CHAPTER THREE
PALEOGRAPHY OF INSCRIPTIONS FROM SECOND CENTURY A.D. TO THIRD CENTURY A.D.

In previous chapter it has been discussed that till the end of first century B.C. the characters of Brāhmī script in Western India developed smoothly without disturbing the old traditional forms. There were no structural changes of the script even though stylistic changes are given due scope for individual mannerisms.

The beginning of first century A.D. marked a new phase of development in the history of script of Western Indian caves. The development can be seen clearly in the inscription of Bhaṭapalika* of Nasik; early inscription nos. 1-11 of Karla; inscription nos. 1-3 of Bedsa and inscription no. 7 of Junnar. It is observed that the old traditional Mauryan style got mixed with the new style. However, the introduction of Kshatrapa pen-style towards the beginning of first quarter of second

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*The inscription records thus "A chaityagriha has been established on mount Trirāṣmi (Tirāṇḥu) by Mahāhakusiriya Bhaṭapalika, daughter of royal minister, Arahalaya Chalisalanaka, wife of the royal minister Agiyatanaka Bhadakarikaya (and) mother of Kapaṇaṇaka" (Burgess 1975:99).
century A.D. brought a drastic change in the scriptal tradition of western India. The influence of Kshatrapa pen-style can be seen clearly in the inscriptions of Sātavāhana rulers, viz. in the inscription of Gautamiputra Sātakarni; in the inscriptions of Vāsisṭhiputra Puḷumavi and in the inscription of Yajña Sātakarni. The new pen-style of Kshatrapa overlapped the old tradition of writing. The influence of Kshatrapa pen-style can be seen clearly in the Inscriptions of Nasik cave which was a centre of writing and learning.

In the epigraphical records of Nasik caves there are many instances of mentioning the names of professional writers. The tradition of keeping records in the record house was known and common during the time of the Kshatrapa Kshaharātas and the Sātavāhanas. The following epigraphical records from Nasik caves show that Nasik was a centre of writing and learning during the second and third century A.D.

1. In the Nasik cave inscription of Ushavadata, in the fourth line it is written as follows:

"Kāpurahare cha game chikhalapadre datāni niligerānamula sahasrani atha 8000(1) eta cha sarva sravita nigamasabhaya nibadha cha pbalakavare charitra to ti ["1"]

Translation. "In the village of chhikhalapadra, (situated)
in the district of Kapura, eight thousands, 8000 have been given as the price for cocoanut trees. And all this have been proclaimed in the guildhall and has been written on boards according to custom" (Burgess 1975:102).

From the inscriptions of Gautamiputra Satakarni and his mother, Queen Balasri Gautami there are instances of mentioning the professional writers. In line nos. 5, 6, 11 and the names of the writers are mentioned as follows:

Line nos. 5 & 6.

5. eta chasa kheta parihare cha nibadho lihi aviyana
   ṭaṅtaṁ amachena sivagutena chhato mahāsamiyēhi Uparakhito
6. datā paṭikā savachhare 14 vasa pa(khe) 2 divase
   1 Tāpasena kata (11-7)

Translation "Moreover, with respect to this field and with respect to this immunity, a charter has been drawn up, which has been approved of by the minister, Šivagupta (sivaguta), who received (our) verbal orders (to that effect), and which is preserved by the great lords. A document, prepared by Tapasa on the first day of the second fortnight of the rainy season of the year 14, has been given (to the donees)" (Burgess 1975:105)
Line nos. 11 and 12.

(11) etehi na pariharehi pariheritha eta chasa kheta
parihara cha etha nibadhā lactha aviyena
āṇatapatiḥarakhya loṭaya mata savachhare 24.

(12) (va) sāsa pakhe 4 divase pachane 5 pujitina katā
nibadhō nibadhō savachhare 24 gimhāṇa pakhe
2 divase 10 (1).

Translation

"And with respect to this field, and with respect to this exemption, a charter has been drawn up (which has been) approved of by Loṭā, the chief lady-in-waiting (to the Queen-Mother), who received oral instructions (regarding this grant), and it has been done in writing by pujiti on the fifth, 5th, day of the 4th fortnight of the rainy season of the year 24. The charter was drawn up on the 10th day of the 2nd fortnight of the hot season of the year 24". (Burgess 1975:107).

The above two inscriptions give a clear evidence of recording the royal proclamation by a professional writer. These two inscriptions were written in two different dates 124 A. D. and 130 A. D. (Sircar 1942:191, 193). The inscriptions mention the name of two professional writers Tāpasa and Pujiti. The name themselves prove that three were different court writers.
In Nasik inscription nos. 17 and no. 18 of private individual records, the names of Saka writers have been mentioned.

Insc. no. 17.

Line no. 1. 'Sidham Sakasa Damachikasa lekhakasa vudhikasa" success! (the gift) of Vudhikasa, the writer of Saka Damachika .... (Burgess 1975 :114)

Insc. no. 18.

Line no. 1. Sidham Sakasa Damachikasa
2. leghakasa Vudhikasa podhi
- "Success! A cistern, (the gift) of Vudhika, the writer of Saka Damachika".

From the above epigraphical records it can be said that there were Saka professional writers during the time of Kshatrapa Kshaharātas and Sātavāhanas. Occurrence of different names of different writers in the inscriptions of Nasik caves further suggests that writing was highly popularised at Nasik during second century A.D.

In the inscription nos. 1 and 6 the name of the writer, Sivabhuti is mentioned twice (Burgess 1975 :84,85). In the inscription of Visapur the name of the writer, Mugudapalita is mentioned.
As there were many professional writers in different regions there were also many chances for developing different local scriptal traditions. The detailed palaeographical analysis of Western Indian cave inscriptions of second and third century A.D. suggests that, there were different scriptal traditions in western India. The inscriptions of different caves viz Karla, Junnar, Nasik and Kanheri have shown different scriptal traditions though they belonged to the same period. For instance, the inscriptions of Kshatrapa Kshaharatas show different scriptal traditions in different regions. In the same way, the Sātavāhana inscription of the same period (Vāsisṭhiputra Pułumavi), shows striking differences in scriptal style tradition from one region to another.

At Nasik the pen-style of Sātavāhanas is similar to the pen-style of Kshatrapa Kshaharatas, whereas the Sātavāhana inscriptions of Karla and Nasik are different in scriptal styles.

At Karla the pen-style of Ushavadata is similar to the pen-style of the Sātavāhanas. But the scriptal style of Ushavadata inscription from Karla is different from that of Ushavadata inscriptions of Nasik. The different scriptal tradition of the different regions viz Karla, Nasik and Junnar are shown in the chart given below.
1. Chart no. I shows the difference of the scriptal styles between the Kshatrapa Kshaharāta scripts of Nasik, Karla and Junnar.

2. Chart no. II shows the difference of the scriptal styles between the Sātavāhana scripts of Nasik and Karla.

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Note: The table contains symbols and characters that represent inscriptions from different locations.
3. Chart no. III shows the similarities of scriptal styles between the Nasik inscriptions of Kshatrapa Kshaharatas and the Nasik inscriptions of Sātavāhanas.

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Kshatrapa Satavahana Inscriptions:

Inscriptions:

Ushvanadvata Nasik

Gautamiputra Satakarni Pulumavi Nasik

Ya j na Satakarni Nasik
Not only different in writing style but different spelling and different letters have also been used for the same meaning or word. The different styles of writing of the same word are given as below:

Ushavadata inscription of Karla

Siddham

Kshaharatasa Kshatrapasa

Nahapānasa

Jama (mā) ta ra

Dinikaputena

Ushavadatena

Ushavadata inscription of Nasik

Siddham rajñah

Kshaharātasya Kshatrapasya

Nahapānasya

Jamatra

Dīṅkaputrena

Ushavadatena
Ushavadata inscription of Karla

Nadiya

Banasayaṁ

Tinigacqisatasahasadena

Solasagamadena

Suvanata(ti)thakareṇa

Solasagamadena

Pābhāse

Punatithe

Ushavadata inscription of Nasik

Nadyā

Barnaṣayaṁ

Trigocatasahasfadāna

Shodaśagramadena

Suvarṇādānatirthakareṇa

Shodaśagramadena

Prabhāse

Punyatirthe
From the above charts, it has been observed that there had been differences in the style of spelling and in the structure of the letters for one and the same word of the same period but different regions. This indicates clearly that there were different schools or writing traditions in various parts of Western India.

The most notable different schools of writing may be classified as follows:

GROUP-I Nasik school of writing

The following inscriptions are under the same scriptal tradition of writing though individual mannerisms are noticed.

(i) Kshatrapa Kshaharata inscriptions of the house of Nahapana (Inscriptions of Ushavadata).

(ii) Satavahana Inscriptions.
    Gautamiputra's inscription; Gautami Balasri's inscription, Vasisthiputra Pulumavi's inscriptions and Sri Yajña Satakarni's inscription.

(iii) Abhira Isvarasena's inscription.

GROUP-II Karla school of writing

The following inscriptions are under the same scriptal tradition of writing. Structurally and stylistically they follow the same tradition.

(i) Kshatrapa Kshaharata inscriptions of the house of Nahapana (Ushavadata inscription from Karla).
ii) Satavahana inscriptions of Vasishthiputra Pulumavi

iii) Bhaja inscription no. 2 of Maharathi Kosikiputra Vinhudata.

iv) Visapur inscriptions of Maharathi Kosikiputra Vinhudata.

Group - III.

Junnar school of writing.
The following inscriptions are under the same tradition of writing.
i) Kshatrapa Kshaharata inscription of the house of Nahapana (Ayama's inscription)
ii) Records of private individuals.

Group - IV

Kuda school of writing.
Kuda inscriptions of second and third century A.D.

Group - V

Kanheri school of writing.
Kanheri inscriptions of second and third century A.D. are under the same tradition of writing structurally and stylitically they follow a common tradition.
i) Inscription nos. 13, 2, 3, 12 and 11.
ii) Inscription nos. 4, 5 and 14.
I. Palaeographical analysis of Nasik inscriptions

(a) Kshatrapa Kshaharata inscriptions of the house of Nahapana:

Four inscriptions of Kshatrapa Kshaharata have been selected for palaeographical study. Three are inscriptions of Ushavadata and the remaining one is the inscription of Dakshamitra. The dates of the inscriptions are in between c. 119-124 A.D. (Sircar 1942: 157-164). The letters of the Kshatrapa Kshaharatas are beautifully written. The shape of the letters are emphasized on squarishness and geometrical forms. The language of the inscription is highly sanskritized.

Vowels:

The following vowels appear in the Kshatrapa Kshaharata inscriptions of Nasik. They are: a, ā, i, ī, u, ē, o and h.

The initial 'a' is represented thus - ḍ. The two left arms are curved and meet at a single horizontal bar, the horizontal bar then meets the vertical line. The vertical is elongated downwards and slightly bent to the left. The long initial 'ā' is formed by projecting a short horizontal line to the right side of the vertical - ḍ. The initial 'i' continued traditional Mauryan style of writing which is represented by three dots arranged triangularly : -indentation.

The initial u and o resemble Roman alphabets L and Z. The initial 'e' is represented by a triangle. The two angles are at the bottom and one at the top - Δ. 'H' is represented by two dots, placing one dot above the other.

Consonants

Velars

The letter 'ka' is represented thus - ʃ. The downward elongation is slightly bent to the left. The vertical line of the cross always tapers from top to bottom. The horizontal bar is bisected at one third length of the vertical. The medial sign for 'ā' is a horizontal short line on the right top of the vertical forming a right angle. ʃ. The medial sign for 'e' is a short horizontal stroke on the left top of the vertical ʃ. The medial sign for 'ɪ' is a U-shaped curve over the thickened head of 'ka' - ʃ. The medial sign for 'o' is a horizontal bar over the top of the vertical ʃ. The medial sign for 'u' is a downward cursive elongation to the right lower end of the vertical ʃ. In writing 'ku' the downward elongation of the vertical is reduced.

The letter 'kha' resembles a simple rounded hook - Ʌ. The medial sign for 'e' is a short dash to the left side of the hook - Ʌ. The medial sign for 'u' is a downward cursive elongation to the lower end of 'kha' - Ʌ.

