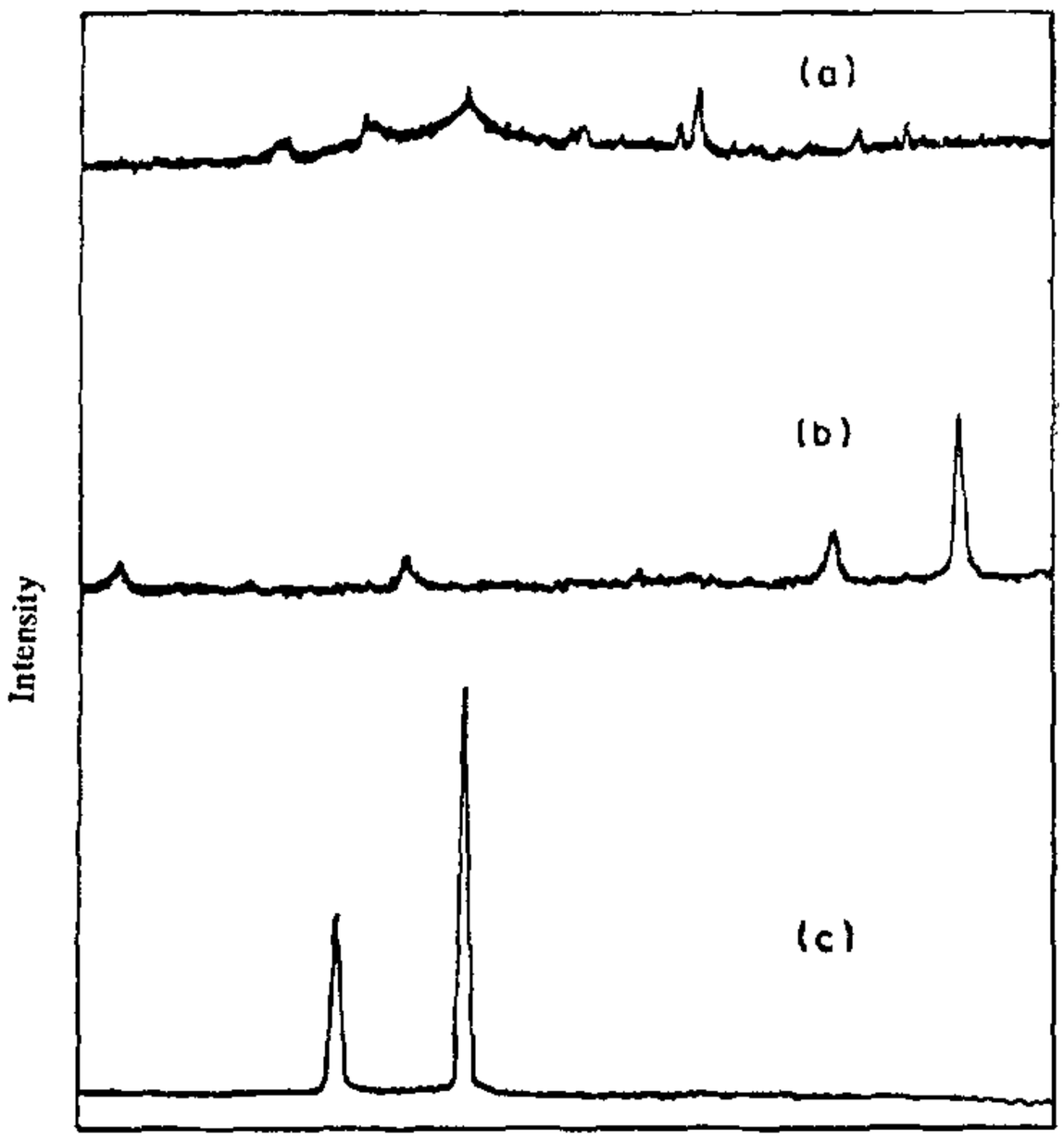

Figure 1a–c. X-ray diffractogram of: **a.** nickel-sulphur non-crystalline electrodeposit, **b.** nickel-boron partly-crystalline electrodeposit, and **c.** nickel-boron crystalline electrodeposit.

using the above bath compositions, revealed an interesting formation of non-crystalline, partly-crystalline and crystalline nature, respectively (figure 1). Formation of these unique deposits is attributed to the abnormal translational correlation in the equilibrium position of the constituent molecules disappearing within distances of a few molecules, leading to discontinuous condensation, which may be due to the bath composition.

