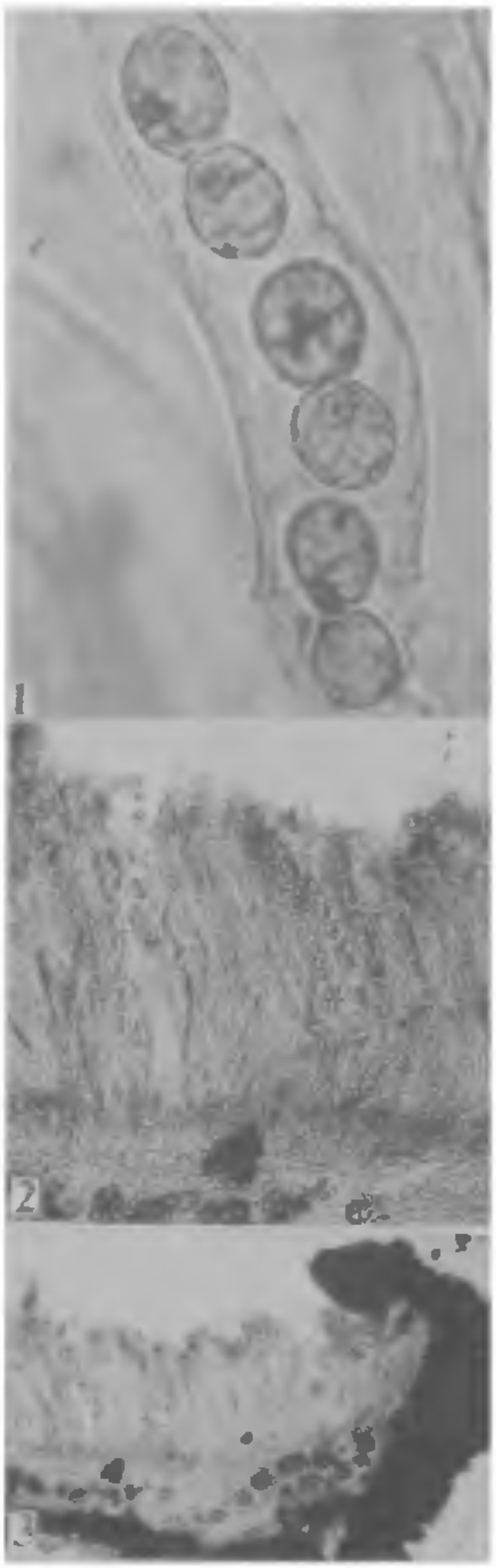

Figures 1–3. 1. Ascospores × 1120.
2. Hymenium × 220.
3. Vertical section of Ascomata × 110.

Collection examined: R. Sharma 17164 (PAN, CUP-IN 589), on dead angiosperm stem, angiospermous forest, Tiger Hill, Darjeeling, West Bengal, 18 August 1979. Leg. Raghunandan Sharma.
Etymology: In honour of Dr W. R. Arendholz.
Remarks: The above species differs from *Tryblidiopsis pinastri*[1] (Pers.) Rehm and *T. arnoldi* Rehm in having much longer 4–8 spored asci, broader ascospores and growing on a different host. It also differs from these two species in having crystalline masses in the medullary excipulum.

The author thanks Prof. R. P. Korf, Cornell University, Ithaca, New York, U.S.A., for help in identification and Dr W. R. Arendholz, Kaiserslautern, W. Germany for latin diagnosis. He also thanks Prof. K. S. Thind, of the University for guidance and encouragement. Financial assistance from the DST is gratefully acknowledged.

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CHROMOSOME COMPLEMENT IN A CYDNID BUG, *LACTISTES TRUNCATO-SERRATUS* SIGN. WITH SPECIAL REFERENCE TO THE KARYOTYPE EVOLUTION IN CYDNIDAE

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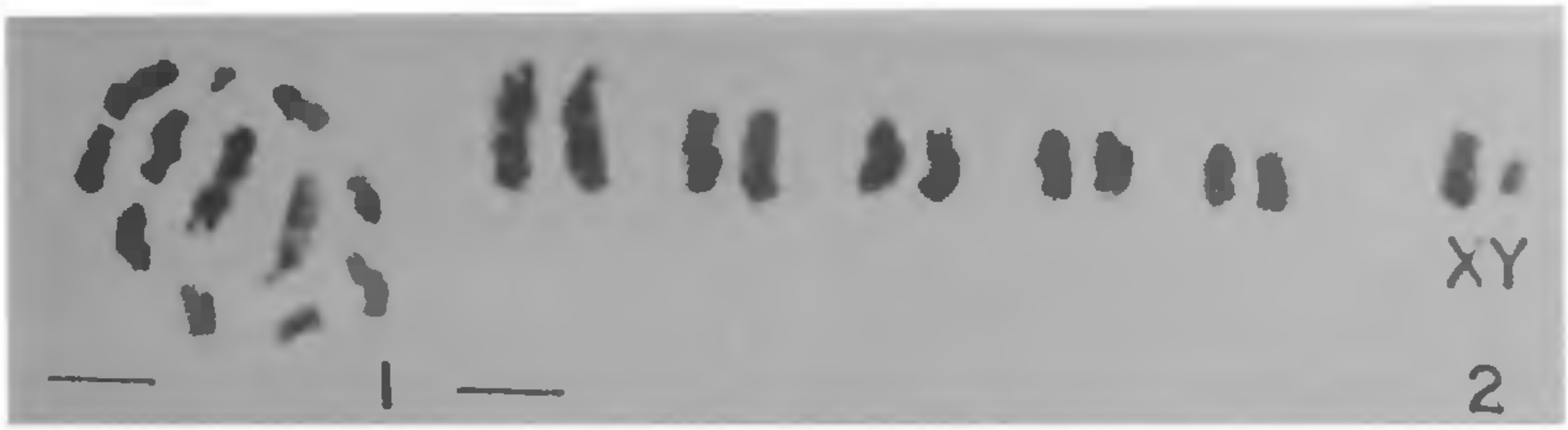
A DIPLOID number of 12 chromosomes with XY-type of sex mechanism is met with in the cydnid bug, *Lactistes truncato-serratus* Sign. The genus is new to cytology. The evolutionary status of the family Cydnidae has also been discussed.

