under similar light and temperature regimes as for the breeding colony for evidence of copulation. Post-operative mortality was less than 10%. After the completion of an experiment the surgically operated animals were dissected out to check the success of the operation. Some of the brains of experimental insects were treated histochemically with performic acid Victoria blue\textsuperscript{3} to reveal cells containing neurosecretory material.

As Fig. 1A shows the removal of NSC did not affect the mating behaviour of female moths when compared to that of controls. By contrast ablation of CC+CA significantly decreased the copulatory behaviour since only 15% of experimentals mated (Fig. 1B). Severing of the nerves connecting CC+CA with rear of the brain also inhibited the mating behaviour of female moths to a considerable extent (Fig. 1C).

Three main conclusions may be drawn from the present investigations: (1) the median neurosecretory cells of the pars intercerebralis region of brain seems to have no role in the mating behaviour of female moths; (2) the corpora cardiaca–corpora allata complex produces a hormone necessary for the sexual behaviour; (3) the transection of small nerves between the brain and corpora cardiaca is as effective as the removal of CC+CA complex. Apparently the release of hormone from this endocrine tissue is controlled neurally by the brain. The actual site of the production of this hormone remains yet to be investigated. It is possible that the intrinsic cells of corpora cardiaca produce this hormone as shown in certain saturniid moths\textsuperscript{4} or the corpora allata produce the hormone which controls the sexual receptivity in female moths.

In experimental groups B and C (see Fig. 1), 11 to 20\% of experimental insects mated. Dissection of experimental animals belonging to group B revealed no trace of corpora cardiaca or corpora allata. But there still remains the possibility that the experiments might have been incomplete in these cases or there might be a critical period for hormone release after which experiments may not affect mating behaviour.

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**EFFECTS OF GRISEOFULVIN ON THE KARYOLOGY OF SPIROYRA PARADOXA RAO**

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*Griseofulvin*, an antifungal antibiotic, was isolated for the first time from the culture filtrates of *Penicillium griseofulvum*. The alternative name *curling factor* was given to this antibiotic since as little as 0.2 µg/ml causes curling of the growing hyphae and stuning of the germ tubes. The effects of griseofulvin have been extensively studied on higher plants and animals. The present study deals with the effects of griseofulvin on the cell division of *Spirogyra paradoxa* Rao, a filamentous green alga belonging to the Order Conjugales.
Unialgal and clonal cultures of the alga were raised in Chu 10 medium by following standard isolation procedures and maintained in a culture chamber (21 ± 1°C; 2,500 lx for 16 hr/day). For cytological studies filaments from actively growing culture were treated with 10, 20 and 30 μg/ml for 30 and 60 min duration. Materials were fixed in Carnoy's fluid (1:3 glacial acetic acid and absolute alcohol mixture) and stained.

In all the concentrations a mitotic delay of two days was observed. The notable morphological effect observed is the shrinkage, decolouration and degeneration of the chloroplasts due to loss of pigments. Various cytological effects (Figs. 2–6) observed as a result of griseofulvin treatment are the breakage of chromosomes and chromatids, chromosome exchanges, ring chromosomes, anaphase bridges and laggards. Frequent occurrence of bi-, tri- and tetra-nucleate cells due to cell wall inhibition was noticed. The cytological effects obtained were assessed quantitatively. The percentage of aberrations showed a direct correlation with the concentration of the chemical and duration of treatments (Fig. 7). Intercalary and isochromatid exchanges were observed in materials fixed after 4 days of treatment. The percentage of aberrations is lower in fixations made during 2 or 3 days following the treatment as compared with fixations made on subsequent days with a few exceptions. This was more expressive with higher concentration of the chemical for longer durations. The maximum percentage of aberrations scored was 18 on 6th day with 30 μg/ml for 60 min duration.

