V. PIRAPPIYAL.
(Articulation of Tamil sounds.)

Tolkāppiyar explains the articulation of the sounds in the third chapter of eluttu-ātikaram called pirappiyal. Pirappu means birth and the sounds are born when they are articulated. There are twenty sutras in this chapter. The last two sutras (according to some three, when the total number will be increased to twenty one) deal with secondary sounds and what are called internal sounds.

II.

The first sutra deals generally with the articulation effected by the uprising energy called casually air or the breath excited from the navel region. This is said to reach head, throat and chest. These are considered to be three places or sthānās in Suklayajūrveda Prātiṣākhya and its commentary gives these three. What head means here is not clear. Chest at least may be interpreted as the lungs. Head and chest are interpreted by Allen and others to refer to the subjective feeling felt when certain sounds are heard, as though from head and chest. Then there are others who speak of eight sthānās (as pāṇinīyaśīkṣā). These eight are the chest, the throat, the head, (the root of) the tongue,
the teeth, the nose, the lip and the palate. Tolkāppiyar's sutram to start with speaks of first three asthānas and then proceeds to speak of the further five separately, thus making in all eight, as though, suggesting a compromise between these views. "The breath reaches these organs and all the sounds are articulated. But the effect of articulation is of varied nature, if carefully analysed," thus concludes the sutram.

The differentiation of the various sounds are classified in five ways in the Śikṣā (i) by tone, (ii) by length, (iii) by place of articulation (iv) by process of articulation and (v) by secondary features. This is according to Pāṇini Śikṣā. Taittirīya Prātiṣākhya states that "the distinction of letters is effected by secondary features, by combination, by place of articulation, by the position of the articulator, and by length. Here it will be seen that the combination replaces tone in the list of other sīkṣās. An instance according to the Śikṣā, of secondary features is the voice-process. As instances of combination are given aspiration and nasality. By the position of articulator is meant the processes of closure, opening and constriction associated respectively with stops, vowels and fricatives. These remind us, as W.S. Allen points out, of Twaddel who is
prepared to admit as 'component terms of articulatory differences' such various features as place of articulation, duration and the processes of voice, aspiration, closure, and constriction.

Dr. P.S. Cuptaramya Sastri, asserts that "the first sutram is more or less a translation of Kārikās of Pāṇinī. But he forgets that there are so differences between the authors for instance there are many details omitted in Tolkāppiyam.

Though the first sutram in Tolkāppiyam seems to be on same terms as those of the Śikṣās, the latter sutras in Tolkāppiyam are not following the method of the Śikṣās in their explanation. One may therefore very well wonder whether this is from the pen of Tolkāppiyar. The whole description here, in this chapter however assumes the knowledge of certain methods of approach, probably known to all the members of the then learned world of India, an approach which is probably similar to one found in the Śikṣās.

III.

The Śikṣās differentiate between athana or place and karāṇa or organ. Atharvaprātiśākhya explains them
as follows:— "The sthāna is that which is approached; Karapa that which approaches" corresponding to what Pike calls points of articulation and articulator. 8 As W.S. Allen points out "In a large majority of cases the articulator is the area of the gongue" 9 mutalna, itain and nunina are the root the middle and the tip of the gongue, whilst the opposing point of articulations are mutal, itai and nuni annam that is, the soft palate, the hard palate and the alveolar. The baksas extend the same classification to lips but Tolkappiyar rightly does not seem to make such distinction for the labials.

Tolkappiyar does not also differentiate between external and internal processes, the internal processes occurring within the mouth and the external process occurring outside the mouth. Tolkappiyar speaks of mitaru vali with reference to vowels and the semi vowel y. 10 He speaks of mukkuvali with reference to nasals. 11 Usually the chest is also to be added on the basis of the first sutram of pirappiyal as made clear by Ilampuranar and Naccinarkkinyar. What is probably intended is that the breath coming from the lungs, that is the chest, comes out in the cases of plosive without any further change except for the modification of the sound whilst in the cases of vowel and semi vowel there is breath undergoing some changes at the glottis so as to become
voice sound; and whereas in the case of nasals is a still further change when the breath escapes not only through the mouth but also through the nose. This may explain the breathed or voiceless sounds, the voiced sounds and the nasals respectively. But Tolkāppiyar refers to vowels as throat sounds and nasals as nose sounds. There is no such characteristic for the plosives. Again though he \( \sqrt{y} \) as a throat sound, he is silent with reference to other semi vowels. At least with reference to semi vowels one can argue they ought to be taken as one with \( \sqrt{y} \). It is not clear why he is silent about the plosives. Perhaps his sutram relating to this has been lost. It is for consideration whether \( \text{vali} \) can be translated as "Prātisruti." \( \text{vali} \) is not mere breath but the sound that the breath gives when undergoing various changes in the various places. See \( \text{valiyin icaikkum} \) \( \text{valiyicai} \).

It is not clear that Tolkāppiyar is differentiating clearly athānas from karana. The various verbs used may be considered here for recognising and differentiating the processes. These are \( \text{ankattal} \) \( \text{ural} \) \( \text{kuvital} \) \( \text{orrval} \) \( \text{varuval} \) \( \text{anaval} \) \( \text{iyaival} \) \( \text{icaicai kannurru ataital} \) \( \text{mukkip valiyicai yappural} \).

\( \text{ankattal} \) is merely opening the mouth. This
may be called an intra-buccal process. *ṣṭṛṇa* will be complete
closure. *varuṭāla* like the passage of the hand an another
part of the body means not complete closure; it is a tap, a
flap or a fricative. *kuvital* is the rounding of the lip;
*iyuṭāla* coming together is also closure. *icaikappurru-ṭaiya*
is probably the constriction required for the semi vowels.
*mukkin vàliyical yappural* is the passage of the breath through
the nose. *āriaṭṭāla* is mere opening and this refers to the
neutral position of the tongue and /a/ /a/ is said to be
*mitarruvaliyical* that is Kanṣṭha which is translated as glottal.

