



NEW LIGHT ON ANCIENT INDIAN ANATOMY

A. NAGARATNAM & A. MADHAVI*

ABSTRACT

Ayurveda is the ancient Indian system of medicine. Its antiquity is prehistoric and approximates with that of Veda. In Ayurveda Caraka Samhita is the oldest document representing the medical school and Susruta Samhita representing the surgical school.

In India it is our tradition to transmit knowledge from Guru to Sisya. The gurukula system of education is lost with the beginning of the Christian era, due to continuous foreign invasions. After sometime, the Ayurvedic texts went into the hands of literary scholars, who were not trained practically in the Ayurvedic scientific teachings. Hence the commentaries written by them interpreted Ayurveda as a literary work and thus the scientific technicality was missed by them. Dalhana's commentary on Susruta Samhita and Cakrapanidatta's commentary on Caraka Samhita are no exceptions.

During the second part of the 19th century and early part of the 20th century, foreign writers wrote critical works on the Ayurvedic system of medicine. Similarly some of the Indian scholars rendered English translations to Caraka Samhita and Susruta Samhita. Certain original texts were also compiled based on the Samhitas. All these writers gave importance to the available commentaries and never bothered themselves to compare and contrast with the original texts. Thus the medical science became a literary work. The net result is that Ayurveda has been considered to be a primitive science, containing fanciful numerations and incoherent notions. Till to-day no attempt has been made to critically judge and establish the scientific basis on which the Ayurvedic system of medicine rests.

An important new hypothesis has been advanced in this research paper as a result of a critical study made on some of the anatomical findings given in the Susruta Samhita.

Through this article a positive identification of the terms: Hrdaya, Phupphusa, Cloma, Sira and Dhamani is made. All the Asayas are identified and proper synonyms suggested.

GENERAL INTRODUCTION

Medicine of ancient India is called Āyurveda. It is a compound word formed out of two terms "Āyuh" and "Veda", and means the Veda of Āyuh. Veda means knowledge about any branch of science, including metaphysics, which was revealed to the seeker, through his extra perception. That is the reason why Vedas are called Apouruṣaeya. In learning knowledge, in the vedic style, the normal instruments of perception and mind are not used. Thus the name "Veda" - the knowledge- is the received name for the highest spiritual truth of which the human mind is capable, says Śrī Aurobindo. There are four Vedas, the Ṛgveda, the Sāmaveda, the Yajurveda and the Atharvaveda. The Āyurveda is appended to the Atharvaveda. Each Veda stands as an authority for the revealed knowledge during the time span of a Yuga and thus Kaliyuga being the fourth in the present round of time, we were provided with four Vedas, and Atharvaveda is of more importance.

To explain the nature and importance of the knowledge contained in Veda we are tempted to quote from Śrī Aurobindo. He said that "From the historical view point the Ṛgveda may be regarded as a record of great advance made by humanity by special means at a certain period of its collective progress. Veda, then, is the

creation of an age anterior to our intellectual philosophies. In that original epoch thought proceeded by other methods than those of our logical reasoning and speech accepted modes of expression which in our modern habits would be inadmissible.

"The wisest then depended on inner experience and the suggestions of the initiative mind, for all knowledge that ranged beyond mankind's ordinary perceptions and daily activities. Their aim was illumination, not logical conviction; their ideal, the inspired seer, not the accurate reasoner. Indian tradition has faithfully preserved this account of the origin of the Vedas. The Ṛṣi was not the individual composer of the Hymn, but the seer (Dṛṣṭā) of an eternal truth and an impersonal knowledge. The language of Veda itself is *Śruti* a rhythm not composed by the intellect but heard, a devine word that came vibrating out of the infinite to the inner audience of the man who had previously made himself fit for the impersonal knowledge. The words themselves, Dṛṣṭi and Śruti, sight and hearing, are vedic expressions; these and cognate words signify, in the esoteric terminology of the Hymns, revelatory knowledge and the contents of inspiration. Hence the Veda ceases to be merely an interesting remnant of barbarism and takes rank among the most important of the world's early scriptures".

The very originals of the present Caraka and Suśruta Saṁhitās fall into this category. This fact is symbolically expressed in the texts by saying Brahmā provāca etc. As time advanced, mental faculties dwindled and the Vedic knowledge became untenable not only to the common man but also to the intellectual.

“The human mind in its progress marches from knowledge to knowledge, or it renews and enlarges previous knowledge that has been obscured and overlaid, or it seizes an old imperfect clue and is led by them to new discoveries. The thought of the Upanishads supposes great origins anterior to itself.”

“The Ṛṣis of the Upaniṣads followed another method. They sought to recover the lost or waning knowledge by meditation and spiritual experiences and they used the text of the ancient mantras as a prop or an authority for their own institutions and perceptions; or else the Vedic word was a seed of thought and vision by which they recovered old truths in new forms. What they found, they expressed, in other terms more intelligible to the age in which they lived. Thus contemporaneous with the Upaniṣads, the originals of the Ayurvedic texts, viz. the Agniveśa Saṁhitā and Suśruta Saṁhitā are composed by the Ṛṣis. This fact is symbolically represented when, both Ātreya and Dhanvantari said that

they learnt from Indra. Indra stands for Indrias and in turn to Manas. The truth-conscious mind has the corresponding faculties Dṛṣṭi, Śṛuti and Viyeka, the direct vision of the truth, the direct hearing of its words, the direct discrimination of the wright. Whoever is in possession of this truth consciousness or is open to the action of these faculties, is the Ṛṣi, sage or seer”.

