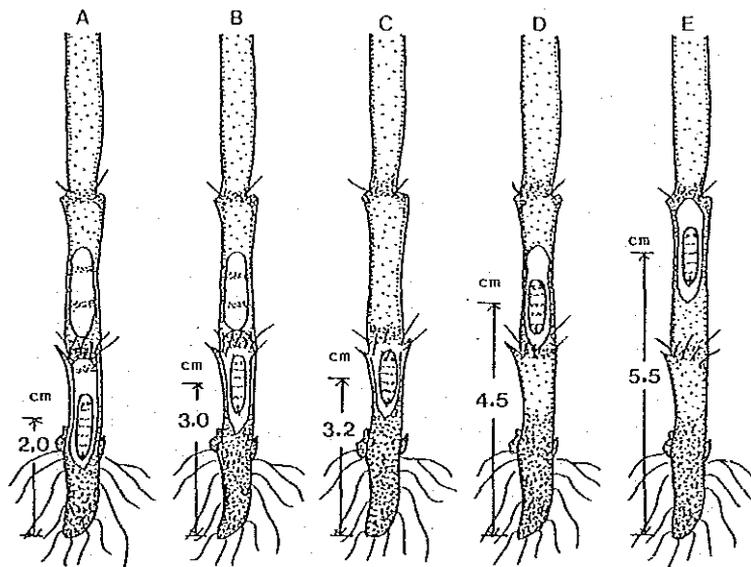


#### 4. Habitat pupa dalam batang tanaman padi

Waktu inokulasi larva yang berbeda dapat mempengaruhi habitat pupa di dalam batang padi. Pengamatan dilakukan dengan pencabutan rumpun contoh yang diinokulasi untuk kemudian diadakan pembelahan batang dari rumpun tersebut. Letak pupa dalam batang diukur, yaitu tingginya dari pangkal batang. Hasil pengamatan ditunjukkan dalam Gambar 30.

Posisi/letak pupa yang terendah dalam batang yang diinokulasi larva pada periode sebelum pembentukan bulir padi, yaitu setinggi kira-kira 2 cm dari pangkal batang. Letak pupa dalam batang ini makin meninggi sejalan dengan fase pertumbuhan tanaman padi itu sendiri. Letak tertinggi pupa yaitu pada batang tanaman yang diinokulasi larva pada masa pemasakan bulir (kira-kira 5.5 cm dari pangkal batang). Berdasarkan keadaan ini, maka dapat dipertimbangkan mengenai pengendaliannya terutama dalam hal pemanenan untuk memotong siklus hidupnya.



- A, B Inoculation of larva in the period before ears formed  
C Inoculation of larva in the heading time  
D Inoculation of larva in the dough-ripe stage  
E Inoculation of larva in the ear-ripening period

Fig. 30. Habitat of pupa in the rice stem by different inoculation period of hatched larva

Table 28. Life table of eggmass of yellow stem borer in the second generation

Grade of development	Period of development	No. of first	Factor of death	No. of death	% of death	% of accumulation death
Eggs	6	9850 (Eggmass 93)	Parasitic wasp *	3956	40.16	
			Predator **	1822	18.50	
			Secluded death	48	0.49	
			Small total	5826	59.15	59.15
Instar one	3	4024 (Group 93)	Predator Resistant variety	3316	82.40	92.81
Instar two	6					
Instar three	6					
Instar four	7					
Instar five	7	708 (Group 93)	Pathogenic fungus	89	12.57	93.72
Pupa	10	619 (Group 93)	Death of ecdysis time	108	17.45	94.81
Adult	-	511	Death of adult emergence time	102	19.96	
			Another	128	25.04	
			Small total	230	45.00	97.15
Female of oviposition	-	140				

\* Kind of parasitic wasp : (1) *Telenomus dignus* Gahan (Scelionidae)  
 (2) *Trichogramma japonicum* Ashmead (Trichogrammatidae)  
 (3) *Trichogramma dandro limi* Matsumura (Trichogrammatidae)

\*\* Kind of predator : *Paederus fuscipes* Curtis  
*Ophionea interstitialis* Schm

