

ポプラ属植物に寄生する本邦産菌類 I

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ここ数年来、筆者らはポプラ類に寄生する菌類の調査をおこなってきた。調査は主として当場の目黒本場苗畑、浅川実験林元八王子苗畑、山形分場苗畑および東京大学農学部の田無演習林苗畑、小石川植物園苗畑の5カ所でおこない、これに若干の野生あるいは植栽樹の資料と、わたくしどもの研究室にとどけられた病害鑑定資料の調査結果を加えてまとめた。ポプラ属植物の種および交配種の種名は、だいたいにおいて浜谷と猪熊⁽¹⁶⁾および猪熊^{(29) (30)}の見解にしたがった。なおこの研究の結果の一部はすでに日本林学会誌に発表した⁽⁶⁻⁹⁾。

この調査の実行、採集菌類の同定ならびに報文とりまとめにあたって数々の有益なるご指導と助言をいただいた当场今関六也保護部長および研究室長伊藤一雄博士に深甚の感謝の意を表するとともに、資料採集に便宜をはかつていただいた東京大学猪熊泰三教授、郷正士、大橋弘瑞、山中寅文、八木喜徳郎の諸氏および當場野原勇太山形分場長、青山安蔵、児玉武男の諸氏に厚くお礼を申し上げる。

いままでポプラ属植物の林業上の価値が低かつた関係もあり、わが国において報告されたポプラ類の病害ないし寄生菌類に関する報文はすくなく、約20種の菌類が記録されているにすぎない。すなわち、1901年池野⁽²⁷⁾が *Populus sieboldii**¹ のふくろみ(囊果)病菌 *Taphrina johansonii* SADEB. に関する報文を発表したのを最初として、同菌が3回にわたって^{(59) (61) (80)}, *Apiosporium salicinum* (PERS.) KZE. が *Populus* sp. に⁽¹⁷⁾, *Uncinula salicis* (DC.) WINT. が *P. sieboldii* と *P. maximowiczii**² に^{(25) (78) (79)}, *Mycosphaerella togashiana* K. ITÔ et KOBAYASHI が *P. simonii**³ と *P. alba**⁴ に⁽³⁶⁾, その不完全時代 *Cercospora* が *P. simonii*, *P. maximowiczii*, *P. deltoides* var. *monilifera*, *P. alba* および *P. nigra* に^{(18) (36)}, *Cenangium* sp., *Tuberculis* sp. および *Phomopsis* sp. が *Populus* spp. 上に⁽³⁵⁾, *Armillariella mellea* (FR.) KARST. が *P. sieboldii* と *P. nigra* に⁽⁵¹⁾, *Helicobasidium mompa* TANAKA が *P. nigra* と *P. maximowiczii* に⁽³¹⁾, *Melampsora larici-populina* KLEB. が *P. maximowiczii* と *P. nigra* に^{(19) (21) (53) (81) (89)}, *M. magnusiana* WAGN. が *P. sieboldii* と *P. jezoensis**⁵ に^{(19-21) (42) (55) (81)}, *M. medusae* THÜM. が *P. maximowiczii* に⁽²³⁾, *M. laricis* HART. が *P. sieboldii* に^{(39) (90)}, *M. abietis-populi* IMAI が *P. nigra* var. *italica* に^{(28) (43)}, *Cryptosporium populi* BON. が *P. sieboldii*, *P. deltoides* var. *monilifera* および *P. nigra* に⁽⁵⁸⁾, *Cytospora chrysosperma* が *P. alba*, *P. deltoides* var. *monilifera*, *P. maximowiczii* および *P. nigra* var. *italica* に^{(48) (39)}, *Pestalotia populi-nigrae* SAWADA et K. ITÔ が *P. nigra*, *P. nigra* var. *italica* および *P. deltoides* var. *monilifera* に^{(33) (82)}, *Gloeosporium tremulae* (LIB.) PASS. が *P. sieboldii* に⁽⁵⁸⁾, そして *Trochila populinum* DESM. が *P. sieboldii* に⁽⁵¹⁾ それぞれ記載ないしは記録されている。なお最近

*1 ヤマナラシ *2 ドロ *3 テリハドロ *4 ギンドロ *5 エゾヤマナラシ、浜谷と猪熊はこれをチヨウセンヤマナラシ (*P. tremula* var. *davidiana*) の変異のなかに含んだ。

(1) (2) 保護部樹病科樹病研究室員

さび病菌 *Melampsora larici-populina* KLEB. については、その寄主範囲に関して導入ポプラ類を含めた広汎な観察報告が発表されつつある^{10) 37) 44) 60)}。

筆者らはいままでの調査で 30 数種の菌類をえたが、それらのうち 3 種は未記載の菌と考えられたので新種の記載をおこない、またわが国において未報告の種および未同定の種についても、それぞれ形態的特徴の記載をおこなった。

子 囊 菌 類

1. *Taphrina populina* FR.—(Plate 1: A~C, Plate 10: Fig. 1)—Syst. Myc. 3: 520, 1832; Mix, Univ. Kansas Sci. Bull. 33: 37, 1949; 千葉・小林, 日林誌 41: 188, 1959

資料: *Populus nigra*, *P. deltoides* var. *monilifera*, *P. canadensis* (山形・釜淵, VI—17, 1958, CO*)

記事: 葉をおかし葉ぶくれ病をおこす。

2. *Glomerella cingulata*. (STONE.) Sp. et Schr.—(Plate 1: F~H, Plate 10: Fig. 2)—Science n. s., 17: 750, 1903; 千葉・小林, 日林誌 41: 189, 1959

異名: *Guignardia* sp., 千葉・小林, 日林誌 39: 78, 1957

資料: *P. alba* × *P. sieboldii* (東京・田無, VI—17, 1957, KT*²; VII—15, 1958, KT); *P. tremula* var. *davidiana* × *P. canescens* (山形・釜淵, VI—17, 1958, CO)

記事: 新梢あるいは若枝をおかし枝枯炭疽病をおこす。

3. *Guignardia* sp.—(Plate 2: A~C, Plate 10: Fig. 3)

子囊殻は樹皮に生じ、初め埋生、後いくらか表面にでる。球形～扁球形、孔口をもち、225~275 × 215~265 μ , 厚さ 15~30 μ の黒色膜状の殻壁をもつ。子囊はこん棒状～長こん棒状、基部細まる。75~100 × 11.5~18.5 μ , 側糸はない。子囊胞子は無色、単胞、楕円形～紡錘形、果粒にとみ、22.5~28.5 × 7.5~9 μ , 平均 24.8 × 8.4 μ 。

資料: *P. japono-gigas* (東京・田無, VII—25, 1958, KT); *P. deltoides* var. *monilifera*, *P. nigra* (山形・釜淵, IV—12, 1958, CO・KT)

記事: 樹皮をおかし胴枯れあるいは枝枯れをおこす。同一病患部に *Macrophoma* sp. (7頁参照) と混生し、おそらくその完全時代と考えられる。本菌は今までポプラに記載された *Guignardia* のうち、*G. populi* THOMPSON³⁸⁾ にその形態的特徴がよく似る。しかし THOMPSON の *G. populi* の不完全時代は *Septogloeum rhopaloides* DEARN. et BISBY である。したがって本菌の生活史や寄主範囲があきらかになるまでその同定を留保する。

4. *Sphaerulina populi* T. KOBAYASHI et CHIBA sp. nov.—(Plate 2: E, F, Plate 11: Fig. 1)

子囊殻は葉表面に生じ、球形、110~135 × 120~150 μ , 黒色膜状の殻壁をもつ。側糸はなく、子囊はこん棒状、50~60 × 10~11 μ , 8 個の子囊胞子を不整 2~数列にふくむ。子囊胞子は無色、紡錘形～長紡錘形、4~6 個の隔膜をもち、25~30 × 3.5~5 μ 。

資料: *P. serotina* f. *erecta* (東京・浅川, VIII—12, 1957, KT)

記事: 葉に生ずる、病斑は葉表面に生じ白～灰白色で円状または不整形。病斑上に黒色小点状に子囊殻

*1 採集者千葉修の略

*2 採集者小林享夫の略

を散生する。本菌による被害は軽微である。ポプラ上には今まで記載された *Sphaerulina* 属菌はない。ポプラ以外のヤナギ科植物上には、ヤナギに 1 種 *S. salicina* SYD.⁷⁶⁾ が記載されているが、*S. salicina* は子嚢が大きく ($110\sim140\times9\sim10\mu$)、子嚢胞子が太く短く ($15\sim18\times5.5\sim7.5\mu$)、さらに隔膜数が 3 であきらかに本菌とは異なる。他に該当種がないので新種と認め記載をした。

5. *Leptosphaeria decaisneana* (CRIE) SACC.—(Plate 6: E, Plate 10: Fig. 4)—Syll. Fung. 2: 50, 1883

子嚢殻は葉表面の病斑上に散生し、球形～扁球形、 $80\sim95\times100\sim110\mu$ 、黒褐色膜状の殻壁をもつ。子嚢はこん棒状～長紡錘形、8 個の子嚢胞子を不整 2 列にふくみ、 $44\sim49\times7.5\sim8.5\mu$ 。子嚢胞子は褐色～帯緑褐色、長楕円形～長紡錘形、ふつつ 3、まれに 2 の隔膜をもち、成熟すると隔膜部でいくらかくびれる、 $15.5\sim19.5\times3.9\sim4.2\mu$ 。

資料: *P. simonii* (山形・釜淵, IX—12, 1958, CO・KT)

記事: 葉に生じた病斑は白～灰白色、円形または不整形、被害はきわめて軽微である。ポプラ類には今まで 5 種の *Leptosphaeria* 属菌が記載されているが、本菌の測定値や隔膜数はそのなかの *L. decaisneana* (CRIE) SACC. に一致した。本菌はわが国では未記録の菌である。

6. *Diaporthe medusaea* NIT.—(Plate 3: A～C, Plate 11: Fig. 2)—Pyr. Germ. 251, 1867; WEHMEYER, Univ. Michig. Stud., Sci. Ser. 9: 101, 1933; 千葉・小林, 日林誌, 41: 246, 1959

異名: *Diaporthe italica* (SACC.) TRAV., SACCARDO, Syll. Fung. 17: 671, 1905

資料: *P. japono-gigas* (東京・田無, VII—15, 1958, KT); *P. deltoides* (東京・目黒, VIII—22, 1959, KT)

記事: 枝枯あるいは胴枯病をおこす。本菌は *Phomopsis* sp. (8 頁参照) の完全時代と考えられる。両菌の同根関係については別に報告する。

7. *Nectria mantuana* SACC.—(Plate 3: F～G; Plate 10: Fig. 5)—Syll. Fung. 2: 505, 1883

子嚢殻は樹皮に生じ橙～紅色、基部に子座をもち数個が果粒状に群生し、球形、膜状の殻壁をもち $250\sim300\times165\sim265\mu$ 。子嚢はこん棒状～円筒形、 $56\sim62\times6.3\sim7\mu$ 。8 胞子を不整 1 列～2 列にふくむ。子嚢胞子は無色、楕円形～紡錘形、2 胞、成熟すると隔膜部でいくらかくびれる、 $10\sim12.5\times3\sim4\mu$ 。