The letter 'ga' resembles an inverted Roman alphabet ʃ.
The medial sign for 'ā' is a short horizontal stroke at the right of the rounded top of 'ga' - ग. The medial sign for 'i' is a cursive upward stroke on the right side of the rounded top. The medial sign for 'o' is a horizontal bar over the rounded top of 'ga' - ग।

The letter 'gha' is squarish in shape. The three verticals are equalized and thickened on the tops. It is represented thus - य।

Palatals:

The letter 'cha' is pear-shaped with a short vertical stroke on the apex. The head of the short vertical is thickened. It is represented thus - छ। The medial sign for 'ā' is a short horizontal stroke at the right of the short vertical - झ। The medial sign for 'i' is a left-opening semi-circle over the top of the short vertical - झ।

The letter 'chha' resembles a horizontally placed figure ८—०० with a short vertical stroke on the left circle-च।

The letter 'ja' resembles straight-backed Roman alphabet E. The medial sign for 'ā' is a cursive upward stroke drawn in continuously from the middle bar of 'ja' - ज। The curve is twisted to the right in some cases. It shows the individual mannerisms of the writers. In inscription no. 5, ja is written thus - ज। and in inscription no. 9 'jā' is written
thus - $\mathfrak{S}$.

The letter 'ḥa' resembles figure 7 with a hook to the right of the vertical. It is represented thus $\gamma$.

Retroflexes

The letter 'ṭa' retained the traditional old style of writing which is represented by a left opening semi-circle. The letter 'ḍa' is an additional slanting stroke on the right end point of 'ṭa' $\zeta$. The letter 'ḍha' is represented thus - $\mathfrak{ɡ}$. The medial 'i' sign is a cursive upward stroke from the top of the vertical $\mathfrak{ɡ}$. The letter 'ṇa' is a vertical line with two horizontal bars, one at the bottom and the other on top. The base of the vertical over the horizontal bar is slightly bent - $\mathfrak{x}$.

Dentals

The letter 'ṭa' is written in two styles. The first style of 'ṭa' resembles Roman alphabet - $\mathfrak{h}$ and the second style of 'ṭa' is represented thus - $\mathfrak{ŋ}$. The medial sign for 'ā' is a short horizontal stroke on the right top of the vertical $\mathfrak{ŋ}$. The medial sign for 'i' is a circular curve over the top of the vertical $\mathfrak{ɡ}$. The medial long sign 'Ī' resembles a cursive fish-hook - $\mathfrak{ʃ}$, on the top of the vertical - $\mathfrak{ŋ}$. The medial sign for 'u' is a short horizontal stroke at the right foot of the U-shaped curve - $\mathfrak{ŋ}$.
The letter 'tha' is represented by a circle with a bold dot in the centre. The letter 'da' has an angular curve in the middle. It is represented thus - . The medial sign for 'a' is a horizontal stroke on the right top of the vertical. The medial sign for long 'i' is a cursive fish-hook over the top of the vertical of 'da' - .

The letter 'dna' resembles reverse Roman alphabet - D - d.
The medial sign for 'i' is a semi-circular curve over the right top of the letter - .

The letter 'na' is a vertical line over the middle of a horizontal bar - . The base of the vertical is slightly bent to the left - . The medial sign for 'a' is a short horizontal stroke on the right top of the vertical - . The medial sign for long 'i' is a cursive hook over the vertical top of the letter - . The medial sign for 'u' is a vertical downward stroke at the right end of the horizontal base - .

Labials:

The letter 'pa' is squarish in shape with an opening on the top. In some 'pa' the left vertical is slightly curved - . The top of the two verticals are thickened. The medial sign for 'a' is a short dash on the right side of the left vertical - . The medial sign for 'i' is a circular curve over the top of the left vertical - . The medial sign for
'i' is a horizontal bar over the top of the left vertical. The medial sign for 'u' is a vertical downward elongation to the right vertical of 'pa' - ү. The letter 'pha' is represented thus - ৰ.

The letter 'ba' is represented by a square box - ☐. The medial sign for 'ә' is a short horizontal stroke at the middle of the right vertical - ☐. The medial sign for 'е' is a short horizontal bar at the middle of the left vertical - ☐.

The letter 'bha' is represented thus - ṣ. The medial sign for 'ә' is a short horizontal stroke at the top right of the vertical stroke. The medial sign for 'о' is a horizontal bar over the top of the vertical - ṣ.

The letter 'ma' is triangular in shape, with two opposite slanting strokes on the apex of the triangle X. The medial sign for 'ә' is a horizontal bar at the top of the right slanting stroke X. The medial sign for long 'ү' is a downward elongated hook at the base of the letter 'ma' - ṭ.

Semi-vowels and ra, la and la

The letter 'ya' is written thus - ә. The base of the letter is flat. The medial sign for 'ә' is a horizontal short stroke on the right top of the middle, vertical - ә. The letter 'ra' is a vertical line which is tapering from top to bottom. The lower end of the vertical is slightly bent to the left. The medial sign for 'i' is written in two ways.
The first type of 'ri' is written thus - । . The second type of ri is written thus - । . This shows the individual mannerisms. The letter 'la' is written thus - । . The base of the letter is flat. The medial sign for 'e' is a short horizontal stroke at the middle left of the right vertical - । . The medial sign for 'i' is an additional prong along the right vertical - ।.

The letter 'la' resembles retroflex 'da'- । , with a short dash at the right bottom end. ।.

The letter 'Ua' is triangular in shape with a short vertical line on the apex of the triangle - । . The head of the vertical is thickened. The medial sign for 'ā' is a short horizontal stroke on the right top of the vertical. - ।. The medial sign for 'i' is a semi-circular curve over the top of the vertical - ।.

**Fricatives** :

The letter 'śa' is written thus - ।. The medial sign for ś is a short horizontal stroke at the right side of the rounded top of the letter 'śa' - ।. The medial sign for 'o' is a horizontal bar over the rounded top of the letter - ।. The letter 'sha' is rectangular in shape with an opening on the top. A short horizontal stroke is the middle of the left vertical - ।.
The letter 'sa' is a U-shaped curve with a prong to the left side, which is elongated downwards - ꜯ. The medial sign for 'ā' is a short horizontal stroke at the right side of the left vertical - ꜯ. The medial sign for 'e' is to the left of the left vertical - ꜯ. The medial sign for 'i' is a cursive upward stroke over the top of the left vertical - ꜯ. The letter 'ha' is squarish in shape with a short horizontal bar projecting from the top of the right vertical - ꜯ.

Clusters

In the Kshatrapa Kshaharāta inscriptions of Nasik the following clusters are noticed.

1. Groups with initial velar:
   (i) Krā - ꜯ
   (ii) Ksha - ꜯ
   (iii) gra - ꜯ
   (iv) grā - ꜯ

2. Group with initial palatal:
   jṅa - ꜯ

3. Group with initial dental:
   (i) tra - ꜯ
   (ii) trā - ꜯ
   (iii) tri - ꜯ
Group with initial dental
(iv) ṭrī -
(v) ḍdha-
(vi) ḍya -
(vii) ḍva -

Group with initial labial
(i) pra -
(ii) bra -
(iii) brā -
(iv) byra -

Group with initial 'ra'
(i) ṭtha -
(ii) ṭya -
(iii) ṭdha -
(iv) ṭpa -
(v) ṭma -
(vi) ṭsa -

Group with initial fricative
(i) śma -
(ii) ścha -
(iii) śra -
(iv) sra -
(v) sya -
(vi) sma -
(vii) hma -
(b) **Sātavāhana inscriptions:**

Five inscriptions of the Sātavāhanas have been selected from Nasik for palaeographical study. They are:

1. inscription of Gautamiputra Sātakarni (c. 124 A.D.);
2. inscription of queen Gautami Balasri (c. 130 A.D.);
3. two inscriptions of Vāsisṭhiputra Pułumavi (c. 137, 149 and 152 A.D.) and (4) one inscription of Sri Yajña Sātakarni (c. 181 A.D.).

The letter styles of the Satavahanas are akin to the letter styles of the Kshatrapa Kshaharatas. The influence of Kshatrapa pen-style is more in the inscriptions of Vāsisṭhiputra Pułumavi and Yajña Sātakarni. However, the characters of the Sātavāhanas were less emphasized on squarishness and geometrical forms while the Kshatrapas gave more emphasis on squarishness and geometrical forms.

**Vowels:**

The following vowels occur in the inscriptions of the Sātavāhanas. They are; a, ā, i, u, o and e.

The initial 'a' is similar in style to the letter 'a' of the Kshatrapas. The two left arms of 'a' touch each other at a distance from the vertical stroke, to which they are joined by a short horizontal bar. The right vertical is elongated downwards. The letter is written thus—

The top of the verticals are thickened.
In the case of long 'ā' the two left arms are curved and meet at a point in the middle of the vertical line, from where the short horizontal dash is projected - ḫ. The initial 'i' is represented by three horizontal short bars arranged triangularly - . The letter 'u' retains the traditional Mauryan style of writing. It resembles Roman alphabet L. The letter 'e' is represented by a simple triangle. The two angles are at the bottom and one at the top - △. The initial 'o' resembles Roman alphabet z.

Consonants:

Velars:

The letter 'ka' of this group of inscriptions selected for study is similar to the letter 'ka' of the Kshatrapas. It is written thus - ḫ. The downward elongation of 'ka' is slightly bent to the left. The vertical line which is bisected by the horizontal bar always tapers from top to bottom. The head of the vertical is thickened. The medial sign for 'ā' is a short horizontal bar at the right top of the vertical. ḫ. The medial sign for 'i' is a cursive stroke over the top of the vertical - ḫ. The medial sign for 'u' is a short horizontal bar at the bottom end of the vertical forming a right angle - ḫ.

The letter 'kha' is written in two styles. The first style of 'kha' resembles a simple rounded hook - ᢶ. The
There are two types of the letter 'ja' in these inscriptions:
(1) The straight-backed 'ja' which resembles Roman alphabet-E, and (2) the cursive backed 'ja' - £. The first type of 'ja' occurs in the inscriptions of Vāsiṣṭhiputra Pulumavi and the second type of 'ja' occurs in the inscriptions of Gautamiputra Sātakarni and Yajña Sātakarni. The medial sign for 'ā' is a cursive upward stroke extending from the middle horizontal bar - £. The medial sign for 'i' is a cursive upward stroke extending from the top horizontal bar of 'ja' - £. The medial sign for 'u' is a vertical downward stroke at the right end of the bottom horizontal bar - £. The letter 'jha' is represented thus - J. The lower end of the vertical is slightly bent to the left.

The letter 'na' is written in two styles. The first style of 'na' is represented thus - ] and the second style of 'na' is represented thus - J. The first style occurs in the inscriptions of Vāsiṣṭhiputra Pulumavi and Gautamiputra Sātakarni. The second style occurs in the inscription of Yajña Sātakarni.

Retroflexes

The letters 'ṭa' and ṭha retain the traditional styles of writing. The letter 'ṭa' is represented by a semi-circle opening to the right - C. The letter 'ṭha' is a simple circle - O.
second type of 'kha' resembles numeral figure- 2. The first style of 'kha' occurs in the inscription of Gautamiputra Sātakarni and the second style occurs in the inscription of Vāsisthiputra Pulumavi.

The letter 'ga' resembles an inverted Roman alphabet U - ُ. The medial sign for 'ā' is a horizontal stroke on the right side of the rounded top - ﻦ. The medial sign for 'i' is a left-opening semi-circle over the rounded top of the letter ﻦ. The medial sign for 'o' is a horizontal bar over the rounded top - ﻦ.

The letter 'gha' is squarish in shape. The three vertical lengths are equalized.

Palatals:

The letter 'cha' is pear-shaped with a short vertical stroke on the apex - ئ. The top of the short vertical is thickened. The medial sign for 'ā' is a short horizontal bar on the right side of the vertical - ِ. The medial sign for 'i' is a left-opening semi-circle over the top of the short vertical stroke - ئ.

