A STUDY OF CERTAIN MEMBERS OF THE SOUTH AFRICAN XYLARIACEAE, WITH REFERENCE TO THE USE OF CULTURAL CHARACTERS IN CLASSIFICATION.

A thesis submitted to Rhodes University
for the Degree of Master of Science

by

Philip M.D. Martin.

October, 1960.

Volume II, Part 3.

Appendix II.

Figures 455 - 560.

(*Penzigia* and *Xylaria*).

Appendix III.

Tables and Graphs.

Fig.455. Stromata of Daldinia concentrica, 550; slightly larger than natural size. Note basal "foot" in the specimen top right.

Fig.456. Stromata of Daldinia eschscholtzii.

Fig.457. Longitudinal section through the outer part of the stroma of Daldinia concentrica.

Note, proceeding from the exterior inwards:-

con. granular dull purple covering from persistent conidiophores.

c.ect. carbonous ectostroma.

p. perithecium.

f.ent. fleshy to corky entostroma beneath and on both sides of the perithecia.

d.t. dark tissue of the entostroma composed of small cells.

l.t. light tissue of the entostroma composed of large cells partly disintegrating.

Both the light and dark tissue together constitute a zone.

Volume II, Part 1.

Fig.458. Stages in development of the stroma of Daldinia concentrica

Appendix II.

A. Very young stage showing stroma breaking through the substrate.

Figures 455 - 460.

con. red conidial layer.

ect. ectostroma, bright crimson.

(Penzig)

ent. entostroma, dark brown.

f.w. host tissue invaded by fungus.

Appendix III.

B. Young stroma showing appearance of numerous perithecia, in outermost layer of entostroma. Only a few of these succeed in developing.

Tables and Graphs

C.D. Development of the ostiole by irregular rupture of the outer layer of the stroma.

ect. pale crimson ectostroma bearing the remains of the conidial layer.

c.ent. dark outer layer of the entostroma, carbonous at maturity.

p. perithecium.

f.ent. fleshy entostroma.

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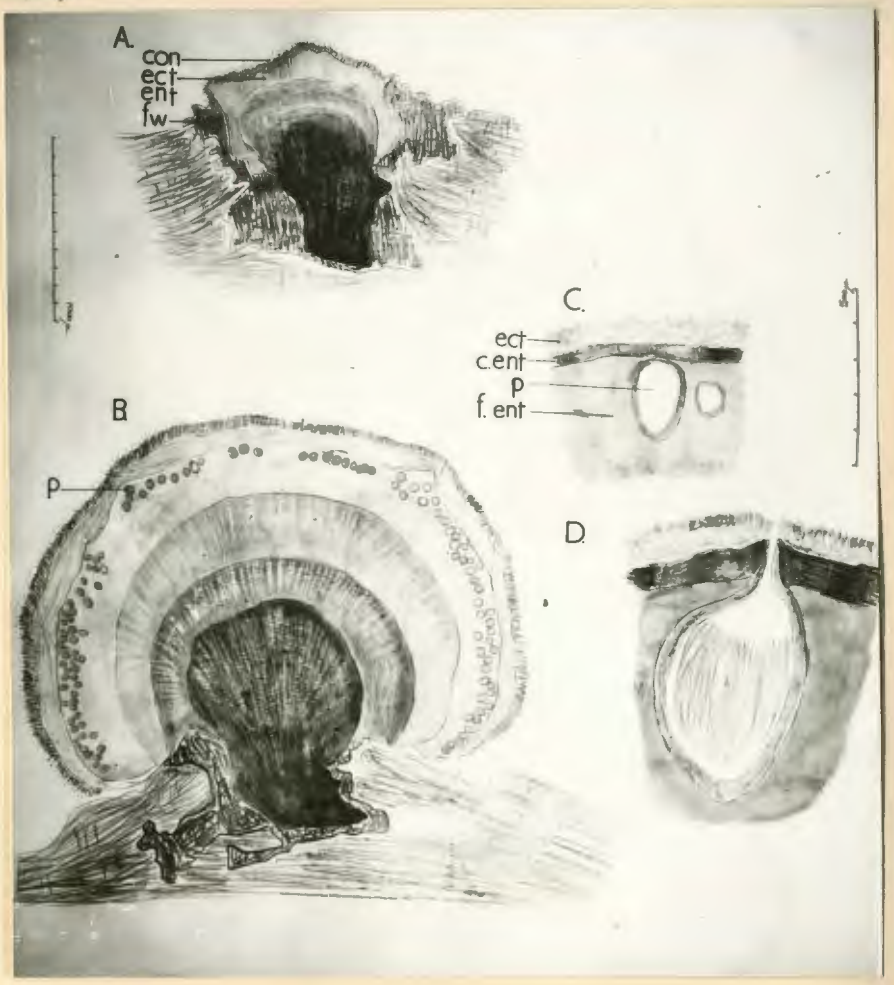
456.



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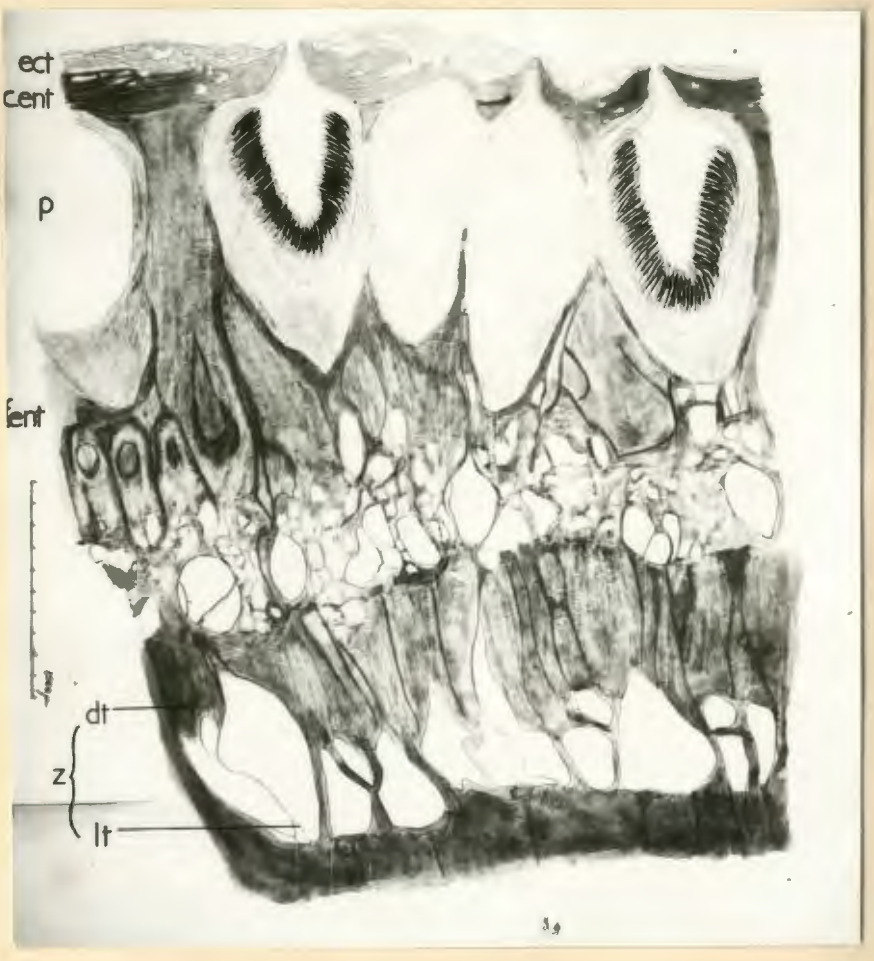


Fig.460. A.B. Asci & spores of Daldinia concentrica, 419 & 551.
C. Spores of Daldinia eschscholzii (asci not available)

Fig.461. Daldinia concentrica, 419; malt bottle culture 2 months old.

Fig.462. Same species; Leoni ans, same conditions.

Daldinia concentrica. Plate cultures.

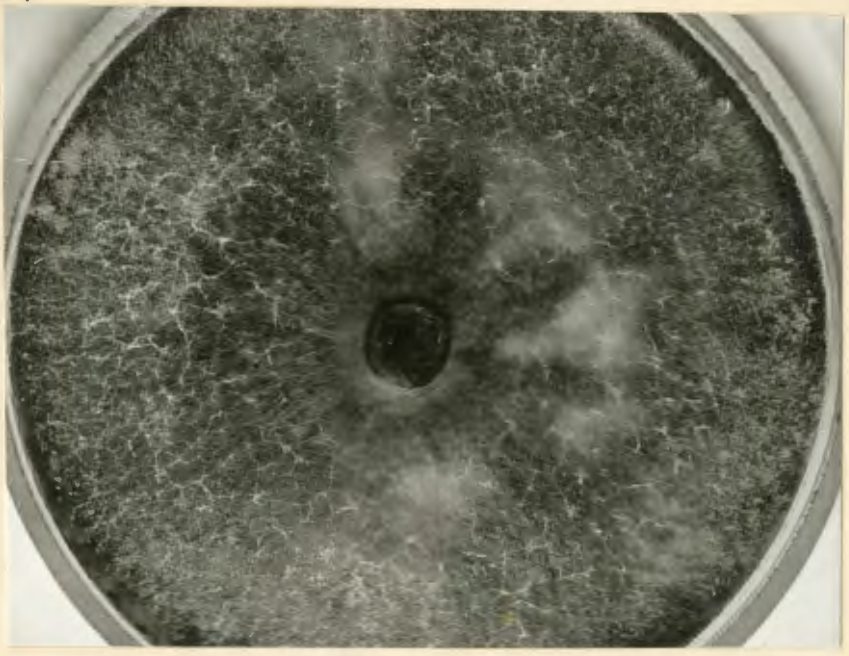
Fig.463. Strain 550; malt, 6 days old at 25°C.

Fig.464A. Strain 419; Czapek, 6 days old at 25°C to show colour of stain.

Fig.464B. Strain 419; malt, same conditions, showing deep accumulation of stain.

Fig.465. Strain 419; maize, same conditions.

464.



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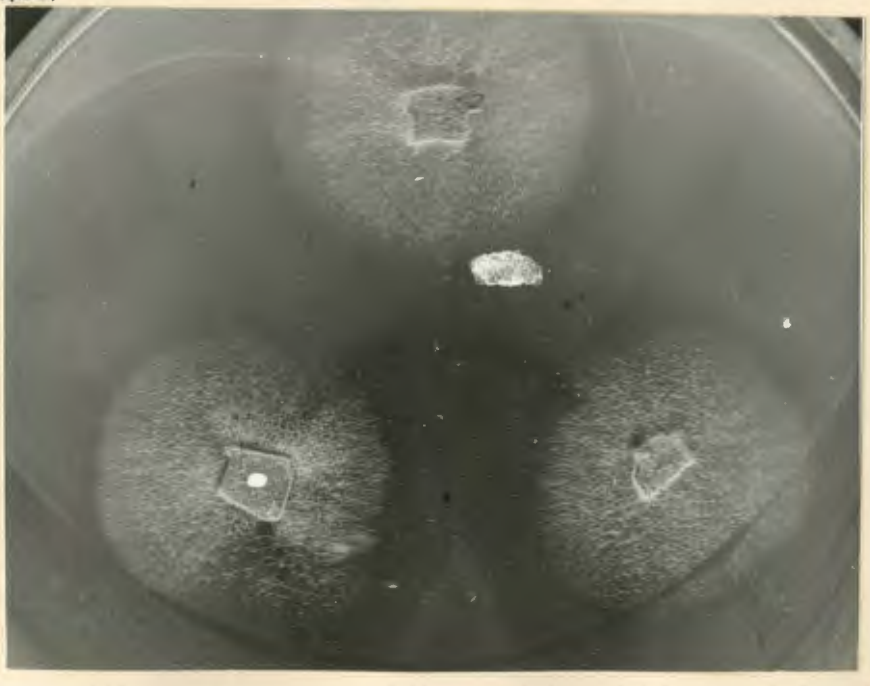

Daldinia eschscholtzii, 235.

Fig.466. Maize bottle culture, 1 month old.

Fig.467. Malt plate culture 8 days old at 25°C.

Fig.468. Maize plate culture, same donditions.

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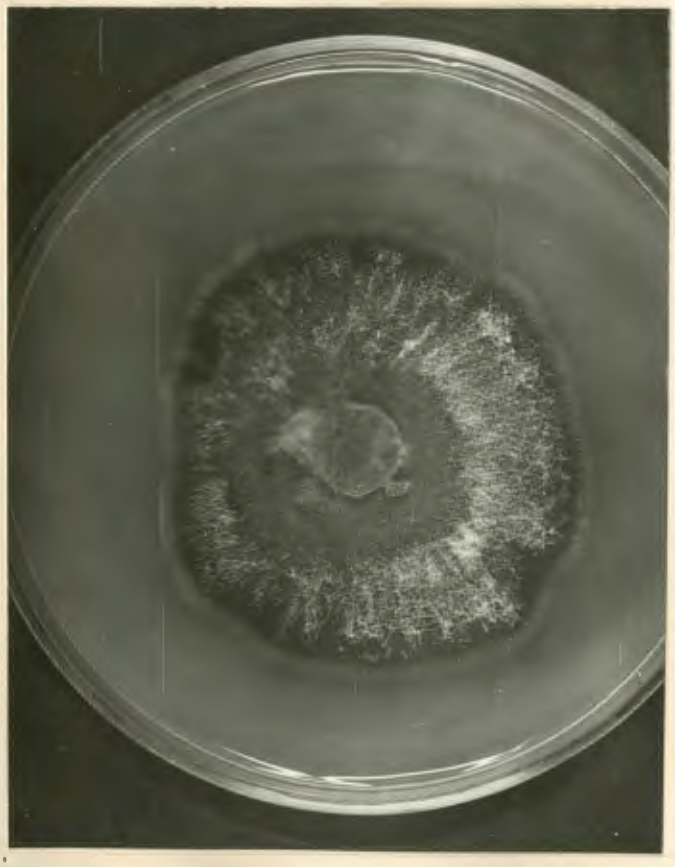

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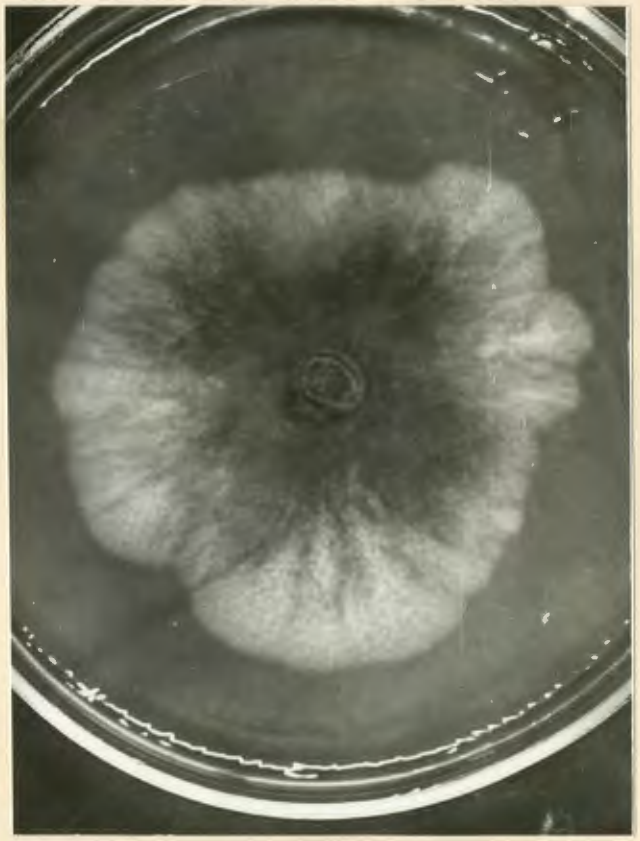


Fig.469. Marginal hyphae and secondary mycelium of:-

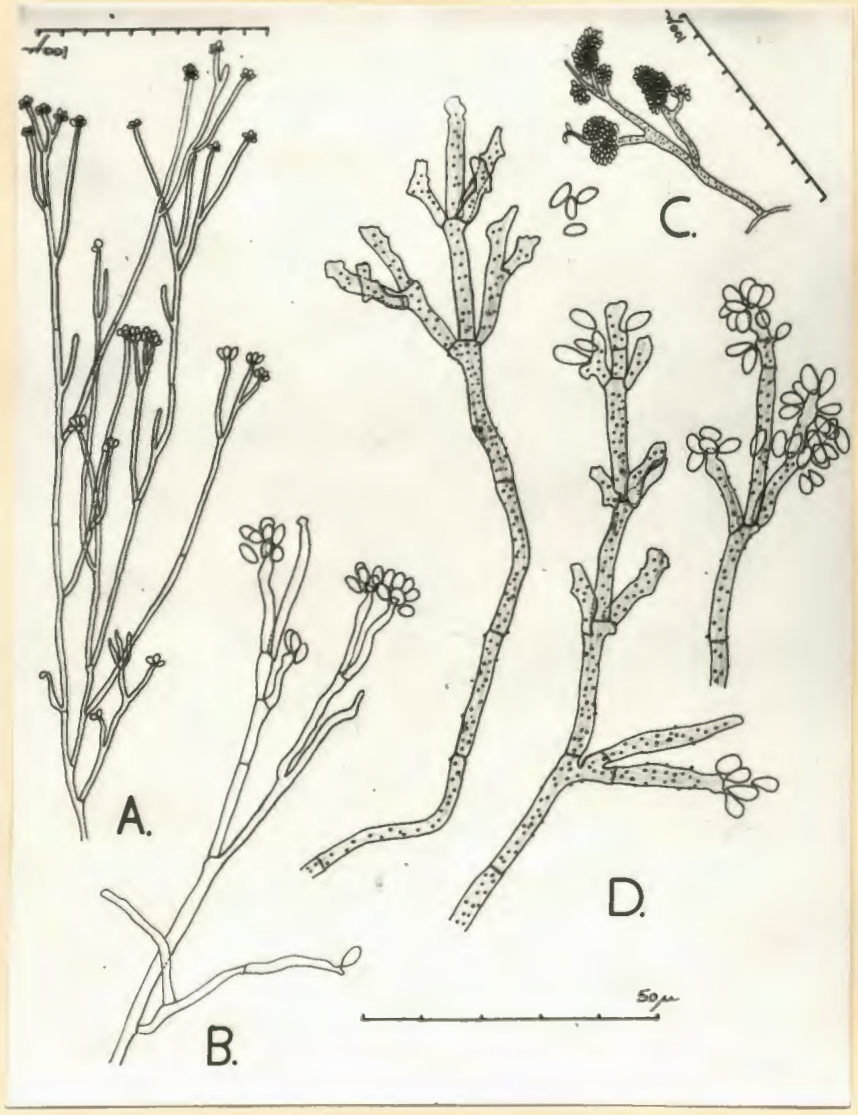
A & C. Daldinia concentrica, 550.

B & D. Daldinia eschscholtzii, 235.

Fig.470. Conidiophores and conidia of:-

A & B. Daldinia eschscholtzii, 235; showing entire conidiophore to low scale and part of it enlarged.

C & D. Daldinia concentrica, 419; same features.



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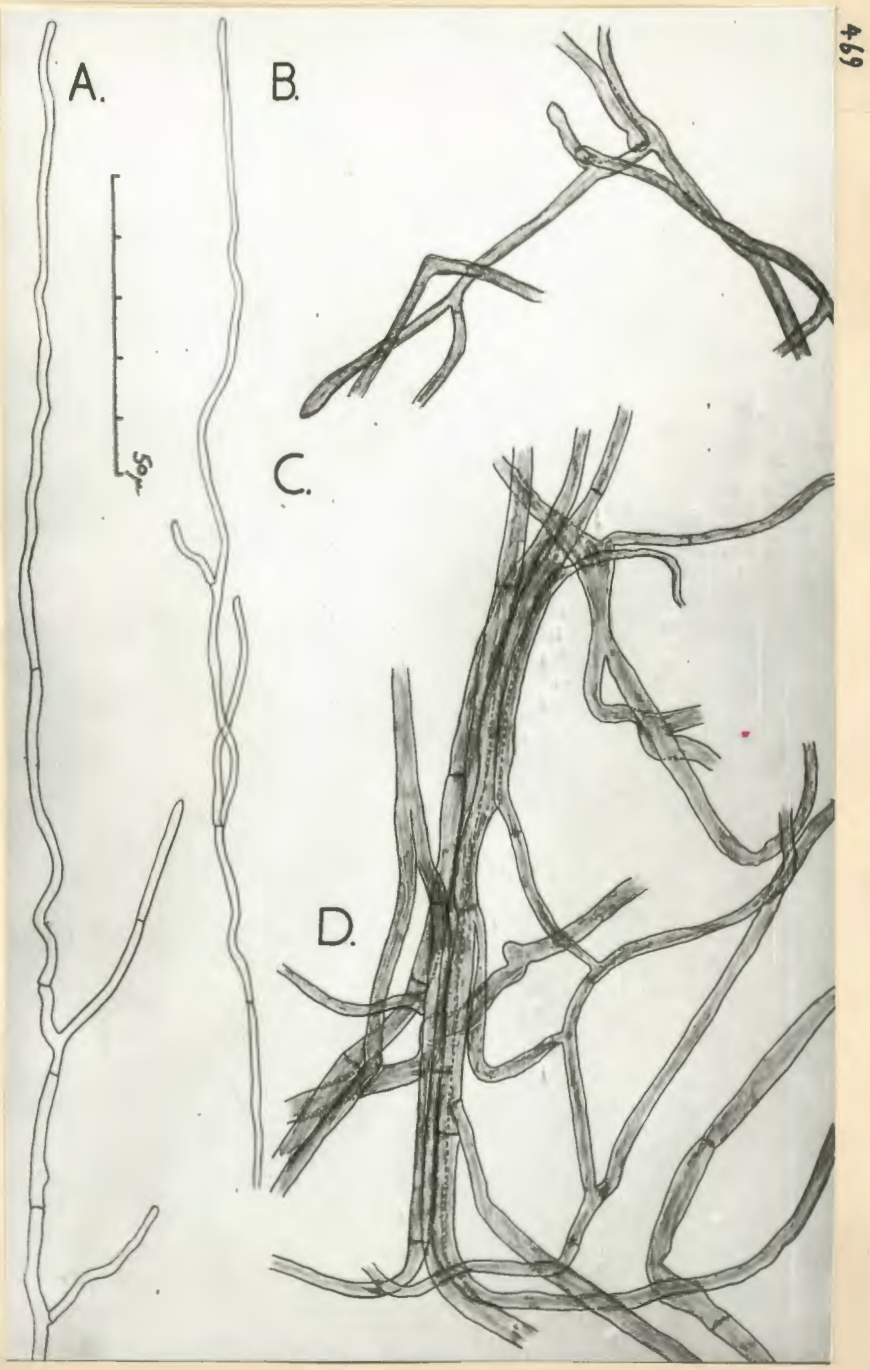

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Fig.471. Penzigia 1, 362.

A. Enlarged view of stroma.

B. Longitudinal section through stroma.

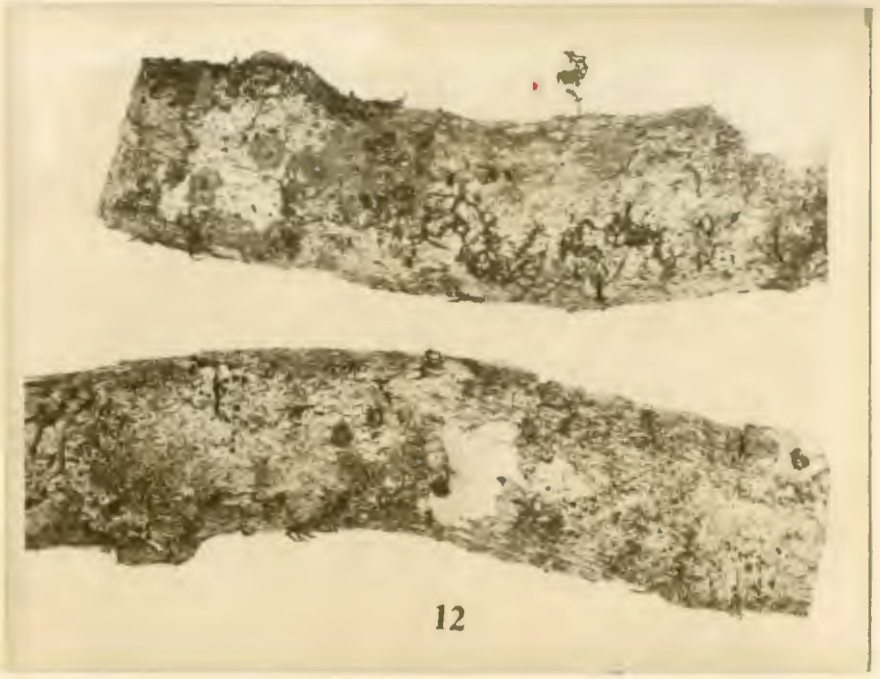
471 A.

471B.

Fig.472. Penzigia 2A, 200; showing stromata and conidial areas on the bark (marked s & c.), ½ natural size.

Fig.473. Enlarged view of the above, showing globose stromata.

472.



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473.

Fig.474. Penzigia 4, 302; surfaces view of stromata, ½ natural size.

Fig.475. Enlarged view of the same.

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475.

Penzigia 3, 390.

Fig.476. Surface view of stromata, ½ natural size.

Fig.477. Enlarged view of the same.

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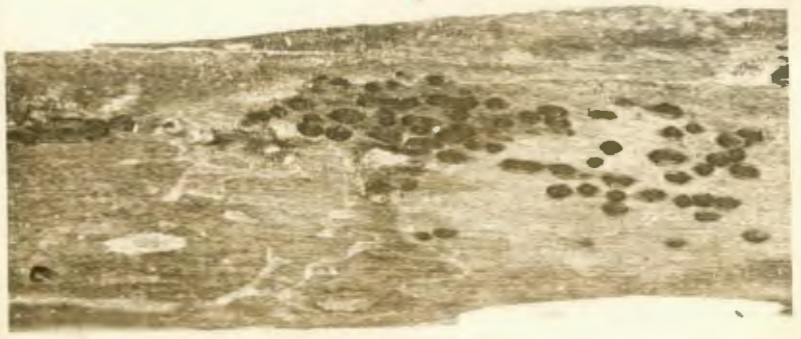

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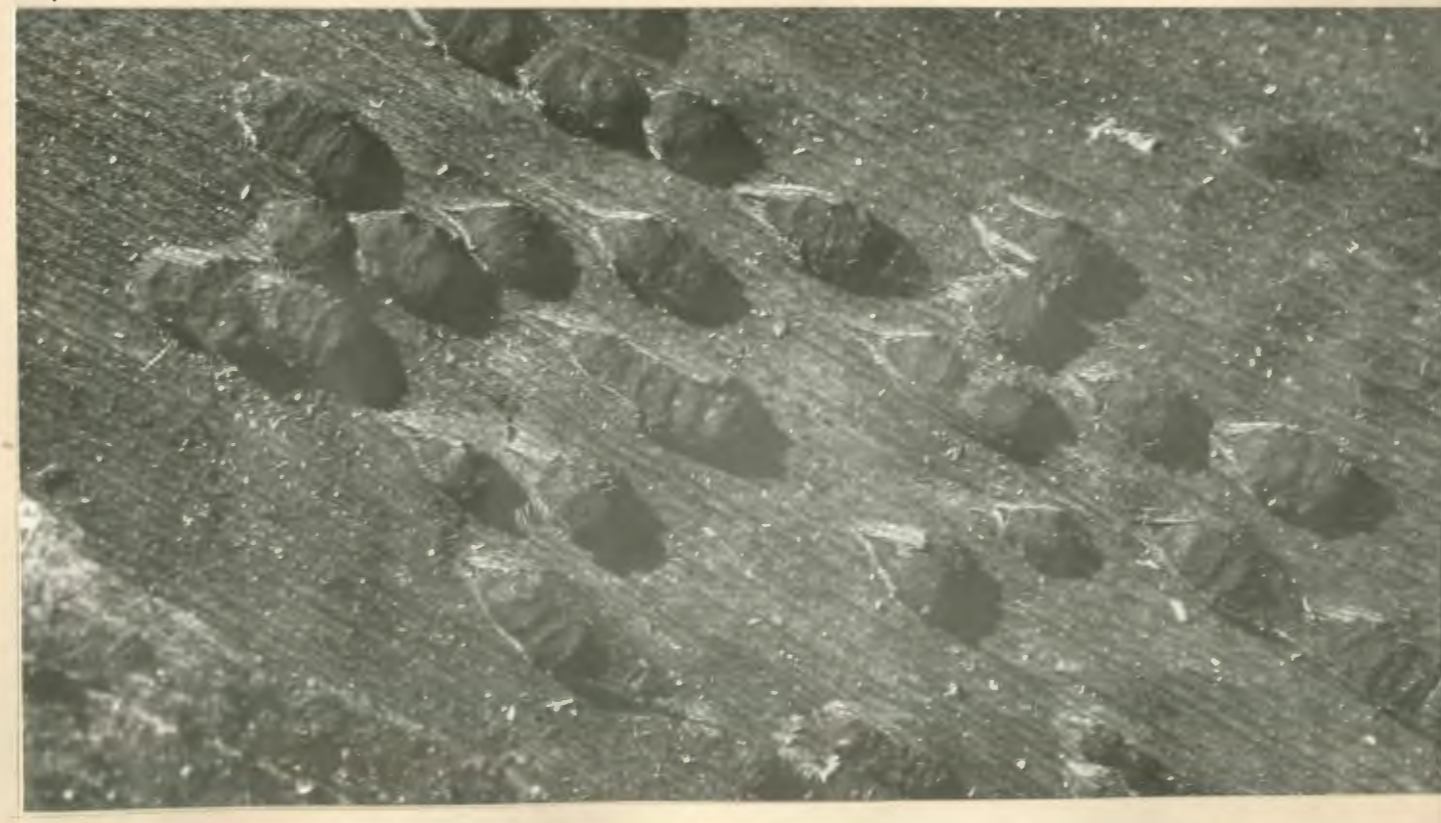

Penzigia discolor.

Figs.478,479. Enlarged views of stromata, 365 & 385.

478.

479.

Fig.480. Penzigia 2A, 200; Longitudinal section through stroma. f.w. wood invaded by fungus.

Fig.481. Penzigia 4, 302; Same features.

Fig.482. Penzigia discolor, 365; Same features.

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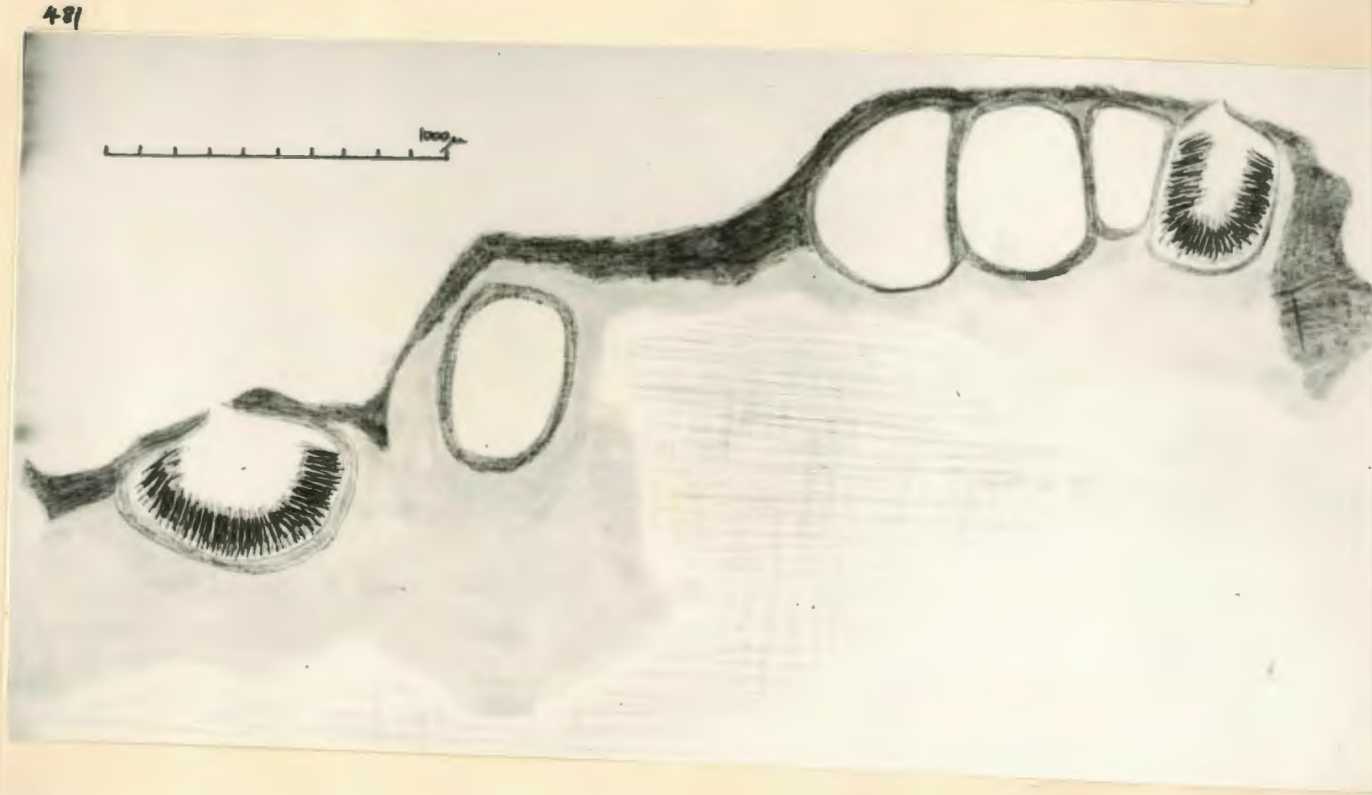

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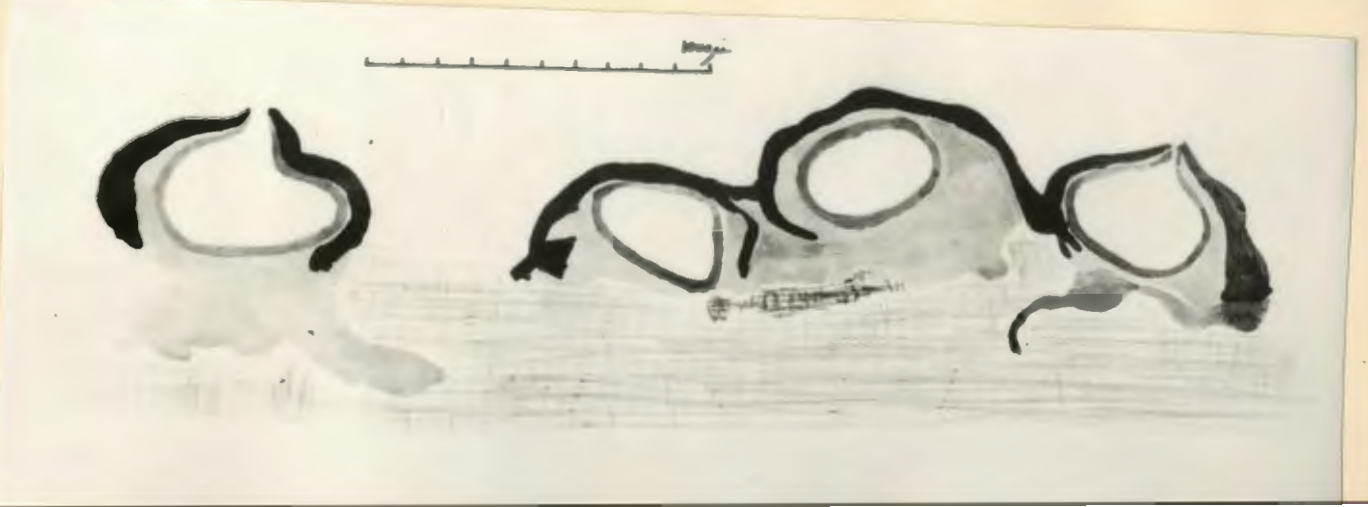


Fig.483. Asci & spores of:-

A, Penzigia 4, 513,

B, Penzigia 2A, 122,

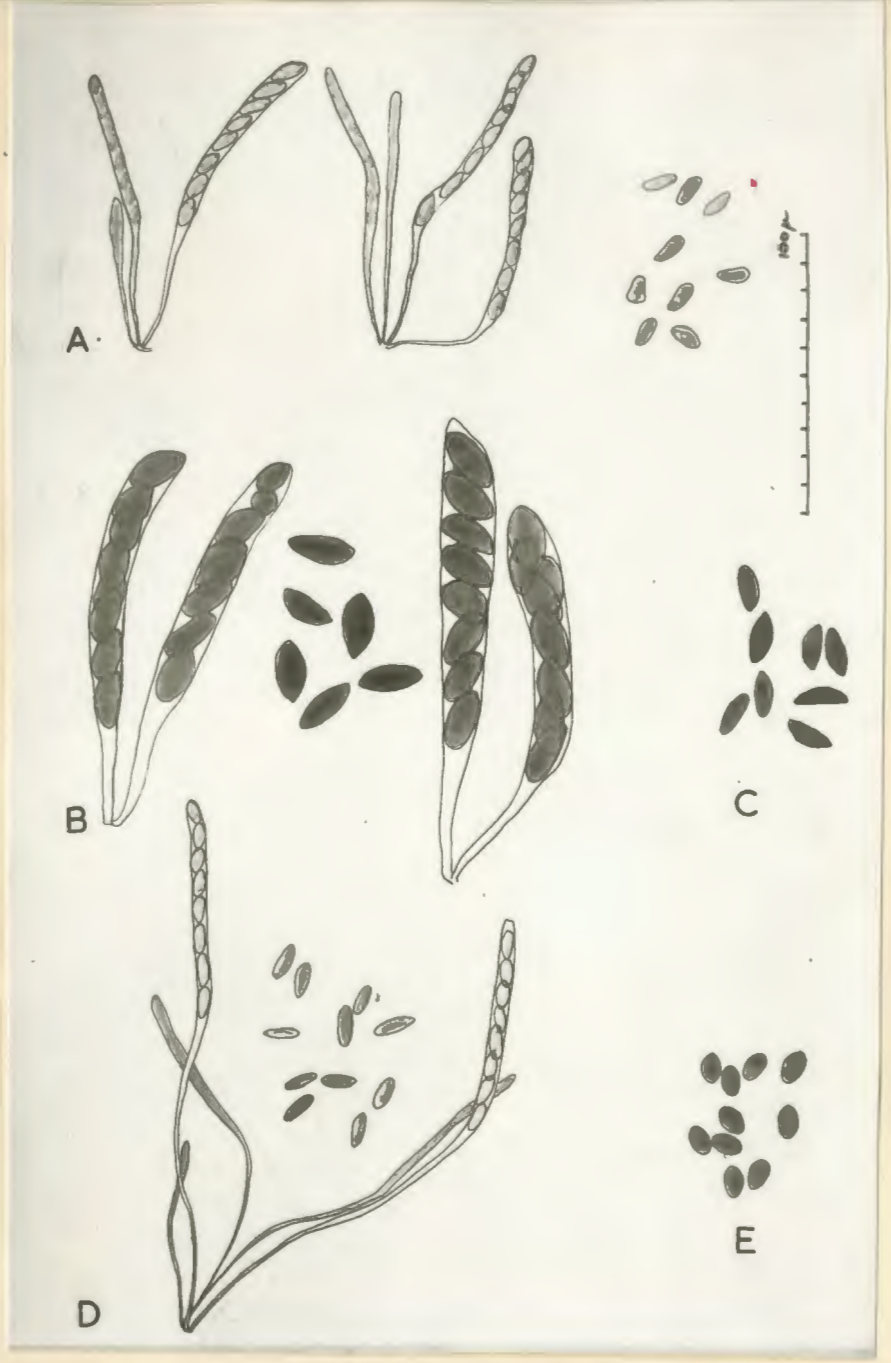
C, Penzigia 1, 362,

D, Penzigia 3, 390.

E. Penzigia discolor, 365. (Asci not available)

Fig.484. Hypoxylon deustum, 50; surface view, enlarged, of old stroma showing undulate surface and papillate ostioles.

Fig.485. Hypoxylon deustum, 401; young stromata showing range in form from aplanate to aplanopulvinate with well developed sterile bases.