資料: *P. maximowiczii*, *P. canescens* (山形・釜淵, X—1, 1959, CO・KT)

記事: 枯れた接穂に生じていた。今までポプラに記載された 6 種の *Nectria* のうち *N. mantuana* SACC. の形態によく一致した。本菌はわが国では未記録の菌である。

8. *Septotinia populiperda* WATERMAN et CASH—(Plate 4: A～E, Plate 11: Fig. 3)—Mycol. 42: 380, 1950; 千葉・小林, 日林誌 41: 142～144, 1959

資料: *P. marilandica*, *P. "leipzig"* (東京・目黒, IV—13, 1959, KT)

記事: 筆者らは先の報告⁷⁾ でこの菌が不完全時代である *Septotis populiperda* (MOESZ et SMARODS) WAT. et CASH の培養上につくられた菌核からえられたことを述べたが、そのご罹病越冬落葉上の菌核からもえられた。Van den ENDE¹³⁾ は、"*Podophyllum* 上に WHETZEL の記載した *Septotinia podophylli* とポプラの *S. populiperdum* との間に形態的差異はない"と述べたが、この両菌の異同関係について研究したものはまだないようである。

担子菌類

9. *Helicobasidium mompa* TANAKA, Jour. Coll. Agr., Tokyo Imp. Univ. 4: 193, 1891; K. Itô, Bull. Gov. For. Exp. Sta. 43: 34~35, 1949; S. Itô, Myc. Fl. Jap. 2 (4): 3, 1955
 資料: *Populus maximowiczii* (岩手・好摩, IX—, 1958, 千葉春美); *Populus nigra* × *P. maximowiczii* (埼玉・寄居, IV—, 1959, 横川登代司); *Populus sieboldii* (山形・釜淵, VII—13, 1959, CO)
 記事: 紫紋羽病菌, 根をおかす。埼玉県資料は苗畑に発生したもので, 好摩と釜淵の資料はすべて若い植栽地もしくは天然生の若い樹であつた。
10. *Armillariella mellea* (FR.) KARST., Krit. Oefv. Finl. Basidv., p. 46, 1899; SINGER, Agar. p. 216, 1949; S. Itô, Myc. Fl. Jap. 2 (5): 129, 1959.
 異名: *Armillaria mellea* (VAHL.) QUÉL.
 資料: *Populus deltoides* var. *monilifera* (山形・上ノ山, X—3, 1959, KT)
 記事: ナラタケ病菌, 根をおかす。
11. *Melampsora larici-populina* KLEB.—(Plate 5: A~C)—Zeits. Pflkr. 12: 43, 1902; S. Itô, Myc. Fl. Jap. 2 (2): 116~117, 1938; 千葉・小林, 日林誌 39: 74, 1957
 資料: section *Aigeiros*—*Populus japonica-gigas*, *P. robusta* (東京・田無, X—22, 1956, CO・KT; 山形・釜淵, X—1, 1957, X—1, 1959, CO; 北海道・光珠内, X—16, 1959, 横山八郎; 東京・浅川, X—1, 1959, 陳野好之), *P. deltoides* × *P. caudina*, *P. charkowiensis* × *P. caudina* (東京・田無, X—22, 1956, CO・KT; 東京・浅川, IX—28, 1956, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1959, CO; 北海道・光珠内 X—16, 1959, 横山); *P. nigra*, *P. euramericana* I—214 (東京・浅川, IX—28, 1956, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1957, X—1, 1959, CO); *P. wislizenii*, *P. gelrica* (東京・浅川, IX—28, 1956, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1959, CO); *P. “leipzig”* (東京・浅川, IX—28, 1956, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1957, X—1, 1959, CO; 北海道・光珠内, X—16, 1959, 横山); *P. marilandica* (東京・浅川, IX—28, 1956, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1959, CO; 北海道・光珠内, X—16, 1959, 横山); *P. deltoides* var. *missouriensis* (東京・浅川, IX—28, 1956, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1959, CO; 北海道・光珠内, X—16, 1959, 横山); *P. euramericana* LK—79 (東京・浅川, IX—28, 1956, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1957, X—1, 1959, CO); *P. deltoides* var. *monilifera*, *P. serotina* f. *erecta*, *P. bachelierii*, *P. grandis* (山形・釜淵, X—1, 1957, X—1, 1959, CO; 東京・浅川, X—1, 1959, 陳野); *P. serotina* (山形・釜淵, X—1, 1957, X—1, 1959, CO; 東京・浅川, X—24, 1957, CO, X—1, 1959, 陳野; 北海道・光珠内, X—16, 1959, 横山); *P. regenerata*, *P. “jacomettis”* (山形・釜淵, X—1, 1957, X—1, 1959, CO; 東京・浅川, X—1, 1959, 陳野; 北海道・光珠内, X—16, 1959, 横山); *P. euramericana* I—455 (山形・釜淵, X—1, 1957, X—1, 1959, CO; 北海道・光珠内, X—16, 1959, 横山); *P. euramericana* I—476 (東京・目黒, X—10, 1957, KT; 東京・浅川, X—1, 1959, 陳野; 北海道・光珠内, X—16, 1959, 横山); *P. euramericana* I—72/51 (東京・浅川, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1959, CO; 北海道・光珠内, X—16, 1959, 横山); *P. nigra* × *P. deltoides* var. *monilifera* (東京・浅

川, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1959, CO); *P. euramericana* I—45/51, *P. euramericana* 77/51, *P. euramericana* I—C. B. D (山形・釜淵, X—1, 1959, CO; 東京・浅川, X—1, 1959, 陳野; 北海道・光珠内, X—16, 1959, 横山); *P. euramericana* LK—83, *P. carolina*, *P. “eckhof”*, *P. deltoides*, *P. “eucalyptus”* (山形・釜淵, X—1, 1959, CO; 東京・浅川, X—1, 1959, 陳野); *P. euramericana* LW—30, *P. deltoides* var. *monilifera* × *P. caudina* (山形・釜淵, X—1, 1959, CO); *P. euramericana* LK—67 (東京・浅川, X—1, 1959, 陳野); *P. vernirubens*, *P. euramericana* I—262, *P. euramericana* I—154, *P. deltoides virginiana* × *P. caudina* (北海道・光珠内, X—16, 1959, 横山); section *Aigeiros* × *Tacamahaca*—*P. nigra* × *P. maximowiczii* (東京・田無, X—22, 1956, CO・KT; 東京・浅川, IX—28, 1956, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1957, X—1, 1959, CO; 北海道・光珠内, X—16, 1959, 横山); *P. nigra* × *P. trichocarpa* (東京・田無, X—22, 1956, CO・KT; 東京・浅川, IX—28, 1956, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1959, CO, 北海道・光珠内, X—16, 1959, 横山); *P. charkowiensis* × *P. trichocarpa*, *P. nigra* × *P. laurifolia* (東京・田無, X—22, 1956, CO・KT; 東京・浅川, IX—28, 1956, X—24, 1957, CO; 北海道・光珠内, X—16, 1959, 横山); *P. deltoides* × *P. trichocarpa* (東京・田無, X—22, 1956, CO・KT; 東京・浅川, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1959, CO); *P. “strathglas”* (東京・浅川, IX—28, 1956, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1959, CO; 北海道・光珠内, X—16, 1959, 横山); *P. “rochester”* (東京・浅川, IX—28, 1956, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1957, X—1, 1959, CO); *P. berolinensis* (東京・浅川, IX—28, 1959, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1959, CO; 北海道・光珠内, X—16, 1959, 横山); *P. maximowiczii* × *P. nigra platierens*, *P. maximowiczii* × *P. berolinensis* (東京・浅川, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1957, X—1, 1959, CO; 北海道・光珠内, X—16, 1959, 横山); section *Tacamahaca*—*P. maximowiczii*, *P. simonii* (東京・浅川, IX—28, 1956, X—24, 1957, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1957, X—1, 1959, CO; 北海道・光珠内, X—16, 1959, 横山); *P. maximowiczii* × *P. trichocarpa* (東京・浅川, IX—28, 1956, X—24, 1957, 千葉, X—1, 1959, 陳野; 山形・釜淵, X—1, 1957, CO; 北海道・光珠内, X—16, 1959, 横山); *P. koreana* × *P. trichocarpa* (東京・浅川, IX—28, 1956, CO, X—1, 1959, 陳野; 山形・釜淵, X—1, 1957, X—1, 1959, CO; 北海道・光珠内, X—16, 1959, 横山); *P. koreana* (山形・釜淵, X—1, 1957, X—1, 1959, CO; 東京・浅川, X—24, 1957, CO, X—1, 1959, 陳野); section *Leucoides*—*P. lasiocarpa* (山形・釜淵, X—1, 1957, X—1, 1959, CO)

記事: さび病菌, 葉をおかす。わが国における本菌の異種寄生性あるいは分布については, すでに松本⁵⁸⁾, 富樫⁵⁹⁾, 平塚²⁹⁻³¹⁾ および沢田⁸¹⁾ によつて報告されている。最近では西口⁶⁰⁾, 伊藤・児玉⁸⁷⁾, 伊藤・浜⁴⁴⁾ および千葉・陳野¹⁰⁾ が, 主としてさび病に対する抵抗性の観点から, 多数の導入あるいは邦産クローン进行调查した結果を, それぞれ発表した。資料からみられるごとく, 本菌はボブラ属の *Aigeiros*, *Tacamahaca* および *Leucoides* 亜属に属するものにのみみられ, *Leuce* 亜属に属するものにはまったくみられない。しかし採集された *Aigeiros* および *Tacamahaca* 亜属の各クローンの間には本菌に対する感受性に大きな差異がみられるようである。

不 完 全 菌 類

12. *Phyllosticta populorum* SACC. et ROUM.,—(Plate 6: A, B, Plate 11: Fig. 6)—Syll. Fung. 3: 23, 1884, 千葉・小林, 日林誌 39: 77, 1957