As W.S. Allen points out this means an unmodified voice. 24

He quotes from M. Joo’s Acoustic phonetics.

"We therefore discuss vowel production on the
hypothesis that the glottis emits a spectrum that is indepen-
dent of supra-glottal articulation and that the filtering
which determines the ultimate vowel spectrum is independent
of the glottal adjustment; that is, the original production
and the articulatory modi cation of the glottal tone are
entirely independent of each other. The spectrum of the
vowel as it exists in the open air is to be reckoned, then,
as the glottal spectrum multiplied for each frequency by the
transmission percentage of the articulatory filter", and
concludes "two thousand years and more before the sound -
spectrograph, a J sound was not unreasonable substitute for the fiction of a pure "glottal spectrum."

IV.

Tolkäppiyar however mentions this ankattal to in J, in J, in J, in J and in J.26 Really speaking this must be applicable to in J, in J, in J in J and in J also. But because the opening of the mouth is modified by the curving of the lips he does not mention ankattal there in. He thus differentiates between ankattal and ital kuvital. The closed back quality is classified according to the lip position rather than according to the tongue position. Naccinärkkäniyer calls ankattal a process or muryarci.27

With reference to articulation of in J, in J, in J, in J and in J28 the explanation given by Tolkäppiyar is original and therefore a little surprising. He speaks of ural that is a contact. Really the palatal vowel is said to be produced by the middle of the tongue approximating to the palate. But ural cannot be translated as approximating. If the palatograph for in J is examined it will be seen that there is an untouched portion in the plate at the palates region and the contact is revealed
near and above the root of the tongue. As an approximation of the middle of the tongue to the middle of the palate cannot be easily described by Tolkappiyar, he has recourse to referring to the contact which can be easily explained. The contact of the right and left edge of the tongue at its back third with the one third portion of the palate which is usually called the soft palate is contrasted with similar contacts arising at middle and front portions. The edges come into contact with the teeth adjacent.

Ilampyrañar interprets appalmutal as the place adjacent to teeth. mutalnâ wilimpu is interpreted as the edges of the back portion of the tongue which alone come into contact when the front vowels are articulated. Because of the tongue considered as an articulator it is made the subject of the sentence and the place near the teeth which is the place of articulation (sthâna) is put in the objective case. Naccinarkkiñiyar does not make such a difference between the articulator and the place of articulation by putting one in the nominative case and the other in the accusative case. He states that these two, the teeth nearby and the edge of the back portion of the tongue come into contact with each other.

Venkaṭarājalu Keddiar does not appreciate
this original statement by Tolkāppiyar and he wants to interpret this in terms of Sanskrit Śīkṣās and therefore interprets appal mutel as the region near the upper teeth and nā vilimpu as probably the middle of the tongue. How vilimpu can mean the central portion is not at all explained by him. According to the Tamil lexicon vilimpu coming probably from the vili, to diminish or pass away means the edge or rim or the margin or the gums as forming the edge of the root of the teeth. Therefore it is difficult to understand how Venkatakrājalu Reddiar arrives at his interpretation.

After mentioning the front vowels and the related diphthong, Tolkāppiyar takes for consideration the back vowels [u], [u], [i], [o], [au]. As already stated their articulation is not described in terms of their nature of back vowels. Probably he feels that the approximation of the back of the tongue towards back portion of the palate realised in front vowels, continues also in these back vowels, the real distinction therefore being in the shape of the mouth. Therefore he speaks of these vowels being articulated through the sounding of the lips. No distinction is made between the open ness of or closeness.

V.

Tolkāppiyar has grouped together first
\[ a \] and \[ ã \], secondly \[ i \], \[ ï \], \[ e \], \[ ë \] and \[ ai \] and thirdly \[ u \], \[ ū \], \[ o \], \[ ë \] and \[ au \]. There should be necessarily variations amongst the sounds mentioned in each one of these groups. Otherwise one cannot have twelve vowels but only three. Therefore Tolkāppiyar hastens to add that there are slight differences amongst these, though each group is born at the same place of articulation. \(^{36}\) According to Ilampūraṇar and Naccinārk-kiṇiyar stands midway between sutras on vowels and consonants, and therefore should be applied to both vowels and consonants. \(^{37}\) Venkaṭarājalu Keddiar \(^{38}\) and Dr. P.Ś. Īḻṟavaṇṇa Sastri \(^{39}\) however feel that this is applicable to vowels only and not to the consonants because the latter are differentiated individually in the subsequent sutras. But for \[ I \] and \[ ù \] no such distinction is mentioned and therefore some such sutram like this is required. \(^{40}\) whereas Ilampūraṇar and Naccinārk-kiṇiyar emphasise the identity of the place of articulation, Venkaṭarājalu Keddiar emphasises the process of articulation being the same. Therefore even when he argues against Ilampūraṇar and Naccinārkkiṇiyar he forgets their emphasis and states that there is no difference in the place of articulation between plosives and the respective nasals, except
that the nasals in addition have the nasal resonance. The plosives becomes a nasal continuant; for allowing the breath to escape through the nose, the soft palate has to be lowered.

VI.

The tongue is divided into three divisions the back, the middle and the front and the palate is also divided into the corresponding three. \( \text{\L k} \) and \( \text{\L n} \) \( ^{40} \) are articulated by bringing into contact the back tongue; the back palate; \( \text{\L c} \) and \( \text{\L n} \) \( ^{41} \) are articulated by bringing into contact the middle tongue and the middle palate \( \text{\L t} \) and \( \text{\L n} \) \( ^{42} \) are articulated by bringing into contact the front tongue and the front palate.