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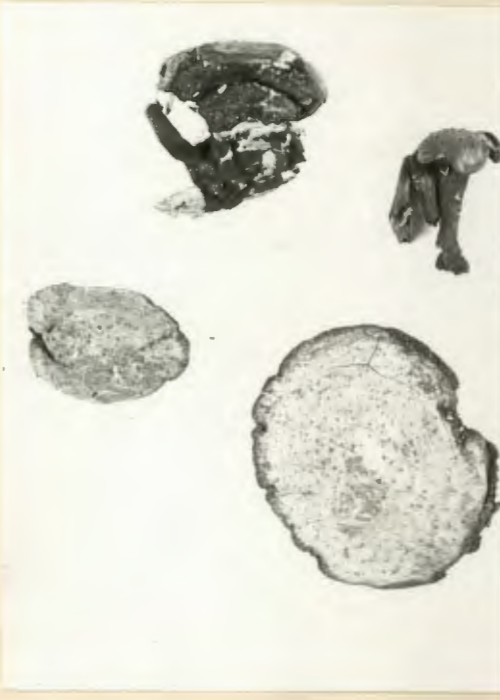

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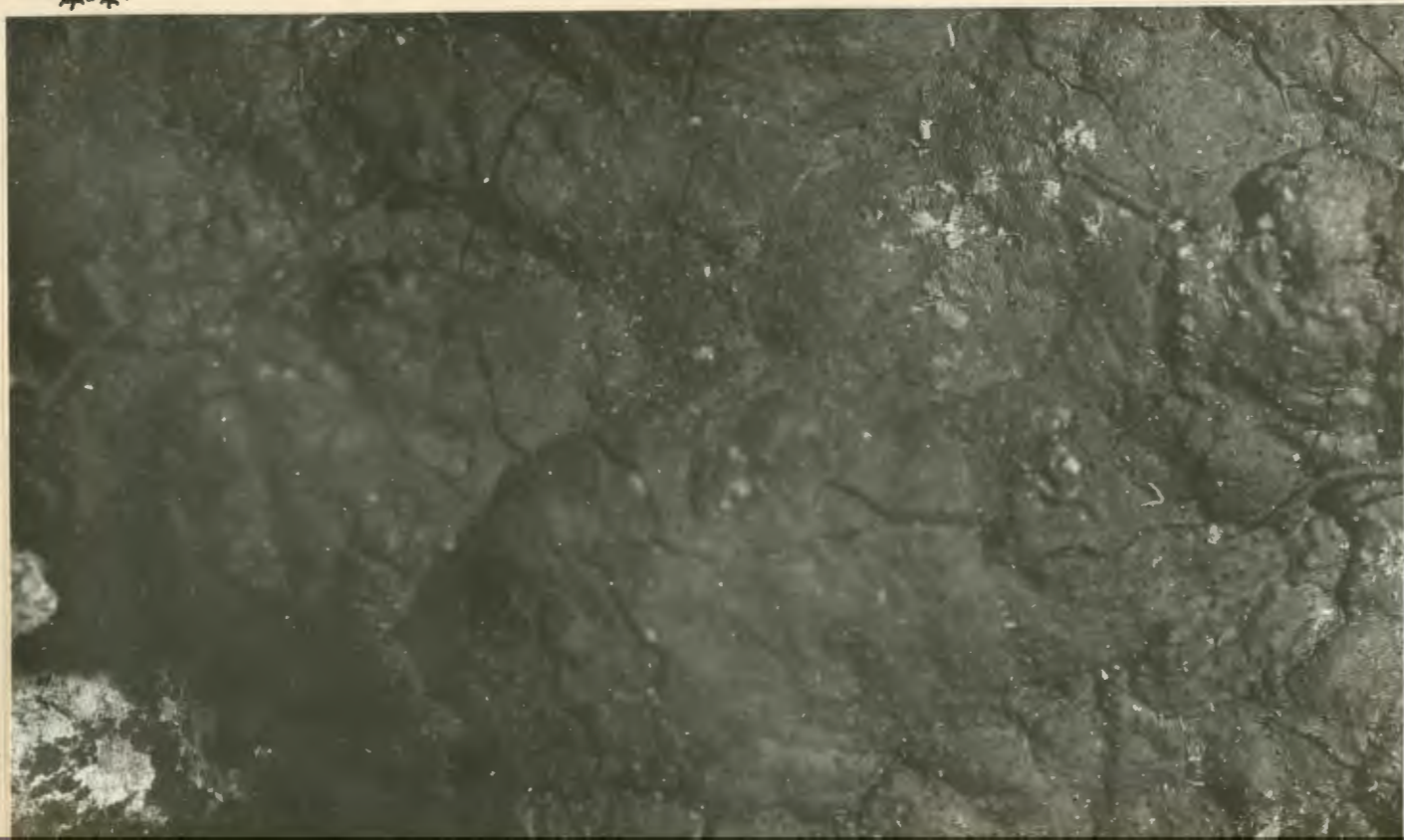

Figs.486,487. Hypoxylon deustum, 552; showing early stages in stromal formation; natural size. The young stromata show a white sterile advancing margin and a grey centre with granulate conidia.

486.

487.

Fig.488. Hypoxylon deustum, 552; stage before maturation of stromata; natural size, showing beginning of carbonization at edges and the protrusion of the perithecial verticds through the ectostroma.

Fig.489. Hypoxylon deustum, 552; bark removed off old log of Olea capensis to show the complex fungal system below the stromata. The line indicates the limits of the previous position of the bark.

Fig.490. Asci & spores of:-

A, Hypoxylon deustum, 50 & 551.

B, Penzigia berteri, 366.

C. Penzigia compuncta, 410.

488.

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490.

Fig.491. Stages in development of the stromata of Hypoxylon deustum, 552; as seen in section:

A.B. Longitudinal sections of stromata corresponding to figs. 488 & 489.

con. conidial palisade layer.

carb. carbonous layer developing under the conidial layer. This is the ectostroma.

f. fleshy entostroma.

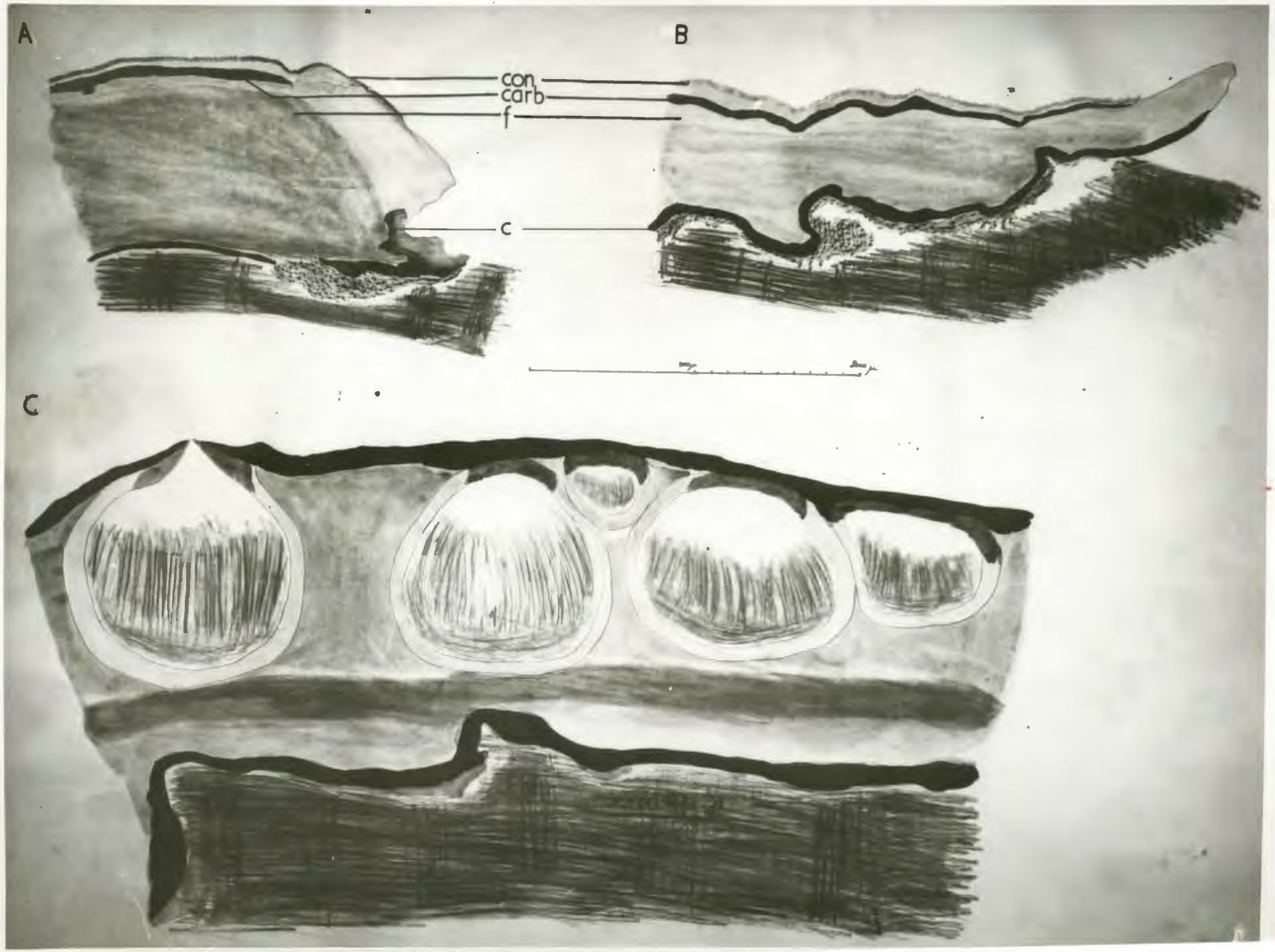
c. carbonous layer below entostroma which may protect it from the bark underneath.

C. Nearly mature stroma showing:-

a) perithecium on the left breaking through to the outside.

b) disappearance of the conidial layer.

c) darkening of the entostroma: this layer disentegrates after maturity.


A
B
con
carb
f
c
C

Penzigia berteri.

Fig.492. Surface view, enlarged, of stroma, 48.

Fig.493. Longitudinal section through stroma, 366.

h. = hollow in fleshy entostroma.

s. = secondary mycelium between carbonous layer and the wood.

492.

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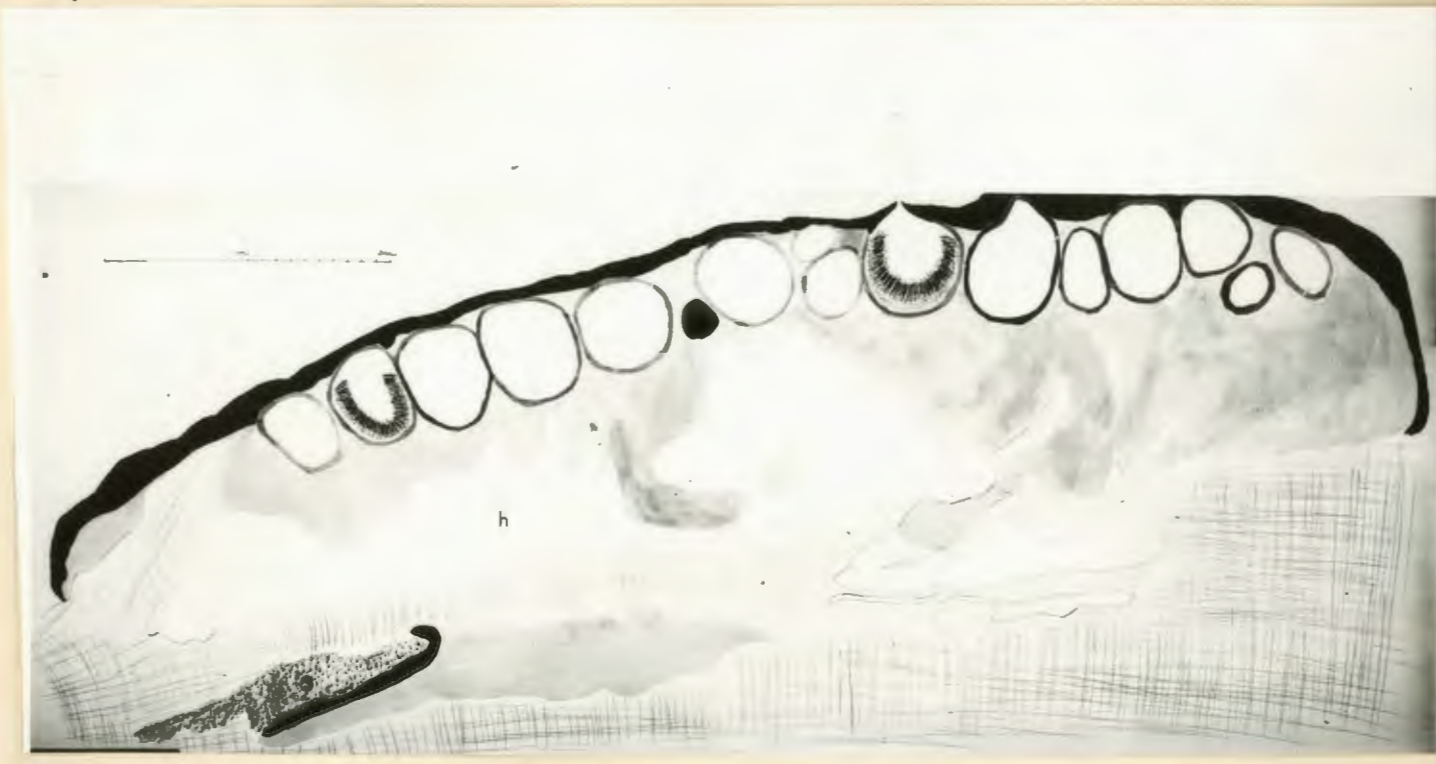

Penzigia compuncta, 410.

Fig.494. Surface view of stromata, enlarged.

Fig.495. Side-view of the same.

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Fig.496. Penzigia compuncta, 410; Longitudinal section through the stroma.

Fig.497. Penzigia I, 362; malt bottle culture 2 months old.

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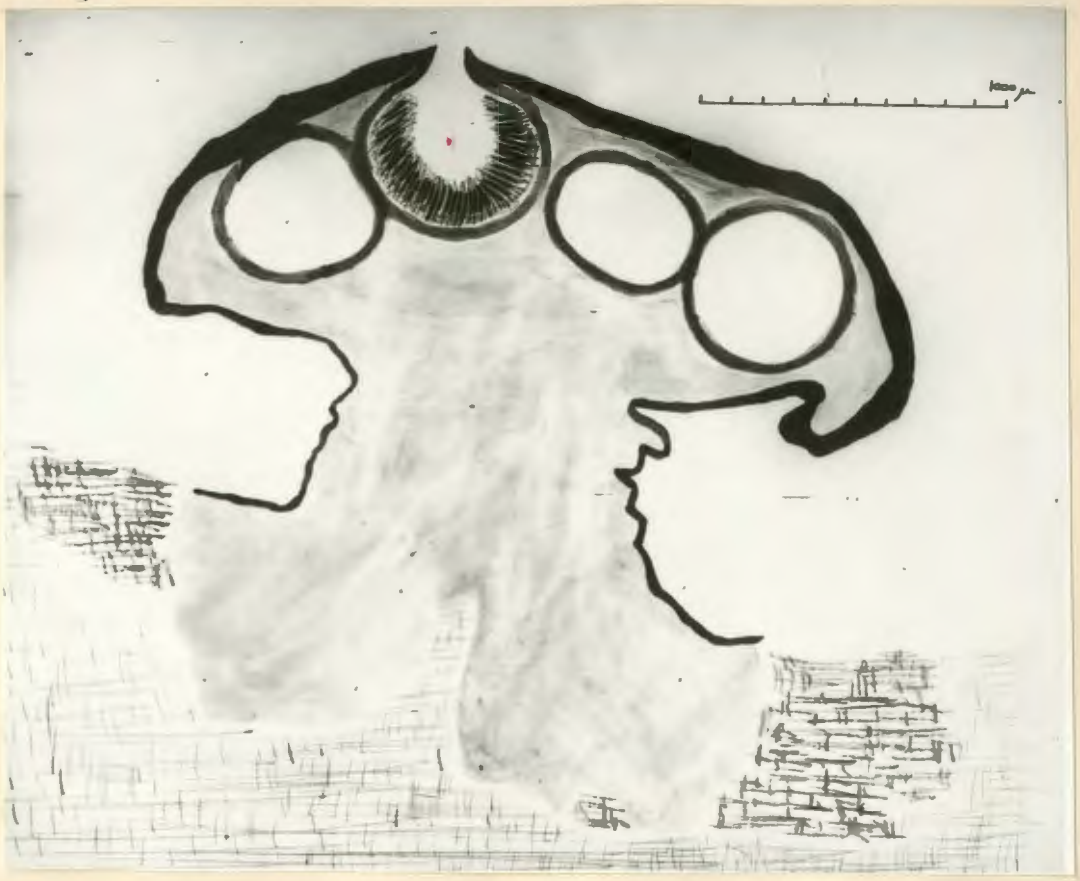


497.

Penzigia I, 362.

Fig.498. Stages showing development of the carbonous bodies.

A. Young mycelial "knot", or focus where multiple proliferation of hyphae takes place.

B.C. Formation of a pseudoparenchymatous mass.

D. Young sphere showing attachments to surrounding mycelium. Note that the cells making up the sphere are no longer visible.

E. Showing the breakdown of cells and the start of carbonization.

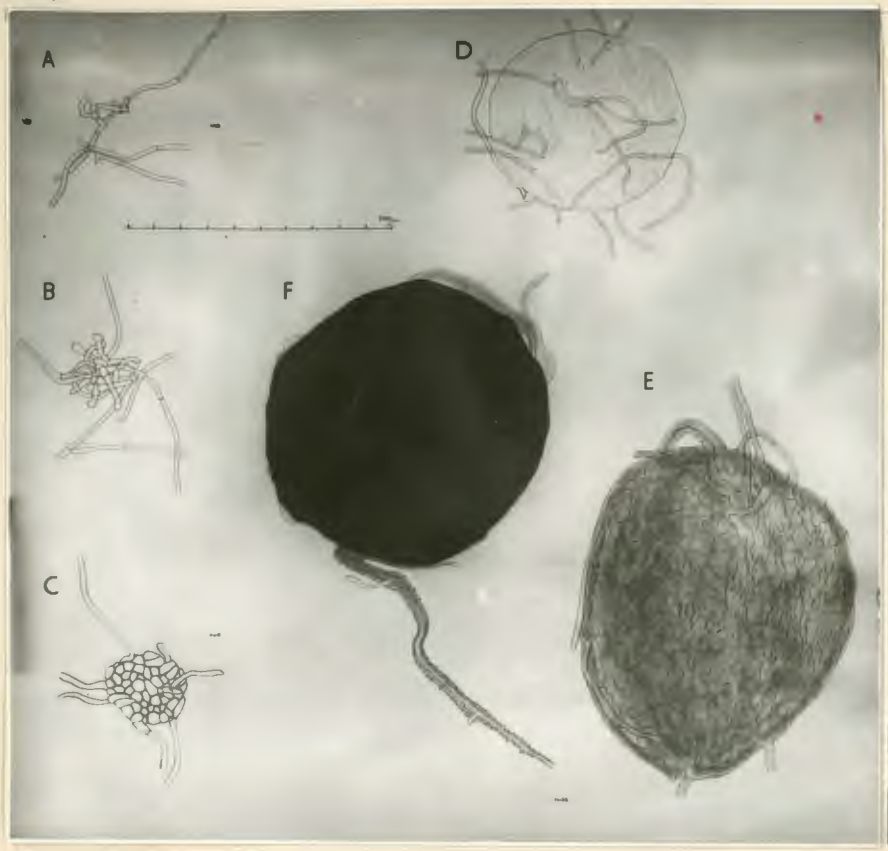
F. The mature carbonous body. Note grossly swollen stained hyphae on the side.

Fig.499. Malt plate culture, 10 days old at 25°C; carbonous bodies visible near centre.

Fig.500. Leonian's, same conditions.

Fig.501. Czapek, same conditions.

498.



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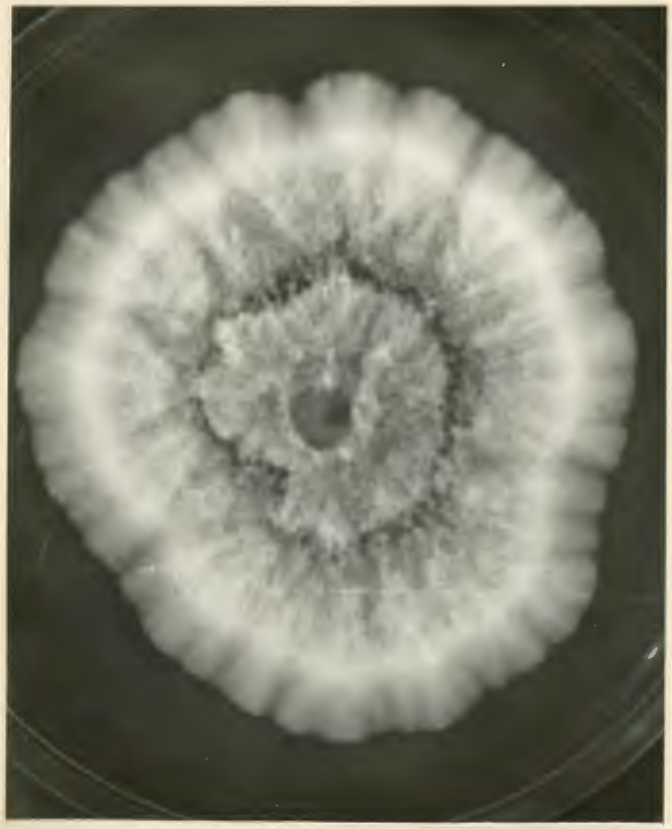

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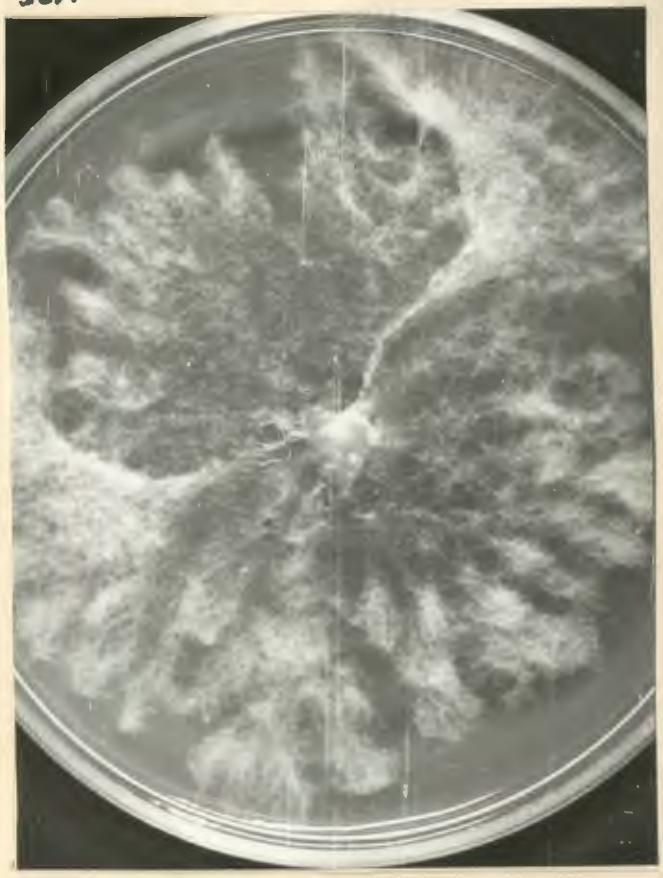


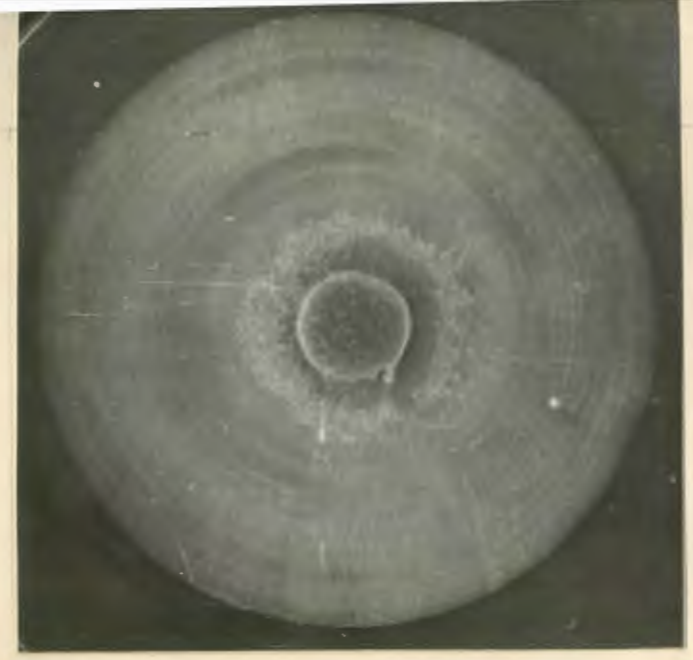
Fig.502. Penzigia 2A, 122; malt plate culture 10 days old at 25°C.

Fig.503. Same species; Leonian's, same conditions.

Fig.504. Penzigia 4, 345; malt bottle culture 2 months old.

Fig.505. Same species, 228; Czapek bottle culture, same age.

Fig.506. Same species, 513; malt bottle culture 2 months old, to show zonation of conidia.



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Penzigia 4, 513; Plate cultures.

Figs.507.508. Malt, 15 days old at 25°C, showing slight differences in appearance. Note the slightly gelatinous margin in contrast to Hypoxylon glomeratum. var.1 (fig.86)

Fig.509. Maize, 15 days old at 25°C.

Fig.510. Leonian's, same conditions.

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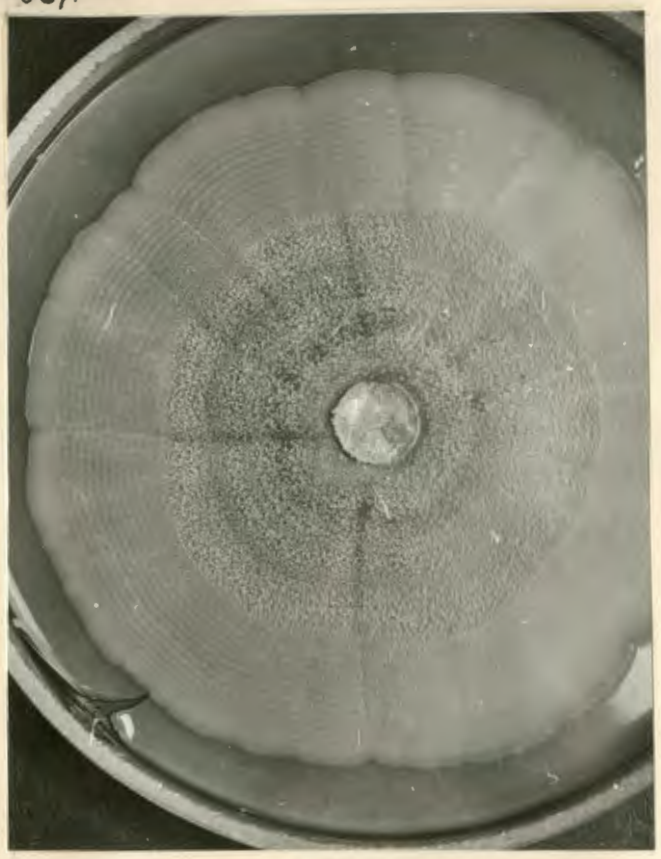

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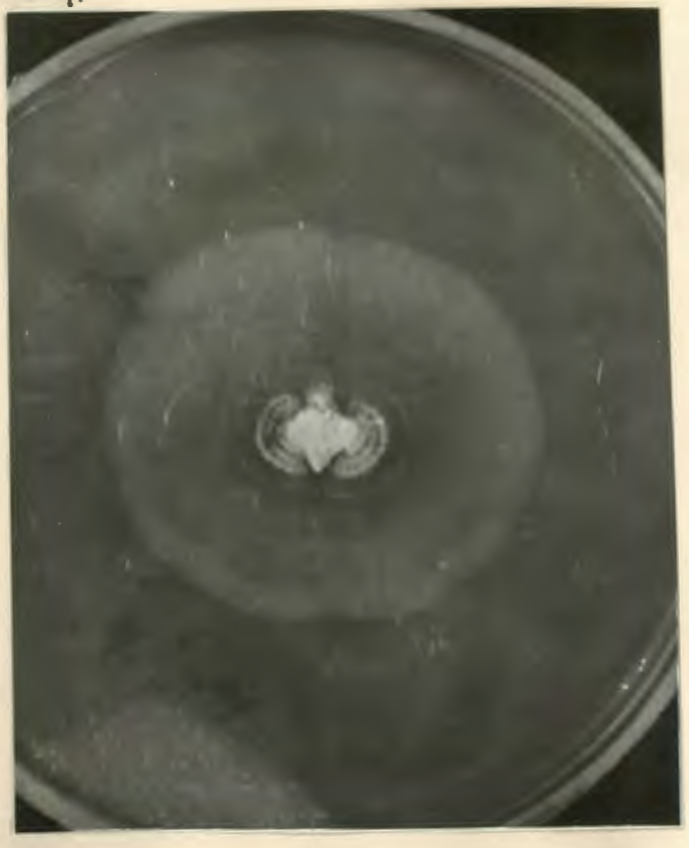

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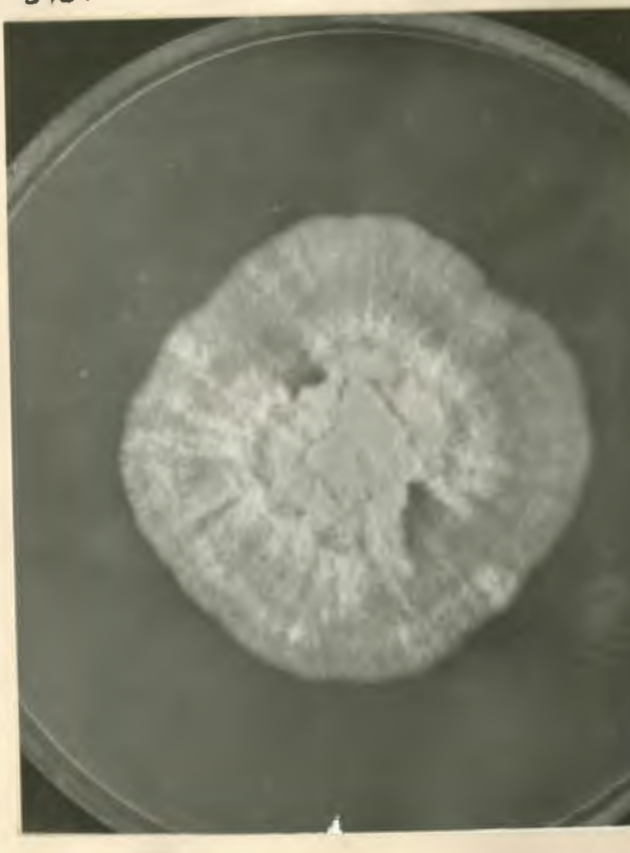


Fig.511. Conidiophores & conidia of:-

A. Penzigia 4, 302.

B. Penzigia discolor (part only, enlarged), 365.

C. Penzigia 2A, 122.

See fig.523 for complete Conidiophore of Penzigia discolor.

Fig.512. Penzigia 3, 390; malt bottle culture 2 months old.

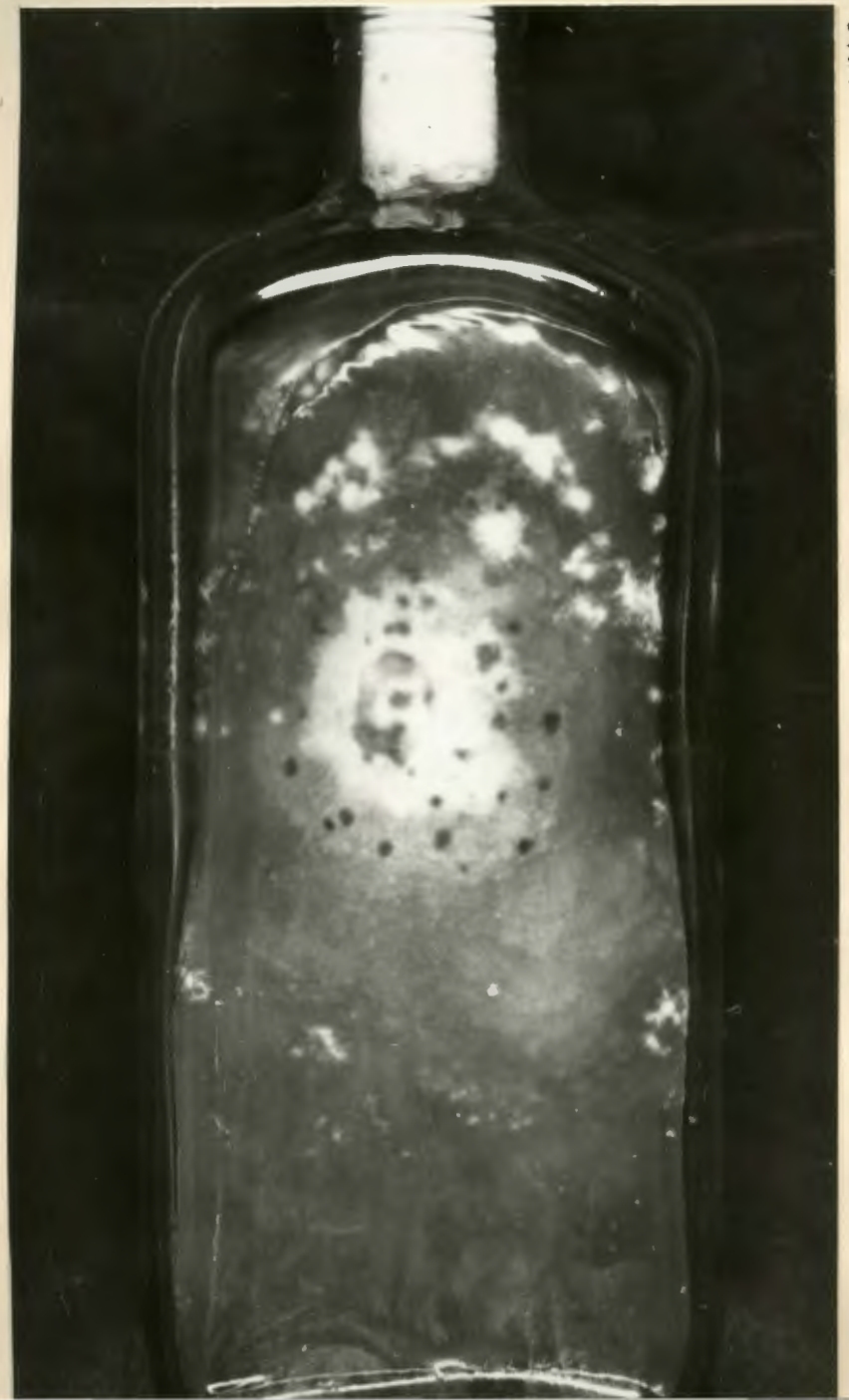


Fig. 512.

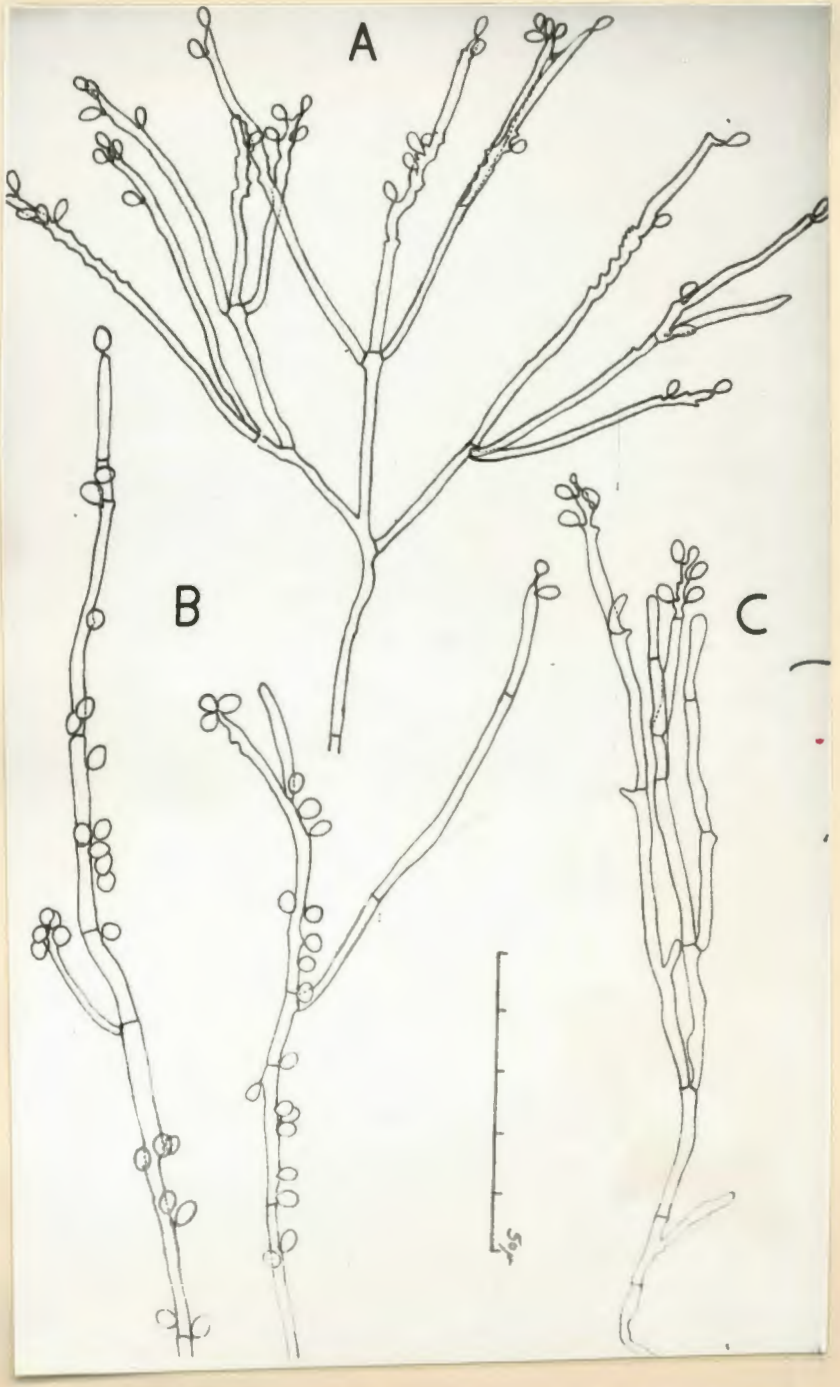


Fig. 511.

Penzigia 3, 390.

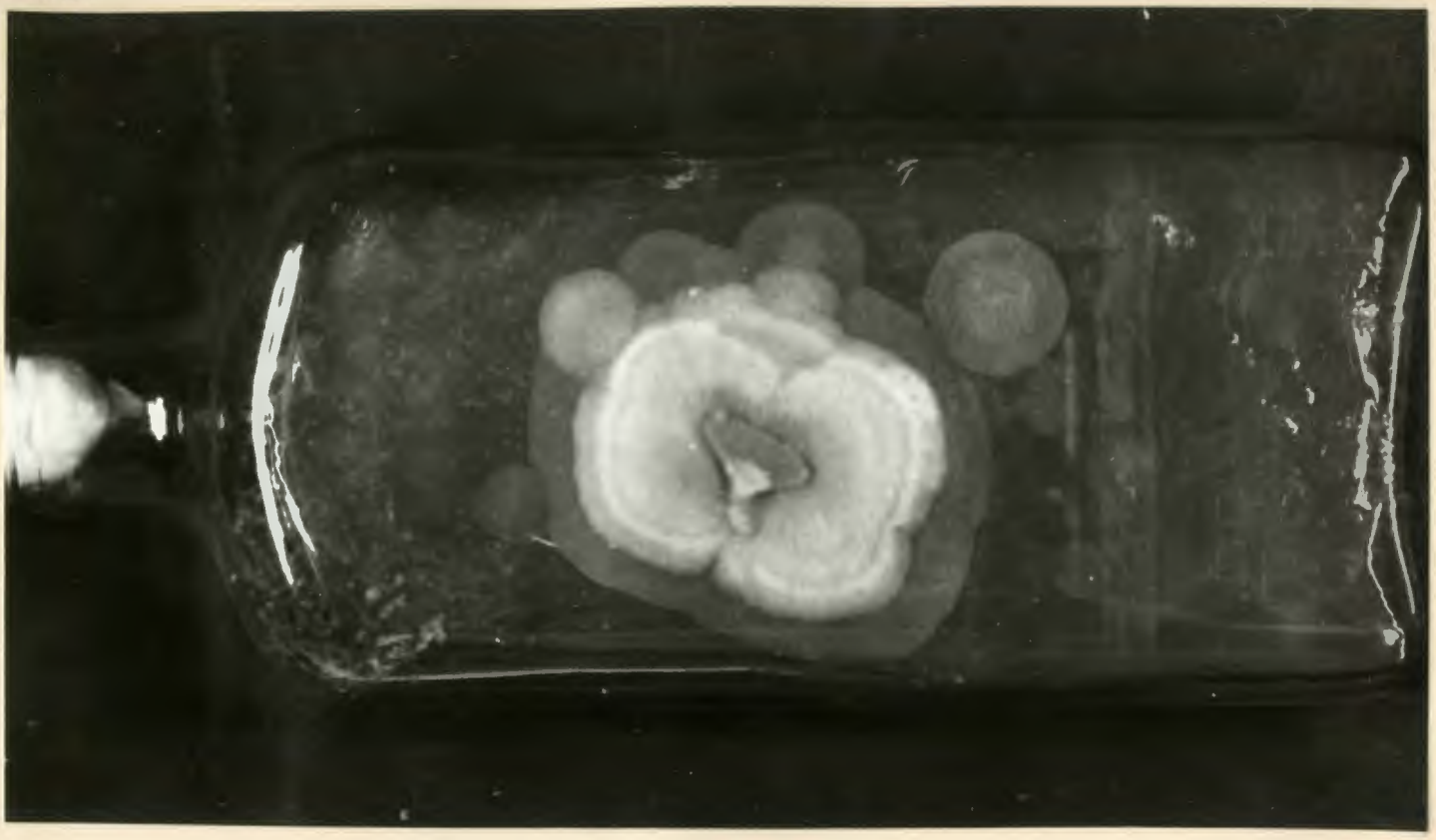
Fig.513. Leonian's battle culture, 1 month old.

Fig.514. Malt plate culture, 15 days old at 25°C.

Fig.515. Older culture, same medium, 25 days old at 25°C.

Fig.516. Czapek plate culture, 15 days old at 25°C.

513.