資料: section *Leuce*—*P. alba*×*P. sieboldii* (東京・浅川, IX—28, 1956, CO); *P. alba*×*P. tremula* var. *davidiana* (山形・釜淵, X—5, 1957, CO); section *Leuce*×*Aigeiros*—*P. sieboldii*×*P. deltoides* var. *monilifera* (山形・釜淵, X—5, 1957, CO); section *Aigeiros*—*P. euramericana* I—45/51, *P. “eucalyptus”* (東京・小石川, X—28, 1956, CO・KT); *P. canadensis*, *P. carolina*, *P. euramericana* LK—67, *P. “wettstein”*, *P. “jacomettis”* (山形・釜淵, IX—12, 1958, CO・KT); *P. grandis*, *P. euramericana* I—214, *P. euramericana* I—172, *P. euramericana* LW—30 (山形・釜淵, X—1, 1959, CO・KT); *P. deltoides* (東京・浅川, IX—24, 1957, X—3, 1958, KT); *P. euramericana* I—455, *P. euramericana* I—154, *P. euramericana* LK—83, *P. euramericana* LW—42 (山形・釜淵, IX—12, 1958, X—1, 1959, CO・KT); *P. nigra*×*P. deltoides* var. *monilifera* (東京・浅川, X—3, 1958, KT); *P. nigra*, *P. euramericana* LK—79 (東京・浅川, IX—24, 1957, X—3, 1958, KT; 山形・釜淵, IX—12, 1958, X—1, 1959, CO・KT); *P. wislizenii*, *P. japono-gigas*, *P. euramericana* I—476 (東京・浅川, X—3, 1958, KT; 山形・釜淵, IX—12, 1958, X—1, 1959, CO・KT); *P. serotina* f. *erecta*, *P. bachelierii* (東京・浅川, X—3, 1958, KT; 山形・釜淵, X—5, 1957, CO, IX—12, 1958, X—1, 1959, CO・KT); *P. deltoides* var. *missouriensis* (東京・小石川, X—28, 1956, CO・KT; 山形・釜淵, IX—12, 1958, X—1, 1959, CO・KT); *P. deltoides* var. *monilifera* (東京・浅川, X—3, 1958, KT; 山形・釜淵, IX—12, 1958, CO・KT); *P. serotina* (東京・浅川, IX—28, 1956, CO; 山形・釜淵, IX—12, 1958, X—1, 1959, CO・KT); *P. regenerata* (東京・小石川, X—28, 1956, CO・KT; 東京・浅川, X—3, 1958, KT; 山形・釜淵, IX—12, 1958, X—1, 1959, CO・KT); *P. marilandica* (東京・浅川, IX—24, 1957, X—3, 1958, KT; 山形・釜淵, X—5, 1957, CO, IX—12, 1958, X—1, 1959, CO・KT); *P. robusta* (東京・小石川, X—28, 1956, CO・KT; 山形・釜淵, IX—12, 1958, X—1, 1959, CO・KT; 東京・田無, X—22, 1956, CO・KT; 東京・浅川, IX—28, 1956, CO); *P. gelrica* (東京・小石川, X—28, 1956, CO・KT; 東京・浅川, IX—24, 1957, X—3, 1958, KT; 山形・釜淵, X—5, 1957, CO, IX—12, 1958, X—1, 1959, CO・KT); *P. deltoides*×*P. caudina* (東京・田無, X—17, 1958, CO・KT; 東京・浅川, X—3, 1958, KT); *P. “eckhof”* (東京・浅川, IX—24, 1957, KT; 山形・釜淵, X—1, 1959, CO・KT); section *Aigeiros*×*Tacamahaca*—*P. berolinensis* (東京・浅川, X—3, 1958, KT); *P. nigra*×*P. maximowiczii* (山形・釜淵, IX—12, 1958, CO・KT; 東京・浅川, X—3, 1958, KT); section *Tacamahaca*—*P. maximowiczii*, *P. maximowiczii*×*P. trichocarpa* (東京・浅川, X—3, 1958, KT); *P. koreana*×*P. trichocarpa* (東京・小石川, X—28, 1956, CO・KT)

記事: 葉に寄生し輪斑病をおこす。資料にみられるごとく, この菌は *Leuce* および *Aigeiros* 亜属のポプラ上に, もつともふつうにみられる。しかし被害葉は比較的長く落葉することなく残り, 早期落葉の害はそれほどひどくないようである。

13. *Phyllosticta alcides* SACC.—(Plate 6: C, Plate 11: Fig. 5)—Syll. Fung. 3: 24, 1884; 千葉・小林, 日林誌 41: 188, 1959

資料: section *Leuce*—*P. alba* (山形・釜淵, X—5, 1957, CO, IX—12, 1958, CO・KT); *P. tremula* var. *daurica* × *P. canescens* (山形・釜淵, X—5, 1957, CO); section *Leuce* × *Aigeiros*—*P. tremula* var. *daurica* × *P. deltoides* var. *monilifera* (山形・釜淵, IX—12, 1958, CO・KT); section *Aigeiros*—*P. nigra*, *P. deltoides* var. *monilifera*, *P. wislizenii*, *P. deltoides* × *P. caudina* (東京・浅川, X—3, 1958, KT; 山形・釜淵, X—1, 1959, CO・KT); *P. canadensis*, *P. regenerata* (山形・釜淵, IX—12, 1958, CO・KT); *P. marilandica*, *P. euramericana* LK—79 (東京・浅川, IX—12, 1958, KT); *P. serotina* (山形・釜淵, IX—12, 1958, X—1, 1959, CO・KT); *P. gelrica* (東京・浅川, IX—28, 1956, CO; 山形・釜淵, IX—12, 1958, X—1, 1959, CO・KT); *P. charkowiensis* × *P. caudina* (東京・田無, X—17, 1958, CO・KT); *P. nigra* × *P. deltoides* var. *monilifera* (山形・釜淵, X—1, 1959, CO・KT); section *Aigeiros* × *Tacamahaca*—*P. nigra* × *P. maximowiczii*, *P. nigra* × *P. trichocarpa*, *P. maximowiczii* × *P. berolinensis* (東京・浅川, X—3, 1958, KT); section *Tacamahaca*—*P. maximowiczii* (東京・浅川, X—3, 1958, KT; 東京・目黒, X—12, 1959, KT); *P. simonii* (東京・浅川, X—3, 1958, KT)

記事: 葉に寄生し, 小褐斑病をおこす。この菌は上にのべた *Phyllosticta populorum* とことなり, *Tacamahaca* 亜属のポプラにもつともふつうにみられるようである。

14. *Phyllosticta longisporum* KOBAYASHI et CHIBA sp. nov.—(Plate 6: D, Plate 11: Fig. 4)

柄子殻は病斑上に散生し, 黒色, 球形ないし扁球形, 90~105 × 85~100 μ 。殻壁は膜状, 厚さ 6 μ 。分生子梗は単条, 短く, 無色。柄胞子は円筒状ないし長円筒形, 両端鈍円, 単胞, 無色, 7.5~10.5 × 1.5 μ 。

資料: *Populus alba* (山形・釜淵, IX—12, 1958, CO・KT)

記事: 葉に寄生する。病斑は白色ないし灰褐色, 不整形, 直径 3~5 mm。この菌の標本は釜淵で1回採集されたのみで, 被害もまた軽微であつた。いままでにポプラ上に記載された *Phyllosticta* 属菌の中には, 本菌と一致するものはない。また他のヤナギ科植物上に記載された *Phyllosticta* の中にも該当する菌がないので, 新種として記載した。

15. *Macrophoma* sp. (Plate 2: A, C, D, Plate 12: Fig. 1)

柄子殻は葉または樹皮に生ずる。はじめ埋生するがのちいくらか表面にでる。樹皮上では時に2ないし数個が列生することもある。球形ないし扁球形, 黒色, 大きさ 250~330 × 240~340 μ , 厚さ 18~24 μ の膜状の殻壁を有す。分生子梗は単条, 無色, 10.5~15.5 × 3~3.5 μ 。柄胞子は長楕円形ないし紡錘形, 単胞, 無色, 果粒にとみ, 22.5~29.5 × 5~6.5 μ 。

資料: *Populus alba*, *P. alba* × *P. sieboldii*, *P. serotina*, *P. serotina erecta*, *P. regenerata*, *P. marilandica*, *P. robusta*, *P. gelrica*, *P. grandis*, *P. carolina*, *P. euramericana* I—476, *P. euramericana* I—214, *P. euramericana* I—45/51, *P. euramericana* LK—83, *P. euramericana* LK—67, *P. "strathglas"*, *P. "wettstein"*, *P. "jacomettis"*, *P. "eckhof"*, *P. deltoides* × *P. caudina*, *P. nigra* × *P. monilifera*, *P. berolinensis*, *P. nigra* × *P. trichocarpa*, *P. koreana*, *P. maximowiczii* × *P. trichocarpa* (東京・目黒, VII—22, 1959, KT); *P. japono-gigas* (東京・田無, VII—15, 1959, KT); *P. nigra* (山形・釜淵, IX—12, 1958, CO・KT; 東京・目黒, VII—13, 1959, KT); *P. deltoides* var. *monilifera* (山形・釜淵, IX—12, 1958, X—1, 1959, CO・KT); *P. maximowiczii* (東京・目黒, VII—22, 1959, KT; 山形・釜淵, X—1, 1959, CO・KT)

記事：葉および樹皮に寄生し、葉枯れあるいは枝枯れをおこす。この菌はまえにのべたように（2頁参照）、*Guignardia* 属菌と同一患部に混生し、その不完全時代と思われる。いままでポプラ上に記載された *Macrophoma* 属菌のなかには、本菌と一致するものはないが、他のヤナギ科植物上に記載された *Macrophoma* 属菌のなかで、*M. salicina* Sacc.⁷⁷⁾ が本菌とよく似ている。しかしこの菌の同定については、まえにのべたように、*Guignardia* 菌との関連および寄主範囲を確かめたいうえでのことにして、ここでは保留したい。

16. *Ascochyta vitellinae* PASS.—(Plate 6: F, Plate 12: Fig. 2)—Fung. Gall. novi in Jour. d'Hist. nat. 1885, No. 4, p. 16; SACCARDO, Syll. Fung. 10: 300, 1892

柄子殻は葉の両面に生ずる病斑上に散生し、球形ないし扁球形、黒色ないし暗褐色、 $130\sim145\times100\sim125\mu$ 。分生子梗は単条、無色、短く、 $5\sim5.5\mu$ 。柄胞子は長楕円形ないし紡錘形、無色、2胞、成熟すると隔膜部でいくらかくびれる。⁸⁾ 大きさ $12.5\sim15.5\times3\sim4\mu$ 。

資料：Populus alba $\times$ P. sieboldii (山形・釜淵，IX—12, 1958, CO・KT)

記事：葉に寄生する。病斑は灰褐色ないし灰白色、径 $2\sim5\text{ mm}$ 、円形ないし不整形。被害は軽微である。いままでポプラ上には3種の *Ascochyta* 属菌が記載されているが、いずれも本菌とは異なるものである。ヤナギ上に記載されている4種の *Ascochyta* 属菌のうち *A. vitellinae* PASS. が本菌とよく一致する。本菌のヤナギに対する寄生性に若干の疑問があるが一応形態的によく一致する *A. vitellinae* PASS. にあてておく。本菌もおそらくわが国では未報告の菌であろう。

17. *Diplodina populi* ELL. et EV.—(Plate 7: E, F)—Bull. Torr. Bot. Cl. 1898, p. 510; SACCARDO, Syll. Fung. 16: 939~940, 1902

柄子殻は樹皮に生じ、はじめ表皮下に埋生するが、のちいくらか表面にでる。褐色ないし暗褐色、球形ないし扁球形、殻壁は膜状、大きさ $140\sim150\times150\sim200\mu$ 。分生子梗は単条、長さ $12.5\sim22.5\mu$ 。柄胞子は楕円形ないし紡錘形、やや不等辺、2胞、ふつう隔膜部ではくびれない、無色、大きさ $7.5\sim13.5\times2.5\sim3.5\mu$ 、ふつう $8.5\sim11\times3\mu$ 。