As age advanced, the mental faculties are further dwindled and hence the subject matter is simplified and minimised to suit the age. The result is our present Caraka and Suśruta Saṁhitās, which are dated to have been written around 6th century B. C. and they are again redacted at a later date.

The ancient Indian medical classics, written exclusively in Sanskrit, are not easily accessible to any other than the direct disciple of that Guru paramparā or that particular school. Sometimes the knowledge of medicine is held as a close preserve in a few families of Hereditary vaidyas. Indian history mentions about great educational centres at Takṣaśilā, Nālandā and Kāśi which attracted students from all over the world. With the beginning of Christian era we lost these educational centres as well as the traditional methods of transferring knowledge from Guru to Śiṣya. Hence the study of Indian sciences had a set back and among them Indian medicine suffered the maximum.

The method of expounding all Indian knowledge in the form of Sūtra is speciality of Sanskrit language. The word "Sūtram" means a thread. This primary meaning gives rise to the secondary meaning of Sūtram as an Aphorism. Just like a thread binds together a number of beads in a rosary; in language the Sūtra forms the underlying continuity of idea that binds together in outline the essentials of the subject. The most important characteristic of this method is the utmost condensation consistent with clear exposition of all essential aspects and continuity of the underlying theme inspite of the apparent discontinuity of the ideas presented. The latter characteristic is worth noting because, the effort to discover the hidden thread of reasoning beneath the apparently unconnected ideas, very often provides the clue to the meaning of many Sūtras. It should be remembered that this method is prevalent when printing was unknown and the entire text has to be memorised by the student. Hence the condensation is made to the utmost limit. In doing so nothing that is essential is left out and everything which a student is expected to be familiar with or which he could easily infer from the context is ruthlessly cut out. The student will find, on careful study, what a tremendous amount of scientific knowledge, the author has managed to incorporate in such sutras. Also it is the custom in our Saṁhitās

to give every thing necessary for the proper understanding of the subject at one place or other in a skeletal form. The student with the help of a hereditary Guru has to dig out the requisite knowledge, to know the meaning of it in its entirety. Unfortunately this Guru Śiṣya Paramparā-nugataṁ or the hereditary system of transmission of knowledge is lost due to reasons best known to the historians.

The Palm leaf manuscripts were preserved with great difficulty and after a lull of many centuries, there arose an overwhelming enthusiasm from different corners of the country, to study and interpret the ancient Indian medicine. By the time such enthusiasm arose, no proper Guru is available. Thus Indian sciences fell into the hands of persons not fully qualified for the job. They are only literary scholars. They are not aware that in Sanskrit, the technical terms used in sciences, do have separate scientific meaning, in addition to their literary sense. Hence the commentaries written to the saṁhitās are more literary in explanations than scientific. The result is the present crippled and disfigured Āyurveda. During the British rule, many foreign scholars evinced great interest in the study of Āyurveda. They gave too much importance to the commentaries and they never went beyond them in trying to understand the system of Āyurveda. The original texts are not

consulted properly. Thus the apparent unscientific nature attributed to Āyurveda is continued. The Indian reviewers, authors and translators on the subject, followed these foreign versions and the commentaries and wrote their works without considering the original text. All other commentaries in regional languages are nothing but verbatim translations of the Sanskrit commentaries. Till to-date, the student and the master are alike in giving a passive reading to the Āyurvedic texts. The subject is learnt without trying to know the correct meaning of the sūtras based on the traditional scientific terminology.

The two Saṁhitās of Āyurveda, start with the metaphysical cosmogenesis and continue into the physical anthropogenesis. In many instances, for example, the text in Suśruta Saṁhitā - Śāreera sthāna chapter One, each sūtra refers both to cosmogene-

sis and anthropogenesis. All these aspects are left out by the commentators in Sanskrit and hence omitted by all later authors. Unless one is familiar with these aspects, the physiology and anatomy, as given in the Saṁhitās is not understandable with its original scientific meaning.

With this background we set forth to suggest the correct interpretation to some of the Sūtras and proper identification of the organs and organ systems recorded in the original texts on Āyurveda. We do not propose to use a negative and destructive method directed against the received solutions, but simply to present positively and constructively, a larger and, in some sort a complementary hypothesis built upon broader foundations - a hypothesis which in addition, may shed light on the important problems in anatomy and physiology and diagnosis in Āyurveda.

SPECIAL INTRODUCTION

Classical Āyurveda rests on certain basic and fundamental truths, acceptance of which depends on the understanding of the subject in its scientific wholeness and richness.

Āyurveda, and as a matter of fact all ancient Indian knowledge has its beginning only from Metaphysics, which deals with cosmogenesis and anthropogenesis alike and relates one to the other.

In Āyurveda, birth is a union of certain groups of ingredients, both physical and metaphysical. Death is only apparent and is the result of dissolution or resolution of the ingredients and life is nothing but the continuity of the union of the ingredients. Nothing in this universe is permanent or constant. On the other hand every thing is changing, limited by the cycle of Birth-life and Pralaya (dissolution).

