THE SUSHRUTA SAMHITA

SUTRAŚṬHĀNAM.

CHAPTER I.

Well, we shall now describe the origin of the Science of Medicine, as disclosed by the holy Dhanvantari to his disciple Sushruta. (Vedotpattimadhyayam).

Once upon a time, when the holy Dhanvantari, the greatest of the mighty celestials, incarnated in the form of Divōdāsa, the king of Kāsi, was blissfully seated, in his hermitage, surrounded by a concourse of holy Rishis; Aupadhenava, Vaitārana, Aurabhra, Paish-kalāvata, Karavirya, Gopura-rakshita, Sushruta and others addressed him as follows:—"O Sire, it grieves us much to find men, though otherwise well befriended..."**

* The present work which originally formed the subject of a discourse by the holy sage Dhanvantari to his disciple Sushruta, has been compiled in its present form by the venerable Nagrijana, and is accordingly designated as the Sushruta Samhita.
by their kin and relations, falling a prey to disease, mental, physical, traumatic, or natural, and pitifully waiting in agony like utterly friendless creatures on earth; and we supplicate thee, O Lord, to illumine our minds with the truths of the Eternal Ayurveda (Medical Science) so that we may faithfully discharge the duties allotted to us in life, and alleviate the sufferings of humanity at large. Bliss in this life and hereafter, is in the gift of this eternal Ayurveda, and for this, O Lord, we have made bold to approach thee as thy humble disciples." To them, thus replied the holy Dhanvantari:—"Welcome to all of you to this blissful hermitage. All of you are worthy of the honour of true pupilship or tutelage."

The Ayurveda (which forms the subject of our present discourse), originally formed one of the subsections of the Atharva Veda; and even before the creation of mankind, the self-begotten Brahma strung it together into a hundred thousand couplets (Shlokas), divided into a thousand chapters. But then he thought of the small duration of human life on earth, and the failing character of human memory, and prudent to divide the whole of the Ayurveda into different branches such as, the Salya, the Shalya-Tantram, the Kaya-Chikitsa, the Vayu, the Kapha-Bhedya, the Anuda-Tantram, the Ayurveda-Tantram and the Vayeyara-Tantram.
Now about the characteristic features of each of these branches of the Science of the Ayurveda:

The Salaya-Tantram*—The scope of this branch of Medical Science is to remove (from an ulcer) any extraneous substance, such as, fragments of skin, particles of stone, dust, iron or bone; splinters, nails, hair, clotted blood, or condensed pus (as the case may be), or to draw out of the uterus a dead foetus, or to bring about safe parturitions in cases of false presentation, and to deal with the principle and mode of using and handling surgical instruments in general, and with the application of fire (cautery) and alkaline (caustic) substances, together with the diagnosis and treatment of ulcers.

The Shalakya-Tantram†—embraces as its object the treatment of those diseases which are restricted to the upward (lit.:—region above the clavicles) fissures or cavities of the body, such as the ears, the eyes, the cavity of the mouth, the nostrils, etc.

The Kayya-Chikitsa (General diseases,‡)—treats of diseases, which, instead of being simply

* Ap-Dhara, matter, lodged in a human organism and proving painful if it is called a Shalja.
† The name is derived from the Sanskrit term Shaliya, a probe or rod, the use and application of the instrument being primarily included within the scope of this branch of the Ayurveda.
‡ Kayya is derived from Kaya, literally signifies the body; thus, whole diseases which may gradually invade the root-principles of a living human organism are called Kayya.
restricted to any specific organ, or to any particular part of the body, affect the entire system, as Fever, Dysentery, Hæmoptysis, Insanity, Hysteria, Leprosy, unnatural discharges from the urethra, etc.

The Bhuta-Vidya (Demoniacal diseases)—lays down incantations and modes of exorcising evil spirits and making offerings to the gods, demons, Gandharvas, Yakshas, Rakshas, etc. for cures of diseases originating from their malignant influences.

The Kaumara-Bhritya Management of children)—deals with the nursing and healthy bringing up of infants, with purification and bettering of mothers’ milk, found deficient in any of its characteristic traits, and also with cures for diseases peculiar to infant life and due to the use of vitiated mother’s milk or to the influences of malignant stars and spirits.

The Agada-Tantram (Toxicology)—deals with bites from snakes, spiders and venomous worms, and their characteristic symptoms and antidotes. It has also for its object the elimination of poison whether animal, vegetable, or chemical (resulting from incompatible combinations) from the system of a man, overwhelmed with its effects.

The Rasayana-Tantram (Science of Rejuvenation)—has for its specific object the
prolongation of human life, and the invigoration of memory and the vital organs of man. It deals with recipes which enable a man to retain his manhood or youthful vigour up to a good old age, and which generally serve to make the human system invulnerable to disease and decay.

The Vajjeekarana-Tantram (Science of Aphrodisiacs)—treats of measures by which the semen of a man naturally scanty or deficient in quality becomes shorn of its defects; or is purified, if deranged by the vitiated humours of the body (such as wind, etc.); or is invigorated and increased in quantity (if pure and healthy); or acquires its healthy and normal consistence (if thinned and enfeebled by indiscretions of youth). [In short, it deals with things which increase the pleasures of youth and make a man doubly endearing to a woman].

Thus the entire science of the Ayurveda is classified into the eight preceding branches. Now tell me, which of them is to be taught and to which of you? Said the disciples:—"Instruct us all, O Lord, in the science of surgery (Shalya) and let that be the chief subject of our study." To which replied the holy Dhanvantari:—"Be it so." Then the disciples again said:—"We are all of one mind in the matter, O Lord, that Sushruta shall be our spokesman and ask
you questions conferably to the general and specified purpose. All of us will attentively hear what you will be pleased to discourse to Sushruta, [and that will save you the trouble of teaching us individually]. To which replied the venerable sage—"Be it so. Now listen, Sushruta, my dear child. The object or utility of the science which forms the subject of our present discussion, may be grouped under two distinct sub-heads such as (1) the cure of diseased persons, and (2) the preservation of health in those who are not afflicted with any sort of bodily distempers."

The etymological meaning of the term "Āyurveda" may be interpreted to denote either a science in the knowledge of which life exists, or which helps a man to enjoy a longer duration of life.

The primary position of surgery:—
[As regards time and importance among the other allied branches of the Science of Medicine]. Hear me discourse on the Science of Surgery (Shalya-Tantram) which is the oldest of all the other branches of the Science of Medicine (Āyurveda) and is further corroborated by the sciences of testimonies, viz., Perception, Inference, History and Scriptural Truths (Agamas). The primary position of this branch of the Ayurveda, (towards its time or origin), may be inferred from the fact that Surgery lends her aid materially towards the
healing up of traumatic ulcer. The second reason for such an inference may be deduced from the replacement of the severed head of Yajna. It is told that the god Rudra, severed the head of the God of Sacrifice (Yajna). Whereupon the gods approached the celestial Ashvins, and addressed them as follows:—"You* twins, O lords, who are to be the greatest of us all, connect the head of Yajna with his decapitated trunk." To them, replied the divine Ashvins:—"We shall do, O lords, as you command us to do." Then the celestials propitiated the god Indra in order that a portion of the oblations offered in the course of a sacrifice, might be allotted to those heavenly twins. The Ashvins reunited the severed head of Yajna to his body as prayed for. [Hence this branch of the Ayurveda (Shalyanga) is the oldest of all its subdivisions].

The primary importance of the Shalyam:—All hold this Tantram to be the most important of all the other branches of the Ayurveda, inasmuch as instantaneous actions can be produced with the help of such appliances as,

* Others incidental to blows and sword-cuts had to be dressed and attended to in the wars between the gods and the demons, long before the appearance of any physical or idiopathic maladies such as, fever, etc.; and certainly contributed all that was demanded of her towards the healing up of such cases. Hence this branch of the Ayurveda is the oldest of all the allied branches of the healing art.
surgical operations, external applications of alkalis, cauterisation, etc., and secondly inasmuch as it contains all that can be found in the other branches of the science of medicine as well, with the superior advantage of producing instantaneous effects by means of surgical instruments and appliances. Hence it is the highest in value of all the medical Tantras. It is eternal and a source of infinite piety, imparts fame and opens the gates of Heaven to its votaries, prolongs the duration of human existence on earth, and helps men in successfully fulfilling their missions, and earning a decent competence, in life.

**Gradual extension of the Ayurvedic Knowledge:**—Brahma was the first to inculcate the principles of the holy Ayurveda. Prajapati learned the science from him. The Ashvins learned it from Prajapati and imparted the knowledge to Indra, who has favoured me (Dhanvantari) with an entire knowledge thereof. I, for the good of mankind, am ready to impart it to those who seek it on earth.

**The King of Kasi gives a brief account of himself in verse:**—I am the supreme and original god manifest in the form of Dhanvantari. It is I who warded off death, disease and decay from the celestials. Formerly I was an inmate of the region of heaven, incarnated on earth
with the view to teach the Science of Surgery with all its allied branches of study to men.

In the present science (Āyurveda), the Purusha (self-conscious organic individual) is described as the resultant of the combination of the soul and the five primary material principles. All medical acts such as, surgical operations, administration of medicinal remedies and applications of alkaline substances, or cauterisation, etc., are restricted to the Purusha alone.*

Why is it so? The answer is, simply because the created world is composed of two distinct classes, such as the mobile and the immobile.† These two classes, in their turn, are further sub-divided for the purposes of the science of medicine into the two orders, Āgneya (hot) and Saumya (cold). Hence the world is composed of five material principles, though characterised by the twofold virtues, Āgneya (hot) and Saumya (cold).‡

* It may be questioned why they should be confined to the Purusha? Such a query may be successfully met by the statement that the Purusha alone is the receptacle of health and disease in contradistinction to the Self or Ego. * *

† The vegetable world belongs to the latter category, while animals, possessed of locomotion, belong to the former.

‡ It may be argued here, since everything in the universe is composed of the five fundamental material principles [of earth, water, fire (heat), air and sky (ether)], it is not competent to assert that the universe is possessed of the twofold attributes, Āgneya (hot or fiery) and Saumya (cold or watery), alone. But since fire (heat) or water (cold) predominates in all things in the universe in juxtaposition with the primary virtues of the
Further classification of the mobile and the immobile: The animated world may be divided into four subdivisions, such as the Svedaja born of sweat or heat and moisture i.e. abiogenous, the Andaja (egg-born or oviparous), the Udbhijja (vegetable) and the Jarayuja (placental or viviparous). The Purusha or the subjective personality (man) is the greatest of them all, because all other forms of life are made to minister to his wants on Earth.

Disease & Its Definition:—The Purusha (man) is the receptacle of any particular disease, and that which proves a source of torment or pain to him, is denominated as a disease.* There are four different types of disease such as, Traumatic or of extraneous origin (Agantuka), Bodily (Sharira), Mental (Manasa) and Natural (Svabhavika). A disease due to an extraneous blow or hurt is called Agantuka. Diseases due to irregularities in food or drink, or incidental to a deranged state of the blood, or of the bodily humours acting either singly or in concert, are called Sharira. Excessive anger, grief, fear, joy, despondency, envy, misery, pride, greed, lust, desire, malice, etc. are

other fundamental material principles, it is not improper to classify all under the head of hot or cold, a third factor being non-existent. Hence the world (jagat) is possessed of the twofold virtues, hot and cold.

* A disease may be defined as something which afflicts the Purusha (self-conscious personality), or those things or incidents which combine to afflict the Purusha are usually interpreted to denote that meaning.
included within the category of mental (Mánasa; distempers; whereas hunger, thirst, decrepitude, imbecility, death, sleep, etc. are called the natural (Svábhāvika) derangements of the body. The Mind and the Body are the seats of the aforesaid distempers according as they are restricted to either of them, or affect both of them in unison.  

Samshodhanam (Cleansing), and Samshamanam (Pacification of the deranged or agitated bodily humours giving rise to the disease, and the regimen of diet and conduct are the four factors which should be duly employed in order to successfully cope with a disease.†

Food is the principal factor which materially contributes to the strength, complexion and vitality (Ojåh) of animated beings. Food consists of six different tastes

* The Self or the Jeevåtmå of a person is above all human concerns and, as such, can never be affected by any disease.

† Cleansing (Samshodhanam) is of two kinds, viz. External and Internal. External purification consists in employing such measures as surgical operations, cauterisation of the affected part or organ, external use of alkaline preparations and medicated plasters, the internal one including such measures as exhibition of purgatives and emetics, application of intestinal enemas (Kshåpanam) and blood-letting. Diet comprises four different factors such as, food, drink, laimative, etc., which, for the purposes of the Ayurveda, are again grouped under three different heads, such as the pacifier of the deranged bodily humours (Dosha-prashamanam), therapeutical (Vyådhi-prashamanam) and health-giving (Swasta-Vrittikara). Achåtra (conduct) appertains to three different factors, such as the body, the speech, and the mental acts. The aforesaid measures, duly employed, are potent enough to combat all sorts of bodily distempers, if the special exigencies of each case are carefully taken into consideration.
(Rasa) [which cannot exist independently of the substances] in which they are inherent. These substances which are called the Oshadhis may be divided into two classes such as the mobile and the immobile. The immobile Oshadhis in their turn, admit of being grouped under four sub-heads such as, the Vanaspatis, the Vrikskas, the Virudhas and the Oshadhis proper.

Those trees which bear fruit without blossoming are called the Vanaspatis such as, the Plaksha and the Oudumvura). Those that bear both fruits and flowers are called the Vrikskas. Shrubs and creepers that trail on the ground are called Virudhas, whereas those plants which die with the ripening of their fruits, are called Oshadhis proper such as cereals.

