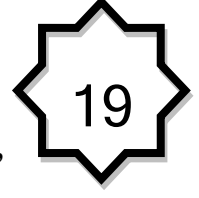


Scientific Insights in Thirukkural

Prof.G.Ramaswamy,

Rtd. Principal, A.V.C.College and Prof.Dhanapalan colleges,
Mayiladuthurai-609001. Tamilnadu.

prof_gramaswamy@yahoo.com and gramaswamy52@gmail.com



Thirukural was retrieved from the palm leaves scripture in 16th century only but the contents in it are more than 2000 years old. Scientific insight is defined by Cambridge English Dictionary as “a clear, deep and sometimes sudden understanding of a complicated problem”. Scientific knowledge is defined as a systematic investigation to established facts or principles or to collect information on a subject. Science is a branch of knowledge dealing with laws, theories, doctrines which are proved and are provable. Traditionally science has two major divisions as Physical science (knowledge of non-living things) and Natural science (living things). Physical science includes Mathematics, Physics, Chemistry etc., and Natural Science consists of the study of Plants (Botany) and Animals (Zoology) and now developed into innumerable branches. Traditional Scientific thoughts and facts are well embedded in Thirukkural and a few alone will be discussed below due to constraints in space.. Thiruvalluvar’s scientific insights can be fully understood if one reads the 2nd chapter on Rain or Medicine(95) or Agriculture(104)

In the Second chapter the poet’s knowledge on Rain is unparallel to any poet or literary piece in the world. The 10 couplets coming under the heading Van sirapu is unique and most appreciated by scholars and the translators admired his knowledge of Nature, Clouds and the Rain. The couplets 11 to 20 are

- 11 defines Water as the elixir of life. (Water as the Prime Natural resource scientifically)
 - 12-gives the narration that Water is the source of all food and water itself is a food.
 13. if clouds fail to rain, hunger will strangle the world.
 14. Agriculture will fail if there is no rain leading to famine (Amerthiya Sen-the Nobel Prize was awarded only for this concept)
 15. Thiruvalluvar’s scientific knowledge is well seen in this couplet as he says Failed or excess rains destroy, as well it uplifts the afflicted.
 16. His observations of nature are marvelous and keen and is seen in this couplet which says even a blade of grass can’t be seen when there is no rain.
 17. The saint poet is able to give the Water Cycle in this couplet as the ocean will dry up if there is no adequate evaporation and cloud formation.
 18. Any penance or celebrations or festivals won’t happen if the rain fails.
 19. Only with the gift of rain worldly affairs will function
 20. As he has narrated the importance of Rain which can’t be compensated by anything in the world he finally concludes Rain is the panacea of the world.
- In these 10 couplets we are admiring the worship of nature like Sun, Rain by the people who lived 3000 years ago. Apart from these 10 couplets in more than 10 kurals he has mentioned the

கொங்குநாடு கலை மற்றும் அறிவியல் கல்லூரி, கோவை
மற்றும்



உலகத் திருக்குறள் மையம்
இணைந்து நடத்திய
உலகச் சாதனை மாநாடு



“ திருக்குறள் காட்டும் அறிவியல் சிந்தனைகள் ”

Thirukkural Special Volume 1 Issue 3

Freshwater with several epithets(737,215..) his knowledge of the ground water which is the potable water is seen many couplets .

The Second important chapter where we can get the glimpses of his Scientific knowledge in Thirukural is in the Chapter 104 (1031 to1040) titled Agriculture . In these verses how the agriculture is to be done and stresses the importance of the Farmers and the Soil.

1031. The poet defines Agriculture is the back bone or the axel around which this planet rotates. No poet has so emphatically said like him in one sentence.

1032.Tillers of the soil are linchpins to the vehicle of life forms.

1033. Agriculture has been the unique prestige of Self-reliance other professions have to bow and toe to eat. A whiplash to all people who are of the opinion agriculture is a mean profession.

