



FIG. 1. Habit Photograph (a) upper view; (b) lower view. (Marker = 2 cm).

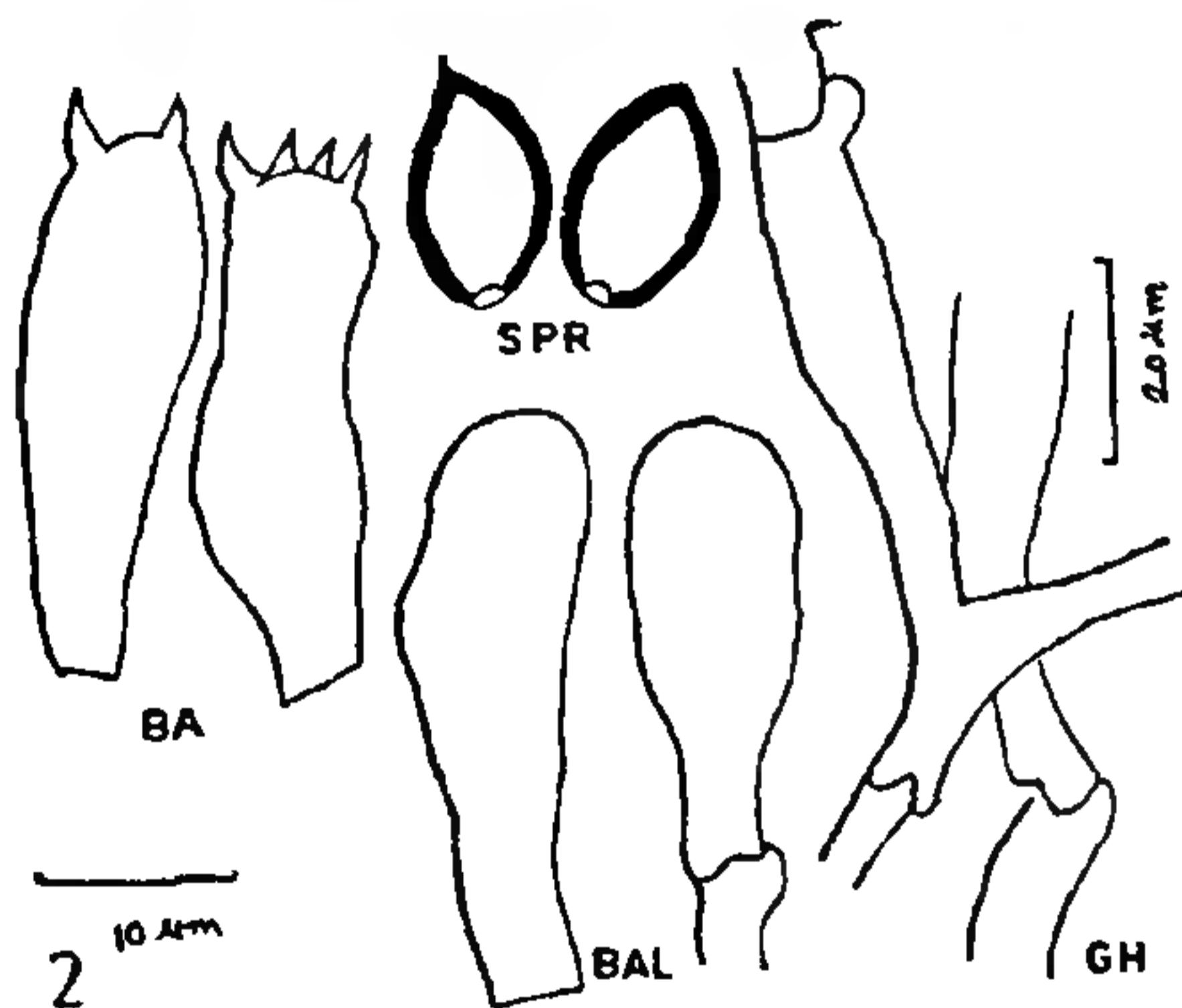


FIG. 2. GH: Generative hyphae; BAL: Basidioles; BA: Basidia; SPR: Spores.

hyphae, hyphae pale luteus coloured with septal clamp connections,  $6.25-8.58 \mu\text{m}$  broad; inamyloid in Melzer; lamellar surface: euhymenial, subhymenium not distinguished, pleurocystidia of any kind absent; lamellar edge: sterile with ch.