There is nothing lifeless. There are only two categories. The one is called Cetana, the other is called Acetana, the difference being the presence or absence of functional Indria. Acetana is a word coined for literary use and not for scientific terminology.

The terms Sthāvāra and Jāṅgama used in Āyurveda have a primary metaphysical meaning and a secondary physical meaning. The terms should be understood based on the context.

It is a rarity in Āyurveda to use

Āyurveda defines the human entity from different stand points.

General & Metaphysical :

“लोको हि द्विविधः- स्थावरो जङ्गमश्च”

Āyurveda & Metaphysics :

“अस्मिञ्छास्त्रे पञ्चमहाभूत शरीरि समवायः पुरुष इत्युच्यते”

Genetical and Biological :

“लोको हि द्विविधात्मक एव आग्नेयः सौम्यश्च”

Physical Science :

“तद्भूयस्त्वात् पञ्चात्मको वा”

Bio-Chemical :

“रसजं पुरुषं”

Embryological :

The Chapter on embryological development viz. Suśruta Saṁhita - Śareera sthāna - Third Chapter.

synonyms for technical terms. When two or more different terms are used for the same technical point, one will be a common literary term and the other will be a technical term. Every term will have its own minor and subtle differentiation. Similarly when two terms are used to denote the same meaning (true synonyms) the author clarifies the point at some place or other and gives the details. Of anatomical importance, only a few sets of true synonyms are noted in the Āyurvedic texts. They are Mūtrāsaya and Vasti; Yakruta and Kālakhaṇḍa etc.

Anatomical :

हस्तपादजिह्वाघ्राणकर्णनितम्बादिभिरङ्गैरुपेतस्तदा शरीरमिति संज्ञां लभते । तच्च षडङ्गं-शाखाश्चतस्रो, मध्यं पञ्चमं, षष्ठं शिर इति ॥

External Anatomy :

- अतः परं प्रत्यङ्गानि वक्ष्यन्ते-मस्तकोदरपृष्ठनाभिललाटनासाचिबुक-वस्तिग्रीवा इत्यता एकैकाः; कर्ण नेत्र नासाभ्रूशङ्खःसगण्डकक्षस्तन वृषणपार्श्वसिफगजानुबाहूह्रप्रभृतयो द्वे द्वे, विशतिरङ्गुलयः, स्रोतांसि वक्ष्यमाणानि, एष प्रत्यङ्गविभाग उक्तः ॥
- श्रवणनयनवदनघ्राणगुदमेढ्राणि नव स्रोतांसि नराणां बहिर्मुखानि. एतान्येव स्त्रीणामपराणि च त्रीणि द्वे स्तनयोरधस्ताद्रक्तवहं च ॥

Internal Anatomy :

तस्य पुनस्सङ्ख्यानम्- त्वचः कला धातवो मला दोषा यकृत्प्ली-
हानौ फुफ्फुमउण्डुको हृदयमाशया अन्त्राणि वृक्कौ स्रोतांसि कण्डरा जालानि
कूर्चा रज्ज्वः सेत्रन्यः सङ्घाताः सीमन्ता अस्थीनि सन्धयः स्नायवः पेश्यो
मर्माणि सिरा धमन्यो योगवहानि स्रोतांसि च ॥

Many of the above technical terms are meagerly understood and in many instances misunderstood. Further, a detailed and analytical study of ancient Indian anatomy and physiology reveals the absence of the consideration and hence the lack of importance to the Blood Vascular system, Respiratory system and Nervous system. Metabolic, Excretory and Reproductive systems are the only systems considered in physiology with detail. Bio-Chemistry and bio-energetics are developed to the maximum and the pathology is based only on Bio-chemistry and hence the treatment is also based on bio-chemistry. The absence

of certain systems is not due to the lack of knowledge but due to their unconnectedness in diagnosis and treatment.

The diseases of mind, lungs and nervous system (considering in terms of modern medicine) are perceived by Āyurveda to different origins based on bio-chemistry. The classification of mānasika vyādhi, of whose treatment is omitted from the Āyurvedic texts, are not mental and psychological diseases as enumerated in modern medicine. Similarly the diseases Apasmāra and Unmada are not connected with brain. The diseases classi-

fied as hṛdaya vyādhi are not heart diseases; Rājyakṣma is not Tuberculosis; Dhanurvāta is not Tetanus, also Vāta is not synonymous with wind; Pitta with Bile; Kapha with Phlegm. The Tridośa theory is not humoral theory of the ancient Greeks.

Thus the classical Āyurveda is

presented in the texts in a nut shell which is not easy to creak and chew. You will understand and appreciate only when you creak the shell and be able to chew the kernal. Until then, as Dr. P.Kutumbayya puts it, Āyurveda contains inchoate notions. In the following few lines we present some of the truths, on anatomy.

HRDAYA IN ĀYURVEDA Vs HEART IN MODERN MEDICINE

Āyurveda said that hṛdaya is a part (Upāṅga) of an organ system called mahā srotas or koṣṭham, and this organ system is synonymous with the digestive system of modern medicine. Hṛdaya is the seat of Puruṣa, the metaphysical animating part of the living human entity. When Puruṣa is present, the body is called Śareera and when Puruṣa is absent, the body is called Kalebara. Hṛdaya is the seat for "Ojas". Hṛdaya is the organ which receives the essence of digested food called "Rasa" which is not the first Dhātu out of the Sapta Dhātus, of which the body is made up of, and which is also called as Rasa. Hṛdaya is provided with a set of 24 Dhamanis and these Dhamanis distribute Rasa to the entire body. Hṛdaya functions during the wakeful state of the person and rests during the resting period of the person. It acts as an entrance to Āmāśaya (Stomach). It is vulnerable for a set diseases called Hṛdaya Vyādhi.