1034. Rulers can govern only when agriculturists produce bountiful crops.

1035. The Farmers are the world's donors and all others to beg food from them only

1036. When farmers stop their work the world will come to a standstill.

1037. In this couplet the traditional knowledge of ploughing is well explained Ploughed and sun dried to dust , four folds in volume, the yield will be rich. We are wonderstruck with his knowledge of Organic farming and Natural manures and techniques.

1038.The agricultural practice includes, ploughing, watering, manuring ,weeding and protecting the crops. All these are very important and to be followed.

1039. If the farmer is lazy and not regularly visiting the fields the soil will laugh at him with very poor yield.

1040 . The farmer is to visit daily, court and love the crop field and if he is sleepy and lazy the field will ridicule him with poor yield.

The third important Chapter where we can witness the Scientific knowledge portrayed is in Chapter 95. Medicine (marunthu) 941 to 950. Couplets.

941.Doctors of medicine deem that, as indicated by the pulse, flex, bile and phlegm, in excess or short cause diseases. The poets' knowledge of disease is astonishing in this couplet.

942. the body needs no drugs if what is eaten is digested before the next meal.

943. . Once digested, eat with moderation, that prolongs the life of one embodied

944. Assured of digestion and real hunger, Eat with care what is agreeable to your body. The saint poet even before 2000 years is mentioning about food allergy.

945. No harm to life if what is eaten does not include disagreeable food.

946. As pleasure dwells with a moderate eater, so is disease with a voracious glutton

947. Unlimited eating beyond one's measure leads to unlimited number of ills.

948.Diagnose the illness, trace its cause, seek the proper remedy and apply it with skill. A marvelous couplet about the whole medicine and its principles.

949. A doctor should have the measure of the patient, disease and its stage, and treat. He gives the guide line for the doctors profession.

950. It is the couplet the epitome of this chapter as it says any treatment involves these four orders; the patient, doctor, medicine and the nurse.

**கொங்குநாடு கலை மற்றும் அறிவியல் கல்லூரி, கோவை
மற்றும்**



**உலகத் திருக்குறள் மையம்
இணைந்து நடத்திய
உலகச் சாதனை மாநாடு**



“ திருக்குறள் காட்டும் அறிவியல் சிந்தனைகள் ”

Thirukkural Special Volume 1 Issue 3

Apart from these three important chapters the scientific knowledge of the saint poet Thiruvalluvar is seen in his couplets on Air, water, numbers, plants, animals, gold, steel and copper .

Physics:

In good old days of the past people used a country made scale to weigh as like our present day country balance used by our vegetable vendors in villages and small towns. The Scale is having an iron horizontal rod and two metallic pans hanging on either side of the rod . This scale is to be checked before weighing that the rod is horizontal and is not tilting to any side. This iron rod is mentioned in Kural 118 and cautions the judges to be neutral in the Chapter 12 .

Mathematics:

Thirukkural gives immense importance to Mathematical knowledge mentioned by him as numbers (ennum) and to other branches of knowledge as writing (ezhuthum) as in Kural 392 and 393. In Thirukural except Number nine and Zero all the digits are mentioned as given below.

One(1): (in kurals-109,323,805,838,,875) more than 40 times

Two(2): (374,392,393,402,455,581,674,760,875,1247)

Three(3): (360,682,684,688,941,1085)

Four(4): 382,390,501,513,605,743,766)

Five(5): (25,27,126,271,632,675)

Six(6): (381)

Seven(7): (62,107,126,398,1269, 1278)

Eight(8): (9)

Nine(9): NIL

Ten(10): (450, 817)

Crore in 816.

Chemistry:

Thirukural has recorded the usage of metals like Steel, Copper and Gold as follows

In kural 267 how the Gold is melted and purity and shining is obtained is compared to persons who do penance. In kural 888 how the metal ornaments and sharp edges are smoothened by using the File(a grooved metal rod)(aram). In kural 931 he has mentioned the fish bait a a twinkling piece of gold for the fish in Chapter 94. In kural 759 we infer that sharp weapons of steel or iron are used and spears in 773 and 775. From Kural 667 we are able to understand the usage of Lynch pin for big chariots and till date we are using it in the cattle pulled carts and in Kural 475 how the axil will break if the cart is overloaded with very less weighing peacock feathers.

