done following standard method[5]. Plots of i_d vs $(h_{eff})^{\frac{1}{2}}$ are straight lines. Slopes of conventional log-plots are 31 ± 2 mV for both the metal ions. These results indicate diffusion controlled reversible two-electron reduction processes. With the increase in AHP concentration the $E_{\frac{1}{2}}$ shifts towards more negative potential (Table I), showing somplex formation. The plots

TABLE I

Variation in $E_{\frac{1}{2}}$ with ligand concentration

Cd (II)-AHP		Pb (II)-AHP	
Ligand concentration (mM)	$-E_{\frac{1}{2}}$ (V *vs.* SCE)	Ligand concentration (mM)	$-E_{\frac{1}{2}}$ (V *vs.* SCE)
3·0	0·778	3·0	0·576
4·0	0·789	5·0	0·590
6·0	0·799	6·0	0·594
7·0	0·804	7·0	0·598
8·0	0·807	8·0	0·601
9·0	0·810	9·0	0·604
10·0	0·813	10·0	0·606

of $E_{\frac{1}{2}}$ against the total ligand concentration show curvature for both the metal ions, indicating succes-sixe complex formation. DeFord and Hute method[6] as molified by Irving[7] has been applied for evaluation of stability constants. The values of $F_{cr, j}(x)$ have been plotted against the ligand concentiation (x). The plots of $F_2(x)$ show a horizontal line in both cases showing formation of two complex species, 1 : 1 and 1 : 2, metal to ligand. The values of the stability constants as read from these plots are: Cadmium (II). $\beta_1 = 5 \cdot 0 \times 10^7$ and $\beta_2 = 8 \cdot 75 \times 10^{10}$; lead (II), $\beta_1 = 30 \cdot 0 \times 10^7$ and $\beta_2 = 13 \cdot 10 \times 10^{10}$.

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PRETREATING PROPERTIES OF ENDRIN ON PLANT CHROMOSOMES

IT was found that certain insectides had a radiomimetic effect on mitotic chromosomes of *Vicia faba* and *Lathyrus satitus* leading to various abnormalit es (Reiger and Michaelis, 1962 and Reddy and Rao, 1969). This note reports the effect of Endrin EC 20 on the plant chromosomes.

To observe the pretreating effect, root tips were treated with 0·1 % Endrin EC 20 (Kilburn Product) solution for 1·5 to 2 hours at 10° C.

Pretreated root tips show contraction and metaphase chromosomes took deep stain. The function of spindle is destroyed and dies not interfere with the spreading of the chromosomes during squash preparation. The centromeric region becomes distinct and visible in prophase–metaphase chromosomes (Fig. 1 *a* and *b*). At prophase hetero- and eu-chromatin regions may be differentiated (Fig. 1 *c*) and the relational coiling of paired chromatids are visible.