Allopathy said that heart is an organ acting as the pumping house of the organ system called Blood Vascular system. Heart receives impure blood through a set of blood vessels called veins; pumps it the lungs through its Pulmonary Artery and after purification in the lungs, the blood is received back through the Pulmonary vein and distributed throughout the body by another network of vessels called Arteries. Blood is a liquid tissue during its journey in the body, it collects gaseous and nitrogenous waste products from the places of formation and eliminates through the organs of excretion.

Thus the reader will find for himself that the organs identified as Hṛdaya and heart are not one and the same. Not even a single point is in common. Some how the modern authors on Āyurveda and the modern commentators mistook these two organs, confused themselves and

brought disgrace to the Āyurvedic anatomist. For about a century and half this verbal blunder is being taught by the teacher and learnt by all the students of Āyurveda, unchanged and being transmitted to the progeny. All this happened because, modern education gave the science student a picture of heart and its circulation from the very beginning of his study of Biological Sciences and with this basic knowledge the student enters the Āyurvedic college and during his study of anatomy, could not find the organ heart and blood circulation. In an attempt to compromise himself, he came upon the term Hṛdaya, and he got satisfied by thinking it to be the heart. The first teacher and the first pupil went wrong alike and no guru was there to correct them. Now a days, the teacher who was also a student, never had any doubt

with this subject and hence never searched for a solution. This tradition was and is being continued, because, the student is not interested in a detailed and fulfilled knowledge of Āyurveda, other than what is necessary to pass his examination. Even if some doubts arose they had no time to read the originals and arrive at the real solution. Now let us see the correct position of both heart and hṛdaya in Āyurvedic anatomy.

Internal anatomy is summed up in one śloka in Suśruta Śāreerasthāna as quoted earlier which reads *tasya punaḥ saṅhkyānām* etc., S. Śā. 5.4. In this śloka, a set of organs are called as Āśayas. These āśayas are eight in number and seven āśayas are common to the male and female, the eighth āśaya, garbhāśaya, is additional to the female.

आशयास्तु वाताशयः, पित्ताशयः, श्लेष्माशयो,

रक्ताशयः, आमाशयः, पक्वाशयो, मूत्राशयः,

स्त्रीणां गर्भाशयोऽष्टम इति ॥

Āśaya is a technical term which means an Ādhāra to something and the name of this something is added as a prefix to denote the nature of the āśaya. In literature and in usage we got a term jalāśaya which means an ādhāra to jala (water). This analogy makes us to understand better, the nature of an āśaya. Thus āśaya is a store house of something, which

is produced somewhere and utilised elsewhere. The āśaya acts as a receiving, storing and distribution centre. Here in the human body there are āśayas which are seven in male and eight in female, acting as reservoirs for different substances and hence, they are not called as aṅga. An aṅga is an organ or a part of an organ, that is capable of doing a particular

function, in which, it, itself partakes. Thus hand is an organ, leg is an organ, liver and spleen etc. are also organs.

Now let us identify what these āśayas are, according to modern anatomy.

Vatāśaya identifies itself with the Rectum. Pittāśaya is Gall bladder/ Śleśmāśaya is Lungs; Raktaśaya is Heart; Āmāśaya is Stomach, with part of Oesophagus and a part of the small Intestine upto Ileo-jejunal junction which is called as Nābhi (antranābhi).

Pakvāśaya is Colon : Mūtrāśaya Urinary bladder and Garbhāśaya is Uterus. If we carefully follow, we will find that in every instance, the contents of the Āśaya are not produced in it or retained in it for more than a fixed limit of time or utilised by it. The details of the functions of the above Āśayas are not necessary here.

Though the texts are perfect in giving the details in the form of Sūtras, it is here, in identifying these Āśayas, the first commentator and the first student who had their education not through a Gurukula Sāmpradāya and who had got only theoretical and literary education of

स्तनयोर्मध्यमधिष्ठायोरस्यामाशयद्वारम् ।
सत्त्वरजस्तमसामधिष्ठानं हृदयं नाम ॥

medicine, without scientific and practical support, went wrong in identifying them. They identified only some of them and could not identify the others. Out of the unidentified Āśayas, Raktāśaya and Śleśmāśaya are of importance. This error of not identifying the Raktāśaya and Śleśmāśaya, is continued all through the ages and all later commentators, translators and writers on Āyurveda, in all the languages, skipped over the subject by verbatim transliterating the terms.

Now we identify Raktāśaya as Heart and Śleśmāśaya as Lungs. The Āyurvedic anatomist and physiologist, has ruthlessly avoided the details of blood circulation and respiration. This is not because of lack of understanding but because of lack of importance for them in Āyurveda. The merit of not giving importance to the above two systems, as well to the nervous system are not discussed here. Thus identifying Heart and Lungs of modern anatomy and equating them with the Raktāśaya and Śleśmāśaya of Āyurveda, now we pass on to the organ called Hṛdaya in Āyurveda, and let us identify and find out its synonym in modern anatomy.