資料：Populus euramericana I—455 (愛知・東春日井，V—25, 1959)

記事：病斑は休眠芽あるいは葉柄痕から発生しているようで、古い病患部では表皮に亀裂を有し、よく破れる。本菌は、今までポプラ上に報告された *Diplodina* 病菌のうち、*D. populi* ELL. et EV. とよく一致した。わが国で未報告の菌である。

18. *Phomopsis* sp.—(Plate 3: D, E, Plate 12: Fig. 3)

柄子殻子座は樹皮に生じ、はじめ埋生、のちいくらか表面にでる。柄子殻窩ははじめ横線状、完熟すると眼窩状、柄子殻子座の中央に孔口をひらく。分生子梗は柄子殻窩の内面に並列し、無色、細く、 $3\sim4\times1.5\mu$ 。柄胞子は2型あり、ひとつはA-胞子とよばれるもので、楕円形ないし紡錘形、単胞、無色、果粒にとみ、大きさ $5.5\sim8.5\times2\sim3\mu$ 、ふつう $7\sim8.5\times2.5\mu$ 。もうひとつの型はB-胞子または *stylo-spore* とよばれるもので、針状ないしかぎ針状、単胞、無色、 $17\sim28\times0.7\sim1.0\mu$ 。湿潤な時にはA-胞子とB-胞子のクリーム色の塊が柄子殻子座の孔口からコイル状に押し出される。

資料：Populus tremula var. davidiana $\times$ P. canescens (山形・釜淵，IX—12, 1958, CO・KT)；P. japono-gigas (東京・田無，VII—15, 1958, CO・KT)；P. charkowiensis $\times$ P. caudina (北海道・栗山，VI—24, 1959, 千葉茂)；P. "strathglas" (北海道・栗山，VI—24, 1959, 千葉茂；東京・目黒，VIII—22,

1959, KT); *P. nigra*, *P. serotina*, *P. serotina* f. *erecta*, *P. regenerata*, *P. marilandica*, *P. robusta*, *P. gelrica*, *P. grandis*, *P. euramericana* I—476, *P. euramericana* I—45/51, *P. euramericana* I—72/51, *P. euramericana* I—214, *P. euramericana* LK—83, *P. euramericana* LK—67, *P. "wettstein"*, *P. "jacomettis"*, *P. nigra* × *P. monilifera*, *P. berolinensis*, *P. nigra* × *P. trichocarpa*, *P. maximowiczii*, *P. koreana*, *P. maximowiczii* × *P. trichocarpa* (東京・目黒, VIII—22, 1959, KT)

記事：樹皮に生じ枝枯れあるいは胴枯れをおこす。この *Phomopsis* 菌は前にのべた *Diaporthe medusaea* NIT. (3頁参照) の不完全時代と考えられる。この菌はまた枝や茎のほかに、サシ穂の頂部 0.5~2 cm の枯れさがつた部分あるいは発根しなかつたサシ穂にもつともふつうにみられる菌である。

ポプラ上には *Phomopsis putator* (SACC.) HÖHN^{84) 92)} と *P. populina* VOGLINO⁷⁵⁾ の2種が記載されているが、このうち *Phomopsis putator* は WEHMEYER⁹²⁾ によつて、かれの訂正した *Diaporthe eres* NIT. の不完全時代とされた。最近ドイツの BUTIN⁴⁾ は WEHMEYER にしたがつてポプラ上に *Diaporthe eres* とその不完全時代 *Phomopsis putator* を報告した。同時にかれは *Phomopsis populina* をも *D. eres* NIT. の不完全時代の異名としてとり扱つた。筆者らは本菌を *Diaporthe medusaea* NIT. の不完全時代と考えているのであるが、文献によると *Diaporthe eres* NIT. と *D. medusaea* NIT. の不完全時代は、それぞれたがいによく似ているようなので、本菌の同定は、その生活史や寄主範囲などをあきらかにしたうえのこととしたい。

19. *Phomopsis macrospora* KOBAYASHI et CHIBA sp. nov.—(Plate 7: A~D, Plate 12: Fig. 4)

柄子殻子座は樹皮に生じ、はじめ埋生、のちいくらか表面にでる。半球形ないし円丘状に隆起し、大きく、直径 3~5 mm。柄子殻窩の形状は前の *Phomopsis* sp. 菌のそれによくにて、はじめ横線状、のち成熟すると眼窩状となり、子座頂部において開口する。分生子梗は短く、直性、無色、長さ 7.5~9 μ 。分生胞子は2種あり、ひとつは A-胞子とよばれ、楕円形ないし紡錘形、単胞、無色、果粒にとむ。大きさ 14.5~19.5 × 3~3.7 μ 。もうひとつの B-胞子または stylospore とよばれるものは長円筒形または長紡錘形で真直またはかぎ状に曲がる。無色、単胞、大きさ 13~17.5 × 1.5 μ 。

資料：*Populus deltoides* (東京・目黒, V—13, 1959, KT); *P. charkowiensis* × *P. caudina* (北海道・栗山, VI—24, 1959, 千葉茂); *P. nigra*, *P. serotina* f. *erecta*, *P. robusta*, *P. "eckhof"*, *P. deltoides* × *P. caudina*, *P. maximowiczii* (東京・目黒, VIII—22, 1959, KT)

記事：樹皮に生じ枝枯れもしくは胴枯れをおこす。本菌はまえの *Phomopsis* とくらべると外観的には、病患部の色が赤褐色であることと、柄子殻子座のいぼ状隆起が大きいことによつて区別される。しかし最も大きい差異は胞子の形状と大きさである。すなわち、本菌の A-胞子はまえの *Phomopsis* のそれよりはるかに大きく、一方 B-胞子は短く太い。この両者の *Phomopsis* の培養は似ているが、本菌の胞子角の色は前種のそれより赤味が強い。

ヤナギ科植物に記載された *Phomopsis* 菌のなかには本菌に該当するものはみあたらないし、またその他の植物に記載された *Phomopsis* 属菌のほかに該当するものがないので新種として記載した。

20. *Cytospora chrysosperma* (PERS.) FR.—(Plate 8: A, B, Plate 12: Fig. 5)—S. M. II. p. 542; SACCARDO, Syll. Fung. 3: 260, 1884; 千葉・小林, 日林誌 41: 248~249, 1959

資料：*Populus maximowiczii* (北海道・苫小牧, VII—1, 1958); *P. "strathglas"*, *P. charkowiensis* ×

P. caudina (北海道・栗山, VII—24, 1959, 千葉茂)

記事: 樹皮に寄生しキトスポラ胴枯病(ふらん病, 粗皮病)をおこす。本菌は1924年富樫⁸⁹⁾が北海道利尻島で採集記録したのがわが国で最初で, そのご亀井⁴⁸⁾がおなじく北海道に広く産することを報告した。今回の調査中に入手した資料もすべて北海道からのものであつた。本菌の完全時代である *Valsa sordida* Fr. はわが国ではまだ報告されていない。

21. *Cytospora nivea* (HOFFM.) SACC.—(Plate 8: C, D, Plate 12: Fig. 6)—Mich. II. p. 264, Syll. Fung. 3: 260, 1884, 千葉・小林, 日林誌 41: 249, 1959.

資料: *Populus maximowiczii* (長野・傍陽, IX—24, 1958, 魚住正, KT); *P. "strathglas"* (北海道・栗山, VII—24, 1959, 千葉茂)

記事: 樹皮に寄生しレウコストマ胴枯病をおこす。本菌は *Leucostoma nivea* Fr. の不完全時代であるが, わが国ではまだ *Leucostoma* 世代はみつかつていない。SCHREINER⁸⁶⁾ によれば, この菌は *Cytospora chrysosperma* より病原性が弱いという。

22. *Cytospora* sp.—(Plate 8: E, F, Plate 12: Fig. 7)

柄子殻子座ははじめ樹皮内に埋生するが, のち白色の円盤となつていくらか表面にでる。その下部にはつきりした殻壁を有する単孔性の柄子殻がある。柄子殻は一子座内に単生もしくは2~3個がかたまつて生ずる。球形ないし扁平な楕円形, 黒色, 460~600 μ 径, 黒色の頸あるいは孔口を有する。殻壁は黒色, 膜状。頸は黒色で子座を貫通して円盤表面に開口する。柄子殻をふくめた子座の高さは350~415 μ 。分生子梗は柄子殻壁内面に竝列し, 無色, 短く, 長さ10~12.5 μ 。柄胞子は腸詰形, 単胞, 無色, 大きさ5.5~6.5 $\times$ 1~1.5 μ 。

資料: *Populus sieboldii* $\times$ *P. canescens* (山形・釜淵, IX—12, 1958, CO・KT); *P. maximowiczii* $\times$ *P. nigra* (山形・上ノ山, X—3, 1959, KT・CO)

記事: この菌は, 子座の発達の貧弱なことで, 柄子殻に明りような殻壁を有し, 単殻性であることで, 前2種の *Cytospora* とはきわめて異なる。本菌の成熟したものでは, 外子座(ectostroma)は頸部のまわりにしかみられない。

今までポプラ類に記載された *Cytospora* のなかで, *Cytospora acharii* SACC.⁸⁹⁾, *C. flavo-virens* SACC.⁸⁹⁾ および *C. populina* SPEG.⁹⁷⁾ の3種がその子座と柄子殻の特徴で本菌に似るが, 前2者はその柄胞子の測定値が記載されていない。*C. populina* SPEG. は柄胞子が4~5 $\times$ 1 μ と記載され, 本菌より小さい。本菌の同定については, その寄主範囲などを検討したうえでのことにゆずりたい。

23. *Dothiorella populnea* THÜM.—(Plate 13: Fig. 5)—SACCARDO, Syll. Fung. 3: 237, 1884

子座は樹皮に生じ, 円盤状, 黒色, 1~3 mm 径。子座表層内部に柄子殻窩を生ずる。柄子殻窩は球形ないし扁球形, 175~290 $\times$ 225~250 μ , 分生子梗は単条または分岐し, 無色, 長さ10~15 μ 。柄胞子は楕円形, 単胞, 無色, 3.5~4 $\times$ 1.5~2 μ , 塊ではやや緑褐色をおびる。

資料: *Populus maximowiczii* (山形・釜淵, X—1, 1959, CO・KT)

記事: 今までポプラ類に記載されている *Dothiorella* 属菌は8種あるが, そのうち *D. populina* KARST.⁶⁹⁾ と *D. populnea* THÜM.⁶⁴⁾ が本菌に類似する。SACCARDO の Sylloge Fungorum にのせられた記載では *D. populina* の柄胞子は5~6 $\times$ 2 μ , *D. populnea* のそれは3.5 $\times$ 1 μ で, 本菌は *D. populnea* によりちかい。ところが, ドイツでポプラ類の菌類を報告した BUTIN⁴⁾ は, *D. populnea* の柄胞子を3.5~4 $\times$ 0.5~

