

ON THE DISTRIBUTION OF THE VARIETIES OF COBRA (*NAIA TRIPUDIANS*) IN INDIA.

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In the year 1901 the Government of India resolved to start the manufacture of antivenene in India, on the lines laid down by Fraser and Calmette, and the first step in this direction was to secure a supply of venom from the various poisonous snakes of the country. A circular ordering the collection of snakes was therefore sent round by the Government of India to the various Local Governments, and as a consequence snakes began to arrive at the Plague Research Laboratory in October 1901. Since that date 1,074 cobras have been collected, and it is proposed in this paper to consider the distribution of the three varieties we have received.

Boulenger in his "Catalogue of the Snakes in the British Museum" thus describes these three varieties:—

A.—Forma *TYPICA* (*C. naia*, L. ; *N. lutescens*, *fasciata*, *brasiliensis*, *siamensis*, Laur. ; *C. rufus*, Gmel.).—Yellowish to dark brown above, with black-and-white spectacle-mark on the hood and a black-and-white spot on each side of the lower surface of the hood. 25-35 scales across the neck, 23-25 across the middle of the body.

B.—Var. *CÆCA* (*N. non-naia*, Laur. ; *C. cæcus*, Gmel ; *T. oxiana*, Eichw.).—Uniform pale brown or grey to blackish ; no marking on the hood ; one or more dark cross-bands on the anterior part of the belly ; young sometimes with dark rings. 25-31 scales across the neck, 21-25 across the middle of the body.

C.—Var. *FASCIATA*, Gray (*N. kaouthia*, Less. ; *N. larvata*, Cant., var. *scopinucha*, Cope)—Brown, olive, or blackish above, often with more or less distinct light, black-edged cross-bars ; hood with a whitish, black-edged ring or U, or with a mask-shaped figure ; a black spot on each side under the hood. 25-31 scales across the neck, 19-21 across the middle of the body.

In popular language these three varieties are:—

A—The cobra with spectacle marking on the hood=Binocellate cobra ;

B—The cobra with no such marks=Anocellate cobra; and

C—The cobra with a ring mark on the hood=Monocellate cobra.

Though the number of cobras received is large, it is unfortunate for our present purpose that they have been sent from comparatively few places, and it becomes therefore impossible to give a complete distribution list for India. But a beginning can at least be made, and it is hoped that members of our Society will send us notes to enable a more correct and complete distribution list to be made out at some future time.

A—*Naia tripudians*, var. *forma typica*, appears to be distributed uniformly throughout India but to be rare in Burma and China. As far as our specimens enable us to judge, the prevalence of this variety in the Provinces of India is as follows:—

Madras	...	...	...	...	...	100 %
United Provinces of Agra and Oudh	...	...	...	...	...	82 %
Bombay	...	...	...	...	...	75 %
Punjab	...	...	...	...	...	50 %
Bengal	...	...	...	...	...	47 %
Central Provinces	...	...	...	...	...	26 %

It is the only variety of cobra we have received from the Madras Presidency.

In confirmation of this Nicholson says (Indian Snakes, p. 106):—"This binocellate variety is found in the South of India and on the coast generally." As he says in a footnote that he examined 1,200 cobras in Bangalore, it may be taken as certain that they were all *typica*. From the Bombay Presidency we have received eight snakes only, of which six belonged to this variety. As these were purchased from local snake-charmers, who said they caught them at Matheran or Khandalla, it is impossible to say anything about the distribution of *typica* in Bombay.

Proceeding northwards, we find it uncommon in the western part of the Central Provinces, but again common in the United Provinces. In Bengal it is also common; but it will be noted that 24 of our 80 Bengal specimens came from Puri and may therefore be considered a northward extension of the Madras cobra.

As regards the Punjab, nothing can be said, as only two cobras were received from this province; one being *typica*, and the other *cæca*.

Captain F. Wall, I.M.S., reports that all the cobras he got in Trichinopoly and Cannanore were of this variety, thus confirming our

results as regards the Madras Presidency. He also reports one out of 36 specimens from Burma.

Capt. P. Mackie, I.M.S., reports from Goona :—

“ In 1904, 45 cobras were examined. They were all quite black in colour. No light one was ever seen. Only a few were examined for ocelli and of all those examined none were found shewing that marking.