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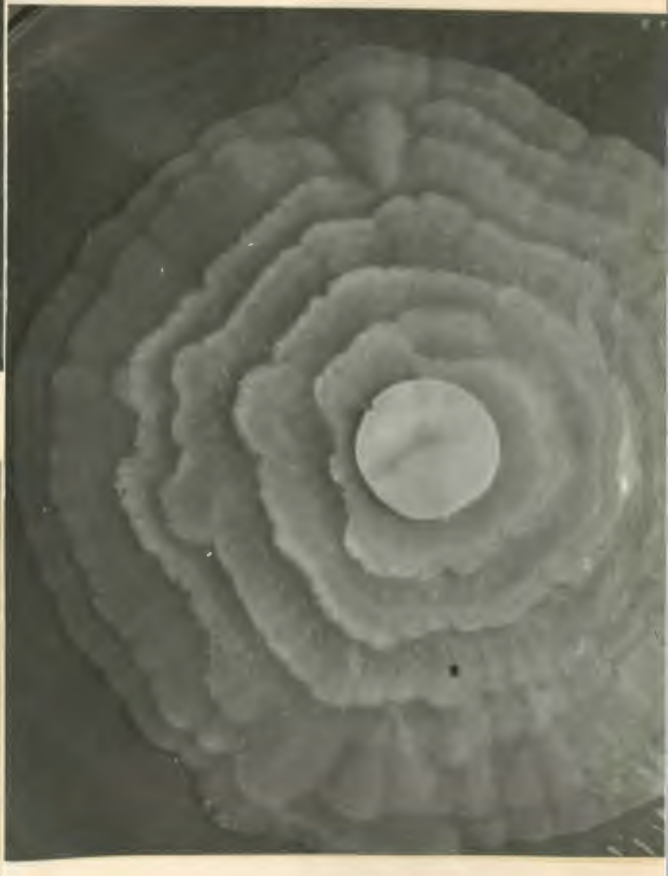

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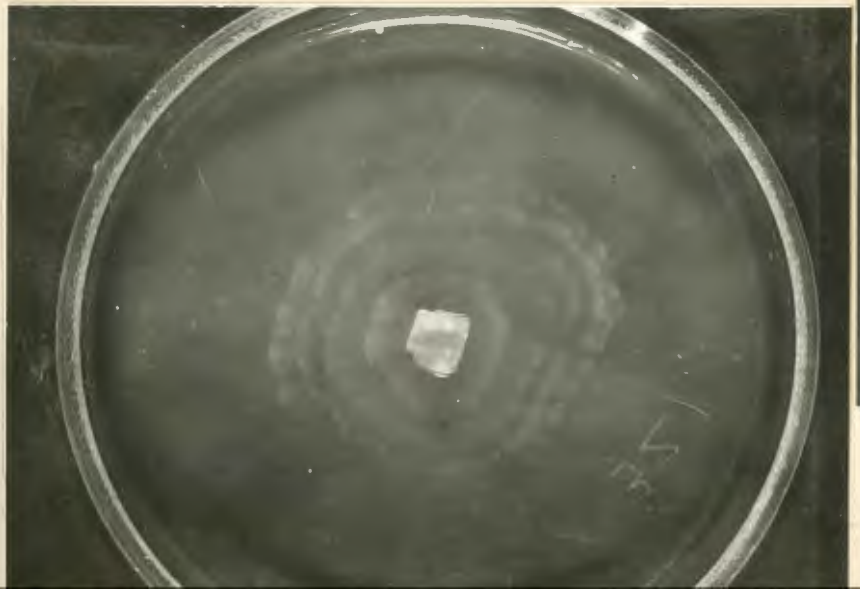


Penzigia discolor, 365; Bottle cultures.

Fig.517. Malt, 2 months old.

Fig.518. Leonian's, 1 month old.

518.

Fig.519. Penzigia discolor, 365; Malt plate culture 8 days old at 25°C.

Fig.520. Same species; Czapek, same conditions.

Fig.521. Marginal hyphae of:-

A. Penzigia 1, 362.

B. Penzigia 4, 302.

C. Penzigia 3, 390.

Secondary mycelium of:-

D. Penzigia 3, 390.

E. Penzigia compuncta, 410.

Fig.522. A. conidiophore of Penzigia 1, 362, to small scale (Those of Penzigia 3 & Penzigia discolor are similar.)

B. Enlargement of fertile branches of the conidiophore of Penzigia 1.

C. Conidiophore of Penzigia 3, 390.

D. Mycelium of Penzigia 3, 390, showing spores budded off random hyphae apices.

Fig.519. Penzigia discolor, 365; Malt plate culture 8 days old at 25°C.

Fig.520. Same species; Czapek, same conditions.

Fig.521. Marginal hyphae of:-

A. Penzigia 1, 362.

B. Penzigia 4, 302.

C. Penzigia 3, 390.

Secondary mycelium of:-

D. Penzigia 3, 390.

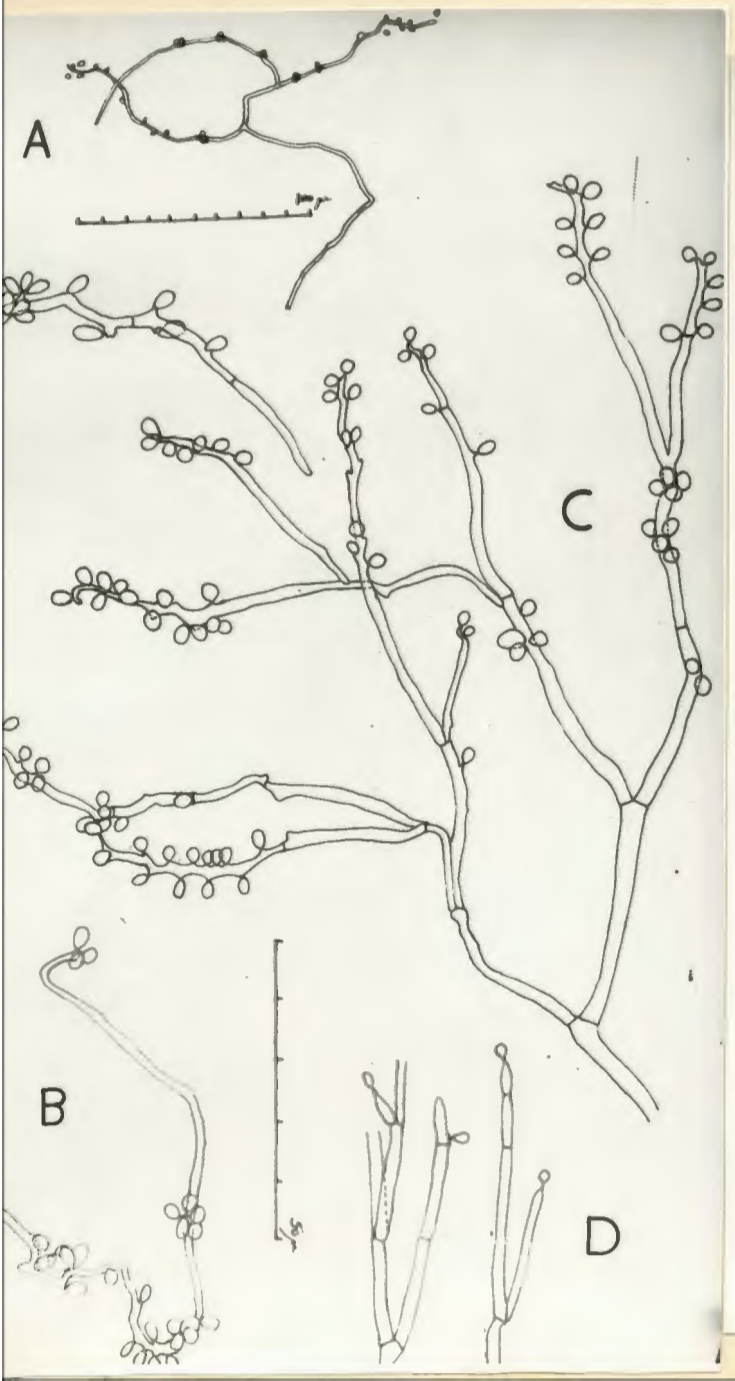
E. Penzigia compuncta, 410.

Fig.522. A. conidiophore of Penzigia 1, 362, to small scale (Those of Penzigia 3 & Penzigia discolor are similar.)

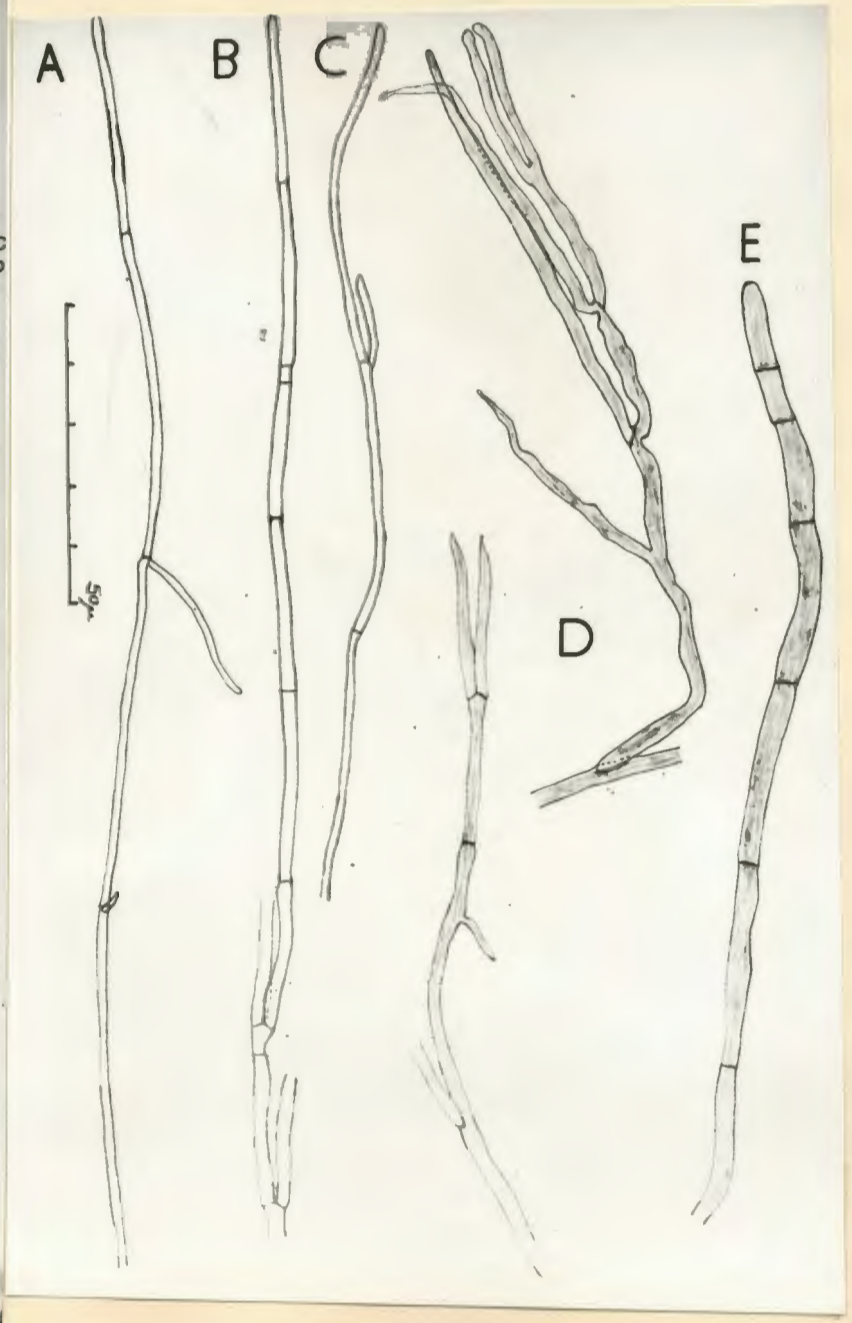
B. Enlargement of fertile branches of the conidiophore of Penzigia 1.

C. Conidiophore of Penzigia 3, 390.

D. Mycelium of Penzigia 3, 390, showing spores budded off random hyphae apices.



شكل ٥٢٢.



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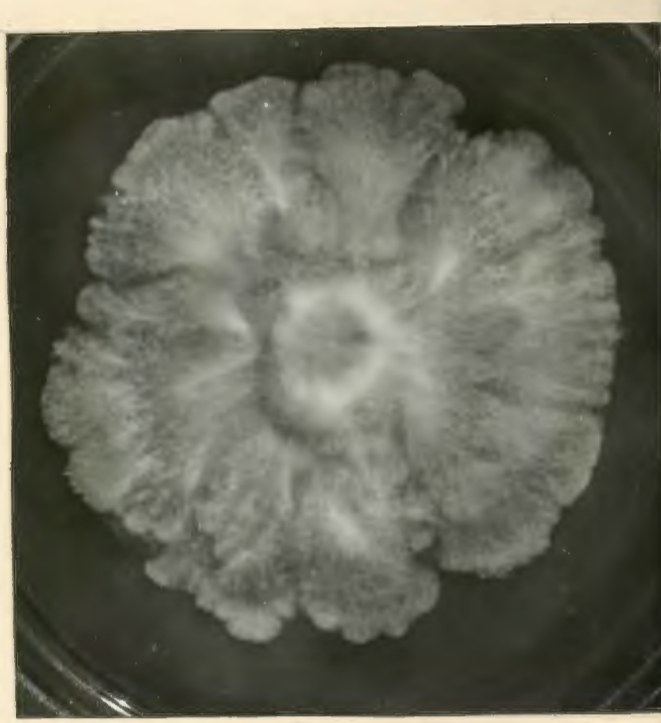


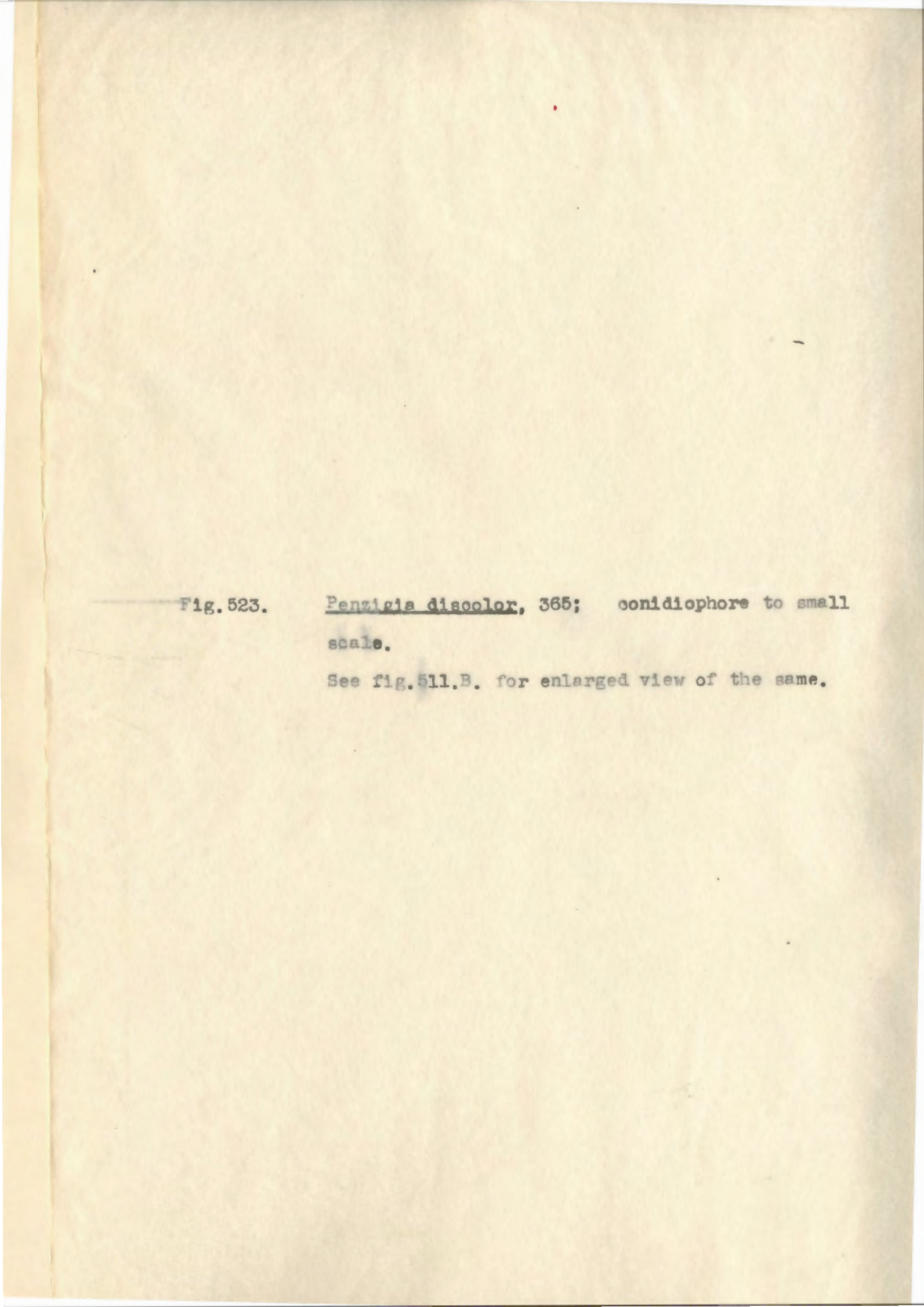
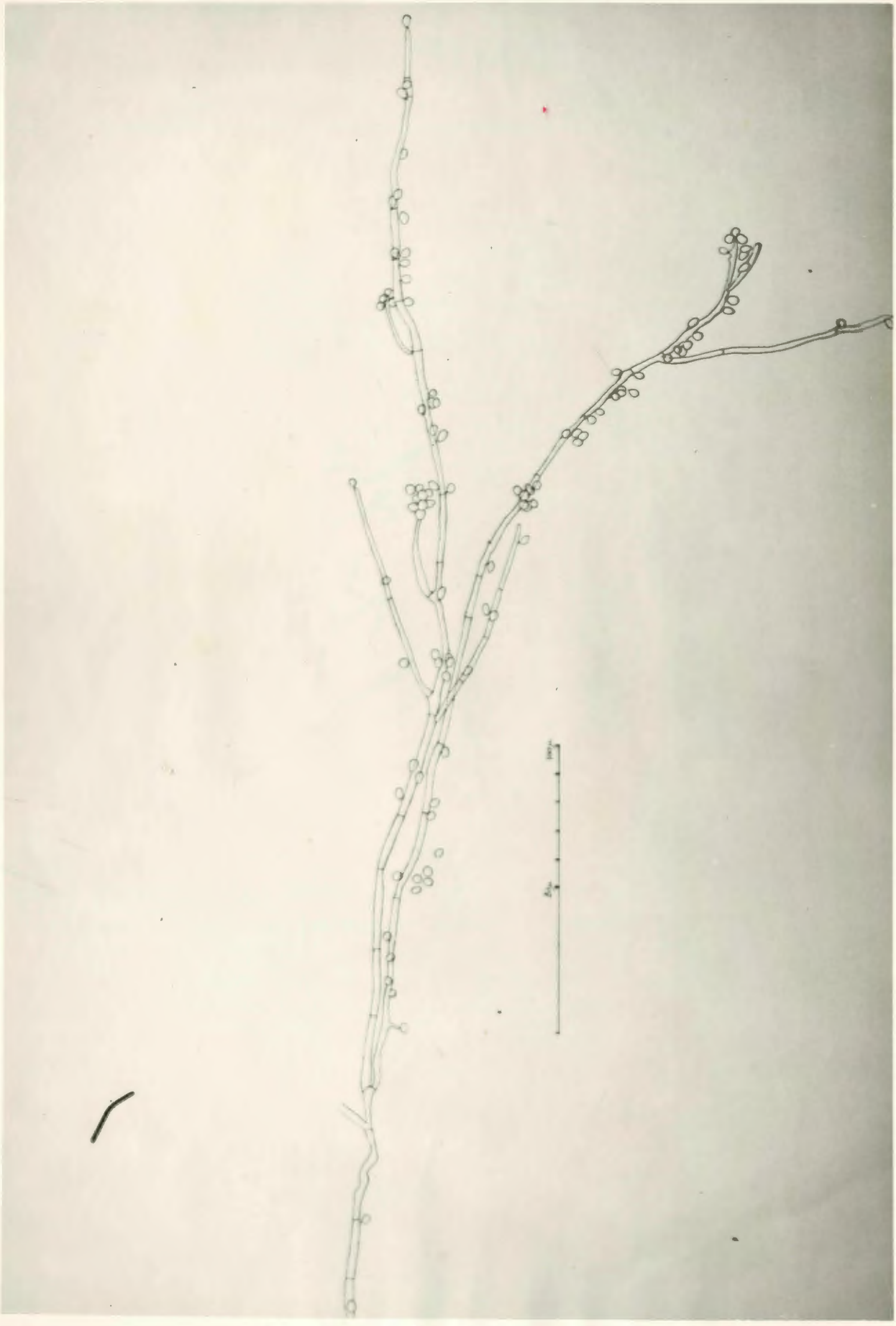


Fig. 523. Penzigia discolor, 365; conidiophore to small scale.

See fig. 511.B. for enlarged view of the same.



Hypoxylon deustum, 551; bottle cultures.

Fig. 524. Malt, 2 months old.

Fig. 525. Czapek, same age.

525

Hypoxylon deustum, 551; plate cultures.

Fig.526. Malt, 10 days old at 25°C.

Fig.527. Maize, same conditions.

Fig.528. Leonian's, 6 days old at 25°C.

Fig.529. Czapek, 10 days old at 25°C, showing typical marked discoloration of mycelium.

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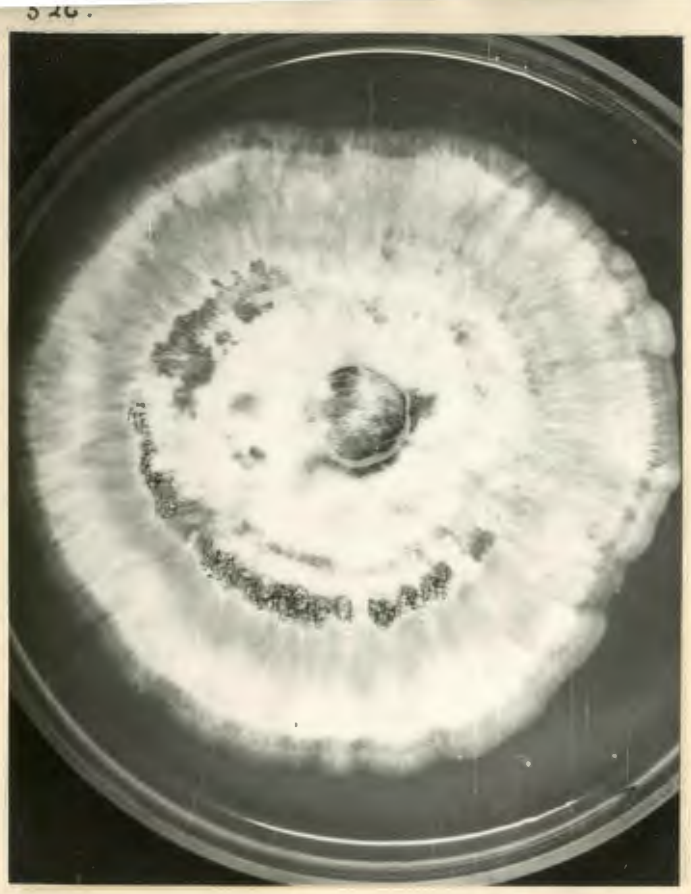

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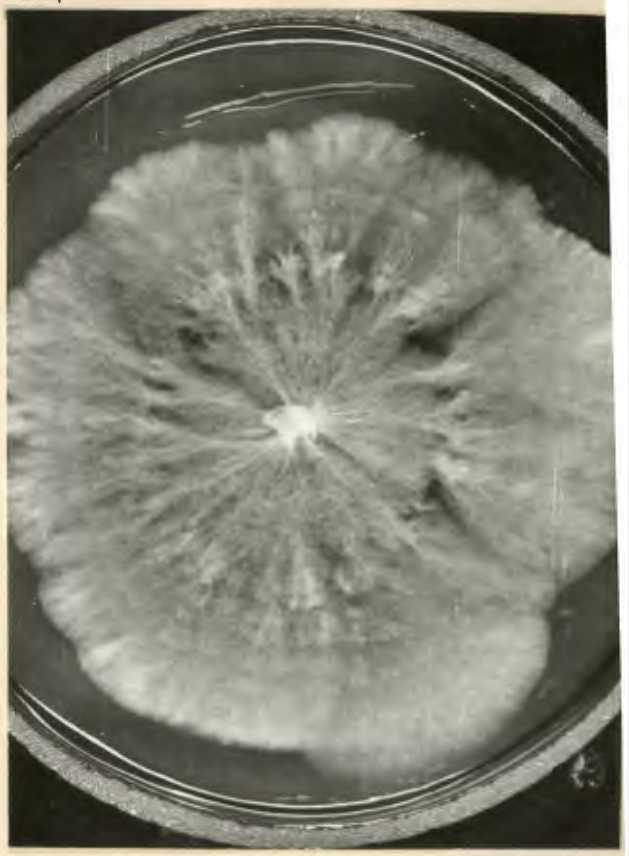


528

529.

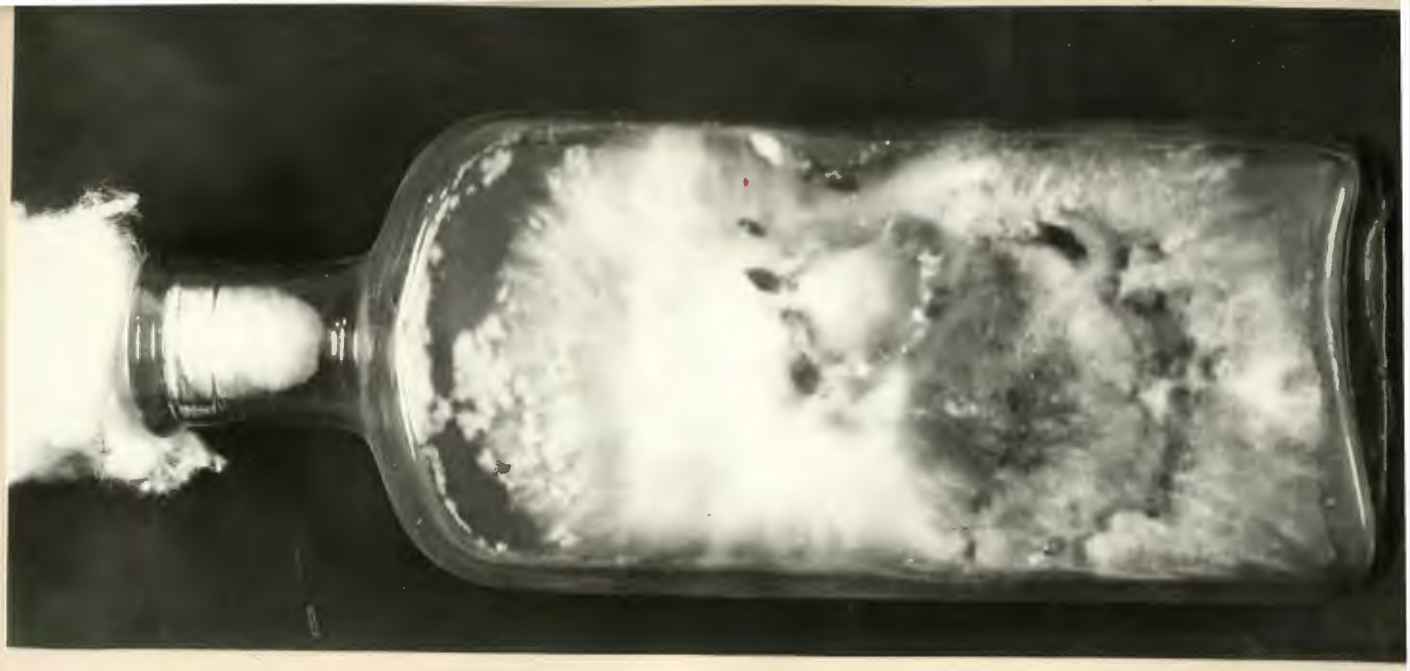
Penzigia bertetti.

Fig.530. Malt, battle culture, 102, 2 months old.

Fig.531. Malt plate culture, 366, 10 days old at 25°C.

Fig.532. Maize, same conditions.

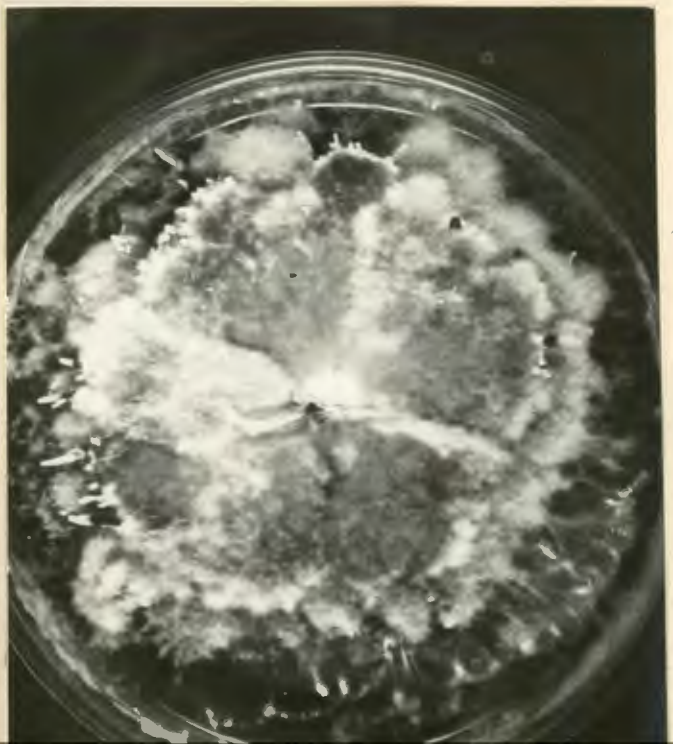
Figs.533,534. Malt plate cultures, 366, 30 days at 25°C, showing coremia with conidia.



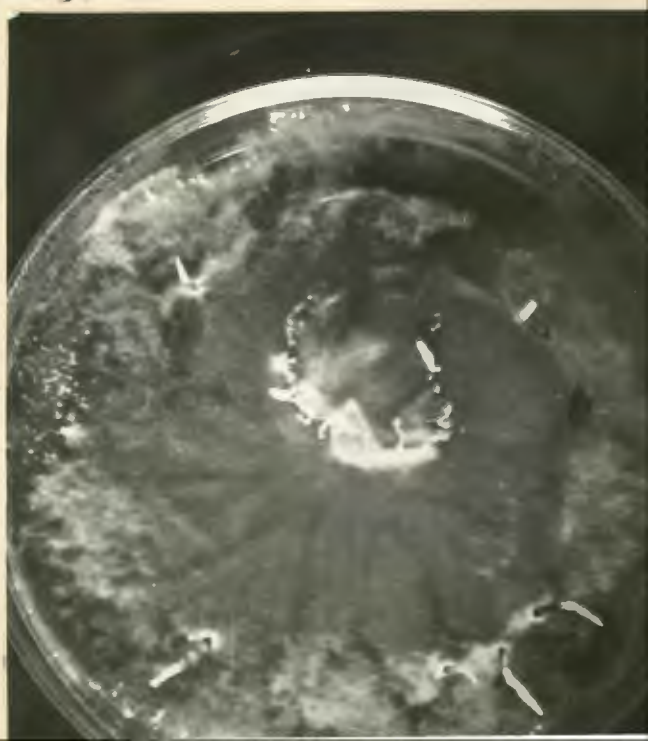
531.

532.

533.



534.



Penzigia compuncta, 410; Bottle cultures.

Fig.535. Leonian's, 2 months old (Malt similar).

Fig.536. Czapek, same age.

536.

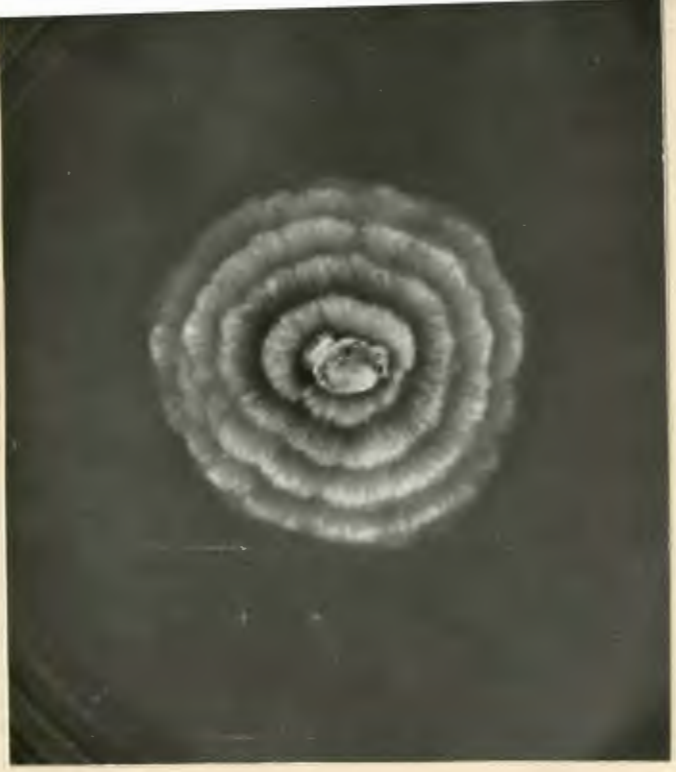
Penzigia compuncta, 410.

Fig.537. Leonian's plate culture, 6 days old at 25°C.

Fig.538. Malt plate culture, 10 days old at 25°C.

Fig.539. Diagrammatic drawing to low scale of a mycelial tassel.

Fig.540. Dead branch of Cassine croceum, 2 months after inoculation showing mycelial tassels.



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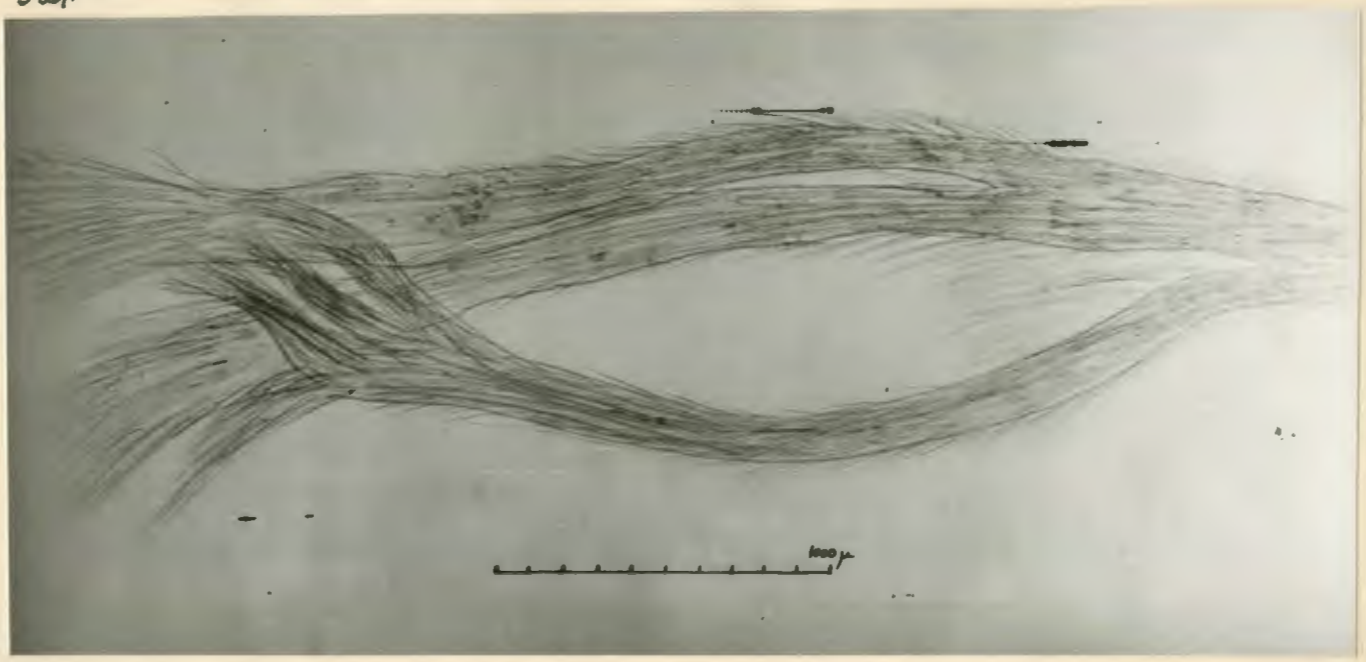


540.

Fig.541. Marginal hypha of:-

A. Penzigia berteri, 366.

B. Hypoxylon deustum, 551.

Secondary mycelium of:-

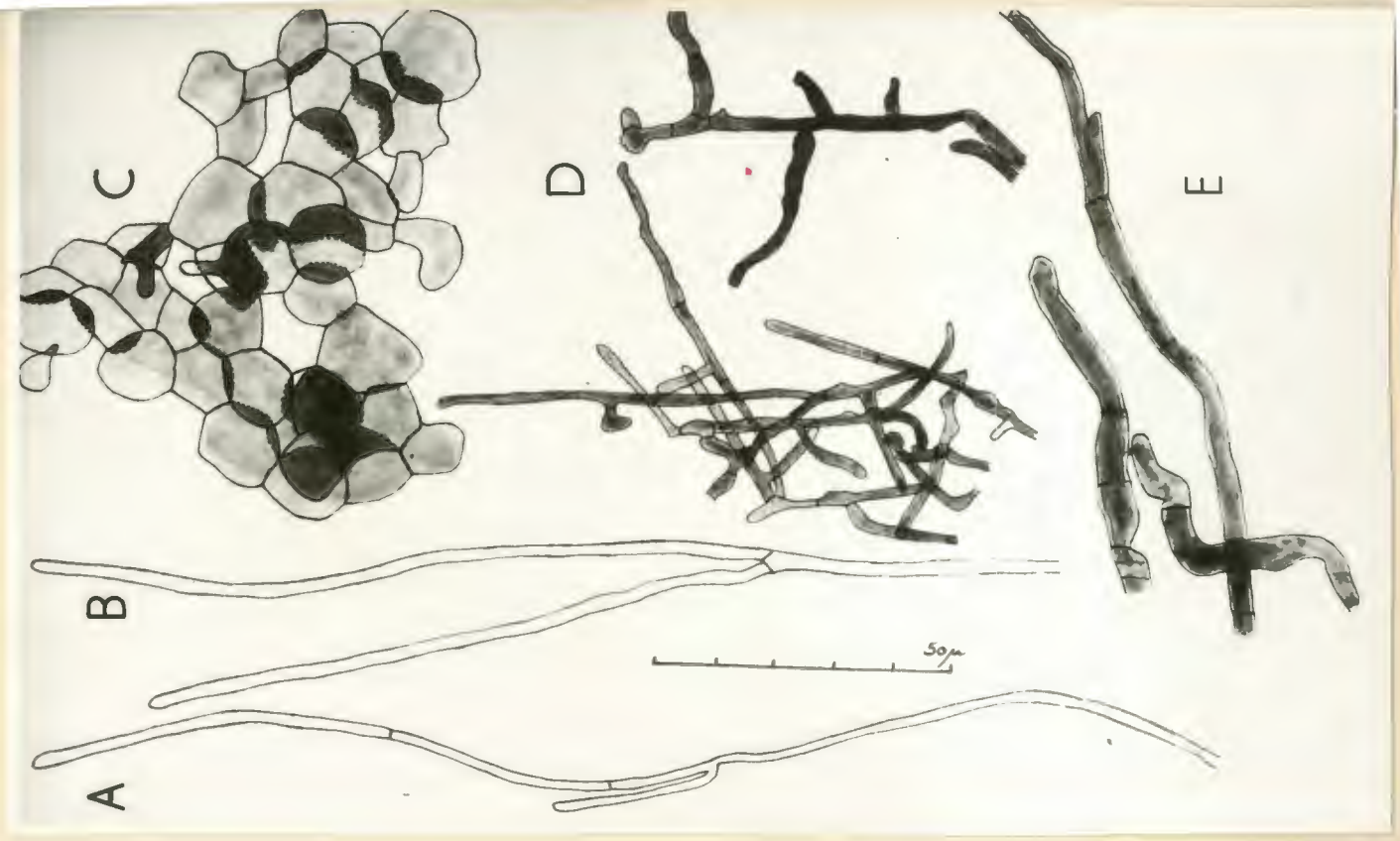
C. Hypoxylon deustum, 551.

D. Penzigia berteri, 366.

E. Penzigia compuncta, 410.

Fig.542. Xylaria fioriana, 510; surface view of stromata, natural size. Note variation in form from aplanopulvinate to cylindrical.

Fig.543. Xylaria arbuscula, 57 & others; stromata ¾ natural siz



542

543.

Fig.544. Xylaria castorea, 456; stromata $\frac{1}{4}$ natural size.

Fig.545. Xylaria leprosa, 507; stromata natural size.

Fig.546. Xylaria leprosa, 133; stromata natural size.

545.

546.