The mobile Oshadhis or animals are divided into four classes such as the viviparous, the oviparous, the sweat-begotten, and those that are born of decomposed vegetable matter. Man and other mammals belong to the first group; birds, snakes, and reptiles belong to the second; ants, worms, etc. belong to the third; while frogs and Indragopas belong to the fourth. For medicinal purposes, bark, leaves, flowers, fruits, roots, bulbs, the expressed juice, and milky or resinous secretions of plants, etc. are obtained from the vegetable world. The

* The use of oil expressed out of drugs and seeds, as well as of their ashes or alkaline preparations are likewise indicated.
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skin, nails, wool, bloody flesh, fat, marrow, bones, are procured from the animal world.

Metals and minerals such as gold, silver, gems, and Manahshila (Realgar), as well as pearls, clay and Kapālas (bones), etc. should be included in the list of the earthy substances. *

Gale, windfall, sunshine, shade, moonshine, darkness, heat, cold, rain, day, night, fortnight, month, seasons, and solstices, etc. should be deemed as the works of eternal time, which, by virtue of their natural effects, contribute to the accumulation, augmentation, pacification or diminution of the deranged bodily humours (such as, wind, etc.).

Authoritative verses on the subject: Physicians should look upon these four factors of food, conduct, earth and time, as the accumulators, aggravators and pacifiers of the deranged bodily humours and of the diseases resulting therefrom in man. Diseases due to causes which are extraneous to the body may affect the mind or the body. When it would affect the body in the shape of any traumatic disease (such as an inflammation due to a blow or a sword cut), it should be treated medicinally like the rest of the physical maladies, while the remedy should consist in the enjoyment of

* Oxide of iron, sand, yellow sulphate of arsenic (Orpiment), salt, Girikara (ferruginous earth), Kasajana (antimony) should be regarded as appertaining to the class of earthy substances.
pleasurable sounds, touch, sights, taste or smell where the mind would be found to be the seat of the distemper.

Thus I have briefly dealt with the Purusha, Disease, Medicine, Appliances and the Specific Time. The term Purusha should be interpreted to include within its meaning the combination of its five material components, and all things resulting therefrom, such as the limbs and members of the body, as well as the skin, the flesh, the blood, the veins and the nerves, etc. The term Disease signifies all distempers incidental to the several or combined actions of the three deranged bodily humours and blood. The term Medicine signifies drugs and their virtues, tastes, potency, inherent efficacy Prabhāva and reactionary properties Vipāka. Appliances (kriyā denotes such processes as, surgical operations, injections, emulsive measures, lubrications, etc. The term Time signifies all opportune moments for medical appliances.

Authoritative verses on the subject:—The primary principle of the Science of medicine has thus been briefly stated and will be fully dealt with in the following one hundred and twenty chapters distributed among the five main sub-divisions or Sthānās of the present work. These hundred and twenty chapters will be found to be elaborately discussed according to the specific import or significance of their denominations under the sub-heads of Sutra-Sthānam
Definitive Aphorisms or Fundamental principles, Nidānam (Etiology), Shārira-Sthānam (Anatomy and Physiology), Chikitsā-Sthānam (Therapeutics) and Kalpa-Sthānam (Toxicology). Subjects other than the preceding ones will be discussed in the closing chapters of the book by way of an Appendix (Uttara-Tantram).

Authoritative verse on the subject: The man who reads this Eternal Science of Medicine (Āyurveda-Shāstram) discoursed by the self-origined Brahmā and propagated by the King of Kāśi, becomes noted for his piety, is honoured by the kings on earth, and attains to the region of Indra (the lord of the celestials) after death.

Thus ends the first chapter of the Sutra-Sthānam in the Sushruta Samhitā which deals with the origin of the Āyurveda.
CHAPTER II,

Now we shall discuss the Chapter which deals with the rites of formal initiation of a pupil into the science of Medicine (Shishyopananyaniyamadhyayam).

Such an initiation should be imparted to a student, belonging to one of the three twice-born castes such as the Brāhmaṇa, the Kṣatriya, and the Vaishya, and who should be of tender years, born of a good family, possessed of a desire to learn, strength, energy of action, contentment, character, self-control, a good retentive memory, intellect, courage, purity of mind and body, and a simple and clear comprehension, command a clear insight into the things studied, and should be found to have been further graced with the necessary qualifications of thin lips, thin teeth and thin tongue, and possessed of a straight nose, large, honest, intelligent eyes, with a benign contour of the mouth, and a contented frame of mind, being pleasant in his speech and dealings, and usually painstaking in his efforts. A man possessed of contrary attributes should not be admitted into (the sacred precincts of) medicine.

Mode of Initiation:—A Brāhmaṇa preceptor should initiate a disciple or student in the following way. —A square sand cushion or platform, measuring a cubit
in length and breadth, should be laid out on a plot of smooth, level and sacred ground under the benign influence of any auspicious phase of the moon or astral combination such as, the “Karanam,” etc. and in a direction of the compass which is held most auspicious to that end. The cushion or the platform should be plastered over with a solution of water and cow-dung; and blades of Kusha grass should be strewn over it. Then the gods, the Brāhmanas and the physicians should be worshipped with oblations of flowers, fried paddy, gems and sun-dried rice. Then having drawn straight lines across the Sthandilam so as to meet the top of the furthest side of the square, and having sprinkled them over with holy water, the preceptor should lay down a blade of Kusha grass tied up in the form of a knot, known as the Brāhmaṇa, along the side of the sacred cushion to his right, and kindle the sacred fire close to his seat. Then having soaked the twigs of the four sacrificial trees of Khadira, Palāsha, Devadāru and Vilva, or of Vata, Oudumvara, Ashvattha and Madhuka in curd, honey and clarified butter; he should perform the rite of Homa according to the rules of a Dārvi Homa ceremony. Then libations of clarified butter should be cast into the sacrificial fire with a repetition of the Mahā Vyāhriti Mantras preceded by the mystic Omkāra. After that, libations of clarified butter should be cast into the fire in honour of each of the gods and Rishis (celestial physicians) invoked.
by repeating the Svāhā Mantra, and the disciple should be made to do the same.

A Brāhmaṇa preceptor is competent to initiate a student belonging to any of the three twice-born castes. A Kṣatriya preceptor can initiate a student of the Kṣatriya or the Vaishya caste, while a Vaishya preceptor can initiate a student of his own caste alone. A Shudra student of good character and parentage may be initiated into the mysteries of the Ayurveda by omitting the Mantras enjoined to be recited on such an occasion.

Then having thrice circumambulated the sacrificial fire, and having invoked the firegod to bear testimony to the fact, the preceptor should address the initiated disciple as follows:—"Thou shalt renounce lust, anger, greed, ignorance, vanity, egotistic feelings, envy, harshness, niggardliness, falsehood, idleness, may all acts that soil the good name of a man. In proper season thou shalt pare thy nails and clip thy hair and put on the sacred cloth, dyed brownish yellow, live the life of a truthful, self-controlled anchorite and be obedient and respectful towards thy preceptor. In sleep, in rest, or while moving about—while at meals or in study, and in all acts

* The libations should be offered as follows—Svāhā (obedience) to Brahmā, Svāhā to Prajāpāti (the lord of the created beings), Svāhā to Ashvins, Svāhā to Indra, Svāhā to Dhanvantari, Svāhā to Bharadvāja, and Svāhā to Atreya.
thou shalt be guided by my directions. Thou shalt do what is pleasant and beneficial to me, otherwise thou shalt incur sin and all thy study and knowledge shall fail to bear their wished for fruit, and thou shalt gain no fame. If I, on the other hand, treat thee unjustly even with thy perfect obedience and in full conformity to the terms agreed upon, may I incur equal sin with thee, and may all my knowledge prove futile, and never have any scope of work or display. Thou shalt help with thy professional skill and knowledge, the Brāhmaṇas, thy elders, preceptors and friends, the indigent, the honest, the anchorites, the helpless and those who shall come to thee (from a distance, or those who shall live close by, as well as thy relations and kinsmen [to the best of thy knowledge and ability], and thou shalt give them medicine [without charging for it any remuneration whatever], and God will bless thee for that. Thou shalt not treat medicinally a professional hunter, a fowler, a habitual sinner, or him who has been degraded in life; and even by so doing thou shalt acquire friends, fame, piety, wealth and all wished for objects in life and thy knowledge shall gain publicity."

Prohibited periods of the study of the Ayurveda:—The day of the new moon, the eighth day of the moon’s wane, the fourteenth day of the dark fortnight, as well as the corresponding days in
the bright one, the day of the full moon, and the meetings of day and night such as (morning and evening) are occasions when the study of the Áyurveda is prohibited. Similarly, a clap of thunder heard at an improper season (months of Pousha, Phālguna and Chaitra), or a flash of lightning occurring at a time when such phenomena are naturally rare, or an evil befalling one's country, relations, or king, should be deemed as occasions prohibiting the study of the Áyurveda. Moreover, one should not read it in a cremation ground, nor while riding (an elephant, horse, or any) conveyance, nor in a battle-field, nor in a place of execution. A festival or the appearance of inauspicious omens, and the days of the fortnight usually avoided by the Brāhmanas in studying the Vedas, as well as an unclean state of the body, should be regarded as occasions prohibiting the study of the Áyurveda.

Thus ends the second chapter of the Sutrasūtra in the Sushruta Samhitā which treats of the formal initiation of a student into the Áyurveda.
Chapter III.

Now we shall discuss the chapter which deals with the classification of the Áyurveda and the order [in which the venerable Dhanvantari discoursed on them to his pupils]. **Adhyayana-Sampradāniyam.**

It has been stated before, that a hundred and twenty chapters have been distributed among the five parts or sub-divisions (of the present work) in the following order:—Forty six in the part of Definitive Aphorisms (**Sutra-Sthānam**); sixteen in the part dealing with the etiology of diseases (**Nidānam**); ten in the part explaining the Anatomy and physiology of the human body (**Shárima Sthānam**); forty in the part of Therapeutics (**Chikitsam**); and eight in the part dealing with poisons and their antidotes (**Kalpa-Sthānam**). In addition to these the **Uttara-Tantram** consists of sixty-six chapters.

**Metrical texts:** The **Sutra-Sthānam** which contains forty-six chapters, is so called because it discusses in the form of hints, arranges in the form of aphorisms and connects by links topics relating to longevity. Chapter 1 Describes the origin of the science of the Áyurveda. 2 Relates to the formal initiation of a pupil into the science of medicine. 3 Deals with the
classification and order of the study of the Ayurveda. 4 Dwells on general interpretations and explanations of subjects studied. 5 Treats of preliminary preparations for surgical operations. 6 Deals with seasons and their influence on health and drugs. 7 Treats of surgical appliances. 8 Describes surgical instruments. 9 Gives practical instructions for surgical operations. 10 Dwells on the duties of medical men preliminary to their commencing practice. 11 Pharmacy of alkalies (potential cauteries). 12 Cauteries and the rules to be observed in their use. 13 Leeches: how and which to use. 14 Blood. 15 Dwells on the study of development and non-development of the humorous constituents of the body and excrements. 16 The ceremony of piercing the lobules of the ears. 17 How to distinguish between suppurating and non-suppurating swellings. 18 Dressings and bandages of ulcers. 19 The management of patients with ulcers, etc. 20 The salutary and non-salutary effects of regimen, etc. 21 The decisive modes in the treatment of sores, etc. 22 The opening of abscesses, etc. 23 General rules to be observed in the treatment of curable and incurable (surgical) diseases. 24 The nature of diseases in general. 25 The (eight different) ways of using surgical instruments. 26 The exploration of splinters lost (deep seated) in the body. 27 The extraction of splinters. 28 How to know favourable and unfavourable terminations
in surgical diseases. 29 The favourable or unfavourable prognosis in diseases as known from messengers, omens and dreams. 30 Prognosis from the perversion of sense perception. 31 Prognosis based on the altered condition of features, etc. 32 Prognosis based on the perversion in the external appearances of the body. 33 Palliative treatment of incurable diseases. 34 The precautions to be taken (against dangers, such as poisoning of water, etc. by a medical man for the safety of a king whose army is on the march. 35 Clinical observations made by physicians. 36 Miscellaneous subjects connected with the treatment of injuries and surgical diseases. 37 The examination of the soil for the selection of vegetable products growing on it to be used as medicines. 38 Classification of drugs according to their therapeutical uses. 39 The two classes of drugs which cleanse the system [by evacuating bad humours] and drugs which pacify the irritated humours. 40 Drugs, their flavours, properties and maturity. 41 The properties of drugs specially considered. 42 Flavours. 43 The choice of emetics. 44 The choice of purgatives. 45 Liquids. 46 Food and drink.

From their investigating the (pathological) causes and symptoms of diseases, they are called Nidanam, (etiology) and are sixteen in number.
Chapter 1 Causes and symptoms of diseases caused by wind. 2 Æomorrhoids. 3 Urinary calculi. 4 Fistulae. 5 Skin diseases (Kushtha). 6 Urinary discharges. 7 Abdominal tumours and dropsy. 8 Abortion and unnatural labours. 9 Abscesses. 10 Erysipelas and Carbuncles. 11 Tumours. 12 Scrotal tumours. 13 Fractures (and dislocations). 14 Diseases of the male organ of generation caused by Shuka. 15 Minor and miscellaneous diseases. 16 Diseases of the mouth.

