These reports too, have recorded only the juvenile forms of this parasite in the nonsiluroid fishes, resulting in what is commonly known as 'ink spot disease' due to the presence of metacercaria stage.

The present investigation reports the widespread infestation by this parasite in fully developed sexually adult state in *Channa punctatus* Bloch, a nonsiluroid fish of the order ophiocephaliformes from water bodies around Jaipur. The adult parasites found infesting *C. punctatus* during this investigation varied in size from 14 to 20 mm in length and 8 to 12 mm in width (*c.f* 2·01 mm × 1·05 mm reported by Rai and Pande[6]). It is also interesting to record that the average length of the ovarian tube alone was 2·48 mm which exceeds the total length of the parasite itself reported by Rai and Pande[6].

In a single fish usually two to five adult parasites were found with a number of juveniles showing exceptional variation in number and size. The degree of infestation can be realized from the fact that these parasites weighed 3·13% of the host's body weight. Further the adult parasites were not limited to the swim bladder alone but attacked almost every visceral organ such as liver, spleen, ovary, body musculature, intestinal muscles and mesentery.

Detailed studies on the effect of parasitization on the physiology of the fish *per se* and its possible effect as food for man are being reported elsewhere.

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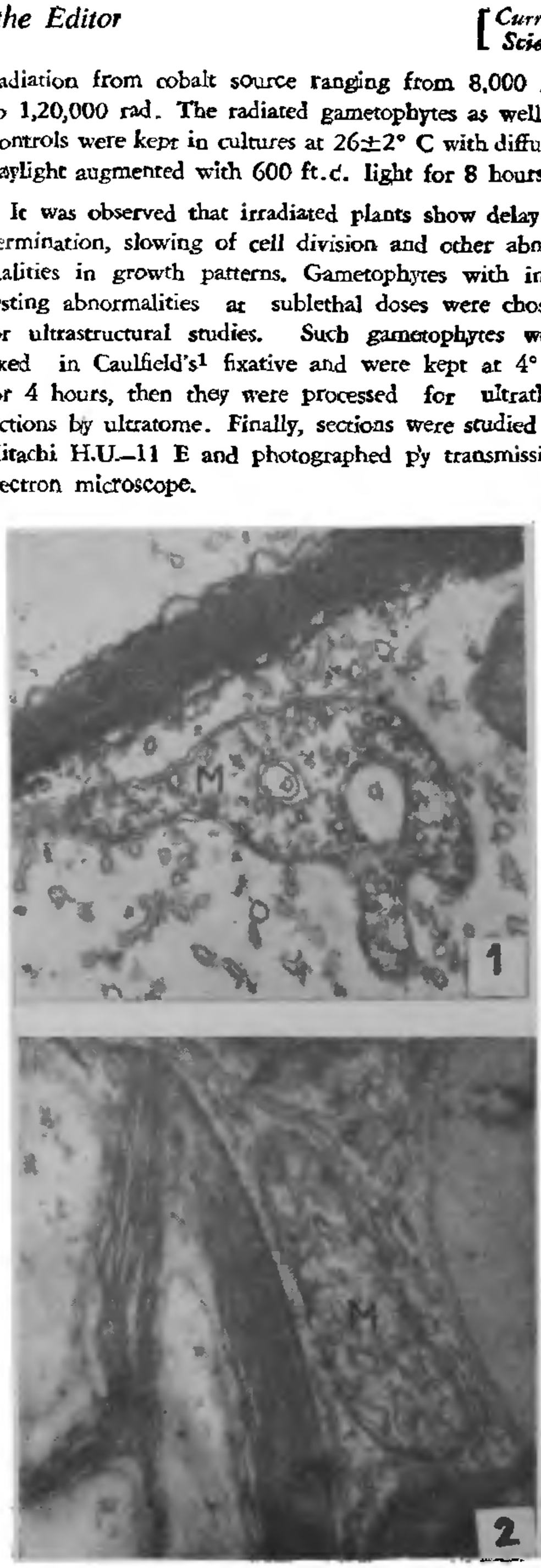
OCCURRENCE OF GIANT MITOCHONDRIA IN THE CELLS OF GAMETOPHYTES OF *LYGODIUM FLEXUOSUM* (L.) SW. EXPOSED TO GAMMA RADIATION

SPORES of *L. flexuosum* were sown in 2 separate petridishes, each having approximately 500 spores in 1% Knop's solution. Various stages of gametophytes of *L. flexuosum*, *viz.*, ungerminated spores, 2 to 3 days old and one month old were exposed to doses of gamma radiation from cobalt source ranging from 8,000 rad to 1,20,000 rad. The radiated gametophytes as well as controls were kept in cultures at 26±2° C with diffused daylight augmented with 600 ft.c. light for 8 hours.

