Biology of the Pahariya and the Santhal Tribes of the Rajmahal Region of Bihar

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ABSTRACT A door-to-door survey by recall-method was carried out among Sauria, Kumarbhag and Mal sub-tribes of Pahariyas inhabiting the Rajmahal hills of Central-East Bihar. The Santhal population of the locality was also surveyed to facilitate comparison. The Pahariyas are financially crippled, half-fed, illiterate and socially deprived people. In spite of practising adult-marriage and having normal fertility, the selection-intensity in them is alarmingly high (always more than 1.0) mainly because of increased mortality component. The Santhals, on the other hand, have much better socio-economic status, fair proportion of literates among them, satisfactory reproductive fitness with milder selection intensity of 0.66. Biological differences, calculated on the basis of nine anthropogenetic traits of attribute nature, is little among the three endogamous sub-tribes of Pahariyas, each of which differs markedly from the Santhals.

INTRODUCTION

Ethnobiologically, Santhal Parganas in the Rajmahal region of Central-East Bihar (23°40' to 25°18' N and 86°28' E to 87°28' E), comprising of Rajmahal, Dumka and Godda districts, abounds in two tribal populations, the Santhals and the Pahariyas that together constitute about 35 per cent of the total human population of the locality (1981 Census Report). The Pahariya tribe, almost exclusively limited to this region, accounts for 5 per cent of it. The Pahariya is a small primitive population inhabiting the flat hill-tops, and are basically hunters and food gatherers. The tribe is considered to be an endangered one because its population-size is gradually dwindling (Census Reports of 1901 to 1981). The common reasons for this sad state of affair may be malnutrition, unhygienic living conditions, lack of medical facilities, poor socio-economic status, increased genetic load, etc. Some information in this regard are available (Roy, 1954; Basu, 1967, 1969; Ansari and Sinha, 1978; Ansari, 1980; Singh, 1986; Adhikary and Chaudhary, 1995), but they are fragmentary and limited in nature. Besides this, the previcus workers considered the Pahariya tribe as a single endogamous population, though in reality it consists of three different endogamous groups: the Sauria, the Mal and the Kumarbhag (Prasad, 1961; Roychoudhary, 1965; Vidyarthi, 1983; Bhasin, 1988).

The present work was therefore undertaken to survey each of these three sub-tribes of Pahariyas separately with an aim to have a composite picture of their socio-economic condition, reproductive fitness, as well as anthropogenetic similarity/dissimilarity among themselves. Another tribal population, the Santhal, was also surveyed just for comparison, and also because they live in the same locality (hillock slopes and plain valleys) and are flourishing well to exhibit normal growth pattern (Census Reports).

MATERIALS AND METHODS

A. Population Surveyed

1. Sauria Pahariyas (also called as Malers or Yugvasi) live mainly in the northern region (Pakur Sub-division and whole of the Godda district) of the Rajmahal region. The word "Sauria" is variously spelt as "Sawaria", "Sanwaria" or "Saoria". Saurias are short statured with long limbs, have light brown or fairer complexion with "beady eyes", not so prominent nose bridge which is rather flat and broad at the base, are beardless or nearly so. They are emotionally religious, believe in animism, and worship numerous gods and spirits, of which *Raksai* and *Chaldai* are the

most revered ones. "Malto", a Dravidian language, is their mother tongue (Prasad, 1961). The family, per tradition, is mostly nuclear and the bride is procured by either of the five ways, *viz.*, (i) by payment of bride price; (ii) by mutual exchange between the families concerned; (iii) in lieu of the wage earned by the groom for serving the bride's family; (iv) by adaption, and (v) by love or by force of physical strength. They are endogamous, and practise monogamy; polygynae with the consent of the first wife is permitted, but polyandry is prohibited. Divorce is permitted subject to prior sanction of their own "village-court". Boys and girls usually inherit the name of their grand parents. Saurias account for about 54 per cent of the total Pahariya population of the region.

