Porphyrosiphon, *Lyngbya* and other subaerial algae, Pre-treatment with 0·1M iodoacetate, ethylmaleimide. PCMB, hydrogen peroxide (0·1%), copper sulphate (0·01%), potassium ferricyanide (0·01%) completely abolished the ability of the alga to reduce TTC. Further, it was observed that heating of the algal mats in dry state to 100° C, for 30 min had no effect on TTC reduction whereas boiling in water even for 1-2 min rendered the algae inactive. Pretreatment of the algae with 10M urea or 0·1% thioglycollate had no effect no reduction. Thus all the tests indicate that the intense TTC reduction is due to the presence of high levels of SH-groups in the subaerial algal cells. Dry algal crusts, when incubated in moist chamber in light for 24–48 hrs, showed marked loss of TTC reduction. Samples collected from soils, barks and terraces and stored over conc. sulphuric acid or silica gel in a desiccator for 2 to 3 yrs were still found to be reactive with TTC.

All the subaerial algae show characteristic multilayered sheath, either deep brown (porphyry colour) or orange colour. The sheath material of *Porphyrosiphon* or *Tolypothr ix* when homogenised in water by grinding or sonication, gives no detectable peaks in the visible region of the spectrum, but shows high absorption in near-violet and blue regions, the absorption continuously decreasing towards red. It is possible that the coloured sheath filters of the deleterious blue wavelengths of sunlight from reaching the trichome inside. It may also possibly aid the alga in yet an unkown way, to keep the reducing state of the cells needed for the survival during the hot summer. Further, the thick sheath may allow the alga to lose or gain water slowly in a controlled way from the trichomes and this appears to be an important factor in preventing damage during dehydration as in the case of other organisms[2].

The remarkable ability of blue-green algae to survive extremes of dehydration and heat has been commented upon by number of workers and is generally attributed to the 'special nature' of blue-green algal cytoplasm[2]. Levitt[3] pointed out that a plant can protect itself against stress injury by preventing or repairing protein aggregation and denaturation by maintaining reduced state (SH) of the cell, in some cases accomplished by possession of hydrophobic proteins.

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EFFECTS OF COUMARIN ON THE CELL DIVISION OF *RHIZOCLONIUM HIEROGLYPHYCUM* (AG.) KUETZ.

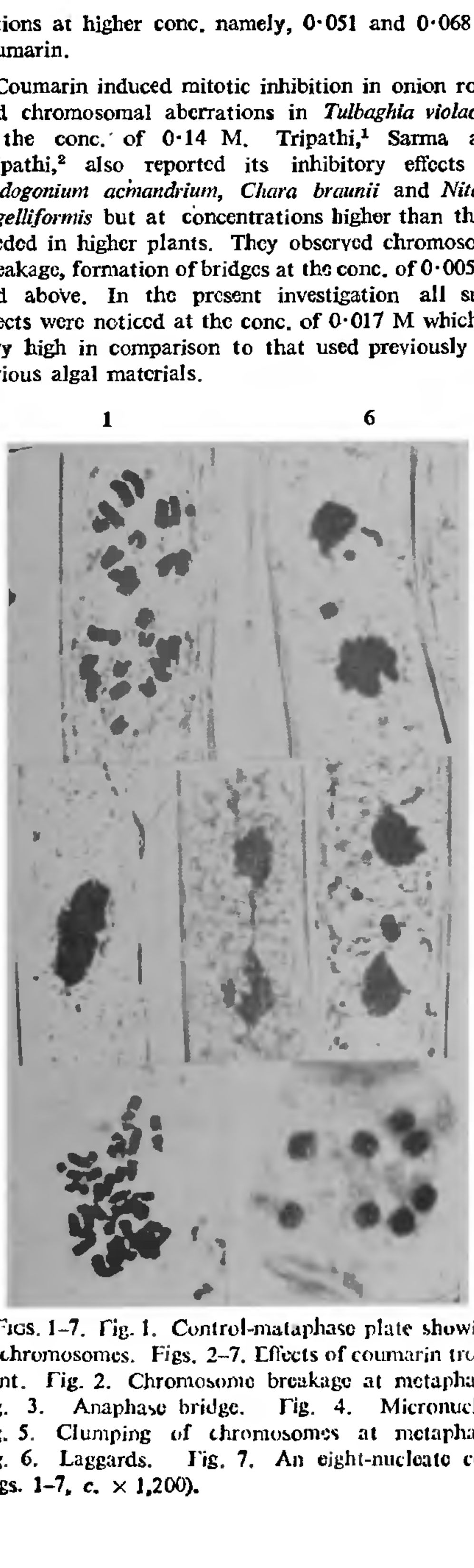
THE effect of coumarin has been extensively studied on a number of higher plants whereas those on algal karyology are comparatively few[1,2]. The present investigation deals with the effects of coumarin on the cell division of *Rhizoclonium hieroglyphycum*, a green alga belonging to the Order Cladophorales.