The letter 'chha' is represented by a horizontally placed figure 8 - ٨, with a vertical short stroke over the left circle - ﺊ. The left circle is bigger than the right circle. In some cases the vertical short stroke is on the curve horizontal figure 8 - ﺊ.
The letter 'da' is a semi-circular curve with a slanting stroke on the right top - ⠼. The letter 'dha' is represented thus - ⠼. The letter 'na' is formed by a vertical line with two horizontal strokes one at the top and other at the bottom. - ₁.

Dentals:

The letter 'ta' is represented as a small vertical line with an inverted U-shaped curve at its foot - ⠜. The sign for ā, e, i and u medials are as usual. The letter 'da' is represented thus - ⠼. The medial sign for 'i' is a cursive stroke on the top of the letter - ⠼. The medial sign for 'u' is a downward elongation from the bottom right end of 'da' - ⠼. The letter 'dha' resembles a reverse Roman alphabet D - ⠼. The letter 'na' retains the traditional style of writing which is represented by a perpendicular line over horizontal bar - ₁.

Labials:

The letter 'pa' is squarish in shape. It resembles a square box open at the top - ⠜. The left vertical of 'pa' is slightly bent in the middle. The medial sign for 'ā' is a short horizontal bar at the right of the left vertical - ⠜. The medial sign for 'i' is a curve over the top of the left vertical. The curve is extended to the left - ⠜. The medial sign for 'o' is a horizontal bar over the top of the left - ⠜.
The letter 'ba' is written in two ways. The first type of 'ba' resembles a square box. The second type of 'ba' has an inward curve at the left side. Both the types appeared in the inscriptions of Vasisthiputra Pulumavi. The medial sign for 'o' are two horizontal short strokes one each side of the square.

The letter 'bha' resembles a reverse Roman small letter 'h'. In some cases the letter 'bha' is represented thus. The sign for 'a' 'e' and 'u' medials are as usual. The medial sign for 'i' is a curve over the top of the vertical. The end of the curve is elongated to the left. The medial sign for long 'I' is an oval-shaped curve over the top of the vertical.

The letter 'ma' is triangular in shape with two upward slanting strokes from the apex of the triangle. In some cases the angles of the base are slightly rounded. The medial sign for 'a' is added to this letter in two ways. Firstly, a horizontal bar at the right middle angular curve of the letter. Secondly, the horizontal stroke is on the right top of the right stroke. The first style of 'ma' occurs in the inscription of Gautamiputra Satakarni. In the case of Vasisthiputra Pulumavi's inscriptions both the
styles of 'mā' are occurred. The medial sign for 'i' is a
cursive upward stroke extending from the right stroke. The
curve is towards the left. The medial sign for 'o' is
a horizontal bar which bisects at the middle of the letter
'ma'. The medial sign for 'u' is a downward
elongation line at the right end point of the base of the
letter.

Semi vowels and ra, la, la

The letter 'ya' is represented thus. The top of the
middle vertical line is thickened. In some cases the base of
the letter 'ya' is straight and in some other cases the base
is rounded.

- Straight base -
- Rounded base -

There are two types of the letter 'ra' in these inscriptions
(1) 'ra' which resembles a vertical line and (2) 'ra' which
resembles a fish hook. The first style of 'ra' occurs
in the inscriptions of Gautamiputra Sātakaṇi and Vāsiśṭhiputra
Puḷumavī. The second style of 'ra' occurs in the inscription
of Yajña Sātakaṇi. The medial sign for 'ā' 'i' and e etc
are as usual. The medial sign for long 'ī' is a oval shaped
curved over the top of the letter.
The letter 'la' is written in two styles; (1) flat base 'la' and rounded base 'la'. The flat base 'la' resembles the letter 'la' of the Kshatrapas. It is represented thus - l. The rounded base 'la' is represented thus - ∫. The medial sign for 'e' is a short horizontal stroke at the middle left of the vertical - ʃ. In case of writing 'lo' the vertical length is reduced and a horizontal bar is placed on the top of the vertical - ʃ. The letter 'la' is represented thus - i. The medial sign for 'u' is a downward vertical stroke from the lower fork - ç.

The letter 'va' is triangular in shape with a short vertical stroke on the apex - a. The medial sign for a, i, e and o are as usual.

Fricatives:

The letter 'sa' is represented thus - ş. The verticals of the letter sa are equalized. The tops of the verticals are thickened. In some cases, the U-shaped curve of 'sa' is angular. ş. The medial sign for 'â' is a short horizontal stroke on the right side of the left vertical ş. The medial sign for 'i' cursive line on the top of the left vertical ş. The curve is extended to the left.

The letter 'ha' is squarish in shape. It resembles the letter 'ha' of the Kshatrapas. The letter 'ha' is represented thus - ur.
In some cases the left vertical is bent in the middle. 

Clusters:

Only few clusters are occurred in the inscriptions of the Satavahanas. They are ddha, nhu and mha. The clusters are written as follows.

\[ \text{ddha} - \begin{array}{c} \text{\raisebox{0.5em}{\rotatebox{90}{$\overline{d}$}}} \end{array} \]

\[ \text{nhu} - \begin{array}{c} \text{\raisebox{0.5em}{\rotatebox{90}{$\overline{t}$}}} \end{array} \]

\[ \text{mha} - \begin{array}{c} \text{\raisebox{0.5em}{\rotatebox{90}{$\overline{y}$}}} \end{array} \]

Remarks:

The above palaeographical analysis of the Nasik inscriptions of second century A.D. clearly shows the similarities of the writing traditions between the Kshatrapa Kshaharātas and the Sātavāhanas. Some letters like, a, e, o, ka, kha, ga, chha, ta, pa, ma, ra, la, va are exactly in similar styles. The medial signs are also ornamented in similar styles. In fact, a common scriptal style can be observed in the inscriptions of the Sātavāhanas and Kshatrapas, which is different from the contemporary inscriptions of Junnar, Karla and Bhaja. Such regional peculiar style of Nasik inscriptions suggests that, at Nasik writing was followed under a particular scriptal tradition which may be called as the Nasik school of writing.
Palaeography of the Abhira Īśvarasena Inscription.

In the sequence of palaeography the inscription of Īśvarasena may be considered as the latest inscription of the Nasik caves. It was recorded in the ninth regnal year of Īśvarasena. According the Mirashi (1981:53) Īśvarasena was ruling in Western Maharashtra in c. 250. The characters of the inscription show an admixture of squarish style of the Kshatrapas and Satavahanas with the cursive style. The shapes of the letters are irregular and emphasized on cursive features. Letters like, a, e, ka, ga, cha, ta, tha, da, dha, va, ya and sa are similar in style with the o letters of the Nasik inscriptions of Vāsishthiputra and Yajñasatakarni.

The letters, kha, ya and sa show developed features prevalent in 4th century A.D. The letter kha is represented by a simple hook with a triangle at the foot. The letter 'ya' is written in three different styles. They are represented as follows:

1) 

2)  

3)  

The letter sa resembles an inverted semi-circle, a short horizontal bar is appended in the middle of the right-foot of the inverted semi-circle.
II. Palaeographical analysis of Karla, Bhaja and Visapur inscriptions

The inscriptions of second century A. D. from Karla, Bhaja and Visapur are under the same scriptal style. Palaeographically, inscription of Kshatrapa Kshaharāta (Ushavadata); inscription nos. 14 and 20 of Karla (inscriptions of 19 and 24 regnal years of Pulumavi); Bhaja inscription no. 2 of Kosikiputra and Visapur inscription nos. 1-5 of Kosikiputra belonged to the same tradition of writing. The similarities of the scriptal styles of these three different places have significance in palaeographical study. These places are in the periphery of about ten km. The monastery of Karla was a prominent centre where local scriptal tradition was flourished.

Before discussing the palaeographical features of Karla school of writing, it is necessary to discuss in brief the Visapur inscriptions which were recently discovered by Mrs. Gokhale. These five inscriptions of Visapur are the records mentioning the donation of cisterns by Maharāṭhi Kosikīputra Vīghudata. The same Kosikīputra is mentioned in the inscription no. 2 of Bhaja; Four inscriptions are to the eastern side of the Visapur fort and one is to the Western side of the fort. The inscriptions of Visapur bear the following evidences.
1) These inscriptions belonged to the second half of second century A. D.

2) The writing styles of the inscriptions belonged to the same writing tradition of Vāsiṣṭhiputra Pūlamavi's inscriptions of Karla.

3) The inscription no. 2 of Bhaja belonged to the same period of Visapur inscriptions.

4) Kosikīputra Viṇhudata was a Maharaṭhi of the Sātavāhana ruler Vāsiṣṭhiputra Pūlamavi.

5) Plugudapalita was a famous writer, perhaps he might be the same writer of the Bhaja no. 2 and Karla no. 14. Even the individual mannerisms are similar in between the inscriptions of Bhaja no. 2, Visapur nos. 1-5 and Karla no. 14.

Text of the inscriptions:

No. 1.
Maharaṭhis Kosikīputasa Viṇhudatasa podhi

No. 2.
1. Sidhaṁ Raño va (........) raṭhisas Kosikīputasa
2. Savachhare 25 ......va ......so podhi
3. Kosikīputasa ..... raka ......ma
4. Ukarika
No. 3.
1. Sidham sithi
2. Kasasa podhi

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No. 4.
1. Mahar (.....) ......
2. Viññudatasa lekhakasa Muguda palitasa podhi

No. 5.
1. Mahar̡̧ha Kosikīputasa
2. Viññudatasa podhi

The above second record shows that the inscription was written in the twenty fifth regnal year of Vāsisthiputra Pulumavi (c 155 A.D.). The donor Kosikīputra Viññudata is the same Kosikīputra mentioned in the inscription no. 2 of Bhaja.

The following similarities of the pen-styles between the inscriptions of Vāsisthiputra (seven regnal year) from Karla; inscription no. 2 of Bhaja and the inscriptions of Visapur clearly show that they are belonged to the same scriptal tradition, probably the inscriptions were written by the same writer. The similarities are shown in the chart given below.

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<tr>
<th>Karla</th>
<th>Bhaja</th>
<th>Visapur</th>
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<tr>
<td>(Vasisthiputra inscription of seven regnal year)</td>
<td>(Kosikīputra inscription)</td>
<td>(Kosikīputra inscription)</td>
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<td>ka-</td>
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<td>Karla (Vasisthiputra inscription of seven regnal year)</td>
<td>Bhaja (Kosikiputra inscription)</td>
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</table>
It is interesting to note that, these inscriptions of Karla, Bhaja and Visapur used a common auspicious symbol. The auspicious symbols are shown below.

![Auspicious Symbols](image)

a. Palaeographical analysis of Kshatrapa Kshaharataka inscription of the house of Nahapana (Inscription of Ushavadana):

It has already been discussed that, the Kshatrapa inscription of Karla is different in scriptal tradition from the Kshatrapa inscriptions of Nasik. In comparison to the characters of Nasik, the letters of Karla are less emphasized on squarishness and geometrical forms. Only few compound letters are occurred in the inscription of Karla.

Vowels:

The initial 'a' is represented thus - \( \text{\textbullet} \). The left upper arm is slightly angular while the lower arm is cursive and they touch the vertical line to the right. The lower end of the vertical line is bent towards the left.

The initial 'u' resembles Roman alphabet \( \text{\textbullet} \). The short horizontal line is slightly slanting downwards.

Consonants

Velars.

The letter 'ka' is represented by a simple cross.
The vertical of the cross is slightly bent towards the left. The letter 'kha' is very peculiar in shape. It resembles an inverted Roman alphabet V→\(^{\wedge}\). The letter 'ga' is written in two styles: 1) rounded top 'ga' and 2) flat top 'ga'. The rounded 'ga' resembles an inverted Roman alphabet \(\bigcirc\). The flat 'ga' is represented thus - \(\bigcirc\). The letter 'gha' is very irregular in shape. The verticals are equalized and slanting towards the left—\(\overset{\text{w}}{\text{w}}\).

**Palatals:**

The letter 'cha' is pear-shaped with a short vertical stroke on the right apex —\(\overset{\text{d}}{\text{d}}\). The top of the vertical is thickened. The letter 'ja' is represented thus —\(\overset{\text{e}}{\text{e}}\). The letter 'ña' is written thus —\(\overset{\text{h}}{\text{h}}\).