“ Up to the present date in 1905, 32 more cobras were examined and particular attention was paid to the presence or absence of ocellate markings. All the cobras except two were quite black and possessed no marks on the hood. Two small ones were seen, one of a light khaki colour with well marked ‘ spectacles ’ and another cobra about $2\frac{1}{2}$ feet long of a dark greyish colour with very well marked ocelli and another pair of subsidiary round ocelli below at the base of the hood. (This specimen is at the Parel Laboratory.) These black cobras of Goona tend to run to a large size and about 10 per cent. were over 5 feet 5 inches long.

“ The ground soil of Goona is of two kinds. On the lower ground in the valleys and on the cultivated land ‘ black cotton ’ soil is prevalent lying on a basis of red laterite. This laterite crops up on the higher ground and here is not covered with soil. Nearly all the cobras were caught within a short distance of cantonments and nearly all on the black cotton soil. The two light cobras were also caught on black cotton soil.”

Among the black cobras we received from Saugor, there were a few with spectacles, and this seems to show that there is a variety of spectacled black cobra in the West of the Central Provinces and probably also in Central India.

Captain Wall reports 10 specimens caught at Fyzabad, U. P., of which 7 were black or plumbeous—black with binocellate markings; 1 was anocellate black, and 2 were light coloured with markings of such a peculiar nature that he found it impossible to place them in either the binocellate or monocellate group.

B.—Naia tripudians, var. *cæca*.—This variety, which is almost invariably black, seems to have a much more restricted range than *typica*. With the exception of nine, the whole of the 629 specimens received came from the Central Provinces.

The nine exceptions were received from Bengal (3), United Provinces (5), and Punjab (1).

Captain Wall reports 3 specimens all light coloured and one with 7-8 leaden dorsal bands, got by himself in the Swat Valley, and two more from Thayetmyo and Meiktila in Burma.

Probably most of Captain Mackie's specimens were of this variety, though he did not examine the first lot of 45 with special reference to this point, as we found this the case among the black cobras received from the neighbouring Central Provinces.

C.—Naia tripudians, var. *fasciata*.—This variety seems absolutely confined to Bengal and Burma, where it largely takes the place of *typica*. Nicholson, however (p. 106), notes its presence in the Central Provinces also.

Of the 169 cobras received from Bengal, 86 were of this variety, and from Captain Wall's report it would appear that the further east one goes, the more common does *fasciata* become. Thus he says that out of 36 specimens collected by him in Burma, mostly near Rangoon, 33 were monocellate. Again, he says that all the specimens seen by him in Chinese Museums "from the Yangtse Valley and further north" and "from Hongkong and thereabouts" were *fasciata* with one exception, and that was a *sputatrix*, a variety which has not yet been found in India.

To sum up, it would appear that *typica* may be looked for in any part of India, more rarely in Burma and still more rarely in China. *Cæca* is the common cobra of the west part of the Central Provinces and Central India, and has been found also along the frontiers, from Afghanistan, Gilgit, Swat to Sikkim. *Fasciata* is eminently the Bengal cobra, and appears also to be the variety commonly found to the east thereof, in Burma and China.

The above account of the distribution of the varieties of cobra is interesting and worth continuing and enlarging, and I trust the publication of this paper in the Journal may induce members in all parts of India to send notes of the cobras found by them.

What is the meaning of this distribution? Why should one part of the country produce spectacled cobras and another ringed ones?