Integrated control

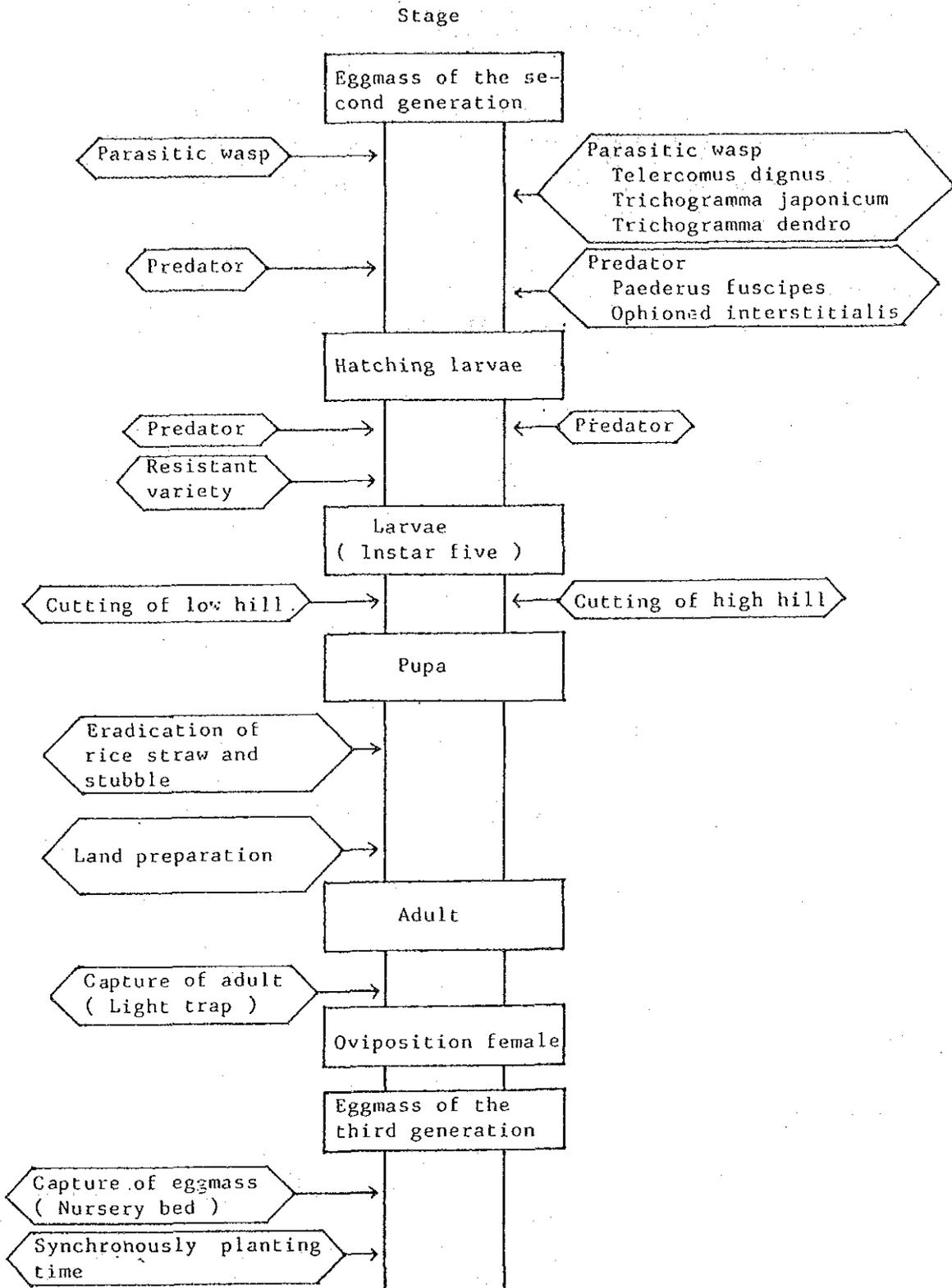


Fig. 31. Model of integrated control of the rice yellow stem borer

## Ecology of the Yellow Stem Borer

### Explanation of the photo

1. Adult male (Ma) and Female (Fe).
2. Egg-mass
3. Migrating behaviour of young larvae
4. Rice stem condition after migration of the 2nd., 3rd. larvae (St)
5. White head
6. Dead heart on rice leaf tip (De)
7. Small entrance hole of larvae (Seh)
8. Entrance hole of larva (Eh)
9. Larvae just after hatching in unhulled rice (L: Larva)
10. Larvae just after hatching in an unhulled rice (L: Larva)
11. Larvae enters the rice leaf sheath
12. Damaged rice stem by the 2nd., 3rd. instar larva (Da., A)
13. Larvae in the rice stem (L: Larva, Ti: Thin film)
14. Damage rice stem by the 2nd., 3rd. instar larva (Da, B)
15. Larva in the rice stem (L: Larva)
16. Larva and pupa of the yellow stem borer (L: Larva, P: Pupa)
17. The 4th. instar larva in the rice stem (L; Larva)
18. Larvae just after hatching in the rice seedling (L: Larva)
19. Damage by larva on neck-spike of rice stem (Da: Damage)
20. The 4th. instar larva enters the rice stem (L: Larva, Ti: Thin film)
21. The 3rd. instar larva enters the rice stem (L: Larva, Extr: Excrements)
22. The 4th. instar larva enters the rice stem (L; Larva, Co: Cocoon)
23. (A) (B). Damaged rice stem by yellow stem borer is indicated by colour change of rice leaf sheath.
24. (A) (B). Entrance holes of larva (Eh)
25. Adult emergence (Ad)
26. Pupa (Pu) and Molting-shell (Mo)
27. Exit hole (Ex)
28. Habitat of pupa in the rice stem (Pu: Pupa)
29. Study on come-fly of yellow stem borer in the nursery bed.
30. Durometer for measuring vein-space of rice leaf sheath.

31. Damage stem of yellow stem borer in the rice regrowth  
 A: White head. B: Egg mass C: Withered stem by insect infestation D: Entrance hole of hatching larvae  
 E: Eat marks of larva F: Migration of hatching larvae
32. C: Chorion of yellow stem borer  
 P: Egg parasitic wasp of yellow stem borer Egg parasitic wasp
33. A: Egg mass of yellow stem borer (La: Newly hatching larvae)  
 B: Newly hatching larvae  
 C: Egg-mass of yellow stem borer  
     (T.A.: Adult of Ticks)  
     (T.E.: Eggs of Ticks)  
 Eggmass and newly hatched larvae
34. Eggs of yellow stem borer (Eg: The 3rd days after the oviposition)

Photo 1

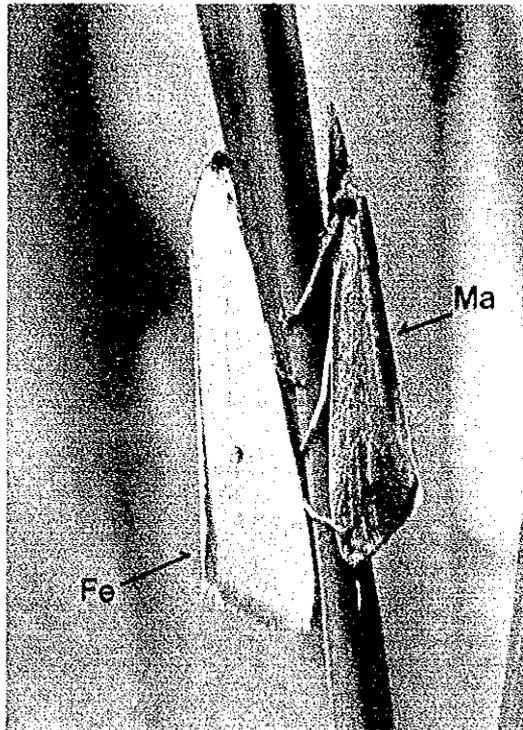


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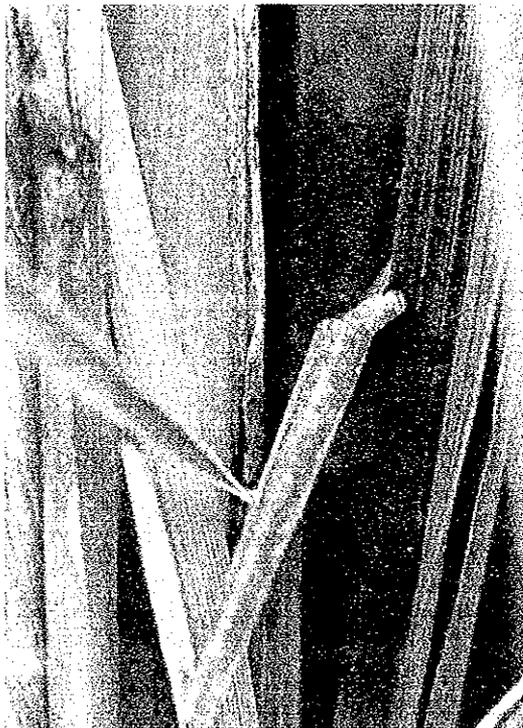
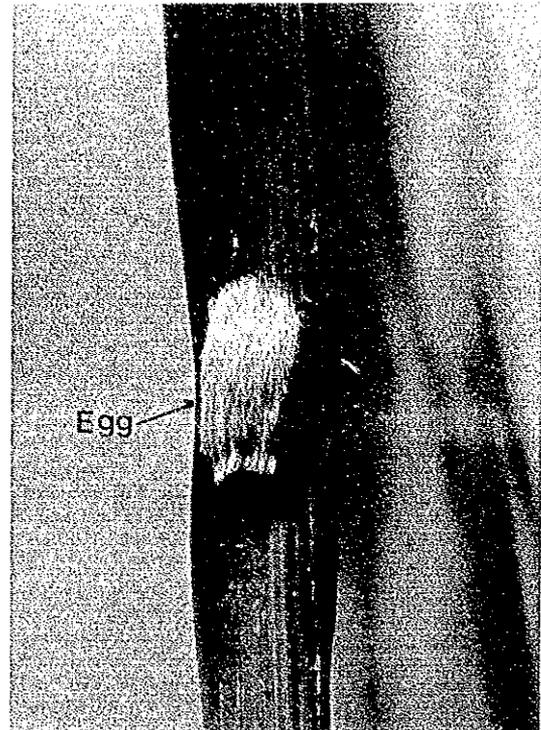