**Retroflex:**

The letter 'tha is a simple circle. The letter 'ṇa' is very irregular in shape. It is represented by a vertical line with two horizontal bars, one at the top and another at the bottom —\(\overset{\text{i}}{\text{i}}\). In some cases the vertical is slanting towards left.

**Dentals:**

The letter 'ta' resembles Roman small letter —\(\overset{\text{h}}{\text{h}}\).
The top of the left vertical is thickened. The thickened top is triangular in shape. The letter 'tha' is represented by a circle with a short horizontal line in the middle left of the circle. It is represented thus - \( \circ \). The letter 'da' has an angular curve in the middle. The lower end is curved towards the left. It is represented thus - \( \mathcal{Z} \). The letter 'dha' resembles a right-angled triangle - \( \triangle \). The letter 'na' is a perpendicular line over the middle of a horizontal bar. In some cases the vertical line is slanting either to the left or right.

Labials:

The letter 'pa' of this inscription is written in a very irregular manner. It is written in different shapes. At least three different shapes can be seen 1) \( \cup \), 2) \( \cup \), 3) \( \cup \). The sizes of the letter are also varied from one to another. The letter 'ba' is represented by an irregular rectangular box - \( \square \). The letter 'bha' is represented by a short vertical line with two wide-opening forks at the foot. The letter 'ma' is represented thus - \( \wedge \).

Semi vowels and ra, la.

The letter 'ya' is represented by a semi-circular curve with a vertical line on the arc of the semi-circle - \( \mathcal{J} \). The top of the vertical is thickened. The letter 'ra' is
represented by a simple vertical line — / . The letter 'la' is written thus - \( \sqrt{ } \). The base of 'la' is flat. The medial sign for 'u' is a simple rounded hook at the base of the letter 'la' — \( \sqrt{ } \).

The letter 'va' is triangular in shape with a short vertical line on the apex of the triangle — \( \Delta \). The head of the vertical line is thickened. The thickened head is triangular in shape.

Fricatives:

The letter 'sa' resembles Roman alphabet - U - with an additional hook pointing downwards attached to the left — \( \Lambda \). The top of the left vertical is thickened. The letter 'ha' retains the early cursive style, which occurs in the inscriptions of first century B.C. It is represented thus—

b. Palaeographical analysis of Vasisthiputra inscriptions from Karla.

Two inscriptions of Vasisthiputra no. 14 and no. 20) have been selected for palaeographical study. The first one was recorded on the seventh regnal year (c.137 A.D.) and the second one was recorded on the twenty-four regnal year (c. 154 A.D.). The letters of these two inscriptions are beautifully written and ornamented.
Vowels

The initial 'a' occurs in inscription no. 20. The shape of initial 'a' is very peculiar. It is represented thus - ą. The lower left arm has an angular curve. The lower end of the vertical is curved to the left and resembles a fish-hook.

The initial 'i' of inscription no. 20 is very peculiar in shape. It is represented by a straight vertical hook with two dots, one on each side of the vertical - ą.

The initial 'u' retains the traditional style and it resembles Roman alphabet - ą. There are two types of initial 'e' in these two inscriptions (1) rounded 'e' and (2) triangular 'e'. The first type of initial 'e' is represented thus - ą. The second type of initial 'e' retains the old traditional style. The initial 'o' resembles Roman alphabet zą. The angles of the letter 'o' are rounded.

Consonants

The letter 'ka' is written in two styles: 1) 'ka' with a fish-hook shape end and 2) 'ka' with a loop at the lower end of the vertical. The first style of 'ka' is represented thus - ą, and the second style of 'ka' is represented thus - ą. The top of the vertical line is thickened. The thickened top is triangular in shape. The medial sign
for ā, e and o are as usual. The medial sign for 'i' is ornamented. It resembles a horizontally placed Roman alphabet $\mathcal{S}$.

The letter 'kha' resembles a hook with a triangle at the foot of the hook - $\mathcal{Z}$. The same style of 'kha' occurs in the Mathura Kshatrapa inscription; Mathura pre-Kushāga inscriptions (Verma 1971:pl.IV) and in the Mathura stone inscription of Huvishka. The medial sign for 'e' is a slanting stroke on the right top of the hook - $\mathcal{Y}$.

The letter ga resembles an inverted Roman alphabet $\mathcal{U}$. The medial sign for 'i' is an alternately twisted curve on the right side of the rounded top of 'ga' - $\mathcal{Y}$. The letter 'gha' is represented thus - $\mathcal{W}$. The base of the right vertical is cursive in the middle. The middle vertical reduced its length.

**Palatals:**

The letter 'cha' is pear-shaped, a short vertical stroke is on the right apex - $\mathcal{S}$. The head of the vertical stroke is triangular in shape. The letter 'chha' resembles a horizontally placed figure 8 - $\infty$ with a short vertical line over the left circle - $\infty$. The top of the vertical is thickened. In some cases the left circle is smaller than the right circle - $\infty$. 
The letter 'ja' resembles straight-backed Roman alphabet $\varepsilon$. The medial sign for 'a' is a cursive upward stroke extended from the middle bar of the letter - $\varepsilon'$. The letter 'ña' is written in two styles: 1) 'ña' with a fish-hook end vertical and 2) 'ña' with a spiral end vertical. The first style of 'na' is written thus - $\jmath$ and the second style is written thus - $\jmath'$. These differences are due to the individual mannerisms of the writers. The medial sign for 'o' is a slanting horizontal bar bisecting the vertical line in between the two left angled hooks - $\jmath$.

Retroflexes:

The letter 'ta' resembles a semi-circle. It retains the traditional style of writing. The letter 'tha' is represented by a circle - $\circ$.

Dentals:

There are two types of the letter 'ta' in these two inscriptions of Vasisthiputra Pulumavi. The first type of 'ta' resemble Roman alphabet $\Lambda$ and the second type has a circle at the left foot - $\Delta$. The medial sign for a, u, e and o etc. are as usual. The medial sign for 'i' is a cursive upward stroke over the top of the letter. The stroke is extended to the left - $\jmath$. 
The letter 'tha' of these two inscriptions is similar in style with the letter 'tha' of the Kshatrapas (3.ii.a). It is represented by a circle with a short bar in the middle of the circle - atrema. The medial sign for 'i' is a cursive upward stroke - atrema. The letter 'da' is cursive in feature. It is represented thus - atrema. The medial sign for 'a' is a horizontal stroke in the middle of the left curve - atrema. The letter 'dha' is triangular in shape - atrema. The letter 'na' is written variously. In some cases the perpendicular line is slanting to the left and in some other cases the perpendicular line is slanting to the right.

Labials:

The letter 'pa' of these two inscriptions is squarish in shape. In some cases the left vertical is cursive - atrema. The medial sign for 'a' and 'e' are as usual. The medial sign for 'a' is added in two styles. The first style of medial 'a' is a horizontal bar over the top left vertical. The second style of medial 'a' is two horizontal strokes, one on each side of the two verticals - atrema. The medial sign for 'u' is a downward elongation extended from the base of the right vertical. The lower end of the elongation is curved towards the left. The letter 'ba' is rectangular in shape. The left vertical is curved in the middle - atrema. The medial sign for 'u' is a downward elongation extended from the right vertical.
of the rectangle. The lower and of the elongation is bent and curved like a fish-hook- gió.

The letter 'bha' is represented thus- भ . The left foot is curved and angular. The head of the letter is thickened on the top.

The letter 'ma' is triangular in shape. Two slanting straight lines are on the apex of the triangle. It is represented thus - म . The heads of the two slanting strokes are thickened. The medial sign for 'a' is a short horizontal bar at the right of the middle angular curve.-अ. The medial sign for 'e' is to the left.- इ . The medial sign for 'o' is two horizontal strokes on each side of the middle angular curves. In some cases the middle constricted portion is bisected by a horizontal bar.

Semi-vowels and ra, la.

The letter 'ya' is written in two styles : (1) crescentic ya and (2) segmented ya. The first style of 'ya' is a vertical line on the arc of a semi-circle- य . The base of the second style of 'ya' is double curved. The top of the vertical line is thickened. The medial sign for आ, इ,
The letter 'ra' is written in two styles. (1) the first style resembles a fish-hook \( \text{fish-hook} \) and (2) the second style is a vertical line with a loop at its lower left foot \( \text{vertical line with loop} \). The medial sign for \( \bar{a}, \bar{i}, \bar{e} \) and \( \bar{o} \) etc. are as usual. The letter 'la' is represented thus \( \text{letter 'la' represented thus} \). The letter 'la' resembles 'da' \( \text{letter 'la' resembles 'da'} \). It is represented by attaching a short dash to the lower end of 'da' \( \text{lower end of 'da'} \). The letter 'va' is triangular in shape. A short vertical line is on the apex of the triangle \( \text{triangle} \).

**Fricatives:**

The letter 'sa' is represented thus \( \text{letter 'sa' is represented thus} \). The top of the left vertical is thickened. The sign for \( a, i, e \) and 'o' medials are as usual. The letter 'ha' is squarish in shape. The top of the square is opened. On the left vertical of the square a short horizontal bar is attached. It is represented thus \( \text{letter 'ha' represented thus} \). The medial sign for 'a' is a short horizontal bar at the top of the left vertical \( \text{letter 'a' represented thus} \).

**Remarks:**

The above palaeographical analysis shows that the writing style of Karla inscriptions is different from the writing style of Nasik inscriptions. Striking differences can be observed in the inscriptions of the same period. For instance, the characters of Ushavadata's inscription from Karla show a
striking difference from that of inscriptions of Nasik. In the same manner, the differences can be observed in the inscriptions of Vāsīśṭhiputra Puḷumavi. However, close resemblance between the Ushavadata's inscription and Vāsīśṭhiputra's inscription can be observed at Karla. In the same way, at Nasik, the characters of Puḷumavi's inscription are resembled with the characters of Ushavadata's inscriptions.

The peculiar pen-styles of Nasik and Karla are given below:

Peculiar palaeographical features of Ushavadata's inscriptions from Nasik:

a) The head of the letters like a, u, ka, cha, chha, ta, da, na, pa, bha, ma, ya, ra, la, va, sa, and ha are thickened.

b) The longitudinal lines of the letters like a, ka, ra and medial 'u' sign taper from top to bottom.

![a ka ra su]


c) The shapes of the letters are emphasized on squarishness and geometrical forms.

d) The base of the letters like pa, ma, ya, ta, va and ha are flat.

![pa ma ya]

Peculiar palaeographical features of the Sātavāhana inscriptions from Nasik:
The Sātavāhana inscriptions of Nasik resemble with the pen-style of the Kšatrapa Kṣaharātasa. However, the characters of the Sātavahanas gave less emphasis on squarishness and geometrical forms. In case of Vāsiśṭhiputra Pulumavi's and Yajña Śatakarni inscriptions, the following letter have a close relationship with the characters of the Kšatrapas, they are:

ka, ja, da, pa, va, chha, ra, ḍa, la and ha. The following letters are different from the Kšatrapa pen-style, they are:

i, bha, ta, ya and kha.

Peculiar features of the Ushavadata's inscription from Karla.

The shapes of the letters are very irregular. The letters are cursive and rounded in some cases. Less attention are given on equalization of the verticals. The verticals are always slanting either to the left or right. The lower end of the downward elongations are bent towards the left. The bases of the letters pa and ha are slightly rounded.

Peculiar features of Vāsiśṭhiputra Pulumavi's inscriptions from Karla:

The head of the letters are thickened. The thickened heads are triangular in shape. The lower end of the downward elongations are spiral or curved inwards, medial 'i' signs are ornamented.

\[
\begin{align*}
a &\rightarrow \text{ornamented medial 'i' signs.} \\
\text{ka} &\rightarrow \text{si}\end{align*}
\]
ornamented medial 'i' signs.

\[ \text{ra-} \quad \text{i} \quad \text{ka-} \quad \text{ki-} \quad \text{thi-} \]

**C. Palaeographical analysis of Bhaja and Visapur inscriptions.**

In this group of inscriptions (Bhaja no. 2 and Visapur nos. 1-5), only nineteen different letters are occurred, they are: u, ka, kha, ga, chha, na, ta, tha, da, dha, dha, na, pa, ya, ra, la, va, sa and ha.