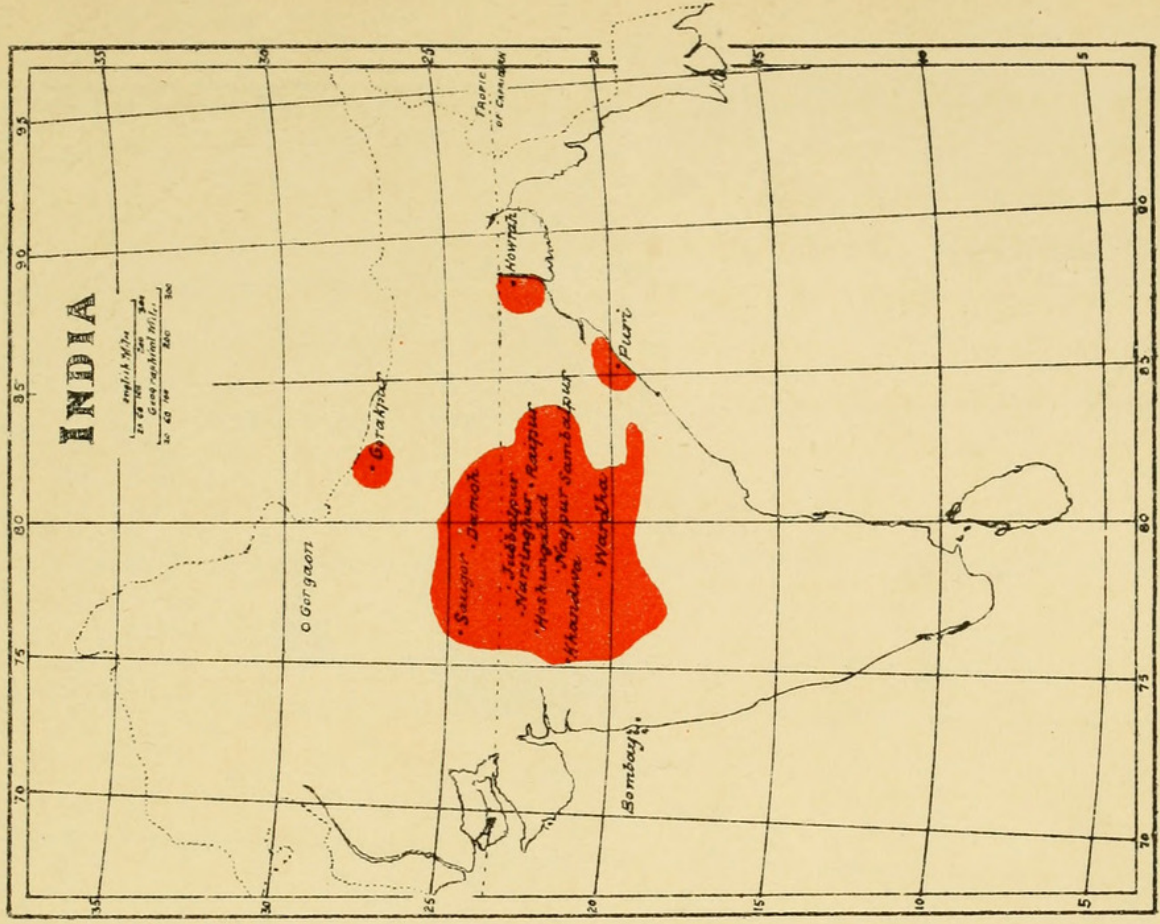
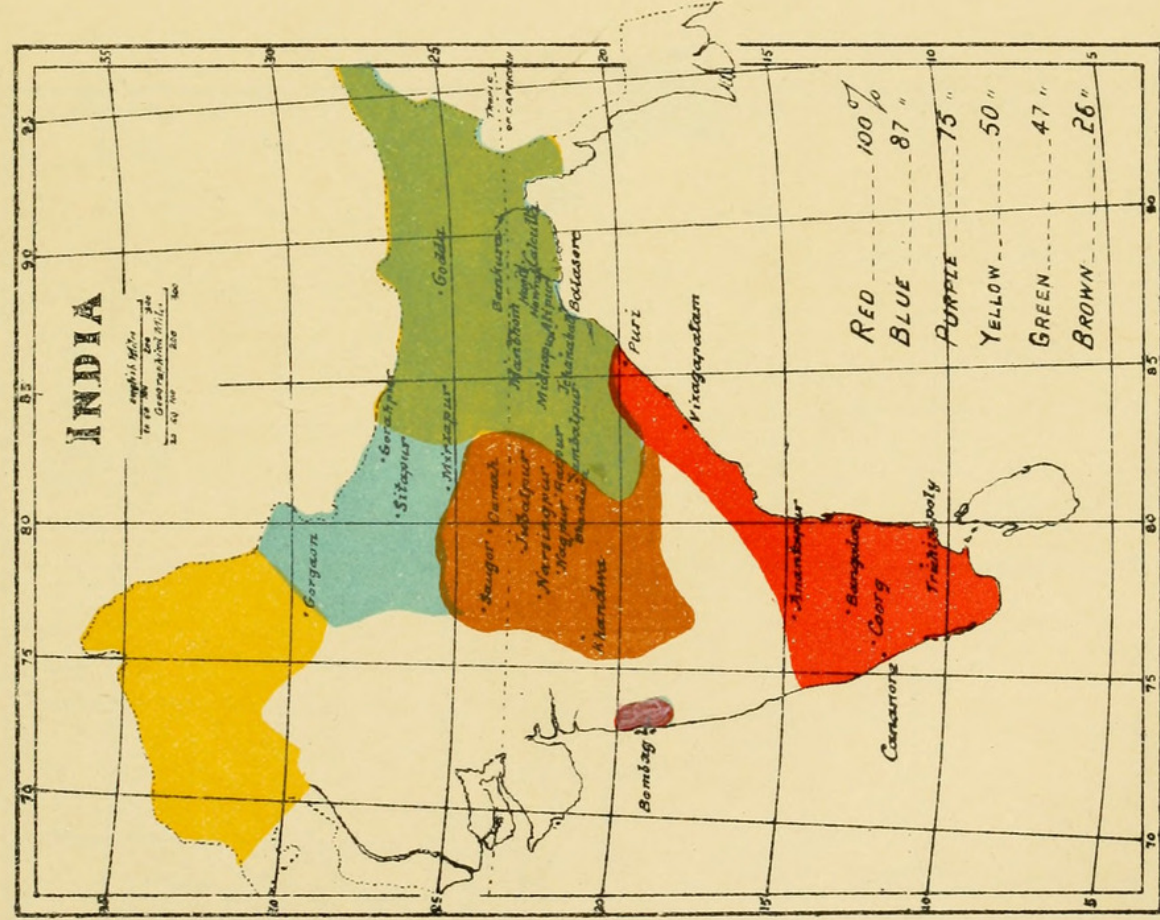
Another curious point raised by this collection of statistics has relation to the body colour of the cobras.