1 μ , *D. populina* のそれを 4~4.5 $\times$ 2 μ と報告し, *D. populnea* の柄胞子はより幅がせまくなっている。しかし, 筆者らは原記載によつて本菌を *Dothiorella populnea* KARST. と同定する。本菌はわが国未報告の菌である。

24. *Sphaceloma populi* (SACC.) JENKINS—(Plate 9: A, B, Plate 13: Fig. 4)— Jour. Agr. Res. 44: 689~700, 1932; 千葉・小林, 日林誌, 37: 76~78, 1957

資料: *Populus erotina* (東京・浅川, IX—28, 1956, CO, IX—24, 1957, KT); *P. bachelierii*, *P. gelrica*, *P. euramericana* (東京・浅川, IX—24, 1957, KT); *P. deltoides*, *P. marilandica* (東京・浅川, X—3, 1958, KT); *P. canadensis* (熊本・八代, VII—, 1958)

記事: この菌は筆者らがまえに白斑性痘瘡病菌 *Sphaceloma* sp. として紹介した⁶⁾ものである。そのごの文献調査によつてポプラに寄生する *Sphaceloma* 菌として, JENKINS が訂正記載した *S. populi* (SACC.) JENKINS^{(45) (46)} があることを知り, その病徴, 形態が筆者らのえた菌とほぼ一致するので, 同一菌と同定した。

このほかに, まえに同時にのべたように⁶⁾ 黒~褐斑を生ずる *Sphaceloma* 菌が採集されるが, その形態培養とも白斑性の *S. populi* とまつたく区別しがたいので, やはり *S. populi* と同定しておく。黒斑性の資料はつぎのとおり: *Populus serotina*, *P. robusta*, *P. gelrica*, *P. euramericana* I—455, *P. euramericana* I—45/51, *P. euramericana* I—214, *P. euramericana* I—154, *P. “eucalyptus”*, *P. “leipzig”* (東京・小石川, X—28, 1956, CO・KT); *P. deltoides* (東京・田無, X—22, 1956, CO・KT); *P. marilandica* (東京・浅川, IX—24, 1957, KT)

うえに記録したごとく, 本菌は *Populus* 属のうち *Aigeires* 亜属に属するものからのみとられた。なお白斑性のものは6月から10月の間にわたつてみられるが, 黒斑性のものは9月下旬から10月の間しかみられない。

25. *Myxosporium rimosum* FAUTR.—(Plate 1: D, E, Plate 13: Fig. 1)—Rev. Myc. 1891, p. 32; SACCARDO, Syll. Fung. 10: 465, 1892; 千葉・小林, 日林誌 41: 189~190, 1959

分生子堆は当年生枝の樹皮に生じ, 初期には無色であるが, 古くなつたもの, あるいは越冬したものである, 厚く淡褐色となる。剛毛はない。分生子梗は無色, 単条, 大きさ 6~12 $\times$ 3~4 μ 。分生胞子は楕円形ないし円筒形, 両端鈍円, 単胞, 無色, 12.5~18 $\times$ 3.5~5.5 μ , ふつう 13~15 $\times$ 3.5~4.5 μ 。塊では鮭肉色ないし桃紅色。

資料: *Populus alba* $\times$ *P. sieboldii* (東京・田無, IV—17, 1957, VII—15, 1958, KT); *P. deltoides* var. *monilifera* (青森・青森, I—22, 1960, 横沢良憲)

記事: 枝枯炭疽病をおこす。本菌は *Glomerella cingulata* (STON.) SPAUL. et SCHR. の不完全時代である(2頁参照)。ポプラに記載された炭疽病菌としては, いままでに葉に寄生する *Gloeosporium* 属菌が8種, 茎, 枝に寄生する *Myxosporium* 属菌が6種ある。それらのうち, 本菌は *Myxosporium rimosum* FAUTR.⁽⁶⁹⁾, *Gloeosporium sibiricum* THÜM.⁽⁶⁴⁾ および *G. populi-albae* DISM.⁽⁶⁴⁾ の3種にきわめてよく一致する。これらの3菌はその形態の記載がまつたく相似て区別しがたいが, 本菌がポプラの葉に寄生するかどうか確かめてないので, *Myxosporium rimosum* FAUTR. と同定する。

最近 ARX¹⁾ は *Colletotrichum* 属菌のモノグラフをあらわした。かれはそのなかで剛毛の有無にかかわらず *Gloeosporium* 属を *Colletotrichum* 属の異名としてふくめたが, *Myxosporium* 属については何らふ

れていない。本菌はかれの種の索引にしたがうと、かれが *Glomerella cingulata* の不完全時代の種名としてあたえた *Colletotrichum gloeosporioides* PENZ. sens. ARX に一致する。ARX はこの *C. gloeosporioides* PENZ. sens. ARX の異名として600を超える種をふくめたが、そのリストのなかにはポプラ上に記載された種はみあたらない。かれが異名として集めた種がすべて完全時代との関連において調べられたかどうかは疑わしいとはいえ、*Colletotrichum gloeosporioides* PENZ. を *Glomerella cingulata* の不完全時代を代表する種名とすることが妥当であると認められるならば、ポプラ上に記載されている *Myxosporium rimosum* FAUTR., *Gloeosporium sibiricum* THÜM. および *G. populi-albae* DESM. の3種は当然 *Colletotrichum gloeosporioides* PENZ. sens. ARX の異名となるものであろう。

26. *Colletotrichum* sp.—(Plate 9: C, D, Plate 13: Fig. 2)

分生子堆は葉表面の病斑上に黒点として散生し、直径70~120 μ 、多数の剛毛を有する。剛毛は長く剛直、褐色ないし暗褐色、45~85 $\times$ 4.5~6 μ 。分生子梗は単条、無色。分生胞子は長楕円形ないし円筒形、時には両端もしくは一端がやや尖る。単胞、無色、17~24 $\times$ 4.5~5.5 μ 。

資料: *Populus sieboldii* $\times$ *P. deltoides* (東京・浅川, IX—28, 1956, CO); *P. nigra*, *P. koreana* $\times$ *P. trichocarpa* (東京・小石川, X—28, 1956, CO); *P. sieboldii* (山形・釜淵, X—5, 1957, CO); *P. tremuloides* (東京・小石川, X—28, 1957, CO·KT); *P. tomentosa*, *P. tremula* var. *daurica*, *P. tremula* var. *daurica* $\times$ *P. deltoides*, *P. maximowiczii* (山形・釜淵, IX—12, 1958, CO·KT)

記事: 葉に寄生し葉炭疽病をおこす。本菌は枝枯炭疽病菌 *Myxosporium rimosum* FAUTR. とは、その形態、とくに胞子の大きさと剛毛の存在、および培養があきらかに異なる。ポプラ上には *Colletotrichum* 属菌が記載されておらず、また *Gloeosporium* 属菌のなかにも本菌と一致するものはない。

ARX¹⁾ の *Colletotrichum* 属の索引によると、本菌はその形態から *Colletotrichum phyllachoroides* (ELL. et EV.) von ARX に一致する。しかし *C. phyllachoroides* は *Artemisia* 属植物 (ヨモギ類) にしか記載されておらず、本菌が *Artemisia* に寄生するかどうか不明であるので、ここではその同定は留保する。

27. *Marssonina brunnea* (ELL. et EV.) MAGN.—(Plate 5: D, E, Plate 13: Fig. 3)—Hedw. 45: 90, 1906; 千葉・小林, 日林誌 41: 144~146, 1959

異名: *Marssonina populicola* MIURA, 満蒙菌類誌 III, 陰花植物, 菌類 p. 480~481, 1928

資料: section *Aigeiros*—*Populus japono-gigas* (東京・田無, VI—17, 1957, VII—15, 1958, KT; 東京・目黒, X—14, 1958, X—12, 1959, KT); *P. marilandica* (東京・浅川, X—3, 1958, KT; 東京・目黒, X—14, 1958, X—12, 1959, KT); *P. nigra*, *P. deltoides* var. *monilifera*, *P. serotina*, *P. robusta*, *P. bachelierii*, *P. gelrica*, *P. grandis*, *P. euramericana* I—45/51, *P. euramericana* I—214, *P. euramericana* I—154, *P. euramericana* F.S.350, *P. deltoides* $\times$ *P. caudina*, *P. nigra* $\times$ *P. deltoides* var. *monilifera*, *P. “jacomettis”*, *P. “eckhof”*, *P. “leipzig”*, *P. “eucalyptus”* (東京・目黒, X—14, 1958, X—12, 1959, KT); *P. deltoides* var. *missouriensis*, *P. wislizenii*, *P. serotina* f. *erecta*, *P. re-generata*, *P. euramericana* LD-131, *P. euramericana* I—455, *P. euramericana* I—476, *P. euramericana* LK—67, *P. euramericana* I—C. B. D, *P. angulata* $\times$ *P. incrassata*, *P. “strathglas”* (東京・目黒, X—12, 1959, KT); *P. deltoides* (福島・郡山, X—5, 1960, KT); section *Aigeiros* $\times$ *Tacamahaca*—*P. nigra* $\times$ *P. laurifolia*, *P. nigra* $\times$ *P. maximowiczii*, *P. nigra* $\times$ *P. trichocarpa*, *P. deltoides* $\times$ *P. trichocarpa* (東京・目黒, X—14, 1958, X—12, 1959, KT); *P. berolinensis* (東京・目黒, X—12, 1959, KT);

section *Tacamahaca*—*P. maximowiczii*, *P. simonii* (東京・目黒, X—14, 1958, X—12, 1959, KT);
section *Leucoides*—*P. lasiocarpa* (東京・目黒, X—12, 1959, KT)

記事: 葉および若枝に寄生しマルゾニア落葉病をおこす。うえに記録したごとく, 本菌は *Aigeiros* 亜属のポプラにふつうにみられ, *Leuce* 亜属であるギンドロ (*P. alba*, white poplar) 系あるいはヤマナラシ (*P. sieboldii*, aspen) 系のポプラにはまつたくみられなかつた。また病斑は葉の両面に生ずるが, *Aigeiros* 亜属では表面生の病斑が, *Tacamahaca* 亜属では裏面生の病斑がより優勢にあらわれる。

すでに筆者らは本菌を *Marssonina brunnea* (ELL. et EV.) MAGN. と同定した⁷⁾が, そのごの検討で, 三浦⁵⁴⁾が満州で *Populus laurifolia* (*Tacamahaca* 亜属) に記載した *M. populicola* MIURA も同一菌としてよいことがわかつた。すなわち, *M. populicola* の記載による胞子の大きさは $16\sim21\times6\sim7\mu$ でやや大きい, その大部分が本菌の測定値と重複する。さらに, 三浦は記載にあたつて, *Tacamahaca* 亜属のポプラに知られていた5種の *Marssonina* 属菌と比較し, 主として病斑が裏面生であること, 胞子がくびれないことの2点をあげて, 新種とした。しかし, かれがあげて比較した種のなかには *M. brunnea* (ELL. et EV.) MAGN. はいいていない。*M. brunnea* の原記載には胞子がくびれるかどうかについては書かれていないが, 筆者らのえた菌では, ふつうくびれないほうが多い。また, うえにのべたように, 病斑の表面生, 裏面生はポプラの種類がちがひによるものであり, 種の区別点にはならないと考えられる。したがつて筆者らは三浦の記載した *Marssonina populicola* MIURA は *M. brunnea* (ELL. et EV.) MAGN. の異名となるものとする。