2. The Mal Pahariyas abound in the South-Eastern part of the Rajmahal region, and sparsely in the hilly forests of Pakur Sub-division. They are tall, more robust, and in complexion more darker than the Saurias. Though a believer of animism, they consider the mother earth *Dharati Garami Gosain* as their prime god. They do not have any language of their own, and speak Mal-pahariya, a broken dialect of Bengali, learned perhaps during close association (as agricultural labourers) with the Bengali-speaking populations residing in the nearby localities. They constitute about 40% of the total pahariya tribe of the region.

3. The Kumarbhag Pahariyas, in their physical appearance, resemble very closely to the mals, and live in the South-Western region of the locality. Their numerical strength is barely 6% of the total Pahariya population. They speak in a language similar to, but quite distinct from Hindi or Hindustani.

4. The Santhals are a growing tribe, and constitute about 30% of the total human population of the region. They are, most probably, the original inhabitants of the locality. Unlike Pahariyas, the Santhals are industrious and hardy people who know the art of living a happy yet simple life. The Santhals are dark complexioned, medium statured with muscular and sturdy built capable of great physical endurance. They are beardless or nearly, so, but have coarse and sometimes curly hairs

on their head. The cheeck bones are somewhat prominent, nose generally broad and depressed, mouth is large with full and projecting lips. The Santhals are regarded as typical examples of pure Dravidian stock in their physical appearance. They believe in animism, but regard sun god "*Sing-bonga*" as their principal diety. They exclusively speak Santhali, an Austro-asiatic language. Adult marriage by choice is commonest. The Santhals are gradually getting to cultivation, and unlike Pahariyas, who live on flat tops of hillocks, have settled in plains in neat, tidy and beautifully constructed mud-houses. They are very fond of dance and music; flute an drums being their main musical instruments.

B. Localities Surveyed

A close perusal of the Census Report and Block-level records revealed that the three sub-tribes of pahariyas abound in the Rajmahal and Pakur Sub-divisions of the Sahibganj district, and in whole of the Godda district of Rajmahal plateau. So, for the present work it was felt appropriate to survey the villages under these two districts. Given below is the break-up of the districts, sub-divisions, blocks and randomly selected villages (their names are presently not being mentioned for brevity) where the survey was extensively done during March 1994 to April 1997).

District	Sub-division	Block	No. of villages surveyed
1. Sahibganj	a) Rajmahal	i) Sahibganj	03
		ii) Borio	35
		iii) Taljhari	10
	b) Pakur	i) Littipara	18
		ii) Hiranpur	19
		iii) Maheshpur	06
2. Godda	a) Godda	i) Sundar Pahari	13
		ii) Boarijor	05
Total			109 villages

Relevant information were collected from the whole village without any pick or choose, whatsoever. Data regarding age of the subjects were collected by recall method with reference to any major physical calamity (earth-quakes, excessive rains, draughts, fires in the forest, etc.),

social event (killing of any beast, construction or completion of any road, canal, dam, school, health centre, well and pond, etc.), and even tribal uprisings (*Hanseri* and *Bithlaha*). The standard process of checking and random verifications were adhered to.

RESULTS

Detailed information and data regarding socio-economic status, reproductive performance and anthropogenetic features were collected, and salient features thereof are being presented.

1. Socio-economic Condition

The economic condition of the four tribal populations (three of the Pahariyas and the Santhals) is based mainly on collection and sale of forest produce. Some even distil wine from mahua (*Bassia lantifolia*) flowers, or tap toddy from palm (*Phoenix dactylifera*) trees, or work as unskilled agriculture-labourers. Still, the annual income (from all the sources taken together and converted in money value at local market price-index) of about 40% of the Santhals, and

of more than 50% of the Pahariya families is less than Rs. 5000/- (Table 1). Local money-lenders (non-tribal) add to their plight. Once a Pahariya takes a loan, his family almost certainly fails to free itself from the debt-trap because of heavy interest rate and general ignorance, and finally becomes a bonded-labour.