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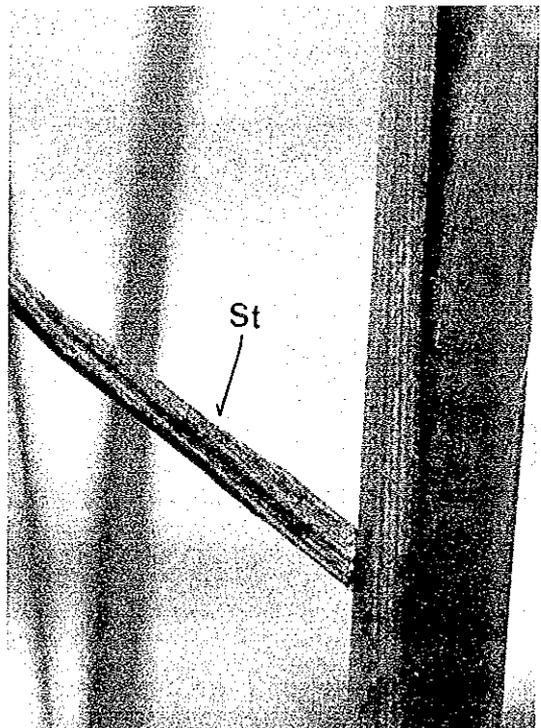


Photo 4



Photo 5



Photo 6

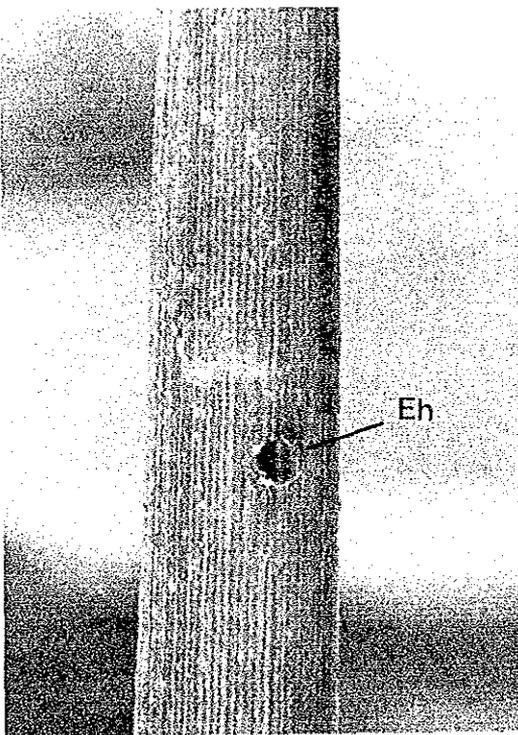


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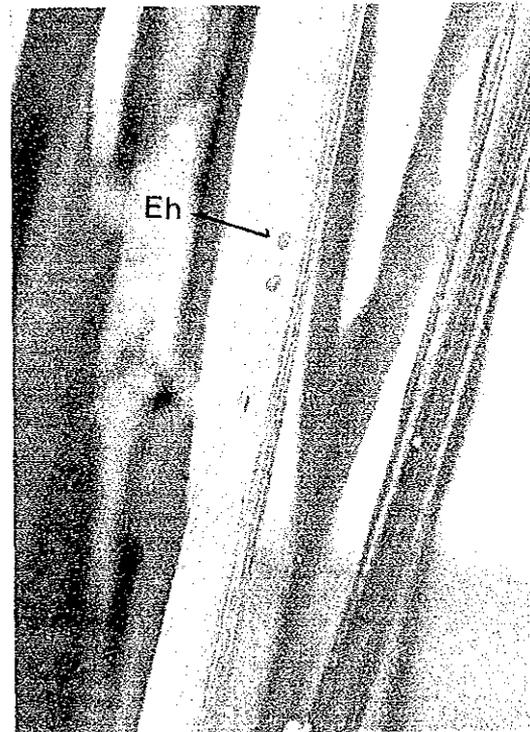