**BASIDIA**:  $20-30 \times 8.75-13.75 \mu\text{m}$ ; bi to tetrasporic; cylindric; with yellowish granular contents; old collapsed empty basidia intermixed with numerous basidioles;  $19.75-20 \times 10 \mu\text{m}$ ; basal septa with clamp connections.

**BASIDIOSPORES**:  $(11.25-13) \times 6.8 (-8.25) \mu\text{m}$ ; luteus in  $10\%$  KOH; broadly ellipsoid ( $Q = 1.77$ ); with broad truncate germ pore

and lateral apicule; wall: smooth, upto  $1.25 \mu\text{m}$  thick; dextrinoid in Melzer; weakly cyanophilic. **STIPE**:  $2.7-4.5 \text{ cm}$  long,  $0.5-1 \text{ cm}$  in diam.; central, cylindrical with slightly bulbous base; pale luteous, darker below; exannulate; stuffed to hollow; surface almost glabrous, few caulocystidia present, clavate shaped, hyaline; stipe hyphae  $5-7.5 \mu\text{m}$  broad, hyaline to pale luteous, clamped; volva absent; base associated with white mycelium.

**LOCALITY**: Mahabaleshwar—120 km away from Pune, S.W. India.

**HOLOTYPE**: M-145. AMH No. 4393.

**LATIN DIAGNOSIS**:

*Pholiota mahabalesharensis*. Sp. nov. Sathe and Deshpande.

Species novum proposita a speciebus ceteris consecutione *Flammula* (Sensu Singer<sup>1</sup>) bene distincta in characteres sequentes (1) Magnioribus sporae, (2) Habitatio tropico, (3) Consorte Pteridio aquilina.

**HOLOTYPE**: M-145. AMH No. 4395.

Habitato solo consorte Pteridio aquilina in Mahabaleshware in parte reginis Indae austro occidentali.

The present species is accommodated in the subgenus *Flammula* (Fr. ex Fr.) Sing. section *Flammula* sensu Singer (1975), due to the total absence of the pleurocystidia of any kind, the dextrinoid spore reaction in Melzer, ex-annulate stipe and naked pileus. It, however, significantly differs from other species in the section on account of smaller pilea and stipe dimensions, larger spore range and its association with the fern *Pteridium aquilinum*, along with its tropical habitat.

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Maharashtra Association for the Cultivation of Science, A. V. SATHE,  
Poona 411 004,  
January 16, 1980.

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### IS THERE ANY LETHAL GENE IN THE TIGER OF REWA?

INDIA is the homeland of white tigers. All the white tigers housed in the zoos of Delhi, Calcutta, Bristol and Washington DC are descendants of one white male, Mohan, captured in 1951 from the forests of Rewa, Madhya Pradesh. Mohan was mated to a

normal coloured female, Begum, also caught wild from the same forest. She bore ten cubs, all yellow indicating that the normal skin colour is dominant to white<sup>1,2</sup>. Mohan was then mated with one of his daughters, Radha who produced 14 cubs of which eleven were white and three yellow. Since then matings between close relatives have been practised in order to increase the number of white tigers in the zoos. In consequence, the average litter size has decreased and the early mortality increased with the increase in the value of inbreeding coefficient of the white tigers<sup>2,3</sup>.

Premature death is the common feature of the white tigers. The mortality in different zoos has been due to pneumonia, trauma of the abdomen, congestion of lungs, viral enteritis and negligence of the mother. Besides, a number of stillbirths have been observed exclusively at the Delhi and Washington zoos<sup>3</sup>. The main purpose of this investigation is to seek an explana-

tion for the causes of stillbirths in the white tigers and the yellow tigers with gene for white skin.

Six matings involving only white parents and two matings involving two white females and one yellow (wild) male which have produced at least one stillborn cub have been selected for investigation (Fig. 1). The segregation of liveborn and stillborn cubs in all these matings is shown in Table I. The total number of cubs produced by eight matings is 71 of which 58 are liveborn and 13 stillborn. Of these 13, seven are females, five males and sex of one is unknown.