It was observed that irradiated plants show delay in germination, slowing of cell division and other abnormalities in growth patterns. Gametophytes with interesting abnormalities at sublethal doses were chosen for ultrastructural studies. Such gametophytes were fixed in Caulfield's[1] fixative and were kept at 4° C for 4 hours, then they were processed for ultrathin sections by ultratome. Finally, sections were studied in Hitachi H.U.–11 E and photographed by transmission electron microscope.



FIGS. 1–2. Fig. 1. Micrograph of a portion of the cell of gamma irradiated gametophyte of *Lygodium flexuosum* showing giant (or complex) mitochondrion (M) (× 32,000). Fig. 2. A portion of another cell of gamma irradiated gametophyte of *L. flexuosum* showing another giant mitochondrion (M) (× 1,920).

The cytological effects observed included many alterations as well as damages in various organelle such as mitochondria, chloroplasts, endoplasmic reticula ribosomes etc. Their membrane system was severely disturbed. The most interesting findings are the giant mitochondria with changed configuration of cristae which were observed in several cells of many gamma irradiated gametophytes.

The giant mitochondria (Figs. 1,2) have irregular shape, they have swollen and irregularly arranged cristae and are many times larger than the normal ones. Such giant mitochondria are probably formed by the fusion of several mitochondria or they may be proceeding towards fission and final disintegration.

Underbrink *et al.*[2] while studying the effects of $\overline{X}$ and gamma radiations on a green alga *Brachiomonas* noted that the mitochondria of this alga were somewhat swollen and their cristae disturbed. But the giant mitochondria of the kind produced as a result of irradiation observed by us have not been reported in plant material.

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AN AIR-DRY METHOD FOR CYTOLOGICAL PREPARATIONS OF APHIDS (HOMOPTERA: APHIDIDAE)

UNTIL the middle of the present century, most studies of aphid chromosomes were made from sectioned material. Earlier, Smith[1] used the acetocarmine technique for squash preparations. Colling[2] reported on a squash method using osmic acid fixative for the somatic chromosomes that apparently gives satisfactory results. Other squash techniques using acetocarmine, acetoorcein, Feulgen and Gomori's hemaroxylin do not give satisfactory results. Dionne and Spicer[3] gave another squash method using the fixative acetiq alcohol and chloroform in place of osmic acid. They hydrolyzed the material with normal hydrochloric acid and then stained it with Gomori's hematoxylin. MacDonald and Harper[4] and Sun and Robinson[5] used an improved squash technique using Feulgen stain for aphid chromosomes. Sun[6] made further improvements in the squash method for the study of somatic chromosomes of aphids. Robinson and Chen[7,8] adopted the same method for squash preparations as of Dionne and Spicer[3] and MacDonald and Harper[4] in more or less a similar way except using Feulgen stain in place of Gomori's hematoxylin. Blackman[9,10] also used a rapid Feulgen squash technique[4]. For the first time Blackman[11] used Giemsa stain for the dytogenetical studies of aphids after squashing the material.

The present method is based on the air or heat drying and tapping technique which takes less time and gives better spread of the chromosomes than by other earlier squash methods.

Best results can be obtained by using embryos either from apterous viviparous females or the fourth instar nymphs. In India it is easier to find cells in late prophase and metaphase stages during the winter when the range of temperature is 15°–20° C. At this time the growth and development are most rapid and fat bodies scanty. An aphid (of the above mentioned morph) is taken on a clean slide in a drop of 0·5% sodium citrate solution. Under a binocular microscope, the terminal part of abdomen is snapped so that the gut and reproductive organs come out leaving the rest of the body behind. Fat bodies can be removed by adding another drop of 0·5% sodium citrate solution and shaking the material with a needle. This will also spread the embryos which can now be removed to a cavity block having 1–3 ml of the sodium citrate solution in which the material may be kept for half an hour. The solution being hypotonic, the treatment will swell the cells. Individual ovarioles can now be separated, from which very young embryos can be sorted out as they are distinguishable from the more advanced ones having noticeably developed eye pigmentation. The advanced stage embryos are not suitable for dytological preparations. The ovarioles along with germarium are transferred to the fixative consisting of 3 : 1 : : methanol : Glacial acetic acid. Leave them in fixative for 15–30 min with a maximum period of one hour. The fixed embryos (3 to 4 to be taken) are now transferred to a drop of 60% acetic acid on a microscope slide (already boiled in chromic acid, washed and stored in 90% ethyl alcohol). The embryos are crushed by gently tapping for 30–50 seconds so as to disperse the cells in the drop using the flat end of a metal rod (10 cm long and 0·3 cm dia). The cells of the embryos get separated and float free in