28. *Pestalotia populi-nigrae* SAWADA et K. ITO—(Plate 9: E, F, Plate 14: Fig. 1)—Bull. Gov. For. Exp. Sta., Tokyo, 45: 140, 1950; 沢田, 林試研報, 105: 78, 1958; 千葉・小林, 日林誌, 41: 146~147, 1959

資料: *Populus tremula* var. *davidiana* (山形・釜淵, X—5, 1957, CO, IX—12, 1958, CO・KT); *P. nigra* (山形・釜淵, IX—12, 1958, CO・KT; 東京・目黒, X—14, 1958, KT); *P. simonii* (山形・釜淵, IX—12, 1958, CO・KT; 東京・浅川, X—3, 1958, KT); *P. nigra*×*P. maximowiczii*, *P. maximowiczii*×*P. trichocarpa* (東京・浅川, X—3, 1958, KT); *P. alba*×*P. sieboldii*, *P. "strathglas"* (東京・目黒, X—12, 1959, KT)

記事: 若枝および葉をおかし, ベスタロチヤ枝枯病および輪紋病(ベスタロチヤ葉枯病)をおこす。本菌は伊藤³⁹⁾がはじめて記載したもので, わが国以外ではまだ知られていなかったが, 最近 GAMBOGI と VERONA¹⁵⁾はイタリアに本菌が存在し枝枯をおこしていることを報告した。

29. *Septotis populiperda* (MOESZ et SMARODS) WATERMAN et CASH—(Plate 4: F, G, Plate 14: Fig. 4)—Mycol. 42: 377, 1950; 伊藤, 森林防疫ニュース 7: 180~185, 1958; 千葉・小林; 日林誌 41: 142~144, 1959

異名: *Septogloeum populiperdum* JOHANNES, Phytop. Zeits. 17: 407, 1951

資料: Section *Leuce*—*Populus tremula*×*P. tremuloides* (山形・釜淵, IX—12, 1958, CO・KT); *P. alba*×*P. tremula* var. *davidiana* (山形・釜淵, X—1, 1959, CO・KT); *P. alba*×*P. sieboldii*, *P. tremula* var. *davidiana*×*P. canescens* (山形・釜淵, X—1, 1959, CO・KT; 東京・目黒, X—12, 1959, KT); *P. sieboldii*, *P. tremula* var. *davidiana*×*P. sieboldii*, *P. sieboldii*×*P. canescens*, (*P. alba*×*P. sieboldii*)×*P. canescens* (東京・目黒, X—12, 1959, KT); section *Aigeiros*—*P. gelrica* (東京・浅川,

IX—28, 1956, CO; 山形・釜淵, IX—12, 1958, X—1, 1959, CO・KT); *P. canadensis* (熊本・八代, VI—1, 1958; 山形・釜淵, IX—12, 1958, CO・KT); *P. carolina*, *P. “jacomettis* (山形・釜淵, IX—12, 1958, CO・KT; 東京・目黒, X—12, 1959, KT); *P. euramericana* LK—79 (山形・釜淵, IX—12, 1958, CO・KT; 東京・浅川, X—3, 1958, KT); *P. serotina*, *P. regenerata*, *P. robusta*, *P. euramericana* I—455, *P. euramericana* I—214, *P. euramericana* I—154, *P. euramericana* LW—42, *P. “wettstein”*, *P. “leipzig”*, *P. “eucalyptus”* (山形・釜淵, IX—12, 1958, CO・KT); *P. marilandica* (山形・釜淵, IX—12, 1958, X—1, 1959, CO・KT); *P. euramericana* I—45/51 (東京・浅川, X—3, 1958, KT; 山形・釜淵, X—1, 1959, CO・KT; 東京・目黒, X—12, 1959, KT); *P. deltoides* var. *missouriensis*, *P. japono-gigas*, *P. serotina* f. *erecta*, *P. bachelierii*, *P. euramericana* I—172 (東京・浅川, X—3, 1958, KT); *P. grandis*, (山形・釜淵, X—1, 1959, CO・KT); *P. deltoides*, *P. euramericana* I—476, *P. euramericana* C. B. D., *P. euramericana* F. S. 350, *P. euramericana* LK—67, *P. deltoides* × *P. caudina*, *P. charkowiensis* × *P. incrassata*, *P. “strathglas”* (東京・目黒, X—12, 1959, KT); section *Aigeiros* × *Tacamahaca*—*P. charkowiensis* × *P. trichocarpa* (東京・浅川, IX—24, 1957, KT); *P. nigra* × *P. maximowiczii* (東京・目黒, X—14, 1958, X—12, 1959, KT; 山形・釜淵, IX—12, 1958, CO・KT; 東京・浅川, X—3, 1958, KT); *P. deltoides* × *P. laurifolia* (山形・釜淵, IX—12, 1958, CO・KT; 東京・目黒, X—12, 1959, KT); *P. nigra* × *P. trichocarpa* (東京・浅川, X—3, 1958, KT; 東京・目黒, X—12, 1959, KT); *P. berolinensis* (東京・浅川, X—3, 1958, KT); *P. “rochester”*, *P. deltoides* × *P. trichocarpa*, *P. maximowiczii* × *P. nigra* platienens, *P. maximowiczii* × *P. berolinensis* (東京・目黒, X—12, 1959, KT); section *Tacamahaca*—*P. maximowiczii* (山形・釜淵, IX—12, 1958, CO・KT; 東京・浅川, X—3, 1958, KT; 東京・目黒, X—14, 1958, X—12, 1959, KT); *P. simoni* (山形・釜淵, IX—12, 1958, CO・KT; 東京・目黒, X—12, 1959, KT); *P. koreana* (山形・釜淵, IX—12, 1958, CO・KT); *P. maximowiczii* × *P. trichocarpa* (東京・浅川, X—3, 1958, KT; 東京・目黒, X—12, 1959, KT); *P. koreana* × *P. trichocarpa* (東京・目黒, X—12, 1959, KT); section *Leucoides*—*P. lasiocarpa* (東京・目黒, X—12, 1959, KT)

記事：葉をおかしセプトチス葉枯病をおこす。本菌は *Septotinia populi-perda* WAT. et CASH (3 頁参照) の不完全時代である。本菌ははじめ Latvia で発見され、*Septogloeum populi-perda* MOESZ et SMARODS と命名されたが、WATERMAN と CASH がその培養上の菌核から完全時代を形成させ、その記載にあたって、同時に不完全時代を BUCHWALD の創設した *Septotis* 属に移したものの⁹¹⁾である。そのご、JOHANNES⁴⁷⁾はドイツでポプラの斑点性病害をおこす菌を新種として、*Septogloeum populi-perdum* JOHANNES と名づけた。最近セプトチス葉枯病について報告した欧州の研究者達^{41) 13) 14) 83) 85) 94)}は、*Septotis populi-perda* と *Septogloeum populi-perdum* JOHANNES とが形態的に差異がみとめられないことを指摘している。しかし、JOHANNES が記載した *Septogloeum populi-perda* の病徴と、これらの研究者の観察した *Septotis populi-perda* の病徴があまりにも異なるため、SCHMIDLE^{83) 94)}や Van den ENDE^{13) 14)}は *Septogloeum populi-perdum* JOHANNES を *Septotis populi-perda* の異名とすることを保留した。SCHMIDLE は両菌の異同を論じたさい、JOHANNES の観察記載した病徴は、ひとつの原因からきたものではなからうとのべ、その理由として、彼が JOHANNES が新種記載のもととした材料を採集した苗畑を調査したところ、JOHANNES の記載する病徴そつくりの病葉を観察することができたが、その時の調査では *Septogloeum* も *Septotis* も検出できな

かつたことをのべている。より最近、BUTIN⁴¹ はこの両菌の病徴の差異に関して SCHMIDLE とおなじ結論に達し、*Septogloeum populiperdum* JOHANNES を *Septotis populiperda* の異名として取りあつた。筆者らも BUTIN の意見に賛成して *Septogloeum populiperdum* JOHANNES を異名としてかかげた。

30. *Epicoccum nigrum* LINK sens. SCHOL-SCHWARZ—(Plate 5: G, Plate 13: Fig. 6)—Mag. Ges. Naturf. Fr. Berl. 7: 32, 1816; SCHOL-SCHWARZ, Trans. Brit. Myc. Soc. 42: 170~171, 1959

異名: *Epicoccum eucalypti* HENN., Hedw. 41: 311, 1902; SACCARDO, Syll. Fung. 18: 679, 1906

分生子褥は葉病斑上に散生し、褐色ないしかんらん(橄欖)色、半球形。分生子梗は短く淡褐色、 $5.5\sim7\times2\sim3.5\mu$ 。分生胞子は球形ないし類球形、褐色ないし暗褐色、不規則縦横に隔膜を有し、表面に細いとげまたはいぼを密生する、大きさ $15.5\sim24\times14\sim21\mu$ 、短柄を有す。柄は無色で $5.5\sim7\times2\sim3.5\mu$ 。

資料: *Populus maximowiczii* × *P. nigra platierensis*, *P. euramericana* I—154, *P. euramericana* I—262, *P. euramericana* I—476, *P. bachelierii*, *P. nigra* × *P. laurifolia*, *P. koreana* × *P. trichocarpa* (北海道・光珠内, X—17, 1959, 横山八郎)

記事: 本菌による病斑は灰褐色ないし褐色、不規則、周縁不鮮明。いままで4種の *Epicoccum* 属菌がポプラ上に知られていた。この4種の *Epicoccum* は筆者らの観察した菌とは異なるように思われた。すなわち *Epicoccum majus* ROSTR.⁷⁴⁾ はその分生胞子が本菌よりはるかに大きく、*E. purpurascens* EHRENB.^{41) 65)} と *E. neglectum* DESM.^{41) 65)} は孢子表面のいぼが網状構造をしており、*E. diversisporum* PREUSS^{41) 65)} は孢子の大きさの記載が欠けている。SACCARDO の菌譜によると、本菌はむしろユーカリ上に記載された *E. eucalypti* HENN.⁷⁴⁾ にまったく一致する。ところが、最近 SCHOL-SCHWARZ³⁵⁾ は多数の *Epicoccum* 属菌の培養的、形態的比較をした結果にもとづいて、これらの *Epicoccum* 菌をただ1種に統合し、タイプ種 *E. nigrum* LINK の異名とした。その異名のなかには上述の5種もすべてふくまれている。SCHOL-SCHWARZ は孢子表面のいぼの配列の差異については何ら言及せず、また種の幅がきわめて大きいものにされたなど、若干の疑問の点もあるが、ここでは一応それにしたがって本菌の種名に *Epicoccum nigrum* LINK sens. SCHOL-SCHWARZ を適用する。

