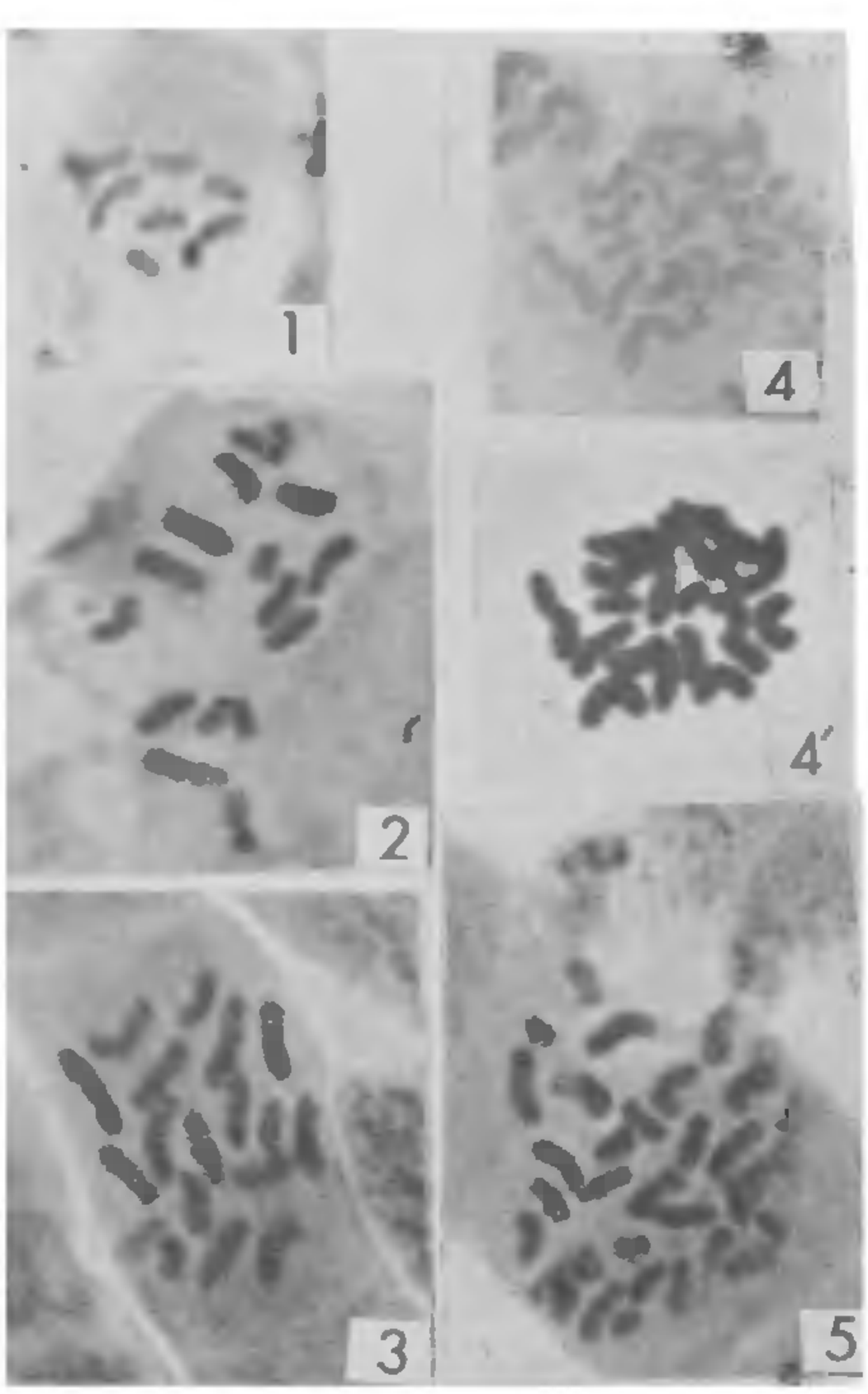
POLYPLOID CHROMOSOME NUMBERS IN THE GENUS *NITELLA*

It is held that polyploidy has arisen in response to cataclysmic changes in nature and polyploids are regarded as expert colonizers since they are better equipped with their greater number of chromosome sets for adaptation to the new environment. Besides, polyploidy plays a significant role in the evolution of species.



FIGS. 1–5. Fig. 1. *N. dualis* var. *pulchella* f. *superba*, a metaphase plate showing 9 chromosomes. Fig. 2. *N. hyalina* var. *hyalina* f. *hyalina*, a metaphahse plate showing 15 chromosomes. Fig: 3. *N. acuminata* var. *acuminata* f. *muratiana*, a metaphase plate showing 18 chromosomes. Figs. 4 and 4′. *N. pseudoflabellata* var. *mucosa* f. *stabilis* a metaphase plate and its drawing respectively showing 21 chromosomes and Fig. 5. *N. gracilis* subsp. *gracilis* var. *conferraceae* f. *confermis*, a metaphase plate showing 36 chromosomes. All × 3900.