The great sage has devoted ten chapters to the subject of Anatomy and Physiology (Shárika-Sthánam) for medical men and contemplative saints to learn the component parts of the human body. They are:

Chapter 1 Cosmology. 2 Healthy and unhealthy condition of male and female germs. 3 Development of the fœtus. 4 Analytical description of the fœtus. 5 Component parts of the body. 6 Investigation of each vital part. 7 Description of the veins. 8 Venesection. 9 Arteries. 10 Pregnancy (child-birth and management of women in child-birth and of children).

The division of Therapeutics, (Chikitsam) includes (amongst others) the modes of treating diseases by medicines, expiatory ceremonies, propitiatory rites, and tranquillizing efforts. Forty chapters have been devoted to this division. Chapter 1 Treatment of two varieties
of ulcers. 2 Treatment of instant wounds and ulcers resulting therefrom. 3 Fractures and dislocations. 4 Diseases of wind. 5 Grievous maladies caused by wind. 6 Hæmorrhoids. 7 Urinary calculi. 8 Fistulae. 9 Skin diseases. 10 Grievous skin diseases. 11 Urethral discharges. 12 Warts, pustules and sores caused by urethral discharges. 13 Diabetes. 14 Abdominal Dropsy. 15 Abortions and unnatural labours. 16 Abscesses. 17 Erysipelas and Carbuncles. 18 Tumours. 19 Scrotal tumours and Syphilis. 20 Minor diseases. 21 Diseases of the male genital organ caused by Shuka. 22 Diseases of the mouth. 23 Swellings. 24 Prophylactic treatment against diseases in general. 25 Miscellaneous diseases. 26 Tonics for virile debility. 27 Tonics for general debility. 28 Remedies for increasing mental powers and duration of life. 29 Remedies for innate maladies. 30 Means for removing worldly distresses. 31 Treatment of diseases where oleaginous substances are useful. 32 Treatment by diaphoretics. 33 Emetics and Purgatives. 34 Treatment for mishaps from the injudicious use of emetics and purgatives. 35 Nozzles and pipes, and enema apparatus. 36 Mishaps from injudicious use of enemas. 37 Enemas and injections, Clysters. 39 Treatment of complications in general. 40 Inhalation, fumigations, gargarismata, etc.

From their proposing remedies against poisons, they are called Kalpas, and are eight in number.
Chapter 1 Preservation of food. 2 Vegetable and inorganic poisons. 3 Poisons from organic creation. 4 Snake poison. 5 Treatment of snake-bites. 6 Rab-bite and its treatment. 7 Emitting the sound of kettle-drums (for the elimination of poison). 8 Antidotes for and treatment of venomous insect-stings.

Thus a synopsis of one hundred and twenty chapters has been given. Now here follows the supplementary division called after its own name (Uttara-Tantram).

The Chapter on Sympathetic diseases is placed first, as this division has for its main object the description of such diseases and their treatment. 2 Diseases of the joinings (margin of the eyelids) of the eyeball. 3 Diseases of the eyelids. 4 The Sclerotic of the eye. 5 The Cornea. 6. The eyeball, as a whole. 7 Diseases of the pupil. 8 Treatment of eye diseases. 9 Prophylactic and curative treatment of wind affections of the eye and ophthalmia. 10 Treatment of Bile affections of the eye and ophthalmia. 11 Treatment of Phlegm affections of the eye and ophthalmia. 12 Treatment of Blood affections of the eye. 13 Treatment of affections in which scarification is needed. 14 Treatment in which paracentesis is needed. 15 Treatment by incisions. 16 Entropium and ectropium. 17 Treatment of the diseases of the pupil and vision. 18 General rules regarding ophthalmic medicine and surgery. 19 Treatment of traumatic affections of the eyeballs. 20 General
signs and symptoms of ear diseases. 21 Treatment of ear diseases. 22 Signs and symptoms of nose affections. 23 Treatment of nose affections. 24 Treatment of nasal catarrh. 25 Signs and symptoms of cranial diseases. 26 Treatment of cranial affections. These (twenty-six chapters) form the end of the eight divisions of the Āyurveda, called Shalākyam.

Chapter 27 Signs of diseases caused by the Navagrahas. 28 Prophylactic treatment of diseases caused by Skandha. 29 Treatment of convulsions caused by Skandha. 30 Treatment of Sakuni affections. 31 Treatment of Revati affections. 32 Treatment of Putanā. 33 Treatment of Andha Putanā. 34 Treatment of Sheeta-Putanā. 35 Treatment of Mukhamandikā. 36 Treatment of Naigamesha. 37 Origin of the nine Grahas. 38 Diseases of the Vagina (and internal female genital organs). These twelve chapters together with what is included in (the last chapter of the division on anatomy, form the fifth division of the Āyurveda) called Kaumāra-Tantram.

Chapter 39 Fevers and their treatment. 40 Enteric Catarrh and its treatment. 41 Consumption and its treatment. 42 Diseases of the abdominal glands and their treatment. 43 Diseases of the heart (Angina Pectoris) etc. 44 Anaemia and allied diseases and their treatment. 45 Haemorrhagic affections and their treatment. 46 Apoplectic diseases and their treatment.
47 Disease from excessive drinking and their treatment. 48 Symptoms, causes, and treatment of excessive thirst. 49 Causes, symptoms and treatment of vomiting. 50 Causes, symptoms and treatment of Hiccough. 51 Causes, symptoms, and treatment of Dyspnœa. 52 Causes, symptoms and treatment of cough. 53 Aphonia. 54 Entozoa. 55 Causes, symptoms and treatment of retention of excrements. 56 Causes, symptoms and treatment of Dyspeptic and Choleric diarrhoea. 57 Aperexia and its treatment. 58 Causes, symptoms and treatment of cystic and urethral affections. 59 Causes and treatment of urine diseases. These (twenty one chapters, describe the remaining diseases of Kāyachikitsā; (which forms the third division of the Āyurveda).

Chapter 60 Causes, symptoms and treatment of diseases caused by superhuman powers. 61 Causes symptoms and treatment of Epilepsy. 62 Mania. These (three chapters form the Bhuta-Vidyā (the fourth division of the Āyurveda).

Chapter 63 on the different varieties of flavour. 64 General rules for the preservation of health. 65 Deductions and inductions drawn from the texts and study of the Āyurveda. 66 On the varieties of morbid elements (humours). These four chapters, are to be understood as being supplementary, and as ornaments to this division.
This last division from its superiority over the others, the great sages have called the Excellent (Uttaram). From the information it gives on varied subjects, it is called the best, the permanent and the last.

In this division which is called the last, there are included four divisions of the Ayurveda; viz., Shalakyam, (treatment of diseases of parts situated above the clavicles), 2 Kaumárabhrityam (management of children), 3 Kayachikitsá (general diseases) and 4 Bhuta-Vidya.

The division (named) Vájeekaranam (on the strengthening of virile power, etc.) and Rasáyanam (remedies preserving vigor, etc.) have been included in the (fourth) division of this treatise called Chikitsá.

The doctrine of antidotes comes under the head of Kalpa of this treatise and Shalyam surgery is incidentally treated throughout the book. Thus these are the eight limbs of divisions of the Science of Medicine proclaimed to the world by the original god. Those who study them with due care and make use of the knowledge with caution, shall preserve the lives of men on this earth. It is imperatively necessary that the book should be read; and after having read it one should attend to the practice (of the science). The physician who has learnt these both, is fit to be honoured by kings.
Authoritative verses on the subject:—A physician, well versed in the principles of the science of medicine (Ayurveda), but unskilful in his art through want of practice, loses his wit at the bedside of his patient, just as a coward is at his wit's end to determine what to do when for the first time he finds himself in the ranks of a contending army. On the other hand a physician, experienced in his art but deficient in the knowledge of the Ayurveda, is condemned by all good men as a quack, and deserves capital punishment at the hands of the king. Both these classes of physicians are not to be trusted, because they are inexpert and half educated. Such men are incapable of discharging the duties of their vocation, just as a one-winged bird is incapable of taking flight in the air. Even a panacea or a medicine of ambrosial virtues administered by an unpractised or ignorant physician, will prove positively baneful as a draught of poison, or a blow with a weapon, or a thunderbolt. A physician, ignorant of the science and art of surgery and emollient measures Snehā-karma, etc. is but a killer of men out of cupidity, and who is allowed to carry on his nefarious trade only through the inadvertence of the king. A physician well versed in the principles of surgery, and experienced in the practice of medicine, is alone capable of curing distempers, just as only a two-wheeled cart can be of service in a field of battle.
Now hear me, O child, describe the mode of studying (the present science of the Áyurveda). The pupil having worshipped and recited his daily prayers should calmly sit near his preceptor, pure in body and mind, who should teach him a full Shloka or couplet of the Áyurveda, or a half or a quarter part thereof, adapted to his intellectual capacity. Then he should make a full and elaborate paraphrase of the recited couplet or any part thereof, and ask his pupils individually to do the same. When the pupils have paraphrased the same to the satisfaction of the preceptor, he should again recite the same stanza or couplet. The passages or shlokas should not be recited too hastily, nor drawled out in a timid or faltering voice, nor with a nasal intonation. The voice should be neither too loud, nor too weak, but each sound should be clearly and distinctly uttered, and the lips, the eyes, the eyebrows, and the hands, etc., should not be lifted or moved to keep time with the recitation. No one should be allowed to pass between the pupil and the preceptor at the time of study.

**Authoritative verses on the subject:**—A pupil who is pure, obedient to his preceptor, applies himself steadily to his work, and abandons laziness and excessive sleep, will arrive at the end of the science (he has been studying).

A student or a pupil, having finished the course of
his studies, would do well to attend to the cultivation of fine speech and constant practice in the art he has learnt, and make unremitting efforts towards the attainment of perfection (in the art).

Thus ends the third Chapter of the Sutradhāna in the Sushruta Samhita which deals with the Classification of the Ayurveda.
CHAPTER IV.

Now we shall discuss the Chapter which deals with General Explanations (Prabhâsaniyamadhyayam).

The endeavours of a man who has studied the entire Ayurveda (shâstra) but fails to make a clear exposition of the same, are vain like the efforts of an ass that carries a load of sandal wood (without ever being able to enjoy its pleasing scent).

Authoritative verse on the subject:—A foolish person who has gone through a large number of books without gaining any real insight into the knowledge propounded therein, is like an ass laden with logs of sandal-wood, that labours under the weight which it carries without being able to appreciate its virtue.

Hence the preceptor will clearly explain each shloka or a half or a quarter part thereof as contained in the present work, divided into a hundred and twenty chapters (as well as in the concluding portion of the Uttara-Tantram appended to it); and the student or the disciple shall attentively hear everything explained or discoursed on by the preceptor. Since it is extremely difficult to classify drugs, taste, virtue (Guna), potency (Virya), transformatory or reactionary effect
(Vipáka), fundamental bodily principles. (Dhátu) bodily excrement (Mala), hollow viscera (Áshaya), vital parts (Márma), veins (Sírá), nerves (Sáyu), joints (Sandhi), bones (Asthi) and the fecundating principles of semen and ovum, and to extricate any foreign matter lodged in an ulcer), or to ascertain the nature and position of ulcers or fractures, or the palliative, curable or incurable nature of a disease, etc.; and since these subjects perplex even the profoundest intellects though a thousand times discussed and pondered over, not to speak of men of comparatively smaller intellectual capacity, hence it is imperatively obligatory on a pupil or a disciple to attentively hear the exposition of each shloka, or a half or a quarter part thereof, made by the preceptor (while studying the science of medicine).

For explanations of truths and principles quoted from other branches of (science or philosophy) and incidentally discussed in the present work, the student is referred to expositions made by the masters (of those sciences or philosophies), since it is impossible to deal with all branches of science, etc. in a single book (and within so short a compass).

Authoritative verses on the subject:—By the study of a single Shástra, a man can never catch the true import of this (Science of Medicine). Therefore a physician should study as many allied branches of (science or philosophy) as possible. The
physician who studies the Science of Medicine from the lips of his preceptor, and practises medicine after having acquired experience in his art by constant practice, is the true physician, while any other man dabbling in the art, should be looked upon as an impostor.

The Shalya-Tantras (surgical works) written or propagated by Upadhenava, Aurabhra, Sushruta and Paushkalavata, are the bases of the works or Tantras written by others (Karavirya, Gopura-rakshita, etc.).

Thus ends the fourth chapter of the Sutras thanam in the Sushruta Samhita which deals with General Explanations.
CHAPTER V.

Now we shall discuss the Chapter which treats of Preliminary measures in connection with the curative remedies of a disease.* (Agropaharaniyam-adhyayam).

The entire course of medical treatment in connection with a disease may be grouped under three subheads, as the Preliminary measures (Purva-karma); the Principal therapeutical or surgical appliances (Pradhána-karma); and the After-measures (Paschát-karma). These measures will be discussed under the head of each disease as we shall have occasion to deal with them. As the present treatise principally

* Several authorities hold that acts such as fasting, administration of purgatives, etc., should be included within the preliminary measures; application of absorbent (Páchana) or healing medicinal agents, within the second or the principal measures; and the administration of tonics or restoratives within the third or the after-measure group. Others, on the contrary, lay down that measures adopted for the absorption, lubrication (pacification by the application of oily substances) or elimination of the deranged bodily humours by sweating should be grouped under the first subhead (Purva-karma), the administration of active purgatives, emetics, etc., under the second (Pradhána-karma) and the giving of rice meal, etc. to the patient under the (Paschát-karma) last; while according to others the active medicinal agents employed to cope with the deranged humours in the incalculative stage of a bodily disease till the appearance of its first characteristic symptoms, should be denominated as the Preliminary measure; measures employed for the subjugation of a disease in its patent or fully developed stage as the Pradhána-karma, and measures employed to guard against the recrudescence of a disease and for the restoration of health in a patient is the sequel treatment or the Paschát-karma.
treats of surgical acts or operations, we shall discourse on them and their accessories at the outset.