VII.

It is curious that Tolkappiyar does not refer to any retroflexion which is usually found in the pronunciation of \( \text{\L t} \) and \( \text{\L n} \) in Sanskrit. The \( \text{\L t} \) and \( \text{\L n} \) are also called cerebrals in Sanskrit. Tolkappiyar however does not make them either cerebral or retroflex. The front tongue is an area of the tongue and not any particular definite point. \( \text{\L t} \) and \( \text{\L n} \) are certainly not dentals like \( \text{\L t} \) and \( \text{\L n} \). Probably they are
The retroflexion characterises according to Tolkæppiyar the Tamil $\mathcal{r}$ and $\mathcal{m}$ and $\mathcal{r}$ and $\mathcal{l}$. The front tongue goes upwards and comes into contact with the palate. The Tamil word for retroflexion is anari. Except for this retroflexion which characterises the $\mathcal{r}$ and $\mathcal{m}$ there is no further distinction between $\mathcal{t}$ and $\mathcal{n}$ on the one hand, $\mathcal{r}$ and $\mathcal{n}$ on the other. Prof. Firth differentiates between Indian or Sanskrit $\mathcal{t}$ and English $\mathcal{t}$ as follows: "The Indian $\mathcal{t}$ is not made with the tip in the English manner but with the very edge or rim of the tip which is slightly curled back, to make this possible." It is for consideration whether the same distinction more or less might have not existed in Tolkæppiyar's age, between $\mathcal{t}$ and $\mathcal{r}$. In Tamil $\mathcal{r}$ will be cerebral and $\mathcal{t}$ will be like English $\mathcal{t}$. On the basis of the sutras which have come down to us, it is very difficult to make any further differentiation. If the Tamil $\mathcal{t}$ is also made a retroflex then there will be no distinction between $\mathcal{t}$ and $\mathcal{r}$.

VIII.

There is one more point to be noticed. The description of the articulation of $\mathcal{r}$ and $\mathcal{m}$ comes
after the description of \( \text{t} \) and \( \text{n} \). But even here there is a slight disturbance in the order because according to the order of the traditional arrangement of the plosive \( \text{p} \) precedes \( \text{r} \). The explanation is that the sutras follow the order of articulation by the tongue. After \( \text{k} \), \( \text{c} \) and \( \text{t} \), \( \text{t} \) comes as the dental. Then for \( \text{k} \), \( \text{c} \), \( \text{t} \) and \( \text{t} \) there is simple contact without any retroflexion or any change. For the articulation of \( \text{t} \) the front edge of the front tongue swells up at its edge. After finishing these cases of simple contact, Tolkāppiyar is said to refer to the articulation by the retroflexion of the tongue, \( \text{r} \), \( \text{n} \), \( \text{r} \) and \( \text{l} \). After these, the articulation with the lip or the lip and the teeth are described.

**IX.**

Now, we will discuss how elaborately Tolkāppiyar is describing the production of the dental and the other sounds. The dental \( \text{t} \) and \( \text{n} \) are next taken by Tolkāppiyar. He refers to the teeth but it is a part of the palate according to him, because he takes the whole dome of the mouth except the teeth as the palate. Therefore he speaks of *annam nanniya pal* 'the teeth which are attached to palate.' Ilampūranar interprets *nanniya* as *poruntiya*.
'fitted in' and Naccinārkkiniyar as cērnta 'part or adjacent'; there is not much difference between these two. Then the tongue does not come into contact directly with the center of teeth. Tolkāppiyar speaks of pālmutal maruṅku as a place of articulation. Iḷampūraṇar and Naccinārkkiniyar interprets the word pāl as teeth. mutal maruṅku according to Iḷampūraṇar is a place adjacent to teeth. Naccinārkkiniyar interprets it as two words mutal as the root of the teeth; and maruṅkil is itself taken as to have the force of a place. Therefore, Naccinārkkiniyar makes it clear that the place of contact is the root of the teeth instead of leaving it vague as the place which is adjacent to teeth. This place is also the part of the palate according to Tolkāppiyar and its commentators; but it is nearer the teeth than what was called front palate. Dhanta-mūla is the word used in Sanskrit Śīkṣās which Veṅkaṭārayalu Reddiar quotes. In Sanskrit these dentals are produced at the teeth according to Vājasaneyā prātiśkhya and Ṛktantravyākaraṇa; and at the rim of the teeth according to Ṛk-prātiśkhya and Taittirīya prātiśkhya. The latter comes near the description given by Tolkāppiyar especially as interpreted by Naccinārkkiniyar. Tolkāppiyar further goes to describe the
articulator, the tongue. It does not articulate with the tip or its dorsal part. It is the blade that articulates. The Śīkaśas, for instance, Atharva-Prātiśākhya use the word 'prastīrṇa', that 'is spread out' to characterise the tongue in this articulation. Tolkāppiyar uses the word parantu. namuṇi parantu is very much like the term used in Śīkaśas 'jihvaṇaṃ prastīrṇam'.

Tolkāppiyar uses also the phrase meyyura. This is interpreted by Ilampūraṇar to mean that the tongue has to obtain or assume the (proper) form and the makes this statement applicable to all sounds by emphasising the fact that only when the tongue - the articulator - assumes the respective proper forms that all the sounds are respectively well articulated and pronounced. orra is interpreted by Ilampūraṇar as the close contact established by the blade of the tongue pressing against the root of the teeth so as to arrive at the proper form for producing the sound.

Naccinārkkiniyar on the other hand, interprets meyy as referring to the form of the tongue; according to him, ura is not the verb coming from the root uru but an uricicol which means 'to a great extent'. orra even according to him means, the close contact or pressure. This is
certainly an interpretation which is different from Ilampūra-
nar.