The main food of the Pahariyas is maize (*Zea mays*) endosperm, and leaves of barbatti or ghangra (*Vigna catjang*), while that of Santhals is rice and maize. The Pahariyas (all the three sub-tribes) are almost half starved: only 15% among the Saurias, 23% among both Mals and Kumarbhags appear to afford two meals a day all the year round (Table 1). On the other hand, the Santhals are comparatively better off. The data are in conformity with those reported earlier from an independent survey by Moitra and Chaudhary (1991).

All the four populations are basically non-vegetarean, but the depleting forest could restrict their number to only 21 per cent among the Saurias, 26 per cent among the Mals, 29 per cent among the Kumarbhags, and 42 per cent among the Santhals. The mals and Kumarbhags do not consume milk or milk-preparations (even when

Table 1: Summary of certain aspects of socio-economic status of Pahariya and Santhal tribes of Rajmahal region of Bihar; frequency data in % of the sample size (in parentheses)

Particulars	Santhals	Pahariyas		
		Sauria	Mal	Kumarbhag
	(397)	(693)	(507)	(426)
I. Annual income in Rs.				
< 2000/-	16.12	35.50	29.19	30.99
< 5000/-	24.69	26.59	23.47	22.07
< 7500/-	18.89	21.21	22.68	25.82
< 9000/-	27.20	12.84	16.77	14.55
> 12000/-	13.10	4.76	7.89	6.57
II. No. of months in a year during which family affords 2 meals/day				
12	52.39	15.30	22.49	22.53
9	22.17	26.98	23.47	23.24
6	13.35	19.19	20.32	23.94
3	7.56	22.08	20.90	18.08
< 3	4.53	16.45	12.82	12.21
III. No. of days in a month, the non-veg food is consumed				
< 15	58.44	78.93	73.57	71.13
> 15	41.56	21.07	26.43	28.87
IV. Frequency (%) of milk-consumption per month:				
Never	72.04	88.31	96.06	96.01
< 15 days	19.14	9.38	3.35	3.29
Almost daily	8.82	2.31	0.59	0.70
V. Frequency (%) of toddy or wine consumption per month:				
Never	3.19	2.95	0.64	0.26
< 15 days	81.99	81.99	88.79	91.67
Almost daily	14.82	15.06	10.57	8.07

available), owing to their religious taboo. Saurias and Santhals do not have such restrictions, still only 2 per cent of Saurias and 9 per cent of the santhals could afford to have milk regularly. Owing to abundance of palm and mahua trees, toddy and locally distilled wine are available in plenty and almost free, and so the two have become a permanent item of Pahariya food. The number of adult males and females not consuming wine regularly is almost nil in all the populations. Toddy has become the main food (and sometimes the only food) for the Pahariyas during May to July (three months) every year.

Literacy (Table 2) is rare among the Pahariyas where 80% of the populations (including the school going children) do not know even the alphabets and countings; the frequency of illiterates among the Santhals is 50%. Nearest school, primary health centre, market-place, road/railheads are far away from their villages (Table 3). Pahariyas, who live at hillock-tops, have to walk a long distance on hilly-terrain to fetch potable water from natural springs, ponds, rivers or wells.