The most plausible explanation for stillbirth in the progeny of white tigers is that one lethal gene was presumably present recessively in Mohan who must have transmitted it down to his descendants. A cub is supposed to be stillborn when it receives the lethal gene from both the parents. The chance of stillbirth increases if matings are made between close relatives.

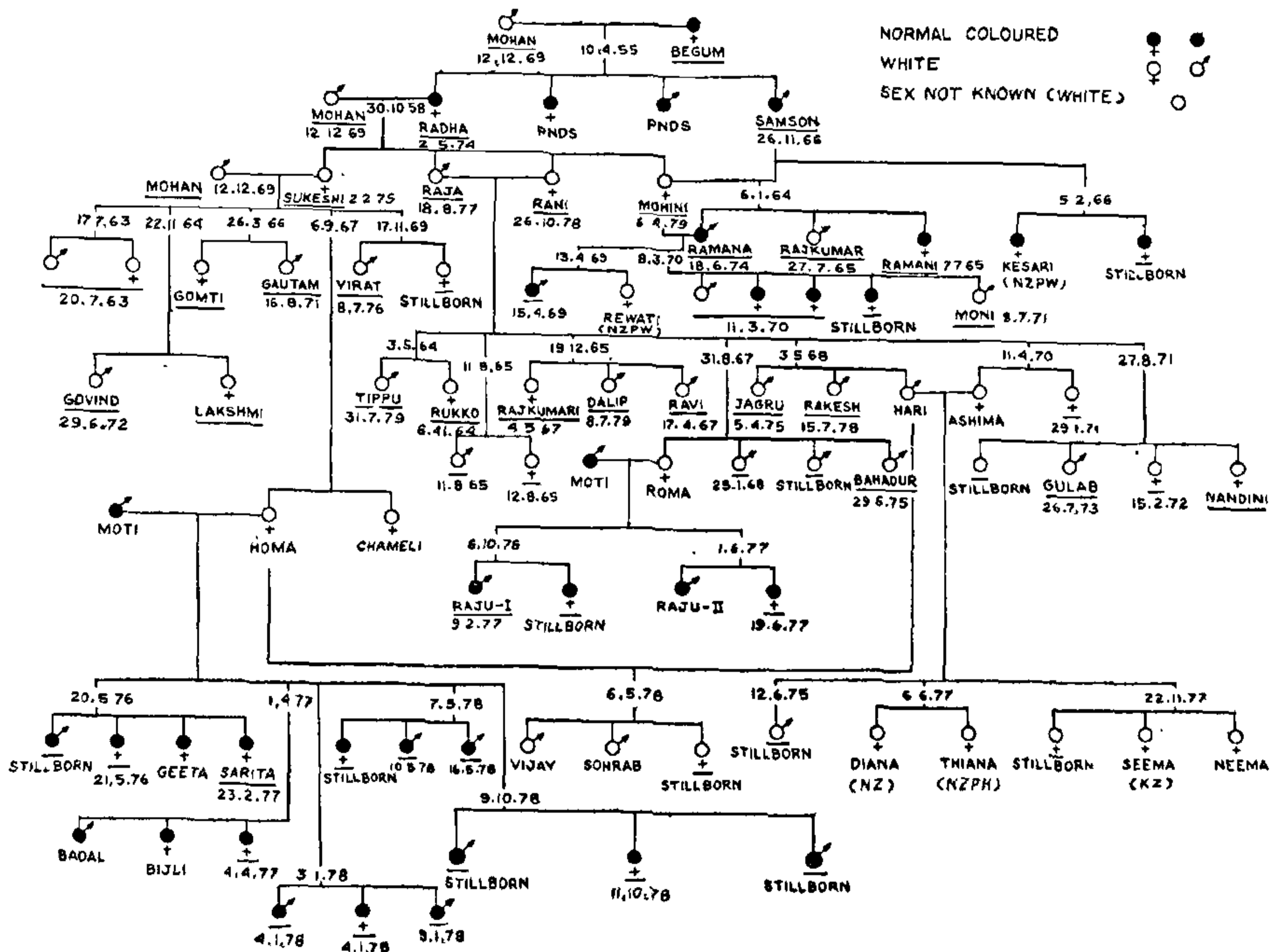


FIG. 1. Genealogy of the white tigers which produced at least one stillborn cub at Delhi Zoological Park, New Delhi and National Zoological Park, Washington, DC, USA. PNDs—Sold to P.N. Das and Sons, Calcutta. NZPW—National Zoological Park, Washington, DC, USA. NZ—Nandan Kanan Zoo, Bhubaneswar. NZPH—Nehru Zoological Park, Hyderabad. KZ—Kanpur Zoo. The line under a symbol or name of a tiger indicates dead. The dates of births and deaths of the tigers are indicated where available.