सु शा अ- ६/४०

The above śloka in Suśruta Śāreerasthāna, chapter-6, gives a

description of the organ called Hṛdaya. Anatomically it is midsternal

in position (*Stanayor Madyah*) and acts as an entrance to *Āmāśaya*. It

is the seat of *Sattva*, *Rajas* and *Tamo guṇas*.

नाभिस्तनान्तरं जन्तोरामाशय इति स्मृतः ।

च. वि. अ. २/१५

Caraka Samhitā in *Vimāna sthāna* described *Āmāśaya*, as that part of the alimentary canal bounded by the transnippular plane above and by the

Ileo-jejunal junction below, thus confirming the position of *Hṛdaya* as the entrance part of *Āmāśaya* which is midsternal in position.

“अधो निष्ठा वितस्त्यान्ते नाभ्यां उपरितिष्ठति”

नारायणोपनिषत्

मन्त्रपुष्प—६, ७

This śloka from *Mantrapuṣpa* gives the correct dimensional position to the organ *Hṛdaya*. The *Hṛdaya* is below the Thyroid cartilage or Adam's apple (*Nishti*) and above *Nābhi*. When you draw a straight line along the midsternal plane, the Thyroid cartilage and *Nābhi* (Umbilicus) falls in a straight line. Since *Nābhyam* is in dual number, it implies that the organ is above the two points called *Nābhi* viz., External Umbilicus and internal Ileo-jejunal junction. Again it says, *Hṛdaya* is at a distance of *Vitasthi* - from Thyroid cartilage and is below it. *Vitasthi* is the distance between the ends of the thumb and the little finger. This distance varies

from person to person and age to age and hence everyone has to measure the position of *Hṛdaya* with his own hand, from the Thyroid cartilage, downward, along the midsternal line, it roughly synchronises with the, *Sterno-Xyphoid* cartilage junction. This śloka thus confirms the midsternal position of *Hṛdaya* and pinpoints its position to the end of Sternum.

IV. *Caraka Samhitā* in giving the measurements of all the constituents of the body, gives the measurement of *Hṛdaya* as *Dwe Anguli*, which means two digits of the finger and to each person with his finger digits only.

“द्वयङ्गुलं हृदयम्”

च. वि. ८/११७

Comparisons to Hṛdaya :

पद्मकोशप्रतीकाशं हृदयं चाप्यधोमुखम्

मन्त्रपुष्प-६

This śloka from Mantrapuṣpa gives two characters of Hṛdaya by saying that it is similar to Padmakōṣam and that its face is downwards. Padmakōṣa means the bud of Lotus and Mukha means entrance. The śloka did not specify in what respect it is

similar to Lotus bud. But the other part says that the entry into the organ Hṛdaya is directed downwards.

A similar śloka is found in Suśruta Saṁhitā Śareerasthāna, Chapter-4, śloka-25.

पुण्डरीकेण सदृशं हृदयं स्यादधोमुखम् ।

जाग्रतस्तद्विकसति स्वपतश्च निमीलति ॥

Here it is said that Hṛdaya is similar to Puṇḍareeka i. e. white Lotus. Its face is downwards. An additional quality given here is that it opens (*Vikasati*) during the wakefull state (*Jāgruti*) and Closes (*Nimeelati*) during resting state (*Swapatah*) which means that this organ Hṛdaya functions when the person is awake and rests when the person sleeps. Thus the similarity of Hṛdaya to *Puṇḍareeka* is explained. It is a well known fact that *Lotus*

blossoms during the day when the sun is present (The presence of sun is the state of wakefulness or *Jāgruti* to the world and the absence of sun is the opposite of it) and closes, during the night when the sun is absent. This similarity is once again stressed by another śloka in Suśruta Saṁhitā Sūtrasthāna, last Chapter. Explaining the rules regarding food intake (*Āhāra Vidhi*) there is a śloka which reads as follows.

दिवा विबुद्धे हृदये जाग्रतः पुण्डरीकवत् ॥

हृदि सम्मीलिते रात्रौ प्रसुप्तस्य विशेषतः ॥

This śloka means that *Hṛdaya* being similar to white Lotus (*Puṇḍareeka*) functions during the day and

rests during the night. Thus the similarity of *Hṛdaya* to *Puṇḍareeka* is clarified and established.

Relative Anatomy :

तस्य (हृदयः) अधो वामतः प्लीहा फुफ्फुसश्च,
दक्षिणतो यकृतं क्लोम च ।

We have already established that Hṛdaya occupies, anatomically mid-sternal plane. This śloka says that, to the right of Hṛdaya two organs called Yakrut and Cloma and to its left, two more organs called Plihā and Phupphusa are present. Further all these organs are below Hṛdaya in the horizontal plane. Now having proved that the Hṛdaya is the entrance part of Āmāśaya occupying to mid-sternal position, it is not difficult to identify the above four organs. The Yakrut is Liver and Cloma is Pylorus and occupies a position right of the midsternal plane. Similarly Plihā is Spleen and Phupphusa is Pancreas, which occupy the left side of the midsternal plane.