Photo 8



Photo 9

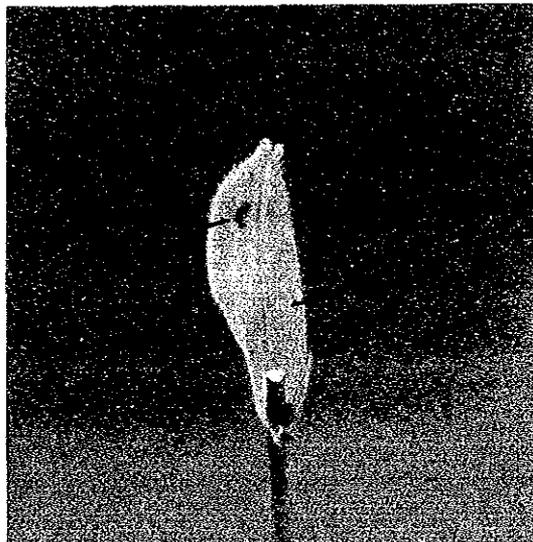
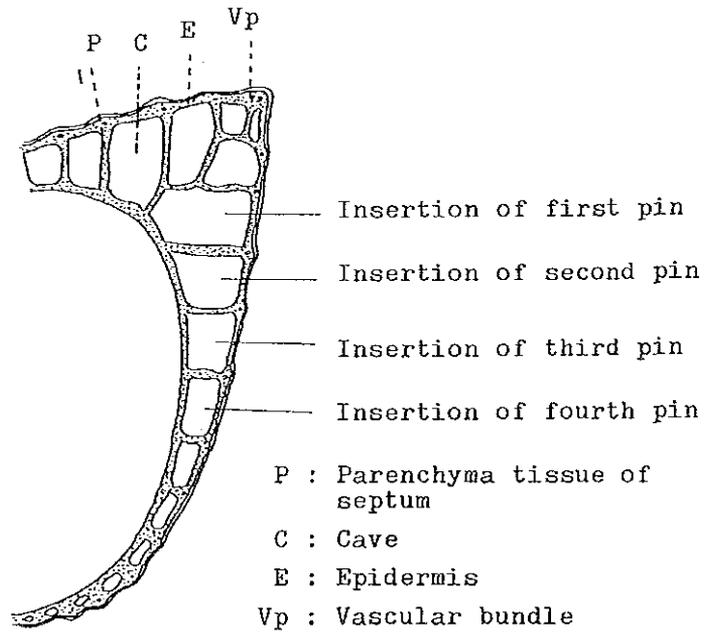
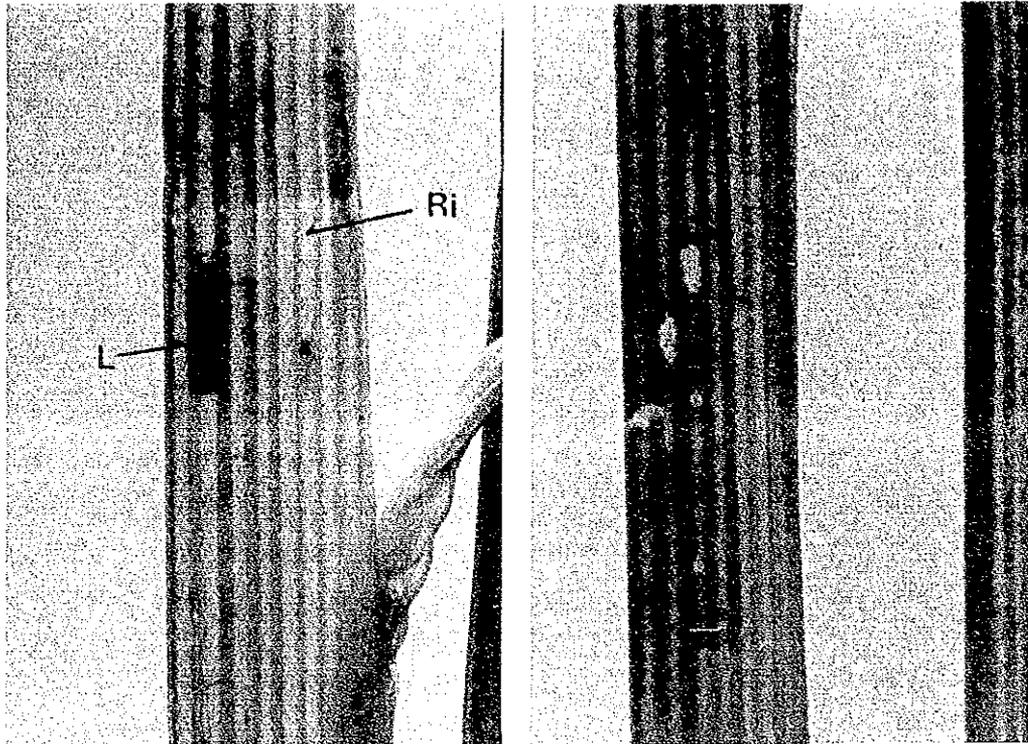


Photo 10



Photo 11



Inserting spot of insect pin and the cross section of rice leaf sheath



Photo 12

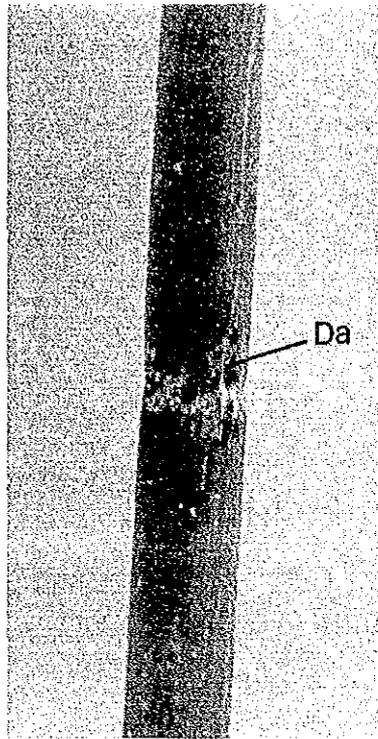


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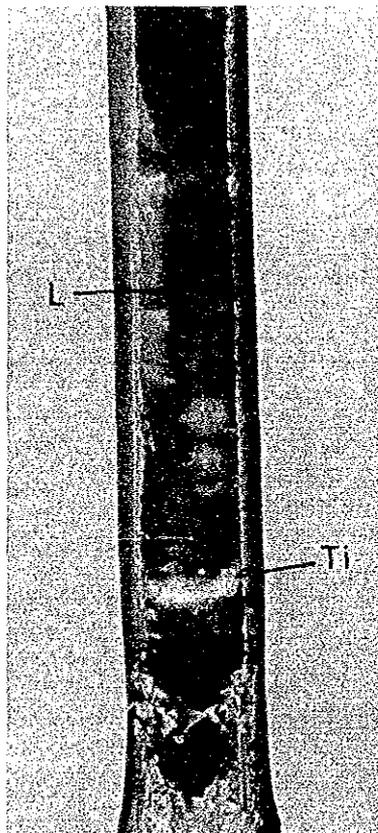
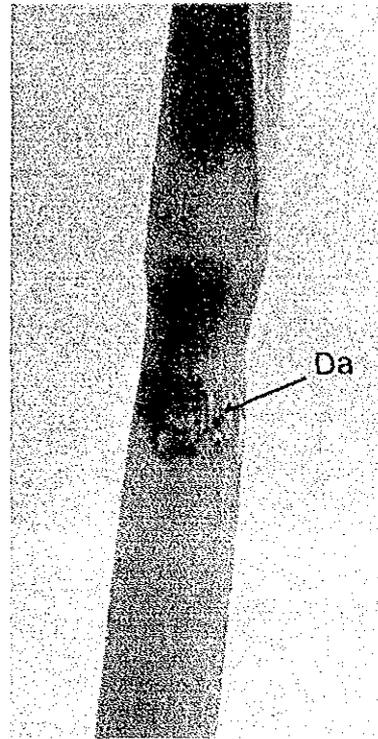


