342
Yasti		•••	306
Yaşaçi-yantra		•••	99
Yava		8	37, 265
			Control of the Contro

					PAGE.
Yavana					348
Yavāsa					359
Yogaratnākara 66, 124,	148,	151,	162, 168,	174, 185,	189, 194,
					259, 271
Yoni-vraneksana					97, 342
Yudhisthira					21
Yujña-śańku			The same of the sa		166