In the first sutram of the 'pirappiyal' the organs of articulation coming together have been mentioned as uruppuryamaiya. Then there are various degrees of coming together. Naccinārkkinīiyar differentiates ural orra from merely orra and both, from varuṭa. ural means close contact with the greatest pressure. ciritu orral will be lesser pressure and varuṭal will be mere touch and go. Perhaps he is thinking of Sanskrit terms 'Sprāta' and Isat sprāta. This may be explained uraorical and orral. But what about the word varuṭal. The Sanskritist may be taken to speak of uraorical as Sprāta and ciritu orral as Isatsprāta. But Naccinārkkinīiyar must be making Tolkāppiyar to speak of 'adyanta sprāta' and 'sprāta' which latter Naccinārkkinīiyar would interpreted as 'Isat sprāta'. This is opposed to ordinary usage. The real contrast in Tolkāppiyar is only between orra and varuṭa. He is not justified in reducing sprāta to 'Isatsprāta' contrasting uraorical and orral instead of orral and varuṭal.

But why he does so will be clear when one
studies the next sutram about \( r \) and \( n \) where the word orra comes in. It is Iłampūraṇar's interpretation which seems to make any sense there. Therefore according to Tolkāppiyar one may conclude that \( t \) and \( n \) are produced at the root of the teeth with the blade of the tongue well spread out or properly spread out. If one realises the force of \( kk. \) prātisākhya which "disapproves of the excessive tongue spreading in any of the stop series," one may realise the full significance of the term used by Tolkāppiyar; for he probably is not against the excessive spreading.

\[
\begin{align*}
\text{\( r \) and \( n \) are described in the next sutram.} & \quad & \text{\( \text{apari nuninā appam orra} \)} \\
& & \text{\( \text{rak kān nak kān ayiranțum pirakkum} \)}
\end{align*}
\]

\( r \) and \( n \) are produced by the tip of the tongue being raised and allowed to gently touch the hard palate.

The subject of the sentence is there nuninā 'front tongue' and the place of contact is expressed in the objective case and the object is here the palate that is as in the previous sutram the front part of the palate. The
verb used prra 'to come into closer contact'. But before 
this contact is established the tongue, as it were, rises up 
perhaps as already stated in the prativestita form, producing 
the retroflexion. This is expressed by the word anari. When 
the cobra curves up its hood the same word anari is used to 
describe it. Therefore when there is retroflexion of the 
tongue coming into closer contact with the palate one has 
the sound ʃ r ʃ and ʃ n ʃ.

A similar description is given for the articulation of ʃ r ʃ and ʃ l ʃ:

muniśa anari annam varuta
rakāram lakāram ayiranṭum Pirakkum

'ʃ r ʃ and ʃ l ʃ are produced by the tip of the tongue 
being raised and allowed to gently rub against the hard 
palate.'

But the difference consists in the degree 
of contact produced. ʃ r ʃ and ʃ n ʃ are articulated 
by prra 'the closer contact or greater pressure' whilst 
ʃ r ʃ and ʃ l ʃ are articulated by varuta 'lesser 
contact or mere touch and go.' It may perhaps mean mere 
friction. This will make all the four letters ʃ ʃ ʃ ʃ and ʃ.
alveolars and the Śiksās, it may be noted also make[r] an
alveolar. The pāṇiniya-śiksā makes it a retroflex though
some other śiksās makes it dental. Dantamūla is rather an
ambiguous term which sometimes means the dental position and
sometimes the alveolar. But Tolkāppiyar distinguishes the
front palate from the edge of the palate to which the teeth
are attached. Therefore these four letters [r][n][r] and [t] may be taken as alveolars in Tamil.

The modern pronunciation of [r] is that
of a rolled sound or trill. The [r] is the ordinary
fricative without much rolling. These must have been the
pronunciations in the age of Naccinārkkiniyar as well. Then
the contrast between them can only consist in the amount of
contact. [r] is varutal and [r] is orral. This
contact of [r] though closer than produced by [r] is
not that of any stop like [k], [c], [t] or [k].
There is more pressure in the latter than found in a trill.
Therefore Naccinārkkiniyar has to explain the three degrees
of contacts. The first is the contact of the plosive which
Naccinārkkiniyar calls uraorral. The second is the contact
found in trills, which is orral and the third is the almost
frictionless contact found in [r] which is varutal.
This will explain why Naccinärkkäniyär interprets in the way he does the term uṣṇorval found in sutram on \( \text{i} t \). Even Pavaṇapänti at the end of the twelfth century or beginning of the thirteenth century is not aware of the plosive nature of \( \text{i} \). By his time \( \text{i} \) and \( \text{i} \) have fallen together only to be differentiated in literary usage as trilled \( \text{i} \) and ordinary \( \text{i} \). Therefore he distinguished only the greater and lesser contact produced 66 annamnä naṇiyurir pana varum. The change in the pronunciation explains the difficulty felt by the later writers like Naccinärkkäniyär in the understanding Tolkääppiya sutras on \( \text{i} \), \( \text{n} \), \( \text{i} \) and \( \text{i} \) and the reason for Naccinärkkäniyär's more or less strained interpretation of these sutras.

67

XI.

ff. 96 describes the articulation of laterals \( \text{i} \) and \( \text{i} \)

nä vilimpu vinäkiyanpäl mutalura

āvayip annam orravum vanțavum

lakära lakäram ayirantum pirakkum

The tongue is the articulator and therefore is taken as subject for the sentence as usual by Iḻampüranär.
The edge or the blade of the tongue as it swells up (that is \textit{vinjal}) and reaches the portion adjacent to the teeth nearby where it comes into closer contact; thus \$l \ j$ is articulated. There is no complete closure because the breath escapes on either side of the tongue. If instead of creating the close contact if the swelled up blade just touches and goes, then \$l \ l \ j$ is articulated.