Hitherto the commentators and translators of the original saṁhitās, as well those who wrote independent treatises on Āyurveda, identified Phupphusa as lungs and did not

identify Cloma. The fact that Phupphusa is in the singular number and said to occupy a position below Hṛdaya dequalifies its identification with the lungs and qualifies our identification with Pancreas. We have already identified Lungs in the Āśayas and proved them to be Śleśmāśaya. Thus the age old discrepancy about the identification of Cloma is set right and the wrong identification of Phupphusa corrected by properly identifying the Hṛdaya as the entrance part of the stomach.

To sum up, all the references cited above prove that, the organ called Hṛdaya is a part of the alimentary canal (Koṣṭham); occupies the midsternal position; acts as an entrance part of the Āmāśaya; functions only when the person is awake and it allows its contents only downwards (Adhomukha).

VII. Functions Attributed to Hṛdaya :

- a) सोमं भुङ्क्विभजतिष्ठन्नाहारमजरः कविः
तिर्यग्ूर्ध्वमधश्शायी शर्मयस्तस्यसन्तता ॥

मन्त्रपुष्प-९

- b) तस्य (रसः) हृदयं स्थानं स हृदयाच्चतुर्विंशति
धमनीरनुप्रविश्योर्ध्वगा दश दशाधोगामिन्यश्च
तस्त्रश्च तिर्यग्गाः कृत्स्नं शरीरमहरहस्तर्पयति
वर्धयति धारयति यापयति चादृष्टहेतुकेन कर्मणा ।
सु सू अ १४/३

From the above, we understand that there is a substance called Rasa, which finds its place in the Hṛdaya and gets distributed through a network of 24 Dhamaṇīs. In this context Rasa is translated by Sri KL Bhisagratna in his Suśruta Saṁhitā, as lymph chyle. Dhamaṇī is simply transliterated and people are of opinion that they are one set of blood vessels. Our findings are that Rasa is not lymph chyle and by Rasa, Āyurveda proposes a pool of bio-chemical fragments, the details of which are not essential and hence not given in this context. Similarly,

Dhamaṇīs are neither veins nor arteries and they are not conducting tubes. On the other hand they represent a tissue channel system, the details of which are also withheld in this context. The significance of 24 Dhamaṇīs is not discussed here. The functions of Hṛdaya falls under physiology for which we propose a separate article and hence it is sufficient here to point out that the functions of Hṛdaya are not connected with blood and its circulation and hence should not be confused with heart. The fact that it is connected to Rasa, confirm its relation with the Āmāśaya and digestive system.

VIII. Pathology of Hṛdaya :

The organ Hṛdaya is susceptible to a class of diseases called Hṛdaya Vyādhi. Among them Krimija (Caused

by worms) Hṛdroga is one. Its symptoms are given as follows :

त्रिदोषजे तु हृद्रोगे यो दुरात्मा निषेवते ।
तिलक्षीरगुडादीनि ग्रन्थिस्तस्योपजायते ॥
मर्मकदेशे संक्लेदं रसश्चाप्युपगच्छति ।
संक्लेदात्कृमयश्चास्य भवत्युपहृतात्मनः ॥

This śloka explains, that due to eating food stuffs, such as gingili seeds, milk and jaggary by a person already suffering from Hṛdroga of Sannipāta origin, a swelling develops inside the Hṛdaya and invites

propagation of Krimi, which results in further complications. This point proves that Hṛdaya is a part connected to Āmāśaya and not to heart and blood circulation.

IX. Additional Evidence :

- a) स्थावरस्योपयुक्तस्य वेगे तु प्रथमेनृणाम् ।
 श्यावा जिह्वा भवेत् स्तब्धा मूर्च्छा श्वासश्च जायते ॥
 द्वितीये वेपथुः सादो दाहः कण्ठरुजः तथा ।
 विषमामाशयप्राप्तं कुरुते हृदि वेदनाम् ॥

The above śloka from Suśruta Saṁhitā, Kalpasthāna gives the symptomatology of poisoning by Sthāvara Viṣa (Vegetable and mineral poisons). Since the poisons are taken by mouth, the symptomatology starts with the tongue and extends further. When the poison enters the Āmāśaya, the author says that pain

is felt in the Hṛdaya. In this instance the poison has not entered the blood circulation yet and hence blood and its circulating system requires some more time to get affected. As such pain in Hṛdaya can only mean pain in that part of the Āmāśaya which goes by the name Hṛdaya.

- b) पूर्वे दर्वीकृतं वेगे दुष्टं स्याद्धि भवेदसृक् श्यावता तेन
 वक्त्रादौ सर्पयन्तीव च कीटकाः द्वितीये ग्रन्थयो वेगे
 तृतीये मूर्ध्नि गौरवम् दुर्गन्धो दंशविकलेदश्चतुर्थेष्ठीवन-
 वमिः सन्धिविश्लेषणं तन्द्रा पञ्चमे पर्वभेदनं, दाहो हिध्मा च
 षष्ठे च हृत्पीडा गात्रगौरवम् मूर्च्छा विपाकोऽतिसारः प्राप्य
 शुक्रन्तु सप्तमे स्कन्धपृष्टकटीभंगः सर्वचेष्टानिवर्तकः]

This śloka from Viṣa Vaidya Cintāmaṇi gives the symptomatology of poisoning by Darveekara Viṣa (snake poison). In this, he clearly says that the poison enters the blood circulation immediately after a bite. But pain in the Hṛdaya is reported in the sixth Vega only, since the poison while circulating enters the gastric artery, only after the lapse of some time. Had Hṛdaya been heart, immediately after the poison enters

the blood, pain ought to have been reported in the first Vega itself. Thus here also we conclude that Hṛdaya is connected to Āmāśaya.