**Vowel:**

The initial 'u' retains the traditional style of writing. It resembles Roman alphabet - L.

**Consonants:**

**Velars:**

The letter 'ka' of Visapur and Bhaja inscription no. 2 are written in similar styles. The vertical line of 'ka' is elongated downwards and curved to the lower end. The curve is towards the left side. The head of the letter is thickened. The thickened head is triangular in shape. The medial sign for long 'i' is an oval-shaped curve over the top of the letter. The medial sign for 'o' is a horizontal bar over the top of the vertical. The letter 'kha' resembles a rounded-hook facing to the left.
The letter 'ga' resembles an inverted Roman alphabet \( \Uparrow \).  

**Palatals:**

The letter 'chha' retains the style of the Vāsiṣṭhuputra Pulumavi's inscription (3.2.b). It is represented by a horizontally placed figure 8 - \( \infty \), with a short vertical stroke appended on the left circle - \( \infty \). The letter 'ma' is represented thus - \( \mathcal{J} \). It occurs in Visapur inscription no. 2.

**Retroflexes:**

The letter 'na' retains the old traditional style. It is represented by a vertical line with two horizontal bars, one at the top and another at the bottom - \( \mathcal{I} \). The letter 'dra' is represented thus - \( \mathcal{J} \). The medial sign for 'i' is an elongated curve over the head of the letter - \( \mathcal{J} \).

**Dentals:**

There are two types of the letter 'ta' in these inscriptions; 1) the first type resembles Roman small alphabet - \( h \) and (2) the second type is represented thus - \( \mathcal{A} \). The letter 'da' is represented thus - \( \mathcal{A} \). The letter 'dha' is slightly triangular in shape - \( \mathcal{O} \).

**Labials:**

The letter 'pa' is squarish in shape - \( \mathcal{U} \). The medial
sign for 'o' is a horizontal bar over the top of the left vertical. The medial sign for 'u' is a downward vertical line elongated from the right vertical. The lower end of the vertical is curved to the left. The letter 'ma' is triangular in shape. Two slanting strokes are on the apex of the triangle. It is represented thus - ꞌ共同体.

Semi-vowels and ra, la.

The letter 'ya' is double-curved type. It is represented thus - ꞌ共同体. The top of the middle vertical is thickened. The letter 'ra' is represented by a vertical line. The lower end of the vertical is curved to the left. The letter 'la' is represented thus - ꞌ共同体. The right arm is cursive. The letter 'va' is triangular in shape. A short vertical line is on the apex of the triangle. The top of the short vertical is thickened.

Fricatives:

The letter 'sa' is represented thus ꞌ共同体. The medial sign for 'i' is a horizontally placed Roman alphabet ꞌ共同体, over the top of the vertical ꞌ共同体. The letter 'ha' is squarish in shape. It is represented thus - ꞌ共同体.

Remarks:

The above palaeographical analysis clearly shows that, the
inscription no. 2 of Bhaja and the inscriptions of Visapur belong to the same tradition of writing. These inscriptions of Bhaja and Visapur show close resemblance with the Karla inscriptions of Vāsiṣṭhiputra Pulumavi.

III. Palaeographical analysis of Junnar Inscriptions.

Thirty-four inscriptions are numbered in the report of Burgess and Bhagwanlal Indraji (1976:41-55). Out of these thirty-four inscriptions only one inscription of Ayama, the prime minister of Nahapana, contains royal name. The other remaining thirty three are the records of private individuals. Most of the inscriptions of Junnar caves are short and a few different letters are occurred. Among them the earliest inscription is the inscription no. 7. (chapter IV).

Palaeographically, the inscriptions of Junnar may be classified into two groups as given below:

Group - I
Inscription nos. 1, 2, 20, 25, 30, 15, 16, 26-29.

Group - II
Inscription nos. 3, 4, 6, 13, 14, 17, 19, 21, 22.

a. Palaeographical analysis of group - I inscriptions:

Among the inscriptions of Junnar, inscription no. 25 of Ayama, the prime minister of Nahapana, is one of the important inscriptions as it is the only one which contains the royal name.
The characters of the inscription are more cursive and less squarish while compared to the other Kshatrapa inscriptions of Karla and Nasik. The pen-style is akin to the other Junnar inscriptions of private individuals.

Inscription of Ayama:

The following different letters occurred in the inscription of Ayama. They are: a, ka, kha, ga, cha, chha, na, ta, th, da, dha, dha, na, pa, ma, ya, la, va, sa and ha.

Vowels:

The letter 'a' of this inscription is very peculiar in shape. Unlike the letter of other Kshatrapa inscriptions the initial 'a' of this inscription is cursive and rounded. It is represented thus—\( \text{\&} \).

Consonants

Velars:

The letter 'ka' is represented thus—\( \text{\&} \). The downward elongation of the vertical is slightly bent to the left. The top of the letter is nail-headed. The letter 'kha' resembles a hook with a triangular base. It is represented thus—\( \text{\&} \). The letter 'ga' resembles an inverted semi-circle. The medial sign for 'o' is a horizontal short bar over the rounded top of the letter.
Palatals:

The letter 'cha' is represented thus - \( \ddot{a} \). The head of the short vertical is triangular in shape. The letter 'chha' resembles a horizontally placed figure \( \infty \), a short vertical line is on the left circle. The letter 'na' is represented thus - \( \perp \).

Retroflexes:

The letter 'ṭa' resembles Roman alphabet \( \mathrm{c} \). The letter 'ḍha' is represented thus - \( \odot \). The head of the letter is triangular in shape.

Dentals:

The letter 'ṭa' is a vertical short stroke with an inverted U-shaped curve at its foot \( \breve{a} \). The head of the vertical is thickened. The thickened head is triangular in shape. The letter 'tha' is represented by a circle with a dot in the centre. \( \odot \).
The letter 'na' retains the traditional style of writing.

Labials:

The letter 'ma' is triangular in shape. Two slanting straight lines are appended on the apex of the triangle.
The letter 'pa' is represented thus - \[ \text{\texttt{L}} \text{j} \]. The left vertical line is longer than the right vertical.

Semi vowels:

The letter 'ya' is a semi-circular curve with a perpendicular line on the arc of the semi-circle \[ \text{\texttt{L}} \text{i} \]. The letter 'va' is triangular in shape with a short vertical line on the apex of the triangle. The top of the vertical is thickened. The thickened head is triangular in shape.

Fricatives:

The letter 'sa' is represented thus - \[ \text{\texttt{L}} \text{s} \]. The left vertical of the letter is thickened. The letter 'ha' is squarish in shape. It is represented thus - \[ \text{\texttt{L}} \text{u} \].

Remarks:

From the above palaeographical analysis of Ayama inscription, it can be observed that, the Kshatrapa Kshaharata inscription of Junnar is written in a different scriptal tradition. It is different from the scriptal styles of Nasik and Karla inscriptions of Kshatrapas.
The characters of the inscription show a close relationship with the other Junnar inscriptions of private individuals. From the above analysis it appears that the local scriptal style predominates the inscription of Ayamā.

b. Palaeographical analysis of private individual records:

Most of the inscriptions of Junnar are short. They are the records mentioning the gifts of the private individuals. From group I inscriptions of private individuals, the following few representative inscriptions are selected for palaeographical study. They are inscription nos. 1, 2, 15, 16, 20, 26-29, 30, 34.

Vowels:

The letter 'a' is represented thus - ỳ. The two cursive left arms are joined by a horizontal bar to the right vertical line. The lower end of the vertical line is curved towards the left. The initial long 'ā' is written thus - ý. The initial 'i' is represented by three horizontal short bars which are arranged in a triangular position. The two bars are put one above the other and the third placed to the right, almost in the middle at an equal distance from them - ). It occurs in inscription no. 20. The letter 'u' resembles Roman alphabet L. In some cases the angle of 'u' is rounded with a short bar on the top of the vertical. It is represented thus - ĥ. Such type of 'u' occurs in inscription no. 16.
Consonants

Velars:

The letter 'ka' is represented thus ʃ. As a rule, most of the letter 'ka' of Junnar inscriptions retain a common style. The vertical line is always curved to left like a fish-hook. In case of inscription nos. 1 and 2 the curve is lesser than the curve of other 'ka' of this group. The letter 'kha' resembles a rounded hook. It is represented thus - /modal. The letter 'ga' resembles an inverted Roman alphabet – ʘ.

There are two types of the letter 'gha' in these inscriptions of group I: 1) rounded base 'gha' and 2) flat base 'gha'. The rounded base 'gha' is represented thus- ʘ. The middle vertical line is reduced its length. The flat-base 'gha' is represented thus- ʘ. The first type of 'gha' occurs in inscription no. 28 and the second type of 'gha' occurs in inscription nos. 26 and 29.

Palatals:

The letter 'cha' is represented thus - ʘ. The top of the vertical short stroke is thickened. The thickened top is triangular in shape. The letter 'chha' resembles a horizontally placed figure 8 - ʘ, a short vertical stroke is on the angular curve of the two circles ʘ. The top of the vertical stroke is thickened. The thickened head is triangular in shape.
It occurs in inscription no. 27. In inscription no. 20 the vertical is on the left circle. The letter 'ja' is written in various ways. At least three types of 'ja' are noticed. (1) straight-backed 'ja' (2) angular backed 'ja' and (3) cursive-backed 'ja'. The first type of 'ja' resembles straight-backed Roman alphabet - E. The second type of 'ja' is represented thus - E, and the third type of 'ja' resembles cursive-backed Roman alphabet - E. The first type of 'ja' occurs in inscription no. 34. The second type of 'ja' occurs in inscription no. 17 and the third type of 'ja' appears in inscription no. 2.

Retroflexes:

The letter 'ta' resembles Roman alphabet C. It occurs in inscription no. 34. The letter 'da' is represented thus - D. The letter 'dha' resembles 'da', but the right bottom end is curved inward L. The letter 'na' is a vertical and another one at the bottom I.

Dentals:

The letter 'ta' of this group appears in many forms. At least three types of 'ta' are occurred. The first type of 'ta' resembles Roman alphabet - H. The second type of 'ta' is a vertical line with an inverted U-shaped curved at the foot of the vertical - H. And the third type of 'ta' is represented thus - H.
The medial sign for ā, i, e and o etc. are as usual. The medial sign for long 'ū' are two parallel horizontal strokes at the right base of the letter 'ta'. The letter 'tha' is represented by a circle with a dot in the centre. The letter 'da' appears in many forms, which seem to be the outcome of the cursive hand. The following forms of 'da' are noticed in the inscriptions of group - I: (1) (2) (3) (4) (5) (6). The medial 'e' sign is also attached in different ways. Some are attached at the left-top of the letter and some are in the left middle curve of the letter. The first type of 'de' occurs in inscription no. 20. The second type of 'de' occurs in inscription nos. 28, 29 and 30. In some cases 'de' is written as 'do. Such type of 'de' appears in inscription nos. 24, 27 and 30. There are three types of the letter 'dha' in these inscriptions. The first type of 'dha' resembles reverse Roman alphabet. The second type of 'dha' is circular in shape and the third type of 'dha' is triangular in shape. The first type of 'dha' occurs in inscription nos. 2, 20, 23, 24, 28, 30 and 31. The second style of 'dha' appears in inscription nos. 15, 26 and 29. The third type of 'dha' occurs in inscription nos. 1, 27 and 33. The letter 'na' is represented by a perpendicular line over a horizontal bar. The top of the perpendicular line is thickened. In case of inscription no. 33 the thickened head is nail-headed.
Labials:

The letter 'pa' is squarish in shape \( \square \). In some cases the left vertical line is cursive \( \_ \). The medial sign for a, e and o etc are as usual. The letter 'ba' retains the traditional style of writing, which is represented by a square box - \( \square \). In some cases the left vertical is cursive in the middle. It occurs in inscription nos. 15 and 20. The medial sign for 'ā' is a short horizontal stroke on the right top of the square box \( \square \). Such type of bā occurs in inscription nos. 17 and 27. The medial sign for 'i' is a cursive stroke on the right top of the letter \( \_ \). It occurs in inscription no. 15. The medial sign for 'u' is a vertical downward stroke extended from the right vertical of the square box - \( \_ \). It occurs in inscription no. 20.