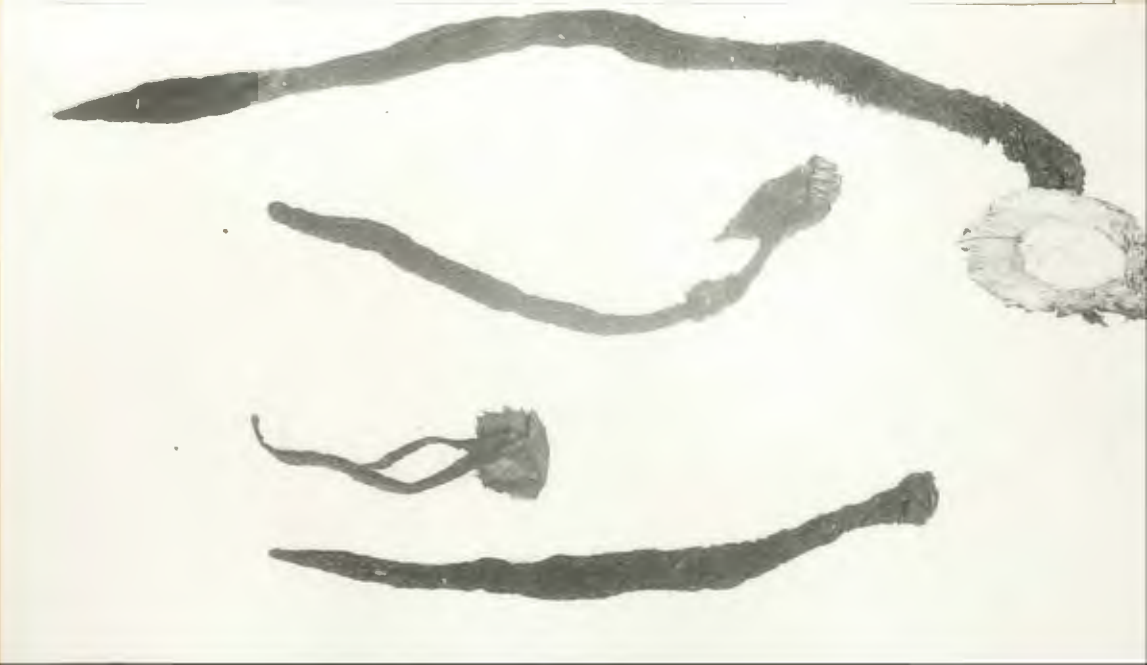
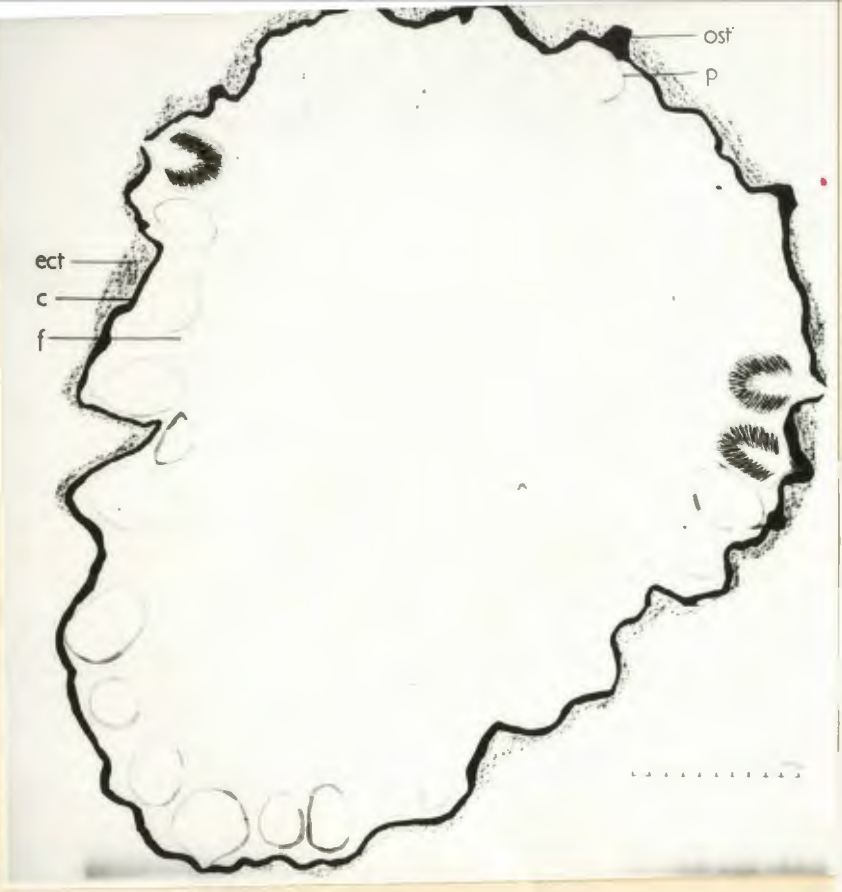


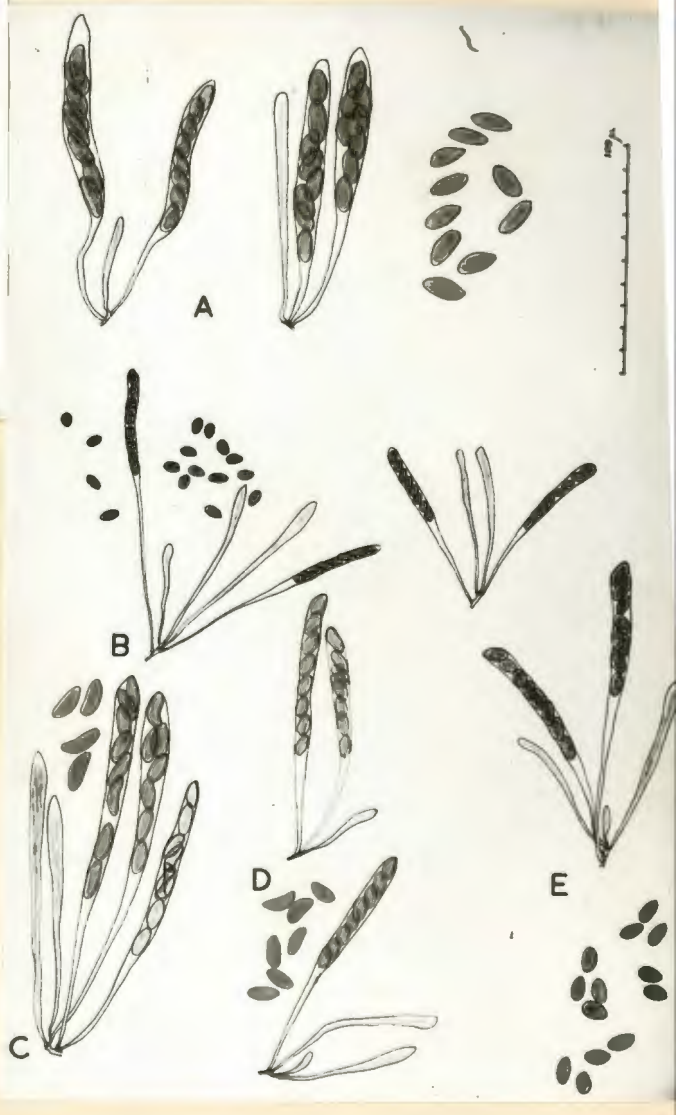
Fig.547. Xylaria leprosa, 507; transverse section of the stroma
con. superficial layer of dark anastomosing mycelium which bore the conidiophores.
ect. carbonous ectostroma.
f. fleshy entostroma.
p. perithecium (walls brittle but uncarbonized).

Fig.548. Longitudinal sections through stromata of:-
A. Xylaria apiculata, 295; this has the typical Xylaria morphology; note division into fertile cylindric region & sterile base with setose covering.
B. Xylaria fioriana, 510; (see fig.542). Here the division between the fertile & sterile region is not well marked.

Fig.549. Asci & spores of:-
A. Xylaria apiculata, 295.
B. Xylaria castorea, 456.
C. Xylaria leprosa, 507.
D. Xylaria arbuscula, 57.
E. Xylaria fioriana, 510.



549.



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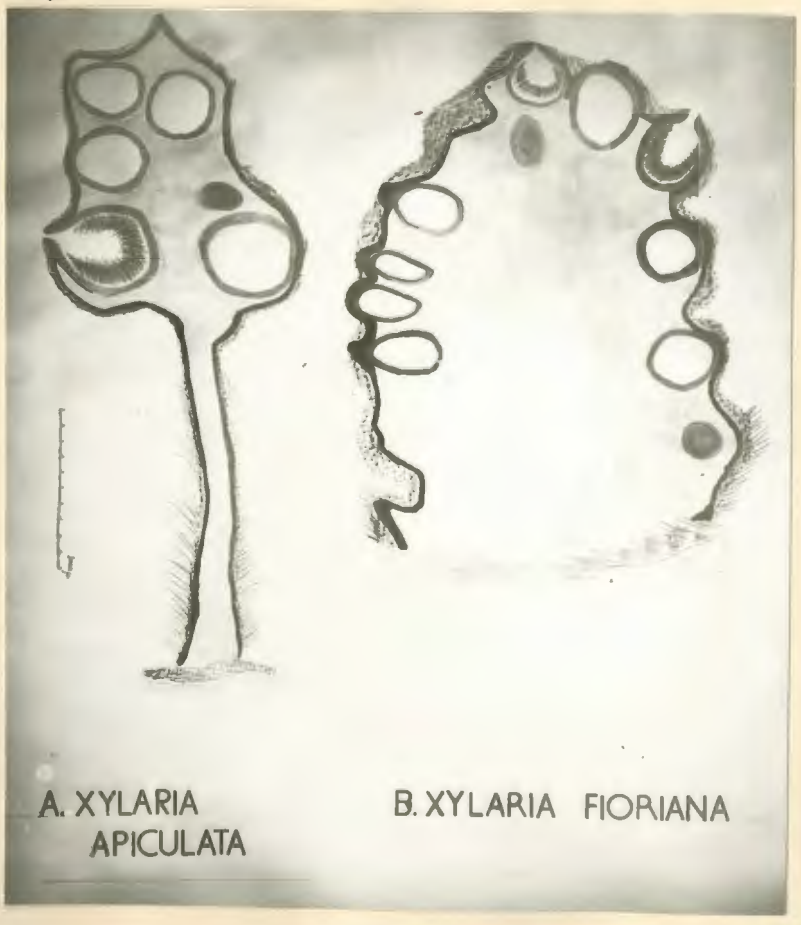


A. XYLARIA APICULATA

B. XYLARIA FIORIANA

Xylaria fioriana, 510; Bottle cultures.

Figs. 550, 551. Leonian' & Czapek cultures, 2 months old, showing conidia borne either on coremioid outgrowths or on small aggregations of superficial mycelium.

550.

551.

Xylaria fioriana, 510.

Fig.552. A.B. Malt plate cultures, 15 days old at 25°C, showing coremioid outgrowths with conidia.

Fig.553. Dead branch of Aloe pluridens, 20 days after inoculation, showing coremioid outgrowths. Note setose base to each outgrowth.

552 A

552 B

553

Fig.554. Xylaria castorea, 456; malt bottle culture, 2 months old, showing sterile coremioid outgrowths.

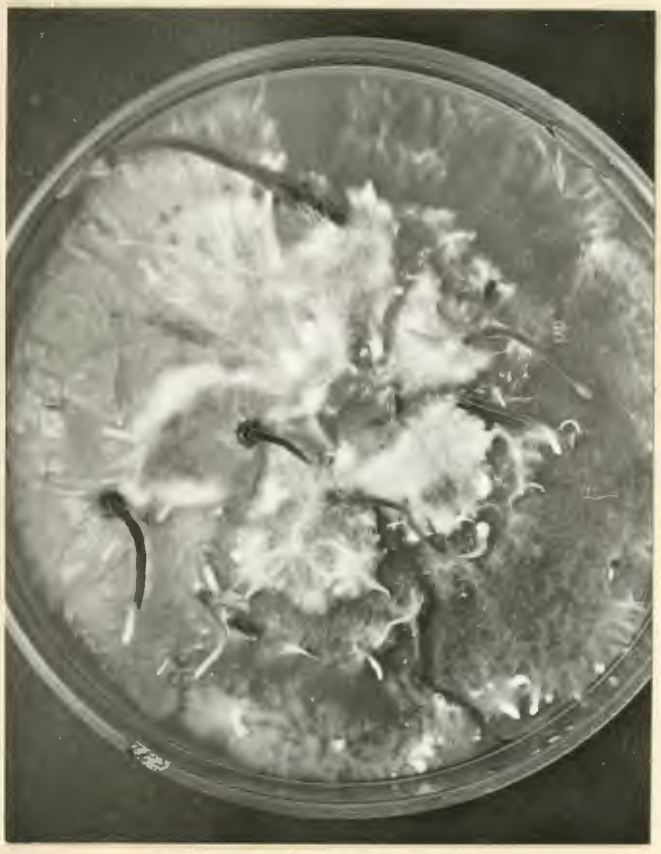
Fig.555. Xylaria castorea, 456; malt plate culture, 20 days old at 25°C, showing the same.

Figs.556,557. The typical Xylaria culture. (on Leonian's at 25°C)

556. Young cultures, 12 days old.

557. Old culture, 20 days old, showing darkening of the mycelium from the centre of the colony, & a coremioid outgrowth at bottom.

555.



556.

557.

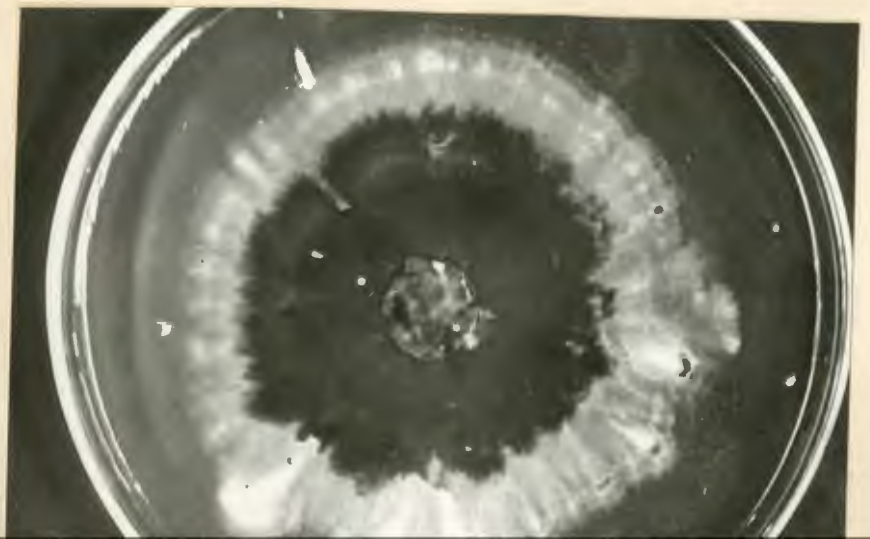


Fig.558. Xylaria fioriana, 510; longitudinal section through coremium showing:-

SH. covering of erect setose hairs.

C. carbonous layer beneath setose covering.

F. fleshy interior.

CON. conidial region.

(See figs.548.B, 553.)

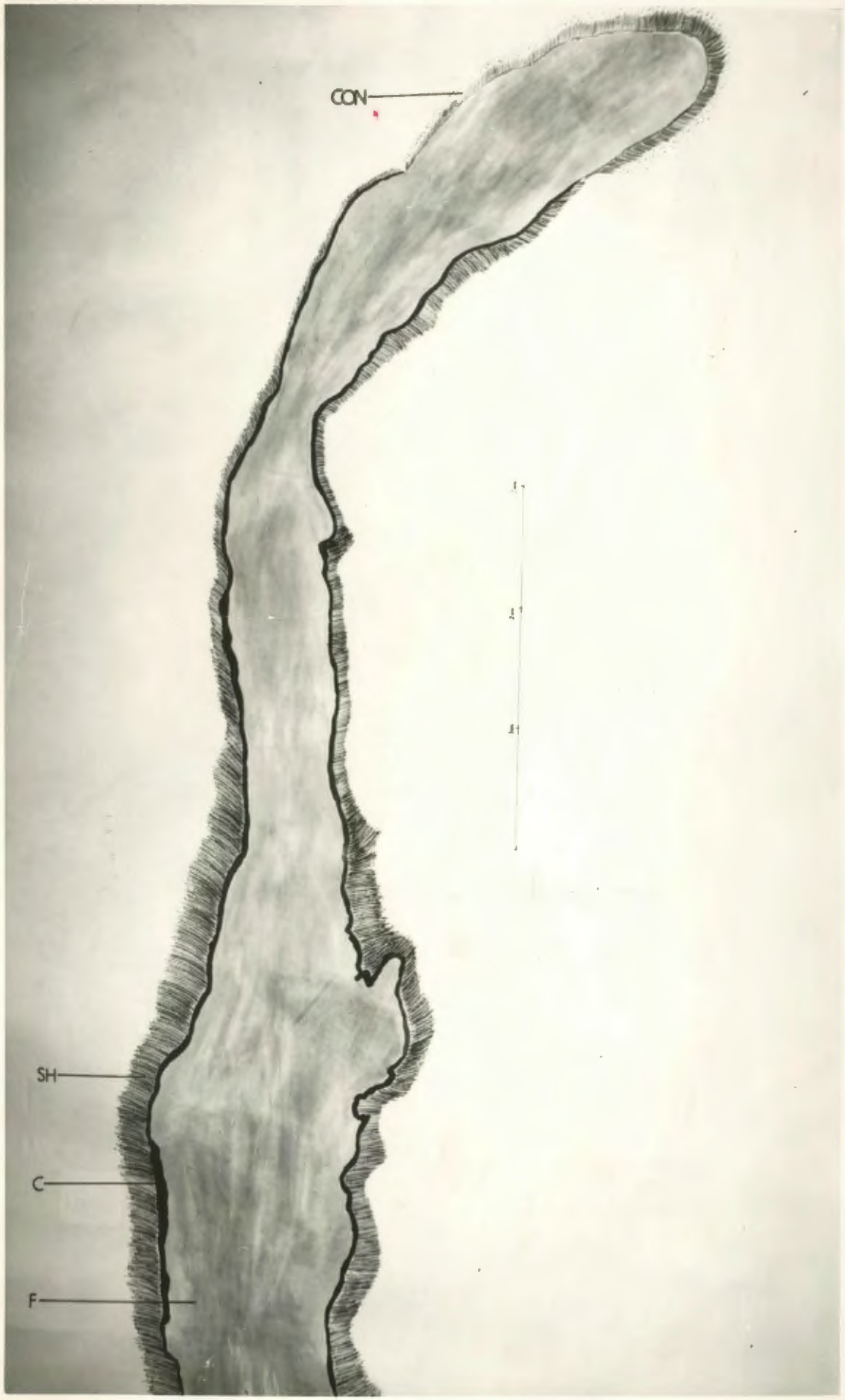

CON
SH
C
F

Fig.559. Secondary mycelium of:-

A. Xylaria castorea, 456.

B. Xylaria fioriana, 510.

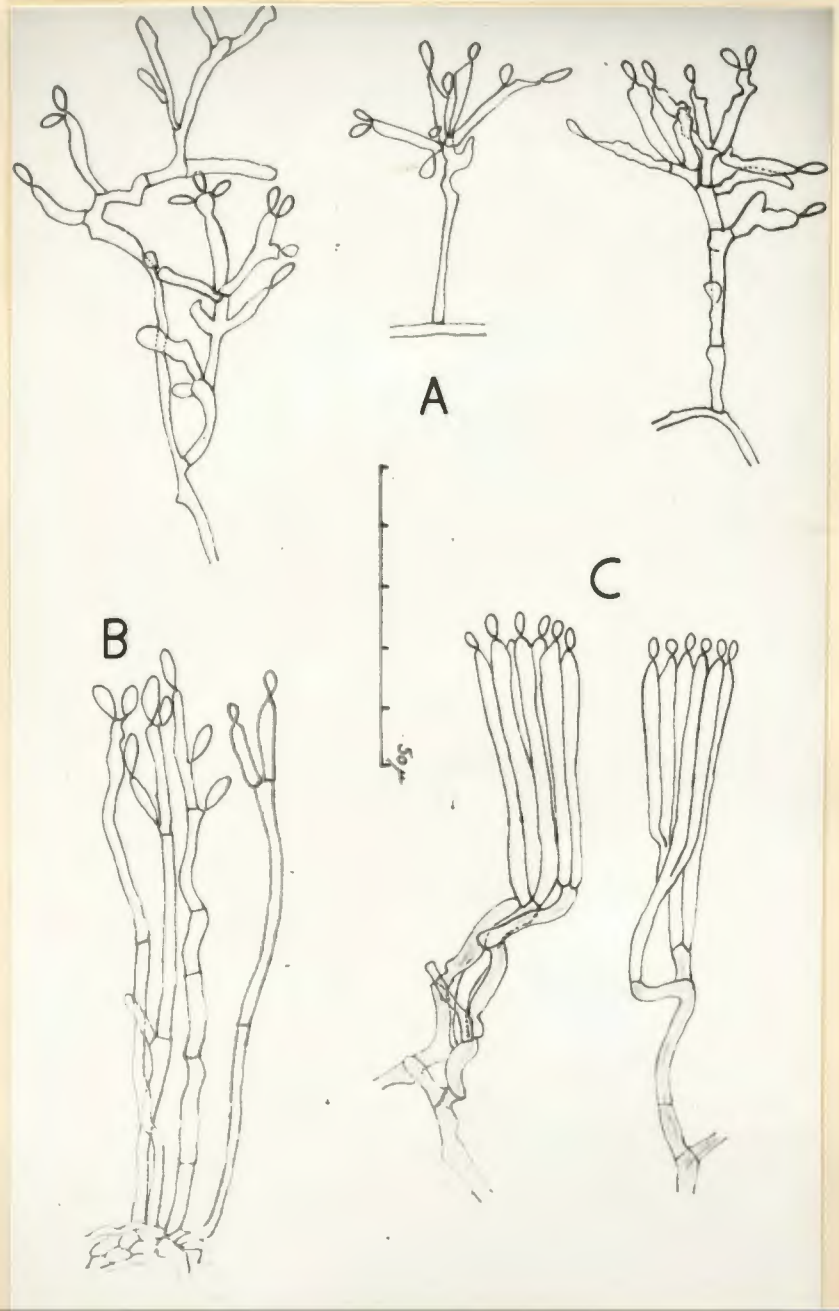
C. Xylaria arbuscula, 57.

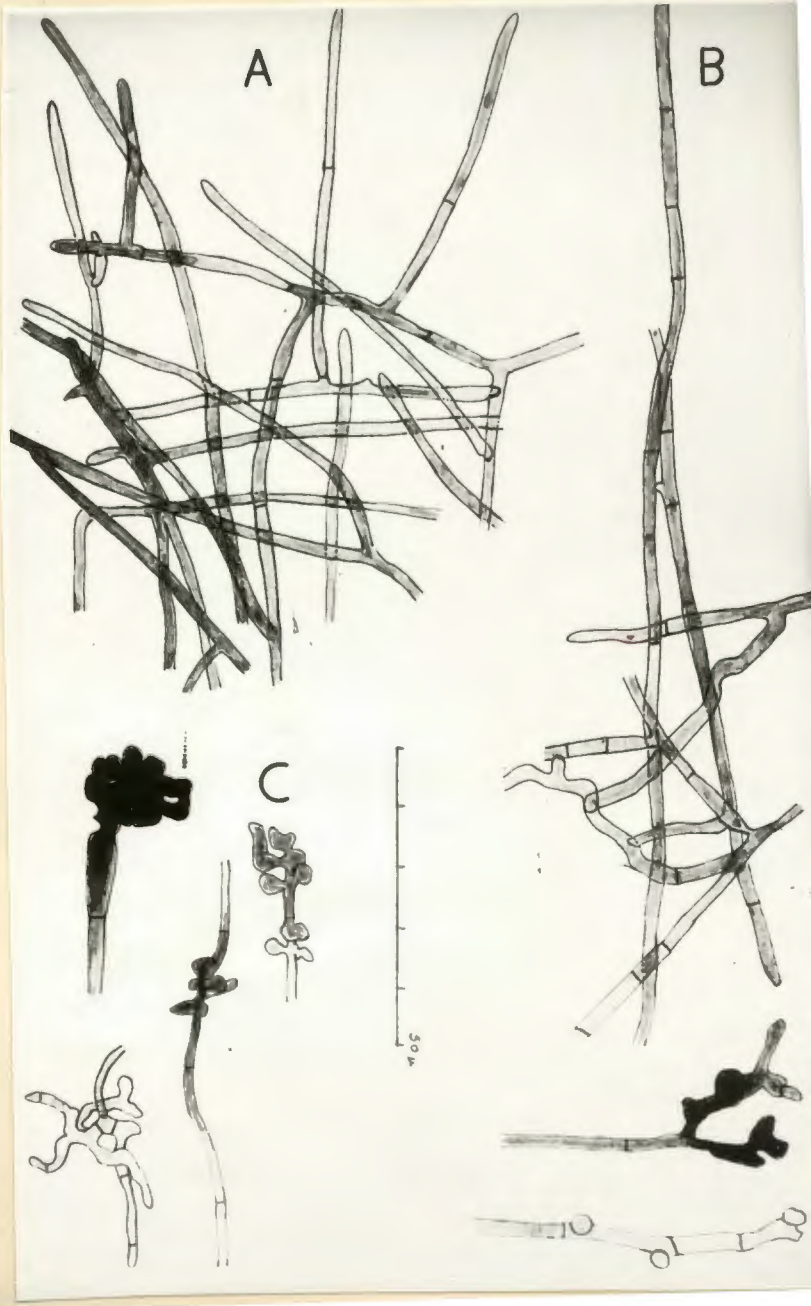
Fig.560. Conidiophores & conidia of:-

A. Penzigia berteri, 366.

B. Hypoxylon deustum, 552. (see figs.486-488)

C. Xylaria fioriana, 510.


A
B
C
50 µm


A
B
C
50 µm

APPENDIX II.

TABLE IA. (Refer to Vol. I p.25).

PROOF THAT BREADTH IS CONSTANT FOR DIFFERENT LENGTHS OF SPORE.

ROSELLINIA AQUILA SPORE ANALYSIS.

LENGTH INTERVAL.	BREADTH INTERVAL.	NO. OF SPORES IN EACH INTERVAL.	AVERAGE BREADTH FOR EACH LENGTH IN
20.6-21.4 μ	7.5- 8.6 μ	1	
	9.4-10.1	1	9.00 μ
21.4-22.1	6.4- 7.1	2	
	7.9- 8.6	2	
	8.6- 9.4	1	7.80
22.1-22.9	6.4- 7.1	1	
	7.9- 8.6	2	
	8.6- 9.4	1	8.07
22.9-23.6	6.4- 7.1	1	
	7.1- 7.9	4	
	7.9- 8.6	1	
	8.6- 9.4	3	
	9.4-10.1	1	8.17
23.6-24.4	6.4- 7.1	1	
	7.1- 7.9	2	
	7.9- 8.6	5	
	8.6- 9.4	3	
	9.4-10.1	2	8.43
24.4-25.1	6.4- 7.1	1	
	7.1- 7.9	5	
	7.9- 8.6	6	
	8.6- 9.4	1	
	10.1-10.9	4	8.08
25.1-25.9 μ	5.6- 6.4 μ	1	
	6.4- 7.1	1	
	7.1- 7.9	11	
	7.9- 8.6	9	
	8.6- 9.4	2	
	9.4-10.1	2	7.96 μ
25.9-26.6	6.4- 7.1	1	
	7.1- 7.9	7	
	7.9- 8.6	6	
	8.6- 9.4	6	8.17
26.6-27.4	6.4- 7.1	3	
	7.1- 7.9	6	
	7.9- 8.6	9	
	8.6- 9.4	5	8.04
27.4-28.1	7.1- 7.9	5	
	7.9- 8.6	4	
	8.6- 9.4	2	
	9.4-10.1	1	8.19
28.1-28.9	7.1- 7.9	2	
	7.9- 8.6	4	
	8.6- 9.4	2	
	9.4-10.1	2	8.55
28.9-29.6	7.1- 7.9	2	
	7.9- 8.6	4	
	8.6- 9.4	3	8.33
29.6-30.4 μ	7.1- 7.9 μ	1	7.50 μ
30.4-31.1	7.9- 8.6	1	8.25
31.1-31.9	7.9- 8.6	1	8.25
		TOTAL: 150	

Calculation of X^2 to determine whether breadth is approximately constant:-

Observed breadth	: 9.0	7.8	8.1	8.2	8.4	8.1	8.0	8.2	8.0	8.2	8.6	8.3	7.5	8.3	8.2 μ
Expected breadth (E):	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2 μ
Difference (D)	: 0.8	0.4	0.1	0.0	0.2	0.1	0.2	0.0	0.2	0.0	0.4	0.1	0.7	0.1	0.0
D^2	: 0.64	0.16	0.01	0.00	0.04	0.01	0.04	0.00	0.04	0.00	0.16	0.01	0.49	0.01	0.00
D^2/E	: 0.079	0.019	0.001	0.0	0.005	0.001	0.005	0.0	0.005	0.0	0.019	0.001	0.060	0.001	0.0

Total = $X^2 \doteq 0.136$. Degrees of Freedom = 14.

Conclusion. 99% level of X^2 (4.660) exceeds the value calculated.

∴ Breadth is approximately constant for different length intervals.

T A B L E I B (Refer to Vol. I p.25).

PROOF THAT BREADTH IS CONSTANT FOR DIFFERENT LENGTHS OF SPORE.

HYPOXYLON TRUNCATUM SPORE ANALYSIS.

LENGTH INTERVAL.	BREADTH INTERVAL.	NO. OF SPORES IN EACH INTERVAL.	AVERAGE BREADTH FOR EAC LENGTH INTERVAL.
6.4- 7.1 μ	4.1-4.9 μ	2	
	4.9-5.6	1	4.76 μ
7.1- 7.9	4.1-4.9	5	
	4.9-5.6	3	4.79
7.9- 8.6	3.4-4.1	5	
	4.1-4.9	12	
	4.9-5.6	3	
	5.6-6.4	1	4.50
8.6- 9.4	2.6-3.4	1	
	3.4-4.1	6	
	4.1-4.9	16	
	4.9-5.6	7	
	5.6-6.4	3	4.61
9.4-10.1	3.4-4.1	2	
	4.1-4.9	7	
	4.9-5.6	2	4.50
10.1-10.9	3.4-4.1	0	
	4.1-4.9	10	
	4.9-5.6	2	4.62
10.9-11.6	3.4-4.1	1	
	4.9-5.6	1	4.50
		TOTAL: 90	

Calculation of X^2 to determine whether breadth is approximately constant:

Observed breadth :	4.7	4.8	4.5	4.6	4.5	4.6	4.5 μ
Expected breadth :	4.6	4.6	4.6	4.6	4.6	4.6	4.6 μ
Difference (D) :	0.1	0.2	-0.1	0.0	-0.1	0.0	-0.1
D^2 :	0.01	0.04	0.1	0.0	0.1	0.0	0.1
D^2/E :	0.002	0.009	0.002	0.0	0.002	0.0	0.002

Total = X^2 = 0.017
Degrees of Freedom = 6
Conclusion. 99% level of X^2 (0.872) exceeds that calculated

. . Breadth is approximately constant for different length intervals.

T A B L E I C. (Refer to Vol. I p.25)

PROOF THAT BREADTH IS CONSTANT FOR DIFFERENT LENGTHS OF SPORE.
HYPOXYLON MEDITERRANEUM SPORE ANALYSIS.

LENGTH INTERVAL.	BREADTH INTERVAL.	NO. OF SPORES IN EACH INTERVAL.	AVERAGE BREADTH FOR EACH LENGTH INTERVAL.
10.9-11.6 μ	4.9-5.6 μ	1	5.3 μ
11.6-12.4	6.4-7.1	2	7.0
	7.1-7.9	1	
12.4-13.1	5.6-6.4	3	6.5
	6.4-7.1	2	
	7.1-7.9	1	
13.1-13.9	4.9-5.6	1	6.6
	5.6-6.4	3	
	6.4-7.1	3	
	7.1-7.9	3	
13.9-14.6	4.9-5.6	1	7.1
	5.6-6.4	3	
	6.4-7.1	14	
	7.1-7.9	14	
	7.9-8.6	3	
	8.6-9.4	1	
14.6-15.4	5.6-6.4	6	7.2
	6.4-7.1	7	
	7.1-7.9	9	
	7.9-8.6	7	
	8.6-9.4	1	
15.4-16.1	5.6-6.4	7	7.1
	6.4-7.1	12	
	7.1-7.9	9	
	7.9-8.6	7	
	8.6-9.4	3	
16.1-16.9	5.6-6.4	5	7.1
	6.4-7.1	6	
	7.1-7.9	9	
	7.9-8.6	3	
16.9-17.6	5.6-6.4	1	7.4
	6.4-7.1	4	
	7.1-7.9	6	
	7.9-8.6	4	
17.6-18.4	5.6-6.4	3	7.2
	6.4-7.1	1	
	7.1-7.9	4	
	7.9-8.6	1	
	8.6-9.4	1	
18.4-19.1	5.6-6.4	1	7.5
	6.4-7.1	3	
	7.1-7.9	0	
	7.9-8.6	1	
	8.6-9.4	2	
19.1-19.9	6.4-7.1	1	6.8
		TOTAL = 180	

X^2 test to show whether any significant difference exists between the numbers

Observed Breadth	:	5.3	7.0	6.5	6.6	7.1	7.2	7.1	7.1	7.4	7.2	7.5	6.8 μ
Expected Breadth (B)	:	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2 μ
Difference (D)	:	1.9	0.2	0.7	0.6	0.1	0.0	0.1	0.1	0.2	0.0	0.3	0.4
D^2	:	3.61	0.4	0.49	0.36	0.01	0.0	0.01	0.01	0.04	0.0	0.09	0.16

$X^2 = \Sigma D^2/B$ = 0.6679. There are 11 degrees of freedom. Calculated value > 99% level of X^2 (3.053).

Conclusions. No significant difference found. Therefore Breadth is approximately constant for different length intervals.

TABLE ID. (Refer to Vol. I p.25).

PROOF THAT BREADTH IS CONSTANT FOR DIFFERENT LENGTHS OF SPORE.

PENZIGIA DISCOLOR SPORE ANALYSIS.

LENGTH INTERVAL.	BREADTH INTERVAL.	NO. OF SPORES IN EACH INTERVAL.	AVERAGE BREADTH FOR EACH LENGTH INTERVAL.
8.6- 9.4 μ	4.1-4.9 μ	1	6.75 μ
	4.9-5.6	0	
	5.6-6.4	0	
	6.4-7.1	3	
	7.1-7.9	3	
9.4-10.1	4.9-5.6	1	6.5
	5.6-6.4	3	
	6.4-7.1	3	
	7.1-7.9	2	
10.1-10.9	4.9-5.6	1	6.6
	5.6-6.4	8	
	6.4-7.1	11	
	7.1-7.9	4	
10.9-11.6	5.6-6.4	2	6.75
	6.4-7.1	12	
	7.1-7.9	2	
11.6-12.4	4.9-5.6	1	6.6
	5.6-6.4	8	
	6.4-7.1	5	
	7.1-7.9	5	
	7.9-8.6	1	
12.4-13.1	5.6-6.4	1	6.0
13.1-13.9	6.4-7.1	1	6.75
		TOTAL: 90	

Calculation of X^2 to determine whether breadth is approximately constant:

Observed breadth	:	6.7	6.5	6.6	6.8	6.6	6.0	6.75 μ
Expected breadth (E)	:	6.7	6.7	6.7	6.7	6.7	6.7	6.7 μ
Difference D	:	0	0.2	0.1	0.1	0.1	0.7	0.05
D^2	:	0	0.04	0.01	0.01	0.01	0.49	0.025
D^2/E	:	0	0.006	0.001	0.001	0.001	0.073	0.0037

$X^2 = 0.119$. There are 6 degrees of freedom.

Conclusion. 99% level of X^2 (0.872) exceeds that calculated

. . Breadth is approximately constant for different length intervals.

APPENDIX III : TABLE II. (Refer to Vol. I p. 26).

HYPOXYLON MEDITERRANEUM.

DETERMINATION OF CORRELATION COEFFICIENT (R) BETWEEN BREADTH AND LENGTH OF SPORES.

VALUES OF V (W-7.5):	VALUES OF L (LENGTH) TO THE NEAREST 0.75 μ :	10.50	11.25	12.00	12.75	13.50	14.25	15.00	15.75	16.50	17.25	18.00	18.75	19.50	fr (frequency)	Vfv	V^2fv	Mean Width	σv^2	σv
	VALUES OF μ (L-15.00):	-4.50	-3.75	-3.00	-2.25	-1.50	-0.75	0.0	+0.75	1.50	2.25	3.00	3.75	4.50				7.19 μ		
5.25	-2.25	1				1	1								3	-6.75	15.19			
6.00	-1.50			1	3	3	3	6	7	5	1	3	1		32	-48.00	72.00			
6.75	-0.75			1	2	3	14	7	12	6	4	1	3	1	55	-41.25	30.94			
7.50	0.00			1	1	3	14	9	9	9	6	4			56	0.00	0.00			
8.25	+0.75						3	7	7	3	4	1	1		26	+19.50	14.63			
9.00	+1.50						1	1	3			1	2		8	12.00	18.00			
fu (frequency)		1	0	3	6	10	36	30	38	23	15	10	7	1	180	-64.50	150.76		0.8389-0.1284=0.7105	0.84
Ufu		-4.50	0.0	-9.0	-13.5	-15.0	-27.0	0.0	+28.5	34.5	33.75	30.0	28.25	4.50	+ 90.50					
U^2fu		20.25	0.0	27.00	30.39	22.50	20.25	0.00	21.38	51.75	75.95	90.00	105.99	20.25	485.6					
V		-2.25	0.0	-2.25	-6.00	-9.00	-11.50	-7.50	- 9.75	- 9.75	-1.50	3.00	0.00	- 0.75	- 63.25					
uV		+10.13	0.0	+6.75	+13.50	+13.50	+ 8.63	0.00	- 7.31	-14.63	-3.37	9.00	0.00	- 3.47	+ 14.73					

Mean Length = 15.59 μ

$\sigma^2_\mu = \frac{U^2fu}{N} - \bar{u}^2 = \left(\frac{485.6}{180}\right) - \left(\frac{90.50}{180}\right)^2 = 2.698 - 0.252 = 2.45$ $\quad \bar{u} = \frac{90.50}{180} = 0.5027$ $\quad \bar{v} = \frac{-64.50}{180} = -0.3583$

σ_μ 1.56

Correlation Coefficient $R = \frac{(1/180 \times 14.73) - (0.5027 \times 0.3583)}{1.56 \times 0.84} = \frac{0.2615}{1.395} = 0.20$

CONCLUSION:

The low value of R shows that length and width of spores are only slightly correlated.

HYPOXYLON PLUMBEUM.

	NUMBER OF DAYS AFTER INOCULATION.															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MEAN DIAMETER OF COLONY mm.	0.2	2.2	4.6	7.6	11.3	14.4	18.2	21.8	25.3	29.1	32.5	36.0	38.4	41.4	44.2	48.0
MEAN RADIUS mm.	0.1	1.1	2.3	3.8	5.6	7.1	9.1	10.9	12.6	14.5	16.2	18.0	19.2	20.7	22.1	24.0
DAILY/12 HOURLY INCREMENT I	0.1	1.0	1.2	1.5	1.8	1.5	2.0	1.8	1.7	1.9	1.7	1.8	1.2	1.5	1.4	1.9
MEAN INCREMENT AFTER 3-5 DAYS				1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
DIFFERENCE between actual VALUES & THE MEAN				.2	.1	.2	.3	.1	0	.2	0	.1	.5	.2	.3	.2
D^2				.04	.01	.04	.09	.01	0	.04	0	.01	.25	.04	.09	.04
D^2/I				.021	.006	.021	.053	.006	0	.021	0	.006	.147	.021	.053	.021

TOTAL = χ^2 = 0.376

DEGREES OF FREEDOM = 12

CONCLUSION : 99% level of χ^2 (3.571) exceeds the value calculated.

HYPOXYLON FERRUGINEO-RUFUM.

	NUMBER OF DAYS AFTER INOCULATION.													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
MEAN DIAMETER OF COLONY mm.	0.0	1.8	3.6	6.1	10.1	14.3	18.3	22.5	26.3	30.6	35.4	38.0	42.5	45.5
MEAN RADIUS mm.	0.0	0.9	1.8	3.0	5.0	7.1	9.1	11.2	13.1	15.3	17.7	19.0	21.2	22.7
DAILY/12 HOURLY INCREMENT I	0.0	0.9	0.9	1.2	2.0	2.1	2.0	2.1	1.9	2.2	2.4	1.3	2.2	1.5
MEAN INCREMENT AFTER 3-5 DAYS					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
DIFFERENCE (D) BETWEEN ACTUAL VALUE & THE MEAN.					0	0.1	0.0	0.1	0.1	0.2	0.4	0.7	0.2	0.5
D^2					0	0.01	0.0	0.01	0.01	0.04	0.16	0.49	0.04	0.25
D^2/I					0.0	0.005	0.0	0.005	0.005	0.020	0.080	0.025	0.020	0.125

TOTAL = χ^2 = 0.285

DEGREES OF FREEDOM = 9

CONCLUSION : 99% level of χ^2 (2.088) exceeds the value calculated.

Temperature 25°C throughout.

SPECIES	STRAIN	NUMBER OF PLATE CULTURES INVESTIGATED.
H. glomeratum	336	6
H. mediterraneum	19	2
N. uni-apiculata	372	2
H. stygium	234	3
H. truncatum	44	2
Hypoxylon 18 B	193	3
H. rubiginosum	219	3
H. ferrugineo-rufum	222	2

TABLE III. (Refer to Graph A, & Vol. I p.27).

CALCULATION OF χ TO SHOW THAT THE GROWTH RATE OF FUNGI IS APPROXIMATELY CONSTANT WITH ADVANCING AGE.

HYPOXYLON GLOMERATUM.

NUMBER OF DAYS AFTER INOCULATION.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MEAN DIAMETER OF COLONY mm.	1.0	5.1	[illegible]	13.3	17.0	21.2	25.3	29.5	33.9	38.5	42.5	46.7	51.1	55.9	59.5	62.1
MEAN RADIUS mm.	0.5	2.5	4.2	6.6	8.5	10.6	12.6	14.7	16.9	19.2	21.2	23.3	25.5	27.9	29.7	31.0
DAILY/12 HOURLY INCREMENT I	0.5	2.0	1.7	2.4	1.9	2.1	2.0	2.1	2.2	2.3	2.0	2.1	2.2	2.4	1.8	1.3
MEAN INCREMENT AFTER 3-5 DAYS					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
DIFFERENCE (D) BETWEEN ACTUAL VALUES & THE MEAN					-.1	.1	0	.1	.2	.3	0	.1	.2	.4	-.2	-.7
D^2					.01	.01		.01	.04	.09		.01	.04	.16	.04	.49
D^2/I					.005	.005		.005	.02	.045		.005	.02	.08	.02	.245

TOTAL = χ^2 = 0.575

DEGREES OF FREEDOM = 11

CONCLUSION : 99% level of χ^2 (3053) exceeds the value calculated.

NUMMULARIA UNI-APICULATA.

NO. OF DAYS AFTER INOCULATION.	1	2	3	4	5	6	7	8
MEAN DIAMETER OF COLONY mm.	3.5	9.9	17.4	25.7	34.9	44.6	56.1	66.8
MEAN RADIUS mm.	1.8	5.0	8.7	12.8	17.4	22.3	28.0	33.4
DAILY/12 HOURLY INCREMENT I	1.8	3.2	3.7	4.2	4.6	4.9	5.9	5.3
MEAN INCREMENT AFTER 3-5 DAYS					5.1	5.1	5.1	5.1
DIFFERENCE (D) BETWEEN ACTUAL VALUES & THE MEAN					-0.5	-0.2	0.7	.2
D^2					0.25	0.04	0.49	0.04
D^2/I					.050	.008	.098	.008

0.164

3

98% level of χ^2(0.185) exceeds the value calculated.

HYPOXYLON TRUNCATUM.

NUMBER OF DAYS AFTER INOCULATION.	1	2	2½	3	3½	4	4½	5	5½	6	6½	7	7½	8	9
MEAN DIAMETER OF COLONY mm.	0.7	7.0	12.2	17.0	21.5	28.0	31.7	37.0	41.7	47.5	52.5	58.2	62.0	68.0	77.0
MEAN RADIUS mm.	0.3	3.5	6.1	8.5	10.1	14.0	15.8	18.5	20.8	23.8	26.2	29.1	31.0	34.0	38.5
DAILY/12 HOURLY INCREMENT I	0.3	3.2	2.6	2.4	2.2	3.3	1.8	2.7	2.3	3.0	2.4	2.9	1.9	3.0	4.5
MEAN INCREMENT AFTER 3-5 DAYS						2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	--
DIFFERENCE (D) BETWEEN ACTUAL VALUES & THE MEAN						0.7	0.8	0.1	0.3	0.4	0.2	0.3	0.7	0.4	--
D^2						0.49	0.64	0.01	0.09	0.16	0.04	0.09	0.49	0.16	--
D^2/I						.189	.246	.004	.035	.061	.015	.035	.189	.061	--

0.835

8

99% level of χ^2(1.646) exceeds the value calculated.

HYPOXYLON RUBIGINOSUM.