X. Now coming to the knowledge of śalya that finds its place in Hṛdaya and to remove it, the method suggested, makes us understand that Hṛdaya can only mean a part of Āmāśaya and not heart.

हृदये संस्थितं शल्यं त्रासितस्य हिमाम्बुना ।
 ततः स्थानान्तरं प्राप्तमाहरेत्तद्यथायथम् ॥
 अ. ह. सू.

The fact that, drinking cold water displaces the śalya obstructing the Hṛdaya, to a convenient place, (stomach in this instance) from where it can be easily removed by suitable

methods, makes us understand that Hṛdaya is connected with Āmāśaya only. Otherwise if Hṛdaya were to be heart, how can drinking water displace it to a convenient place ?

XI. विषभुक्ताय दद्याच्च शुद्धायोर्ध्वमधस्तथा ।
 सूक्ष्मं ताम्ररजः काले सक्षौद्रं हृद्विशोधनम् ॥
 शुद्धे हृदि ततः शाणं हेमचूर्णस्य दापयेत् ॥
 अ. ह. सू. ७/२६.२७

The above ślokas from Aṣṭāṅga-hṛdaya, Sūtrasthāna, chapter 7, Ślokas - 26 and 27 gives the treatment for food poisoning. He says that, to get rid of the effects of poison on Hṛdaya, a small quantity of finely powdered copper has to be licked along with Honey (It brings about vomiting, empties the Āmāśaya

and thus cleans Hṛdaya connected to it). When the Hṛdaya is thus purified, again gold bhasma has to be licked with honey to counteract the side effects of copper, previously given. Thus this śloka also proves that Hṛdaya is a part of the Āmāśaya and not heart.

XII. The term Hṛdayodgāra means eructation. Hṛdayodgāra means that Udgāra that came from the Hṛdaya or through Hṛdaya. Eructation takes

its origin only from the stomach and not from the heart. Hence the term Hṛdaya identifies itself with a part of Āmāśaya only.

XIII. The term Hṛllāsa means nausea. Nausea is a reflex action of

the stomach and hence here also Hṛdaya is connected to Āmāśaya.

XIV. विदह्यते यस्य तु भुक्तमात्रे दह्यते ।
 हृत्कोष्ठगलं च यस्य ॥

Vidāha means heart-burn. In giving the symptoms, the author says that the burning sensation passes through or extends from Hṛdaya to Galam through Koṣṭham. Here Koṣṭham is that part of oesophagus which connects the throat above and Hṛdaya below. The relation of Hṛdaya in this śloka clearly establishes its connection to Āmāśaya.

We now sum up, the nature, position and functions of the organ identified as Hṛdaya in the Āyurvedic anatomy and try to see what the modern medicine says about it and calls it with what name in its anatomical nomenclature.

Hṛdaya is an upāṅga of Koṣṭham. (Koṣṭham = alimentary canal.) It forms the upper boundary of that part of Koṣṭham, which is called as Āmāśaya. It occupies a position in between the two stana. It acts as a Dwāram to Āmāśaya. Its function is volvular, allowing its contents downwards. It functions during the wakeful state and rests during the restful state of the human being and hence it is compared to the white lotus which blossoms during the day and fades away during the night. It receives the quintessence of the digested food, called Rasa and distributes it to the entire body through a network of Dhamanīs which number 24. It occupies a position along a straight line connecting Nishti with Nābhi and at a distance

of one *Vitashti* from the *Nisti* downwards and measures Two *Āṅguli*, the measurements being with ones own hand.

Now talking in terms of modern anatomy Hṛdaya is a part of the alimentary canal. It connects the cardiac end of the stomach and the oesophagus. It acts as a valve controlling the entry of food into the stomach. The entry of food is directed downwards only. It is midsternal in position. It falls in a line along the midsternal line in, between the Thyroid cartilage and Umbelicus, at a distance of one measure (the distance between the end of the thumb and the little finger) with his own measurement. It measures two finger digits with his own finger. It is at the end of sternum according to the above measurement.

Technically speaking this part Hṛdaya must and should be a part of the oesophagus with the above qualities and position.

Now to quote from Grey's Anatomy, Edition 36, page 1316 - 18, Splanchnology :

OESOPHAGUS :- "The oesophagus is a muscular tube, about 25 cm long, connecting Pharynx to the stomach". It is divided into a cervical, a thoracic and the abdominal parts. "Radiological studies show

that swallowed food is momentarily held up in the lower gastric end of the oesophagus, prior to entry into the stomach. It is hence certain that some form of sphincter mechanism, capable of contraction and relaxation, must be present at the oesophagogastric junction." Hence that part of the oesophagus that occupies a position from the end of the sternum downwards, which measures 2.5 cm. roughly coincides with the description of Hṛdaya.