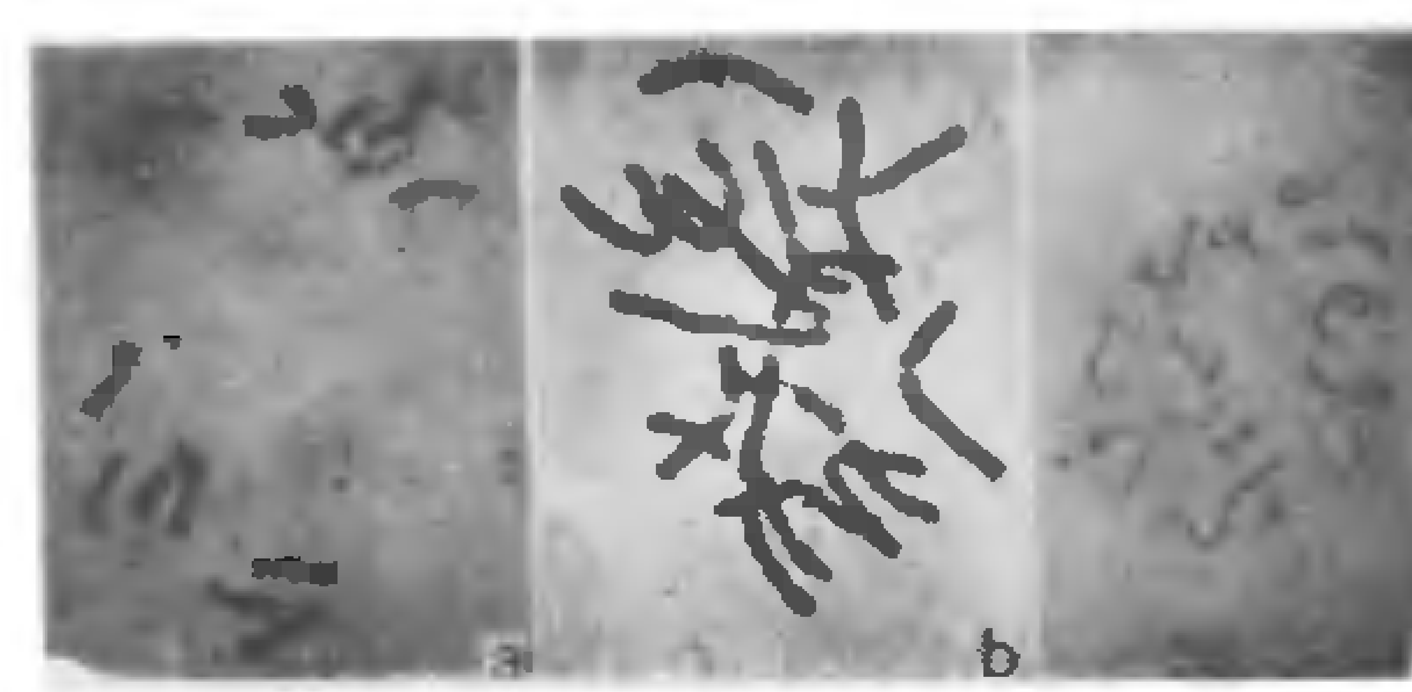
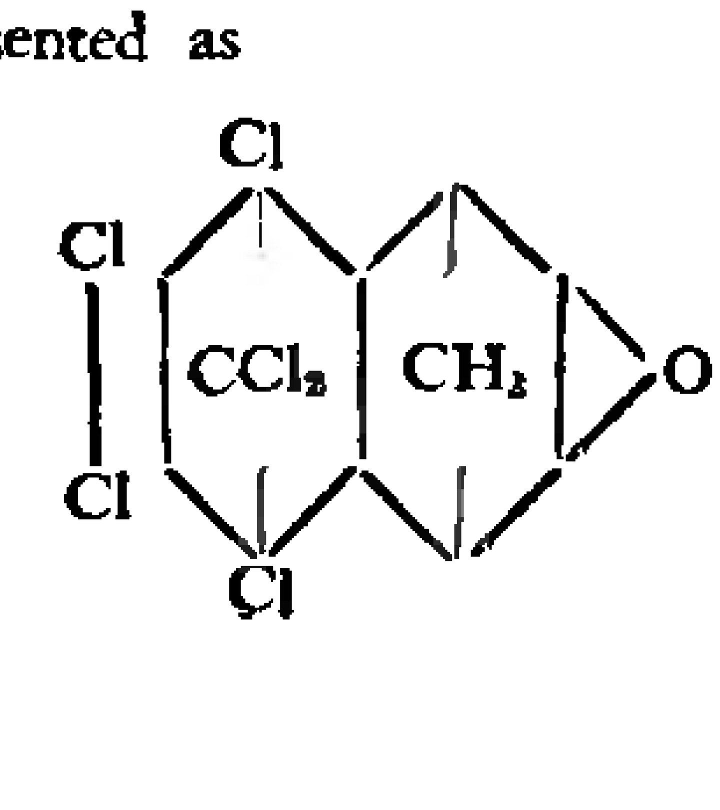


FIG. 1. Pretreating effect of Endrin in (*a*) *Lathyrus sativus*, anaphase, (*b*) *Allium cepa*, metaphase and (*c*) Proph se of *Pisum sativum*.

The Endrin technique has been tested in about fifteen species both monocotyledonous, *e.g., Allium cepa, Hordeum vulgare, Zea mays* and dicotyledonous, *e.g., Lathyrus sativus, Vicia faba, Pisum sativum, P. arvensis, Nigella sativa, Cicer arietinum, Lens esculentum, Aloe* sp., *Capsicum* sp., *Trigonella foenum–graecum* plants, with larger chromosome size and it proved favourable in most materials. However, higher concentration and overtreatment showed high contraction, stickiness and fragmentation of chromosomes.

Endrin is a member of cyclodiene insecticides developed in 1945, by Julius Hyman in the United States The composition is Hexachloro epoxy octahydro endo-endo dimethanonapthalene. Flat formula of Endrin may be represented as



(O'Brien, 1967). Insecticides with chlorinated hydrocarbons, *e.g.*, gammexane (Hexachlorocyclo hexane) leads to abnormalities in spindle fibre formation (Sharma and Chaudhuri, 1959, 1961; Sharma and Ghosh, 1969; and Dutta, 1966). Endrin also contains Hexachloro group which may be responsible for showing similar properties.

Endrin EC 20 is probably one of the cheapest pretreating chemicals known so far. Its application in other plant species is under investigation.

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HERMAPHRODITISM IN THE MURREL, *CHANNA PUNCTATA* (BLOCH, 1793)

HERMAPHRODITISM has been reported in several teleostean fishes[1-3]. Among freshwater fishes of India, hermaphroditism has been reported in *Hilsa ilisha*[4] (an anadromous fish), *Cirrhina reba*[5], *Barbus* (*Puntius*) *sitgma*[5], *Mystus vittatus*[7], *Clarias bactrachus*[8], *Heteroneustes fossilis*[9] and *Channa striatus*[10]. However, this is the first report on hermaphroditism in *Channa punctata*.