Photo 13



Photo 15



Photo 16

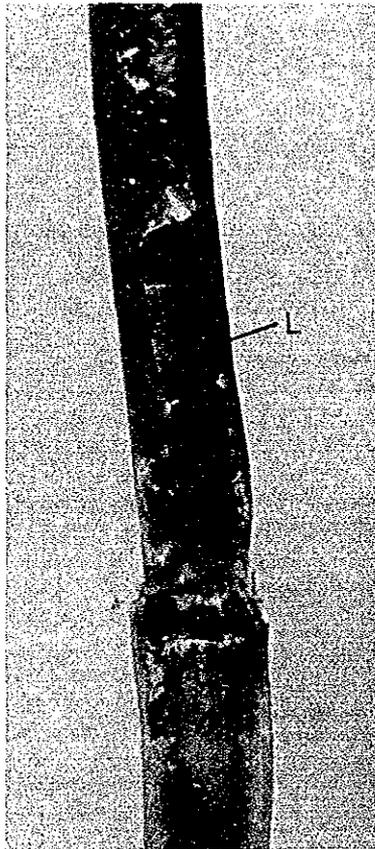
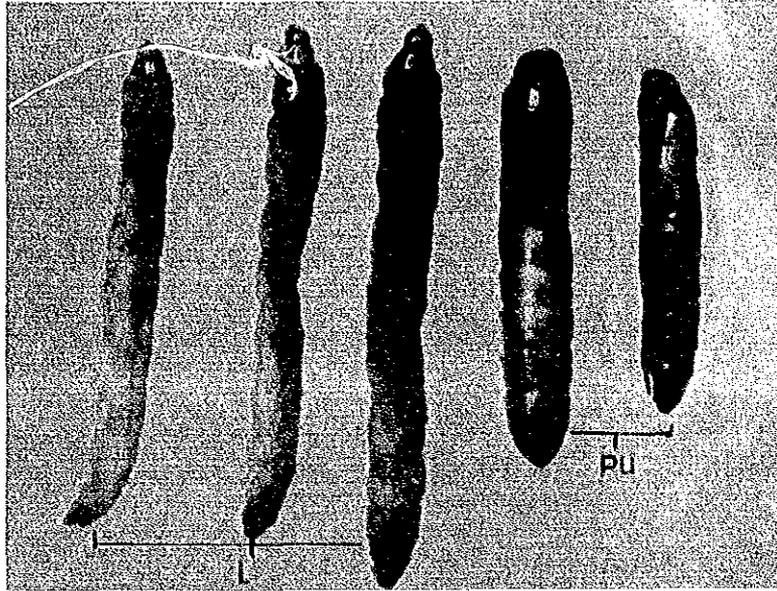


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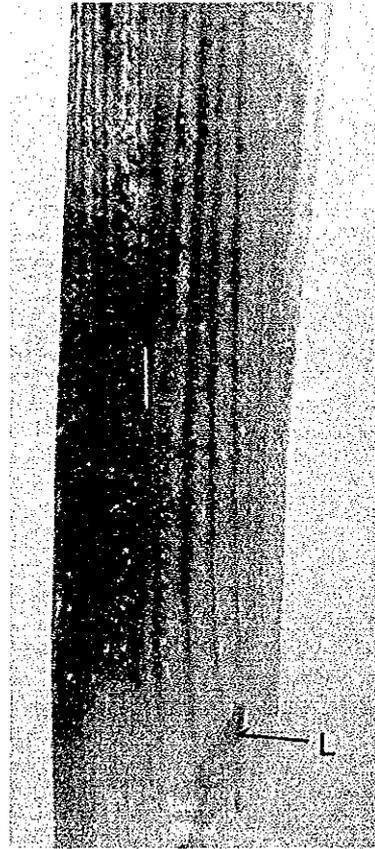


Photo 18



Photo 19

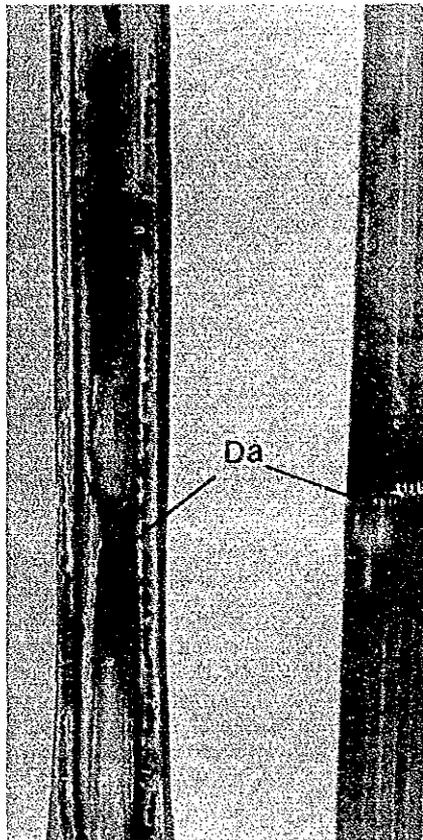


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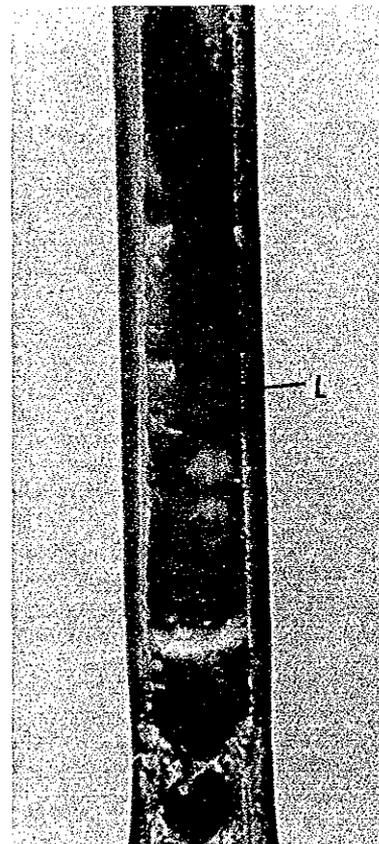
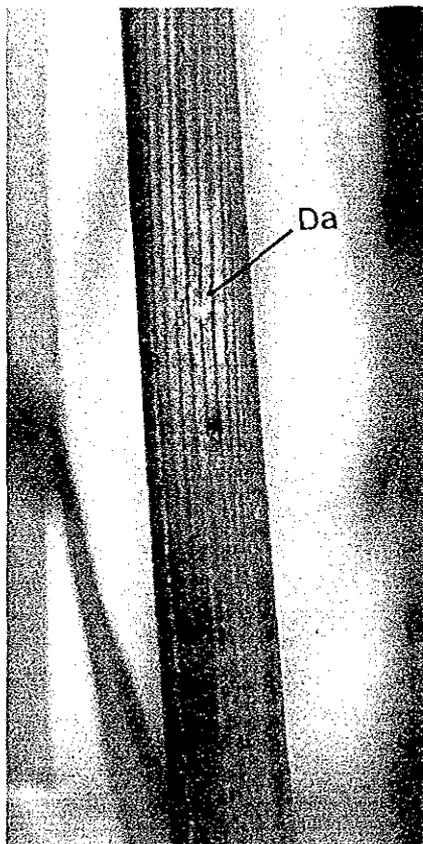
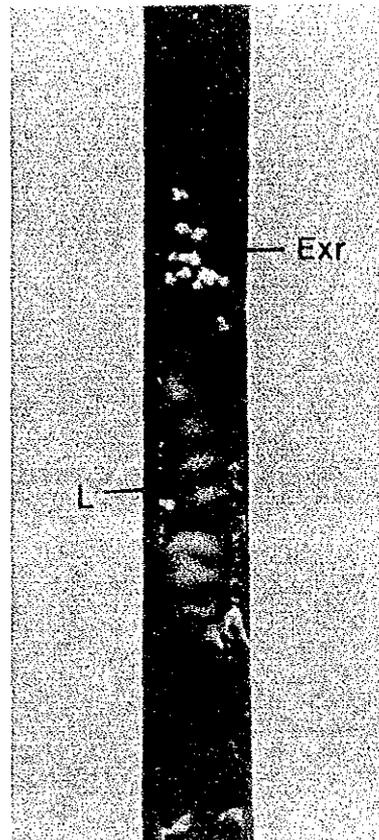