NUMBER OF DAYS AFTER INOCULATION.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MEAN DIAMETER OF COLONY mm.	0.1	2.7	5.7	10.4	15.6	7.8	25.0	29.6	34.7	38.3	43.3	47.7	52.2	57.2	62.1	66.6
MEAN RADIUS mm.	0.0	1.3	2.8	5.2	7.8	10.1	12.5	14.8	17.3	19.1	21.6	23.9	26.1	28.6	31.0	33.3
DAILY/12 HOURLY INCREMENT I	0.0	1.3	1.5	2.4	2.6	2.3	2.4	2.3	2.5	1.8	2.5	2.3	2.2	2.5	2.4	2.3
MEAN INCREMENT AFTER 3-5 DAYS				2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
DIFFERENCE (D) BETWEEN ACTUAL VALUES & THE MEAN				0.1	0.3	0.0	0.1	0.0	0.2	0.5	0.2	0.0	0.1	0.2	0.1	0.0
D^2				0.01	0.09	0.0	0.01	0.0	0.04	0.25	0.04	0.0	0.01	0.04	0.01	0.0
D^2/I				.005	.039	0.0	.005	0.0	.018	.109	.018	0.0	.005	.018	.005	0.00

TOTAL = χ^2 = 0.222

DEGREES OF FREEDOM = 12

99% level of χ^2 (3.571) exceeds the value calculated.

HYPOXYLON MEDITERRANEUM.

NUMBER OF DAYS AFTER INOCULATION.	1	1½	2	2½	3	3½	4	4½	5	5½	6
MEAN DIAMETER OF COLONY mm.	14.2	-	15.0	22.5	29.5	5.2	43.0	49.5	55.7	62.5	67.5
MEAN RADIUS mm.	2.1	-	17.5	11.2	14.8	17.6	21.5	24.7	27.8	31.2	33.7
DAILY/12 HOURLY INCREMENT I	-	--	-	3.7	3.5	2.9	3.9	3.3	3.1	3.4	2.5
MEAN INCREMENT AFTER 3-5 DAYS		-			3.2	3.2	3.2	3.2	3.2	3.2	3.2
DIFFERENCE (D) BETWEEN ACTUAL VALUES & THE MEAN		-			.3	-.3	.7	.1	-.1	.2	-.7
D^2		-			.09	.09	.49	.01	.01	.04	.49
D^2/I		-			.028	.028	.153	.003	.003	.013	.153

0.381

6

99% level of χ^2(0.872) exceeds the value

HYPOXYLON STYGIUM.

NUMBER OF DAYS AFTER INOCULATION.	1	2	3	4	5	6	7
MEAN DIAMETER OF COLONY mm.	[illegible]	7.5	18.8	28.0	39.7	48.0	58.0
MEAN RADIUS mm.	0.65	3.8	9.4	14.0	19.9	24.0	29.0
DAILY/12 HOURLY INCREMENT I	0.7	3.1	5.6	4.6	5.9	4.1	5.0
MEAN INCREMENT AFTER 3-5 DAYS			5.0	5.0	5.0	5.0	5.0
DIFFERENCE (D) BETWEEN ACTUAL VALUES & THE MEAN			0.6	-0.4	0.9	-0.9	0.0
D^2			0.36	0.16	0.81	0.81	0.00
D^2/I			.072	.032	.162	.162	0.00

0.428

4

98% level of χ^2 (0.429) exceeds the value

(Refer to Graphs 1 - 4, & Vol. 1 p.45).

SIGNIFICANCE TABLE TO SHOW SIGNIFICANCE BETWEEN SPORE DIMENSIONS OF VARIOUS STRAINS OF THE ROSELLINIA - ENDOXYLON - NUMMULARIA GROUP.

ECIES	NO.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.
ELLINIA OTUBERANS	1	-	S	S	S	S	S	S	S	S	sl	S	S	sb	S	sl	S	S	S	S	S	S	S	S	sb
ELLINIA TUSISSIMA	2	S	-	S	sb	S	S	S	S	S	sb	S	S	S	S	S	S	sb	S	S	S	sb	S	sl	S
ELLINIA LVERACEA	3	S	S	-	S	sb	S	S	S	S	S	sl	S	S	S	S	sl	S	sl	S	S	sl	S	S	S
ELLINIA ROIDES	4	S	sb	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	sb	S	S	S	S	S	S
ELLINIA ICULATA	5	S	S	sb	S	-	S	S	S	S	S	S	S	S	ns	S	S	S	S	S	S	S	S	S	S
ELLINIA MMOIDEA	6	S	S	S	S	S	-	sb	S	S	S	S	sb	S	S	S	S	S	S	S	S	S	S	sb	S
ELLINIA RTICALIS	7	S	S	S	S	S	S	-	sl	S	S	S	sb	S	S	S	ns	S	sl	S	S	S	sb	sb	S
ELLINIA ELENA	8	S	S	S	S	S	S	sl	-	S	S	S	S	S	S	S	sl	S	S	S	S	S	S	S	S
ELLINIA UILA	9	S	S	S	S	S	S	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
OXYLON OMERATUM VAR. 1.	10	sl	sb	S	S	S	S	S	S	S	-	sb	S	S	S	S	S	ns	S	S	sl	sb	S	S	S
VAR. 2.	11	S	S	sl	S	S	S	S	S	S	sb	-	ns	S	S	S	sl	S	S	S	S	sl	S	sb	S
VAR. 3.	12	S	S	S	S	S	sb	sb	S	S	S	ns	-	S	S	S	S	S	S	S	S	sl	S	sb	S
VAR. 4.	13	sb	S	S	S	S	S	S	S	S	S	S	S	-	ns	sl	S	S	S	S	S	S	S	S	ns
VAR. 5.	14	S	S	S	S	ns	S	S	S	S	S	S	S	ns	-	S	S	S	S	S	S	S	S	S	sl
.6=PENZIGIA 1.	15	sl	S	S	S	S	S	S	S	S	sl	S	S	sl	S	-	S	S	sb	S	sb	S	S	S	sl
MULARIA CCENTURIATA	16	S	S	sl	S	S	S	ns	sl	S	S	sl	S	S	S	S	-	S	sl	S	S	S	sb	S	S
OXYLON TANS	17	S	sb	S	S	S	S	S	S	S	ns	S	S	S	S	S	S	-	S	S	sl	sb	S	S	S
MULARIA -APICULATA	18	S	S	sl	sb	S	S	sl	S	S	S	S	S	S	S	S	sl	S	-	S	sb	S	S	S	S
OXYLON 13A	19	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	-	S	S	S	S	S
OXYLON RILLIA	20	S	S	S	S	S	S	S	S	S	sl	S	S	S	S	sb	S	sl	sb	S	-	S	S	S	S
OXYLON MULARIUM	21	S	sb	sl	S	S	S	S	S	S	sb	sl	sl	S	S	S	S	ns	sl	S	S	-	S	S	S
XYLON ITERRANEUM	22	S	S	S	S	S	S	sb	S	S	S	S	S	S	S	S	sb	S	sl	S	S	S	-	S	S
XYLON RCODES	23	S	sl	S	S	S	sb	sb	S	S	S	sb	sb	S	S	S	S	S	S	S	S	S	S	-	S
ULARIA CHBRENNERA	24	sb	S	S	S	S	S	S	S	S	S	S	S	ns	sl	sl	S	S	S	S	S	S	S	S	-

S = Entirely significant.
sb = Breadth only significant.
sl = Length only significant.
ns = Not significantly different.

WIDTH INTERVAL (μ).	1.1-1.9	1.9-2.6	2.6-3.4	3.4-4.1	4.1-4.9	4.9-5.6	5.6-6.4	6.4-7.1	7.1-7.9	7.9-8.6	8.6-9.4	9.4-10.1	10.1-10.9	MEAN WIDTH. μ	NO. OF SPORES (N)	Sx.	$(Sx)^2$.	$(Sx)^2/N$.
ROSELLINIA (1) PROTUBERANS					42	115	84	23	6					5.54	270	1497.00	2241009.000	8300.003
ROSELLINIA (2) OBTUSISSIMA							7	27	31	16	8	0	1	7.45	90	671.25	450576.563	5006.406
ROSELLINIA (3) PULVERACEA					3	9	16	22	8	2				6.36	60	381.75	145733.063	2428.884
ROSELLINIA (4) MOROIDES						1	5	30	33	55	20	5	1	8.39	150	1178.250	13882730.625	9255.154
ROSELLINIA (5) APICULATA			4	32	75	26	3							4.46	140	624.00	389376.000	2781.257
ROSELLINIA (6) MAMMOIDEA							4	36	72	61	30	6	1	7.85	210	1649.25	2720025.5625	12952.503
ROSELLINIA (7) CORTICALIS						2	18	25	11	2	2			6.74	60	404.25	163418.0625	2723.634
ROSELLINIA (8) THELENA					1	3	14	24	11	6	1			6.79	60	407.25	165852.563	2764.209
ROSELLINIA (9) AQUILA							5	24	61	72	33	13	1	8.02	210	1683.75	2835014.063	13500.670
HYPOXYLON (10) GLOMERATUM VAR.1.				1	18	64	54	12	1					5.56	150	833.25	694305.563	4628.704
(11) VAR.2.					3	14	48	38	17					6.32	120	759.00	576081.000	4800.675
(12) VAR.3.					1	21	35	30	3					6.11	90	549.75	302225.063	3358.563
(13) VAR.4.			3	5	63	35	9	5						4.86	120	582.75	339597.5625	2829.980
(14) VAR.5.			2	17	43	28								4.56	90	410.25	168305.063	1870.056
(PENZIGIA 1) (15) VAR.6.				1	49	59	8	3						5.02	120	602.25	362705.063	3022.542
N. (16) SUCCENTURIATA						2	21	27	9	0	1			6.59	60	395.25	156222.563	2603.709
HYPOXYLON (17) EXUTANS					4	51	49	16						5.73	120	687.75	473000.063	3941.667
N. (18) UNI-APICULATA							34	42	12	1	1			6.61	90	594.75	353727.563	3930.306
(19) HYPOXYLON 13A	4	39	17											2.41	60	144.75	20952.563	349.209
HYPOXYLON (20) MERRILLII					17	107	81	13	2					5.58	220	1227.00	1505529.000	6843.314
HYPOXYLON (21) NUMMULARIUM					1	16	50	42	9	2				6.30	120	756.00	571536.000	4762.800
HYPOXYLON (22) MEDITERRANEUM						3	42	71	72	39	12	0	1	7.20	240	1727.25	2983392.563	12436.802
HYPOXYLON (23) ASARCODES						3	12	39	55	28	11	2		7.42	150	1113.00	1238769.000	8258.460
N. (24) KALCHBRENNERA				3	34	21	2							4.78	60	286.50	82082.250	1368.375
TOTALS:	4	39	26	59	354	580	602	549	413	284	119	26	5		3060			126014.743

$S(x^2)$ = 126,995.625 Total Sum of Squares = 126,995.6250 - CF

TABLE IV B.

LENGTH INTERVAL. (μ)	5.6 — 6.4	6.4 — 7.1	7.1 — 7.9	7.9 — 8.6	8.6 — 9.4	9.4 — 10.1	10.1 — 10.9	10.9 — 11.6	11.6 — 12.4	12.4 — 13.1	13.1 — 13.9	13.9 — 14.6	14.6 — 15.4	15.4 — 16.1	16.1 — 16.9	16.9 — 17.6	17.6 — 18.4	18.4 — 19.1	19.1 — 19.9	19.9 — 20.6	20.6 — 21.4	21.4 — 22.1	22.1 — 22.9	22.9 — 23.6	23.6 — 24.4	24.4 — 25.1
ROSELLINIA (1) PROTUBERANS			3	4	23	44	88	56	41	10	1															
ROSELLINIA (2) OBTUSISSIMA							2	3	15	17	26	20	4	2	1											
ROSELLINIA (3) PULVERACEA	1	4	5	8	26	8	7	1																		
ROSELLINIA (4) MOROIDES				1	1	1	9	22	26	36	25	25	2	1	1											
ROSELLINIA (5) APICULATA	1	5	9	26	50	23	21	5																		
ROSELLINIA (6) MAMMOIDEA						1	3	4	16	16	22	24	41	38	30	11	5	1								
ROSELLINIA (7) CORTICALIS											4	9	17	10	8	6	3	2	1							
ROSELLINIA (8) THELENA												1	2	2	5	6	14	9	9	5	2	2	1	1	1	
ROSELLINIA (9) AQUILA																1	1	0	1	1	5	5	12	13	20	20
HYPOXYLON (10) GLOMERATUM VAR. 1.							1	8	22	39	41	22	12	4	1											
(11) VAR. 2.							3	1	11	20	21	25	19	10	7	2	1									
(12) VAR. 3.								2	2	13	14	24	16	13	4	2										
(13) VAR. 4.			4	4	22	26	40	15	6	3																
(14) VAR. 5.		1	4	7	21	25	20	11	1																	
(PENZIGIA 1) (15) VAR. 6.						1	24	27	47	14	4	2	1													
N. (16) SUCCENTURIATA											7	8	13	14	12	5	0	1								
HYPOXYLON (17) EXUTANS							1	5	22	23	36	22	11													
N. (18) UNI-APICULATA							10	12	31	21	14	2														
HYPOXYLON (19) 13A.	15	18	20	4	3																					
HYPOXYLON (20) MERRILLII				1	2	11	37	39	67	42	16	3	0	2												
HYPOXYLON (21) NUMMULARIUM					1	2	6	7	16	16	31	19	12	5	3	2										
HYPOXYLON (22) MEDITERRANEUM							1	0	3	6	11	42	45	46	37	18	18	10	2	1						
HYPOXYLON (23) ASARCODES				1	0	1	1	10	13	22	23	35	26	13	3	2										
N. (24) KALCHBRENNERA			3	8	11	18	12	6	2																	
TOTALS:	17	28	48	58	158	153	292	231	342	291	295	271	230	173	122	56	44	23	13	7	7	7	13	14	21	20

$S(x^2) = 632,238.100$

25.1 – 25.9	25.9 – 26.6	26.6 – 27.4	27.4 – 28.1	28.1 – 28.9	28.9 – 29.6	29.6 – 30.4	30.4 – 31.1	31.1 – 31.9	31.9 – 32.6	32.6 – 33.4	38.6 – 39.4	MEAN LENGTH (μ).	NO. OF SPORES.	Sx.	$(Sx)^2$.	$(Sx)^2/N$
												10.66	270	2878.50	8285762.25	30688.083
												13.28	90	1195.50	1429220.250	15880.225
												8.89	60	533.25	284355.563	4739.259
												12.64	150	1896.00	3594816.000	23965.440
												9.09	140	1272.75	1619892.562	11570.612
												14.90	210	3128.25	9785948.063	46599.753
												15.69	60	941.25	885951.563	14765.859
												18.58	60	1114.50	1242110.250	20701.838
28	28	28	14	13	11	4	1	1	2	1	1	25.91	210	5440.50	29599040.250	140947.811
												13.26	150	1988.25	3953138.063	26354.254
												14.00	120	1680.00	2822400.000	23520.000
												14.33	90	1288.50	1660232.250	18447.250
												10.11	120	1213.50	1472582.250	12271.591
												9.70	90	873.0	762129.000	8468.100
												11.71	120	1405.50	1975430.250	16461.919
												15.45	60	927.00	859329.000	14322.150
												13.24	120	1588.50	2523332.250	21027.731
												12.19	90	1097.25	1203957.563	13377.306
												7.04	60	422.25	178295.063	2971.584
												11.78	220	2590.50	6710690.250	30503.138
												13.32	120	1598.25	2554403.063	21286.922
												15.67	240	3761.25	14147001.563	58945.840
												14.52	150	2178.00	4743684.000	31624.560
												10.43	60	625.50	391250.250	6520.838
28	28	28	14	13	11	4	1	1	2	1	1		3060	40852.05		615962.063

T A B L E IV C.

ANALYSIS OF VARIANCE OF SPORE DIMENSIONS.

ROSELLINIA, HYPOXYLON (ENDOXYLON) AND NUMMULARIA.

W I D T H.

Correction Factor = $(19,246.50)^2/3060$ = (367,345,139.063)/3060 = 120,047.431.

Total Sum of Squares = 126,967.500 - 120,047,-431 = 6,920.069

Between Sample Sum of Squares = 124,711.822 - 120,047,-431 = 4,664.391

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL	3059	6,920.069		
BETWEEN SAMPLES	23	4,664.391	215.649	667.479
WITHIN SAMPLES	3036	2,255.678	0.7429769	

Least significant Interval ($\Delta \bar{x}$) between any 2 means = $\sqrt{0.7430} \times 1.960 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$

$= 0.15 - 0.26\,\mu$ *

L E N G T H.

Correction Term =1,668,890,397.723/3060 = 545,389.019

Total Sum of Squares = 632,238,-100 - 545,389.019 = 86,849.081

Between Sample Sum of Squares = 615,962.063 - 545,389.019 = 70,573.044

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL:	3059.	86,849.081		
BETWEEN SAMPLES:	23.	70,573.044	3,068.393	572.354
WITHIN SAMPLES:	3036	16,276.037	5.36101	

Least significant interval ($\Delta \bar{x}$) between any 2 means = $\sqrt{5.360} \times 1.960 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$

$= 0.45 - 0.85\,\mu$ *

* Value depends on numbers of spores compared.

T A B L E IV D. (Refer to Graphs C,D,& E).

% SPORES PER LENGTH GROUP OF CERTAIN SPECIES OF ROSELLINIA AND HYPOXYLON ENDOXYLON.

RANGE OF SPORE LENGTH. (μ).	% SPORES IN EACH LENGTH INTERVAL.									
	ROSELLINIA MAMMOIDEA.	ROSELLINIA CORTICALIS.	ROSELLINIA THELENA.	ROSELLINIA AQUILA.	HYPOXYLON GLOMERATUM VAR. 1.	VAR. 2.	VAR. 3.	VAR. 4	VAR. 5.	PENZIGIA 4.
6.4-7.1										1.1
7.1-7.9									3.3	4.4
7.9-8.6									3.3	7.8
8.6-9.4									16.7	23.3
9.4-10.1	0.5							21.7	27.8	0.8
10.1-10.9	1.4				0.7	2.5		33.3	22.2	20.0
10.9-11.6	1.9				5.3	6.8	2.2	12.5	12.2	22.5
11.6-12.4	7.6				14.7	9.2	2.2	5.0	1.1	39.2
12.4-13.1	7.6				26.0	16.7	14.4	2.5		11.7
13.1-13.9	10.5	6.6			27.3	17.5	16.7			3.3
13.9-14.6	11.4	15.0	1.7		14.7	20.8	26.7			1.7
14.6-15.4	19.5	28.3	3.3		8.0	15.8	17.8			0.8
15.4-16.1	18.1	16.6	3.3		2.7	8.3	14.4			
16.1-16.9	14.3	13.3	8.3		0.7	5.8	4.4			
16.9-17.6	5.3	10.0	10.0	0.5		1.6	2.2			
17.6-18.4	2.3	5.0	23.3	0.5		0.8				
18.4-19.1	0.5	3.3	15.0	0.0						
19.1-19.9		1.6	15.0	0.5						
19.9-20.6			6.3	0.5						
20.6-21.4			3.3	2.4						
21.4-22.1			3.3	2.4						
22.1-22.9			1.7	5.7						
22.9-23.6			1.7	6.2						
23.6-24.4			1.7	9.6						
24.4-25.1				9.6						
25.1-25.5				13.3						
25.5-26.6				13.3						
26.6-27.4				13.3						
27.4-28.1				6.7						
28.1-28.9				6.2						
28.9-29.6				5.2						
29.6-30.4				2.0						
30.4-31.1				0.5						
31.1-31.9				0.5						
31.9-32.6				1.0						
32.6-33.4				0.5						
38.6-39.4				0.5						

T A B L E V. (Ref. to Graphs B–F, & Vol. I p.89).

TO SHOW DEGREE OF SIGNIFICANCE (AT 5% LEVEL) BETWEEN THE GROWTH RATES OF THE ROSELLINIA - ENDOXYLON - NUMMULARIA GROUP.

SPECIES	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.
147		15	15	15	15	15	.	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	.
R. 1.		20	20	20	20	20	.	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
PROTUBERANS	–	25	25	25	25	25	.	25	25	.	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
		.	.	28	28	.	.	28	28	.	.	.	28	28	.	28	28	28	28	28	28	28	28	28	28
257	15		15	.	15	.	15	15	15	15	15	15	15	15	15	15	15	.	15	.	15	15	15	15	15
R. 2.	20		20	.	.	.	20	20	20	.	20	20	20	.	20	20	20	20	20	.	20	20	20	.	.
OBTUSISSIMA	25	–	.	.	.	25	25	25	25	25	25	.	.	25	.	25	25	25	25	25	25	25	25	.	.
	.		.	28	28	.	.	28	28	.	28	.	28	28	.	28	28	28	28	28	28	28	28	.	28
269	15	15		.	15	.	15	15	15	.	.	.	.	.	.	15	15	15	15	15	15	15	15	.	15
R. 3.	20	20		20	20	20	20	20	20	.	.	.	.	20	.	20	20	20	20	20	20	20	20	.	20
PULVERACEA	25	25	–	.	.	25	25	25	25	25	25	.	.	25	.	25	25	25	25	25	25	25	25	.	.
	.	.		28	28	28	.	28	28	.	28	.	28	28	.	28	28	28	28	28	28	28	28	28	28
412	15	.	.		15	.	15	15	15	15	15	.	.	.	.	15	.	15	15	.	15	15	15	.	.
R. 4.	20	.	20		.	.	20	20	20	.	.	20	.	.	20	20	20	20	20	.	20	20	20	.	.
MOROIDES	25	.	.	–	25	25	25	25	25	25	.	.	.	.	.	25	25	25	25	.	25	25	25	.	.
	28	28	28		28	28	28	28	28	28	28	28	28	28	28	28	.	28	28	28	28	.	28	28	28
430	15	15	15	15		15	15	15	15	15	15	15	15	15	15	.	.	15	.	15	.	.	15	15	15
R. 5.	20	.	20	.		.	20	20	20	20	20	20	20	.	20	20	20	20	20	.	20	20	20	20	.
APICULATA	25	.	.	25	–	25	25	25	25	25	.	.	.	.	.	25	25	25	25	.	25	25	25	.	.
	28	28	28	28		28	28	28	28	28	28	28	28	.	28	28	28	28	28	.	.	28	28	28	.
433	15	.	.	.	15		15	15	15	15	15	15	.	.	15	15	15	15	15	15	15	15	15	.	15
R. 6.	20	.	20	.	.		20	20	20	.	.	.	.	.	.	20	20	20	20	.	20	20	20	.	.
MAMMOIDEA	25	25	25	25	25	–	.	25	25	.	25	.	25	25	25	25	25	25	25	25	25	25	25	.	25
	.	.	28	28	28		.	28	28	.	.	.	28	28	.	28	28	28	28	28	28	28	28	.	28
531	.	15	15	15	15	15		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	.
R. 7.	.	20	20	20	20	20		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
CORTICALIS	.	25	25	25	25	.	–	25	25	.	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	.	.	.	28	28	.		28	28	.	.	.	28	28	.	28	28	28	28	28	28	28	28	28	28
508	15	15	15	15	15	15	15		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
R. 8.	20	20	20	20	20	20	20		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
THELENA	25	25	25	25	25	25	25	–	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	28	28	28	28	28	28	28		28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
544	15	15	15	15	15	15	15	15		15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
R. 9.	20	20	20	20	20	20	20	20		20	20	20	20	20	20	.	20	20	.	20	20	20	.	20	20
AQUILA	25	25	25	25	25	25	25	25	–	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
	28	28	28	28	28	28	28	28		28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
524	15	15	.	15	15	15	15	15	15		.	.	.	.	15	15	15	15	15	15	15	15	15	.	15
H. 10.	20	.	.	.	20	.	20	20	20		.	.	.	.	.	20	20	20	20	20	20	20	20	.	.
GLOMERATUM	.	25	25	25	25	.	.	25	25	–	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
VAR. 1.	.	.	.	28	28	.	.	28	28		.	.	28	28	.	28	28	28	28	28	28	28	28	28	28
218 11.	15	15	.	15	15	15	.	15	15	.		.	.	.	15	15	15	15	15	15	15	15	15	.	15
	20	20	.	.	20	.	20	20	20	.		.	.	.	.	20	20	20	20	20	20	20	20	.	.
VAR. 2.	25	25	25	.	.	25	25	25	25	25	–	25	25	.	25	25	25	25	25	.	25	25	25	25	.
		28	28	28	28			28	28				28	28		28	28	28	28	28	28	28	28		28

396	15	15	.	.	15	15	15	15	15	.	.		.	.	15	15	15	15	15	15	15	15	.	15
12.	20	20	.	20	20	.	20	20	20	.	.		.	20	.	20	20	20	20	20	20	20	.	20
	25	.	.	.	.	.	25	25	25	25	25	–	.	25	.	25	25	25	25	25	25	25	.	.
VAR. 3.	.	.	.	28	28	.	.	28	28	.	.		28	28	.	28	28	28	28	28	28	28	.	28
335	15	15	.	.	15	15	15	15	15	.	.	.		.	.	15	15	15	15	15	15	15	.	15
13.	20	20	.	.	20	.	20	20	20	.	.	.		.	.	20	20	20	20	20	20	20	.	.
	25	.	.	.	.	25	25	25	25	25	25	.	–	25	.	25	25	25	25	25	25	25	.	.
VAR. 4.	28	28	28	28	28	28	28	28	28	28	28	28		28	28	28	28	.	28	.	28	28	.	28
397	15	15	.	.	15	.	15	15	15	15	.	.	.		.	15	15	.	15	15	15	15	.	15
14.	20	.	20	.	.	.	20	20	20	.	.	20	.		.	20	20	20	20	.	20	20	20	.	.
	25	25	25	.	.	25	25	25	25	25	.	25	25	–	25	25	25	25	25	.	25	25	25	25	.
VAR. 5.	28	28	28	28	.	28	28	28	28	28	28	28	28		28	28	28	28	28	28	.	28	28	.	.
212	15	15	.	15	.	15	15	15	15	15	15	15	.	.		15	15	15	15	.	15	15	15	.	15
N. 15	20	20	.	20	20	.	20	20	20		.	.	.	.		20	20	20	20	20	20	20	20	.	20
SUCCENTURIATA	25	.	.	.	.	25	25	25	25	25	25	.	.	25	–	25	25	25	25	25	25	25	25	.	.
	.	.	.	28	28	.	.	28	28	.	.	.	28	28		28	28	28	28	28	28	28	28	.	28
382	15	15	15	15	.	15	15	15	15	15	15	15	15	15	15		.	15	.	15	.	.	.	15	15
H. 16.	20	20	20	20	20	20	20	20	.	20	20	20	20	20	20		20	20	20	20	20	.	20	20	20
EXUTANS	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	–	25	25	25	25	25	.	.	25	25
	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28		28	28	28	28	28	28	28	28	28
372	15	15	15	.	.	15	15	15	15	15	15	15	15	15	15	.		.	.	15	.	.	15	15	15
N. UNI- 17.	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		20	20	20	20	.	20	20	20
APICULATA	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	–	25	25	25	.	25	25	25	25
	28	28	28	.	28	28	28	28	28	28	28	28	28	28	28	28		28	28	28	28	.	28	28	28
127	15	.	15	15	15	15	15	15	15	15	15	15	15	.	15	15	.		.	.	.	15	15	15	15
H. 18.	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		20	20	20	20	20	20	20
13A.	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	–	25	25	25	25	25	25	25
	28	28	28	28	28	28	28	28	28	28	28	28	.	28	28	28	28		28	28	.	.	.	28	28
226	15	15	15	15	.	15	15	15	15	15	15	15	15	15	15	.	.	.		15	.	.	15	15	15
H. 19.	20	20	20	20	20	20	20	20	.	20	20	20	20	20	20	20	20	20		20	.	20	20	20	20
MERRILLIE	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	–	25	25	25	25	25	25
	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28		28	28	28	28	28	28
275	15	.	15	.	15	15	15	15	15	15	15	15	15	15	.	15	15	.	15		15	15	15	15	15
H. 20.	20	.	20	.	.	.	20	20	20	20	20	20	20	.	20	20	20	20	20		20	20	20	20	.
NUMMULARIUM	25	25	25	.	.	25	25	25	25	25	.	25	25	.	25	25	25	25	25	–	25	25	25	25	.
	28	28	28	28	.	28	28	28	28	28	28	28	.	28	28	28	28	28	28		28	.	28	28	28
427	15	15	15	15	.	15	15	15	15	15	15	15	15	15	15	.	.	15	.	15		15	15	15	15
H. 21.	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	.	20		20	20	20	20
MEDITTERANEUM	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	.	25	25	25	–	.	.	25	25
	28	28	28	28	.	28	28	28	28	28	28	28	28	.	28	28	28	.	28	28		28	28	28	
19	15	15	15	15	.	15	15	15	15	15	15	15	15	15	15	.	.	15	.	15	15		15	15	15
H. 22.	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	.	.	20	20	20	20		20	20	20
MEDITTERANEUM	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	.	25	25	25	25	.	–	.	25	25
	28	28	28	.	28	28	28	28	28	28	28	28	28	28	28	28	.	.	28	.	28		28	28	28
31	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	.	15	15	15	15	15	15		15	15
H. 23.	20	20	20	20	20	20	20	20	.	20	20	20	20	20	20	20	20	20	20	20	20	20		20	20
MEDITTERANEUM	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	.	25	25	25	25	.	.	–	25	25
	28	28	28	28	28	28	28	28	28	28	28	28	.	28	28	28	28	.	28	28	28	28		28	28
262	15	15	.	.	15	.	15	15	15	.	.	.	.	.	.	15	15	15	15	15	15	15		15	15
H. 24.	20	.	.	.	20	.	20	20	20	.	.	.	.	.	.	20	20	20	20	20	20	20		20	.
ASARCODES	25	.	.	.	.	.	25	25	25	25	25	.	.	25	.	25	25	25	25	25	25	25	–	25	.
	28	.	28	28	28	.	28	28	28	28	.	.	28	.	.	28	28	28	28	28	28	28		28	.
402	.	15	15	.	15	15	.	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	
N. 25.	20	.	20	.	.	.	20	20	20	.	.	20	.	.	20	20	20	20	20	.	20	20	20	.	
KALCHBRENNERA	25	.	.	.	.	25	25	25	25	25	.	.	.	.	.	25	25	25	25	.	25	25	25	.	–
	28	28	28	28	.	28	28	28	28	28	28	28	28	.	28	28	28	28	28	28	.	28	28	.	

. = Not significant

Numbers indicate temperatures at which growth rates are significantly different.

TABLE VA : 15°C.

NUMBER:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
STRAIN	147	257	269	412	430	433	531	508	544	584	218	396	335	397	212	382	372	127	226	275	427	19	31	262	402
MEAN DAILY RADIAL	0.179	1.889	1.232	1.256	2.915	1.769	0.265	6.142	3.945	0.769	0.719	1.000	1.119	0.962	1.338	2.938	2.588	2.106	2.812	1.825	2.616	2.781	3.112	1.106	0.194
GROWTH INCREMENT	0.190	1.671	1.260	1.525	2.516	1.656	0.216	6.039	3.811	0.694	0.725	0.893	0.950	1.088	1.494	3.187 2.354	2.550	2.131	2.731	1.612 0.762	2.562	2.950	3.600	0.975	0.188
READINGS mm.(x)		1.902	0.881	1.325	2.422	1.006	0.244		3.997	0.794	0.619	0.798	0.925	1.488		3.438 3.105	2.562		2.262	2.456 2.625	2.675	2.888		0.900	
TOTAL (Sx)	0.369	5.462	3.373	4.106	7.853	5.656	0.725	12.181	11.753	2.257	2.063	2.691	2.994	3.538	2.832	15.022	7.700	4.237	7.805	9.280	7.853	8.619	6.712	2.981	0.382
NUMBER OF READINGS(N)	2	3	3	3	3	4	3	2	3	3	3	3	3	3	2	5	3	2	3	5	3	3	2	3	2
MEAN GROWTH RATE(mm/day)	0.19	1.82	1.12	1.37	2.62	1.41	0.24	6.09	3.97	0.76	0.69	0.90	1.00	1.18	1.42	3.00	2.57	2.12	2.60	1.86	2.62	2.87	3.36	1.00	0 19
$S(x^2)$	0.0689		3.8816	5.6588	20.6936	8.3844	0.1764	74.1936	46.0627	1.7034	1.4257	2.4342	3.0103	4.3233	4.0228	45.7910	19.7641	8.9764	20.4823	19.4323	20.5629	24.7770	22.6445	2.9838	0.0730
$(Sx)^2$	0.1362		11.3771	16.8592	61.6696	31.9903	0.5256	148.3767	138.1330	5.0940	4.2560	7.2415	8.9640	12.5174	8.0202	225.6605	59.2900	17.9521	60.9180	86.1184	61.6696	74.2872	45.0509	8.8863	0.1459
$(Sx)^2/N$	0.0681		3.7924	5.6197	20.5565	7.9976	0.1752	74.1883	45.0443	1.6980	1.4187	2.4138	2.9880	4.1725	4.0101	45.1321	19.7633	8.9760	20.3060	17.2237	20.5565	24.7624	22.5254	2.9621	0.0730

Correction Term = $(138.444)^2/74$ = 259.0100

Total Sum of Squares = 371.5052 - 259.0100 = 112.4952

Between Sample Sum of Squares = 367.3682 - 259.0100 = 108.3582

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F.
TOTAL	73	112.4952		
BETWEEN SAMPLES	24	108.3582	4.5149	
WITHIN SAMPLES	49	4.1370	0.08443	534.753 Significant at the 5% level.

$$\Delta \bar{x} = \sqrt{0.08443} \times 2.008 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

No. of items Compared.		$\Delta \bar{x}$
2	2	0.58 mm.
2	3	0.53
2	4	0.51
2	5	0.49
3	3	0.48
3	4	0.45
3	5	0.43
4	4	0.41
4	5	0.39
5	5	0.37

TABLE V B. 20°C.

NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
STRAIN	147	257	269	412	430	433	534	508	544	524	218	396	335	397	212	382	372	127	226	275	427	19	
MEAN DAILY RADIAL GROWTH INCREMENT READINGS (mm.) (x).	0.262 0.319 0.169	2.411 2.581	1.685 1.926 1.750 1.250	1.812 2.181 2.887 2.075	2.601 2.675 2.764	2.106 2.119 2.269	0.450 0.526	6.039 7.455 8.687	5.746 6.039 5.540	1.875 1.987	1.714 1.587	1.398 1.576 1.649	1.731 1.725 1.781	2.084 2.432	1.569 1.612	4.832 5.454 5.812 4.844	4.032 4.050 4.250	3.401 3.416 3.284	5.588 5.988 6.362	2.950 2.900 2.519 2.475	2.875 3.414	4.400 4.450	
TOTAL (Sx)	0.750	4.992	6.611	8.955	8.040	6.494	0.776	22.181	17.325	3.862	3.301	4.623	5.237	4.516	3.181	20.942	12.332	10.101	17.938	10.844	6.289	8.850	1
NUMBER OF READINGS (N)	3	2	4	4	3	3	2	3	3	2	2	3	3	2	2	4	3	3	3	4	2	2	
MEAN GROWTH RATE (mm/day)	0.25	2.50	1.65	2.24	2.68	2.16	0.49	7.39	5.78	1.93	1.65	1.54	1.75	2.26	1.59	5.23	4.11	3.37	5.98	2.71	3.14	4.42	
$S(x^2)$	0.1989	12.4716	11.1737	20.6805	21.5605	14.0738	0.4792	167.5105	100.1776	7.4638	5.4564	7.1574	9.1439	10.2577	5.0603	110.3380	50.7220	34.0205	107.5569	29.5835	19.9210	39.1625	59
$(Sx)^2$	0.5625	24.9208	43.7053	80.1920	64.6416	42.1720	0.9526	491.9968	300.1556	14.9150	10.8966	21.3721	27.4262	20.3960	10.1188	438.5674	152.0782	102.0302	321.7718	117.5923	39.5515	78.3225	117.
$(Sx)^2/N$	0.1875	12.4604	10.9238	20.0480	21.5472	14.0573	0.4763	164.0000	100.0519	7.4575	5.4483	7.1240	9.1421	10.1980	5.0594	109.6418	50.6927	34.0101	107.2924	29.3981	19.7757	39.1612	58.

Correction Term = $(211.651)^2/66$ = 679.0909

Total Sum of Squares = 869.8320 - 679.0909

Between Sample Sum of Squares = 863.3564 - 679.0909

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F.
TOTAL	65	190.8411		
BETWEEN SAMPLES	24	184.2455	7.6769	48.05
WITHIN SAMPLES	41	6.5756	0.16038	Significant at the 5% level.

$\Delta \bar{x}$ =

22	23	24	25	
19	31	262	402	TOTALS.
4.400 4.450	4.912 5.938	1.775 1.850 1.862	2.400 2.400 2.194	
8.850	10.850	5.487	6.994	211.651
2	2	3	3	66
4.42	5.43	1.83	2.33	
39.1625	59.3876	10.0402	16.3340	869.9320
78.3225	117.7225	30.1072	48.9160	
39.1612	58.8617	10.0357	16.3053	863.3564

NO. OF ITEMS COMPARED.		$\Delta \bar{x}$
2	2	0.81 mm.
2	3	0.74
2	4	0.70
3	3	0.66
3	4	0.62
4	4	0.57

$$\Delta \bar{x} = \sqrt{.16038} \times 2.020 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

F.
48.05
ignificant t the 5% level.

TABLE V C. 25°C.

NUMBER / STRAIN	1 147	2 257	3 269	4 412	5 430	6 433	7 534	8 508	9 544	10 524	11 212	12 396	13 335	14 397	15 212	16 382	17 372	18 127	19 226	19' 227	20 275	21 427	2 1
MEAN DAILY RADIAL. GROWTH INCREMENT READINGS mm.(x)	0.306 0.781 0.793 0.675	2.106 2.132 1.920	2.048 1.969 2.175	2.700 2.806 2.594	2.789 2.634 2.655	1.000 1.000 1.375	1.052 0.904 0.915	10.093 8.937 10.187	8.031 6.875 8.750	0.831 0.594	3.045 3.419 3.174	1.769 2.010 1.922	2.350 1.919 1.981 2.375 2.288 2.050	3.056 3.009	2.175 2.018	8.791 9.166 6.438 5.332 5.686 5.969 5.750	4.844 5.188 5.360	4.310 3.885 4.188	7.489 8.110	7.532 7.771 7.416	3.438 3.725 2.901 2.994 3.188	5.354 5.145 5.544	6. 6.
TOTAL (Sx)	2.555	6.158	6.192	8.100	8.078	3.375	2.871	29.217	23.656	1.425	9.638	5.701	12.963	6.065	4.193	47.132	15.392	12.383	15.599	22.719	16.246	16.043	12.
NUMBER OF READINGS (N)	4	3	3	3	3	3	3	3	3	2	3	3	6	2	2	7	3	3	2	3	5	3	2
MEAN GROWTH RATE (mm/day)	0.64	2.08	2.06	2.70	2.69	1.13	0.92	9.74	7.89	0.71	3.21	1.90	2.16	3.03	2.10	6.73	5.13	4.13	7.80	7.57	3.25	5.35	6.
$S(x^2)$	1.7881	12.6671	12.8019	21.8925	21.7655	3.8906	2.7611	285.5136	188.3251	1.0434	31.0359	10.8635	28.2075	18.3932	8.8029	332.1974	79.1092	51.2087	121.8572	172.1165	53.2387	85.8723	75.
$(Sx)^2$	6.5280	37.9210	38.3409	65.6100	65.2561	11.3906	8.2426	853.6331	559.6063	2.0301	92.8910	32.5014	168.0394	36.7842	17.5812	2221.4254	236.9137	153.3387	243.3288	516.1530	263.9325	257.3776	150.
$(Sx)^2/N$	1.6320	12.6403	12.7803	21.8700	21.7514	3.7969	2.7475	284.5444	186.5321	1.0153	30.9637	10.8305	28.0066	18.3921	8.7906	317.3465	78.9712	51.1129	280.4256	172.0510	52.7865	85.7926	75.

Correction Term = $(367.790)^2/81$ = 1669.993.

Total Sum of Squares = 1722.0801 - 1669.9930

Between Sample Sum of Squares = 1702.5406 - 1669.9930

$\Delta\bar{x}$

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F.
TOTAL	80	52.0871		
BETWEEN SAMPLES	25	32.5476	1.2919	
WITHIN SAMPLES	55	19.5395	0.3553	3.665 Significant at 5% level.

	22	23	24	25	TOTALS
	19	31	262	402	
354	6.000	6.362	2.119	2.742	
145	6.250	5.860	1.900	2.811	
544			1.825		
043	12.250	12.222	5.844	5.553	367.790
	2	2	3	2	81
.35	6.13	6.11	1.95	2.78	
.8723	75.0625	74.8146	11.4308	15.4203	1722.0801
.3778	150.0625	149.3772	34.1523	30.8358	
.7926	75.0312	74.6886	11.3841	15.4179	1702.5406

$$\Delta\bar{x} = \sqrt{0.3553} \times 2.004 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

NO. OF ITEMS COMPARED.		$\Delta\bar{x}$
2	2	1.20 mm.
2	3	1.08
2	4	1.03
2	5	1.00
2	6	0.95
2	7	0.92
3	3	0.95
3	4	0.91
3	5	0.87
3	6	0.84
3	7	0.83
4	4	0.84
4	5	0.81
4	6	0.78
4	7	0.75
5	5	0.72
5	6	0.71
5	7	0.70
6	6	0.69
6	7	0.66
7	7	0.63

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ificant
% level.

TABLE VD. 28°C.