The above results indicate a unique formation of non-crystalline nickel-sulphur deposit, partly-crystalline and crystalline nickel-boron deposits. The mechanism of the formation of these interesting deposits is under detailed study.

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5 May 1987; Revised 2 July 1987

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STERILITY AND MEIOSIS IN FIVE SPECIES OF JASMINE †

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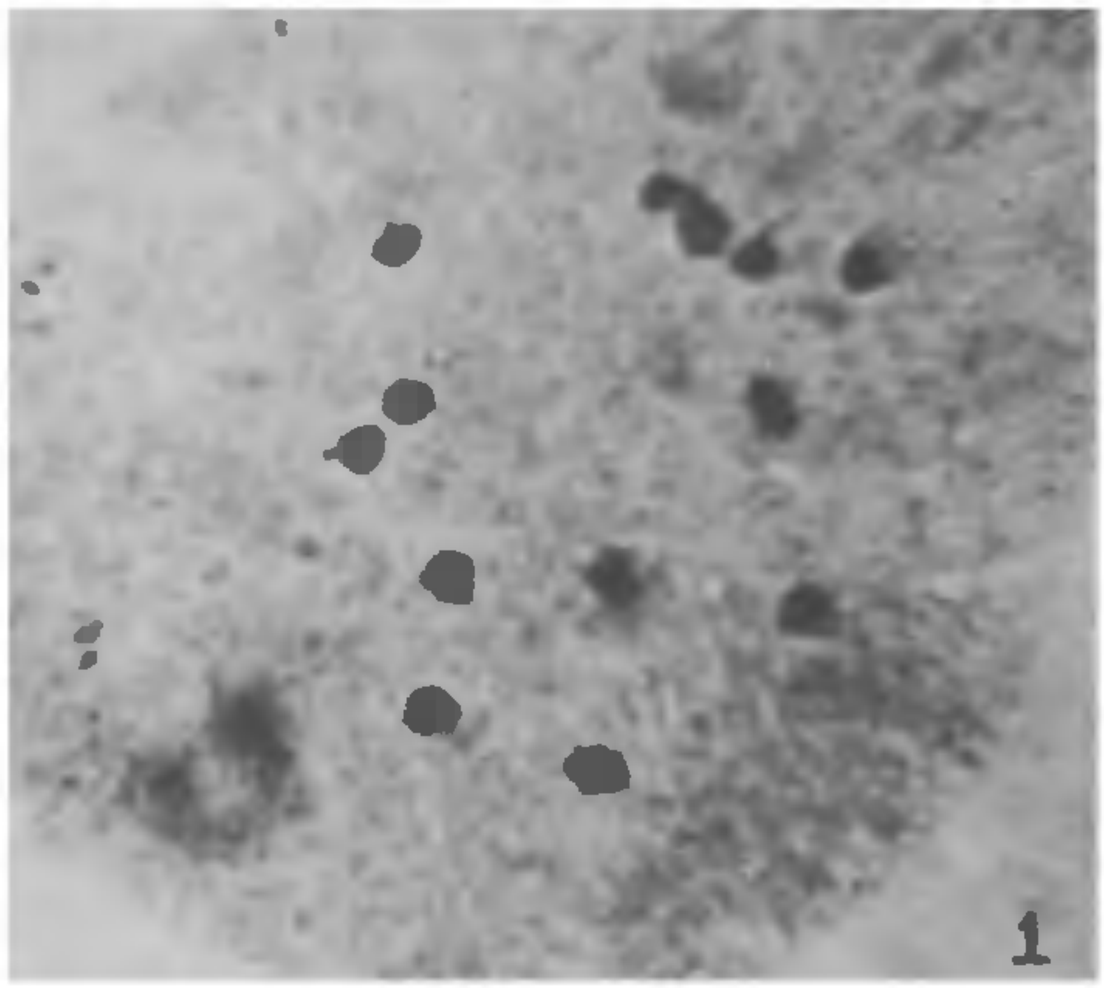
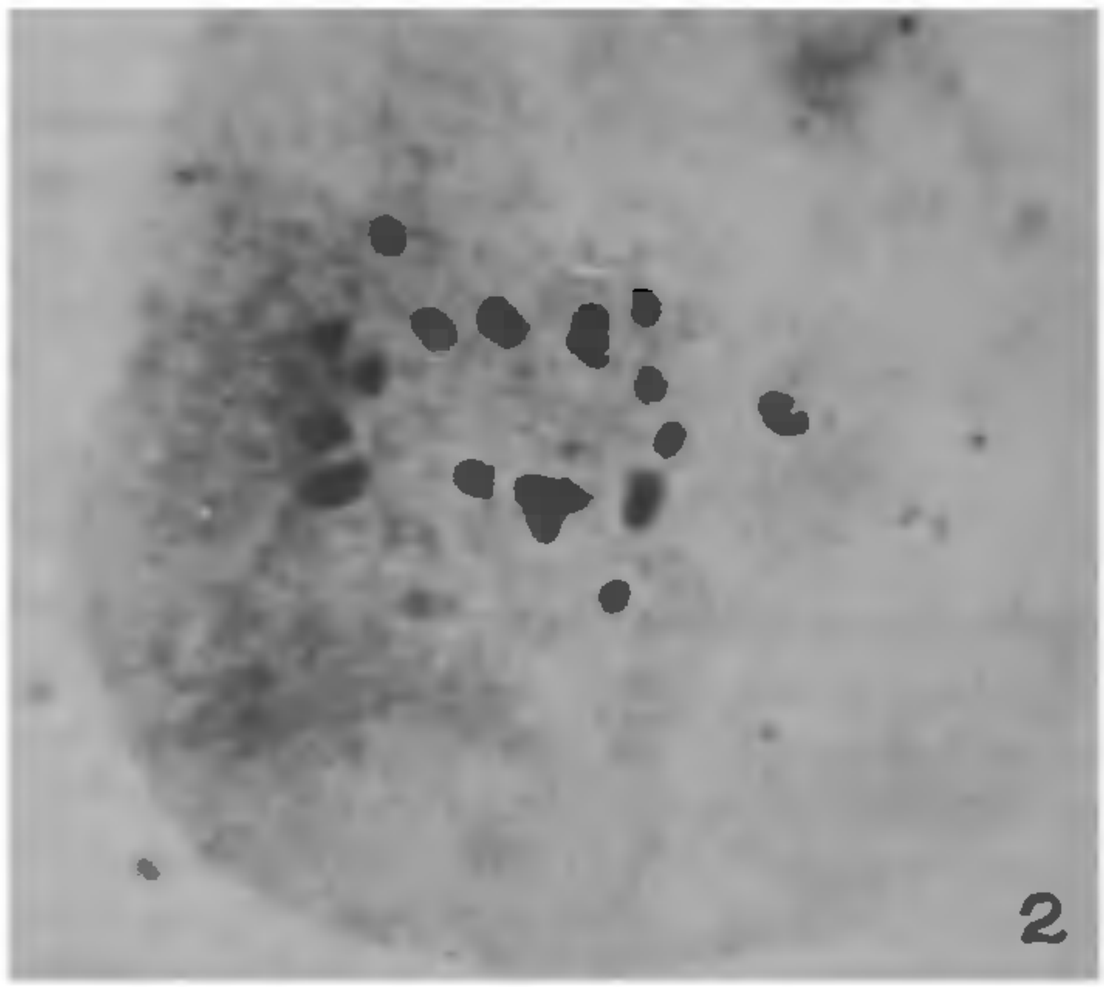
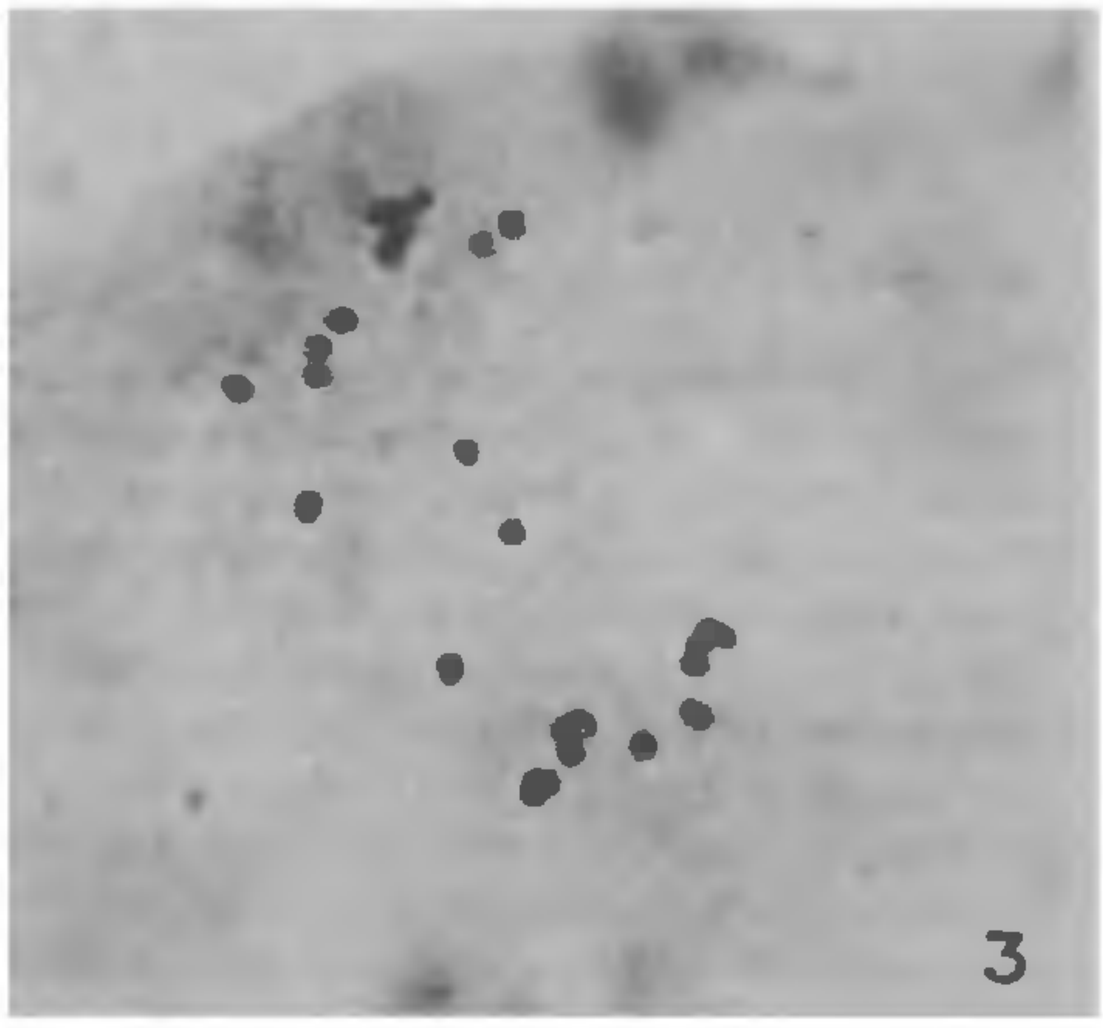
THE genus *Jasminum* (family Oleaceae) contains a number of economically important shrubs which are used as a source of essential oil. Of the five species of jasmines grown at this Institute, regular seed set under open pollination was observed in three species viz *Jasminum auriculatum* Vahl., *J. calophyllum* L. and *J. flexile* L. Of the remaining two species, *J. grandiflorum* L. sets seed rarely but no seed set was observed in *J. pubescens* Willd. Pollen fertility of these two seed-sterile species was also low (23% in *J. pubescens* Willd. and varied between 48 and 55% in three collections of *J. grandiflorum* L.) as compared to that of *J. auriculatum* Vahl. (90%), *J. calophyllum* L. (71%) and *J. flexile* L. (67%). Meiosis in pollen mother cells of these five species is reported here.