During my studies on *Channa punctata* from Guntur (Andhra Pradesh), I have come across a 202 nm long (TL) hermaphrodite. Though Dehadrai *et al.*[11] reported some colour difference between males and females of this species, I do not find it to be a reliable secondary sexual character in the large number of specimens (2,400) examined from Guntur. On dissection, it is easy to identify the sex of even juveniles measuring 70 mm TL, because both ovaries extend behind the vent, whereas the testes do not. In the present hermaphrodite, the gonad looks like a testis externally and does not extend behind vent. However, when examined microscopically, both gonads are observed to be ovotestes. The ovarian and testicular tissues are mixed, without any particular position for each (Fig. 1 *a*). All the ova are immature; yolk deposition has started in a few of the larger ova. The diameter of the ova ranges from 0·023 mm to 0·230 mm. The spermatocytes can be made out only under high magnification (× 1,000) (Fig. 1 *b*).

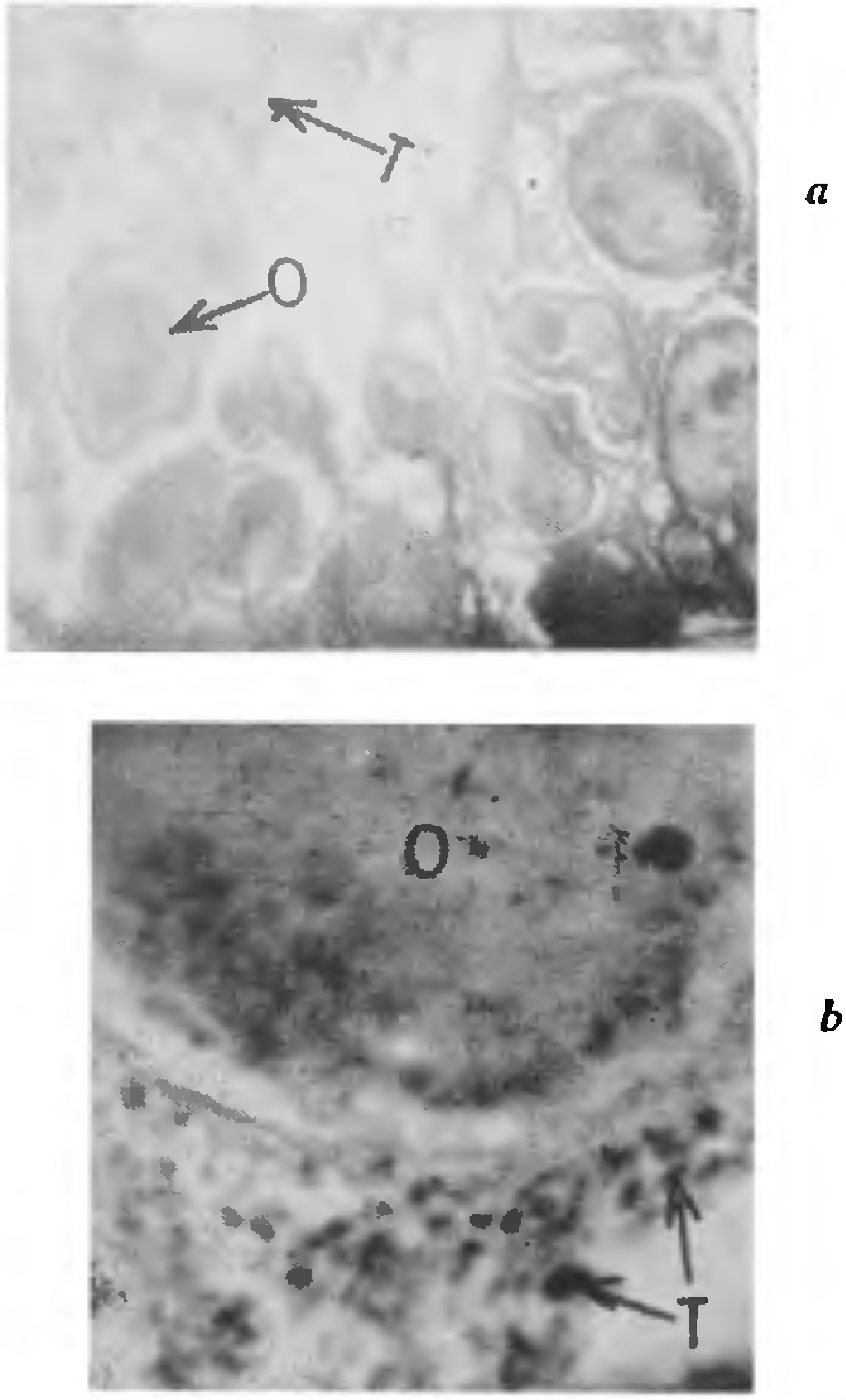

FIG. 1 *a* and *b*. Microphotograph of section of ovotestis to show (*a*) arrangement of ovarian (O) and testicular (T) tissues, × 100. (*b*) spermatocytes (T) and part of an ovum (O), × 1,000.

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