Surgical acts or operations are divided into eight different kinds such as Incising (Chhedya), Excising (Bhedya), Scraping (Lekhya), Puncturing (Yedhya), Searching or probing (Kshya), Extracting (Aharya), Secreting fluids (Visraya) and Suturing (Seevya). A surgeon (Vaidya) called upon to perform any (of the eight preceding kinds) of operations, must first equip himself with such accessories as surgical appliances and instruments, alkali, fire, probe or director (Shalaka), horns, leeches, gourd (Alavu), Janyaoushta (a kind of pencil shaped rod made of slate with its top-end cut into the shape of a Jamboline fruit), cotton, lint, thread, leaves, tow (Patta), honey, clarified butter, lard, milk, oil, Tarpanam (powdered wheat soaked in water), decoctions Kashaya, medicated plasters, paste (Kalka), fan, cold water, hot water, and cauldrons, etc., and moreover he shall secure the services of devoted and strong-nerved attendants.

Then under the auspices of blissful astral combinations, etc., and having propitiated the Brahmanas and the physicians, with gifts of curd, sun-dried rice, cordials and gems, etc., and having made offerings to the gods and uttered benediction, etc., the surgeon should commence his work. The patient should be given light food (before the act), and made to sit with
his face turned towards the east. His limbs should be carefully fastened so as to guard against their least movement during the continuance of the operation. Then the surgeon, sitting with his face towards the west, and carefully avoiding the vital parts (Marmas), Veins, nerves (Snayus), joints, bones and arteries of the patient, should insert the knife into the affected part along the proper direction till the suppurated part would be reached and swiftly draw it out. In case of extended suppuration, the part opened (length of incision) should be made to measure two or three finger's widths in length. An incision (Vrana) which is wide, extended, equally and evenly divided, should be deemed the best.

Authoritative verses on the subject:—An incision which is wide, extended, well divided, does not involve any vital part, etc. of the patient, and is well-matured as regards time, is the best of its kind*. Courage, light handedness, non-shaking, non-sweating, sharp instruments, self confidence and self command are what should be possessed by a surgeon engaged in opening a boil or an abscess.

Two or three incisions should be made if a single opening does not seem large enough for the purpose.

* Certain commentators interpret the couplet as follows: A boil or an abscess which is wide, extended, well defined in its shape, equally suppurated in all its parts and does not involve any vital part of the body is the fittest thing for a surgeon's knife—Tr.
Authoritative verse on the subject:—The knife (lancet) should be freely used wherever a fissure, sinus, or a cavity would appear in a boil, so as to ensure a complete flowing out of the pus accumulated in it.

Lateral (tirjak) incisions should be made in regions of the eye-brows, temple, forehead, cheeks, eyelids, lower lip, gums, armpits, loins, belly and the groins.

An incision made in the region of the hand or root should be made to resemble the disc of the moon, while those about the anus and the penis should be made semi-circular (half-moon) in shape.

Authoritative verse on the subject:—An incision in any of the abovesaid regions not made as directed, may give rise to extreme pain, prolonged granulation (healing) and condylomatous growths in and about the ulcer, owing to an inadvertent cutting of the local veins, or nerves. In a case of artificial or instrumental parturition, in ascites, in piles, in stone in the bladder, in fistula in ano, and in diseases affecting the cavity of the mouth, the patient operated on should be kept on an empty stomach (before the act).

Then sprays of cold water should be dashed over the face and the eyes of the patient to relieve the pain and the sense of exhaustion incidental to the operation. The sides of the incision should be firmly pressed (so as to ensure a good outflow of the accumulated pus) and
the margins of the wound should be rubbed with the fingers (so that they may have a level surface and be of uniform structure throughout). Then the wound should be washed with an astringent decoction (of Nīmba, Tripakhā, etc.) which should be wiped and made thoroughly dry with a piece of clean linen. Then a lint plug (Varti) plastered over with the (paste) Kalka of sesamum, honey and clarified butter, and soaked in disinfectant (lit.—purifying medicines such as Ajagandha, etc.) should be inserted deep into the cavity of the wound. After that, a poultice made of officinal substances should be applied over it and the whole should be bound up with thick layers of tow (Kavalikās—such as the leaves and bark of the Indian figtree etc.) which are neither too irritant nor too cooling in their effect; and finally scraps of clean linen should be wound round them. The limb, [or the affected part] should be subsequently fumigated with the fumes of pain-killing (anodyne) substances and also with those of drugs which are supposed to ward off all malignant spirits (from the bedside of the patient).*

Then it should be fumigated with the drugs, known as Guggulu, Vacha, white mustard, Saindhava and the leaves of the Nimva tree, soaked in clarified butter. The residue of the clarified butter [dripped

* Even the bedsheets, etc., of the patient should be fumigated as above. This foreshadows the germ theory of the modern day.—Tr.
down and collected from the fumigating compound described above], should be rubbed over the region of the heart and other vital parts of the patient, and the floor of the chamber should be washed and sprinkled over with drops of water previously kept in a (new) pitcher for the purpose. The rites of protection from the influences of baneful spirits, should then be performed by reciting the Mantra which runs as follows:—"I am about to practise the prophylactic incantation for guarding thy person against the malignant influences of Rakshas and conjured demonesses, and may the god Brahmadeva be graciously pleased to approve of its performance. May the Gods and deities and ministers of grace disperse and confound the hosts of wrathful Nāgas (celestial serpents), Pishāchas, Gandharvas and Pitris that might be maliciously disposed to strike thee in thy sickly confinement. May the spirits, which stir abroad in the night and roam about in the sky and on earth, defend thy person in recognition of thy fervent devotion to them. May the concourse of Brahma-begotten sages such as, Sanaka, etc., the saintly and canonised kings (Rajarshis) in heaven and the sacred mounts, streams and oceans of the earth protect thee from evil. May the fire-god guard thy tongue; the wind-god protect thy breath; and the Moon-god, Parjanya, Vidyut (lightning) and the spirit of the clouds preserve the healthy coursings of those vital winds in thy organism which are respectively known as Vyāna,
Apaña, Udāna and Samāna. **May Indra, the presiding deity of all physical energies, keep thy bodily strength immaculate. May Manu defend the two side tendons at the nape of thy neck, as well as thy faculty of intellect; the Gandharvas, thy faculty of desire; Indra, thy fortitude; Varuna, thy faculty of cognition; the Ocean, thy region of umbilicus; the Sun-god, thy eyes; the Quarters of the Heaven, thy ears; the Moon-god, thy mind; the Stars, thy complexion; the Night, thy shadow; the Water, thy vigour; the Oshadhis, thy hair; Infinite Ether, the space which is imprisoned in thy body; Vasundharā, thy body; Vaishvānarā, thy head; Vishnu, thy moral courage; Purushottama (the foremost of beings), thy energy of action (dynamical action of purposes); Brahmā, thy self; and Dhruva (immutable being), thy eyebrows. May these divinities, which perpetually reside in thy body, ensure thy safe continuance in being and may thou enjoy a long life through their grace. May the gods such as, Brahmā, etc., confer blessings on thy head, May the Sun, the Moon, the twin sages Nārada and Parvata, the fire-god, the wind, and the other celestial helpmates of Indra, bring thee good. May the prophylaxis devised by Brahmā keep thee from evil. May thou be spared to witness the return of many a long and happy year on earth. May such abnormal physical phenomena as, drought, deluge, excessive downpour of rain, and excessive germination (or wholesale
extinction of such vermin as) rats, mosquitoes, flies which invariably portend evil and mortality in a community, as well as bloody feuds among kings, abate and cease. May thou be relieved of all pain and misery. We close the prayer with a "Svāhā" (obeisance). The present Vedic mantra exercises an occult power in relieving ailments which are due to the malignant influences of conjured up she-devils. May thou acquire a long life through the protective energy of the prophylactic prayer (lit:—incantation) now read by me.

Then having protected the body of the patient with the recitation of the above Vedic Mantra, the surgeon shall see his patient taken to his own chamber, and prescribe the proper course of medicine and diet according to the exigencies of each case. The old bandage should be loosened on the third day of the operation, when the wound or the ulcer should be washed, and a fresh bandage should be wound round as before. The bandage should not be loosened on the day following the lancing of a boil, as such a measure might give rise to a sort of excruciating pain and formation of knots in the wound and retard the process of granulation (healing). On the third day, the surgeon (Vaidya) should prescribe the proper medicated plaster, diet, etc. after fully considering the strength of the patient, the nature of the disease, and the then prevailing season of the year. A wound should not be tried to be healed up, as long as
the least morbid matter, or pus remains in its inside, as it would lead to the formation of fresh cavities in the surrounding healthy tissues, and ultimately to a recrudescence of the disease.

**The authoritative verses on the subject:** Accordingly a wound or an ulcer should be made to heal up after the perfect purification of both of its inside and exterior has been fully brought about. Even after the healing of the wound the patient should studiously avoid all sexual connections, indigestive viands, fatiguing physical exercises and indulgence in emotions of grief or fright, or in ecstasies of joy, until the cicatrix has acquired enough toughness. The dressings and bandages should be untied and changed every third day in winter, in spring and in the season of Hemanta, and on each alternate day in summer and in the rains. But a physician (surgeon) should not be guided by these rules in cases where there would be reasons to apprehend imminent danger, and in such cases the wound or the ulcer, like a house in flames, should be checked as speedily as possible.

Clarified butter boiled with Yashtifadhu, and applied tepid to a wound, incidental to a surgical operation, is sure to alleviate the excruciating pain that is usually experienced in such an affected part.

Thus ends the fifth chapter of the Sutrassthānam in the Sushruta Samhitā which treats of Preliminary measures.
CHAPTER VI.

Now we shall discuss the Chapter which treats of the characteristic features of the different seasons of the year and their influence on health and drugs (Ritucharyadhyāyam).

The Eternal Time is without origin, middle, or end, self-begotten, and the lord of all attributes. Contrariety or non-contrariety of the natural attributes of drugs or substances endued with characteristic tastes, such as sweet, etc., are brought about by time; and time is the principal factor that controls the births or deaths of beings.

Etymology of the term Kāla (time):—
The Kāla or the Eternal time is so called from the fact of its not suffering even one of its own minutest particles or subdivisions (Kalā) to perish, though perpetually moving, and in constant motion in itself; or it derives its epithet from the fundamental quality of its destroying all beings and laying their dead remains in heaps in succession. Some assert that the name is due to the fact that time blends (kalanam) all beings with misery or happiness according to their respective acts, or to its leading all beings to destruction (kāla).

The Sun-god, by his peculiar motions, divides eternal time which is measured by years (Samvatsaras)
into (increasingly progressive but smaller subdivisions) such as, Nimeshas (l|:—time taken in closing the eyelids), Kāshthaśas, Kalās, Muhurtas, days and nights, fortnights, months, seasons, solstices, years and Yugas.

Time taken in articulating any of the short vowels (such as ‘A. etc.), is called an Akshi-Nimesha. Fifteen Akshi-Nimeshas make one Kāshthaśa. Thirty Kāshthaśas make one Muhurta. Thirty Muhurtas make one day and night. Fifteen days and nights make one fortnight. A fortnight is either dark or bright. Two fortnights make one month. The twelve months such as, Māgha, etc. are divided into six seasons such as, Winter, Spring, Summer, Rains, Autumn and Hemanta, each consisting of two months.

The two months known as Tapas and Tapasya (Māgha and Phālguna) constitute the season of winter. Spring consists of two months called Madhu and Mādhava (Chaitra and Vaishāka). Summer is marked by two months known as Shuchi and Shukra (Jaiṣṭha and Āśādha). The rains or the rainy season is marked by two months called Nabhas and Nabhasya ( Shrāvana and Bhādra). The two months known as Isha and Urja (Āśvina and Kārtika) constitute what is called the season of Autumn. Hemanta is marked by two months called Sahas and Sahasya (Agrahāyana and Pousha). These six seasons are respectively characterised by cold, heat, rains, etc.
Chap. VI. ] SUTRASHTANAM.

The two Ayanams are ushered in by the sun and the moon changing their respective courses in the heavens (passing over the tropics of Cancer and Capricorn) as the measurers of time. The rains, autumn and Hemanta follow one another in succession when the sun is over the Tropic of Capricorn or is in the Winter Solstice (Dakshináyanam) and the moon gains in strength in this part of the year. Rasas (Serum or sap) possessed of acid, saline and sweet tastes, grow strong and become dominant when the sun is over the Tropic of Capricorn (Dakshináyanam) and all beings gain in strength and energy more and more. Winter, spring and summer mark the passing of the sun over the Summer Solstice (Uttaráyanam). The sun grows stronger in heat and light, and saps (rasas) of bitter, pungent and sour tastes increase in intensity, and all animals gradually begin to lose strength and energy.

Authoritative verses on the subject:—The moon imparts the moisture and humidity to the earth which is soaked up by the sun in his daily course, while the wind in conjunction with the sun and the moon, contributes towards the preservation of animal life. The successive change of the two solstices marks a year.