The alga was collected from a freshwater pond at the Banaras Hindu University and cultured in BBM medium designated as BBMP[3] fortified with 8% soil-extract (1 : 1). A light period of 16 hr of c. 2500 lux per day was provided to the cultures at 22±1° C. Actively growing vegetative filaments from culture were treated for 6, 12, 18, 24 and 32 hr with different concentrations (0·017, 0·034, 0·051 and 0·068 M) of coumarin prepared in culture solution. Materials were fixed in a mixture of absolute alcohol and glacial acetic acid (3 : 1) and stained[4].

Delay in mitosis and reduction in the percentage of mitotic index at peak time were observed in this alga. Mitotic index was retarded and brought down from 39·2% in control to 10·4% in material treated with 0·068 M (highest conc. used) for 32 hr. Stickiness, clumping, breakage of chromosomes at metaphase, bridges and laggards at anaphase were the main visible chromosomal changes. The quantitative data revealed linear increase in the frequency of chromosomal aberrations with increase of conc. of coumarin. While treatment with 0·017 M for 32 hr showed aberrations (stickiness and clumping of chromosomes, chromosome breakage at metabphase and anaphase, laggards and anaphase bridges) upto 4·8%, treatment with 0·068 M conc. for 32 hr revealed aberrations upto 13·6%. Metaphase breakage was obsrved after 24 hr treatment with conc. of 0·051 M solution of coumarin. Anaphase bridges were seen after the treatment with 0·017 M conc. for 32 hr. Besides chromosomal changes, vacuolated nuclei at higher conc. were also recorded. Formation of micronuclei has also been detected frequently at higher conc. Inhibition of cell plate formation as evidenced by the formation of 8-nucleate cells (4-nucleate or rarely less per cell in the control) accompanied with bulging of cells, degeneration of chloroplasts, vacuolation were the observed morphological effects of present investi-

gations at higher conc. namely, 0·051 and 0·068 M coumarin.

Coumarin induced mitotic inhibition in onion roots and chromosomal aberrations in *Tulbaghia violacea*[5] at the conc. of 0·14 M. Tripathi,[1] Sarma and Tripathi,[2] also reported its inhibitory effects on *Oedogonium acmandrium*, *Chara braunii* and *Nitella flagelliformis* but at concentrations higher than those needed in higher plants. They observed chromosome breakage, formation of bridges at the conc. of 0·005 M and above. In the present investigation all such effects were noticed at the conc. of 0·017 M which is very high in comparison to that used previously on various algal materials.



Figs. 1–7. Fig. 1. Control-mataphase plate showing 24 chromosomes. Figs. 2–7. Effects of coumarin treatment. Fig. 2. Chromosome breakage at metaphase. Fig. 3. Anaphase bridge. Fig. 4. Micronuclei. Fig. 5. Clumping of chromosomes at metaphase. Fig. 6. Laggards. Fig. 7. An eight-nucleate cell. (Figs. 1–7, *c.* × 1,200).

On the basis of present investigation, it may be concluded that *R. hieroglyphycum* is more resistant to coumarin in comparison to other algae so far studied.

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INTERFERTILITY STUDY OF *DAEDALEA FLAVIDA* LÉV.

Nobles[1] pointed out the importance of interfertility studies in the taxonomy of fungi and she advanced a hypothesis that in Polyporaceae species which possess tetrapolar type of interfertility are associated with white rots and positive oxidase reactions, while species with bipolar interfertility cause brown rots and give negative oxidase reactions. Banerjee and Samadder[4] reported previously that *Daedalea flavida* Lév. possesses bipolar type of interfertility. But this fungus was found to cause white rot[5] and show positive oxidase reaction[6]. So a reinvestigation was made on the interfertility of *D. flavida* and the results are reported in this paper.

Five sporophores of *Daedalea flavida* were collected and several monosporous cultures were isolated from each of them following the usual dilution method. The monosporous cultures obtained from a single sporophore were paired among themselves in all possible combinations on 2·5% malt agar slants and in this way polarity of each of the isolates were determined. The distribution of mating types among the monosporous cultures is shown following the methods of Nobles[2] and Nobles, Macrae and Tomlin[3]. To designate the alleles governing interfertility conventional symbols such as $A_1A_2B_1B_2$ were used. The sporophores were dried and deposited in the Mycological Herbarium of the Visva-Bharati University (VBMH). Names of the hosts and isolate numbers of the voucher herbarium specimens are listed.