On the whole, the socio-economic life of the

Table 2: Literacy (per cent) among the Santhals and Pahariyas of age-group 10 years to 30 years

| Tribe | Sex | No. of persons surveyed | Illiterate % | Literate (%) read upto class | | | | |
				3	7	10	College	Total
Santhals	M	763	46.4	32.6	10.0	7.0	4.0	53.6
	F	820	51.2	31.8	8.8	5.6	2.6	48.8
	M+F	1583	48.9	32.1	9.4	6.3	3.3	51.1
Saurias	M	1052	81.9	14.3	2.0	1.1	0.7	18.1
	F	1109	87.3	11.7	0.8	0.2	nil	12.7
	M+F	2161	84.7	12.9	1.3	0.5	0.6	15.3
Mals	M	889	73.8	21.7	2.6	1.2	0.7	26.2
	F	903	84.2	14.5	1.3	nil	nil	15.8
	M+F	1792	79.0	18.0	2.0	0.7	0.3	21.0
Kumarbhags	M	749	75.2	20.8	2.4	1.2	0.4	24.8
	F	818	85.3	13.7	1.0	nil	nil	14.7
	M+F	1567	80.5	17.1	1.6	0.6	0.2	19.5

Table 3: Availability of social-welfare facilities to Pahariya villages (frequency in per cent of number of villages surveyed)

| No. of villages surveyed | Santhals 28 | Pahariyas | | |
		Sauria 72	Mal 47	Kumarbhag 39
I. Distance (in km) of schools from villages				
< 1	50.00	50.00	36.17	41.02
2	31.14	29.17	23.40	23.07
> 2	18.86	20.83	40.43	35.91
II. Distance (in km) of health centre from villages				
< 5	64.29	19.44	31.92	38.47
5	10.71	16.67	17.02	15.38
> 5	25.00	63.89	51.06	46.15
III. Distance (in km) of market place from the tribal villages				
< 5	71.43	38.89	40.43	48.72
5	10.71	22.22	17.02	20.51
> 5	17.86	38.89	42.55	30.77
IV. Distance (in km) of bus/railways head from the villages				
< 5	75.01	37.49	38.29	25.65
5	14.28	18.07	17.03	20.51
> 5	10.71	44.44	44.68	53.84
V. Distance (in km) of villages from source of potable water				
1	100.00	55.56	74.46	69.23
2	–	36.11	19.16	30.77
3	–	8.33	6.38	–

three Pahariya sub-tribes is most miserable as they have no perennial source of water, food, health care and other bare necessities of daily life. Because of *Jhoom* (shifting) cultivation, their whole population along with the name of the village shifts (by about 1-3 km) from one place to the other. This miserable state of the Pahariya tribes is partly also due to isolation they face because of their shy nature emanating from their illiteracy, abject poverty, and sometimes also due to poor personal hygiene. All the welfare measures initiated for their upliftment appear to have almost failed. Santhals, on the other hand, are comparatively better off. The socio-economic disparity between the pahariyas and the santhals, both living in the same habitat, has unwillingly dragged the former population in a fierce struggle against the Santhals that are deemed as their nearest rival. The result is obvious: the Pahariya population is dwindling, and the Santhal one is prospering.

2. Reproductive Performance

The mean age at marriage among males and females of the three Pahariya tribes is about 20 and 17 years respectively (Table 4). The Santhals marry a bit later, this age in them being 22 and 19 years. Marriage of boys before their puberty is almost nil, except very few among the Saurias (1.12%). The mean active fertile period among

Table 4: Some demographic parameters of the Santhals and Pahariya tribes (figures in parentheses indicate sample-size)