UMBER TRAIN	1 147	2 257	3 269	4 412	5 430	6 433	7 534	8 508	10 524	11 218	12 396	13 335	14 397	15 212	16 382	17 372	18 127	19 226	20 275	21 427	22 19	23 31	24 262	25 402	TOTALS.
EAN DAILY ADIAL	0.206	0.000	0.026	4.562	2.329	1.112	0.015	7.913	0.000	0.275	0.088	2.962	1.476	0.456	7.271	4.828	4.084	7.140	2.475	2.020	4.955	3.300	1.650	2.131	
ROWTH NCREMENT	0.125	0.287	0.132	4.250	2.305	0.150	0.105	8.765	0.025	1.300	0.106	3.000	1.746	0.869	6.000	4.500	3.616	7.077	2.612	2.000	5.225	3.575	0.556	1.775	
EADINGS m.(x)	0.231	0.631	0.509		1.224	0.950	0.255	7.015	0.300		0.000	2.881	2.049		6.062 5.938 6.094		3.042		2.850			2.712	1.081	1.425	
OTAL (Sx)	0.562	0.918	0.667	8.812	5.858	2.212	0.375	23.693	0.325	1.575	0.294	8.843	5.271	1.325	31.365	9.328	10.742	14.217 2	7.937	4.020	10.180	9.587	3.287	5.331	166.724
UMBER OF EADINGS(N)	3	3	3	2	3	3	3	3	3	2	3	3	3	2	5	2	3	2	3	2	2	3	3	3	67
EAN GROWTH ATE(mm/day)	0.19	0.31	0.22	4.41	1.95	0.74	0.13	7.90	0.11	0.79	0.10	2.95	1.76	0.66	6.27	4.66	3.58	7.11	2.65	2.01	5.09	3.20	1.10	1.78	
(x^2)	0.1114	0.4805	0.2771	38.87 43	12.23 54	2.1615	0.0783	188.65 10	0.0963	1.2446	0.029 01	26.07 36	9.4255	0.9631	198.02 10	43.55 96	39.00 83	101.06 35	21.07 07	8.0804	51.85 27	31.02 56	4.2002	9.7224	788.3060
$Sx)^2$	0.3158	0.8427	0.4449	77.65 13	34.31 62	4.8929	0.1406	561.35 82	0.1056	2.4806	0.0864	78.19 86	27.78 34	1.7556	982.50 86	87.01 16	115.39 06	202.12 31	62.99 60	16.16 04	103.63 24	91.91 06	10.80 44	28.41 96	781.2450
$Sx)^2/N$	0.1053	0.2809	0.1483	38.82 57	11.43 87	1.6310	0.0469	187.11 94	0.0352	1.2403	0.0288	26.06 62	9.2613	0.8778	196.50 17	43.50 58	38.46 35	101.06 15	20.99 87	8.0802	51.81 62	30.63 69	3.6015	9.4732	

Correction Term = $(166.724)^2/67 = 414.8789$

Total Sum of Squares = 788.3060 - 414.8789

Between Sample Sum of Squares = 781.2450 - 414.8789

OURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F.
OTAL	66	373.4271	15.9	
ETWEEN SAMPLES	23	366.3661	15.928	94.79
ITHIN SAMPLES	43	7.0610	0.1643	Significant at 5% level

$$\Delta \bar{x} = \sqrt{0.1643} \times 2.018 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

NO. OF ITEMS COMPARED.		$\Delta \bar{x}$
2	2	0.81 mms.
2	3	0.75
2	5	0.68
3	3	0.66
3	5	0.59

T A B L E VI. (Refer to Graph G, & Vol. I p.103).

TO SHOW DEGREE OF SIGNIFICANCE BETWEEN SPORE MEASUREMENTS

OF STRAINS OF THE ANNULATUM GROUP OF HYPOXYLON.

SPECIES.	NO.	1 ROSELLINIA 3A.	2 HYPOXYLON MICHELIANUM.	3 HYPOXYLON MICROCARPUM 511.	4 HYPOXYLON MICROCARPUM 557.	5 HYPOXYLON STYGIUM.	6 HYPOXYLON TRUNCATUM.	7 ROSELLINIA NITENS.
ROSELLINIA 3A.	1	-	S	S	S	S	S	S
HYPOXYLON MICHELIANUM.	2	S	-	S	S	S	S	S
HYPOXYLON MICROCARPUM 511	3	S	S	-	sb	S	sl	sl
HYPOXYLON MICROCARPUM 557.	4	S	S	sb	-	S	S	S
HYPOXYLON STYGIUM	5	S	S	S	S	-	S	S
HYPOXYLON TRUNCATUM.	6	S	S	sl	S	S	-	S
ROSELLINIA NITENS.	7	S	S	sl	S	S	S	-

S = significant.

sb = breadth only significant.

sl = length only significant.

TABLE VI A.

WIDTH INTERVAL	2.6-3.4	3.4-4.1	4.1-4.9	4.9-5.6	5.6-6.4	6.4-7.1	MEAN WIDTH. μ	NO OF SPORES.	Sx.	$(Sx)^2$.	$(Sx)^2/N$.
ROSELLINIA 3A.		4	69	82	23	2	5.04	180	907.50	823556.313	4575.313
HYPOXYLON MICHELIANUM		1	17	54	24	4	5.35	100	534.75	285957.563	2859.576
HYPOXYLON MICROCARPUM 511		33	50	5	1	1	4.31	90	387.75	150350.063	1670.556
HYPOXYLON MICROCARPUM 557	19	61	37	3			3.86	120	462.75	214137.563	1784.480
HYPOXYLON STYGIUM	28	50	12				3.62	90	325.50	105950.250	1177.225
HYPOXYLON TRUNCATUM	3	76	122	34	5		4.38	240	1015.00	1030225.000	4292.604
ROSELLINIA NITENS	2	39	43	6			4.19	90	377.25	142317.563	1581.306
TOTALS:	52	264	350	184	53	7		910	4,010.50		17,941.060

$S(x^2)$ = 18,566.438

Total Sum of Squares = 18,566.438 - CF

TABLE VI B.

LENGTH INTERVAL	5.6-6.4	6.4-7.1	7.1-7.9	7.9-8.6	8.6-9.4	9.4-10.1	10.1-10.9	10.9-11.6	11.6-12.4	12.4-13.1	13.1-13.9	13.9-14.6	14.6-15.4	15.4-16.1	MEAN LENGTH.	NO.OF SPORES.	Sx.	$(Sx)^2$.	$(Sx)^2/N.$
ROSELLINIA 3A.				5	22	43	57	37	10	4	2				10.40	180	1871.25	3501576.5625	19453.203
HYPOXYLON MICHELIANUM								6	20	22	38	9	3	2	13.06	100	1305.75	1704983.063	17049.830
HYPOXYLON MICROCARPUM 511		3	4	25	38	14	5	1							8.88	90	798.75	638001.563	7088.906
HYPOXYLON MICROCARPUM 557			6	30	58	19	5	1	1						8.96	120	1075.50	1156700.250	9639.167
HYPOXYLON STYGIUM	7	32	34	15	2										7.28	90	654.75	428697.563	4763.306
HYPOXYLON TRUNCATUM	1	9	44	82	70	18	14	2							8.53	240	2048.25	4195328.063	17480.534
ROSELLINIA NITENS			4	15	24	27	16	2	1	1					9.42	90	848.25	719528.063	7994.756
TOTALS:	8	44	92	172	214	121	97	49	33	26	40	9	3	2		910	8,602.50		83,469.704

$S(x^2)$ = 84,173.188

Total Sum of Squares = 84,173.188 - CF

T A B L E VI C.

ANALYSIS OF VARIANCE OF SPORE DIMENSIONS.

ANNULATUM GROUP OF HYPOXYLON.

W I D T H.

Correction Factor = $(4070.50)^2/910$ = 16,084,110.250/910 = 17,674.846

Total Sum of Squares = 18,566.438 - 17,674.846 = 891.592

Between Sample Sum of Squares = 17,941.060 - 17,674.846 = 266.214

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL	909	891.592		
BETWEEN SAMPLES	6	266.214	44.3690	64.065
WITHIN SAMPLES	903	625.378	0.69256	

$$\Delta \bar{x} = \sqrt{0.6926} \times 1.963 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

$$= 0.14 - 0.23\mu .^*$$

L E N G T H.

Correction Factor = $(8602.50)^2/910$ = (74003006.250)/910 = 81,321.985

Total Sum of Squares = 84,173.188 - 81,321.985 = 2,851.203

Between Sample Sum of Squares = 83,469.704 - 81,321.985 = 2,147.719

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL	909			
BETWEEN SAMPLES	6	2,147.719	357.9531	459.4738
WITHIN SAMPLES	903	703.484	0.77905	

$$\Delta \bar{x} = \sqrt{0.7791} \times 1.963 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

$$= 0.15 - 0.25\mu .^*$$

* Value depends on number of spores compared.

T A B L E VII. (Refer to Graph G, & Vol.I p.115).

TO SHOW DEGREE OF SIGNIFICANT DIFFERENCE BETWEEN GROWTH RATES OF THE STRAINS OF THE ANNULATUM GROUP.

SPECIES	STRAIN	NO.	1.	2.	3.	4.	5.	6.	7.	8.
ROSELLINIA 3A.	434	1		15 20 25 .	15 20 25 28	15 20 25 28	. . 25 28	. 20 25 28	15 . 25 28	15 20 . 28
HYPOXYLON MICHELIANUM	288	2	15 20 25 .		15 . . 28	. . . 28	15 20 25 28	15 20 25 28	. 20 25 28	15 . 25 28
HYPOXYLON MICROCARPUM	511	3	15 20 25 28	15 . . 28		15 . . .	15 20 25 28	15 20 25 28	15 20 25 .	15 . 25 28
HYPOXYLON MICROCARPUM	557	4	15 20 25 28	. . . 28	15 . . .		15 20 25 28	15 20 25 28	. 20 25 .	. . 25 28
HYPOXYLON STYGIUM	234	5	. . 25 28	15 20 25 28	15 20 25 28	15 20 25 28		. 20 . .	15 20 25 28	15 20 25 28
HYPOXYLON TRUNCATUM	44	6	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 . .		15 20 25 28	15 20 25 28
HYPOXYLON TRUNCATUM	311	7	15 . 25 28	. 20 25 28	15 20 25 .	. 20 25 .	15 20 25 28	15 20 25 28		15 20 25 .
ROSELLINIA NITENS	370	8	15 20 . 28	15 . 25 28	15 . 25 28	. . 25 28	15 20 25 28	15 20 25 28	15 20 25 .	

. = Not significant.

Numbers indicate temperatures at which growth rates are significantly different.

TABLE VII A. 15°C.

NUMBER:	1.	2.	3.	4.	5.	6.	7.	8.	
SPECIES:	ROSELLINIA 3A.	H.MICHELIANUM.	H.MICROCARPUM.	H.MICROCARPUM.	H.STYGIUM.	H.TRUNCATUM.	H.TRUNCATUM.	ROSELLINIA NITENS.	TOTALS.
STRAIN:	434.	288.	511.	557.	234.	311.	44.	370.	
MEAN DAILY RADIAL	2.250	1.262	0.308	1.383	2.725	2.600	1.519	1.180	
GROWTH INCREMENT	2.750	1.450	0.303	1.212	2.294	2.588	1.368	0.806	
READINGS mm. (x)	2.757	1.300	0.308		2.163	2.638		0.875	
TOTAL (Sx)	7.757	4.012	0.920	2.595	7.182	7.826	2.887	2.861	36.040
NUMBER OF READINGS (N)	3	3	3	2	3	3	2	3	22
MEAN GROWTH RATE (mm./day)	2.59	1.34	0.31	1.30	2.39	2.61	1.44	0.95	
$S(x^2)$	20.2260	5.3851	0.2815	3.3816	17.3666	20.4168	4.1788	2.8077	74.0441
$(Sx)^2$	60.1710	16.0961	0.8464	6.7340	51.5811	61.2463	8.3348	8.1853	
$(Sx)^2/N$	20.0570	5.3654	0.2821	3.3670	17.1937	20.4154	4.1674	2.7284	73.5764

Correction Term = $(36.04)^2/22$ = 59.040073

Total Sum of Squares = 74.0441 - 59.0401

Between Sample Sum of Squares = 73.5764 - 59.0401 = 14.5363

$$\Delta \bar{x} = \sqrt{0.3341} \times 2.145 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL	21	15.0040		
BETWEEN SAMPLES	7	14.5363	2.0766	62.1550 Significant at the 5% level.
WITHIN SAMPLES	14	0.4677	0.03341	

NO. OF ITEMS COMPARED		$\Delta \bar{x}$
2	2	0.39 mm.
2	3	0.36
3	3	0.32

NUMBER:	1.	2.	3.	4.	5.	6.	7.	8.	
SPECIES:	ROSELLINIA 3A.	H.MICHELIANUM.	H.MICROCARPUM.	H.MICROCARPUM.	H.STYGIUM.	H.TRUNCATUM.	H.TRUNCATUM.	ROSELLINIA NITENS.	TOTALS.
STRAIN:	434.	288.	511.	577.	234.	311.	44.	370.	
MEAN DAILY RADIAL GROWTH INCREMENT	3.792 3.990	0.919 1.206	1.444 1.712	1.456 1.537	4.850 3.958	2.562 2.650	3.640 3.642	1.472 1.918	
READINGS mm. (x)	3.930	2.769 1.844 1.823	1.800		4.550			1.781	
TOTAL (Sx)	11.712	8.561	4.956	2.993	13.358	5.212	7.282	5.171	59.245
NUMBER OF READINGS (N)	3	5	3	2	3	2	2	3	23
MEAN GROWTH RATE (mm./day)	3.90	1.71	1.65	1.50	4.45	2.61	3.64	1.72	
$S(x^2)$	45.7442	16.6900	8.2561	4.4823	59.8908	13.5863	26.5138	9.0175	184.1810
$(Sx)^2$	137.1709	73.2873	24.5619	8.9580	178.4362	27.1649	53.0275	26.7392	
$(Sx)^2/N$	45.7236	14.6575	8.1873	4.4790	59.4787	13.5824	26.5137	8.9131	181.5353

Correction Term = $(59.245)^2/23$ = 152.5217

Total Sum of Squares = 184.1810 - 152.5717

Between Sample Sum of Squares = 181.5353 - 152.5717

$$\Delta \bar{x} = \sqrt{0.1651} \times 2.131 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL	22	31.6593		
BETWEEN SAMPLES	7	29.0136	4.1448	
WITHIN SAMPLES	15	2.6457	0.1651	25.10 Significant at the 5% level.

NO. OF ITEMS COMPARED.		$\Delta \bar{x}$
2	2	0.87 mm.
2	3	0.79
2	5	0.72
3	3	0.69
3	5	0.63

TABLE VII C. 25°C.

NUMBER:	1.	2.	3.	4.	5.	6.	7.	8.	
SPECIES:	ROSELLINIA 3A.	H.MICHELIANUM.	H.MICROCARPUM.	H.MICROCARPUM.	H.STYGIUM.	H.TRUNCATUM.	H.TRUNCATUM.	ROSELLINIA NITENS.	TOTALS.
STRAIN:	434.	288.	511.	557.	234.	311.	44.	370.	
MEAN DAILY RADIAL	3.897	1.350	1.537	1.531	4.745	5.000	3.185	2.494	
GROWTH INCREMENT	3.655	1.388	1.463	1.339	5.330	4.998	2.995	2.645	
READINGS (mm.) (x)		1.662 1.575	1.512	1.525	4.915			3.265	
TOTAL Sx	7.552	5.975	4.512	4.395	14.990	9.998	6.180	8.404	54.454
NUMBER OF READINGS (N)	2	4	3	3	3	2	2	3	20
MEAN GROWTH RATE (mm./day).	3.78	1.49	1.50	1.47	5.00	5.00	3.09	4.20	
$S(x^2)$	28.5456	8.9919	6.7889	6.4625	75.0812	49.9800	19.1143	23.8763	218.8407
$(Sx)^2$	57.0327	35.7006	20.3581	19.3160	224.7001	99.96	38.1924	70.6272	
$(Sx)^2/N$	28.5163	8.9252	6.7860	6.4387	74.9000	49.9800	19.0962	23.5425	218.1848

Correction Term = $(54.454)^2/20$ = 148.2619

Total Sum of Squares = 218.8407 - CF = 70.5788

Between Sample Sum of Squares = 218.1848 - CF = 69.9229

$$\Delta \bar{x} = \sqrt{0.0547} \times 2.179 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL	19	70.5788		
BETWEEN SAMPLES	7	69.9229	9.9890	180.80
WITHIN SAMPLES	12	0.6559	0.0547	Significant at 5% level.

NUMBER OF ITEMS COMPARED.		$\Delta \bar{x}$
2	2	0.51 mm.
2	3	0.47
2	4	0.44
3	3	0.42
3	4	0.39

TABLE VII D. 28°C.

	1. ROSELLINIA 3A. 434	2. H.MICHELIANUM. 288	3. H.MICROCARPUM. 551	4. H.MICROCARPUM. 557	5. H.STYGIUM. 234	6. H.TRUNCATUM. 44	7. H.TRUNCATUM. 311	8. ROSELLINIA NITENS. 370	TOTALS.
LY			0.625	1.862	5.712	5.344	0.000	0.035	
ROWTH	NIL	NIL	0.682	0.537	5.369	4.719	0.156	0.021	
T READINGS			0.806	0.000	5.812		0.230	0.050	
							1.062		
x)			2.113	2.399	16.893	10.063	1.448	0.106	33.022
EADINGS (N)			3	3	3	2	4	3	18
WTH RATE y)			0.70	0.80	5.63	5.03	0.36	0.04	
			1.5054	3.7554	95.2324	50.8273	1.2051	0.0042	152.5298
			4.4648	5.7552	285.3734	101.2640	2.0967	0.01124	
			1.4883	1.9814	95.1245	50.6320	0.5242	0.0038	149.6912

Correction Term = $(33.022)^2/18 = 60.5807$
Total Sum of Squares = $152.5298 - 60.5807 = 91.9491$
Between Sample Sum of Squares = $149.6912 - 60.5807 = 89.1105$

$$\Delta\bar{x} = \sqrt{0.1366} \times 2.179 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

F VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.	NUMBER OF ITEMS COMPARED.		$\Delta\bar{x}$
	17	91.9491			2	2	0.80 mm.
			17.82210	130.5170	2	3	0.73

TABLE VIII. (Refer to Graphs H - J, & Vol. I p.134).

TO SHOW DEGREE OF SIGNIFICANT DIFFERENCE AT (5% LEVEL)

BETWEEN SPORE DIMENSIONS OF THE RUBIGINOSUM GROUP.

SPECIES. NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
HYPOXYLON 18B (1)	-	S	sb	S	ns	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
HYPOXYLON PLUMBEUM (2)	S	-	sl	S	S	S	S	S	S	sl	S	sl	S	S	S	S	S	sl	S	S	S	S
HYPOXYLON 18A (3)	sb	sl	-	S	sb	S	S	S	S	S	S	-	S	S	S	S	S	S	S	S	S	S
HYPOXYLON 19 (4)	S	S	S	-	S	S	S	S	S	S	S	S	S	sb	ns	S	S	S	S	S	S	S
HYPOXYLON 18F (5)	ns	S	sb	S	-	S	S	S	S	S	S	S	S	S	sb	S	S	S	S	S	S	S
HYPOXYLON 18D (6)	S	S	S	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S
HYPOXYLON 18E (7)	S	S	S	S	S	S	-	S	S	S	sb	S	S	S	S	S	S	S	S	S	sb	S
HYPOXYLON CORYPHAE (8)	S	S	S	S	S	S	S	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S
HYPOXYLON VOGESIACUM (9)	S	S	S	S	S	S	S	S	-	S	S	S	sl	S	S	S	S	S	S	S	S	S
HYPOXYLON 38 (10)	S	sl	S	S	S	S	S	S	S	-	S	sl	S	S	S	S	S	sl	sb	S	S	S
HYPOXYLON RUBIGINOSUM (11)	S	S	S	S	S	S	sb	S	S	S	-	S	S	S	S	S	S	S	S	S	sb	S
HYPOXYLON (12)	S	sl	sl	S	S	S	S	S	S	sl	S	-	sb	S	S	S	sb	ns	S	S	S	S
HYPOXYLON TENUE (13)	S	S	S	S	S	S	S	S	sl	S	S	sb	-	S	S	S	sb	sb	S	S	S	S
HYPOXYLON 2C (14)	S	S	S	sb	S	S	S	S	S	S	S	S	S	-	sb	S	S	S	S	S	S	S
HYPOXYLON HAEMATOSTROMA (15)	S	S	S	ns	S	S	S	S	S	S	S	S	S	sb	-	S	S	S	S	S	S	S
H.LURIDUM VAR. MINUS (16)	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	-	sl	S	S	sl	sl	S
HYPOXYLON 18G (17)	S	S	S	S	S	S	S	S	S	S	S	sb	sb	S	S	sl	-	sb	sl	S	sb	S
HYPOXYLON PICEUM (18)	S	sl	S	S	S	S	S	S	S	sl	S	ns	sb	S	S	S	sb	-	S	S	S	S
H. OCHRACEO-FULVUM (19)	S	S	S	S	S	S	S	S	S	sb	sl	S	S	S	S	S	sl	S	-	sl	sl	S
H. FERRUGINEO-RUFUM. VAR.1. (20)	S	S	S	S	S	S	S	S	S	S	ns	S	S	S	S	sl	S	S	sl	-	ns	S
H. FERRUGINEO-RUFUM. VAR.2. (21)	S	S	S	S	S	S	sb	S	S	S	ns	S	S	S	S	sl	b	S	sl	ns	-	S
HYPOXYLON VIVIDUM (22)	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	-

S = Significantly different.

sb = Breadth Only.

sl = Length Only

ns = Not significantly different.

TABLE VIII A.

WIDTH INTERVAL μ	2.6-3.4	3.4-4.1	4.1-4.9	4.9-5.6	5.6-6.4	6.4-7.1	7.1-7.9	7.9-8.6	8.6-9.4	9.4-10.1	MEAN WIDTH μ	NO. OF SPORES.	Sx.	$(Sx)^2$.	$(Sx)^2/N$.
HYPOXYLON (1) 18B.			1	18	61	59	10	1			6.31	150	946.50	895862.250	5972.415
HYPOXYLON (2) PLUMBEUM			22	38	40	19	1				5.62	120	674.25	454613.063	3788.142
HYPOXYLON (3) 18A.			14	36	54	15	1				5.71	120	684.75	468882.563	3907.355
HYPOXYLON (4) 19.				2	8	37	30	22	1		7.24	100	723.75	523814.063	5238.141
HYPOXYLON (5) 18F.				21	66	55	8				6.25	150	937.50	878906.250	5859.375
HYPOXYLON (6) 18D.	13	54	31	1	1						3.92	100	392.25	153860.063	1538.606
HYPOXYLON (7) 18E.	14	69	115	35	16	1					4.42	250	1104.75	1220472.563	4881.890
HYPOXYLON (8) CORYPHAE	43	44	12	1							3.53	100	353.25	124785.563	1247.856
HYPOXYLON (9) VOGESIACUM		1	5	43	61	34	5	1			5.96	150	893.25	797895.563	5319.338
HYPOXYLON (10) 38.			15	43	37	3	2				5.51	100	550.50	303050.250	3030.503
HYPOXYLON (11) RUBIGINOSUM		19	111	68	11	1					4.76	210	1000.50	1001000.250	4766.668
HYPOXYLON (12) ATROPURPUREUM			21	70	45	14					5.51	150	826.50	683102.250	4454.015
HYPOXYLON (13) TENUE			4	26	80	33	7				6.07	150	909.75	827645.063	5517.638
HYPOXYLON (14) 20.			1	9	31	66	40	2	0	1	6.73	150	1009.50	1019090.250	6793.938
HYPOXYLON (15) HAEMATOSTROMA				3	18	62	62	24	11		7.25	180	1304.25	1701068.063	9450.378
HYPOXYLON (16) LURIDUM		2	38	43	14	3					5.09	100	508.50	258572.250	2585.723
HYPOXYLON (17) 18G.			23	35	16	1					5.20	75	390.00	152100.000	2028.000
HYPOXYLON (18) PICEUM			19	78	68	14	1				5.58	180	1005.00	1070025.000	5611.250
HYPOXYLON (19) OCHRACEO FULVUM		6	34	48	11	1					5.00	100	500.251	250250.063	2502.501
H.FERRUGINEO(20) RUFUM. VAR. 1.		15	57	61	16	1					4.92	150	737.50	549906.250	3626.067
(21) VAR. 2.		5	41	39	14	1					4.99	100	498.75	248751.563	2487.516
HYPOXYLON (22) VIVIDUM			1	3	31	97	60	28			7.01	220	1542.00	2377764.000	10808.018
TOTALS:	70	215	565	721	699	517	227	78	12	1		3105	17493.25		101,415.633

$S(x^2) = 102,831.750$

TABLE VIII B.

LENGTH INTERVAL (μ)	4.9 – 5.6	5.6 – 6.4	6.4 – 7.1	7.1 – 7.9	7.9 – 8.6	8.6 – 9.4	9.4 – 10.1	10.1 – 10.9	10.9 – 11.6	11.6 – 12.4	12.4 – 13.1	13.1 – 13.9	13.9 – 14.6	14.6 – 15.4	15.4 – 16.1	16.1 – 16.9	16.9 – 17.6	17.6 – 18.4	18.4 – 19.1	19.1 – 19.9	19.5 – 20.6	20.6 – 21.4	21.4 – 22.1	22.1 – 22.9	22.9 – 23.6	23.6 – 24.4	24.4 – 25.1	25.1 – 25.9	MEAN LENGTH (μ)	NO. OF SPORES	Sx.	$(Sx)^2$	$(Sx)^2/N.$
HYPOXYLON (1) 18B.								2	4	16	31	42	25	17	7	4	1	1											13.62	150	2043.00	4173849.000	27825.660
HYPOXYLON (2) PLUMBEUM					2	4	10	41	20	19	13	5	3	3															11.29	120	1345.00	1809025.000	15075.208
HYPOXYLON (3) 18A.									4	15	29	37	25	7	3														13.36	120	1602.75	2568807.563	21406.720
HYPOXYLON (4) 19.											5	10	18	21	24	11	5	4	1	1									15.26	100	1562.50	2441406.250	24414.063
HYPOXYLON (5) 18F.						1	0	1	7	25	29	37	26	18	5	1													13.36	150	2003.25	4013010.563	26753.473
HYPOXYLON (6) 18D.			8	37	29	20	5	1																					8.10	100	810.00	656100.000	6561.000
HYPOXYLON (7) 18E.				7	15	45	47	57	27	27	12	9	4																10.39	250	2597.25	6745707.563	26982.830
HYPOXYLON (8) CORYPHAE	4	26	40	25	4	1																							6.77	100	676.50	457652.250	4576.523
HYPOXYLON (9) VOGESIACUM							1	14	15	22	25	32	22	12	4	2	0	1											12.99	150	1947.75	3793730.063	25291.534
HYPOXYLON (10) 38.				6	12	31	26	18	5	2																			9.46	100	945.75	894443.063	8944.431
HYPOXYLON (11) RUBIGINOSUM				4	2	24	36	75	38	19	9	3																	10.53	210	2211.75	4891838.063	23294.467
HYPOXYLON (12) 470.						4	14	25	26	37	23	16	3	2															11.69	150	1753.50	3074762.250	20498.415
HYPOXYLON (13) TENUE						1	2	19	44	49	23	12																	11.78	150	1766.25	3119639.063	20797.594
HYPOXYLON (14) 2C.									2	3	3	11	23	36	34	22	10	5	1										15.29	150	2292.75	5256702.563	35044.684
HYPOXYLON (15) HAEMATOSTROMA									1	3	12	20	35	34	29	26	13	4	1	2									15.10	180	2718.75	7391601.5625	41064.453
HYPOXYLON (16) LURIDUM				1	0	38	38	30	3																				9.79	100	978.75	957951.563	9579.516
HYPOXYLON (17) 18G							4	13	16	27	9	4	1	1															11.67	75	877.50	770006.250	10266.250
HYPOXYLON (18) PICEUM					1	1	12	45	38	35	26	17	4	1															11.60	180	2087.25	4356612.563	24203.431
HYPOXYLON (19) OCHRACEO-FULVUM				6	10	32	31	14	7																				9.43	100	943.50	890192.250	8901.923
H.FERRUGINEO(20) RUFUM VAR. 1.					2	4	32	52	31	22	3	2	1	1															11.58	150	1617.75	2617115.063	17447.438
(21) VAR. 2.				1	2	7	20	31	26	10	3																		10.79	100	1058.25	1119893.063	11198.931
HYPOXYLON (22) VIVIDUM											5	22	32	35	35	36	27	9	9	5	1	1	0	1	1	0	0	1	15.88	220	3493.50	12204542.250	55475.192
TOTALS:	4	26	48	87	72	213	278	438	314	331	260	279	222	188	141	102	56	24	12	8	1	1	0	1	1	0	0	1		3105	37333.25		465603.742

$S(x^2)$ = 470,085.250

Total Sum of Squares = 470,085.250 - CF.

T A B L E VIII C.

ANALYSIS OF VARIANCE OF SPORE DIMENSIONS.

RUBIGINOSUM GROUP OF HYPOXYLON.

W I D T H.

Correction Term = $(17493.25)^2/3105$ = 985,551.677

Total Sum of Squares = 102,831.750 - 985,551.687 = 4,276.582

Between Sample Sum of Squares = 101,415.633 - 985,551.687 = 2,860.465

SOURCE OF VARIANCE.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL	3104	4,276.582		
BETWEEN SAMPLES	21	2,860.465	136.21261	296.545
WITHIN SAMPLES	3083	1,416.117	0.4593308	

$$\Delta \bar{x} = \sqrt{0.4593} \times 1.960 \sqrt{\frac{n_1 + n_2}{n_1 \; n_2}}$$

$$= 0.12 - 0.20 \; \mu \; .^{*}$$

L E N G T H.

Correction Term = $(37,333.25)^2/3105$ = (1393771555.563)/3105 = 448,879.728

Total Sum of Squares = 470,085.250 - 448,879.728 = 21,205.522

Between Sample Sum of Squares = 465,603.742 - 448,879.728 = 16,724.014

SOURCE OF VARIANCE.	DEGREE OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL	3104	21,205.522		
BETWEEN SAMPLES	21	16,724.014	796.3816	547.8685
WITHIN SAMPLES	3083	4481.508	1.4536	

$$\Delta \bar{x} = \sqrt{1.4536} \times 1.960 \sqrt{\frac{n_1 + n_2}{n_1 \; n_2}}$$

$$= 0.21 - 0.36 \; \mu \; ^{*}$$

* Value depends on the numbers compared.

TABLE IX (Refer to Graphs H-J, & Vol. I pp. 187,188).

To Show Degree Of Significance Between Growth Rates Of The Rubiginosum Group.

Species.	No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
H 18B 376	1	-	15 20 . 28	. 20 . 28	. . 25 .	15 20 25 28	15 20 25 28	. 20 25 28	. 20 25 28	15 20 25 29	. 20 . .	. 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	. 20 25 28	. 20 . .	15 20 25 28	15 20 25 28	. 20 . 28	15 20 . 28	. 20 25 28	. 20 25 28	15 20 . 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28
H. plumbeum 193	2	15 . . 28	-	. 20 . .	. . . 28	15 20 25 28	. 20 25 28	. . 25 .	. 20 25 28	. 20 25 28	. 20 . 28	. 20 25 28	15 20 25 28	. 20 25 28	. 20 25 28	. 20 25 28	. 20 25 28	. 20 25 28	. 20 . 28	. 20 25 28	. 20 . .	. 20 25 .	. 20 . 28	. . . 28	. . . 28	. 20 . 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28
H. 18A 220	3	. 20 . 28	. 20 . .	-	. 20 . 28	15 20 25 28	15 20 25 28	. . 25 .	. 20 25 28	15 20 25 28	. . . 28	15 20 25 28	15 20 25 28	. 20 25 28	. 20 25 28	. 20 25 28	. 20 25 28	. 20 25 28	. . . 28	15 20 25 28	15 . . .	. 20 25 .	15 . . 28	. . . 28	. . . 28	15 . 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28
H. 19 221	4	. 20 25 .	. . . 28	. 20 . 28	-	15 20 25 28	15 20 25 28	. . 25 28	. 20 25 28	15 20 25 28	. 20 25 .	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 . 25 28	. 20 25 28	. 20 25 28	. . . 28	15 20 25 28	. . . 28	. 20 25 28	. 20 . 28	. 20 . 28	. 20 . 28	15 . . .	15 20 25 28	15 20 25 28	15 . 25 28	15 20 25 28	15 20 25 28
H. 18F 379	5	15 . 25 28	15 20 25 .	15 20 25 28	15 20 25 28	-	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	15 20 25 28	15 20 25 .	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28
H. 18D 389	6	15 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	-	15 20 . 28	15 20 25 28	. 20 25 .	15 20 25 28	. . . 28	. 20 . 28	. . . 28	. . . 28	. 20 . 28	15 20 . 28	15 20 . 28	15 20 . 28	. 20 25 28	. 20 25 28	15 20 25 .	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	15 20 25 28	. 20 . 28	15 20 . 28	. 20 . 28
H. 18E Strain 418	7	. 20 25 28	. . 25 .	. . 25 28	. . 25 28	15 20 25 28	15 20 . 28	-	. 20 25 28	15 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	. 20 25 28	15 . 25 28	15 20 25 28	. . 25 28	. 20 25 .	. . 25 28	. . 25 28	. . 25 28	. . 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28
H. 18E Strain 561	8	. 20 25 28	. 20 25 28	. 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	-	15 . 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	. . 25 28	. 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	15 20 25 28	. 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 . 25 28	15 . 25 28
H. coryphae 534	9	15 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	15 20 25 28	-	15 . 25 28	. 20 25 28	. . 25 28	. 20 25 28	. 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	. 20 25 28	. 20 25 28	15 20 25 .	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	15 20 25 28	. 20 25 28	15 20 25 28	. . 25 28	15 . 25 28
H. vogesiacum Strain 312	10	. 20 . .	. 20 . 28	. . . 28	. 20 25 .	. 20 25 28	15 20 25 28	. 20 25 28	. 20 25 28	15 20 25 28	-	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	. 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 .	15 . 25 28	. . 25 28	. . 25 28	15 . 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28
H. vogesiacum Strain 2	11	. 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. . . 28	15 20 25 28	15 . 25 28	. . 25 28	15 20 25 28	-	15 20 25 28	. . . .	. . . .	. 20 . .	15 20 . .	15 20 . .	15 20 . .	15 20 . .	15 20 . .	15 20 . .	15 20 . .	15 20 . .	. 20 . .	. 20 . .	15 20 . .	. 20 . .	15 20 . .	. . . .
H. 38 556	12	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 .	15 20 25 28	15 20 25 28	. 20 . .	15 20 25 28	. 20 25 28	-	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 . 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	. . 25 28	2 2
H. rubiginosum Strain 219	13	15 20 25 28	. 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	. . . 28	15 20 25 28	15 . 25 28	. 20 25 28	. 20 25 28	. . - .	. . . .	. 20 . .	15 20 25 28	15 20 25 28	15 20 . 28	. 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 . 28	15 20 25 28	15 20 25 28	. 20 25 28	15 20 . 28	2 2
H. rubiginosum Strain 501	14	15 20 25 28	. 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	15 20 25 28	. 20 25 28	. . - .	. . . .	. 20 . .	15 20 25 28	15 20 25 28	15 20 . 28	. 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 . 28	15 20 25 28	15 20 25 28	. 20 25 28	15 20 . 28	2 2
H. rubiginosum Strain 538	15	15 20 25 28	. . 25 28	. . 25 28	15 . 25 28	15 20 25 28	. 20 . 28	15 20 . 28	15 20 25 28	. 20 25 28	15 20 25 28	. 20 25 28	15 20 25 28	. 20 . .	. . . .	. 20 25 .	15 20 25 .	15 20 25 .	15 20 25 .	. 20 . 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28
H. purpureum Strain 470	16	. 20 25 28	. 20 25 28	. 20 25 28	. 20 25 28	15 20 25 28	15 20 . 28	. 20 25 28	. . 25 28	15 . 25 28	. 20 25 28	15 20 25 28	15 20 25 28	. . . .	. 20 25 .	. 20 25 .	. 20 25 .	15 20 25 28	. 20 . 28	15 20 25 28	15 20 25 28	15 20 25 28	. 20 25 28	. 20 25 28	. 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	15 20 25 28	1 2

H. purpureum Strain 481	17	.	.	.	.	15	15	.	.	15	.	15	15	15	15	15	15		.	15	15	15	15	.	.	15	15	15	15	15	15			
		20	20	20	20	20	20	20	.	.	20	20	.	20	20	20	20		.	.	20	20	20	20	20	20	20	20	20	20	.		
		25	25	25	25	25	.	.	25	25	25	.	25	.	.	25	.	-	25	.	25	25	25	25	25	25	25	25	25	.	.		
		28	28	28	28	28	28	28	28	28	28	.	28	.	.	.	.		28	.	28	28	.	.	.	28	28	28	28	28	28		
H. tenue 374	18	.	.	.	.	.	15	15	.	15	.	15	15	15	15	15	.	.		15	15	15	15	15	15	15	15	15	15	15	15			
		20	20	.	.	20	20	.	20	20	20	20	20	20	20	.	20	.		20	.	20	.	.	.	.	20	20	20	20	20			
		.	.	.	.	25	25	25	25	25	.	25	25	25	25	25	25	25	-	25	.	25	.	.	.	.	25	25	25	25	25			
		.	28	28	.	28	28	28	28	28	.	28	28	28	28	28	28	28		28	28	28	28	28	28	.	28	28	28	28	28			
H. 2C 378	19	15	.	15	15	15	.	15	15	.	15	15	15	.	.	.	15	15	15		.	15	.	15	15	.	15	15	.	15	.			
		20	20	20	20	20	20	20	20	20	20	20	.	20	20	20	20	.	20		20	20	20	20	20	20	20	20	20	.	20			
		25	25	25	25	25	.	.	25	25	25	.	25	.	.	25	.	.	25	-	25	25	25	25	25	25	25	25	25	.	.			
		28	28	28	28	28	28	28	28	28	28	.	28	.	.	.	.	.	28		28	28	28	.	.	.	28	.	28	28	28			
H. haematostroma	20	15	.	15	.	15	.	.	15	.	15	15	15	.	.	.	15	15	15	.		.	15	15	.	15	15	15	.	15	.			
		20	.	.	.	20	20	.	20	20	20	20	20	20	.	20	20	.	20		20	20	20	.	20	20	20	.	20	20				
		25	.	.	.	25	25	25	25	25	25	25	25	.	.	25	25	.	25	-	25	.	.	.	.	25	25	.	25	25				
		28	.	.	28	28	28	.	28	28	28	28	28	28	28	28	28	28	28		.	28	28	28	28	28	28	.	.	28			
H. 18C 504	21	.	.	.	.	15	15	.	.	15	15	15	15	15	15	15	15	15	15	.	.		.	.	.	.	15	15	.	.	.			
		20	20	20	20	20	.	20	.	20	20	.	20	.	.	20	.	20	20	20	20		20	20	20	20	20	20	.	20	.			
		25	25	25	25	25	25	25	25	.	25	25	.	25	25	25	.	25	25	25	25	-	25	25	25	25	25	.	25	25	25			
		28	.	.	28	.	28	.	28	28	28	28	28	28	28	28	28	28	28	28	28		28	28	28	28	28	28	.	28	.			
H. 18G 487	22	15	.	15	.	15	15	.	15	15	15	15	15	15	15	.	.	15	15	.	15	.		.	.	.	15	15	15	15	15			
		20	20	.	20	20	20	.	20	20	.	20	20	20	20	20	20	20	.	20	20	20		.	.	.	20	20	20	20	20			
		.	.	.	.	25	25	25	25	25	.	25	25	25	25	25	25	25	.	25	.	25	-	.	.	.	25	25	25	25	25			
		28	28	28	28	28	28	28	28	28	28	28	28	.	28	28	28	.	28	28	28	28		.	.	28	28	.	28	28	28			
H. piceum Strain 326	23	.	.	.	.	15	15	.	.	15	.	15	15	15	15	15	.	.	15	15	15	.	.		.	.	15	15	15	15	15			
		20	.	.	20	20	20	.	20	20	.	20	20	20	20	20	20	20	.	20	20	20	.		.	.	20	20	20	20	20			
		25	.	.	.	25	25	25	25	25	25	25	25	25	25	.	25	25	.	25	.	25	.	-	.	.	25	25	.	25	25			
		28	28	28	28	28	28	28	28	28	28	28	28	.	.	.	.	.	28	.	28	28	28		.	28	28	.	28	28	28			
H. piceum Strain 330	24	.	.	.	.	15	15	.	.	15	.	.	15	15	15	15	.	.	15	15	.		.		.		15	15	15	15	15			
		20	.	.	20	20	20	.	20	20	20	20	20	20	20	.	20	20	.	20	.	20	.	.		.	20	20	20	20	20			
		25	.	.	.	25	25	25	25	25	25	25	25	25	25	.	25	25	.	25	.	25	.	.	-	.	25	25	.	25	25			
		28	28	28	28	28	28	28	28	28	28	.	28	.	.	.	.	.	28	.	28	28	.	.		.	28	.	28	28	28			
H. piceum Strain 562	25	15	.	15	15	15	.	.	15	.	.	.	15	.	.	.	15	15	15	.	15	.	.	.	.		15	.	15	15	.			
		20	20	.	.	20	20	.	20	20	.	20	20	20	20	20	20	20	.	20	20	20	.	.	.		20	20	20	20	20			
		.	.	25	.	25	25	25	25	25	25	.	25	.	.	.	25	25	.	25	.	25	.	.	.	-	25	25	.	25	25			
		28	28	28	.	28	28	28	28	28	.	28	28	28	28	.	28	28	.	28	28	28	28	28	.		28	28	28	28	28			
H. ochraceo fulvum 482	26	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15		15	15	15	15			
		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		20	20	20	20			
		25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25		25	25	25	25			
		28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28		28	28	28	28			
H. ferrugineo rufum var.1 287	27	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	.	15		15	15	15			
		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		20	20	20			
		25	25	25	25	25	25	25	25	.	25	25	.	25	25	25	25	25	25	25	25	25	.	25	25	25	25	25	-	25	25	25			
		28	28	28	28	28	28	28	28	28	28	.	28	.	.	.	.	28	28	.	28	28	.	.	.	28	28			28	28	28			
H. ferrugineo rufum var.2 222	28	15	15	15	15	15	.	15	15	.	15	.	.	.	.	.	15	15	15	.	.	.	15	15	15	15	15	15		15	.			
		20	20	20	.	20	.	20	20	20	20	.	20	.	.	.	20	20	20	20	.	.	20	20	20	20	20	20		20	20			
		25	25	25	.	25	.	.	25	25	25	.	25	.	.	.	25	25	25	25	.	25	25	.	.	.	25	25	-	.	25			
		28	.	.	28	.	28	.	28	28	28	28	28	28	28	28	28	28	28	28	.	.	28	28	28	28	28	28		.	28			
H. hypomiltum 490	29	15	15	15	15	15	15	15	15	15	15	15	.	15	15	15	15	15	15	15	15	.	15	15	15	15	15	15	15		15			
		20	20	20	20	20	20	20	.	20	20	20	.	20	20	20	20	20	20	.	20	20	20	20	20	20	20	20	20		20			
		25	25	25	25	25	.	.	25	25	25	.	25	.	.	25	.	.	25	.	25	25	25	25	25	25	25	25	.		.			
		28	.	.	28	.	28	.	28	28	28	28	28	28	28	28	28	28	28	28	.	.	28	28	28	28	28	28	.		28			
H. vividum cultured direct 268	30	15	.	15	15	15	.	15	15	.	15	.	.	.	.	.	15	15	15	.	.	.	15	15	15	.	15	15	.	15				
		20	20	20	20	20	20	20	.	.	20	.	20	20	20	20	.	.	20	20	20	.	20	20	20	20	20	20	20	20				
		25	25	25	25	25	.	.	25	25	25	.	25	.	.	25	.	.	25	.	25	25	25	25	25	25	25	25	.	-				
		28	28	28	28	28	.	28	28	.	28	28	.	28	28	28	28	28	28	28	28		28	28	28	28	28	28	28	28				
H. vividum from re-cultured stroma 258	31	15	.	15	15	15	.	15	15	.	15	.	.	.	.	.	15	15	15	.	.	.	15	15	15	15	15	15	.	15	.			
		20	20	20	20	20	20	20	20	20	20	20	.	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	.	.			
		25	25	25	25	25	25	25	.	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	.	25	25	25			
		28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	.	28	28	28	28	28	28	28	.			