Photo 20

Photo 22



Photo 23

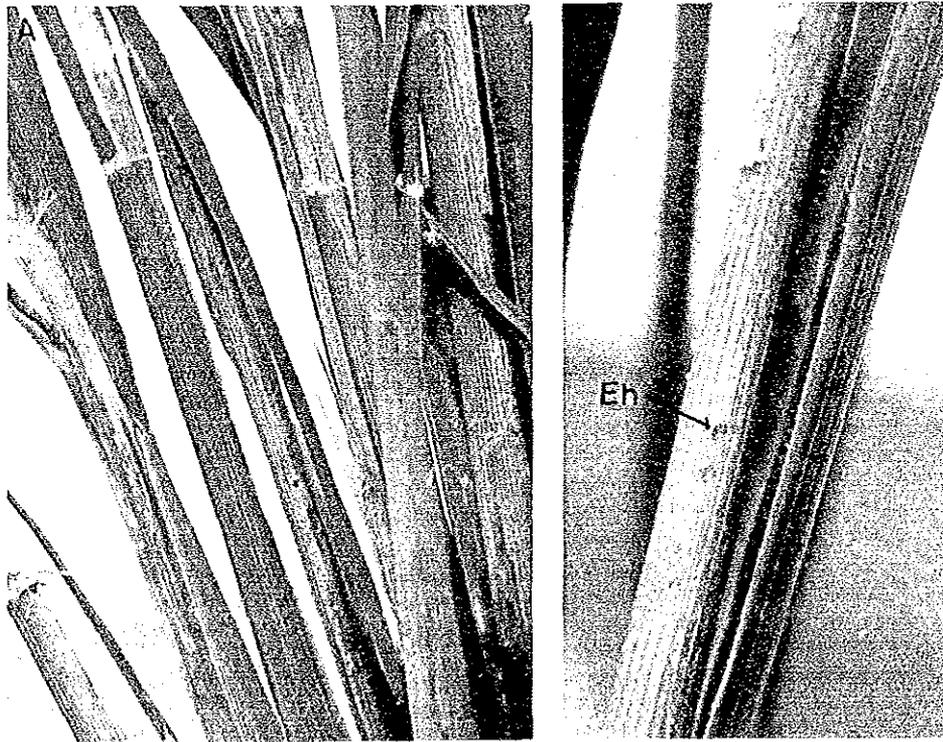
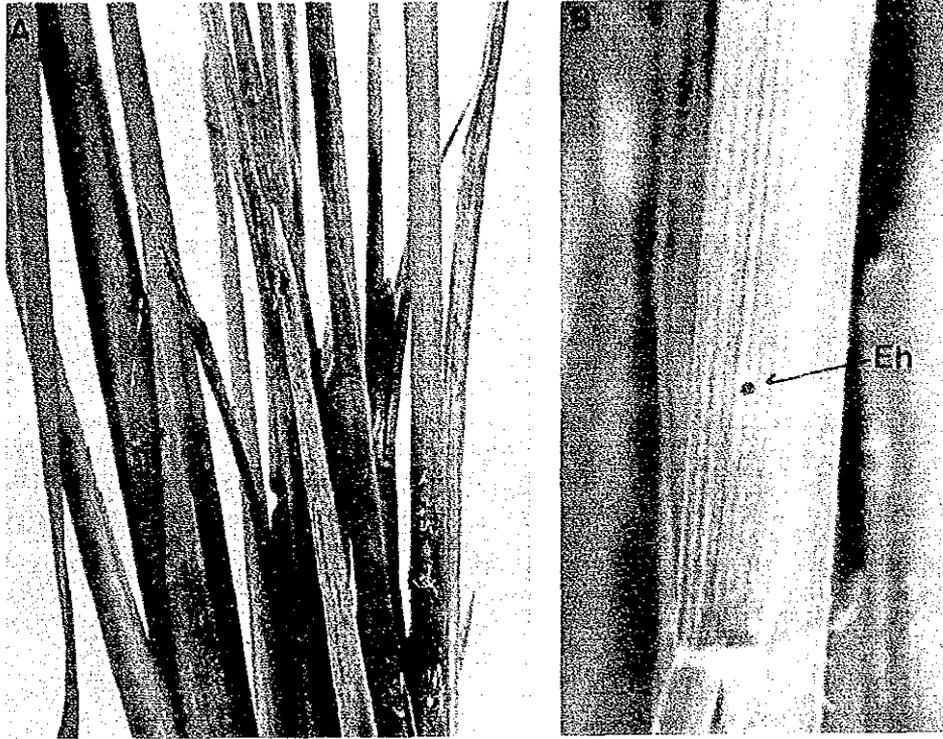