Parameters	Santhals	Pahariyas		
		Sauria	Mal	Kumarbhag
1. Age (in yrs) at marriage				
(% ± SE)	(494)	(785)	(526)	(469)
In females	19.18 ± 3.26	16.68 ± 2.55	16. 49 ± 2.47	17.73 ± 2.48
	(443)	(720)	(500)	(429)
In males	22.44 ± 3.33	19.60 ± 3.15	20.72 ± 2.80	20.58 ± 2.64
2. Difference (in yrs) in				
age of spouses ($\overline{X}$ ± S.D.)	(625)	(947)	(548)	(516)
	4.62 ± 3.83	4.78 ± 2.90	4.69 ± 2.48	4.49 ± 2.59
3. Active fertile period (in yrs)				
among females ($\overline{X}$ ± S.D.)	(493)	(776)	(525)	(458)
	24.80 ± 3.51	27.30 ± 2.51	26.51 ± 2.47	26.25 ± 2.43
4. Waiting period ($\overline{X}$ ± S.D.)				
in females (in yrs)	(367)	(664)	(474)	(401)
	3.48 ± 2.14	3.68 ± 1.90	3.51 ± 2.04	3.31 ± 1.77
5. Frequency (% ± S.D.)				
of never-pregnant mothers	(485)	(764)	(520)	(450)
	5.30 ± 1.70	4.90 ± 1.80	2.70 ± 1.30	1.70 ± 1.20
6. Age (in yrs) of females at				
their first motherhood ($\overline{X}$ ± S.D.)	(367)	(664)	(474)	(401)
	22.63 ± 3.71	19.92 ± 3.60	20.76 ± 3.97	20.90 ± 4.06
7. Age (in yrs) of males at				
their first fatherhood ($\overline{X}$ ± S.D.)	(367)	(664)	(474)	(401)
	24.94 ± 3.39	22.89 ± 3.83	22.79 ± 3.88	23.01 ± 4.01
8. Incidence (%) of polygamy				
among males	(444)	(720)	(499)	(429)
	24.45	20.14	7.62	11.42
among females	(485)	(785)	(524)	(458)
	18.97	15.92	2.67	5.90
9. Incidence (%) polygynae				
	(444)	(720)	(499)	(429)
	0.68	0.70	0.80	0.70
10. Mean matrimonial distance				
(in kms)	(518)	(812)	(542)	(484)
	19.20	12.50	7.30	8.60

women is of about 26 ± 1 years in all the four tribes. The females among the Mals and the Kumarbhags are satisfactorily fertile; the sterile ones are only 2.7 per cent and 1.7 per cent respectively of the total married females. However, the sterile females are comparatively more frequent among the Saurias (4.9%) and the Santhals (5.3%). The mean age at the first motherhood is highest among the Santhals (22.63 years), followed by the Kumarbhags (20.90 years), the Mals (20.76 years), and the Saurias (19.92 years).

Single marriage is rule, but multiple marriages are nevertheless met with among males: 24.45 per cent in the Santhals, 20.14 per cent in Saurias, 11.42 per cent in Kumarbhags, and 7.62 per cent in the Mals. Such multiple marriages are mostly due to divorce (not a taboo) or death of the previous wife during child-birth or some ailment. However, the polygynae is very uncommon, and hardly 1 per cent of the married males had more than one wife at a time. The mean matrimonial distance is shortest among the mals (7.3 km), highest among the Santhals (19.2 km). Thus distance-endogamy is moderately prevalent among the Pahariyas, and comparatively less so among the Santhals.

The net reproductive index (no. of female children/no. of mothers of age more than 45 years) is around 2.5 in all the four populations. However, the child-woman ratio (no. of children of age upto 5 years per hundred women of age-group 15 to 45 years), which when compared to some other Indian populations (Basu, 1969) is quite high.

The mean number of live children born per mother of completed family is around five in all the four populations. The gross non-accidental pre-adolescent mortality rate among the Pahariya children is around 40 to 45 per cent and only 28 per cent (of the total children) among the Santhals. This mortality is more common among the male children than among the female ones of the same age-group. Because of this high mortality rate,

Table 5: Some parameters of reproductive performance among the Santhals and Pahariya tribes (figures in parentheses indicate sample size)