The numbers indicate temperatures at which growth rates are significantly different.

. = not significant

TABLE IX A 15°C.

NUMBER STRAIN	1 376	2 193	3 220	4 221	5 379	6 389	7 418	8 561	9 534	10 312	11 2	12 556	13 219	14 501	15 538	16 470	17 481	18 374	19 378	20 319	21 504	22 487	23 326	24 330	25 562	26 482	27 287	28 222	29 490	3 26
MEAN DAILY RADIAL	0.431	1.013	0.650	0.625	0.004	1.283	0.950	0.388	1.363	0.350	1.069	1.675	1.194	1.194	1.194	0.642	0.444	0.150	1.125	1.125	0.900	0.869	0.688	0.675	1.075	2.979	2.613	1.394	1.869	1.47
GROWTH INCREMENT	0.463	0.925	0.575	0.700	0.023	0.734	0.725	0.456	0.875	0.425	1.206	1.513	1.256	1.181	1.269	0.642	0.431	0.469	1.144	1.131	0.656	0.813	0.719	0.822	1.075	3.450	2.325	1.406	1.788	1.25
READINGS mm. (x)	0.431	0.856		0.756		1.575	0.550		1.538			1.531	1.263 1.519	1.306	1.044	0.733		0.163	1.125	1.013	0.794							1.400		1.22
TOTAL (Sx)	1.325	2.794	1.225	2.081	0.027	3.592	2.225	0.838	3.776	0.775	2.275	4.719	5.232	3.681	3.507	2.017	0.875	0.782	3.394	3.269	2.350	1.682	1.407	1.497	2.150	6.429	4.938	4.200	3.657	3.95
NUMBER OF READINGS (N)	3	3	2	3	2	3	3	2	3	2	2	3	4	3	3	3	2	3	3	3	3	2	2	2	2	2	2	3	2	3
GROWTH RATE (mm./day)	0.44	0.93	0.61	0.69	0.014	1.20	0.74	0.42	1.26	0.39	1.14	1.57	1.31	1.23	1.17	0.67	0.44	0.26	1.13	1.09	0.78	0.84	0.70	0.75	1.08	3.22	2.47	1.40	1.83	1.32
$S(x^2)$	0.5859	2.6145	0.7531	1.4522	0.0005	4.6655	1.7306	0.3530	4.9888	0.3031	2.5972	7.4388	6.9057	4.5260	4.1259	1.3616	0.3829	0.3487	3.8400	3.5710	1.8708	1.4161	0.9903	1.1313	2.3113	20.7769	12.2334	5.8807	6.6901	5.23
$(Sx)^2$	1.7556	7.8064	1.5006	4.3306	0.0007	12.9025	4.9506	0.7022	14.2582	0.6001	5.1756	22.2690	27.3738	13.5498	12.2990	4.0683	0.7653	0.8115	11.5192	10.6864	5.5225	2.8291	1.9796	2.2410	4.6225	41.3320	24.3838	17.6400	13.3736	15.6
$(Sx)^2/N$	0.5852	2.6021	0.7503	1.4435	0.0004	4.3008	1.6502	0.3511	4.0861	0.3000	2.5878	7.4230	6.8435	4.5033	4.0997	1.3561	0.3827	0.2038	3.8397	3.5621	1.8408	1.4145	0.9898	1.1205	2.3112	26.6660	12.1919	5.8800	6.8868	5.20

TOTALS: Total (Sx) = 83.587

Number of Readings (N) = 80

$S(x^2)$ = 115.4061

$(Sx)^2/N$ = 113.4290

Correction Term = $(83.587)^2/80$ = 87.3348

Total Sum of Squares = 115.4061 - 87.3348

Between Sample Sum of Squares = 113.4290 - 87.3348

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F.
TOTAL	79	28.0713		
BETWEEN SAMPLES	30	26.0942	0.86981	21.557
WITHIN SAMPLES	49	1.9771	0.04035	Significant at 5% level.

$$\Delta \bar{x} = \sqrt{0.04035} \times 2.008 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

NO. OF ITEMS COMPARED.		$\Delta \bar{x}$
2	2	0.40 mm.
2	3	0.37
2	4	0.34
3	3	0.33
3	4	0.31

TABLE IX B 20°C.

NUMBER STRAIN	1 376	2 193	3 220	4 221	5 379	6 389	7 418	8 561	9 534	10 312	11 2	12 555	13 219	14 501	15 538	16 470	17 481	18 374	19 378	20 319	21 504	22 487	23 326	24 330	25 562	26 482	27 287	28 222	29 490	30 268	31 268 cult.
MEAN DAILY RADIAL	0.706	1.443	1.063	1.894	0.0625	1.297	1.450	2.600	2.563	0.950	2.106	2.750	1.963	1.969	1.602	2.210	2.556	1.188	2.825	1.500	2.250	0.944	1.288	1.214	0.875	4.458	3.609	1.769	2.869	2.256	2.938
GROWTH INCREMENT	0.613	1.469	1.125	1.669	0.0352	1.906	1.350	1.813	2.588	0.981	2.2025	2.988	1.856	1.925	1.694	2.028	2.750	1.106	2.875	1.519	1.638	0.981	1.219	1.344	1.375	4.708	3.400	1.794	2.906	2.175	3.138
READINGS (x) mm.	0.719	1.450 1.450		1.038		2.381	0.975		2.042	0.894		2.888 2.355	1.875 2.019	1.606	1.369	2.295	2.150	0.600 0.906	2.394	1.575		1.319	1.069					1.725		2.250	
TOTAL (Sx)	2.038	5.812	2.188	4.601	0.0977	5.584	3.775	4.413	7.193	2.825	4.131	10.981	7.713	5.500	4.665	6.553	7.456	3.800	8.094	4.594	3.888	3.244	3.576	2.558	2.250	9.166	7.009	5.288	5.775	6.681	6.076
NUMBER OF READINGS (N)	3	4	2	3	2	3	3	2	3	3	2	4	4	3	3	3	3	3	3	3	2	3	3	2	2	2	2	3	2	3	2
MEAN GROWTH RATE(mm/day)	0.68	1.45	1.09	1.53	0.05	1.86	1.26	2.21	2.40	0.94	2.07	2.74	1.93	1.83	1.56	2.19	2.49	1.27	2.70	1.53	1.94	1.05	1.19	1.28	1.13	4.58	3.50	1.76	2.89	2.23	3.04
$S(x^2)$	1.3912	8.4452	2.3956	7.4502	0.0515	10.9842	4.8756	10.0470	17.4365	2.6641	8.5359	30.3772	14.8901	10.1618	7.3102	14.2639	18.718	3.8154	21.9775	7.0380	7.7455	3.5938	4.2877	3.2801	2.6563	42.0390	24.5849	9.3234	16.6760	14.8827	18.4789
$(Sx)^2$	4.1534	33.7793	4.7873	21.1692	0.0955	31.1811	14.2506	19.4746	51.7392	7.9806	17.0652	120.5824	59.4904	30.2500	21.7622	42.9418	55.5519	14.4400	65.5128	21.1048	15.1165	10.5325	12.7878	6.5434	5.0625	84.0156	49.1261	27.9630	33.3506	44.6358	36.9178
$(Sx)^2/N$	1.3845	8.4448	2.3936	7.0564	0.0477	10.3937	4.7502	9.7373	17.2464	2.6602	8.5326	30.1456	14.8726	10.0833	7.2541	14.3136	18.5306	4.8133	21.8343	7.0316	7.5582	3.5078	4.2626	3.2717	2.5312	42.0078	24.5630	9.3210	16.6753	14.8786	18.4589
TOTALS	Total (Sx) = 157.525					Number of Readings (N) = 85							Mean Growth Rate (mm/day) = 350.3770					$S(x^2)$ = 350.3770				$(Sx)^2/N$ = 348.5625										

Correction Term = $(157.525)^2/85 = 291.9308$

Total Sum of Squares = $350.3770 - 291.9308$

Between Sample Sum of Squares = $348.5625 - 291.9308$

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F.
TOTAL	84	58.4462		
BETWEEN SAMPLES	30	56.6317	18.8772	
WITHIN SAMPLES	54	1.8145	0.0336	629.24 Significant at 5% level.

$$\Delta \bar{x} = \sqrt{0.03360} \times 2.004 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

NO. OF ITEMS COMPARED.		$\Delta \bar{x}$
2	2	0.37 mm.
2	3	0.34
2	4	0.31
3	3	0.30
3	4	0.28

TABLE IX C 25°C.

NUMBER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
STRAIN	376	193	220	221	379	389	418	561	534	312	2	555	219	501	538	470	481	374	378	319	504	487	326
MEAN DAILY GROWTH INCREMENT READINGS x (mms.)	0.888	1.306	1.213	1.263	0.082	3.264	2.575	4.473	3.375	1.531	2.625	3.625	2.356	2.475	2.063	3.023	2.488	1.457	2.469	1.675	3.213	1.100	1.825
	0.994	1.369	1.350	1.494	0.156	2.133	2.313	4.213	2.900	1.100	2.600	3.700	2.344	2.450	1.943	2.937	2.944	1.332	3.035	1.663	3.475	1.194	1.881
		1.550		2.144		2.344	2.880	4.275	4.413	0.494	2.175	3.588	1.769	2.475	2.281		2.889	1.514	2.861	1.681	3.388	1.775	1.650
		1.575						4.238	4.288		2.238	3.325	2.394					1.156			3.363		
									3.222				2.663					1.406					
TOTAL (Sx)	1.882	5.800	2.563	4.901	0.238	7.741	7.688	17.199	18.198	3.125	9.726	14.238	11.526	7.400	6.287	5.960	8.321	6.865	8.365	5.019	13.439	4.069	5.356
NUMBER OF READINGS (N)	2	4	2	3	2	3	3	4	5	3	4	4	5	3	3	2	3	5	3	3	4	3	3
MEAN GROWTH RATE (mm/day)	0.94	1.45	1.28	1.63	0.12	2.58	2.53	4.30	3.64	1.04	2.43	3.56	2.31	2.47	2.10	2.98	2.77	1.37	2.79	1.67	3.36	1.36	1.79
$S(x^2)$	1.7766	8.4629	3.2939	8.4239	0.0311	20.6977	19.8206	73.9934	68.0434	3.7980	23.8552	50.7600	26.9972	18.2538	13.2342	17.7645	23.2036	9.5024	23.4925	8.3970	45.1873	5.7863	9.5913
$(Sx)^2$	3.5419	33.6400	6.5690	24.0198	0.0566	59.9231	59.1053	295.8056	331.1672	9.7656	94.5951	202.7206	132.8487	54.7600	39.5264	35.5216	69.2390	47.1282	69.9732	25.1954	180.6067	16.5568	28.6867
$(Sx)^2/N$	1.7710	8.4100	3.2845	8.0066	0.0283	19.9744	19.7018	73.9514	66.2334	3.2552	23.6488	50.6802	26.5697	18.2533	13.1755	17.7608	23.0797	9.4256	23.3234	8.3985	45.1517	5.3189	9.5622

NUMBER	24	25	26	27	28	29	30	31	TOTALS.
STRAIN	330	562	482	287	222	490	268	268 cult.	
MEAN DAILY GROWTH INCREMENT READINGS x (mms.)	1.881	2.025	6.458	3.922	2.025	2.571	3.075	4.038	
	1.641	1.825	6.708	4.850	2.050	2.694	2.875	4.400	
	1.394		7.083	2.641	2.050		2.950		
			6.833						
TOTAL (Sx)	4.916	3.850	27.082	11.413	6.125	5.265	8.900	8.438	227.521
NUMBER OF READINGS (N)	3	2	4	3	3	2	3	2	98
MEAN GROWTH RATE (mm/day)	1.64	1.93	6.77	3.80	2.04	2.63	2.97	4.22	
$S(x^2)$	8.174	7.4313	183.5618	45.8795	12.5056	13.8677	26.4238	35.6654	817.8762
$(Sx)^2$	24.1671	14.8225	733.4347	130.2566	37.5156	27.7202	79.2100	71.2083	
$(Sx)^2/N$	8.0557	7.4112	183.3587	43.4155	12.5052	13.8601	26.4033	35.6042	809.5788

Correction Term = $(227.521)^2/98 = 528.2225$

Total Sum of Squares = 817.8762 - 528.2225

Between Sample Sum of Squares = 809.5788 - 528.2225

$$\Delta \bar{x} = \sqrt{0.1238} \times 1.997 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F.
TOTAL	97	289.6537		
BETWEEN SAMPLES	30	281.3563	9.37854	
WITHIN SAMPLES	67	8.2974	0.1238	75.7311 Significant at 5% level.

NUMBER OF ITEMS COMPARED.		$\Delta \bar{x}$ (mm.)
2	2	0.70
2	3	0.64
2	4	0.61
2	5	0.59
3	3	0.57
3	4	0.54
3	5	0.51
4	4	0.50
4	5	0.47
5	5	0.44

TABLE IX D : 28°C.

* NUMBER:	1	4	6	8	9	10	11	12	13	14	15	16	17	18	19	22	23	24	25	26	27	30	31	
** STRAIN:	376	221	389	561	534	312	2	556	219	501	538	470	481	374	378	487	326	330	562	482	287	268	268 cult.	TOTALS.
MEAN DAILY RADIAL GROWTH INCREMENT READINGS mm.(x)	0.006	0.200	3.023	5.271	3.208	0.781	1.744	3.613	1.225	2.013	2.100	1.682	1.606	0.375	0.891	2.325	1.750	1.375	0.775	8.688	1.388	3.175	2.750	
	0.006	0.048	3.422	5.396	3.584	0.000	1.719	3.688	1.875	1.919	0.731	1.813	2.319	0.750	1.422	1.744	1.756	1.300	0.738	8.031	1.725	3.225	2.663	
	0.031	0.350	4.375		3.188 3.750	0.056	1.121	3.675	1.713 1.050	0.688	0.723	0.756		0.750	1.477							3.225		
TOTAL (Sx)	0.043	0.598	10.820	10.667	13.730	0.837	4.584	10.976	5.863	4.600	3.554	4.251	3.925	1.875	3.790	4.069	3.506	2.675	1.513	16.719	3.113	9.625	5.413	132.753
NUMBER OF READINGS(N)	3	3	3	2	4	3	3	3	4	3	3	3	2	3	3	2	2	2	2	2	2	3	2	64
MEAN GROWTH RATE(mm.day)	0.014	0.20	3.61	5.33	3.43	0.28	1.53	3.66	1.47	1.53	1.19	1.42	1.96	0.63	1.26	2.04	1.75	1.34	0.76	8.36	1.56	3.21	2.71	
$S(x)^2$	1.3912	0.1648	39.9892	56.8981	47.3622	0.6131	7.2531	40.1607	9.0531	8.1810	5.4671	6.6876	7.9570	1.2656	4.9975	8.4472	6.1460		1.1453	139.9783	4.9022	30.8819	14.6541	463.8289
$(Sx)^2$	4.1534	0.3576	117.0724	113.7849	188.1529	0.7006	21.0131	120.4726	34.3748	21.1600	12.6309	18.0710	15.4056	3.5156	14.3641	16.5568	12.2920		2.2892	279.5250	9.6908	92.6406	29.3006	
$(Sx)^2/N$	1.3845	0.1192	39.0241	56.8925	47.1282	0.2335	7.0044	40.1575	8.5937	7.053	4.2103	6.0237	7.7028	1.1385	4.7880	8.2784	6.1460		1.1446	139.7625	4.8454	30.8802	14.6503	457.3962

N.B. * NUMBERS 2 3 5 7 20 21 28 29) NIL.
** STRAIN 193 220 379 418 319 504 222 490)

Correction Term = $(132.753)^2/64$ = 275.3649

Total Sum of Squares = 463.8289 - 275.3649

Between Sample Sum of Squares = 457.3962 - 275.3649

SOURCE OF VARIATION	DEGREES OF FREEDOM	SUM OF SQUARES	MEAN SQUARE	F.
TOTAL SUM OF SQUARES	63	188.4640		
BETWEEN SAMPLES	23	182.0313	7.9144	
WITHIN SAMPLES	40	6.4327	0.1608	44.7357

Significant at the 5% level.

$$\Delta \bar{x} = \sqrt{0.1608} \times 2.021 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

NO. OF ITEMS COMPARED		$\Delta \bar{x}$
2	2	0.81 mm.
2	3	0.74
2	4	0.70
3	3	0.66
3	4	0.62

TABLE X. (Refer to Graph K, & Vol. I p.173).

TO SHOW THAT SPORE DIMENSIONS OF DALDINIA CONCENTRICA AND DALDINIA ESCHSCHOLZII ARE SIGNIFICANTLY DIFFERENT.

W I D T H. NUMBER OF SPORES PER INTERVAL.

WIDTH INTERVAL	2.6-3.4	3.4-4.1	4.1-4.9	4.9-5.6	5.6-6.4	6.4-7.1	7.1-7.9	7.9-8.6	NO. OF SPORES	MEAN WIDTH	(Sx)	$(Sx)^2$	$(Sx)^2/N$
DALDINIA CONCENTRICA		1	10	35	25	16	2	1	90		513.75	263939.063	2932.656
DALDINIA ESCH-SCHOLZII	2	19	9						30		117.75	13865.063	462.169
TOTALS	2	20	19	35	25	16	2	1	120		631.50		3394.825

$S(x^2)$ = 3458.250

Correction Factor = $(63150)^2/120$ = 3323.26

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL	119	134.99		
BETWEEN SAMPLES	1	71.56	71.56	133.134
WITHIN SAMPLES	118	63.43	0.5375	Significant at 5% level

CONCLUSION: Significant difference between spore width measurements.

L E N G T H. NUMBER OF SPORES PER INTERVAL.

LENGTH INTERVAL	7.1-7.9	7.9-8.6	8.6-9.4	9.4-10.1	10.1-10.9	10.9-11.6	11.6-12.4	12.4-13.1	13.1-13.9	13.9-14.6	NO. OF SPORES	MEAN LENGTH	(Sx)	$(Sx)^2$	$(Sx)^2/N$.
			8	13	18	17	13	13	7	1	90		1009.50	1019090.250	11323.225
	7	17	6								30		246.75	60885.563	2029.519
TOTALS	7	17	14	13	18	17	13	13	7	1	120		1256.250		13352.744

$S(x^2)$ = 13520.638

Correction Factor = $(1256.250)^2/120$ = 13151.367

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL	119	369.271		
BETWEEN SAMPLES	1	201.377	201.377	141.535
WITHIN SAMPLES	118	167.894	1.4228	Significant at 5% level

CONCLUSION: Significant difference between spore length measurements.

T A B L E X1 (Refer to Graph L, & Vol. I p.178).

TO SHOW DEGREE OF SIGNIFICANT DIFFERENCE (AT 5% LEVEL) BETWEEN SPORE DIMENSIONS OF STRAINS OF THE PENZIGIA GROUP (INCLUDING HYPOXYLON DEUSTUM).

SPECIES.	NO.	1 PENZIGIA 1.	2 PENZIGIA 2A,	3 PENZIGIA 4.	4 PENZIGIA 3.	5 PENZIGIA DISCOLOR.	6 HYPOXYLON DEUSTUM.	7 PENZIGIA BERTERI.	8 PENZIGIA COMPUNCTA.
PENZIGIA 1.	1	-	S	S	sl	S	S	S	sl
PENZIGIA 2A.	2	S	-	S	S	S	S	S	S
PENZIGIA 4.	3	S	S	-	S	S	S	S	S
PENZIGIA 3.	4	sl	S		-	S	S	S	sb
PENZIGIA DISCOLOR.	5	S	S	S	S	-	S	sb	sl
HYPOXYLON DEUSTUM.	6	S	S	S	S	S	-	S	S
PENZIGIA BERTERI.	7	S	S	S	S	sb	S	-	S
PENZIGIA COMPUNCTA.	8	sl	S	S	sb	sl	S	S	-

TABLE XI A.

WIDTH INTERVAL (μ)	2.6-3.4	3.4-4.1	4.1-4.9	4.9-5.6	5.6-6.4	6.4-7.1	7.1-7.9	7.9-8.6	8.6-9.4	9.4-10.1	10.1-10.9	10.9-11.6	11.6-12.4	12.4-13.1	13.1-13.9	13.9-14.6	MEAN WIDTH μ	NO. OF SPORES (N)	Sx.	$(Sx)^2$.	$(Sx^2)/N.$
PENZIGIA 1.				7	20	25	7	1									6.44	60	386.25	149189.063	2486.484
PENZIGIA 2A.							6	14	29	32	28	21	6	3	0	1	9.92	140	1388.25	1927238.063	13765.909
PENZIGIA 3.	6	36	18	13	12	4	1										4.54	90	408.75	167076.563	1856.406
PENZIGIA 4.		1	49	59	8	3											6.54	120	602.25	362705.063	3022.542
PENZIGIA DISCOLOR			1	8	34	46	20	1									5.02	110	719.25	517320.563	4702.914
HYPOXYLON DEUSTUM						5	11	14	24	26	15	4	1				9.16	100	915.75	838598.063	8385.981
PENZIGIA BERTERI		3	9	40	25	12	1										5.56	90	500.25	250250.063	2780.556
PENZIGIA COMPUNCTA			1	10	47	31	9	2									6.32	100	632.25	399740.063	3997.401
TOTALS:	6	40	78	137	146	126	55	32	53	58	43	25	7	3	0	1		810	5553.00	·	40998.193

$S(x^2)$ = 41,650.875

Total Sum of Squares = 41,650.875 - CF

TABLE XI B.

LENGTH INTERVAL (μ)	7.1 – 7.9	7.9 – 8.6	8.6 – 9.4	9.4 – 10.1	10.1 – 10.9	10.9 – 11.6	11.6 – 12.4	12.4 – 13.1	13.1 – 13.9	13.9 – 14.6	14.6 – 15.4	15.4 – 16.1	16.1 – 16.9	16.9 – 17.6	17.6 – 18.4	18.4 – 19.1	19.1 – 19.9	19.9 – 20.6	20.6 – 21.4	21.4 – 22.1	22.1 – 22.9	22.9 – 23.6	23.6 – 24.4	24.4 – 25.1	25.1 – 25.9	25.9 – 26.6	26.6 – 27.4	27.4 – 28.1	28.1 – 28.9	28.9 – 29.6	29.6 – 30.4	30.4 – 31.1	31.1 – 31.9	31.9 – 32.6	32.6 – 33.4	33.4 – 34.1	34.1 – 34.9	34.9 – 35.6	35.6 – 36.4
P. 362.										3	9	10	20	9	7	2																							
P. 2A.													2	4	9	6	21	18	22	10	20	12	7	2	2	0	4	0	1										
P. 3.				1	7	10	31	24	10	7																													
P. DISCOLOR			12	16	33	23	23	1	2																														
P. 4.				1	24	27	47	14	4	2	1																												
H. DEUSTUM																												1	0	0	2	3	3	2	4	2	5	1	4
P. BERTERI		3	9	13	28	10	16	4	6	1																													
P. COMPUNCTA	1	0	2	4	9	14	17	29	19	4	1																												
TOTALS:	1	3	23	35	101	84	134	72	41	17	11	10	22	13	16	8	21	18	22	10	20	12	7	2	2	0	4	1	1	0	2	3	3	2	4	2	5	1	4

LENGTH INTERVAL μ	36.4 – 37.1	37.1 – 37.9	37.9 – 38.6	38.6 – 39.4	39.4 – 40.1	40.1 – 40.9	40.9 – 41.6	41.6 – 42.4	42.4 – 43.1	MEAN LENGTH (μ).	NO. OF SPORES (N).	Sx	$(Sx)^2$	$(Sx)^2/N$
P.362.										16.40	60	984.00	968256.000	16137.600
P. 2A.										21.17	140	2964.00	8785996.000	62752.114
P. 3.										12.316	90	1108.50	1228772.250	13653.025
P. DISCOLOR										10.77	110	1185.00	1404225.000	12765.818
P. 4.										11.71	120	1405.50	1975430.250	16461.919
H. DEUSTUM	5	9	6	15	10	13	7	6	2	37.62	100	3776.25	14260064.063	142600.640
P.BERTERI										10.86	90	977.25	955017.563	10611.306
P. COMPUNCTA										12.19	100	1218.75	1485351.563	14853.516
TOTALS:	5	9	6	15	10	13	7	6	2		810	13619.25		289835.938

$S(x^2) = 292,404.598$ Total Sum of Squares = 292,404.598 - CF

T A B L E XI C.

ANALYSIS OF VARIANCE OF SPORE DIMENSIONS.

PENZIGIA AND HYPOXYLON DEUSTUM.

W I D T H.

Correction Factor = $(15,553.00)^2/.810$ = 38,068.900

Total sum of Squares = 41,650.875 - 38,068.900 = 3,581.975

Between Sample Sum of Squares = 40,998.193 - 38,068.900 = 2,929.293

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL.	809	3,581.975		
BETWEEN SAMPLES.	7	2,929.293	418.4704	514.205
WITHIN SAMPLES.	802	652.682	0.81382	

$$\Delta \bar{x} = \sqrt{0.8138} \times 1.963 \sqrt{\frac{n_1+n_2}{n_1 n_2}} \text{ at the 5\% level} = 0.22 - 0.30\ \mu\ *$$

L E N G T H.

Correction Factor = $(13,619.25)^2/.810$ = 228,992.556

Total Sum of Squares = 292,404.598 - 228,992.556 = 63,412.042

Between Sample Sum of Squares = 289,835.938 - 228,992.556 = 60,843.382

SOURCE OF VARIATION.	DEGREE OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL.	809	63,412.042		
BETWEEN SAMPLES.	7	60,843.382	8,691.911	2713.8
WITHIN SAMPLES.	802	2,568.660	3.202817	

$$\Delta \bar{x} = \sqrt{3.2028} \times 1.963 \sqrt{\frac{n_1+n_2}{n_1 n_2}} \text{ at the 5\% level} = 0.44 - 0.59\ \mu\ *$$

* Value depends on numbers of spores measured.

TABLE XII. (Refer to Graph L, & Vol. I p.197).

TO SHOW DEGREE OF SIGNIFICANT DIFFERENCE (AT 5% LEVEL)
BETWEEN GROWTH RATES OF STRAINS OF THE PENZIGIA GROUP.

GROUP.	STRAIN.	1. PENZIGIA 1. 362.	2. PENZIGIA 4. 513.	3. PENZIGIA 2A. 122.	4. PENZIGIA 3. 390.	5. PENZIGIA DISCOLOR. 365.	6. HYPOXYLON DEUSTUM. 552.	7. PENZIGIA BERTERI. 366.	8. PENZIGIA C 410.
PENZIGIA 1.	362.	—	15	.	.	.	15	15	.
			.	20	.	.	20	20	.
			.	.	.	25	25	25	25
			.	28	28	.	28	28	28
PENZIGIA 4.	513.		15	15	15	15	.	.	15
			.	20	.	.	20	20	.
		—	.	.	.	25	25	25	25
			.	28	28	.	.	28	28
PENZIGIA 2A.	122.		.	15	.	15	15	15	.
			20	20	20	20	20	.	20
		—	.	.	.	25	25	25	25
			28	28	.	28	28	28	28
PENZIGIA 3.	390.		.	15	.	.	15	15	.
			.	.	20	.	20	20	.
		—	.	.	.	25	25	25	25
			28	28	.	28	28	28	28
PENZIGIA DISCOLOR.	365.		.	15	15	.		15	.
			.	.	20	.	—	20	.
		—	25	25	25	25		25	.
			.	.	28	28		.	28
HYPOXYLON DEUSTUM.	552.		15	.	15	15	15		.	15
			20	20	20	20	20	—	20	20
		—	25	25	25	25	25		25	25
			28	.	28	28	.		28	.
PENZIGIA BERTERI.	366.		15	.	15	15	15	.		15
			20	20	.	20	20	20	—	20
		—	25	25	25	25	25	25		25
			28	28	28	28	28	.		.
PENZIGIA COMPUNCTA.	410.		.	15	.	.	.	15	15	
			.	.	20	.	.	20	20	—
		—	25	25	25	25	.	25	25	
			28	28	28	28	28	.	.	

. = Not significant

Numbers indicate temperatures at which growth rates are significantly different.

TABLE XII A. 15°C.

NUMBER	1	2	3	4	5	6	7	8	
	PENZIGIA 1.	PENZIGIA 4.	PENZIGIA 2A.	PENZIGIA 3.	PENZIGIA DISCOLOR.	HYPOXYLON DEUSTUM.	PENZIGIA BERTERI.	PENZIGIA COMPUNCTA.	TOTALS.
STRAIN	362	513	122	390	365	552	366	410	
MEAN DAILY RADIAL		1.839	0.823	0.513	0.213	2.156	2.338	0.483	
GROWTH INCREMENT	0.944	1.995	0.724	0.488	0.169	2.113	1.475	0.613	
READINGS m.m.(x)	0.525	1.859	0.776	0.401	0.350	1.638	0.969	0.667	
TOTAL Sx	1.469	5.693	2.323	1.402	0.732	5.907	4.782	1.763	24.071
NO. OF READINGS (N)	2	3	3	3	3	3	3	3	23
MEAN GROWTH RATE (m.m./day)	0.73	1.90	0.77	0.47	0.24	1.97	1.59	0.59	
S (x^2)	1.1668	10.8178	1.8037	0.6621	0.1964	11.7961	8.5808	1.0539	36.0776
$(Sx)^2$	2.1580	32.4102	5.3963	1.9656	0.5358	34.8926	22.8675	3.1082	
$(Sx)^2/N$	1.0790	10.8034	1.7988	0.6552	0.1786	11.6308	7.6225	1.0361	34.8044

Correction Term = $(24.071)^2/23 = 25.1919$

Total Sum of Squares = 36.0776-25.1919 = 10.8851

Between Sample of Squares = 34.8044-25.1919 = 9.6125 $\quad \Delta \bar{x} = \sqrt{0.07958} \times 2.120 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE	F
TOTAL	23	10.8857		
BETWEEN SAMPLES	7	9.6125	1.3732	17.2567
WITHIN SAMPLES	16	1.2732	0.07958	Significant at the 5% level.

NO. OF ITEMS COMPARED.		$\Delta \bar{x}$
2	2	0.60 m.m.
2	3	0.55
3	3	0.49

TABLE XII B 20°C.

NUMBER:	1	2	3	4	5	6	7	8	
SPECIES:	PENZIGIA 1.	PENZIGIA 4.	PENZIGIA 2A.	PENZIGIA 3.	PENZIGIA DISCOLOR.	HYPOXYLON DEUSTUM.	PENZIGIA BERTERI.	PENZIGIA COMPUNCTA.	TOTALS
STRAIN:	362	513	122	390	365	552	366	410	
MEAN DAILY RADIAL	0.544	1.229	3.479	0.950	0.938	2.001	4.104	0.722	
GROWTH INCREMENT	1.469	1.242	2.719	1.013	0.937	2.438	3.758	0.960	
READINGS mm. (x)	1.000				1.238	1.800 1.931	2.836	0.534	
TOTAL Sx	3.013	2.471	6.198	1.963	3.113	8.170	10.698	2.216	37.832
NO. OF READINGS(N)	3	2	2	2	3	4	3	3	22
MEAN GROWTH RATE (mm/day)	1.00	1.24	3.10	0.98	1.04	2.04	3.57	0.74	
S (x^2)	3.4539	3.0530	19.4964	1.9287	3.2905	16.9166	39.0083	1.7280	88.8754
$(Sx)^2$	9.0782	6.1058	38.4152	3.8534	9.6908	66.7489	114.4472	4.9107	
$(Sx)^2/N$	3.0261	3.0529	19.2076	1.9267	3.2303	16.6872	38.1491	1.6369	86.9168

Correction Term = $(37.842)^2/22$ = 65.0168

Total Sum of Squares = 88.8754-65.0168 = 23.8586

Between Sample Sum of Squares = 86.9168-65.0168 = 21.9000

$\Delta\bar{x} = \sqrt{0.1399} \times 2.145 \sqrt{\frac{n_1+n_2}{n_1 n_2}}$

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL	21	23.8586		
BETWEEN SAMPLES	7	21.9000	3.1286	22.3629
WITHIN SAMPLES	14	1.9586	0.1399	Significant at the 5% level.

NO. OF ITEMS COMPARED.		$\Delta\bar{x}$
2	2	0.80 mm.
2	3	0.73
2	4	0.69
3	3	0.66
3	4	0.61

TABLE XII C 25°C.

NUMBER:	1	2	3	4	5	6	7	8	
STRAIN:	PENZIGIA 1. 362	PENZIGIA 4. 513	PENZIGIA 2A. 122	PENZIGIA 3. 390	PENZIGIA DISCOLOR. 365	HYPOXYLON DEUSTUM. 552	PENZIGIA BERTERI. 366	PENZIGIA COMPUNCTA. 410	TOTALS.
MEAN DAILY RADIAL GROWTH	1.288 1.006	1.017	1.212	0.881	1.781	2.719	3.643	1.824	
INCREMENT READING.	0.994	0.713	1.288	1.144	1.763	2.289	2.563	1.625	
mm. (x)	0.950	1.058	0.769	0.813	1.862	2.797	3.019	1.540	
TOTAL Sx	4.238	2.788	3.269	2.838	5.406	7.805	9.225	4.989	40.558
NO.OF READINGS(N)	4	3	3	3	3	3	3	3	25
MEAN GROWTH RATE (mm/day)	1.061	0.93	1.09	0.95	1.80	2.60	3.08	1.66	
S (x^2)	4.5615	2.6620	3.7192	2.7459	9.7472	20.4557	28.9548	8.3392	81.1855
$(Sx)^2$	17.9606	7.7729	10.6864	8.0542	29.2248	60.9180	85.1006	24.89012	
$(Sx)^2/N$	4.4902	2.5910	3.5631	2.6847	9.7416	20.3060	28.3335	8.2967	80.0068

Correction Term = $(40.558)^2/25$ = 65.7981
Total Sum of Squares = 81.1855 - 65.7981 = 15.3874
Between Sample Sum of Squares = 80.0068 - 65.7981 = 14.2087

$$\Delta \bar{x} = \sqrt{0.06733} \times 2.110 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$$

SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.	NO. OF ITEMS COMPARED.		$\Delta \bar{x}$
TOTAL:	24	15.3874			3	3	0.45 mm.
BETWEEN SAMPLES:	7	14.2087	2.0298	30.1470	3	4	0.42 mm.
WITHIN SAMPLES :	17	1.1787	0.06733	Significant at the 5% level.			

TABLE XII D 28°C.

NUMBER:	1	2	3	4	5	6	7	8	
SPECIES:	PENZIGIA 1.	PENZIGIA 4.	PENZIGIA 2A.	PENZIGIA 3.	PENZIGIA DISCOLOR.	HYPOXYLON DEUSTUM.	PENZIGIA BERTERI.	PENZIGIA COMPUNCTA.	TOTAL.
STRAIN:	362	513	122	390	365	552	366	410	
MEAN DAILY RADIAL	0.563				0.444	0.430		2.085	
GROWTH INCREMENT	0.100	0.513	NIL	NIL	1.331	2.047	2.569	1.665	
READINGS, mm.(x)	0.300	0.667			0.975	1.910	2.850	1.909	
TOTAL Sx	0.963	1.180			2.750	4.387	5.419	5.659	20.358
NO.OF READINGS(N)	3	2			3	3	2	3	16
MEAN GROWTH RATE (mm/day).	0.32	0.59			0.92	1.46	2.71	1.89	
$S(x^2)$	0.4170	0.7081			2.9193	8.0232	14.7223	10.7637	37.55
$(Sx)^2$	0.9274	1.3924			7.5625	19.2458	29.3656	32.0243	
$(Sx)^2/N$	0.3093	0.6962			2.5208	6.4153	14.6828	10.3414	34.96

Correction Term = $(20.358)^2/16$ = 25.9030

Total Sum of Squares = 37.5536 - 25.9030 = 11.6506

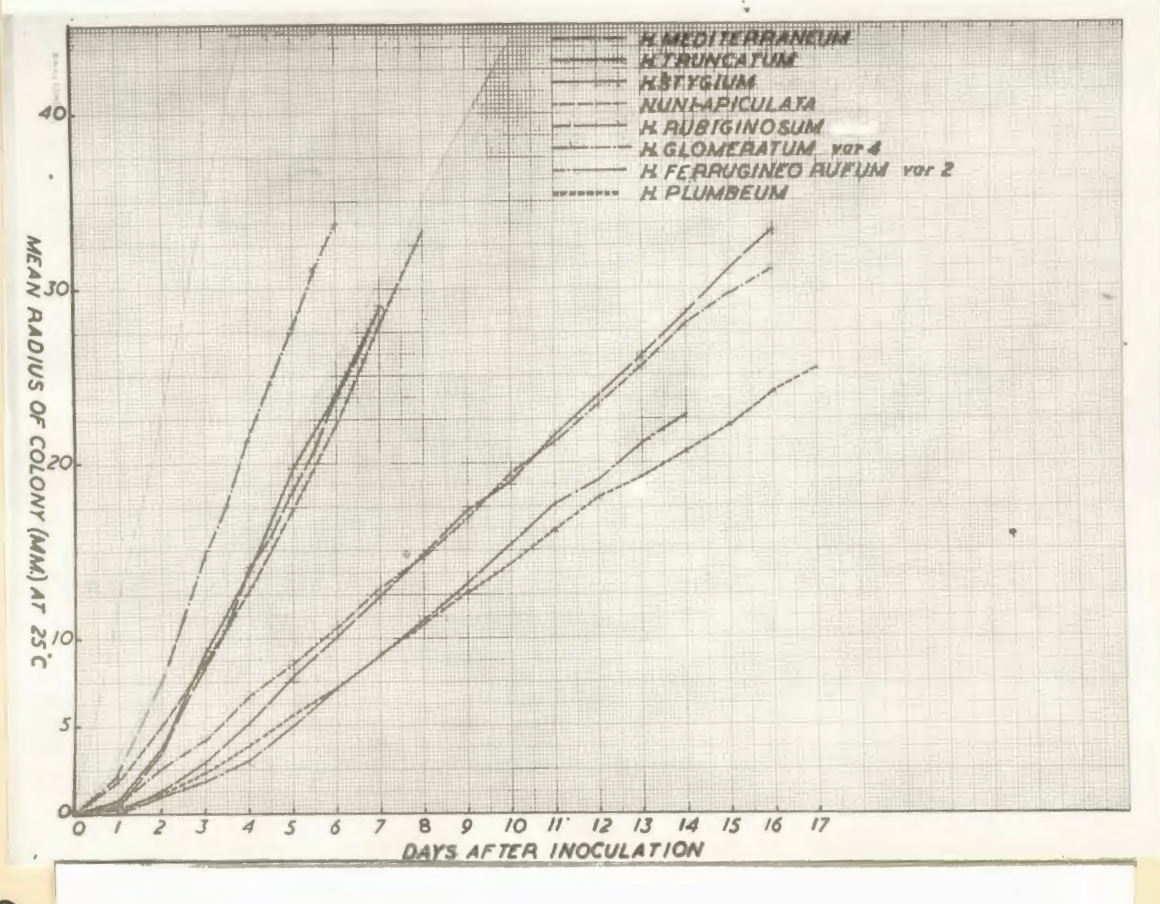
Between Sample Sum of Squares = 34.9658 - 25.9030 = 9.0628

$\Delta \bar{x} = \sqrt{0.2588} \times 2.228 \sqrt{\frac{n_1 + n_2}{n_1 n_2}}$

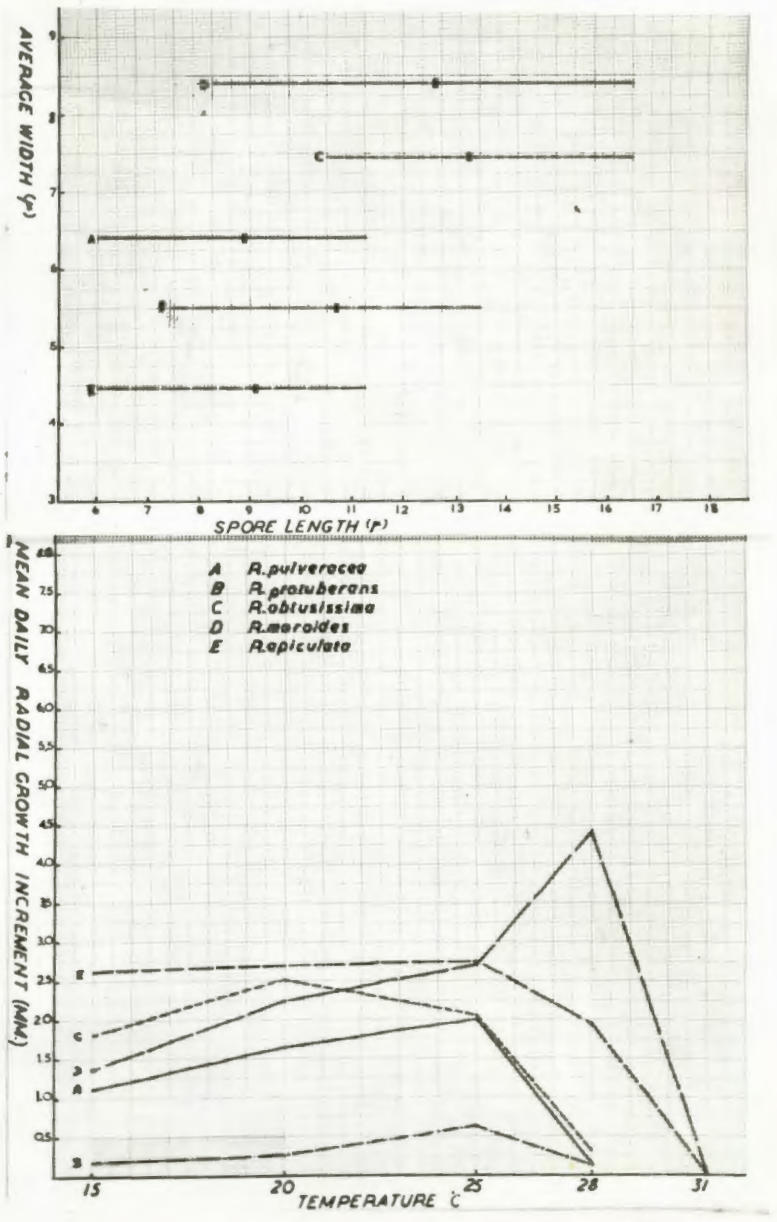
SOURCE OF VARIATION.	DEGREES OF FREEDOM.	SUM OF SQUARES.	MEAN SQUARE.	F.
TOTAL	15	11.6506		
BETWEEN SAMPLES	5	9.0628	1.81256	7.00425
WITHIN SAMPLES	10	2.5878	2.25878	Significant the 5% level.