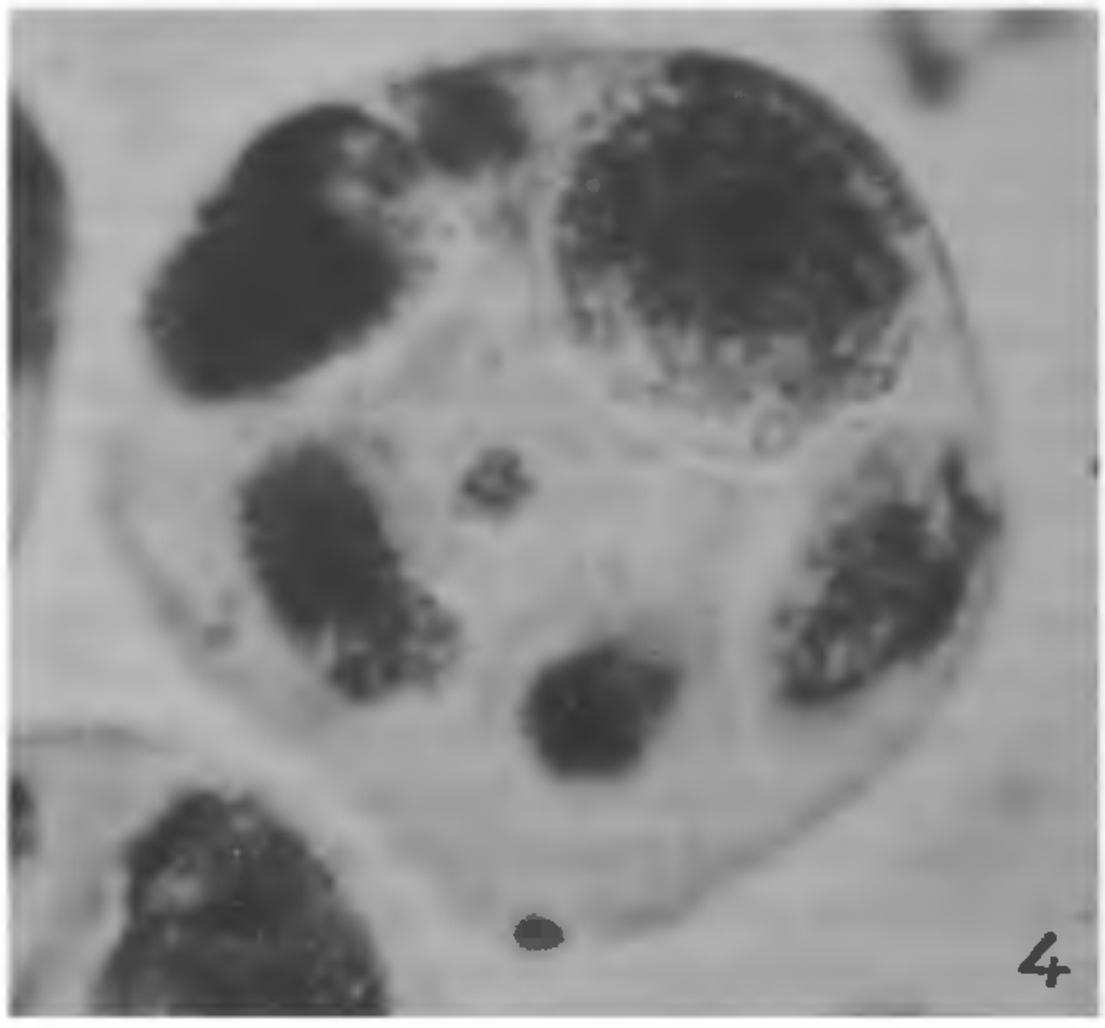
All the species reported were diploid with 26 chromosomes in their somatic complement. In the seed fertile species of *J. auriculatum* Vahl., *J. calophyllum* L. and *J. flexile* L., meiosis was normal, except for the occurrence of cytomixis and sticky chromosomes at metaphase and anaphase stages. However, in *J. flexile* in addition to tetrads, triads were occasionally observed. In *J. grandiflorum* L. thin tubular cytoplasmic connections were frequently observed, particularly in the early stages of Prophase 1. Stickiness of chromosomes leading to