Without exception, all the *cæcas* received from the Central Provinces are black, while all the cobras received from the Madras and Bombay Presidencies are yellow or olive coloured, or a variation between these two shades.

From the map given at the end of this paper, those interested will be able to see exactly from which parts of the Central Provinces these black cobras come; and I should be grateful if any member interested in geology would inform us whether there is anything in the soil of these places likely to favour the production of this colour.

List showing the number of Cobras received at the Plague Research Laboratory, from various parts of India, between 1st October 1901 to 31st March 1905.

Serial Num- ber.	Name of Town.	KIND OF COBRA.			Total.
		<i>Naia typica.</i>	<i>Naia caeca.</i>	<i>Naia fasciata.</i>	
BENGAL.					
1	Alipore	1	..	8	9
2	Balasore	10	..	..	10
3	Bankura ... ..	.....	..	11	11
4	Barisal ... ..	.....	..	4	4
5	Burdwan	4	..	..	4
6	Godda	8	..	..	8
7	Hooghly... ..	5	..	5	10
8	Howrah	10	2	9	21
9	Jehanabad	4	..	..	4
10	Jessore	9	..	..	9
11	Manbhum	2	..	..	2
12	Midnapore	5	..	49	52
13	Poori	24	1	..	25
Total ...		80	3	86	169
Percentage of each ...		47·3	1·8	50·9	...
BOMBAY.					
1	Thana	6	2	..	8
Total ...		6	2	..	8
Percentage of each ...		75·0	25·0	...	...
CENTRAL PROVINCES.					
1	Bhundara	1	..	..	1
2	Damoh	9	34	..	43
3	Hoshangabad ... ..	...	3	..	3
4	Jubbulpore	28	15	..	43
5	Khandwa	79	469	..	548
6	Nagpur	2	1	..	3
7	Narsinghpur	9	33	..	42
6	Raipur	3	2	..	5
9	Sambalpur	58	12	..	70
10	Saugor	35	50	..	85
11	Wardha	1	..	1
Total ...		224	620	...	844
Percentage of each ...		26·5	73·5



TYPICA

COECA.

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