Parameters	Santhals	Pahariyas		
		Sauria	Mal	Kumarbhag
1. Incidence (% ± SE) of twin births	(1327)	(2451)	(1952)	(1681)
	0.37 ± 0.17	0.49 ± 0.14	0.51 ± 0.16	0.48 ± 0.17
2. No. of children born per mother of age >45 yrs ($\overline{X} \pm$ S.D.)	(930)	(793)	(879)	(646)
	5.50 ± 2.70	4.99 ± 2.50	5.75 ± 2.40	5.05 ± 2.40
3. Net Reproductive Index	2.686	2.447	2.784	2.469
4. Frequency (%) of live-borns to mothers of diff. age-groups	(n = 930)	(n = 793)	(n = 879)	(n = 646)
< 20 yrs	6.56	11.98	6.94	7.43
20-25 yrs	17.63	23.58	25.38	30.50
25-30 yrs	27.32	23.20	25.48	29.10
30-35 yrs	23.76	20.18	21.39	18.57
35-40 yrs	14.19	14.00	15.13	10.22
40-45 yrs	10.54	7.06	5.57	4.18
> 45 yrs	nil	nil	0.11	nil
5. Child-women ratio (%)	88.06	140.74	156.94	140.72
6. $\overline{X}$ of surviving children per mother	3.94	2.43	2.80	2.85
7. Secondary sex-ratio	(1337)	(2415)	(1952)	(1681)
	108.58	104.42	102.91	100.38
8. Selection - intensity (I)	0.6568	1.2061	1.0509	1.7066
(a) mortality component (I_m)	0.3401	0.7584	0.7544	1.2124
(b) fertility component (I_f)	0.2356	0.2546	0.1590	0.2234

the child-survival per mother is 2 to 3 among the Pahariyas, and 4 among the Santhals. The secondary sex-ratio is highest among the Santhals (108.6), followed by the Saurias (104.4), the Mals (102.9), and the Kumarbhags (100.4).

The selection-intensity (I), that is, the rate of elimination due to mortality and differential fertility (Crow, 1958) is more than 1.00 among the three sub-tribes of the Pahariyas (Table 5), being alarmingly high among the Kumarbhags (1.7066), but comparatively less so among the Saurias (1.2061), and the Mals (1.0509). This high value of (I) is mostly due to its mortality component (I_m). The santhals, with the I-value less than one (0.6568), appear to have normal growth pattern. In various non-tribal populations, the I-value is much less than 1 (Singh, 1986).

Inter-subtribe marriage are almost absent, except very few (0.03 % of total marriage) between the Mals and the Kumarbhags.

3. Anthropogenetic Traits

Incidence of nine anthropogenetic traits, viz., widow's peak, tongue-rolling, tongue-folding, attached condition of ear-lobe, relative length of the index finger of hand and presence of mid-phalangeal hairs thereupon, PTC-taste ability, ABO- and Rh- blood groups were surveyed in the four populations by following the standard methods prescribed therefor (Bhasin et al., 1992).

Sanghvi's G^2-value (Sanghvi, 1953) for inter-population biological differences were thereupon calculated using Mahalnobis D^2-statistic to obtain cumulative χ^2-value for inter-population differences (determined separately for each of the traits for every combination of any two of the four populations surveyed), and then to divide it by the total number of degree of freedom. The values so obtained (Table 6) suggest that the three Pahariya sub-tribes are quite close to each other (G^2-value upto a maximum of 10.20) and can be clustered together. The Santhal population, on the other hand, appears to be quite apart from this Pahariya cluster (G^2-value ranges from 22.6 to 33.0).

DISCUSSION

Two very important facts emerge out of this study: (1) the selection-intensity, that is, the rate of elimination by natural selection, is more than 1.00 among the Pahariyas, and (2) the three Pahariya sub-tribes do not seem to differ from each other on the basis of their anthropogenetic traits.