Photo 24



Photo 25



Photo 26

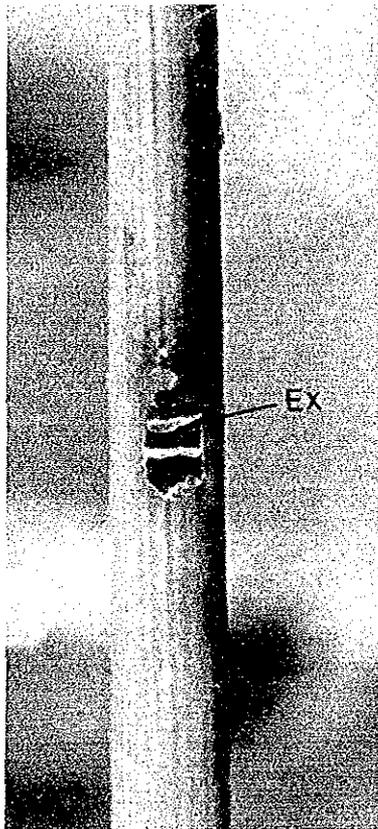
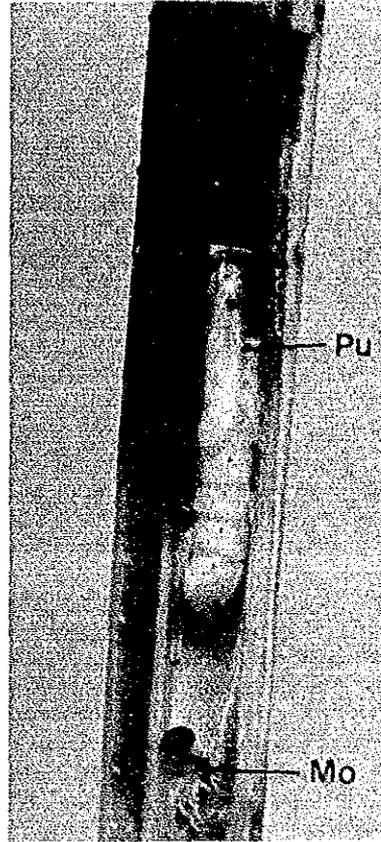


Photo 27



Photo 28



Photo 29

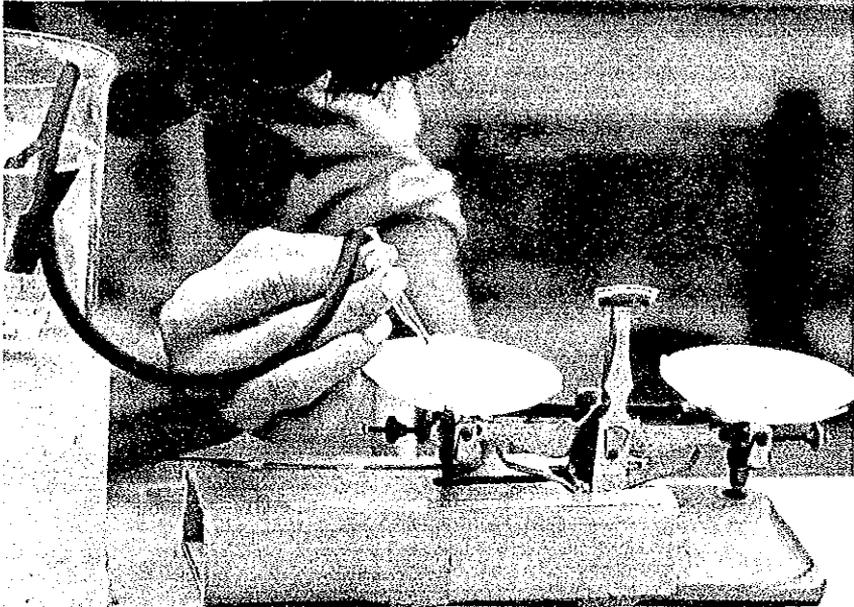


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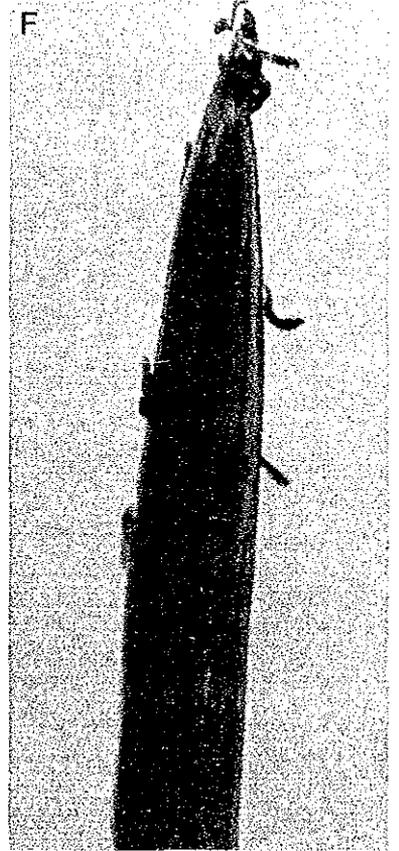


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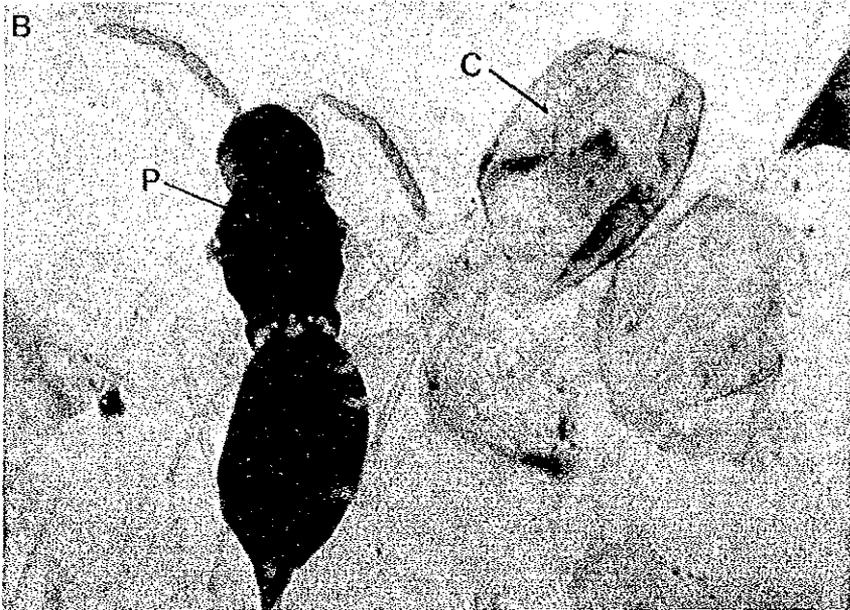