Therefore according to Tolkappiyar the \$l \ l \ j$ and the \$l \ l \ j$ are more or less produced at the same place of articulation and they differ only in the pressure developed. \$l \ l \ j$ has orral whilst \$l \ l \ j$ has only varuṭal. The exact place of articulation is not clear. The phrase describing it is paluṭal. Is it the alveolar or dental region? Tolkāppiyar differentiates amongst (i) \textit{anmutalpal} \textsuperscript{68} 'teeth nearby' (ii) the \textit{aynam} \textsuperscript{69} 'the palate' and (iii) \textit{nunilaynam} \textsuperscript{70} 'the front palate.' He assumes that \$l \ l \ j$ and \$l \ l \ j$ have the same place of articulation but different from that of \$r \ j$ and \$l \ j$. \$r \ j$ and \$l \ j$ are alveolars. \$l \ j$ and \$l \ l \ j$ are probably dentals. But the dental in Tolkāppiyam is pronounced when the tongue comes into contact with \textit{not with} the centre of the teeth but with the root of the teeth.

But in Tolkāppiyam itself one finds that if
\( \text{1 \ j} \) is followed by the dental \( \text{1 \ t} \), the \( \text{1 \ j} \) and \( \text{t \ j} \) become assimilated to the alveolar \( r \) (e.g.) \( \text{taṭam} \) > \text{Karraṭam}. This shows that \( \text{1 \ j} \) is nearer the alveolar region, though not in the alveolar region itself. 71 When \( \text{1 \ j} \) is followed by the dental \( \text{t \ j} \), perhaps because its flap like quality of pronunciation, it becomes along with the dental \( \text{t \ j} \) assimilated to the \( \text{t \ j} \) e.g. \( \text{mul} + \text{tītu} \) > \text{muṭṭitu}. But in modern pronunciation \( \text{1 \ j} \) is a pure dental and \( \text{1 \ j} \) is a cerebral. Probably this change had occurred even before the age of Naccinārkkinīyar. In the pronunciation of the southern districts of Tamil and in Kerala \( \text{1 \ j} \) and \( \text{1 \ j} \) do not become assimilated to \( \text{r \ j} \) or \( \text{t \ j} \) but they become unvoiced before the dental which also does not change except that there is a doubling of this dental \( \text{t \ j} \) e.g. \( \text{mēl} + \text{pāti} \) > \text{mēlpāṭi} and \( \text{mul} + \text{ṭaṭam} \) > \text{mulṭaṭam}. 72

Naccinārkkinīyar tries to introduce the idea of \( \text{1 \ j} \) being a cerebral into Tolāppiyam. The word \( \text{vinkal} \) which is interpreted by Ilampūruṇar as an 'swelling up' or 'having tension' is interpreted by Naccinārkkinīyar as "going up". The same meaning is given for \( \text{apari} \) also as \( \text{apartal} \) is retroflexion. But in the interpretation of Naccinārk-
kiniyar both \( \sigma \text{I} \) and \( \sigma \text{!} \) will have retroflexion. Therefore Pavaṇanti\(^73\) Vaṭṭiyaratiṭećiśkar in his Iḻakkapā Vilakkam\(^74\) and others assert \( \sigma \text{I} \) and \( \sigma \text{!} \) are articulated at two different places, \( \sigma \text{I} \) as a dental at the root of the teeth and \( \sigma \text{!} \) at the palate. On the basis of this interpretation Venkatarājalu Reṇḍier tries to interpret Tolkāppiyar sutram itself as referring to two different places of articulation.\(^75\) He splits the sutram in the following way:-

\[ \text{Anpal mutalura orra lakāram pirakkum and āvayin ānnam varuṭa lakāram pirakkum.} \]

But this is a strained construction. \( \text{ura} \) as the infinitive has to go along with \( \text{orravum} \) and \( \text{varutavum} \) which are connected by the conjunction \( \text{um} \). He quotes Sanskrit śāksaś; but there also some speak of the root of the teeth and some of the teeth as the place of articulation. In Sanskrit the vowel \( \sigma \text{lu} \) is an alveolar and ṣk-pratiśākhyā will make \( \sigma \text{r} \) and \( \sigma \text{I} \) articulate at that same place. There is however no meaning in arguing on the basis of Sanskrit pronunciation unless one is prepared to conclude that the Tamil sounds and Sanskrit sounds had no difference whatever. The difficulty which drives Naccinārkkiniyar and Venkatarājalu Reṇḍier and others to give their own strained interpretation consists in the fact that the pronunciation of these two sounds have changed from what \( \text{M} \) they were in the age of Tolkāppiyar.
XII.

Upto this Tolkāppiyar has followed the order suggested by the movements of the tongue as the articulator. From here on there is a departure for he proceeds to describe the articulation at the lips. \( \text{ŋ} \) and \( \text{m ŋ} \) are articulated by the two lips coming together. \( ^{76} \) When the teeth and the lip come into contact \( \text{ṽ ŋ} \) is articulated. \( ^{77} \)

XIII.

What remains is \( \text{y ŋ} \). Its articulation is described in a curious way. "The voiced air coming from the throat reaches the palate and there is a kind of a tension when the breath seems to create a kind of pressure or close contact." Perhaps what is meant is a friction. Thus \( \text{y ŋ} \) is articulated. Īlampūraṇar speaks of the tongue reaching the palate when the voiced air from the throat reaches that palate and causes a pressure when \( \text{y ŋ} \) is articulated. \( ^{78} \) Venkaṭarājalu Reddiar quotes Taittiriya-Prātiṣākhyā, tālau jīhvāmadhyāntābhyaṁ yakāre which speaks of "the contact being made at the palate by the edges of the middle of the tongue." This Taittiriya-prātiṣākhyā expresses the same kind of contact described by Tolkāppiyar with reference to \( \text{i ŋ} \). \( ^{80} \) The difference is clearly stated by
Tolkëppiyar to be in the pressure or friction.