There are two types of the letter 'bha' in these group of inscriptions. The first style of 'bha' is written thus - \( \_ \). and the second style of 'bha' is represented thus - \( \_ \). The shape of the letter 'ma' is as usual. The letter is triangular in shape, two slanting strokes are on the apex of the triangle - \( \_ \).

Semi-vowels and ra, la

The letter 'ya' appears in many forms. The different styles of the letter 'ya' are: (1) crescented ya
(2) double curved 'ya' and (3) wedge shaped 'ya'. The first type of 'ya' is represented thus - . The third type of 'ya' is represented thus . In these inscriptions the verticals of 'ya' are not equalized.

The letter 'ra' is represented by a fish-hook shaped vertical line . The medial sign for a, e, o are as usual. The medial sign for 'u' is a short horizontal stroke in the right middle of vertical line - . The letter 'la' is written in three different styles. The first type of 'la' is written thus - . The second type of 'la' is written thus - and the third type of 'la' is written thus - . The first type of 'la' occurs in inscription no. 2. The second type of 'la' occurs in inscription nos. 23, 26, 27, 29 and 30. The third type of 'la' occurs in inscription no. 20.

The letter 'va' is triangular in shape. A short vertical line is on the apex of the triangle . The top of the vertical is thickened.

Fricatives:

The letter 'sa' appears in many forms. In some cases, the U-shaped curve is angular . In some other cases the U-shaped curve is rounded. The left arm of 'sa' is attached in different manners. The top of the

(1) (2) (3) (4) (5) (6) left vertical is thickened. In inscription no. 33, the
thickened top is nail-headed. The letter 'ha' is squarish in shape. It is represented thus- ḫ.

c. Palaeographical analysis of Group II inscriptions

In group II the following inscriptions are included. They are inscription nos. 3, 4, 6, 9, 13, 14, 17, 19, 21 and 22. The characters of this group are beautifully written. The shapes of the letters are emphasized on squarishness and geometrical forms. The medial i, ı and u signs are beautifully ornamented.

Vowels:

The initial 'a' occurs in inscription nos. 3, 4, 6, 9, 13, 14 and 22. The letter 'a' is represented thus- ḧ. The two cursive left arms of 'a' meet at a single horizontal bar, the horizontal bar then meets the right vertical. The right vertical is elongated downwards. The lower end of the vertical is curved to the left. In some cases the lower left arm of 'a' is curved towards the right ḧ. The long initial 'ā' is represented thus- ā.

There are two types of the letter 'u' in these group of inscriptions: 1) angular L-shaped 'u' and 2) fish-hook shaped 'u'. The first types of 'u' resembles Roman alphabet L. It occurs in inscription no. 3. The second type of 'u' resembles a fish-hook unità. It occurs in inscription no. 13.
The initial 'e' is written in two different styles.
Both the styles are triangular in shape. But the positions
are different. In the first style, the triangle is composed
of a vertical stroke to the left and two other lines which
starting from either ends, meet at a central point to the
right. In the second style the two angles are at the
bottom and one at the top. The first style of 'e' occurs
in inscription no. 3 and the second style occurs in
inscription no. 6.

Consonants

Velars:

There are two types of the letter 'ka' in these group of
inscriptions. The first type is represented thus— and the
second type is represented thus—. The medial sign for ā,
e and o are as usual. However, the medial 'ī' sign is
beautifully ornamented. It is represented thus— Such
type of 'kī' occurs in inscription no. 22.

The letter 'kha' is written in two styles. The first
type of 'kha' resembles a simple rounded hook. The second
type of 'kha' is represented thus—. Both the types of
'kha' can be observed in inscription no. 3.

The letter 'ga' resembles an inverted Roman alphabet
U—. In some cases 'ga' resembles an inverted semi-
circle—. The medial sign for 'ā' is a horizontal short
stroke at the right of the rounded top. The medial sign for 'e' is a short horizontal stroke at the left of the rounded top. The medial sign for 'i' is added variously in this letter. In inscription no. 3 'gi' is written thus and in inscription no. 6 'gi' is written thus.

The letter 'gha' is represented thus. The left vertical is slightly bent in the middle. It is occurred in inscription no. 4. The letter 'gha' of this group resembles in style with letter 'gha' of Nasik (3:1)

**Palatals:**

The letter 'cha' appears in various shapes. In inscription no. 3. 'cha' is represented thus. In inscription no. 6 'cha' is represented thus. In inscription no. 8 it is represented thus. The top of the vertical line is thickened. The letter 'ja' resembles straight-backed Roman alphabet E. The medial sign for 'a' is a cursive upward stroke extended from the middle bar of the letter E. The medial 'i' sign is added in two different styles. The first type of medial 'i' sign is a cursive upward stroke extended from the top bar of the letter E. The second type of medial 'i' sign is a U-shaped curve over the right top bar of the letter E. The first type of 'ji' occurs in inscription no. 9 and the second type occurs in inscription n. 14.
Retroflexes:

The letter 'ta' resembles a semi-circle opening to the left. The letter 'da' is represented thus. The letter 'dha' resembles 'da' with a spiral at the right bottom end. The letter 'na' is a vertical line with two horizontal bars, one at the top and other at the bottom. In some cases, the bottom bar is cursive.

Dentals:

There are three types of the letter 'ta' in these inscriptions: The first type of 'ta' resembles Roman alphabet h. The second type of 'ta' is a vertical short stroke with a U-shaped curve at the foot. The third type of 'ta' is represented thus. The medial sign ą, e and u are as usual. The medial sign for 'i' is added variously in this letter. They are:

Inscription no. 3 - ti - ą
Inscription no. 4 - ti - ą
Inscription no. 6 - ti - ą
Inscription no. 8 - ti - ą
Inscription no. 14 - ti - ą
Inscription no. 21 - ti - ą
Inscription no. 22 - ti - ą
The letter 'tha' retains the traditional style, which is represented by a circle with a dot in the centre. The letter 'da' is cursive in form. It is represented thus—\[\text{\textbullet}\]. The letter 'dha' resembles a reverse Roman alphabet D — Q. The letter 'na' is written in two styles: 1) straight base na and 2) cursive base na. The first style of na is represented by a perpendicular over the middle of a horizontal bar—J. The second style of 'na' is represented thus—L. The horizontal bar is cursive. The medial sign for 'i' is added variously. The different styles of 'ni' are written as follows:

- Inscription no. 3 - ni - \[\text{T}\]
- Inscription no. 4 - ni - \[\text{N}\]
- Inscription no. 6 - ni - \[\text{N}\]
- Inscription no. 10 - ni - \[\text{N}\]
- Inscription no. 13 - ni - \[\text{N}\]
- Inscription no. 14 - ni - \[\text{N}\]

Labials:

The letter 'pa' is squarish in shape. It is represented thus—\[\text{U}\]. The letter 'ba' retains the traditional style of writing, which is represented by a square box—\[\text{Q}\]. There are two types of letter 'bha' in these inscriptions: The first type of 'bha' is written thus—\[\text{F}\] and the second style is
represented thus- �. The letter 'ma' is represented thus-
The tops of the two slanting strokes are thickened. In some cases the triangular base is rounded. The medial sign for 'u' is a downward elongation from the bottom end of 'ma'. The lower end of the elongation is curved to the left.

Semi-vowels and ra, la and ła

There are three types of the letter 'ya' in these inscriptions. The first type of 'ya' is double-curved type. The second type of 'ya' is crescentic 'ya' and the third type is represented thus- ਊ. The first type occurs in inscription nos. 3, 4 and 9. The second type of 'ya' occurs in inscription nos. 6, 13, 21 and 22. The third type of 'ya' occurs in inscription nos. 8 and 9. The letter 'ra' is written in two styles. The first style of 'ra' is represented by a simple vertical line. The second style of 'ra' resembles a fish-hook. The lower end of the vertical line is curved to the left.
The medial sign for 'i' is added in the following styles.

Inscription no. 3 - ริ

Inscription no. 6 - ริ

Inscription no. 22 - ริ

The letter 'la' is represented thus- لاء. The letter 'ła' resembles 'ła' ła, with a short dash at the right bottom
end. The letter 'va' is triangular in shape, a short vertical stroke is on the apex of the triangle. In some cases the triangular base is rounded. It is represented thus. The medial sign for 'a' and 'e' are as usual. The medial signs for 'i' and 'i' are added as follow:

Inscription no. 3 - vi -
Inscription no. 3 - vi -
Inscription no. 4 - vi -
Inscription no. 13 - vi -
Inscription no. 14 - vi -
Inscription no. 22 - vi -

Fricatives:
The letter 'sha' is represented thus. It occurs in inscription no. 14. The letter 'sa' is a U-shaped curve with a hook to the left side. The medial sign for 'ā' and 'e' are as usual. The medial sign for 'i' is added variously. They are ornamented in the following different styles.

Inscription no. 3 - si
Inscription no. 6 - si
Inscription no. 14 - si
Inscription no. 22 - si

The medial sign for 'u' is a downward elongated line extended from the right vertical of 'sa'. It resembles initial 'a'.

The letter 'ša' is represented thus. It occurs in inscription no. 14. The letter 'sa' is a U-shaped curve with a hook to the left side. The medial sign for 'ā' and 'e' are as usual. The medial sign for 'i' is added variously. They are ornamented in the following different styles.

Inscription no. 3 - si
Inscription no. 6 - si
Inscription no. 14 - si
Inscription no. 22 - si

The medial sign for 'u' is a downward elongated line extended from the right vertical of 'sa'. It resembles initial 'a'.

The letter 'ša' is represented thus. It occurs in inscription no. 14. The letter 'sa' is a U-shaped curve with a hook to the left side. The medial sign for 'ā' and 'e' are as usual. The medial sign for 'i' is added variously. They are ornamented in the following different styles.

Inscription no. 3 - si
Inscription no. 6 - si
Inscription no. 14 - si
Inscription no. 22 - si

The medial sign for 'u' is a downward elongated line extended from the right vertical of 'sa'. It resembles initial 'a'.
IV. Palaeographical analysis of Kuda inscriptions.

In the sequence of palaeographical features the inscriptions of Kuda may be classified into three distinct groups. The writing traditions of these three groups are different from one to another. On the basis of palaeography the inscriptions are categorized as follows.

Group - I
Inscription nos. 15-20 and 29-31

Group - II
Inscription nos. 1-4, 9, 13, 14, 23-28.

Group - III
Inscription nos. 7-8 and 10-12.

.a. Palaeographical analysis of group I inscriptions.

Most of the inscriptions of group I are short. They are the records of private individuals.

Vowels

The letter 'a' of this group is represented thus

The two cursive left arms meet before they actually touch the vertical line to the right, to which they are joined by a horizontal bar to the right - (horizontal bar). The initial 'i' is represented by three horizontal short strokes arranged triangularly. The two horizontal bars are put one above the

*Group III inscriptions are discussed in chapter four as they are belonged to the script of fourth century A.D.
other and the third one placed to the right almost in the middle
at an equal distance from them — The initial 'i' of group I
appears in inscription no. 17. The letter 'u' resembles Roman
alphabet L. It occurs in inscription nos. 15 and 19.

Consonants

The letter 'ka' of this group is represented by a simple
cross †. The horizontal bar which bisects the vertical line is
very short. The letter 'ga' resembles an inverted semi-circle
○. It appears in inscription no. 17. The letter 'gha' is formed by three perpendicular lines over a horizontal bar. The letter is represented thus- w.

Palatals :

The letter 'cha' of this group of inscription is written in
two different styles. The first style of 'cha' is represented
by a semi-circular curve to the left of a straight vertical
line - d. The second type of 'cha' is pear-shaped, a short vertical is on the right apex. It is represented thus- ⚼. The first style of 'cha' occurs in inscription no. 15 and the second style occurs in inscription no. 18. The letter 'ja' of this group resembles straight backed Roman alphabet. E . It occurs in inscription nos. 18 and 19.