NO. OF ITEMS COMPARED.		$\Delta \bar{x}$
2	2	1.13 mm.
2	3	1.03
2	3	0.93

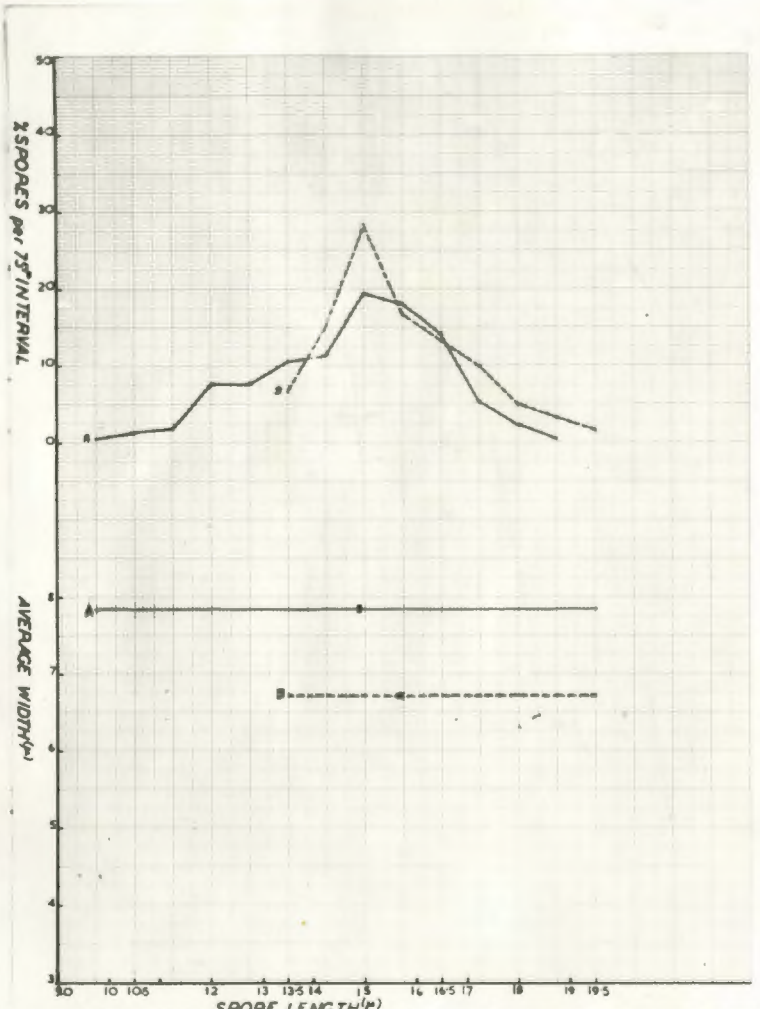
A

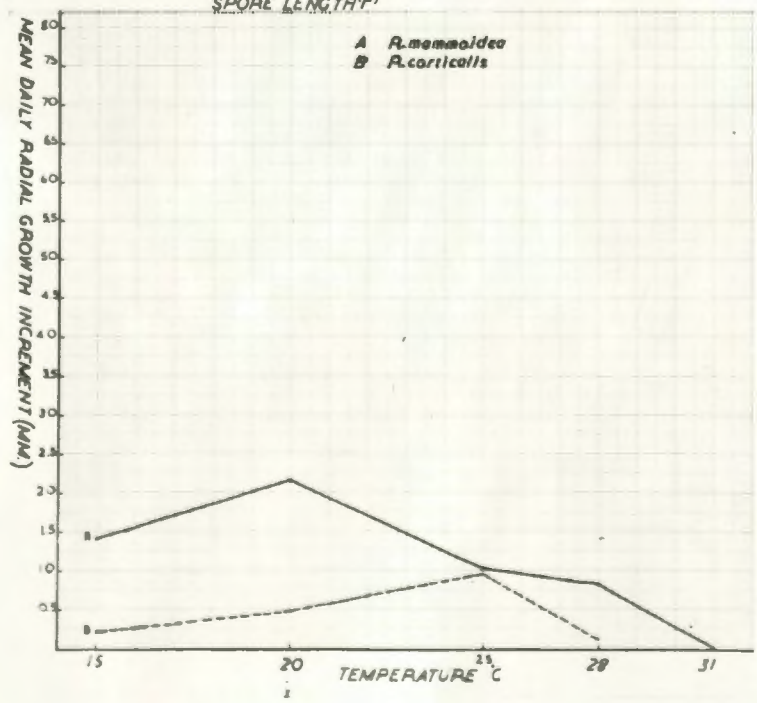

H. MEDITERRANEUM
H. TRUNCATUM
H. STYGIUM
H. UNI-APICULATA
H. RUBIGINOSUM
H. GLOMERATUM var 4
H. FERRUGINEO RUFUM var 2
H. PLUMBEUM
MEAN RADIUS OF COLONY (MM.) AT 25°C
0
5
10
20
30
40
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
DAYS AFTER INOCULATION

B

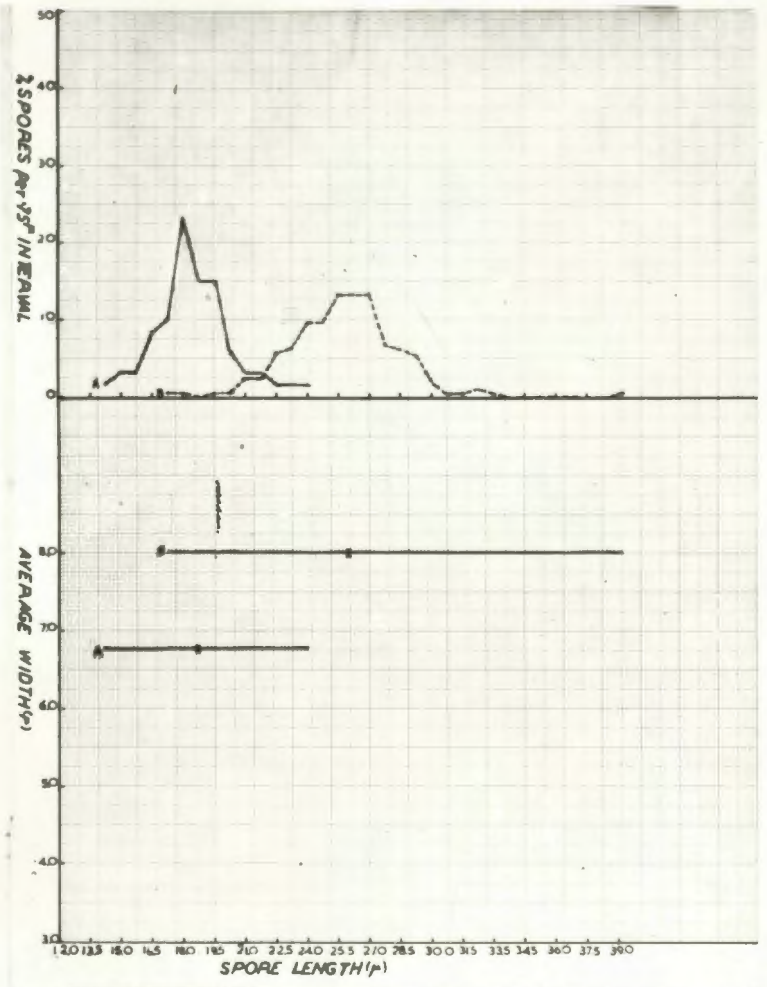

AVERAGE WIDTH (μ)
SPORE LENGTH (μ)
A R.pulverocea
B R.protuberans
C R.obtusissima
D R.moroides
E R.apiculata
MEAN DAILY RADIAL GROWTH INCREMENT (MM.)
TEMPERATURE °C
15
20
25
28
31

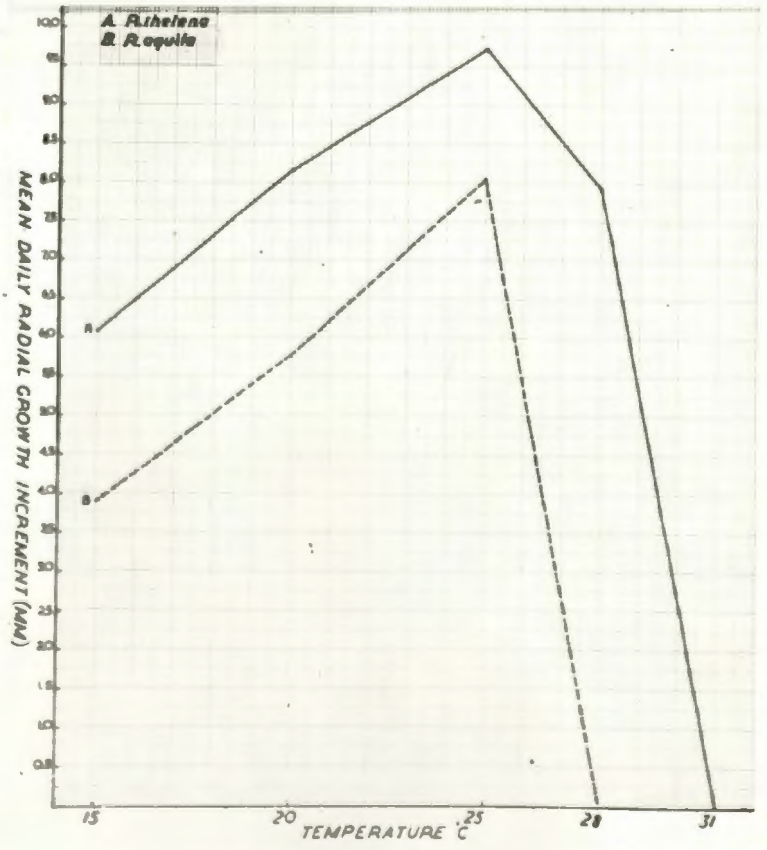
C


% SPORES per 75° INTERVAL
AVERAGE WIDTH(μ)
SPORE LENGTH(μ)
10 10·5 12 13 13·5 14 15 16 16·5 17 18 19 19·5

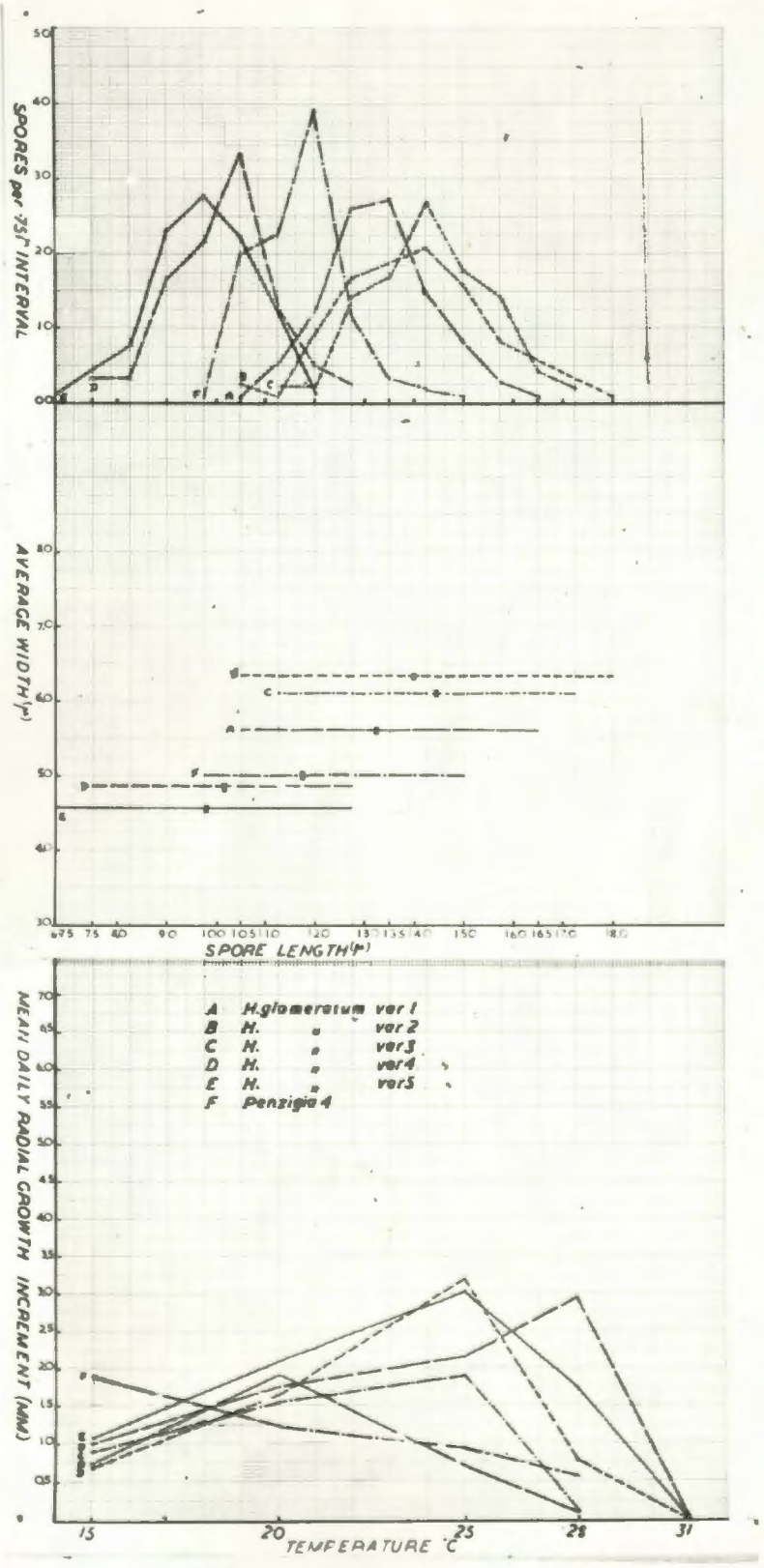

A P.mammoidea
B P.corticalis
MEAN DAILY RADIAL GROWTH INCREMENT (MM.)
15 20 25 28 31
TEMPERATURE °C

D.

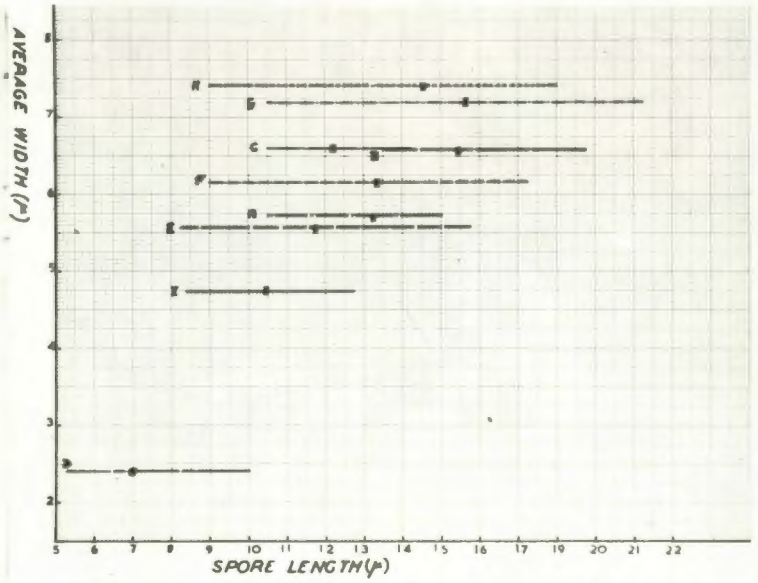

% SPORES PER 5% INTERVAL
AVERAGE WIDTH (μ)
SPORE LENGTH (μ)
A
B

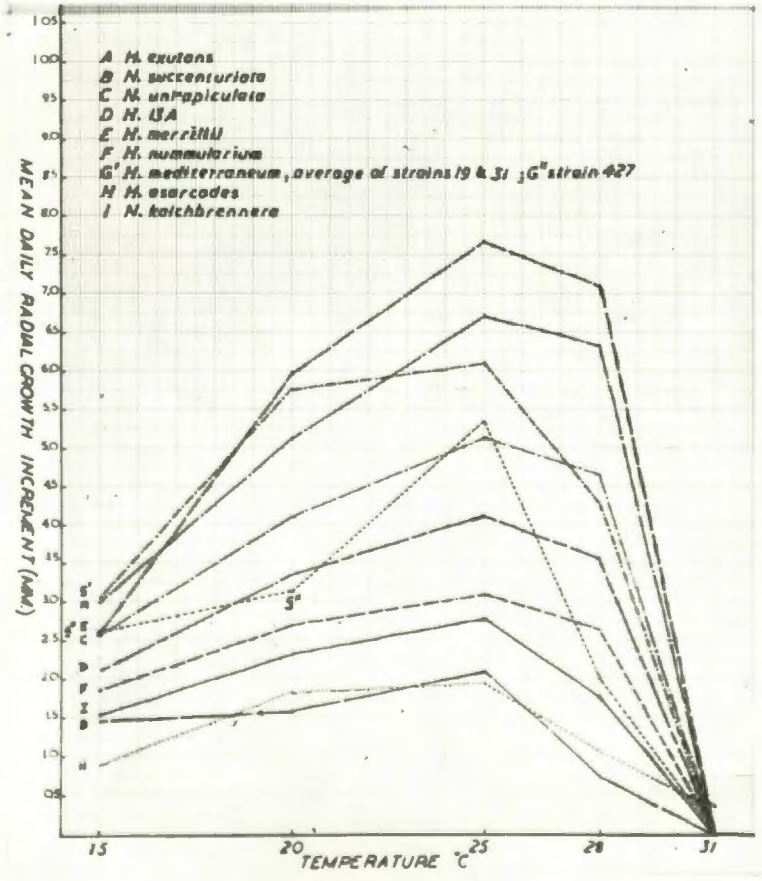

A. Ritchiana
B. R. aquila
MEAN DAILY RADIAL GROWTH INCREMENT (MM)
TEMPERATURE °C
15
20
25
28
31

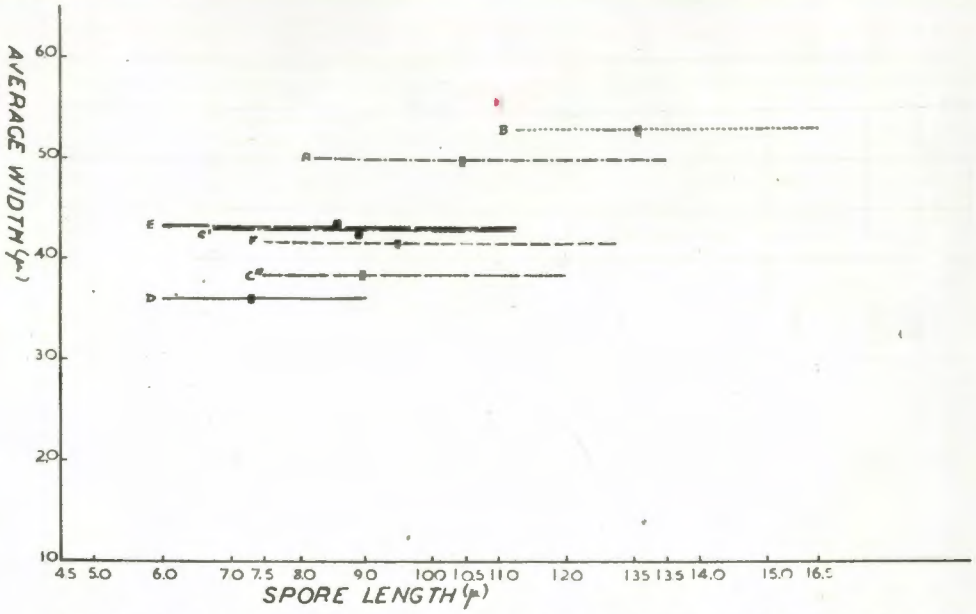
E.

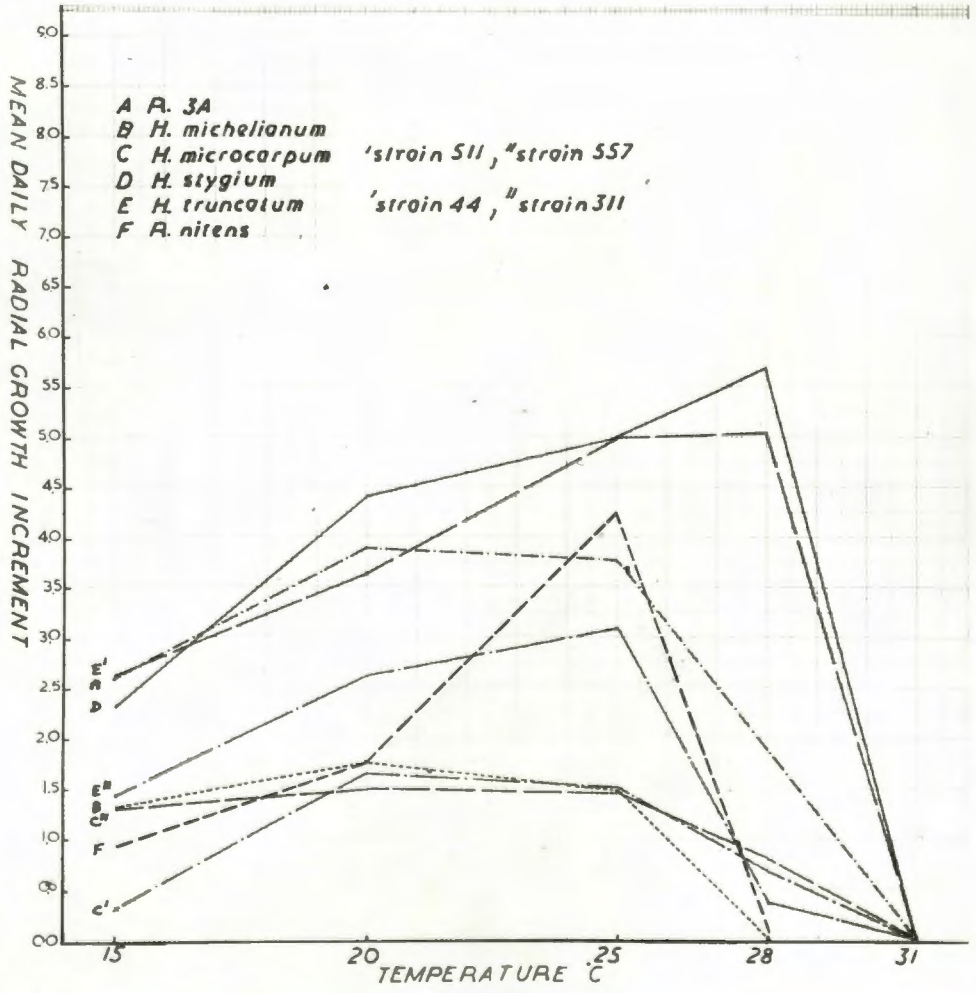

SPORES per 7.5μ INTERVAL
AVERAGE WIDTH (μ)
SPORE LENGTH (μ)
A H.glomeratum var 1
B H. " var 2
C H. " var 3
D H. " var 4
E H. " var 5
F Penzigia 4
MEAN DAILY RADIAL GROWTH INCREMENT (MM.)
TEMPERATURE °C

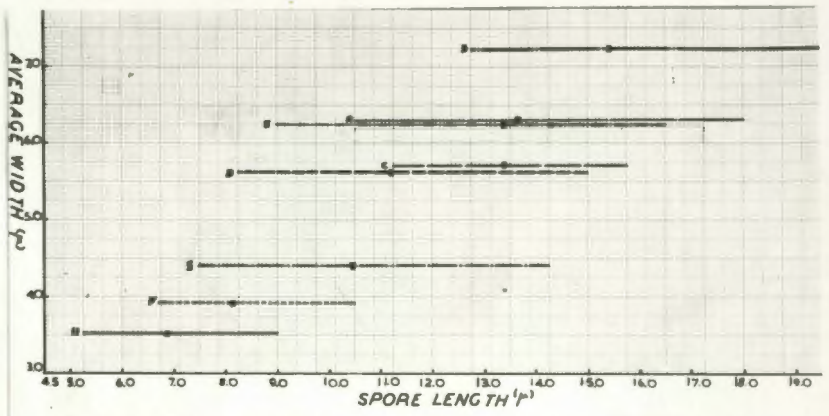
F.

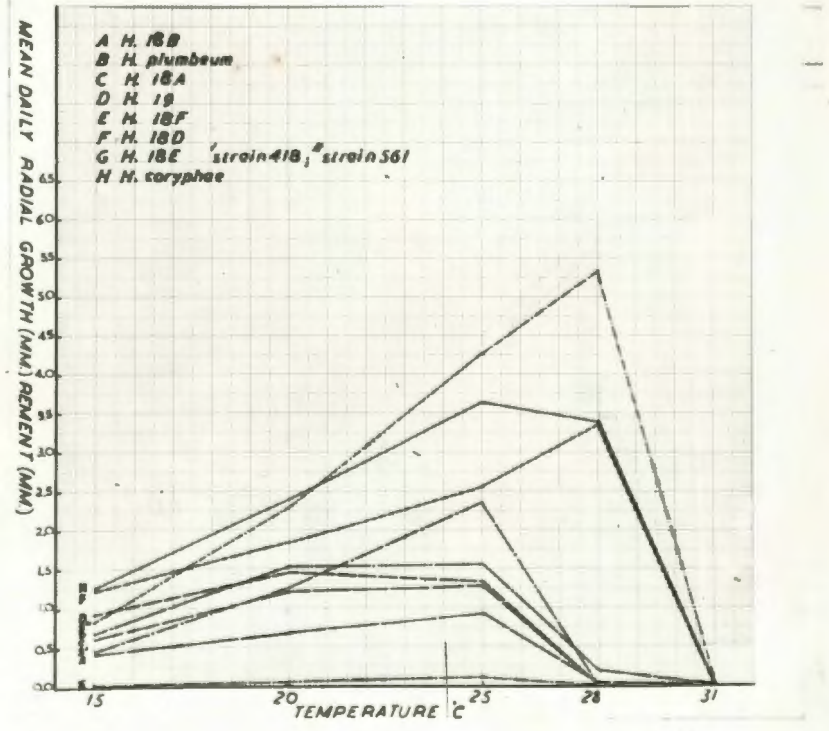

AVERAGE WIDTH (μ)
SPORE LENGTH (μ)

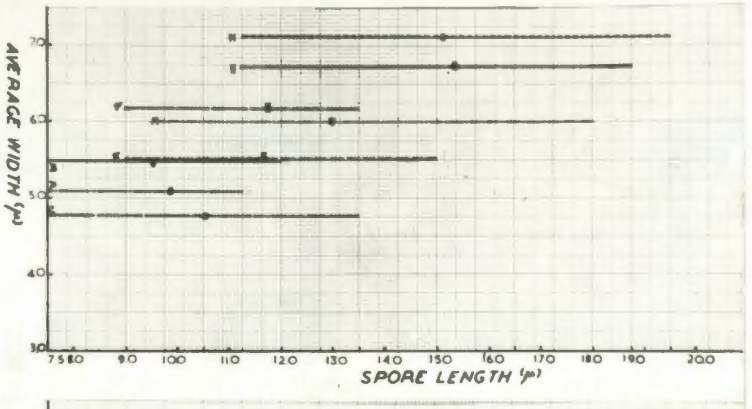

A M. exutans
B M. succenturiata
C M. unrapiculata
D M. USA
E M. merrillii
F M. nummularium
G' M. mediterraneum, average of strains 19 & 31 ; G" strain 427
H M. osarcodes
I M. kalchbrenneri
MEAN DAILY RADIAL GROWTH INCREMENT (MM.)
TEMPERATURE °C

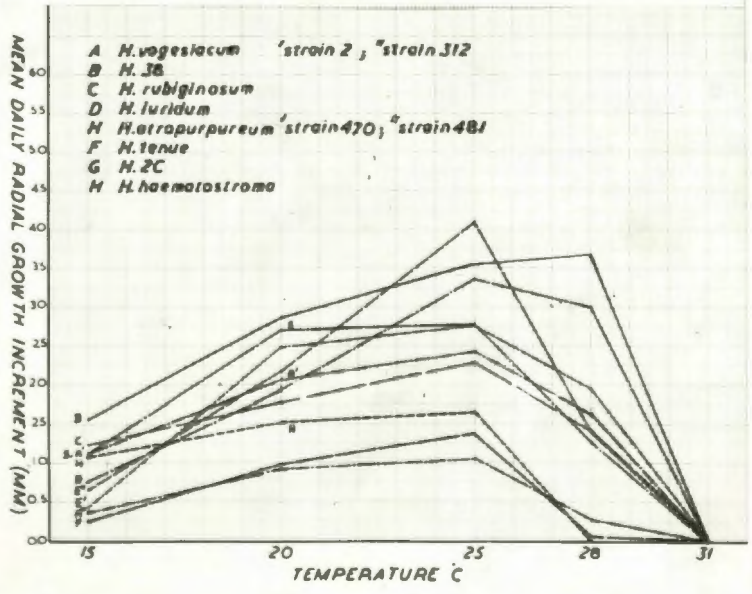

AVERAGE WIDTH (μ)
60
50
40
30
20
10
B
A
E
C'
F
C''
D
4.5 5.0 6.0 7.0 7.5 8.0 9.0 10.0 10.5 11.0 12.0 13.5 13.5 14.0 15.0 16.5
SPORE LENGTH (μ)

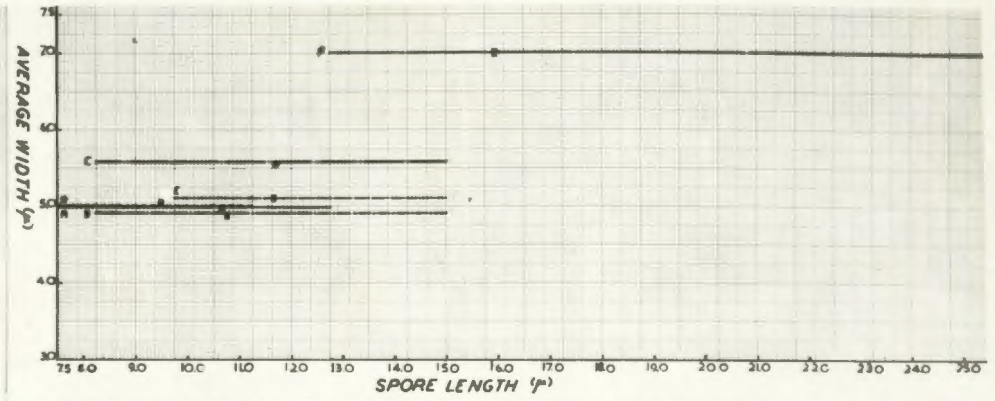

MEAN DAILY RADIAL GROWTH INCREMENT
A A. 3A
B H. michelianum
C H. microcarpum 'strain 511, "strain 557
D H. stygium
E H. truncatum 'strain 44, "strain 311
F A. nitens
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
E'
C
D
E''
B
C''
F
C'
15
20
25
28
31
TEMPERATURE °C

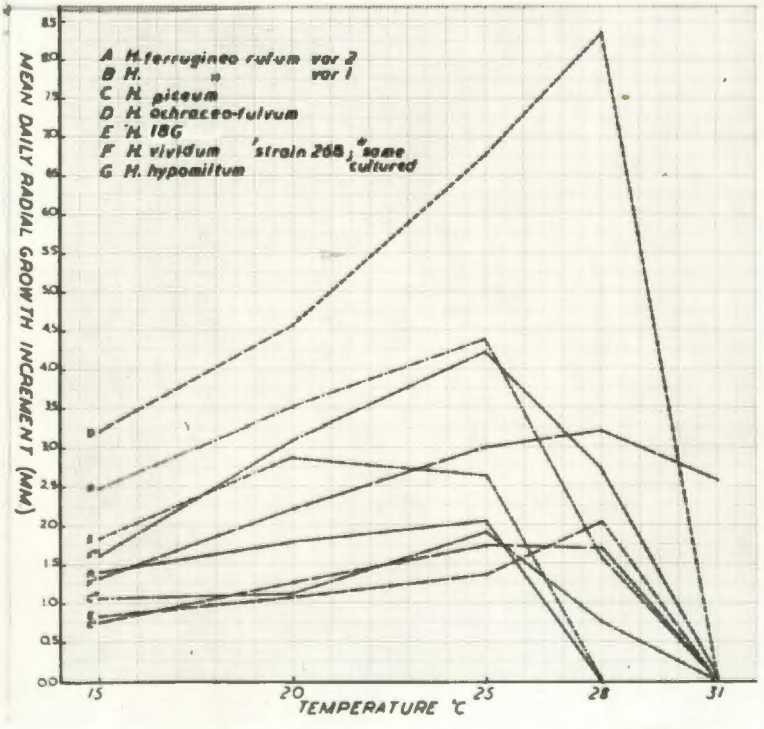

AVERAGE WIDTH (µ)
SPORE LENGTH (µ)


A H. 18B
B H. plumbeum
C H. 18A
D H. 19
E H. 18F
F H. 18D
G H. 18E 'strain 418; "strain 561
H H. coryphae
MEAN DAILY RADIAL GROWTH (MM.) INCREMENT (MM.)
TEMPERATURE °C

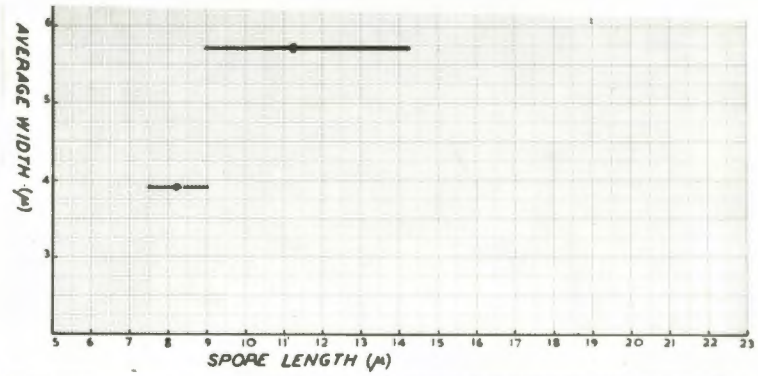

AVERAGE WIDTH (µ)
70
60
50
40
30
75 80 90 100 110 120 130 140 150 160 170 180 190 200
SPORE LENGTH (µ)

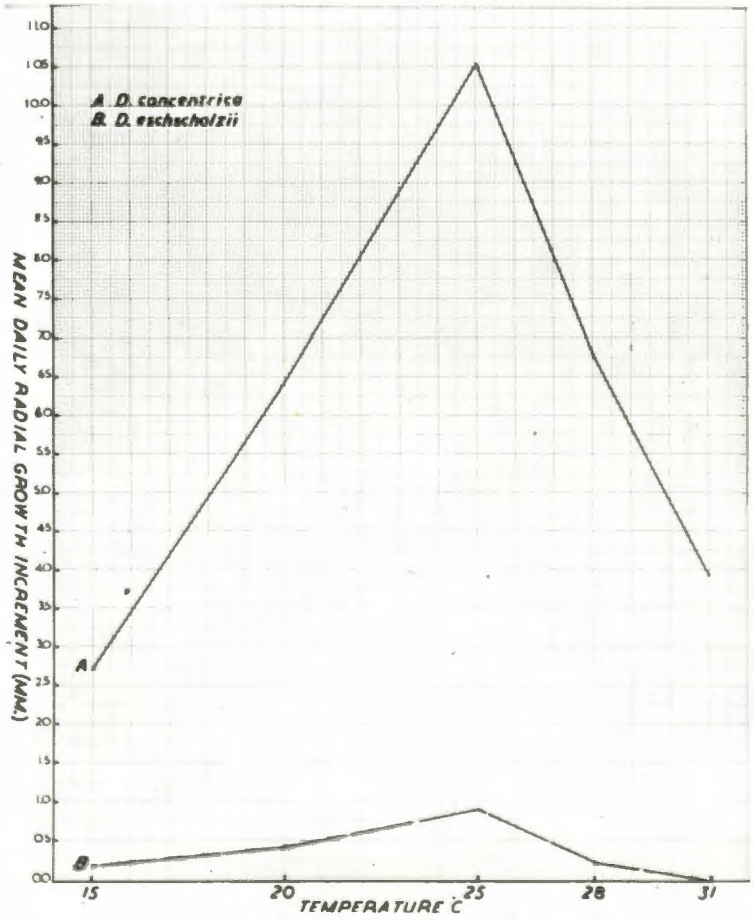

A H.vogesiacum 'strain 2 ; "strain 312
B H. 38
C H. rubiginosum
D H. luridum
H H.atropurpureum 'strain 470 ; "strain 481
F H. tenue
G H. 2C
H H. haematostroma
MEAN DAILY RADIAL GROWTH INCREMENT (MM)
15 20 25 28 31
TEMPERATURE C

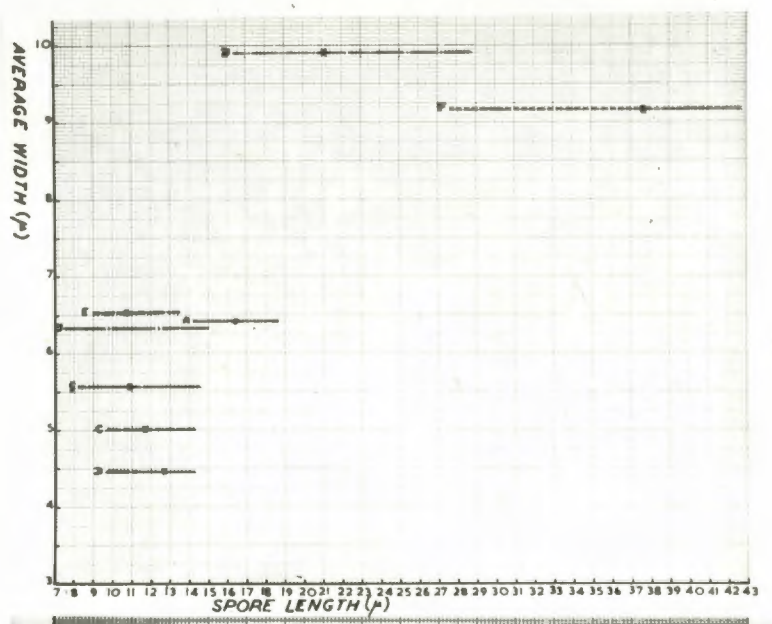

AVERAGE WIDTH (μ)
SPORE LENGTH (μ)

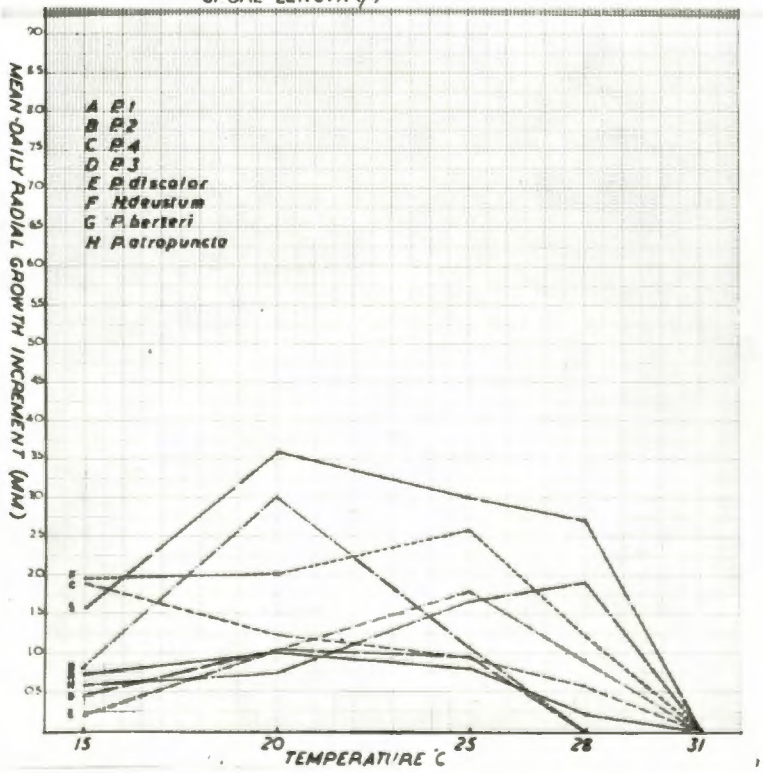

A H. ferrugineo-rufum var 2
B H. " var 1
C H. piceum
D H. ochraceo-fulvum
E H. 186
F H. vividum strain 268, some cultured
G H. hypomiltum
MEAN DAILY RADIAL GROWTH INCREMENT (MM)
TEMPERATURE °C

K.


AVERAGE WIDTH (μ)
SPORE LENGTH (μ)


A. D. concentrica
B. D. eschscholzii
MEAN DAILY RADIAL GROWTH INCREMENT (MM.)
TEMPERATURE C


AVERAGE WIDTH (μ)
SPORE LENGTH (μ)


A P1
B P2
C P4
D P3
E P discolor
F Ndeustum
G Aberteri
H Aatropuncta
MEAN DAILY RADIAL GROWTH INCREMENT (MM)
TEMPERATURE °C