The bio-chemical nature and the physiology of Rasa, the nature and modus operandi of Dhamanī cannot be interpreted in terms of modern medicine. Also the importance given to this part of the body called Hṛdaya in Āyurveda has no parallel in modern medicine. The literature available on the functions of the oesophagus is meagre to judge its importance. A detailed exposition of Rasa and its circulation through Dhamanī as given in Āyurveda follows as a separate

article. The merits and demerits of the Āyurvedic system in giving so much importance to this part of the oesophagus need not stand on the way to identify it.

Thus the identification of Hṛdaya as the cardiac end of the oesophagus and Raktāśaya as heart helped us to identify Śleśmāśaya as lungs, Cloma as pylorus and Phupphusa as pancreas. One can understand and appreciate these, when he understands and appreciates the Rasa and its circulation. In identifying the above, we have not resorted to any corrections to the original ślokas, or strained to give created meanings. What we did is only a correct rendering of the original text. The others missed because they studied the text with a preconceived notion of modern anatomy and strained to fit it with the Āyurvedic anatomy. If you read them separately, then try to compare and contrast, one can arrive at the *Truth*, which is presented above.

BIBLIOGRAPHY

1. BLAVATSKY, H. D. 'The Secret Doctrine' Adayar Edition in 6 Vol., Adayar, Madras, India, 1971.
2. SRI AUROBINDO, 'The Secret of Veda', Sri Aurobindo Ashram, Pondicherry, 1971.
3. ŚABDA KALPADRUMAM, Chaukhamba Sanskrit Series, Varanasi.
4. SUŚRUTA 'SĀMHITĀ', V. Ramaswamy Sastrulu & Sons, Madras, 1969.
5. K. L. BHISHGRATNĀ, English translation to Suśrutasaṁhitā in 3 Vol., Chaukhamba Sanskrit Series, Varanasi.
6. 'CARAKA SĀMHITĀ', V. Ramaswamy Sastrulu & Sons., Madras.
7. 'AṢṬĀṄGA HRDAYAM' -do-
8. 'VĪṢA VAIDYA CINTĀMAṆĪ' -do-
9. 'MANTRA PUṢPAM' -do-
10. 'GREY's ANATOMY', Edition 36.
11. AMARAKOŚAM, V. Ramaswamy Sastrulu & Sons, Madras.
12. MĀDHAVANIDĀNAM, Pandit D. Gopalachari, Madras.

सारांश

प्राचीन भारतीय शरीर रचना पर नवीन प्रकाश

ए. नागरत्नम

ए. माधवी

प्राचीन भारतीय चिकित्सा शास्त्र का ही नाम "आयुर्वेद" है। इसकी प्राचीनता प्रागैतिहासिक ओर वेदों की समकालीन मानी जाती है। आयुर्वेदीय चिकित्सा शास्त्र के प्राचीनतम ग्रन्थ का नाम चरक संहिता है। इसी प्रकार सुश्रुत संहिता आयुर्वेदीय शल्य शास्त्र का सबसे प्राचीन ग्रन्थ है। इन दोनों की मूल रचनाओं पर विचार किया जाये तो यह वैदिक ऋषियों की रचना के समान प्रतीत होती है। इनके मूल सिद्धान्तों तथा ऐतिहासिक परम्पराओं पर विचार किया जाये तो यह अत्यन्त सांकेतिक होने के कारण इनकी व्याख्या की आवश्यकता भी सिद्ध होती है। पहले, भारत में विज्ञान का प्रसार गुरु-शिष्य परम्परा द्वारा हुआ करता था। आगे चलकर यह ग्रन्थ उन भाषा पंडितों के हाथों में चले गये जिन्होंने उन सांकेतिक शब्दों का विचार साहित्यिक दृष्टिकोण से किया।

इसवी की 19 वीं शती के उत्तरार्ध तथा 20 वीं शती के पूर्वार्ध में विदेशी लेखकों ने आयुर्वेदीय चिकित्सा ग्रन्थों की विविध विवेचनीय व्याख्याये कीं। साथ ही साथ भारतीय विद्वानों ने भी उपरोक्त संहिताओं के अंग्रेजी में अनुवाद किये ताकि इस ज्ञान का प्रसार अंग्रेजी भाषा भाषी देशों में भी हो। इन अनुवादों में सांकेतिक शब्दों का यथोचित अनुवाद नहीं हुआ जिसके फलस्वरूप यह माना जाने लगा कि आयुर्वेद एक अपरिष्कृत विज्ञान है तथा इसके सिद्धान्त अवैज्ञानिक व काल्पनिक हैं। आज तक भी इन सिद्धान्तों का शास्त्रीय आधार पर विवेचन करने का प्रयत्न नहीं हुआ जिन पर कि आयुर्वेद का वास्तविक सार निर्भर है।

अब इस लेख में सुश्रुतोक्त मानव-शरीर-रचना सम्बन्धित विचारों को नवीन रूप में प्रस्तुत किया गया है। यहाँ पर यह दिखाने का प्रयास किया गया है कि व्याख्याकारों तथा अनुवादकों दोनों के द्वारा हृदय फुफुस, तथा धमनी आदि शब्दों का यथोचित अनुवाद नहीं किया गया और यही स्थिति इनके अंग्रेजी में अनुवाद की भी है। अतः प्रस्तुत लेख में इन विभिन्न अंगप्रत्यंगों व आशयों का शास्त्रानुसार निरूपण करने का और इनके यथोचित पर्याय बतलाने का प्रयास किया गया है।