Retroflexes :

The letter 'tha' retains the traditional form, which is
represented by a circle with a dot in the centre $\odot$. The letter 'ṇa' is formed by a vertical line with two horizontal bars, one on the top of the vertical and other at the bottom-$\text{-I}$.

**Dentals:**

The letter 'ṭa' is formed by a vertical short line with an inverted U-shaped curve at its foot-$\text{-} \text{ sigu}$ . The letter 'ḍa' is written in two styles. The first style of 'ḍa' resembles Mauryan 'da', which is represented by a semi-circle opening to the left, with its ends elongated vertically to the top and bottom-$\text{-} \text{ sigu}$ . The second style of 'ḍa' is angular in the middle-$\text{-} \text{ sigu}$ . The first style of 'ḍa' occurs in inscription nos. 20 and 30. In case of inscription no. 28 the semi-circular curve is squarish. The second style of 'ḍa' occurs in inscription nos. 15 and 16. The letter 'ḍ̪ha' resembles a reverse Roman alphabet D - Q . The letter 'ṇa' retains the traditional style which is represented by a perpendicular line over the middle of a horizontal bar.

**Labials:**

The letter 'ṇa' is rectangular in shape. It is represented thus-$\text{-} \text{ sigu}$ . The letter 'ba' is written as usual. The letter 'bha' is represented thus-$\text{-} \text{ sigu}$ . There are two types of the letter 'ma' in these inscriptions of group I : 1) rounded base 'ma' and 2) triangular base 'ma'. The first type of 'ma' is written thus-$\text{-} \text{ sigu}$ and the second type is written thus-$\text{-} \text{ sigu}$ . The first type of 'ma' occurs in inscription nos. 15, 16, 19 and 22.
The second type of 'ma' occurs in inscription nos. 17, 30 and 31.

**Semi-vowels, ra and la.**

The letter 'ya' is written in two different styles; 1) crescentic 'ya' and 2) double-curved 'ya'. The crescentic 'ya' is a semi-circular curve with a vertical line on the arc of the semi-circle. The double-curved 'ya' is represented thus - 亁. The first type of 'ya' occurs in inscription nos. 15, 16, 17, 18, 19 and 20 etc. The second type of 'ya' occurs in inscription no. 27. The letter 'ra' is represented by a vertical line - | .There are two types of the letter 'la' in these inscriptions of group I; 1) flat-base 'la' and 2) angular base 'la'. The flat base 'la' is represented thus - 亁 and the angular base 'la' is represented thus - る. The first type of 'la' appears in inscription nos. 15, 18, 20, 28 and the second type of 'la' occurs in inscription nos. 16, and 27. The letter 'va' is triangular in shape, a short vertical line is on the apex of the triangle - \( \Delta \). In some cases the triangular base is slightly oval in shape.

**Fricatives:**

The letter 'sa' is represented thus - 乽. There are two types of the letter 'ha' in these inscriptions of group I; 1) flat base 'ha' and rounded base 'ha'. The flat-base 'ha' is squarish in shape. It is represented thus - \( \text{lr} \). The rounded base 'ha' is cursive in form. It is represented thus - 乴. The first type of 'ha' occurs in inscription nos. 18, 20, 30 and 31. The second type of 'ha' occurs in inscription nos. 17 and 19.
Remarks:

From the above palaeographical analysis it can be observed that, letters like a, ka, ma, ha and have retained the traditional style of writing. The letter 'ma' of inscription nos. 15, 16, 19 and 22 resembles the mauryan rounded base 'ma'. The letter 'ha' is similar in style with the letter 'na' of Nasik inscription of the time of Hukur and Nanaghat inscription of Nagempa. Letters like pa, ha, la, bha and va are similar in style with the letters of the Kshatrapa Kanaharatas. In fact, the letters of this group is a mixture of old traditional style and new developed style which was coming up. Palaeographically the inscriptions of this group may be dated in the beginning of second century A.D.

Vowels:

The initial 'a' of this group is represented thus- . The two cursive left arms meet before they actually touch the vertical line to the right, to which they joined by a horizontal bar to the right. The lower end of the right vertical line is curved to the left. The initial long 'a' is a short horizontal bar projected from the right vertical of the letter 'a'. It is represented thus- . The initial 'i' is represented by three horizontal curves arranged triangularly- . The two horizontal bars are put one above the other and the third one placed to the right almost in the middle at an equal distance from them . The initial 'u' is represented thus- .
Consonants

Velars:

The letter 'ka' is represented thus - . The lower end of the vertical line is curved to the left. In some cases the curve is spiral.

Dentals:

The letter 'ta' is a vertical stroke with an inverted U-shaped curve at the foot of the vertical . The medial sign for å, é and ù are as usual. The medial sign for 'i' is added in the following different styles:

- Inscription no. 1 - ti - å
- Inscription no. 2 - ti - å
- Inscription no. 4 - ti - å
- Inscription no. 5 - ti - å
- Inscription no. 9 - ti - å
- Inscription no. 23 - ti - å

The letter 'tha' retains the traditional style of writing. It is represented by a circle with a dot in the centre. . The letter å is written thus - å. The medial å and é signs are as usual. The medial 'u' sign is a downward elongation extended from the right.
The bottom of the letter 'da'. The lower end of the elongation is spiral. Such type of 'du' occurs in inscription nos. 5 and 13. The letter 'dha' resembles a reverse Roman alphabet 0.

The medial 'i' sign is added at the middle of the right diameter of the letter. Such type of 'dhi' occurs in inscription no. 24. In inscription no. 5 'dhi' is written thus.

The letter 'na' is represented by a perpendicular line over a horizontal bar. The medial 'a', e signs are as usual. The medial sign for 'i' is added in the following different styles:

- Inscription no. 5 ni -
- Inscription no. 5 ni -
- Inscription no. 24 ni -

**Labials:**

The letter 'pa' is written in two styles: 1) squarish 'pa' and 2) cursive 'pa'. The first style of 'pa' is squarish in shape. The second style of 'pa' is represented thus. The first style occurs in inscription nos. 5 and 25. The second style of 'pa' occurs in inscription nos. 1, 9 and 13. The medial sign for 'a' is a short horizontal stroke at the right of left vertical. The medial sign for 'u' is a downward vertical line extended from the right vertical. The lower end of the vertical elongation is curved towards the left.
In some cases the curve is spiral. Such type of 'pa' appears in inscription nos. 1, 9 and 13.

There are two types of the letter 'ba' in these inscriptions of group II. The first type of 'ba' resembles a rectangular box - □ . The second type of 'ba' is represented thus - □ . The left vertical of the box is cursive in the middle . The first style of 'ba' occurs in inscription nos. 24 and 25. The second style of 'ba' appears in inscription no. 5. The medial sign for 'o' is two horizontal short bars, one on each side of the rectangular box. The letter 'bha' is written in two different styles. The first style of 'bha' is represented thus - □ and the second style of 'bha' is represented thus - □ . The first style occurs in inscription nos. 1, 5, 9 and 25. The second style appears in inscription no. 23.

The letter 'ma' is triangular in shape. Two slanting straight strokes are on the apex of the triangle. It is represented thus - □ . In some cases the angles of the triangular base are rounded.

Semi-vowels and ra, la.

There are three types of the letter 'ya' in these inscriptions. 1) rounded base 'ya' 2) straight base 'ya' and 3) double-curved 'ya'. The first type, rounded base 'ya' is represented thus - □ . The second type, straight base 'ya' is represented thus - □ , and the third type double-curved 'ya' is represented thus - □ .
The first type of 'ya' occurs in inscription nos. 19 and 13. The second type of 'ya' occurs in inscription nos. 5 and 25. The third type of 'ya' occurs in inscription no. 23.

The letter 'ra' is written in two different styles. The first style of 'ya' is written thus - . The second style of 'ra' is represented thus - . The first style occurs in inscription nos. 5 and 25. The second style of 'ra' occurs in inscription nos. 1, 9, 13 and 23. The letter 'la' is represented thus - .

The medial sign for 'e' is a short horizontal stroke at the left side of the right vertical - . The medial sign for 'o' is a short horizontal bar, bisected the right vertical line - . It occurs in inscription no. 25. The letter 'va' is triangular in shape. A short vertical line is on the apex of the triangle. The medial sign for ä and e are as usual. The medial signs for 'i' and 'i' are ornamented in two different styles: 1) and 2) . They are occurred in inscription nos. 9 and 23.

Fricatives:

The letter 'sa' is represented thus - . The letter 'ha' is written thus - . In some cases the left vertical is curved in the middle. The medial sign for 'a' is a horizontal short stroke on the right top of the left vertical. The medial sign for 'i' is curve over the top of left vertical - .

Remarks:

The above palaeographical analysis shows the development of
styles of the letters during second and third century A.D. Emphasis is given in the ornamentations of the medial signs like 'i' and u, which are unknown in the writings of the group I inscriptions. The structure of the letters retained the Kshatrapa style which are prevalent on squarishness and geometrical forms. The ornamentations of the letters show that they are the developed style of writing. The style of the ornamentations are similar with the ornamentation of Junnar (S.W.C). So far the inscriptions of Kuda are concerned, the style of group II inscriptions are the second phase of development.
The Brāhmī script of Kanheri may be classified into four major types. The first type belongs to the Satavahana Kshatrapa style of second and third century A.D. The writing style of second century and the writing style of third century have stylistic differences. They are included in two separate groups. The third type is the nail-headed variety of the fourth and fifth century A.D. The fourth type is the box-headed variety of the Vakatakas of the fifth century or the beginning of sixth century A.D. And the fifth type is the protonagari of the Rashtrakutas.

A close palaeographical study of these different inscriptions of different phases evidenced the different scriptural traditions that had prevailed at Kanheri. Besides the rock inscriptions, many epitaphs have been discovered by Gokhale (ed. Asher & Gai 1985:56). These epitaphs record the names of teachers of high religious achievements. According to Gokhale (1985:115) the box-headed and nail-headed varieties of Brāhmī were introduced at Kanheri along with the intrusion of the Vākāṭaka king Harisena. These pen-styles definitely indicate the Vākāṭaka phase with the advent of the Trikutakas the Vakataka phase disappeared.
Palaeographical Analysis of second and third Century A. D. Inscriptions.

On the basis of palaeographical features the inscriptions of second and third century A.D. may be categorised into two groups as follows:

Group - I: Insc. nos. 13, 2, 3, 12 and 11.

Group - II: Insc. nos. 4, 5, and 14.

While studying the inscriptions of Kanheri it is noticed that:

i) The number of inscriptions is very large
ii) Different styles of writing are observed.
iii) Individual mannerisms influenced the pen-style. However, it is decided to take some representative inscriptions for palaeographical analysis. Therefore, only a few representative inscriptions of the second and third century A.D. have been selected for the analysis.

Palaeographical Analysis of Group - I

The inscriptions of this group are the short records of private individuals. Among them (nos. 13, 2, 3, 12 and 11), inscription no. 13 is the earliest.

Consonants

Velars

The letter 'ka' appears in inscription nos. 13, 2, 3, 12 and
11. Letter 'ka' of this group may be categorized into two styles. The first type of 'ka' is represented by a simple cross with a straight downward elongation. In the second type of 'ka' the lower end of downward elongation is curved to the left - Ꞝ. The first style appears in inscription no. 13 and the second type occurs in inscription nos. 2, 3, 12 and 11. In some cases the top of the vertical of 'ka' is thickened. The letter 'ga' occurs in inscription no. 12. "Ga" resembles an inverted Roman alphabet U - ꞛ. The medial sign a is a horizontal stroke to the right side of 'ga' - ꞛ. The letter 'gha' appears in inscription no. 3. Here, 'gha' resembles a U-shaped curved with a short vertical stroke in the middle of the curve - ꞛ.

**Palatals**

The letter 'cha' of this group occurs in inscription no. 13. It is pear-shaped, a short vertical stroke is appended from the apex - ꞛ. The medial sign for 'e' is a short horizontal stroke to the left top of the short vertical - ꞛ.