Naccinärkkkiniyar is misled by the phrase mitarruvaliyicai. Probably he feels that the air has its origin at the throat. Therefore this commentator who does not believe that there is any established order for words in Tamil syntax and who therefore feels that any word in Tamil can be taken from one place in the sentence to any other place freely, has the following prose order. eluvali 'the air is coming, arising from the navel area mitarruccerna 'reaches the throat and by that fact becomes voiced' annam kannurru ataiya 'reaches the palate and pressed there as though kind of a peg is inserted at the place' yakaram pirakkum 'then [y]is articulated'. The disorder introduced in the sutram is shown by the numbers herein below:-

\[
\begin{array}{cccccc}
6 & 4 & 3 & 1 & 2 & 5 \\
\text{annam} & \text{cernta} & \text{mitarru} & \text{elu} & \text{valiyicai} \\
7 & 8 & 9 & 10 \\
\text{kannurru} & \text{ataiya} & \text{yakaram} & \text{pirakkum} \\
\end{array}
\]

These numbers given on the words describe the order in which they are taken by Naccinärkkkiniyar. Perhaps without introducing this disorder, one can give the sutram the same interpretation. The vali 'the air' (which started from the navel) becomes a voiced sound at the glottis or throat; and this
can be the meaning of mitayru elu valiyica. But for Nacci-
nārkkiniyar's conviction that the word could be arranged as
he likes he would not have attempted this kind of interpreta-
tion.

XIV.

Pavananti who is probably earlier than Nacci-
nārkkiniyar and later than Ilampūraṇar combines the three
sutras of Tolkāppiyam dealing with \( k \), \( n \), \( c \),
\( ñ \), \( t \) and \( ñ \) whilst \( t \) and \( n \) are
dealt within a separate sutram which is not more than a line,
as against three lines of Tolkāppiyam describing the same
dentals. nāmuṭi 'the end of the tongue' reaches the edge of
the teeth nearby when \( t \) and \( n \) are articulated. He uses
the word ura in the case of \( t \), \( n \) and also
in the case of \( y \). That shows he is careful about the
description of the various kinds of contacts. The next
sutram deals with \( p \) and \( m \). Whilst Tolkāppiyar
speaks of lips coming into contact, Pavananti speaks speci-
ically of the upper and lower lip coming together.

His description of \( y \) is evidently a
mistake. The back portion of the tongue according to him
comes into contact with the back portion of the palate when
\( y \) is articulated. This may be a mistake for itainā
*italyanamura y-t-tönrum* when *y* is articulated by the middle of the tongue it comes into contact with the middle of the palate. Ilakkaṇavilākkam points out the absurdity of Nanpūl description and asks us to pronounce the word *mey* and *pay* for realising this:

\[*r* \(\tilde{J}\) and *l* \(\tilde{J}\) are according to Pavananti articulated when the front end of the tongue passes over the palate.\]

87 It will be seen here that there is no reference to retroflexion as mentioned in Tolkāppiyam. Pavananti nowhere mentions the retroflexion with reference to any sound whatever. The articulation of *l* \(\tilde{J}\) and *l* \(\tilde{J}\) has already been noted.

The next sutram describes the articulation of \([v]\) which is said to be realised when the upper teeth come into contact with the lip. 89 It will be seen that Tolkāppiyar does not characterise the teeth as the upper spore. If Nanpūl is differentiating between the articularator and the place of articulation he would have made lower lip the articularator.

Pavananti states *r* \(\tilde{J}\) and *n* \(\tilde{J}\) are articulated when the front portion of the tongue comes into closer contact with the palate. The word *nāpiyura* is used here to show that the tongue reaches much more closely. There
are different readings naniyurul and mikavuril which do not however alter the meaning. Probably this naniyura suggested to Naccinärkkiniyar to distinguish ərral and ura, ərral and varutal.

It will be seen that Pavaṇanti describes the sounds unlike Tolkāppiyar according to the place a sound occupies in the Tamil alphabet.

XV.

Two other sutras remain to be considered. The twelve vowels do not change the places of their respective articulation and they are articulated through the air breath, which starts from the throat. This is the meaning of the second sutram of pirappiyal. The throat, if we were to rely upon the śikṣās, means the glottis. The air probably undergoes some change at the glottis and this may be identified as the process of voicing, one of the bāhya-prayatnas mentioned in the śikṣās. This is also the interpretation given by Ilampūranar. Ilampūranar points out that the shorter ū and shorter ĭ undergo a change at the place of their articulation. This change will be considered later on.

Naccinärkkiniyar perhaps does not correctly understand this statement of Ilampūranar. He feels, on the
basis of the pronunciation current in his age, that there is no distinction between \( \overline{\varepsilon} \) \( \text{u} \) \( \text{j} \) and shorter \( \overline{\varepsilon} \) \( \text{u} \) \( \text{j} \) and shorter \( \overline{\varepsilon} \) \( \text{i} \) \( \text{j} \). The difference however has already been stated in Tolkāppiyam and also suggested by the names themselves that is, kurriyalukaram shorter \( \overline{\varepsilon} \) \( \text{u} \) \( \text{j} \) and kurriyalikaram shorter \( \overline{\varepsilon} \) \( \text{i} \) \( \text{j} \) which denotes shorter quantity nilai tirdya is interpreted by Naccinārkkkiniyar as referring only to the twelve vowels not undergoing any change in their respective quantities unlike the shorter \( \overline{\varepsilon} \) \( \text{u} \) \( \text{j} \) and shorter \( \overline{\varepsilon} \) \( \text{i} \) \( \text{j} \) which suffer a change that way. This interpretation may explain the difficulties Naccinārkkkiniyar felt; but it cannot explain the real idea of the sutram. His difficulty arises as will be shown later on, because of the change in the pronunciation which has occurred by his time.