From the cytological survey, the family Cydnidae seems to be fascinating because it has a heterogenous group of bugs so far as their number of chromosomes is concerned[1–7]. To trace the karyotypic evolution, in this group of bugs, a thorough cytological study of the family is all the more important. The present studies bring into light the chromosomes in meiosis in a still unexplored genus, namely *Lactistes* of the family, through its species *L. truncato-serratus* Sign.

Many individuals of *L. truncato-serratus* Sign. were collected during July 1980 from the light posts at night. Their gonads were processed following the procedure of Mittal and Joseph[8].

L. truncato-serratus carries $2n = 12$ (figure 1) with XY-type of sex mechanism. They constitute a single pair of long, 2 pairs of medium-sized, 2 pairs of small autosomes, and a heteromorphic pair of sex-chromosomes, X and Y (figure 2). The size of the various chromosomes ranges from 7.64–2.06 μm. (table 1).



Figures 1–6. Mitotic and meiotic stages of *Lactistes truncato-serratus*. **1.** Spermatogonial metaphase. **2.** Male karyotype prepared from figure 1. **3.** Diplotene. **4.** Metaphase-I. **5** and **6.** Metaphase-II plates. (Scale lines = 5 μm).

Table 1 *Matrical analysis of the various chromosomes of L. truncato serratus Sign.*

Chromosome number	1	2	3	4	5	X	Y	S.D.
Measurements in microns	7.64	6.23	3.47	3.05	2.94	3.64	2.06	±0.08

During male meiosis, which is typically of heteropteran type, at diplotene (figure 3) each autosomal bivalent indicates a single terminal chiasma. The chiasma frequency at this stage is 4.5 per cell. The sex-chromosomes, stained darkly, display their dyad nature. Metaphase-I (figure 4) shows 5 dumb-bell-shaped autosomal bivalents and X and Y chromosomes lying very close to each other. The first meiotic division is equational for the sex-chromosomes and reductional for the autosomes so that at metaphase-II (figures 5 and 6) are seen 5 autosomal univalents and both the sex-chromosomes forming a sex-pseudo-bivalent.

Chromosome analysis in the various cytologically known species of the family Cydnidae is given in table 2.

Table 2 *Chromosome analysis in the various cytologically known species of the family Cydnidae.*

Species	Diploid number	Haploid chromosome formula	Reference
Cydnus maurus Dall.	12, S	5+XY	4
Cydnus varians Fabr.	12, S	5+XY	4
Cydnus nitritus Fabr.	12, S	5+XY	5
Lactistes truncato serratus Sign.	12, S	5+XY	Present report
Legnotus picipes Fall.	14, S	6+XY	9
Macroscytus japonensis Scott.	—, S	6+XY	7
	14, O	— —	7
Macroscytus subaëneus Dall.	12, S	5+XY	1, 2
Microporus nigritus Fabr.	14, S	6+XY	6
Scaptocoris castaneus Perty.	26, S	12+XY	3
Stibaropus molginus Schiödt.	31, S	14+XXY	1, 2

S = testicular cells. O = ovarian cells.

From table 2, it appears that a modal number of 10+XY chromosomes can be suggested for the family Cydnidae.

It seems that the cydnids have evolved from the pentatomids, through decrease or increase in the number of their chromosomes, as suggested by other workers[10–12]. The retention of the ancestral diploid number of 12 chromosomes by some of the cydnid species further suggests that they are more primitive than pentatomids.

4 February 1983; Revised 8 August 1983

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BLOOD-WATER DIFFUSION BARRIER AT THE SECONDARY GILL LAMELLAE IN *ANABAS TESTUDINEUS* (BLOCH) DURING EARLY ONTOGENESIS

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THE measurement of thickness of blood-water diffusion barrier at secondary gill lamellae of fish has been worked out both at light and electron microscopic levels[1–10]. However, studies on diffusion distance during early ontogenesis of the fish are scanty. Thickness of the diffusion barrier(T) at the secondary gill lamellae during the early life of an air breathing fish is important since the fish depends exclusively on gill respiration in the beginning and at the same time weight specific metabolism remains very high. In *Anabas testudineus* the air breathing habit starts only after 22–25th day of hatching and after onset of the bimodal gas exhange machinery, a sharp decline in VO_2 through the gills occurs[11]. As the diffusion distance increases with increasing body weight[4] it is, therefore, interesting to know the changes in the thickness of the diffusion barrier and its impact on fish metabolism particularly on O_2 uptake during early life. Besides measurements of diffusion distance its relationship to the body weight and length has been established in this communication.

Spawners were selected on the basis of sexual dimorphism[12] during rainy season and induced breed-