**Retroflexes**

The letter 'gha' represents thus - ꞛ. The top of 'gha' is thickened. The medial sign for 'i' is a cursive upward stroke drawn from the right side of the vertical - ꞛ. It occurs in inscription nos. 13 & 12. The letter 'na' appears
in inscription nos. 13 and 3. The letter 'na' is formed by a vertical line with two horizontal strokes, one at the top and other at the bottom. In case of inscription no. 3 the vertical line is slightly slanting to the right.

**Dentals**

The letter appears in inscription nos. 13, 2, 3 and 11. Here, in this group of inscriptions 'ta' may be categorized into three types. The first type resembles Roman alphabet. The second type is a short vertical line with an inverted U shaped curve at the foot of the vertical. It represents thus - $\mathbb{A}$. The third type represents thus - $\mathbb{A}$. The first type occurs in inscriptions nos. 13 and 2. The second type appears in inscription no. 3 and the third type appears in inscription no. 10.

The letter 'tha' is recorded in the traditional Mauryan style, which is represented by a complete circle with a dot in the centre. The medial sign for 'e' is a slanting stroke to the left side of the circle - $\mathbb{O}$. The medial sign for 'u' is a vertical line at the middle bottom of the circle. It occurs in inscription no. 10.

The letter 'da' appears in inscription nos. 13, 12, 2, 3 and 10. All of them are different in style. In inscription no. 13 the letter 'da' is written in the traditional style,
a semi-circle opening to the left with its elongated verticals on the top and at the bottom - }. In inscription no. 2 the shape of 'da' is reverse. It represents thus - ® . In inscription nos. 12 and 10 'da' represent thus - ® . In inscription no. 'da' represents thus - ® . The letter 'dha' of this group of inscriptions has two styles. They are represented thus; ® ; ® . The letter 'na' is represented by a vertical line appended from the middle of a horizontal bar - I . It appears in inscription nos. 12, 2, 3 and 10. In case of inscription nos. 12 and 2 the vertical line is slightly slanting to the right.

Labials:

The letter 'pa' of this group of inscriptions represents thus - Ü . It occurs in inscription nos. 13, 12, 3 and 10. In case of inscription no. 10 on the shape of 'pa' it happens that phasis is given on squarishness. The medial sign for 'ā' is a short horizontal stroke to the right side of the vertical - © . The medial sign for 'ō' is a horizontal short bar over the left vertical - © . The letter 'ba' retains the traditional Mauryan style which is represented by a square box - © . It occurs in inscription no. 10. The letter 'bha' is represented thus - © . It appears in inscription no. 10. The letter 'ma' is triangular in shape with two slanting strokes appended from the apex of the triangle in opposite directions - © . In case of inscription no. 13 the two slanting strokes rises from different points.
Semivowels and ra, la

The letter 'ya' of this group of inscriptions is a semi-circular curve opening on the top with a perpendicular line on the arc of the semi-circle - υ. 'Ya' occurs in inscription nos. 13, 12, 2, 3 and 10. The letter 'ra' is a vertical line. In the case of inscription no. 3 the lower end of 'ra' curved to the left - J. The letter 'la' represents thus - ∨. It occurs in inscription nos. 13, 3 and 10.

The letter 'ua' is triangular in shape with a vertical short stroke on the apex. - џ.

Fricatives

The letter 'sa' represents thus - ṣ. It occurs in inscription nos. 13, 12, 2, 3 and 10. In the case of inscription nos. 13, 12 and 3 the left prong is angular.

The letter 'ha' of this group is cursive. The base of 'ha' is rounded. It represents thus - ḥ. The letter 'ha' occurs in inscription nos. 13 and 10.

b. Palaeographical Analysis of group II Inscriptions

Vowels:

The letter 'a' represents thus - lığını. The two left arms touch each other at a distance from the vertical stroke, to which they are joined by a small horizontal bar. The vertical
line is elongated downwards and curved the bottom end towards the left. Letter 'a' appears in inscription nos. 4, 5 and 15. The long 'ā' is formed by projecting the short horizontal bar of the two left arms through the right side of the vertical line - ʝ. The long 'ā' occurs in inscription nos. 4, 14 and 15. The initial 'i' is formed by three horizontal short strokes, arranged in a triangular position - ʝ. It occurs in inscription no. 5.

The letter 'u' resembles Roman alphabet L. The letter 'e' has two types. The first type is represented by a triangle - Δ. The second type is represented thus - ʝ. The first style appears in inscription no. 14. The second type occurs in inscription no. 15. The letter 'o' resembles Roman alphabet Z.

Consonants

Velars

The letter 'ka' appears in inscription nos. 4, 5, 14 and 15. The vertical line of 'ka' is elongated downwards and the lower end is curved to the left like a fish-hook - ʝ. The medial sign for 'ā' is a short horizontal stroke to the right top of the vertical - ʝ. The medial sign for 'e' is a short horizontal bar to the left top of the vertical - ʝ. The medial sign for 'u' is a short horizontal stroke to the right end of the vertical - ʝ. It resembles Roman alphabet - ʝ.
The letter 'kha' is represented by a simple hook with an oval shaped base - க . It appears in inscription no. 5. In case of inscription no. 15 the bottom of 'kha' is triangular in shape - க . The medial sign for 'ā' is a short horizontal stroke to the right rounded top of the hook - ஏ . The letter 'ga' is represented by an inverted Roman alphabet - உ - ஒ . The medial sign for 'ā' is a short horizontal stroke to the right top of 'ga' - ஏ . The medial sign for 'u' is a short horizontal bar to the right side of the right foot of 'ga' - ஒ . The medial sign for 'o' is a horizontal bar over the top of 'ga' - ஒ . The letter 'gha' is represented thus - ஖ . The top of the middle vertical is thickened and triangular in shape.

**Palatals**

The letter 'cha' is pear-shaped, a vertical short stroke is appended from the apex - ச . The head of the short vertical is thickened and triangular in shape. The letter chha resembles horizontally placed figure 8 - 8 with a short vertical stroke appended from the right circle - ச . It occurs in inscription nos. 14 and 15. The letter 'ja' resembles Roman alphabet E. The back of 'ja' is cursive in the middle - E . It appears in inscription nos. 4, 5, 14 and 15. The letter 'ńa' represents thus - ந .

**Retroflex:**

The letter 'ṭa' is written in the old traditional style
which resembles Roman alphabet. The medial sign for 'i' is a semi-circle drawn in continuous from the above right end point of 'tā' - ِ The letter 'ṭha' is represented by a simple circle. The letter 'ḍa' resembles 'tā' with a short vertical line appended from the above right end point of the semi-circle - ِ. The medial sign for 'u' is a downward elongation, the lower end of the elongation is curved to the left - ِ. The letter 'ḍha' resembles 'ḍa', the lower end of 'ḍa' is curved inward - ِ. In some case the semi-circle is angular. The first type occurs in inscription nos. 4, 5 and 15. The letter 'ṇa' is formed by a vertical line with two horizontal strokes, one on the top and other at the bottom - ِ. In some case the lower bar is curved. The letter 'ṇa' appears in inscription nos. 4, 5, 14 and 15.

Dentals:

The letter 'ta' of this group of inscriptions can be classified into two styles. Firstly, a U-shaped inverted curve with a vertical short stroke over the rounded top - ِ. Secondly, 'ta' with a circle to the left base of the inverted U shaped curve. It represents thus - ِ. The top of the vertical is thickened. The first style appears in inscription no. 14, and the second style appears in inscription nos. 4, 5 and 15. The letter 'ḍa' is represented by a circle with a dot in the centre - ِ. The curve of letter 'ḍa' is angular.
It represents thus - ꞧ . The letter 'da' occurs in inscription nos. 4, 5, 14 and 15. The letter 'dha' resembles reverse Roman alphabet- D - Ƣ . The letter 'na' is represented a perpendicular over a horizontal bar - ꞧ .

Lacial

The letter 'pa' of this group is squarish in shape and resembles Kshatrapa Kshaharata 'pa' of Nasik cave inscriptions. It is represented thus- ꞧ . The letter 'ba' resembles a rectangular box- ꞧ . The medial sign for 'o' is two short horizontal strokes on either sides of the box- ꞧ . It occurs in inscription no. 14. The letter 'bha' has two types. The first type represents thus- ꞧ . The second style resembles a reverse Roman alphabet- h - ꞧ . The first style occurs in inscription nos. 4, 5 and 14. The second style occurs in inscription no. 15. The medial sign for 'ā' is a short horizontal stroke to the right side of the vertical- ꞧ . The letter 'ma' resembles a triangle with two slanting line appended from the apex in opposite directions. It represents thus- ꞧ . The letter 'ma' occurs in inscription nos. 4, 5, 14 and 15.

The letter 'ya' is a vertical line over the arc of semi-circle- ꞧ . In some cases the 'ya' is double-curved type. The letter 'ya' appears in inscription nos. 4, 5, 14 and 15.

The letter 'ra' resembles a fish hook - ꞧ . The top of the vertical is thickened. It occurs in inscription nos. 4, 5, 14 and 15.
The letter 'a' is represented thus — —. In some cases the right arm is bent towards the left. The medial sign for 'i' is a slanting line to the right side of the arm. It represents thus — —. 'li' of this type appears in inscription no. 5.

Fricatives:

The letter 'sa' is a — U shaped curve with a hook pointing downwards which is attached to the left side of the curve — —. It occurs in inscription nos. 4, 5, 14 and 15.

The letter 'ha' of this group may be categorized into two styles (1) flat based 'ha' and (2) rounded base ha. The flat base 'ha' is squarish in shape and is represented thus — —. The round base 'ha' is cursive, it is represented thus — —. The first type occurs in inscription nos. 4 and 5. The second type appears in inscription no. 14 and 15.

Concluding Remarks of Group I and II Analysis:

The above palaeographical analysis of group I and II inscriptions shows that, inscriptions of group I are earlier than the inscriptions of group — II. Inscriptions of group I are of private individuals. They are in cave nos. 2 and 7. In group II the following inscriptions are included. Inscription nos. 4 & 5 written on the left hand side and right hand side of the gate posts of chaitya hall, which were written in the fifth regnal year of Gautamiputra Siri Yajña Sātaḵarnī. Inscription no. 15 is in cave no. 21 which was written in the sixteenth
regnal year of Siri Yajña Satakarni. Inscription no. 14 is in cave no. 74 which was written in the eight regnal year of Madhariputra Sakasena.

Inscription no. 13 of cave no. 7 is the earliest. In this inscription 14 different letters occurred. They are ka, cha, ṭa, da, dha, dha, ṇa, pa, ma, ya, ra, la, sa and ha. In the case of two letters, 'da' and 'ha' the continuity of the old traditional can be observed. The letter 'a' resembles Mauryan rounded da - ṭ. The letter 'ha' resembles 'ha' of the Nasik inscription no. 4 of Hakusiri's time. However, the remaining 12 letters have retained the style of the beginning of second century A.D. Hence, the date of the inscription may be dated in the beginning of the second century A.D. In the same way, the letters of inscription nos. 12, 2, 3 and 10 also retain the scriptal style of the beginning of second century A.D. The letters pa, la, ya, ha, which occur in the inscriptions of group I retain rounded bases which are prevalent in the inscriptions of first century A.D. However, letters like 'ka' 'ga' cha, ta, da, dha, dha, ma, sa, belonged to the writing style of early second century A.D., therefore, the inscriptions of group I may be considered as the writing style of transitional period.

The palaeographical analysis of group II inscriptions further suggests that the inscriptions were written by the end of 2nd century A.D. Following are the features
of this period. Most of the letters of group II are written in developed styles. The head marks are distinct. Letters are more ornamented with curves and curls at the ends. Letters like 'ta', 'tha', 'ya' became more rounded. The development of dental 'ta' in cursive form with a circle at the left foot can be seen which prevalent in the scriptal style of third century A.D. Letters like 'pa', 'ma', 'va', 'sa', 'ha', 'da', retain the Kshatrapa style of writing. Some of the letters like 'ka', 'ra', 'dha', are beautifully ornamented. In fact, the future line of development of third and fourth century A.D. can be noticed in letters like 'ka', 'da', 'ta', 'tha' and 'dha'. The head of the letters show the tendency of becoming nail-headed, type which became common in the Kanheri inscriptions of late third century and fourth century A.D.