As also ff. 100 makes use of the word nilai. nilai is there explained leaving no room for any doubt. The six nasals, though keeping their respective places of articulation as already explained are articulated when the air is converted into a sound or when the air passes through the nose. Perhaps valiyical as already stated, refers to the resonance or prātiśruti. The \( \overline{\varepsilon} \) \( \text{y} \) \( \text{j} \) is said to have the throat air sound. This may be taken as prātiśruti or resonance, one of the
bāhya prayatnas. There is no such resonance or bāhya-prayatna mentioned with reference to plosives or the semi vowels other than ʌ ʌ ʌ ʌ ʌ ʌ ʌ ʌ. One cannot believe that Tolkāppiyar could not have known the all India view about these two classes of sounds. The natural conclusion therefore is that the sutras referring to these two classes have not reached us. Or it may be that Tolkāppiyam never mentioned the bāhya-prayatna or resonance and the sutras two or more which refer to them have been wrongly included in the texts, from perhaps the marginal notes written by readers of the old manuscripts.

XVI.

The last sutram which is considered by some as consisting of two is a kind of an exception to the general rules already stated. The places of articulation for all the sounds have been stated specifically and explicitly. "The air surging out at those places is thrown out with the articulation of the sound; the sound caused by the upsurging breath has the characteristic feature of change as described in the Vēdās of the antaṇar or Brahmin; these are defined quantitatively without any room for confusion." This is the interpretation of Ilāmpūranar. Because the air upsurging from the navel region goes up to the head and comes back to the chest called neṅcu. neṅcu is probably a reference to
the region of lungs. This change undergone by the upsurging air, is spoken of as uralccivāram. There is the phrase vañiyicai where vañi is air and icai is sound. In the first sutram of this chapter reference has been made only to vañi. Ḫampūraṇar explains that Ḫ the air is called vañi until it reaches the region of the chest, whereasafter, whenever it surges from the latter region, it ceases to be mere air but becomes speech sound.

Ḫampūraṇar takes the last two lines of the last sutram to form a different sutram, the very last in this chapter. The meaning of this last sutram, as given by him is as follows: "This is not stated here; I am speaking only of the quantity of vañiyicai when it is coming out from inside it becomes articulated, as capable of clearly expressing the meaning." The meaning is here emphasised because these speech sounds differ from the sounds of straining etc. which are also articulated through some process or other. Quantity is also mentioned. If Tolkāppiyar has stopped with the previous sutram alone, Ḫampūraṇar feels, one may be tempted to interpret Tolkāppiyar as accepting the subjective approach of the Vēdās. This last sutram, therefore, is necessary according to him to emphasise the objective approach of Tolkāppiyar.
Ilampūraṇar states that the doubt which arises in the mind of the reader whether the previous sutram is a reference to the views of others or whether Tolkāppiyar’s acceptance of other’s views is here cleared.

Every sound according to the mystic statement of the Vēdās is said to have four stages viz (1) Parai (2) Paicanti (3) Matti māi and (4) Vaikāri. The first three are internal. The last alone is the speech sound articulated and heard. This alone is studied by Tolkāppiyar as being available for objective study.

Naccinārkkiniyār, however, takes the two sutras of Ilampūraṇar as one sutra. As usual with Naccinārkkiniyār he goes on rearranging the words as he likes. velippatakkilantu is taken as kilantu velippata and velippata is taken as a cause rather than as an effect. He refers here to the teacher of Tolkāppiyar. That Teacher for the purpose of articulating all the speech sounds had in the previous works of his (probably Akattiyam), stated and announced (the principle), because of this I (Tolkāppiyar) have also referred to the place of articulation (namely the eight places referred in the first sutram); when these sounds are articulated with the sounds ejected along with their birth, as
against the way in which I have stated (i.e. with reference to this air surging up from the navel region) especially with reference to the characteristic feature of change (that is, the change of which has been noted by Śāmpūraṇa) is the air going up to the head and coming down to the chest; there is also the way carefully and faultlessly searching for and recognising the sound of the air upsurging from the mūlādāra; this way of speaking is found in the Vēdās of the brahmin; You can understand them here; It is not possible to explain them here; Therefore that is not stated here; to that clear and definite part of the meaningful air which comes from the navel and the air which is articulated so as to be perceived externally I have stated the quantities; therefore understand their quantities." This is more or less the translation of the commentary of the sutram as given by Nācchānārkānīyar.

Further he says, this is not merely a statement of the views of others through it is something related to that kind of statement. The author states "assigning the quantities by dividing into parts, the air upsurging from the navel and explaining the air which comes from the mūlādāra, really belongs to the Vēdās." After stating thus, he proceeds to conclude (impliedly) that the Vēdīc writers achieve no significant results whatever, because of such conclusions.
akattu elu valiyicai according to Naccinärkkiniyar means mūlādaṃśa.

He repeats what Ilampūraṇar has stated about the sounds of straining etc and concludes "Therefore according to our author that sound alone can be termed ēluttu which is articulated whilst speaking and which is an organic part of a word. He quotes the following old sutram "That is called ēluttu which moves when the three are effective or in motion namely (1) the place of articulation, (2) the air and (3) the effort or process."

In the following sutram the words are given numbers according to the order in which Naccinärkkiniyar takes the words of the sutram. It is not quite clear what purpose is served by the distortion of words except for introducing the word mūlādaṃśa.