31. *Cercospora populina* ELL. et EV.—(Plate 5: F)—Jour. Myc. 3: 20, 1887; 伊藤・小林, 林試研報 59: 1~28, 1953

資料: *Populus alba*, *P. tremula* var. *davidiana*, *P. euramericana* F. S. 350 (東京・小石川, X—28, 1956, CO・KT); *P. nigra* × *P. trichocarpa* (東京・浅川, IX—24, 1957, X—3, 1958, KT); *P. maximowiczii* × *P. berolinensis*, *P. maximowiczii*, *P. koreana* × *P. trichocarpa* (東京・浅川, X—3, 1958, KT); *P. simonii* (東京・浅川, X—3, 1958, KT; 東京・目黒, X—14, 1958, X—12, 1959, KT); *P. sieboldii*, *P. alba* × *P. sieboldii*, *P. sieboldii* × *P. canescens* (東京・目黒, X—12, 1959, KT)

記事: 本菌は *Mycosphaerella togashiana* K. ITÔ et KOBAYASHI の不完全時代であり、葉をおかし褐斑病をおこす³⁶⁾。section *Leuce* および section *Tacamahaca* に属するポプラにふつうにみられる。

32. *Cladosporium mortianoffianum* THÜM.—(Plate 14: Fig. 2)—Pilzfl. Sibir. n. 474 et 653; SACCARDO, Syll. Fung. 4: 357~358, 1886

子実層は病斑表面に密生し、煤状ないしビロード状を呈する。分生子梗は褐色、大きく、多数の隔膜を有し、滑面、真直あるいはいくらか電光形(ジグザグ形)、大きさ $185\sim270\times4.5\sim6\mu$ 、数本が束生する。分生胞子は楕円形ないし紡錘形、ふつう両端まるいが、時に一端が尖る。ふつう2胞だがまれに3

胞, 褐色ないしオリーブ褐色, 大きさ $10\sim18\times5\sim7\ \mu$, ふつう $14\sim17\times5.5\ \mu$ 。

資料: *Populus euramericana* I—455 (岩手・厨川, XI—1959, 村井三郎)

記事: ポプラ上にいままで記載された *Cladosporium* には *C. ramulorum* DESM.⁶⁵⁾, *C. asteroma* FUECK.⁶⁵⁾, *C. brunneum* CDA.⁶⁵⁾, *C. martianoffianum* THÜM.⁶⁵⁾, *C. epiphyllum* (PERS.) MART.⁶⁵⁾ および *C. lethiferum* PECK⁶⁹⁾ の6種がある。そのほかに, BISBY²⁾ および DEARNESS¹²⁾ は *Cladosporium subsessile* ELL. et BARTH. を *Populus tremuloides* 上に記録し, 最近 BUTIN⁴⁾ は *Cladosporium herbarum* (PERS.) LINK, *C. subsessile* ELL. et BARTH., *C. fasciculatum* CDA. および *C. epiphyllum* (PERS.) MART. の4種をポプラ上に記録している。これらの *Cladosporium* 属菌のなかで *C. martianoffianum* THÜM. の記載が本菌にまったく一致した。この菌はわが国では未記録の菌である。

33. *Alternaria tenuis* NEES—(Plate 14: Fig. 3)—Syst. p. 72; SACCARDO, Syll. Fung. 4: 545—546, 1886

子実層は病斑表面に密生し媒状を呈する。分生子梗は剛直, 褐色ないし暗褐色, 束生し, 多数の隔膜を有す。大きさ $47\sim95\times3.5\sim4.5\ \mu$ 。分生胞子は洋梨形ないしフラスコ形, 数個が鎖生し, 縦横に多数の隔膜を有す。緑褐色ないしオリーブ褐色, 滑面, $29\sim58\times11.5\sim17.5\ \mu$, ふつう $41\sim47\times14\sim16\ \mu$ 。

資料: *P. maximowiczii* × *P. nigra platierens*, *P. deltoides* × *P. trichocarpa* (東京・小石川, X—28, 1956, CO・KT); *P. bachelierii*, *P. nigra* × *P. deltoides* var. *monilifera* (東京・浅川, IX—24, 1957, KT); *P. "strathglas"* (山形・釜淵, IX—12, 1958, CO・KT; 北海道・光珠内, X—3, 1958, 横山八郎); *P. simonii* (東京・浅川, X—3, 1958, KT; 北海道・光珠内, X—3, 1958, 横山); *P. euramericana* I—455 (東京・田無, X—17, 1958, CO・KT); *P. marilandica*, *P. gelrica*, *P. grandis* (北海道・光珠内, X—3, 1958, 横山)

記事: ポプラあるいは他のヤナギ科植物上に記載された *Alternaria* はないが, BRECKLE³⁾ は1918年に *Populus deltoides* 上に *Alternaria tenuis* NEES を記録している。*Alternaria* 属のタイプ種である *A. tenuis* NEES は, 草本類, 木本性植物に多くの寄主を有する種であり, 筆者らのえた菌の形態は *Alternaria tenuis* NEES のそれにほぼ一致するので, その種名にあてる。

図 版 説 明

Plate 1

Taphrina populina FR.

- A: 葉表凸面病斑, カナダポプラ ×1.2
- B: 葉裏凹面病斑, カナダポプラ ×1.2
- C: 葉裏表面に裸生する子囊 ×180

Myxosporium rimosum FAUTR.

- D: 分生孢子粘塊を生じているモニリフェラヤマナランの罹病枝 ×1.2
- E: 分生子堆の一部 ×180

Glomerella cingulata (STONEM.) SPAULD. et SCHR.

- F: 平吉 2 号 (*Populus alba* × *P. sieboldii*) の被害枝 ×1.2
- G: 剛毛のない子囊殻 ×150
- H: 剛毛を有する子囊殻 ×310

Plate 2

Guignardia sp. および *Macrophoma* sp.

- A: 子囊殻 (*Guignardia* sp.) および 柄子殻 (*Macrophoma* sp.) の混生する被害枝, 巨大ポプラ ×2
- B: 子囊殻 (*Guignardia* sp.) ×90
- C: 子囊殻 (*Guignardia* sp.) (左) および柄子殻 (*Macrophoma* sp.) (右) ×90
- D: 柄子殻 (*Macrophoma* sp.) ×150

Sphaerulina populi KOBAYASHI et CHIBA

- E: 罹病葉, 平吉 2 号種 (*Populus alba* × *P. sieboldii*) ×1
- F: 子囊殻 (ヨードヨードカリで染色) ×180

Plate 3

Diaporthe medusaea NIT.

- A: 被害枝上に突出した子囊殻頭 (自然生) ×1.2
- B: 同 上 (湿室処理) ×1.2
- C: 子囊殻 ×90

Phomopsis sp.

- D: 被害枝上に形成された柄子殻群, 巨大ポプラ ×1
- E: 柄子殻, A-および B-胞子を有す ×150

Nectria mantuana SACC.

- F: 子囊殻子座を散生する被害枝 ×1.5
- G: 子囊殻子座の一部 ×150

Plate 4

Septotinia populiperda WATERM. et CASH

A: 罹病落葉上の菌核から発生した子囊盤 ×1

B: 同 上, 子囊盤および菌核 ×1.2

C: *Septotis populiperda* の培養上につくられた菌核から発生した子囊盤 ×1.5

D: 同 上, 子囊盤および菌核 ×1.5

E: 試験管培養上に発生した子囊盤 ×1

Septotis populiperda (MOESZ et SMARODS) WAT. et CASH

F: 罹病葉, *Populus gelrica* ×1

G: 分生子褥 ×180

Plate 5

Melampsora larici-populina KLEB.

A: 夏孢子堆を密生する罹病葉, *Populus charkowiensis* × *P. caudina* ×1

B: 冬孢子堆を密生する罹病葉, *Populus angulata* × *P. incrassata* ×1.2

C: 冬孢子堆 ×180

Marssonina brunnea (ELL. et EV.) MAGN.

D: 被害若枝, 巨大ボブラ ×1

E: 被害葉, 巨大ボブラ ×1

Cercospora populina ELL. et EV.

F: 被害葉, *Populus nigra* × *P. trichocarpa* ×1

Epicoccum nigrum LINK

G: 被害葉, 黒点は分生子褥 ×3

Plate 6

Phyllosticta populorum SACC. et ROUM

A: 被害葉, *Populus alba* × *P. sieboldii* ×1.2

B: 柄子殻 ×180

Phyllosticta alcides SACC.

C: 被害葉, *Populus serotina* ×1

Phyllosticta longisporum KOBAYASHI et CHIBA

D: 柄子殻 ×180

Leptosphaeria decaisneana (CRIE) SACC.

E: 子囊殻 ×150

Ascochyta vitellinae PASS

F: 柄子殻 ×310

Plate 7

Phomopsis macrospora KOBAYASHI et CHIBA

A: 被害枝, アメリカクロヤマナラシ ×1.2

B: 湿室処理で生じた孢子角 ×1.7

C: 柄子殻 ×90

D: A-胞子および B-胞子 ×400

Diplodina populi ELL. et EV.

E: 被害枝 *Populus euramericana* I—455 ×1.2

F: 柄子殻 ×310

Plate 8

Cytospora chrysosperma (PERS.) FR.

A: 被害幹樹皮および胞子角, フロ ×1.2

B: 柄子殻子座 ×90

Cytospora nivea (HOFFM.) SACC.

C: 白色孔口部を密生する枯死枝 ×1

D: 柄子殻子座および conceptacle ×50

Cytospora sp.

E: 柄子殻子座を有する枯死枝, *Populus sieboldii* × *P. canescens* ×1.2

F: 柄子殻 ×150

Plate 9

Sphaceloma populi (SACC.) JENKINS

A: 白斑型病斑 ×1.2

B: 黒褐斑型病斑 ×1.2

Colletotrichum sp.