Thiruvalluvar had mentioned the copper vessel with lid in Kural 887 .

Thiruvalluvar's scientific insight into pheromones can be seen in 1113 and 1121 kurals. In 1113 he is describing the lady love's who is having a characteristic body odour or smell. In 1121 kural the saint poet is comparing the buccal saliva of the lady love to be tastier than that of milk and honey mixture.

Exhaustive scientific facts are given in Thirukkural on Nature ,plants and animals. Only in this century people are aware of Biodiversity and its significance but Thiruvalluvar our ancient

கொங்குநாடு கலை மற்றும் அறிவியல் கல்லூரி, கோவை

மற்றும்

உலகத் திருக்குறள் மையம்

இணைந்து நடத்திய

உலகச் சாதனை மாநாடு



“ திருக்குறள் காட்டும் அறிவியல் சிந்தனைகள் ”

Thirukkural Special Volume 1 Issue 3

grandfather had coined an appropriate term for it in Kural 322 and how to conserve living forms on earth. This Kural may be considered the epitome of his Scientific Insight. Thiruvalluvars keen observations of plants, animals and their behavior is beyond appreciation and Thirukural may be considered a treasure house of knowledge in this aspect.

Botany:

Around 20 kural Thiruvalluvar has mentioned the trees like Neem (217), Coconut or palm tree (333,216), Mango (216), Accacia(879), Banana(1191), Bamboo(1113) and also about a poisonous tree (1008-*Strychnos vomica*?)

In Thirukkural as well as in many Sangam literature poems the flower Anicham- a tender stalked sweet smelling flower(*Anagallis areveniae*) used by ladies is mentioned and in Thirukurals (90,1111,1115,1120) mentioning of this flower is made and several research papers are published on this flower and till date it is not identified beyond doubt by Biologists.

Thiruvalluvar used the term fruit for the thorns of *Tribulus terrestris* known as *Nerunji mull* in English.

Thiruvalluvar's mention of "Kuvilai" flower is also much discussed and few botanists are accepting it is the American White water Lilly –*Nymphaea odorata* and a few are of the opinion it is the flowers of the water hyacinth- *Pontederia crassipes* the common aquatic plant.(Vide Flora Table-(1)

Flora in Thirukkural (Table-1)

Serial Number	Chapter Number	Kural number	Plant / Part	Remarks	discussion
1	1	3	Flower	Almighty's feet flower like	Name not mentioned
2	2	16	Grass	No rain no blade of grass	Plants water dependant
3	8	76	Tree	Dried tree of a desert	Desert tree can't rejuvenate
4	9	90	Anicham	Tender flower	? see text
5	10	100	Fruit	Any edible fruit	Preference of fruit over unripened fruit
6	12		ulli		
7	22	216	Tree	Beneficial tree	Mango or any edible fruit
8	22	217	Tree	Medicinal tree	Neem or ?
9	43	425	Flower	Blossoming /drying	Plant nature
10	60	595	Aquatic plants	Lotus or Lilly?	Aquatic plants adaption to water level-scientific knowledge

கொங்குநாடு கலை மற்றும் அறிவியல் கல்லூரி, கோவை

மற்றும்

உலகத் திருக்குறள் மையம்

இணைந்து நடத்திய

உலகச் சாதனை மாநாடு



“ திருக்குறள் காட்டும் அறிவியல் சிந்தனைகள் ”

Thirukkural Special Volume 1 Issue 3

11	60	600	Tree	Comparison	Plants lack the sixth sense
12	88	879	Thorny tree	Eradication method-nibble the bud	Scientific knowledge of <i>Prosopis julifera</i> ?
13	100	997	Trees	Lacking	Plants lack the sixth sense
14	111	1103	Lotus flower	Comparison	Eye comparison
15	112	1111	Anicham	Petiole ,tenderness	See text
16	112	1112	Flower	comparison	
17	112	1113	Bmboo	comparison	
18	1112	1114	Kuvalai flower	Comparison	See the text
19	112	1115	Anicham	Tender flower	? see text
20	112	1120	Anicham	flower	? see text
21	112	1120	Thornyfruit	?	?
22	120	1191	Seedless fruit	Banana or ?	
23	131	1304	Climber	Valli kodi?	
24	131	1305	Flower	Comparison to eye	Which flower?
25	131	1306	Fruits		
26	132	1313	Kottu flower	Flowers in a branch	Which flower?