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<th>1</th>
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<td>palla</td>
<td>elutaru</td>
<td>valiyin</td>
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<td>valiyicai</td>
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<td>kōṭal</td>
<td>antapar</td>
<td>maraitte</td>
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24 aktivan
25 muvalatu
26 eluntupurat
27 ticalkkum
28 meyteri
29 valiy
30 icai
31 alavu

AVII.

In modern Tamil and probably even in the medieval Tamil what Dr. Caldwell calls the law of convertibility of surds into sonants is found to be operating. Opinions are divided about its operating in ancient Tamil. If eluttu means only the sound one can argue that Tolkäppiyar has only one kind of plosive sounds voiced or voiceless. But unfortunately Tolkäppiyar uses the term sometimes applying it also to written letter. But wherever the root icai 'sounds' is found it used in any word in combination with eluttu, there cannot be any two opinion about the reference being only to the sound; and even if there is reference to the letter form there is clearly a definition of the pronunciation of the letter or the sound. Tolkäppiyar does not refer to two different pronunciation of \( k\), \( c\), \( t\), \( t\), \( p\) or \( r\) sounds; nor does he refer to the two different pronunciation of any one of the letters \( k\), \( c\), \( t\), \( t\), \( p\) or \( r\). A writer refers to ff. 22 for proving the operation of Dr. Caldwell's law.\(^{95}\)” It passes one's understanding, how that sutram which deals
with consonantal clusters, has anything to do with the variation in pronunciation.

This chapter pirappiyal deals with the pronunciation or articulation of the sounds. There is certainly a sutram which states that there are slight variations. That is because Tolkāppiyar has defined the articulation for a group of sounds together, so that he has to point out, in conclusion, that there are slight variation in the articulation of each one of the sound in that group. Though the commentators takes that sutram to refer to both the vowels and the consonants, as already pointed elsewhere, Venkaṭārājalu Reddyar takes it as being applicable to only to vowels. In that case it cannot serve to explain the operation of the law.

This chapter deals with articulation of individual sounds. The first chapter deals with the classification, quantities etc. of the individual sounds. Their behaviour in words is treated in the second chapter. It is here if at all Tolkāppiyar should have referred to this law of Dr. Caldwell implicitly or explicitly. He does refer to the change in pronunciation of certain vowels like \( \text{i} \) \( \text{i} \) and \( \text{u} \) \( \text{u} \) and consonants like plosive occurring with āytam and also to the nasal \( \text{m} \). An author like
Tolkāppiyar who has noted carefully the phonemes and the allophones in this way including the nasalisation of $\check{\ell}_y \check{\ell}$, could not be expected to have omitted the difference if any between voiced or voiceless plosives as allophones or in words. Such assumption it is true, cannot be made with reference to Pavananti and other later day writers, who are writing their sutram on phonology not by actually listening to the pronunciation current in their age but by slavishly copying down or adopting the sutrams from Tolkāppiyam or Avinayam.

There is from this point of view one important sutram in molimarapu. Its interpretation had already been discussed. That sutram according to all the commentators except Naccinārkkiniyar states that the sounds or the letters whether occurring individually and pronounced individually or occurring in words with other sounds, do not suffer any change. The change, referred to as interpreted by all commentators should be in the specific pronunciation of sound and its quality. Even Naccinārkkiniyar does not deny the truth of the statement; but only argues that such a statement is already implied and therefore this sutram should be interpreted so as not to make it redundant. The importance of this sutram with reference to the operation of Dr. Caldwell's law in the age of Tolkāppiyar
is patent enough. Whether eluttu, is taken as referring to
tetter form or sound form it has only one pronunciation
according to this sutram and not two or more as is expected
by the law.
PIRAPPIYAL.

(Articulation of sounds)

Reference.

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5. XIII p. 23
6. Ibid p. 23
7. Ibid p. 27
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9. Ibid 19
10. I ff. 84 and 99
11. Ibid ff. 100.
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13. I ff. 84
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25. Ibid pp 60 and 61.
26. I ff. 86
27. I B. p. 94
28. I ff. 86
29. XIII p. 61
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31. I A. p. 31
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33. I C. p. 77
34. Tamil Lexicon Vol. 6
35. I ff. 87
37. I A. p. 31 and I B. p. 65
38. I C. p. 79
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40. I ff. 89
41. Ibid 90
42. Ibid 91
43. IVI p. 43
44. I ff. 94 and 95.
45. XIII. p. 53
46. I A. p. 52 and I B. 97 (ff. 94)
47. I ff. 93
48. I A. 32
49. I B. 97
50. I C. p. 80 (ff. 93)
51. XIII. p. 56
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54. Ibid "
55. Ibid "
56. Ibid "
57. I A. p. 32 (ff. 93)
58. II ff. 301.
59. I B. p. 97 (ff. 93)
60. XIII. p. 25
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62. I ff. 95
63. I ff. 96
64. XIII p. 55
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66. VI ff. 84
67. XIX p. 115
68. I ff. 86
69. I ff. 94
70. Ibid 95.
71. XII p. 112
73. VI ff. 84
74. VII ff. 12
75. I C. p. 82
76. I ff. 97
77. Ibid 98
78. I A. p. 33
79. I C. p. 83
80. XIII p. 61
81. VI ff. 79
82. Ibid 80
83. Ibid 81
84. Ibid 82
85. XII p. 117
86. VII ff. 12 (p. 22)
87. VI ff. 83
88. Supra p. 189
89. VI ff. 85
90. Ibid 86
91. XIII p. 22
92. I A. p. 31
93. I ff. 102.
94. XII p. 29
95. XIV p. 138
96. I ff. 22
98. (a) Tamil Culture Vol. V p. 189
97. I ff. 88
98. Ibid 34
99. Ibid 36
100. Ibid 38
102. Ibid 146.
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