

The Diakinesis and Metaphase I association of these B-chromosomes along with pachytene associations are given in Table I.

TABLE I

Association of B-chromosomes from Pachytene to Metaphase I

	I <sub>III</sub>	I <sub>II</sub> +I <sub>I</sub>	3 <sub>I</sub>	Total cells
Pachytene	.. 19	12	1	32
Diakinesis	.. 53	21	7	81
Metaphase I	.. 28	11	1	40

At anaphase I the chromosomes are usually distributed 2-1 and occasionally the univalent may divide during anaphase I and then 3-1 or 2-2 distribution may be observed. At anaphase II when 2 B-chromosomes are present these divide and are distributed 2-2 and when there is 1 B, this may divide to give 1-1 distribution. Thus, there are two types of microspores, one type with 2B's and the other with only one. The pollen fertility is quite normal, about 97% of pollen being good.

There are certain problems connected with the origin of *P. typhoides* particularly about the centre or centres of origin and the phylogenetic nature of its origin. Previously on grounds of taxonomy and concentration of varieties several authors like Hackel, Stapf, Leek, Werth (cf. Krishnaswamy, 1937 and 1951)<sup>1,2</sup> and Vavilov<sup>3</sup> expressed the opinion that the primary centre of origin for this species is Africa particularly the region of Sudan and Abyssinia. Of all the varieties so far examined by the author B-chromosomes are found in plants raised from the seeds of Sudanese origin. The B-chromosomes according to Muntzing (1954 and 1958)<sup>4,5</sup> give some indication as to the centre of origin, as he observed that these accessory chromosomes are more frequent in primitive strains than in highbred commercial varieties. Thus the present cytological evidence points to Sudan-Abyssinian origin of this cultivated plant, a conclusion also arrived at by others (Hackel, Stapf, Leek and Vavilov) on other grounds as mentioned above.

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A NEW SPECIES OF *OOCYSTIS*  
(*O. KUMAONENSIS* SP. NOV.) FROM  
NAINI TAL

DURING his study of the algal flora of Naini Tal District, the author came across an interesting form of *Oocystis*. This alga was collected by the writer in August, 1958 from a dripping rock in the campus of the college. Subsequently it was collected from five more places in the vicinity of Naini Tal. It was found growing in mucilaginous masses mixed with *Cosmarium* and some colonial blue-green algae. The alga was collected periodically and was always examined in living condition. Iodine in KI and iron-alum-haematoxylin were used to ascertain the presence of pyrenoids.

Vegetative cells always occur singly and measure 31.2-35.1  $\mu$  in length and 19.5-23.4  $\mu$  in width. The cells are usually ellipsoidal (Fig. 1) with broadly rounded poles. The cell-wall is smooth and thin in younger cells (Fig. 1), but appreciably thickened in older resting cells (Fig. 2). Each cell contains several discoidal chloroplasts (Fig. 1) with a small pyrenoid in each.

Reproduction usually occurs by means of autospores. Four autospores are regularly formed in each cell. The formation of the autospores in the present alga is rather interesting and is, therefore, described in some detail below. During reproduction the vegetative cell, which is destined to form the autospores, gets slightly enlarged and becomes irregular in shape (Fig. 3). The protoplast undergoes two successive divisions by bipartition and this results in the formation of four unequal daughter protoplasts (Fig. 3). These daughter protoplasts which are generally found cruciately arranged, are eventually metamorphosed into autospores (Fig. 4). Of these four autospores, two are big and two small and have been designated as macro- and micro-autospores respectively. Macro-autospores (Fig. 4Ma) are about three