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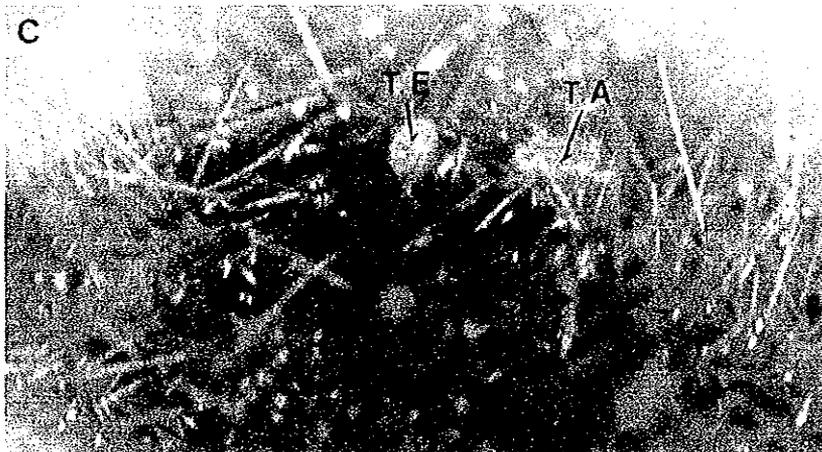
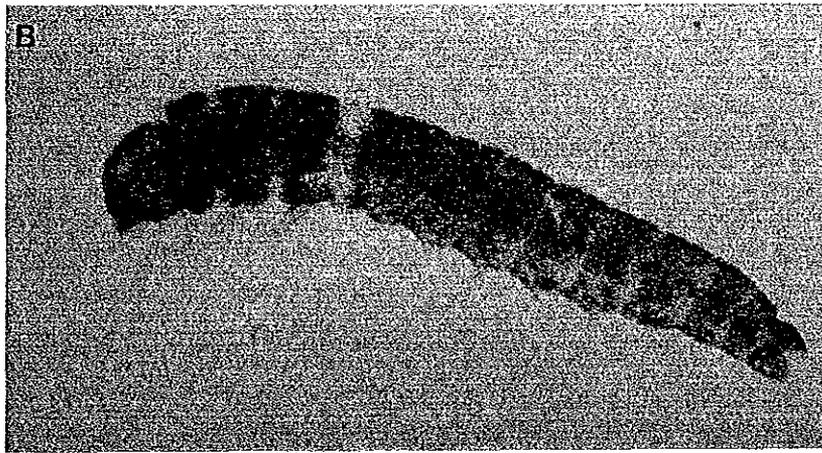
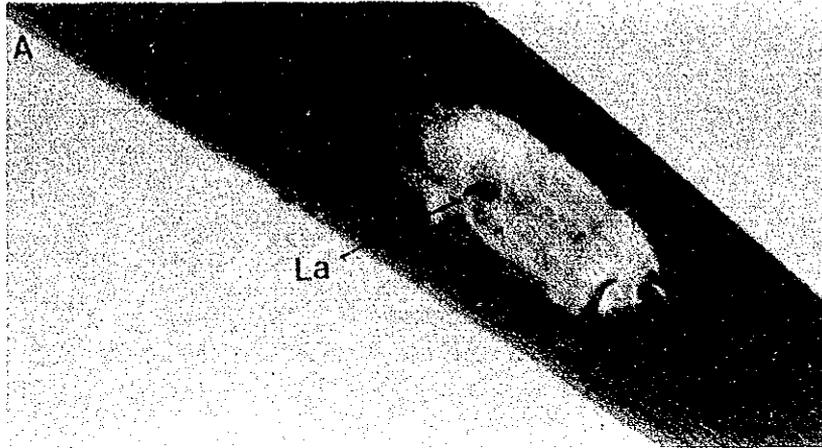


Photo 33



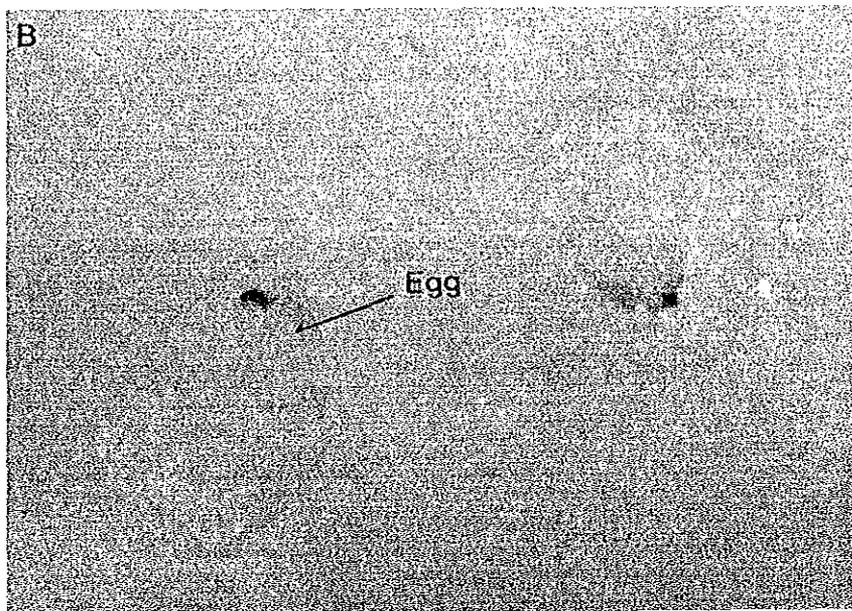
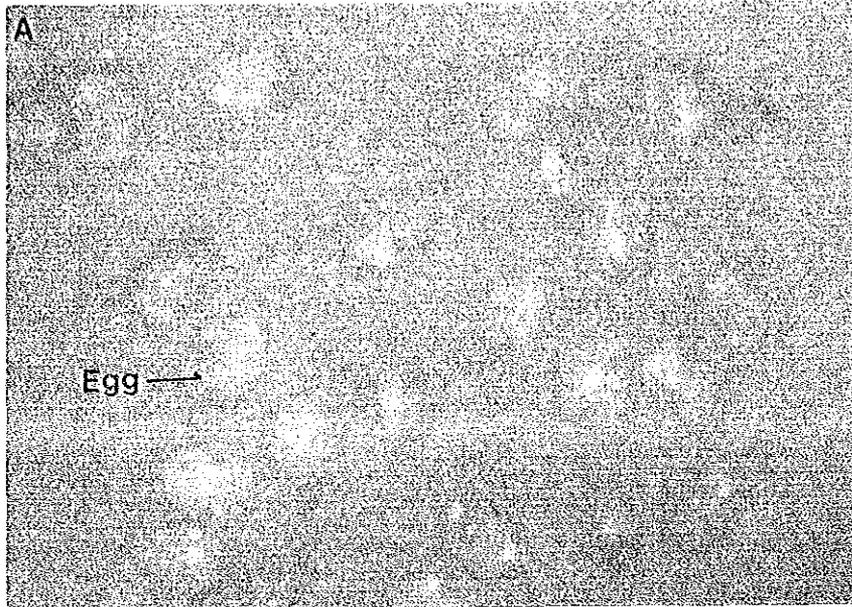


Photo 34





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