Figs. 1–6. Fig. 1. Control metaphase plate showing 12 chromosomes. Figs. 2–6. Effects of griseofulvin treatment. Fig. 2. Late prophase showing several chromosome breaks. Fig. 3. Prophase showing a ring chromosome. Fig. 4. Metaphase showing chromatid exchanges between two chromosomes. Fig. 5. Anaphase showing laggards. Fig. 6. Anaphase groups (polar view) showing n = 13 daughter chromosomes.

(Figs. 1, 4, c. × 1,800; Figs. 2, 3, c. × 480; Fig. 5, c. × 900; Fig. 6, c. × 1,200).

Fig. 7. Percentage of chromosomal aberrations at different concentrations of griseofulvin employed for 30 and 60 min durations.

--- 30 min; --- 60 min; O–O 10 μg/ml; ●–● 20 μg/ml; △–△ 30 μg/ml.
Various chromosomal aberrations were induced in *Vicia faba* by griseofulvin at 20–40 μg/ml. It induced multinuclearity in mammalian cells cultured in vitro. In the present study also griseofulvin induced multinucleate condition of cells due to cell wall inhibition. Unlike in *Vicia faba* multipolar spindles and C-mitosis were not observed in *Spirogyra* with griseofulvin, although the same concentration range, i.e., 20 and 30 μg/ml of the chemical was used.

The present study with griseofulvin on *Spirogyra* is the first attempt made on an algal material and it is interesting that this antibiotic produced positive results in bringing about various types of cytological aberrations which showed a similarity with mitomycin, rifamycin and polymyxin applied to the same alga. However, at this stage it is not possible to specify the mode of action of this antibiotic.

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**DIAGNOSIS OF RINDERPEST IN CATTLE BY AGAR GEL PRECIPITATION TEST**

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The diagnosis of Rinderpest in the field is difficult because the clinical signs and the postmortem findings in Rinderpest and other infectious diseases involving gastro-intestinal tract are similar. The diagnosis becomes difficult in such cases where the clinical signs and lesions are not typical of the disease. The laboratory diagnosis in suspected cases of Rinderpest is very essential to take appropriate measures for the prevention of spread of the disease.

The Rinderpest virus is a member of the paramyxovirus group of viruses and is highly associated with the Leukocytes (Summer) and infected tissue cells (Scott). This property of virus has been made use of in the present study to confirm the diagnosis of Rinderpest by Agar gel precipitation test (AGPT).

The antiserum against Rinderpest virus was raised in rabbits using Kabete 'O' strain of tissue culture Rinderpest vaccine following standard methods. The animals were infected with 1·0 ml of virus suspension containing 100 vaccine doses and mixed with an equal volume of Freund's adjuvant. Three injections were given at weekly intervals. Ten days after last injection the rabbits were bled. The blood serum was separated and stored after addition of 0·01% thiomersol as a preservative. The serum was adsorbed with calf kidney cells, suspension of lymph node and suspension of buffy coat from healthy animals following the method of Weir et al. The presence of antibody in the serum was confirmed by performing gel diffusion test employing the reference antigen (lymph node suspension collected from experimentally infected animal) and standardised by using a known positive and a known negative sample.

In the field trials, a total number of 200 samples from cattle were screened for the presence of Rinderpest viral antigen. Of the total samples, 190 were blood samples, six lymph nodes and four spleen homogenates. In the case of blood samples buffy coats were separated and used in the test.

The AGPT was performed on 3" x 1" sized glass slides. The slides were covered with 2·5 ml of gel consisting of 1% Difco agar in normal saline. After hardening 1 mm diameter wells 3 mm apart were carved and used for charging serum against suspected material. The necessary controls were incubated at room temperature in a humidified chamber. The results were recorded after 24 hours.

Of the 200 samples tested, 83 buffy coat samples, six lymph nodes and four spleen homogenates gave precipitation lines formed by reference antigen.

This test can be used advantageously in detecting suspected and ailing cases of Rinderpest especially when the animals were still in incubation. The method adopted here is simple and quick.

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