Five such complete years count as a Yuga. The subdivisions of eternal time from the minutest Nimesha to a complete Yuga, are constantly revolving like a wheel,
and this constant or perpetual revolution is called the wheel or cycle \( \frac{1}{2} \) time (Kála-Cháakra) by certain authorities.

The six seasons such as, the Rains, etc., have been again adverted to in this chapter for the purpose of fully describing the accumulation, excitation, aggravation and pacification of the bodily humours, such as, wind, etc. According to some, the rainy season consists of two months known as Bhádra and Áshvina; Autumn consists of the two months of Kártika and Márghashirshya; Hemanta consists of the two months of Pousha and Mágha; spring consists of the two months of Phálguna and Chaitra; summer, of Vaishákha and Jaistha; and Právrit, of Áshádha and Shravana.

Oshadhí is, Medical plants and cereals, sprout during the rains and are enfeebled in their properties. Water becomes muddy or turbid and the earth is covered over with fresh deposits of washed off or silted mud. The sky becomes overcast with clouds, and the wind, charged with an excess of humidity, dulls the appetite and organisms of beings. Hence the food of beings which principally consists of tender and new-grown vegetables of feeble potency, considerably vitiated by the turbid water partaken of as drink during the season, proves acid in its digestive reaction, and germinates excessive bile in the human system. In autumn the sky becomes cloudless, the mire is dried
up, and the bile originated and accumulated during the rains, is liquefied by the rays of the sun and gives rise to bilious diseases.*

Plants and vegetables (Oshadhis) that grow or sprout during the rainy season, are matured in course of time and ripen in their virtues and potency in the season of Hemanta. The water becomes clear, cool and heavy in this season. The sun’s rays become feeble and mild; and the winds moistened with frost and snow, make the human system a little numb and heavy. Hence water and vegetables partaken of in Hemanta are divested of their properties of acid reaction after being assimilated in the human system, but they give rise to an accumulation of phlegm in the body owing to their heaviness, sliminess, and cooling and oily character. In spring, the phlegm thus accumulated in the body is liquefied and ushers in diseases due to a deranged state of that bodily humour.†

The said plants and vegetables, in their turn, lose their sap, moisture and nutritive element in summer, and become dry and extremely light. In the same manner water becomes drought-making [produces a state of parchedness in the organism—Ruksha] in its virtue, and considerably loses its natural coolness and

* This should be regarded as the excited, aggravated or agitated state of bile (Pitta) in the parlance of Ayurveda.
† This is called the excited or agitated state of phlegm (Kapha).
nutritive properties. The sun's rays dry up the natural moisture of the human system, and accordingly water and vegetables largely partaken of in summer, give rise to an accumulation of wind in the system owing to their lightness, dryness, or expansive and drought-making properties. Subsequently wind thus accumulated in the summer, is agitated by the rains and cold winds in the forepart of the rainy season (Právriti), when the ground is flooded with water and thus gives rise to diseases which are incidental to a deranged state of the bodily wind.

The fundamental bodily humours such as, wind, bile, etc. augmented and accumulated during the rains, Hemanta and summer, should be checked as soon as they become aggravated (manifest themselves) in autumn, spring, or in the forepart of the rainy season (Právriti).

Diseases which owe their origin to a deranged state of bile, phlegm and wind, are respectively ameliorated in Hemanta, summer, and autumn by natural causes, [such as the variations of atmospheric or earthly temperature, rainfall, etc.]. Thus far we have discussed the accumulation, excitation and pacification or alleviation of the deranged bodily humours.

Likewise the features, which specifically mark the different seasons of the year are observed to

1 This is called the excited state of wind (Vayu).
characterise the different parts of a complete day and night, [or in other words] traits peculiar to spring time exhibit themselves in the morning; the noon is marked by all the characteristics of summer; the evening by those of the rainy season; the midnight by those of autumn; and the hours before dawn by those of Hemanta. And similarly, like the seasons of the year, the different parts of the day and night are marked by variations of heat, cold, etc. [or in other words] the deranged bodily humours such as wind, bile, etc. naturally and spontaneously accumulate, aggravate, or subside during the different parts of the day as they do in the different seasons of the year [represented by those parts of the day and night as stated above].

Water and vegetables retain their natural properties when the seasons are natural, and do not exhibit contrary features, and they then tend to increase the appetite, vitality, strength, and power of the human system. Contrary or unnatural seasons are but the consequences of sin committed by a whole community and portend the workings of a malign destiny. A season, exhibiting unnatural or contrary features, affects or reverses the natural properties of water and vegetables peculiar to it, which, drunk or partaken of, cause dreadful epidemics in the country. The best safeguard lies in not using such defiled water and vegetables when an epidemic breaks out in the country.
Sometimes a town or a city is depopulated by a curse, anger, sin, or by a monster or a demoness conjured up by a spell or incantation. Sometimes the pollens of poisonous flowers or grasses, etc., wafted by the winds, invade a town or a village, and produce a sort of epidemic cough, asthma, catarrh, or fever, irrespective of all constitutional peculiarities or deranged bodily humours agitated thereby. Towns and villages are known to have been depopulated through malignant astral influences, or through houses, wives*, beds, seats, carriages, riding animals, gems and precious stones assuming inauspicious features.

**Prophylactic measures:**—In such cases migration to a healthy or unaffected locality, performances of rites of pacification and atonement, (wearing of prophylactic gems and drugs), recitations of mantras, libations of clarified butter cast into the sacrificial fire, offerings to the gods, celebration of sacrificial ceremonies, obeisance with clasped palms to the gods, practice of penances, self-control and charity, kindness, spiritual initiation, obedience to one’s elders and preceptors, and devotion to the gods and the Brāhmanas, and observance of such like rules of conduct may prove beneficial to the affected community.

* Marriages with girls of prohibited description have been known as well to have ushered in an epidemic which devastated a whole town or a country.
The characteristic features of the seasons which do not exhibit unnatural traits (Metrical texts) :—Cold winds from the north blow in the season of Hemanta. The quarters of the sky are enveloped in smoke and assume a dusky aspect. The sun is hid in the frost; and lakes and pools are frozen or lie covered over with flakes, or thin layers of ice. Crows, rhinoceroses, buffaloes, lambs and elephants become excited and sprightly in this part of the year; and the Lodhra, Priyangu, and Punnaga trees begin to blossom.

Winter exhibits the same features as above, only in a greater degree of intensity; and the quarters of the sky are agitated by strong gales of wind and showers of rain.

In spring, when the summits of the mount Malaya are besmeared red with the moist foot-prints of the brides of the Siddhas and the Vidyadharas, and are perfumed in contact with the sweet-scented sandal forests, the lively south-wind is roused up from his lair and winnows gladness to damsels burning with desires, and kindles up the flame of love and appeases the amorous anger of the beloved pairs by turning their fancies to themes of love. The quarters of the sky are cleared up and look joyful. The woods are decked with the full-blown flowers of the Kinshuka, lotus,
Vakula, mango and Ashoka trees. The bee hums and the notes of the Cuckoo are heard to reverberate through the skies. The south wind fans this king of the seasons, and the forests are hung with the festoons of tender and sprouting leaves in his honour.

The sun's rays become stronger and more intense in summer. Unhealthy winds blow from the south-east. The earth is heated; the rivers run narrow and shallow in their beds; the quarters of the sky glare with a blazing light, the birds Chakravakas with their mates roam about in quest of cool ponds and reservoirs of water; herds of deer are tormented and overwhelmed with thirst; trees, plants and creepers are scorched by the intense heat, and withered leaves drop off from the trees which alone serve to make the identification of their parents possible.

In the forepart of the rainy season (Prāvirī, packs of detached clouds, spangled with lightning and driven before the gales of the west-wind, come thundering over and envelop the skies. The Earth is robed in green with luxurious growth of corn, enlivened, here and there by the dark crimson of the cochineal insects (Indragopa), and Kadampa, Nipa, Kutaja, and the Ketaki trees begin to flower.

During the rainy season, the rivers overflow their banks, tumbling down the trees which grow on them. Ponds and lakes are decked with the full-blown Kumud
and Nilotpala flowers. The earth is covered with profuse vegetation. All distinction between dry lands and reservoirs of water becomes impossible, and the sun and the planets are enveloped in dark clouds that shower torrents of rain but do not roar.

In autumn the sun's rays assume a mellow golden tint. Masses of white clouds are seen to sail the dark deep blue of heaven. Ponds are decked with the full blown lotus flowers, agitated by the wings of the diving swans. The high grounds become dry, while the lowlands still retain their muddy character. The level plains are covered with shrubs and undergrowths, and plants and trees such as, Vána, Saptáhva, Vadhuka, Kásha and Asana, flower in abundance.

The bodily humours such as wind, etc. are disturbed and aggravated by the contrariety, excess or variations in the characteristic features of the seasons. Hence it is prudent to check the deranged phlegm in spring, to conquer the deranged bile in autumn, and to subdue the deranged bodily wind in the rains, before they develop themselves in any patent or manifest bodily ailment.

Thus ends the sixth chapter of the Sutrasthānam in the Sushruta Samhitā which treats of the characteristic features of the seasons and their influence on health and drugs.
CHAPTER VII.

Now we shall discuss the Chapter which treats of Surgical Appliances, their Uses and Construction. (Yantra-Vidhimadhyayam).

Surgical instruments number one hundred and one * in all, of which the hand is the most important, inasmuch as (all of them depend on the hand for their principal auxiliary) and as none of them can be handled without it; and further because all surgical operations pre-eminently require its co-operation. Any foreign or extraneous substance, which finds a lodgment in the human system and becomes painful to the body and the mind alike, is called a Shalyam; and surgical instruments are the means of extracting it (from its seat or place where it is embedded).

(Surgical Appliances may be divided into six different groups or types, such as the Svastika, the Sandansha, the Tála, the Nádi Yantras, and the Shalákás, besides those that are called the minor or accessory appliances (Upa-yantras).

The Svastika instruments (forceps) in their turn, are divided into twenty-four sub-classes; the Sandansha instruments (tongs) into two; the Tála Yantras

* According to certain authorities hundred is here indefinitely used for a large number.
into two; the Nádi-Yantras (tubular) into twenty; and the Shalákás (bougies) into twenty-eight; while the Upa-yantras admit of being divided into twenty-five different types. These instruments are all made of iron which may be substituted for any other similar or suitable substance where iron would be unavailable.

The mouths of these appliances are usually made to resemble those of birds and beasts, and hence they should be made to resemble the mouths of some particular animal in shape, or otherwise, according to the advice of old and experienced physicians (surgeons), or according to the directions as laid down in the Shástras of Medical books of recognised authority, or according to the exigencies of the case, or after the shape and structure of other appliances used on similar occasions.

**Metrical texts:** Appliances should be made neither too large nor too small, and their mouths or edges should be made sharp and keen. They should be made with a special eye as to strength and steadiness, and they should be provided with convenient handles.

Appliances of the Śvastika class should be made to measure eighteen fingers in length; and their mouths should be made to resemble those of lions, tigers, wolves, hyenas, bears, cats, jackals, deer, Ervárukás—a species of deer, crows, cormorants,
Kururas (a species of bird), Hásas (a species of sparrow), vultures, falcons, owls, kites, herons, Bhringarajas (a species of bird), Anjalikarnas, Avabhanjanas, Nandinukkanas, and such like beasts and birds. The two blades or halves of a Svastika should be welded together by means of a bolt resembling a Masura pulse lentil in size, and the handles should be turned inward in the shape of a mace, or an Ankusha. Appliances of this type should be used in extracting any thorn or foreign matter which may have entered into the bones.

Sandanshas tongs are divided into two classes as they are soldered together with or without a bolt. They should be made to measure sixteen fingers in length, and should be used to withdraw any thorn-like substance from below the skin, flesh, veins or nerves.

The Tála Yantras which measure twelve fingers in length, may be divided into two classes as the single Tála and the double Tála. The former resemble the scales of fish in shape, while the latter, according to certain authorities, are made to resemble the entire mouth of a fish of the Bhetuli species. These Yantras are used in extracting splinters from inside the nose, ears and other external channels or passages of the body.

The Nádi Yantras, tubular instruments like syringes
enemas, etc. with a passage or aperture running through their entire length are constructed in a variety of shapes and for various purposes. Some of them are open at one end, while others are open at both. These instruments are used for the purpose of extracting any shalyam that has pricked into the external canals or passages of the body, or for inspecting the seat of affection as in piles, etc., or for sucking blood, etc. from any affected part, or simply as accessories to other surgical appliances. The length and circumference of a Nādi Yantra should be made to commensurate with those of the passage Srotā, or outlet of the human system into which it is intended to be introduced. We shall describe, later on, the types of Nādi Yantras which are to be used in connection with such diseases as fistula in ano, piles, etc. or in tumours and ulcers, in Mutradvriddhi (Hydrocele) in NIRuddha Prakāsha (Phimosis), in NIRuddha Guda stricture of the rectum) and m ascites, as well as those to be used for the purpose of injecting anything into the urethra, the bowels, the vagina and the uterus, or are used in connection with medicated inhalation, or with those that are known as the Alāvu Yantras (gourd used for cupping).