The I-value is an abstract measurement of the reproductive fitness of any population, and its value of more than unity (as found in Pahariyas) is indicative of more loss of individuals (during the period from their birth to preadolescent age

Table 6: Incidence (% ± S.E.) of certain anthropogenetic traits in tribals of Santhal Parganas

Traits	Santhals	Pahariyas		
Sample Size:	(2066)	Sauria (2581)	Mal (2231)	Kumarbhag (1718)
1. Widow's peak	50.6 ± 1.1	54.6 ± 1.0	47.0 ± 1.1	49.6 ± 1.2
2. Tongue-rolling	54.2 ± 1.1	42.8 ± 1.0	42.4 ± 1.0	49.4 ± 1.2
3. Tongue-folding	2.5 ± 0.3	1.9 ± 0.3	2.4 ± 0.3	2.3 ± 0.4
4. Attached ear lobe	49.9 ± 0.7	31.1 ± 0.6	28.6 ± 0.7	25.9 ± 0.7
5. Shorter-index finger	62.2 ± 1.0	74.5 ± 0.9	73.7 ± 0.9	65.5 ± 1.1
6. Presence of midphalangeal hair	44.6 ± 0.9	32.5 ± 0.8	39.1 ± 0.8	39.4 ± 0.8
7. PTC-tasters	43.2 ± 2.0	44.9 ± 1.7	45.7 ± 1.9	56.3 ± 2.2
8. ABO-blood groups				
A	26.9	26.5	24.5	16.1
B	37.0	34.3	36.9	40.7
O	26.2	30.9	30.2	35.8
AB	9.9	8.3	8.4	7.4
9. Rh-negative	1.6 ± 0.3	2.4 ± 0.5	2.8 ± 0.6	2.3 ± 0.5

Biological Difference (G^2) between pairs of tribes:

Sauria-Mal	: 4.02	Santhal-Sauria :	33.0
Sauria-K.bhag	: 10.20	Santhal-Mal :	29.6
Mal-K.bhag	: 5.80	Santhal-K.bhag :	22.6

of 15 years) from the population than the number born therein. Close examination of the data further reveals that the fertility component of I, that is, the I_f- values among the three Pahariya sub-tribes are almost equal to the I_f-value of the Santhals. It means that the fertility as well as foetal loss (on whose basis the I_f is calculated) are not much to be blamed for the sad plight of the Pahariyas.

Alarmingly high mortality component of the I (I_m-value), on the other hand, is really a matter of great concern. This high mortality may be due to various reasons: poor health (Chaudhary and Adhikari, 1997), malnutrition, illiteracy, lack of sanitation, drinking water, medical facilities, etc. The data presented herewith, very clearly suggest that the socio-economic condition of the Pahariyas is most unenviable, and demands sincere efforts to make them live like humans. A point of caution, however, is needed here. Pahariyas must not be given any aid without work, as is the practice presently followed by various government and non-government agencies, for the simple reason that it makes them lethargic, and robs them off of any initiative to work and earn livelihood. In stead, efforts be made to start cottage-industry at their door-steps, and may be based on their indigenous products like making of leaf-plates, bamboo-baskets, grass-ropes, Kendu leaf collection for biri, collection of medicinal herbs, forestation, poultry farming, api-, seri-, lac-culture etc. An improvement in their socio-economic condition would keep them bound to their own forest. No effort be made to bring them down the hills, as it will dislodge them from their natural habitat, and put them in the midst of the cut-throat competition of the "civilised" materialistic world.

Absence of marked biological difference (based on G^2-value of Mahalnobis D^2-statistic) among the three sub-tribes of Pahariyas suggests that their gene-pools might be fairly akin to each other. Further extrapolation of this suggestion can lead to hypothesise that the three sub-tribes may belong to a common genetic stream, and the differences among them are trivial and out of chance factor. The hilly terrain of Rajmahal region with almost negligible ways of communication till date, might have created several artificially segregated spatial pockets of this population to produce the three sub-tribes by fission in the original popula-

tion. Each sub-tribe is then quite likely to have language, food-habit and customs of its own, greatly influenced by an moulded with that of the resident population. Continued endogamy would have perfected the impacts of isolation. This concept of an initial common genetic stream and its subsequent spatial fission is in conformity with the view of O'Malley (1938). The santhals owing to their higher G^2-value from the pahariyas, are definitely a different tribe.

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