Nitella is recognised by the general lack of aneuploid chromosome number and the integrity of its functional genomes. However, a few aneuploid chromosome numbers, *viz.*, $n = 14$, 16, 17, 28, and 34 have been recorded by Karling[1], Sato[2], Imahori and Kato[3] and Guerlesquin[4] in various taxa of *Nitella*. In India, no such case of aneuploidy has been reported so far in this genus. A polyploid series appears to exist in its various taxa so far investigated. The present finding 5 and 6 of chromosome numbers, *viz.*, $n = 9$ (*N. dualis* var. *pulchella* f. *Superba* R.D.W.) Fig. 1, $n = 15$ (*N. hyalina* var. *hyalina* f. *hyalina* R.D.W.) Fig. 2, $n = 18$ (*N. acuminata* var. *acuminata* f. *mauratiana* R.D.W.) Fig. 3, $n = 21$ (*N. pseudoflabellata* subsp. *pseudoflabellata* var. *mucosa* f. *stabilis* R.D.W.) Fig. 4, and $n = 36$ (*N. gracilis* subsp. *gracilis* var. confervacea f. donfermis R.D.W.) Fig. 5 vividly reveal that $n = 3$ might be the basic number in this genus. From the view-point of monobasic chromosome number, all the species of *Nitella* appear to be closely related and to have been evolved from a common ancestral stock.

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Botany Department, (MISS) SUBHRA MUKHERJEE.
University of Ranchi,
Ranchi (Bihar),
December 27, 1977.

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EFFECT OF PHYLLOSPHERE FUNGI ON THE SPORE GERMINATION OF *ALTERNARIA ALTERNATA* FR. CAUSING LEAFBLIGHT OF SUNFLOWER

DURING the year 1976 a blight disease on the leaves of sunflower was observed in the local fields around Bichpuri (Agra). The causal organism was isolated, purified and subjected to Koch's postulate which confirmed its pathogenicity. Out of the 20 phyllosphere fungi isolated from the local variety of sunflower six fungi, viz., *Monilia sitophila*, *Rhizoctonia solani*, *Cladosporium herbarum*, *Penicillium* sp., *Aspergillus*

TABLE I

Percentage of germination length and number of germ tube per spore of Alternaria alternata *in the various fungus diffusate at* 26° *C* ± 2

(Mean of 20 observations)

Sl. No.	Name of fungus	Percentage germination	Length of germ tube in *u*	No. of germ tube per spore	Nature of the fungus
1.	Control	100	66·0	Single	..
2.	*Monilia sitophila*	100	181·5	2–3	Synergestic
3.	*Rhizoctonia solani*	100	131·0	2–3	Synergestic
4.	*Cladosporium herbarum*	100	99·0	Single	Synergestic
5.	*Aspergillus sulphureus*	87	8·3	Singie	..
6.	*Pencillium* sp.	86	19·8	Single	...
7.	*Aspergillus niger*	No germination	..	..	Antagonistic

sulphureus and *A. niger* were present almost throughout the season were selected for testing their antagonistic nature, against the blight pathogen. The crude culture filtrates were centrifuged and used separately to determine the percentage germination of the spores of *Alternaria alternata* and length and number of germ tubes following the usual 'Slide Germination Method'[1]. The results summerised in the table indicate that out of the six fungi tested *Aspergillus niger* was highly antagonistic against the pathogen as the spore germination in the filtrate of this fungus was totally checked. *Monilia sitophila* and *Rhizoctonia solani* on the other hand were found to be synergestic. In both these cases not only was there recorded a cent per cent germination of the spores but the length of the germ tubes also increased to 2–3 times the length observed in control.

The active principle/s in the culture filtrate of *Aspergillus niger* lost its activity almost completely at 100° C kept for 10 minutes and at 1 : 10 dilution.

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Plant Pathology Research Lab.,
Department of Botany,
Agra College, Agra 282 002,
December 20, 1977.

Y. K. GUPTA.
M. N. GUPTA*

* Prof. and Head, Department of Botany. Agra College, Agra.

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DEFENSIVE SECRETIONS FROM THE REPUGNATORIAL GLANDS OF A POLYDESMOID MILLIPEDE

DURING our field studies, we observed that the bites of the ants and termites invariably prompted the millipede *Jonespelis splendidus* Verhoeff to discharge, which ultimately dispersed these insects, and left the millipede free to move away unmolested. We wanted to examine the causes for this behaviour which must be sought in the role of defensive secretions of the repugnatate glands that are present in many polydesmoid millipedes. The purpose of this note is to present the results of our experiments on the nature of these secretions of this soil feeding polydesmoid millipede[1].

The millipedes were electrically stimulated (1 volt D.C., 0·2 m sec duration) and the droplet released at the gland opening was absorbed on to a piece of Whatmann filter paper. It was immediately eluted into 7 pH phosphate buffer (for enzyme assays) or into toluene (for other analyses). The structure of the repugnatate gland was studied by microscopic examination of 5 μ paraffin sections stained in haemaroxylin. The presence of benzaldehyde and HCN in the secretion was detected by spot tests[2]. The cyanogenesis was quantified in the apparatus described by Eisner *et al*[3]. The gas was trapped into 0·005 N $AgNO_3$ and estimated photometrically[3]. The protein content of the secretion was estimated colorimetrically[4]. The β-glucosidase activity was followed according to Hestrin *et al*[5] and the mandelonitrile lyase activity was assayed by measuring the HCN production when the secretion was mixed with the nitrile in Warburg flasks[6]. Chromatography of the secretion was done in Silica gel G–TLC plates developed in butanol ethanol water