The Shalākā-Yantras bougies are of various shapes and serve a variety of purposes. The lengths and girths of these instruments should be determined
according to the necessity of each individual case. Four probes or directors (shalākā) in two pairs, are used for the purposes of searching (Eshana) pus in a suppurated part or limb, or in connection with uplifting, cutting and thereby withdrawing a shalyam from the part it has pricked into, or with a view to transfer such a body from one place to another Chālanam, or for the purpose of extracting it (Shalyam) from the affected part. The mouths of the two types of these directors respectively resemble those of a Gandupāda earthworm and of a Sharapunkha (Tephosia Purpurea, Pers) while the other two are respectively headed like the hood of a serpent and a fish hook. A couple of directors are used for the purpose of withdrawing a foreign matter (Shalyam) imbedded in any outer canal of the body (Srotas). The top-ends of these directors are bent down a little, and they resemble a lentil seed in size. Six types of directors or probes are used in cleansing the pus from an affected part of the human organism and their top-ends are fitted with caps of loose cotton. The three sorts of directors used in applying alkaline medicines, are shaped like ladles, and their mouths resemble the cavities of little stone mortars (Khala.) Of the six sorts of directors used in connection with the process of cauterisation (Agni-Karma) three are mouthed like the Jamboline fruit, while the other three are faced like a mace or a spear (Ankusha). A kind of director used in removing nasal
tumours, is mouthed like the half of the kernel found in the inside of a jujube-stone, with a little dip in the middle, its lip or end having a keen or sharp edge. The ends of the type of probe used in applying Anjanams medicated collyria to the eyelids are wrought into two small round lobes like the Matara pulse and are blunted, while the sort of probe used in cleansing the urethra, is made round like the end of the stem of a Mālāti flower.

The Upa-yantras or minor surgical accessories include such substances as rope, the Venikā braided hair, silk thread, the bark and the inner-skin of trees, creepers, linen, Ashtilā stones, large oval shaped pebbles, a hammer, the palms of the hands, the soles of feet, fingers, tongue, the teeth, the nails, hair, the mane of horses, branches of trees, a magnet, alkali, fire, and medicine, and such acts as spitting, straining ḫunthanam, exhilaration and intimidation.

Metrical texts: These accessories should be applied to the entire body of a patient, or to any part thereof such as, the arteries, the viscera, or the joints, according to the necessities of each case to be determined by the surgeon.

The Functions of Surgical Instruments: are striking out (Nirghātanam—lit:—withdrawing a Shalyam by moving it to and fro), injection or filling, binding, up-lifting, cutting and
thereby withdrawing a Shalyam, resettng by means of a twirling motion, removing of a Shalyam from one place to another, twisting, expanding, pressing, purifying of a passage, drawing off, attracting, bringing to the surface, uplifting, lowering down, applying pressure all round a part, or an organ, agitating, sucking, searching, cutting or cleaving, straightening, washing or flushing, stuffing the nose and cleansing. They number twenty-four in all.

**Metrical texts** :—The intelligent surgeon shall exercise his judgment and determine the nature of the surgical operation required in each individual case, for surely the shalysas requiring a surgeon’s aid are infinitely varied in their character.

An appliance, Yantra which is too thick, or made of inferior metal and hence not substantially made, or too short or too long, or does not admit of being easily handled and is incapable of taking in the entire Shalyam, or is curved, loosely fitted, or soft-bolted, or loosely tied up with cords, should not be used in surgical operations. These are the twelve defects of a surgical instrument.

**Metrical texts** :—The use of an instrument devoid of the abovesaid defects and measuring eighteen fingers in length, is commended in surgical operations. Shalysas which are manifest and visible to the naked eye, should be extracted with the instruments of the
Sinha-mukha (lion-mouthed) type, while those that can not be seen, should be removed with the help of the Kanka-mukhas (heron-mouthed) instruments, etc., according to the directions laid down in the Śāstras (medical or surgical works of recognised authority). The Kanka-mukhas are the best of all other types of instruments, inasmuch as they can be inserted and taken out without the least difficulty, are capable of drawing out a Shalyam with the greatest ease, and are applicable to all parts of the human body, be they an artery or a bone-joint.

Thus ends the seventh chapter of the Sutraśānam of the Sushruta Śāhitas which treats of the shape, construction and dimensions of surgical appliances.
CHAPTER VIII.

Now we shall discuss the Chapter which treats of instruments used in connection with a surgical operation. *(Shastravachararaniyamadhyayam).*

These instruments are twenty in number such as, the Mandalagram, the Karapatram, the Vridhipatram, the Nakhashastram, the Mudrika, the Utpalapatram, the Ardhhadharam, the Suchi, the Kushapatram, the Atemukham, the Sharariumukham, the Antarmukham, the Trikurchakam, the Kutharika, the Vrihimukham, the Ará, the Vetasapatrakam, the Vadisha, the Dantashanku, and the Eshani.¹

¹ The Mandalagram measures six fingers in length and is provided with a round or circular face. The Karapatram is the same as the modern saw. The term Vridhipatram signifies a razor. A Vridhipatram measures seven fingers in length, the handle alone measuring five fingers. The Nakhasastram is the same as the modern nail-clipper, the blade of the instrument measuring a finger in breadth. The Utpalapatram resembles a lotus leaf in shape. The Ardhhadharam (hanceet) measures eight fingers’ breadth in length, being one finger broad at the middle, and two fingers at the blade. The Suchi is the same as the modern needle. The Kushapatram is so called from its resemblance to the blade of a Kashagrass. An Atemukham resembles the bill of a bird of the Ate species. The blade of an Atemukham measures two fingers in length, the handle measuring five fingers and thus giving an entire length of seven fingers. The Sharariumukham (scissors) is so-called from the resemblance of its blades to the bills of a Sharari bird and looks somewhat like a modern black-smith’s clipper, the measure of its entire length being twelve fingers. The Antarmukham is semicircular in shape and is provided with a toothed edge like that of a hand-saw. The Trikurchakam (trocar) is provided with three separate blades. The intervening space between the couple of blades attached to a handle measuring five fingers in length, is equal to the width of a Vrihiwed, its entire length being eight fingers.
Of the above-aid instruments the Mandalagram and the Karaptram should be used in incising and scraping. The Vridhhipatraṁ, the Nakhasastraṁ, the Mudrika, the Utpalapatram, and the Arddhadháram, should be employed in incising (Chhedam) and excising (Bhedanam); and the Kushapatram, the Shuchi, the Átemukhaṁ, the Sharárimukham, the Trikurchakam and the Antarmukham should be made use of in exudating or secreting (Visrávanam). The Kutháriká, the Vrihimukham, the Ará, the Vetasapatram and the Shuchi (needle) should be used in puncturing. The Vadisha and the Danta-şanku should be used in extracting solid bodies. The Eshani (probe or director) in probing or searching the course or direction of the pus (in a suppurated part), and the Shuchi (needle) should be used in suturing. Thus we have explained the eight different functions of the instruments in connection with surgical operations.

The, kutháriká (small, blunt axe) measures seven fingers and a half in the handle, the blade is half a finger in width and is blunted like the tooth of a cow. The Vrihimukham measures six fingers in its entire length and its top is like that of a Vrihi seed, and the edge is cut into small thorn-like projections. The Ará resembles the awl of a cobbler and measures ten fingers in its entire length, the blade is wide as the seed of a sesamum and has the girth of a Darva (grass) stem. The Vetasaptram (knife) resembles the leaf of a Vetasa plant. The blade is four fingers in length, one finger in width, and is keenly edged, the handle measuring four fingers in length. The Vadisha is shaped like a modern fishing hook. The Danta-shanku (pincers for extracting teeth) somewhat resembles the Vrihimukham in shape. The face of an Eshani (probe) is like that of a Gandupárda (earth-worm).
Now we shall deal with the mode of handling the abovesaid instruments.—The Vṛddhipatram and other instruments for excising (Bhedānām) should be caught hold of at a part between the blade and the handle. In acts of scraping the Vṛddhipatram and the Mandalāgram should be handled with the palm of the hand slightly turned up. The instruments for secreting should be caught hold of at the roots of their blades at the time of using them, while in the case of a king, an old man, a timid or a delicate person, a child, a woman and specially in the case of a prince of the royal blood, the Trikurchakam should be used when any secreting or exudating operation would be necessary. The handle of a Vṛhari-nukham should be kept concealed within the palm of the hand and the blade should be caught hold of with the thumb and the index finger (Pradeshini). The Kuthārika should be first supported on the left hand and then struck with the thumb and third finger of the right. The Arā, the Karapatram and the Eshani, should be caught hold of at their roots. The rest of the surgical instruments should be grappled according to requirements.

The abovesaid instruments are shaped like things which their very names imply, as have been already described. The Nakashastram and the Eshani measure eight fingers in length. The Suchi (needle)
shall be described later on. The top-ends of the Vadisha and the Danta-Shankhu (Dental pincers) are a little bent down and their faces are made to resemble sharp thorns, or the newly sprouted leaves of a barley plant. The top-end of an Eshani closely resembles the mouth of an earth-worm. The length of a Mudrikā should be made equal to that of the top phalanges of the index finger of a man of average height.) A Sharārimukham measures ten fingers in length. The rest of the instruments are mostly made to measure six fingers in length.

**Commendable features in a Surgical instrument:**—Instruments that are fitted with handles of easy grip and are made of good and pure iron, well shaped, sharp, and are set with edges that are not jagged and end in well formed points or tops, should be deemed as the best of their kind.

Curvature, bluntness (Kuntha—lit: incapable of cutting hair), unequal sharpness of the edge, rough-edgedness, over-thickness, over-thinness, over-lengthiness, and over-shortness are the defective traits in a surgical instrument. Those possessed of contrary features should be used. But a Karapatram set with a very rough (dentated) edge may be used for the purpose of sawing the bones.

A surgical instrument meant for excision (Bhedanam) should be set with an edge as thin as that of a Musura
pulse lentil seed, while an instrument used in scraping should be set with an edge half as thin as that of the former. An instrument used either in connection with the measures of secretion or cutting by uplifting (Vyadhanam) should be set with an edge as fine as the human hair, while an instrument of incision should have an edge half as thin as that of the former.

Surgical instruments should be tempered with one of the three substances such as, alkali, water, and oil. Instruments used in cutting an arrow, a bone, or any foreign matter (Shalyam pricked into the human body, should be tempered with alkali, whereas those that are made use of in cutting, cleaving, and lopping off the flesh from an affected part), should be tempered with water. Instruments used in opening Vyadhanam a vein (Shira) or in cutting open a nerve Snáyu should be tempered with oil, and should be whetted upon a species of stone-slab resembling a Masha pulse in colour, and their set edge should be protected by putting it in a sheath made of Shálmali wood.

**Authoritative verses on the subject:** —An instrument, well-ground, well-shaped, fitted with a convenient handle and capable of (laterally) cutting a hair in two and made according to measures laid down in the Shastras, should be alone used in a surgical operation.
The Inferior or Substitutive Instruments (the Ṛtu-Shastras) — The skin of bamboos, crystals, bits of glass, Kuruvinḍas (a sort of crystal) leeches, fire, alkali, nails, the leaves of trees known as Goji, Shephalikā and Shākapatra, the tender sprouts of corn, hair, and the fingers, should be included within the category of the minor instruments of surgery and (which may be used in certain instances in substitution for the principal and usual ones.

Metrical texts: — The four articles such as strips of bamboo skin, crystals, bits of glass, and the rock known as Kuruvinḍa, should be used by an intelligent physician in incising or excising Bhedanam operations, where the patient would be found to have a dread of the knife, or too young to be surgically operated upon with it, or where the proper instrument cannot be procured. The nails of fingers should be used in operations of incising, excising or extracting in (substitution for the instruments enjoined to be used for the purpose), when such a course would appear feasible. The processes of applying alkalis, leeches and cauterisation will be dealt with later on. In Diseases affecting the eyelids or the cavity of the mouth, operations for the purposes of secreting or evacuating the accumulated pus or phlegm, may be performed with the leaves of Shākapatra, Shephalikā or Gojis. In the absence of a probe or director, searching may be done with the help
of a finger, or with a hair, or with a corn sprout. An intelligent physician should deem it his imperative duty to get his surgical instruments made by a skilful and experienced blacksmith, and of pure, strong and sharp iron (steel). A physician, skilled in the art of using surgical instruments, is always successful in his professional practice, and hence the practice of surgery should be commenced at the very outset of medical studies.

Thus ends the eighth chapter of the Sutrashānam in the Sushruta Samhitā which treats of Surgical Instruments.
CHAPTER IX.

Now we shall discuss the Chapter which treats of practical instructions in surgical operations (Yogya-Sutra).

The preceptor should see his disciple attends the practice of surgery even if he has already thoroughly mastered the several branches of the science of Medicine, or has perused it in its entirety. In all acts connected with surgical operations of incision, etc. and injection of oil, etc. the pupil should be fully instructed as regards the channels along or into which the operations or applications are to be made (Karma-patha). A pupil, otherwise well read, but uninitiated into the practice (of medicine or surgery) is not competent to take in hand the medical or Surgical treatment of a disease. The art of making specific forms of incision should be taught by making cuts in the body of a Pushpaphalā: a kind of gourd, Alávu, watermelon, cucumber, or Erváruka. The art of making cuts either in the upward or downward direction should be similarly taught. The art of making excisions should be practically demonstrated by making openings in the body of a full water-bag, or in the bladder of a dead animal, or in the side of a leather pouch full of slime or water. The art of scraping should be instructed on a piece of skin on which the hair has been allowed to remain. The art of venesection
(Vedhya) should be taught on the vein of a dead animal, or with the help of a lotus stem. The art of probing and stuffing should be taught on worn (Ghuna) eaten wood, or on the reed of a bamboo, or on the mouth of a dried Alāvu (gourd). The art of extracting should be taught by withdrawing seeds from the kernel of a Vimbī, Vilva or Jack fruit, as well as by extracting teeth from the jaws of a dead animal. The act of secreting or evacuating should be taught on the surface of a Shāhī planck covered over with a coat of bee's wax, and suturing on pieces of cloth, skin or hide. Similarly the art of bandaging or ligaturing should be practically learned by tying bandages round the specific limbs and members of a full-sized doll made of stuffed linen. The art of tying up a Karna-sandhi (severed ear-lobe) should be practically demonstrated on a soft severed muscle or on flesh, or with the stem of a lotus lily. The art of cauterising, or applying alkaline preparations (caustics) should be demonstrated on a piece of soft flesh; and lastly the art of inserting syringes and injecting enemas into the region of the bladder or into an ulcerated channel, should be taught by asking the pupil to insert a tube into a lateral fissure of a pitcher, full of water, or into the mouth of a gourd (Alāvu).