† Contribution No. 52/86.









Figures 1–4. 1. 13IIs at MI in *J. grandiflorum;* **2.** 9II + 8I at MI in *J. pubescens*; **3.** Laggards at AI in *J. pubescens*; **4.** Polyad containing 7 microspores in *J. pubescens*.

clumping of chromatin material was observed in 49% of MI and 63% of AI cells. In the remaining MI cells, 13 bivalents were observed (figure 1). Precocious movement of chromosomes and spindle disturbance were noted in a few cells. At AI stage, laggards and bridges were noted in 7% and 5% cells, respectively. Tetrad formation was normal in most of the cases, In *J. pubescens*, 5–11 bivalents accompanied by 4–16 univalents were observed in 25% of the MI cells (figure 2). Secondary association of 2–6 bivalents was observed in a few MI cells. Secondary association has also been reported in *J. sambac*[1]. At AI stage, laggards varying from 1 to 5 in number were noted in 20% cells (figure 3). Multipolar separation at AII was also observed in a few cells. Polyads containing 5–8 microspores were noted in about 4% cells (figure 4).

Sterility in jasmines has been ascribed to various causes as cytomixis and defective gene function[2], persistent tapetal cells and other abnormalities during meiosis[3–5] In the seed-sterile species of *J. grandiflorum* and *J. pubescens*, both diploid and triploid forms have been reported[1,6,7]. Sharma and Sharma[1] suggested that the sterility in diploid jasmines may be due to gene mutation or structural changes of chromosomes. The present study indi-

cates that the sterility in *J. grandiflorum* may be due to genic causes. Dasgupta and Sharma[7] reported normal meiosis in male sterile *J. pubescens*. However, meiotic abnormalities like univalent formation, laggards, multiple pole formation and abnormal cytokinesis observed in this study may also be responsible for sterility in this species.

15 April 1986; Revised 22 September 1986

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AN EASY METHOD OF PRESERVING CULTURES OF ASPERGILLI AND PENICILLA

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MAINTENANCE of fungal cultures in the living state by repeated subculturing involves the risk of variation, and contamination, sometimes resulting in loss of strains. Dry preservation may greatly minimize these risks and this can be achieved by dispersing dry spores/mycelium in soil or silica gel. There are reports[1] where the cultures left to dry in the laboratory have retained viability for periods varying from 15 to 50 years[1].

In the present investigation, on storage moulds of wheat and maize, dry spores of various species of *Aspergillus* and *Penicillium* were obtained by the method described by Cropsey *et al*[2].

Cellophane discs (80 mm diam) were placed in petri dishes, wrapped in brown paper and sterilized in an autoclave at 1.1 kg cm^2 for 20 min. The sterile cellophane discs were laid asceptically on gelled salt malt agar (SMA) containing 7.5% sodium chloride, 2% malt extract and 2% agar, prepoured in 90 mm diam petri dishes. The surface of the cellophane discs was then evenly inoculated with suspension of spores in sterile water from two week-old-cultures of *Aspergillus amstelodami, A. candidus, A. flavus, A. fumigatus, A. terreus, A. nidulans, A. niger, A. ochraceus, A. tamarii, Penicillium citrinum, P. notatum, P. funiculosum* and *P. oxalicum* grown on SMA. Two replicates for each isolate were kept. The inoculated plates were incubated at 25°C for two weeks. By this method the mycelial growth remained confined to the medium, while the conidiophores and conidia were produced on the exposed cellophane surface. These cellophane discs were then lifted along with the conidial mass and dried between the sterile blotters for three days at room temperature (27–35°C) which were then aseptically placed in sterile butter paper envelopes, sealed in polyethylene bags and stored at 10–12°C.

The cultures thus stored in May 1973 were tested for viability initially after 1 year and subsequently after every 2 years till June 1984. Viability was again tested in June 1987 i.e. after 14 years, all were found viable vigorously growing. *Aspergillus candidus* gave better sporulation when compared to the culture of the same maintained by periodic transfer during this period.

The method described is easy, less cumbersome and requires very little storage space and at the same time quite effective in retaining the viability and maintaining the purity of the cultures.

22 May 1985; Revised 17 July 1987

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EFFECT OF MERCURY ON *PISTIA STRATIOTES*

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EFFECT of mercury on *Pistia stratiotes* L. shows that all the treatments, except up to 1 ppm, decreased Hill reaction activity of chloroplasts over control data. But up to 1 ppm of the metal, there was no significant change in the variable over control (average control value : 224 μmol 2, 6-dichloroindophenol reduced/mg chlorophyll/hr). Mercury concentrations above 1 ppm were toxic to the plant. The inhibitory effects (about 99% of control) were pronounced with the treatment of 20 ppm of mercury tested.