TABLE I  
Segregation of liveborn and stillborn cubs of the white and yellow tigers

Matings	Live born	Still-born	Total
<b>I. Both parents are white</b>			
Sukeshi × Mohan, Delhi	9	1	10
Rani × Raja, Delhi	18	2	20
Ashima × Hari, Delhi	4	2	6
Homa × Hari, Delhi	2	1	3
Mohini × Samson, Washington, DC	4	1	5
Mohini × Ramana, Washington, DC	6	1	7
<b>II. Female parent is white and male parent is wild yellow</b>			
Homa × Moti, Delhi	12	4	16
Roma × Moti, Delhi	3	1	4
All matings	58	13	71
Expected segregation (3:1)	53.25	17.75	71
$\chi^2 = 1.69$ d.f. = 1			

Unless both parents are heterozygous for lethal gene, no stillborn cubs are produced.

Since there was not a single stillborn among ten cubs produced in the three litters of Begum, she was not likely to be heterozygous for the lethal gene. Mohan transmitted the lethal gene to one son named Samson and to the four offsprings namely, Raja, Rani, Sukeshi and Mohini, in the first litter of Radha as is evident from the fact that matings among them produced at least one stillborn. In their turn either Raja or Rani transmitted the lethal gene to their offsprings namely, Hari, Ashima and Roma. All of them are heterozygous for this gene. So are Homa and Ramana who are the products of the matings of Mohan-Sukeshi and Samson-Mohini respectively. Roma and Homa produced stillborn cubs when they mated with a normal coloured tiger, Moti who was caught from the forests of Panna in the neighbourhood of Rewa (Fig. 1). This evidence indicates that Moti must be heterozygous for the lethal gene.

If two parents, each having a lethal gene mate with each other, one in four cubs is likely to be stillborn. Due to small size of the progeny there exists heterogeneity in the segregation of some individual matings

but the pooled data are in accordance with an expected segregation of liveborn and stillborn cubs in the ratio of 3:1 as is evident from  $\chi^2$ -test (Table I). However, more data are needed to confirm the presence of a lethal gene in the tigers of present investigation. Furthermore, it is also necessary to investigate whether there exists any chromosomal aberration either numerically or structurally among stillborn cubs.

The absence of stillbirths in the Bristol and Calcutta zoos may be due to the absence of the lethal gene among the progenitors of the white tigers in these two zoos.

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Biometry and Population Genetics Unit,  
Bose Institute,  
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2. Roychoudhury, A. K., *Sci. and Cult.*, 1978, 44, 371.
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#### CHLOROTIC STREAK, A NEW VIRUS DISEASE OF RICE

RICE is known to be affected by 11 virus diseases and two diseases caused by mycoplasma-like organism<sup>2-4</sup>. A new virus disease differing in symptoms and mode of transmission is reported in this paper.

The symptoms of the disease were stunting of plant growth; chlorotic streaking, striping or mottling of the newly emerged leaves; and difficult emergence of leaves. Characteristic chlorotic streaks were also observed on the leaf sheath. Recovery of the diseased plants after shock phase of the infection was often observed. The stubbles of the infected plants showed clear chlorotic streak symptoms, indicating the systemic nature of the disease.

*Nephotettix virescens* (Distant), *N. nigropictus* (Stål), and *Nilaparvata lugens* (Stål) failed to transmit the disease. The disease was also not transmissible by sap, seed and soil. Rice mealy bug, *Heterococcus rehi* (Lindinger) (= *Ripersia oryzae* Green) which is associated with disease spread, under field conditions successfully transmitted the disease in artificial inoculation tests.

One week after colonisation of the mealy bugs on the diseased plants, the nymphs that emerged on the diseased plants were transferred to 10-day-old seedlings of IR 26 at the rate of 3 nymphs per seedling.