Authoritative verses on the subject:—An intelligent physician who has tried his
prentice hand in surgery on such articles of experiment as, gourds, etc., or has learnt the art with the help of things as stated above, or has been instructed in the art of cauterisation or blistering (application of alkali) by experimenting on things which are most akin, or similar to the parts or members of the human body they are usually applied to, will never lose his presence of mind in his professional practice.

Thus ends the ninth chapter of the Sutrasthānam in the Sushruta Samhitā which treats of Instructions in Surgical operations.
CHAPTER X.

Now we shall discuss the Chapter which treats of the essential qualifications of a physician before he formally enters his profession (Vishikha-nupraveshaniya-madhya-yam).

A physician having thoroughly studied the Science of medicine, and fully pondered on and verified the truths he has assimilated, both by observation and practice, and having attained to that stage of (lucid) knowledge, which would enable him to make a clear exposition of the science (whenever necessary), should open his medical career commence practising) with the permission of the king of his country. He should be cleanly in his habits and well shaved, and should not allow his nails to grow. He should wear white garments, put on a pair of shoes, carry a stick and an umbrella in his hands, and walk about with a mild and benignant look as a friend of all created beings, ready to help all, and frank and friendly in his talk and demeanour, and never allowing the full control of his reason or intellectual powers to be in any way disturbed or interfered with.

A physician, having met with a messenger of happy augury, or having been encouraged on his journey by the notes of auspicious birds or sights, should go to the house of his patient. [Then, having entered the
sick room], the physician should view the body of his patient, touch it with his own hands, and enquire about his complaint. Several authorities hold that these three, (inspection, touch and questioning,) largely form the means of our ascertaining the nature of a disease. But that is not correct, inasmuch as the five sense-organs of hearing, sight, etc. and oral enquiry material-ly contribute to a better diagnosis.

Diseases, which are to be diagnosed with the help of the organ of hearing, will be fully treated, later on, in the Chapter on Vrana-Srāva (secretions from an ulcer). The wind (Vāyu), making the blood ebullient, forces it up with a distinctly audible report and thus affects the sense of hearing. But this will be dealt with later on in the abovesaid chapter. The heat and coldness of the body, or the gloss, roughness, hardness, or softness of the skin of the affected part as in fever, or in an œdematous swelling of the body, are perceptible by the sense of touch. Fullness or emaciation of the body (cachexia), state and indications of vitality, strength, complexion, etc. are perceived by the sense of sight. Secretions or discharges (from the inflamed mucous membrane of the urethra) in Prameha etc., should be tested with the organ of taste.* The characteristic smell emitted

* The sweet, or any other taste of the discharges should be inferred from the fact of their being or not being swarmed with hosts of ants or flies, etc.
by an ulcer in its critical stage (Arishta) should be determined with the help of the organ of smell.

While such facts as the time or season (of the first appearance) of the disease, the caste which the patient belongs to, and things or measures which tend to bring about a manifest amelioration of the disease, or prove comfortable to the patient (Sātmyām) as well as the cause of the disease, the aggravation of pain, the strength of the patient, and his state of digestion and appetite, the emission of stool, urine and flatus, or their stoppage, and the maturity of the disease as regards time, should be specifically ascertained by directly interrogating the patient (on those subjects). Though the above said five organs of sense, like the three fundamental vital humours, help us to make the correct diagnosis of a disease, still the objects locally perceived by these senses should not be left out of account in ascertaining its specific nature.

**Authoritative verse on the subject:** A disease wrongly observed or incorrectly described, or wrongly diagnosed, is sure to mislead a physician.

Having made these observations the physician will try to cure diseases that are curable, adopt palliative measures in cases where palliation is the only remedy that can be offered, and give up a case which is beyond
all medical treatment, and mostly those which are of more than a year's standing. Diseases affecting a Brāhmana well versed in the Vedas, or a king, or a woman, or an infant, or an old man, or a timid person, or a man in the royal service, or a cunning man, or a man who pretends to possess a knowledge of the science of medicine, or a man who conceals his disease, or a man of an excessively irascible temperament, or a man who has no control over his senses, or a man in extremely indigent circumstances of life or without any one to take care of him, are apt to run into an incurable type though appearing in a common or curable form at the outset. The physician, who practises his art with a regard to these facts, acquires piety, wealth, fame and all wished for objects in life.

**Authoritative verse on the subject:**—A physician should abjure the company of women, nor should he speak in private to them or joke with them. A physician is forbidden to take anything but cooked rice from the hands of a woman.

This ends the tenth Chapter of the Sutraśāhanam in the Sushruta Sāṃhitā which treats of the essential qualifications of a physician.
CHAPTER XI.

Now we shall discuss the Chapter which treats of the pharmacy of alkalis or potential cauteries (Kshāra-pāka-vidhi-madhyāyam).

In cases that require incising, excising and scraping, alkalis or alkaline preparations are of greater importance than surgical instruments and appliances (both principal and secondary or substitutive), as they are possessed of the virtues of subduing the three deranged bodily humours such as wind, bile and phlegm).

The etymological signification of the term Kshāra (alkalis) is based on their property of corroding the skin or the flesh of an affected part of the body, or on their peculiar quality in destroying the skin and flesh where such an effect is desired. Since a variety of substances enter into the composition of Kshāra (alkalis), they are endowed with the virtue of subduing the three deranged bodily humours. Owing to their white colour, Kshāras should be included within the category of cooling substances (Saumya).

But since many drugs or substances of a hot or fiery nature (Āgneya) enter into their composition, Kshāras (alkalis) are endowed with the properties of blistering, burning, suppurating (Pāchana), opening etc., without
involving any contradiction to their generic (Saumya) nature, and hence they are included within the list of those substances which are both hot and cooling (Saumya and Ágneya in their virtues. They are pungent in taste, of a heat-making potency, irri-tant, digestive, corrosive, absorbent, liquefacient, improve unhealthy sores and granulation, and act as styptic and paralysing agents. They exercise destructive action on animal tissues. They are antitoxic, anthelmintic and possess the property of curing mucous accumulations in the intestines. They tend to reduce fat and phlegm and they have the virtue of destroying skin diseases. In large doses, alkalis) have the effect of destroying the virile potency of a man.

Kshára (caustics may be grouped under two distinct heads according to their mode of administration), such as the Pratisárániya (for external application) and the Pánía (alkaline potions). Alkaline preparations should be externally used in such skin diseases as Kitima, Dadru, Kilás, Mandala, Fistula in ano, tumour, bad ulcer (Dushta Vrana, sinus, Charna-kjla, Tilkálaka, Narcbya, Vyanga, Mashaka and external abscesses and hæmorrhoids. In cases of worms and poisoning as well as in the seven forms of diseases which affect the cavity of the mouth, such as Upajihva, Upakusha, Danta-Vaidarbha, and in the three types of Rohini, external applications of alkalis act like substitutive
surgical instruments. Alkaline potions or any other internal use of alkalis, should be prescribed in cases of Gulma (abdominal glands), Ascites, loss of appetite, indigestion, flatulent distension of the abdomen with suppression of stool and urine, urinary calculi, stone in the bladder, internal abscesses, worms in the intestines and haemorrhoids, as well as for subduing or eliminating any sort of poison from the system.

Alkalis or alkaline potions will prove positively injurious to a patient laid up with fever or haemoptysis, to a man of bilious temperament, to an infant, or to an old man, and they will work similar mischief in a weak person, or in a patient suffering from vertigo, insensibility, syncope and Timira (darkness of vision). These preparations of Alkalis should be made in one and the same way by filtering; and we reserve the full description of this process for another occasion.

Alkalis for external application are prepared in three different potencies; the mild, middling and strong (extremely irritant). A physician wishing to prepare such an alkali, should first purify his body and mind, and observe a fast on a day in autumn marked by auspicious astral combinations. Then having ascended the brow of a hill, he should select a full grown Ashita-mushka (Ghant: pārul: tree of middle age, and growing on soil recommended in the works on pharmacy and not anywise affected. Then having
formally invoked the spirit of the aforesaid tree, which bears no white flowers) the physician should fell it on the day following,—reciting the Mantra which reads as :—“O thou possessed of mighty virtues, O thou endued with fiery potency, may thy potency never decrease or vanish. Stay here, O thou blissful one, execute thy work, and after the performance thereof thou shalt be at liberty to ascend to the heavenly regions.”

Then having performed the Homa ceremony with thousands of white and red flowers, the physician should cut the wood of the aforesaid tree into small pieces and put them in a place protected from the wind. Then having placed pieces of unslaked limestone over them, the physician should burn them to ashes with the lighted faggots of dried sesameum plants. Then after the fire has fairly burnt itself out, the ashes of the limestone and the Ghantá-párola wood should be separately collected and stored. Similarly the wood as well as the leaves, roots and fruits of Kutaja, Palása, Ashvakarna, Páribhadra, Vibhitaka, Áragvádha, Tilvaka, Arka, Snuhi, Apámarga, Pátalá, Naktamála, Vrisha, Kadali, Chitraka, Putika, Indra-Vriksha, Áspotá, Ashvamáraka, Saptachchhada, Agnimantha, Gunjá, and the four species of Koshátaki, should be burnt down to ashes.
Then a Drona measure of the ashes thus prepared should be dissolved and stirred up in six Drona measures of pure water or cow's urine, and be filtered twenty-one times in succession. The alkaline water filtered as above should be kept in a large caldron over a fire and boiled by gently agitating it with a ladle. It should be taken down from the fire when by gradual stirring, the saturated water would appear transparent, slimy, red and irritating. It should then be filtered through a piece of clean linen, and the dregs thrown away. After this a Kudava measure and a half 12 Palas of the above-said saturated or alkaline water should be taken out of the caldron, and the rest should be again kept boiling over the fire. Following this, substances known as Kata-Sharkarā, the ashes of the burnt limestone previously obtained, Kshiraśākas (fresh water oysters) and Sankhanābhi, should be burnt red hot in equal proportions, and then immersed and pressed in the Kudava measure of alkaline water previously set apart in an iron basin as above described.

Then having immersed eight Pala measures of the substances known as the Shankhanābhi etc., in the above-said alkaline water, the physician should boil it by continuous and steady stirring, care being

* Two parts of the burnt ashes of Ghantā parula and one part of the ashes of Kutaja, etc.
taken not to make it of too thin nor of too thick a consistency. Then the basin or the caldron should be taken down from the oven, and its contents poured into an iron pitcher, carefully covering its mouth after filling it. The alkali thus prepared is called the Kshāra (alkali of middling potency, which, if prepared without the subsequent addition :lit : throw-over) of the ashes of Katasharkara, etc., goes by the name of mild alkali Mrīdu Kshāra). Similarly, alkali prepared with the addition of the powders of the drugs known as Danti, Dravanti, Chitraka, Lángulaki, Putika-Pravala Talpatra, Vidha, Suvarchiká, Kanaka-Kshiri, Hingu, Vacht, and Vishá, or with as many of them as are available, each weighing four tolas, is called the strong Kshāra (extremely irritating alkali). These alkaline preparations of different potencies, should be severally used in cases where their administrations would be clearly indicated. An alkaline preparation, any way weakened, should be strengthened by adding to it alkaline water (water saturated with an alkali) as before described.

**Authoritative verses on the subject:** The commendable features in an alkali are based on its whiteness, on its being neither too mild nor too strong, on its gloss and sliminess, on its sticking to the place of application, and on its power of secreting (Abhisyandi) the morbid fluid, and on its rapid effect. On the other hand, its defective traits consist in its being
too mild, of excessive whiteness, excessive strength or irritability, of over-sliminess, excessive stickiness or thickness, insufficient boiling, and insufficiency of component ingredients.

A patient laid up with a disease amenable to an application of alkali (potential cauteray or caustic) should be kept in a spacious chamber, and should not be exposed to draughts and to the hot rays of the sun. [Then the physician having secured] the necessary appliances etc., as already laid down in the Chapter V, should view the part of the patient's body to which the alkali is to be applied. The affected part should be then rubbed or scarified† with an alkali, and covered over‡ with a piece of linen. The alkaline preparation should be applied with a rod or director§ and kept undisturbed for a period needed to articulate a hundred long letter sounds).

**Metrical texts:** The perfect burning (blistering) should be inferred from the black colour of the skin of the affected part. Madhuka and the substances included within the Amla-varga (group of acid drugs) pasted with clarified butter, should be applied to allay the incidental burning (sensation). A plaster composed

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* In a case brought about by (Pitta) ascendancy of the deranged bile.
† It should be scraped with the alkali where the skin would appear hard and benumbed owing to the action of the deranged vital winds (Vāyu).
‡ In a case of deranged phlegm (Kapha) the affected part being marked by itching and swelling.
of the shreds of Anila-Kanjika, sesamum and Madhukam taken in equal parts, and pasted together, should be applied to the part burnt with an alkali; in the event of the latter having failed to produce the desired effect owing to the disease being deeply seated. Madhukam and the Kalka paste of sesamum mixed with clarified butter would cause such an incidental ulcer to heal.