Zoology:

Scientific references of animals from invertebrates to vertebrates is finding a place in Thirukkural.
(Table-2)

Fauna of Thirukkural ,

Table-2

Invertebrates

S.num	Animal	Chapter name	Chapter number	Kural number	remarks
1	worm	kindness	8	77	Sunlight will parch the worm to death

Fishes: Vertebrates

S.num	Animal	Chapter name	Chapter number	Kural number	remarks
1	Fish	gambling	94	931	Fishing bait sparkling gold

கொங்குநாடு கலை மற்றும் அறிவியல் கல்லூரி, கோவை
மற்றும்



உலகத் திருக்குறள் மையம்
இணைந்து நடத்திய
உலகச் சாதனை மாநாடு



“ திருக்குறள் காட்டும் அறிவியல் சிந்தனைகள் ”

Thirukkural Special Volume 1 Issue 3

2	Kayal fish	Dream	122	1212	Fish compared to the lady's eye
---	------------	-------	-----	------	---------------------------------

Reptiles

S.num	Animal	Chapter name	Chapter number;	Kural number	remarks
1	Tortoise	Sublimity	14	126	Tortoise behavior of shrinking into the carapace
2	crocodile	Habitat	50	495	Crocodile's strength in water
3	Snake	Internal enemy	89	890	Dangerous to live with a snake
	Cobra	Valour of army	77	763	Snake's prey is rat
	Snake	Alar/gossip	115	1146	Snake swallowing moon-folklore belief

Birds

S.num	Animal	Chapter name	Chapter number	Kural number	remarks
1	Birds	Avoiding friendship	28	274	Temporary life is compared to the flight of a bird
	Birds	Unstability	34	338	Life will fly away from body during death
2	Peacock	Ladys aaadmiraation	109	1081	Wondering
	Peacock feathers	overloading	48	475	Emphasis on threshold value
3	Crow	P[lace advntage	49	481	Crow-diurnal and Barn owl-nocturnal;
	crow	Relationship	53	527	Social behavior of crow while feeding
4	Barn Owl	Place	49	481	Nocturnal bird, weak during day time
5	Egret	place	49	490	Stalking behavior of egrets
6	Swan				

கொங்குநாடு கலை மற்றும் அறிவியல் கல்லூரி, கோவை
மற்றும்



உலகத் திருக்குறள் மையம்
இணைந்து நடத்திய
உலகச் சாதனை மாநாடு



IV- Mammals

S.num	Animal	Chapter name		Kural number	remarks
1	Elephant	Work culture	50	539	
		Work culture	68	678	Capture of elephants with Kumki elephants
		earning	76	758	Elephant war;
		Place value	70	772	Army strength
1	Male elephant	Habitat	50	500	Elephant's courage
		Encouragement	60	597	Elephant's fighting quality
		Motivation	70	774	Elephants quality
		Lady's adoration	109	1087	Decorations of the elephant
2	Tiger		28	273	Tiger skin clad cow-camouflage
		encouragement	60	599	Tiger's attack
3	Fox	Habitat	50	500	Native living Place value
4	Cow	Tyranny	56	560	Cow as wealth
	Ox/bull	Fighting quality	63	624	Cow old name
5	Rat	Strength of army	77	763	Rat is the prey to snake
6	Rabbit	Army strength	78	772	Motivation to be higher and not a mean
7	Horse	Dangerous friendship	82	814	Old term
8	Deer	Lady's beauty	109	1085	Female deer like fearing behaviour
	deer	Comparison of look	109	1089	Female deer quality
9	Yak?	Shame	39	969	Animal will die if it sheds its fur

கொங்குநாடு கலை மற்றும் அறிவியல் கல்லூரி, கோவை
மற்றும்



உலகத் திருக்குறள் மையம்
இணைந்து நடத்திய
உலகச் சாதனை மாநாடு