Now you may ask the question how can an acid substance, which is fiery in its virtue and heat-making in its potency, tend to subdue the effects of an alkali which is possessed of similar virtues and properties, instead of augmenting them, as can naturally be apprehended? Well my child, the question can be fairly answered by stating, that substances of all tastes enter into the composition of an alkali except the acid one. The pungent (Katu) taste is the principal taste of an alkali, while the saline (Lavana) forms its minor or accessory flavour (Anurasa). Now this saline taste in conjunction with the acid one renounces its extremely sharp or irritating property and is thus transformed into one of sweetness or of soothing virtue. Hence it is that an acid taste tends to allay the burning incidental to an application of alkali (potential caustic) in the same way as water tends to put out fire.

An operation of perfect cauterisation with an alkaline application brings about an amelioration of the disease, or the disease is entirely subdued, accompanied by
lightness of the limbs and absence of secretion from the affected part; while an insufficient burning [of the part] is generally attended by symptoms of aggravation of the malady and also gives rise to local pain, itching and numbness. [On the other hand], excessive burning [of the part] with an alkaline preparation may have a fatal termination, and is attended by such symptoms as burning, suppuration, redness, secretion in and from the seat of affection. A feeling of languor and fatigue comes upon the patient accompanied with thirst, swooning and an aching sensation. An ulcer incidental to a burn by an alkali should be treated with a special eye to the nature of the disease and the deranged bodily humour specifically involved in the case.

A weak person, an infant, an aged person, a man of timid disposition, a patient suffering from abdominal dropsy with general anasarca or from haemoptysis, a pregnant woman, a woman in her menses, a person suffering from an attack of high fever or urethral discharges, or emaciated with chronic inflammation of the lungs, or a person subjected to fits of fainting or abnormal thirst, or a person suffering from virile impotency, or whose testes have become deranged either upwards or downwards, or a woman suffering from retroversion or introversion of the uterus or prolapsus of the vagina, should be deemed
unfit for being cauterised with alkalis. Moreover their application is not to be sanctioned over the veins, nerves, joints, gristles or tender bones or cartilages, sutures, arteries, throat, umbilicus, genitals, regions of Srotas (external channels), parts covered over with a thin layer of flesh, inside the nails and other vulnerable parts of the body, nor in diseases of the eyes, excepting those which affect the eyelids.

Alkalis fail to produce any beneficial effect in a patient suffering from edema of the limbs, or suffering from bone-ache, or laid up with a disease affecting the joints or the heart, or in a person of impaired appetite who has lost all relish for food, even when their use is otherwise indicated.

**Authoritative verse on the subject:** An Alkali administered by an ignorant physician is to be dreaded more than poison, fire, blows with a weapon, thunder-bolts, or death itself; while in the hand of an intelligent physician it is potent enough to speedily subdue all serious diseases in which its use is indicated.

Thus ends the eleventh Chapter of the Sutrasthānam in the Sushruta Sambhita which treats of the Pharmacy of Alkalis.
CHAPTER XI.

Now we shall discuss the Chapter which treats of cauteries and the rules to be observed in their use (Agni-Karma-Vidhimadhyayam).

A fire (cautery) is better than an Alkali as far as its healing property is concerned. A disease burnt with fire, is cured for good and knows no recrudescence; and diseases which ordinarily baffle the skill of a surgeon or a physician, and never prove themselves amenable to medicinal or surgical remedies, are found to yield to fire (cauterisation).

The following drugs, articles and substances should be understood as accessories to an act of cauterisation, viz., Pippali, the excreta of goats, the tooth of a cow (Godanta), Shara, a rod, the surgical instrument known as the Jámvavaustha, articles made of copper or silver, honey, treacle, oil, or any other oily substance. Out of these, Pippali, the Godanta, Shara and the rod should be (made red hot and) used in cauterising the affected part in a disease which is restricted only to the skin; similarly the surgical instrument known as the Jámvavaustha, as well as the appliances made of copper or silver should be used in a disease which is seated in the flesh. Honey, treacle and oil should be (boiled and) employed in cauterising the disease
which affects any of the veins, nerves, bones or bone-joints.

Cauterisation* is admissible in all seasons of the year except summer and autumn; but no such distinction should be observed in cases of impending danger, when it should be practised with the help of such appliances of a contrary (cooling) nature, [as wet sheets, cooling drinks and cooling plasters, etc.]

In all diseases and in all seasons of the year, the patient should be fed on a diet of slimy (mucilaginous) food before actually applying the cautery; while the patient should be kept on an empty stomach before the act where the complaint would be a case of Mudagarbha (false presentation), fistula in ano, haemorrhoids or a disease affecting the cavity of the mouth.

According to certain authorities the processes of cauterisation may be grouped under two heads according as the skin or the flesh is cauterised. The present work does not lay any injunction against the cauterisation of any nerve, vein, bone or bone joint (as stated before). A burning of the skin is accompanied by a peculiar bursting or cracking sound. The skin becomes contracted and emits a fetid smell. Similarly, in a case where the flesh is burnt, (the affected part) assumes a dove color of (blackish brown), marked by pain and a little swelling, and the incidental ulcer becomes dry and contracted. In the case where a nerve or a vein
is burnt, the ulcer presents a raised (elevated) and black aspect with the stoppage of all secretions; while an ulcer incidental to the cauterisation of any of the bone joints has a parched red hue and becomes hard and rough.

The regions of the eye-brows, forehead and temple-bones, should be cauterised in diseases affecting the head as well as in a case of Adhimantha (Ophthalmia). In diseases affecting the eyelids the eye should be covered over with a moist piece of Alaktaka (a thin pad of red pigment principally used in dyeing the feet of ladies) and the roots of the eyelashes should be duly cauterised. Cauterisation is specifically enjoined to be resorted to in cases of glandular inflammation, tumour, fistula in ano, scrofula, elephantiasis, Charmakila, warts, Tilakálaka, hernia, sinus hæmorrhage, and on the occasion of cutting a vein or a bone joint, as well as in the event of the vital wind (Váyu) being extremely agitated and lodged in the local skin, flesh, vein, nerves and the bone-joints and giving rise to excruciating pain in and about the ulcer which in consequence presents a hard, raised and inert surface.

The modes of cauterisation vary according to the seat of the disease, and number four in all, viz., the Ring, the Dot, the Lateral or Slanting lines, and the Rubbing modes.
Authoritative verse on the subject:—
A physician, after having carefully considered the seat of the disease and judiciously ascertained the patient's strength and the situations of the Marmas (the vital parts of the patient's) body, should resort to cauterisation with an eye to the nature of the malady and the then prevailing season of the year.

The part, after being properly cauterised, should be rubbed with an unguent composed of honey and clarified butter. A man of bilious temperament or with a quantity of bad blood lying stagnant and locked up in any part of his body, or of lax bowels, a person with any foreign substance (such as a thorn or a splinter still lodged in his body), a weak or an old man, an infant, or a man of timid disposition, or a person afflicted with a large number of ulcers, as well as a patient suffering from any of the diseases in which diaphoretic measures are forbidden, should be regarded as a subject unfit for cauterisation.

Now we shall describe the characteristic symptoms of the several kinds of burns other than those caused (for surgical purposes). Fire feeds both upon fatty and hard fuels, [such as oil and logs of wood etc.]. Hot or boiling oil has the property of permeating or entering into the minutest nerves and veins, and
hence, it is capable of burning the skin, etc. Accordingly an ulcer incidental to such a burning (scald) is characterised by extreme pain, etc.

Burns may be grouped under four distinct heads viz., the Plushtam, the Dur-Dagdham, the Samyag-Dagdham and the Ati-Dagdham. A burn characterised by the discolouring of its seat and extreme burning and marked by the absence of any vesicle or blister, is called the Plushtam, from the root "plusha" to burn. A burn, which is characterised by the eruption of large vesicles or blisters, and assumes a red colour, and is characterised by excessive burning and a kind of drawing pain, and which suppurates and takes a long time to heal, is called the Dur-Dagdham (bad burn or scald). A burn, which is not deep (superficial) and assumes the colour of a ripe Tāla fruit, and does not present a raised or elevated aspect and develops the preceding symptoms, is called the Samyag-Dagdham (fully burnt one). A burn in which the flesh hangs down, and where the veins, nerves and bones are destroyed, accompanied with fever, burning, thirst, fainting and such like disturbances, and which leads to a permanent disfiguration of the body, retarding the healing of the incidental ulcer which leaves a discoloured cicatrix even after healing, is called the Ati-Dagdham (over burnt one). A physician should try to heal any of these four types of burns with the measures already laid down before.
Authoritative verses on the subject.—The blood of a man is agitated and made hot by fire, and the blood thus heated tends to excite or causes it to raise the bile. And since fire and bile (Pittam) are similar in their taste, essence, effect, potency and natal factors, the effects of Pittam (burning sensation etc.), are naturally aggravated and augmented through a contact with fire. Blisters or vesicles crop up in rapid succession and mark the seat of burning, and fever, thirst, etc., supervene.

Now I shall describe the course of medical treatment to be adopted for the cure of burns. Hot and dry fomentations, as well as warm plasters should be applied to a burn of the Pushtam type, and a course of hot food and drink should be likewise prescribed for the patient. The blood becomes thin when the body is diaphorised by means of warm fomentations, and water, in virtue of its natural cooling properties, tends to thicken the blood. Hence warm fomentations or applications exercise curative virtues in the case of a burn of the foregoing type, and water or cold applications produce the contrary effect.*

Both warm and cold measures are to be adopted in the case of a burn of the Dur-Daghdha type, the

* By arresting the radiation of the incarcerated heat and thereby favouring the elevation of the local temperature and the increase of the burning sensation.
medicinal remedies consisting of cold applications and unguents of clarified butter. *

A plaster composed of Tugákshiri, Plaksha, Chandana, Gairika, and Amritam (Guduchi), pasted together with clarified butter, should be applied over a burn of the Samyag-Dāgīthā type, or the flesh of domestic or aquatic or amphibious animals should be pasted and plastered over the affected part. A burn of the present type, marked by excessive burning, should be medicinally treated in the same manner as a case of bilious abscess (Pitta-vidradhi).

In the case of a burn of the Ati-Dāgīthā (over-burnt) type, the loose or the dangling integuments (skin) and flesh should be removed, and cold applications should be made over the ulcer. Then the affected part should be dusted over with pulverised Shali rice, or a plaster composed of the pulverised skin of Tinduki and clarified butter pasted together, should be applied over its surface. † The affected part should be covered over with the leaves of Guduchi, or of lotus, or other aquatic plants, and all measures and remedial

* Cold applications and cooling measures should be resorted to in the case of a deep and excessive burn, while the contrary should be held as the correct remedy in the case of a slight and superficial one.

† Several authorities prescribe Tinduki bark and human cranium powdered together and mixed with clarified butter, while others prescribe a decoction of Tinduki bark.
agents, indicated in the case of a bilious erysipelas, should be resorted to in the present instance as well.

A plaster composed of bee’s wax, Madhukam, Sarjaraśa, Manjisthā, (red) Chandanam and Murvā pasted together and boiled with clarified butter should be regarded as beneficial to burns of all types to promote rapid healing.

In the case of a burn from boiling oil, clarified butter or such like substances should be externally applied and all measures which promote dryness of the part Ruksha) should be adopted without the least hesitation.

Now we shall describe the symptoms which become manifest in a person [whose nostrils and larynx] are choked with smoke.—The respiration becomes laboured and hurried and the abdomen is distended accompanied by constant sneezing and coughing. The eyes look red and seem as if burning. The patient breathes out smoke and fails to catch any other smell than that of it. The sense of hearing is considerably affected; the sense of taste becomes inert; fever, thirst and a burning sensation supervene; and the patient drops down utterly unconscious.

Now hear me discourse on the course of medical treatment to be adopted in the case of one
over-powered with smoke.—Emetics in the shape of clarified butter mixed with sugarcane juice or milk saturated with the juice of grapes, or lumps of sugar-candy dissolved in an adequate quantity of water, or any acid potion slightly sweetened, should be administered to the patient. The contents of the stomach are speedily discharged by vomiting; the distension of the abdomen is removed; the smell of smoke in the breath is mitigated, and the accompanying fever with (its concomitants) of sneezing, languor, thirst, cough, laboured breathing etc. is abated, and the patient is restored to consciousness. Gargles having a sweet, saline, acid or pungent (katu) taste restore the sense-perception of the patient, and gladden his mind. Medicated snuffs in adequate quantities should be administered by a well-read physician to such a patient, whereby his head, eyes and neck would be able to resume their normal functions. And a course of diet, which is light, emollient and not acid in its reaction, should be prescribed.

Cooling measures or applications should be prescribed or made in the event of any part of the body being scorched by excessive heat, or by being exposed to a draught of hot and parched wind. Similarly, hot and emollient measures or applications should be resorted to where any part of the body has become frozen or shrivelled by snow or cold winds. A person struck
by lightning should be regarded as beyond the pale of medicine.

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* Additional texts *—Where the scorching would be found to be considerably extensive; otherwise such measures as lubrication with medicated unguents, etc., should be adopted in a case where the patient is picked up alive.

Thus ends the twelfth Chapter of the Sutrasthānam in the Sushruta Samhita which treats of Cauteries and the rules to be observed in their use.