C: 被害葉, *Populus sieboldii* × *P. davidiana* ×1

D: 分生子堆 ×180

Pestalotia populi-nigrae SAWADA et ITÔ

E: 被害葉, 黒色輪紋は分生子堆 ×1

F: 分生子堆 ×90

Plate 10

Fig. 1: *Taphrina populina* FR.

a: 子囊および blastospore b: 子囊の一部拡大 c: blastospores

Fig. 2: *Glomerella cingulata* (STONEM.) SPAULD. et SCHR.

a: 剛毛を有する子囊殻孔口部殻壁の一部 b: 子囊および子囊胞子 c: 子囊胞子 d: 子囊胞子の発芽

Fig. 3: *Guignardia* sp.

a: 子囊および子囊胞子 b: 子囊胞子 c: 子囊胞子の発芽

Fig. 4: *Leptosphaeria decaisneana* (CRUE) SACC.

a: 子囊および子囊胞子 b: 子囊胞子

Fig. 5: *Nectria mantuana* SACC.

a: 子囊および子囊胞子 b: 子囊胞子

Plate 11

Fig. 1: *Sphaerulina populi* KOBAYASHI et CHIBA

a: 子嚢および子嚢胞子 b: 子嚢胞子 c: 子嚢胞子の発芽

Fig. 2: *Diaporthe medusaea* NIT.

a: 子嚢および子嚢胞子 b: 子嚢胞子 c: 子嚢胞子の発芽

Fig. 3: *Septotinia populiperda* WATERM. et CASH

a: 子嚢, 子嚢胞子および側糸 b: 同拡大 c: 子嚢胞子 d: 子嚢胞子の発芽

Fig. 4: *Phyllosticta longisporum* KOBAYASHI et CHIBA

a: 柄子殻の一部 b: 柄胞子

Fig. 5: *Phyllosticta alcides* SACC.

a: 柄胞子 b: 柄胞子の発芽

Fig. 6: *Phyllosticta populorum* SACC. et ROUM.

a: 柄胞子 b: 柄胞子の発芽

Plate 12

Fig. 1: *Macrophoma* sp.

a: 柄子殻の一部 b: 柄胞子 c: 柄胞子の発芽

Fig. 2: *Ascochyta vitellinae* PASS.

a: 柄子殻の一部 b: 柄胞子

Fig. 3: *Phomopsis* sp.

a: 柄子殻の一部 b: A-胞子 c: A-胞子の発芽 d: B-胞子

Fig. 4: *Phomopsis macrospora* KOBAYASHI et CHIBA

a: A-胞子 b: B-胞子

Fig. 5: *Cytospora chrysosperma* (PARS.) FR.

a: 柄子殻窩の一部 b: 柄胞子 c: 柄胞子の発芽

Fig. 6: *Cytospora nivea* (HOFFM.) SACC.

a: 柄子殻窩の一部 b: 柄胞子 c: 柄胞子の発芽

Fig. 7: *Cytospora* sp.

a: 柄子殻窩の一部 b: 柄胞子 c: 柄胞子の発芽

Plate 13

Fig. 1: *Myxosporium rimosum* FAUTR.

a: 分生子堆の一部 b: 分生胞子

Fig. 2: *Colletotrichum* sp.

a: 分生子堆 b: 分生胞子 c: 分生胞子の発芽

Fig. 3: *Marssonina brunnea* (ELL. et EV.) MAGN.

a: 分生子堆の一部 b: 分生胞子 c: 分生胞子の発芽

Fig. 4: *Sphaceloma populi* (SACC.) JENKINS

a: 分生子堆の一部 b: 分生胞子

Fig. 5: *Dothiorella populnea* THÜM.

a : 柄子殻窩の一部 b : 柄胞子

Fig. 6: *Epicoccum nigrum* LINK

a : 分生子褥の一部 b : 分生胞子

Plate 14

Fig. 1: *Pestalotia populi-nigrae* SAWADA et ITÔ

a : 分生子堆の一部 b : 分生胞子 c : 分生胞子の発芽

Fig. 2: *Cladosporium martianoffianum* THÜM.

a : 分生子梗および分生胞子 b : 分生胞子

Fig. 3: *Alternaria tenuis* NEES

a : 分生子梗 b : 分生胞子

Fig. 4: *Septotis populiperda* (MOESZ et SMARODS) WATERM. et CASH

a : 分生子褥の一部 b : 2 裂した分生胞子の発芽

Fungi Inhabiting Poplars in Japan I

Takao KOBAYASHI⁽¹⁾ and Osamu CHIBA⁽²⁾

Materials were collected chiefly at four nurseries in Tokyo and one in Yamagata prefecture; namely Meguro and Asakawa nursery of the Government Forest Experiment Station, Koishikawa and Tanashi nursery of Tokyo University, and Kamabuchi nursery of Yamagata Sub-branch of the Government Forest Experiment Station. About one hundred and fifty clones of poplars were surveyed in growing and dormant seasons. Specific names of the poplars are those following INOKUMA^(29) 30) and, HAMAYA and INOKUMA⁽¹⁶⁾. Some of the results obtained were preliminarily reported⁽⁸⁻⁹⁾.

Fungi hitherto reported in Japan

Chiefly for rather minor importance of the poplars in our forest, only about twenty fungi have been recorded on them in our country, while about a thousand species of fungi inhabiting them have hitherto been described in various parts of the world.

A fruit pocket fungus, *Taphrina johanstonii* SADEB., was first reported by IKENO⁽²⁷⁾ on *Populus sieboldii* and then recorded three times^(59) 61) 80). *Apiosporium salicinum* (PERS.) KZE. causes a sooty mold of *Populus* sp.⁽¹⁷⁾ and *Uncinula salicis* (DC.) WINT. causes a powdery mildew of *P. sieboldii* and *P. maximowiczii*^(25) 78) 79). *Mycosphaerella togashiana* K. ITÔ et KOB. inhabits the overwintered leaves of poplars⁽⁸⁾. Its conidial stage *Cercospora*, which is very similar to *C. populina* ELL. et EV., causes a leaf spot of *P. simonii*, *P. alba*, *P. maximowiczii*, *P. nigra* and *P. deltoides* var. *monilifera* during the growing season⁽⁸⁾. This *Cercospora* leaf spot was also reported by HARA⁽¹⁸⁾ in Shizuoka prefecture. Three fungi associated with a serious canker,

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in which *Cenangium* sp., *Tuberculis* sp. and *Phomopsis* sp. are included, were preliminarily reported by K. ITÔ and CHIBA³⁵⁾.

Armillariella mellea (FR.) KARST. causes a root rot of *P. sieboldii* and *P. nigra*⁵¹⁾. *P. nigra* and *P. maximowiczii* were listed as the host plants of *Helicobasidium mompa* TANAKA, a violet root rot fungus, by K. ITÔ⁸¹⁾.

Five species of *Melampsora* have been recorded in Japan. Of them, *M. larici-populina* KLEB. and *M. magnusiana* WAGN. are widely distributed in Japan. The former species was collected on *P. maximowiczii* and *P. nigra*^(19) 21) 53) 81) 89). Recently, several workers recorded many species and hybrids of poplars as the host of it^(10) 87) 44) 60). The latter species was recorded on *P. sieboldii* and *P. jezoensis*^{*19~21) 42) 55) 81)}. *M. laricis* HART. on *P. sieboldii* was reported from Hokkaidô³⁹⁾ and the Tôhoku District⁹⁰⁾. *M. medusae* THÜM. on *P. maximowiczii*²³⁾ and *M. abietis-populi* IMAI on *P. nigra* var. *italica*^{28) 43)} have been reported only from Hokkaidô.

NIJIMA⁵³⁾ noted that *Cryptosporium populi* BON. caused a canker disease of *P. sieboldii*, *P. deltoides* var. *monilifera* and *P. nigra* in Japan. An occurrence of *Cytospora chrysosperma* (PERS.) FR. in Japan was first recorded by TOGASHI³⁹⁾. Thereafter KAMEI⁴³⁾ stated that it was widely distributed in Hokkaidô and collected on *P. alba*, *P. deltoides* var. *monilifera*, *P. maximowiczii* and *P. nigra* var. *italica*. *Pestalotia populi-nigrae* SAWADA et K. ITÔ was described by K. ITÔ³²⁾ with some pathological studies. It causes a shoot blight on several poplars, such as *P. nigra*, *P. nigra* var. *italica* and *P. deltoides* var. *monilifera*^{32) 82)}. On *P. sieboldii*, *Gloeosporium tremulae* (LIB.) PASS. and *Trochila populinum* DESM. were listed by NIJIMA⁵³⁾ and KITAJIMA⁵¹⁾, respectively, without any notes.

Fungi collected in this survey

During the last four years about thirty fungi were collected by the writers. Some of them are additional species to the Japanese fungous flora. Although some others have not yet been identified, their mycological features will be described with some survey notes.

Ascomycetes

1. *Taphrina populina* FR.—(Plate 1: A~C, Plate 10: Fig. 1)—Syst. Myc. 3: 520; Mix, Univ. Kansas Sci. Bull. 33: 37, 1949; CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 41: 188~189, 1959

Asci arising from epidermal cells in which the stalk cell of asci are immersed, matured asci $69\sim87\times21\sim24\mu$ in size, constricted at their base, stalk cells $10\sim20\times15\sim20\mu$; asci usually containing many blastospores hyaline, unicellular, globular to elliptic, $3\sim4.5\times2.5\sim3\mu$.

Hosts: On living leaves of *P. nigra*, *P. deltoides* var. *monilifera* and *P. canadensis*.

Notes: In the world, four species of the genus *Taphrina* have been recorded on poplars⁵⁶⁾. Two of them, *T. rhizophora* JOHANS. and *T. johansonii* SADEB., attack carpels and cause the fruit pocket. The other two, *T. populina* FR. and *T. populi-salicis* Mix, cause the yellow leaf blister or the golden-yellow concave-convex spot of leaves. In Japan, *T. johansonii* parasitic on fruits of *P. sieboldii* is well known^{27) 59) 81) 80)}, but the present species has not been recorded.

2. *Glomerella cingulata* (STONEM.) SPAULD. et SCHR.—(Plate 1: F~H, Plate 10:

* By HAMAYA and INOKUMA¹⁶⁾ it is included in the range of variation of *Populus tremula* var. *davidiana*.

Fig.2)—Science, n. s., 17: 750, 1903; CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 41: 189~190, 1959

Syn.: *Guignardia* sp., CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 39: 78, 1957

Perithecia erumpent, black, globular to subglobular, ostiolate, $145\sim165\times130\sim150\mu$, perithecial walls membranaceous, $12.5\sim18\mu$ in thickness, consisting of brown to dark cells, brown typical setae formed or not around ostioles; asci clavate to oblong-fusoid, tapering toward the base, $45\sim55\times9\sim10\mu$; ascospores hyaline, unicellular, elliptic to fusoid, inaequilateral, $12.5\sim15.5\times4\sim5\mu$.

Hosts: On living shoots of *P. alba* $\times$ *P. sieboldii*, *P. tremula* var. *daurica* $\times$ *P. canescens* and *P. sieboldii* $\times$ *P. canescens*.

Notes: This fungus is the perfect stage of *Myxosporium rimosum* FAUTR. (see page 31). In the preliminary note⁶¹ the writers gave this fungus as *Guignardia* sp. However, in the course of further examination, there have been frequently found typical setae around the ostioles of perithecia. So, the fungus was transferred to the genus *Glomerella* and identified as *G. cingulata*.

3. *Guignardia* sp.—(Plate 2: A~C, Plate 10: Fig. 3)

Perithecia erumpent, black, globular to subglobular, $225\sim275\times215\sim265\mu$, with membranaceous walls of $15\sim30\mu$ thick; asci clavate, to oblong-clavate, tapering toward the base, $75\sim100\times14.5\sim18.5\mu$; ascospores hyaline, unicellular, elliptic to fusoid, granular, $22.5\sim28.5\times7.5\sim9\mu$.

Hosts: On the bark of *P. japonica*, *P. deltoidea* var. *monilifera* and *P. nigra*.

Notes: This fungus causes a dieback or canker and may be the perfect stage of a *Macrophoma* which occurs frequently on the same lesions (see *Macrophoma*, page 27). Two species of the genus *Guignardia* on *Populus*, viz. *G. (Laestadia) niesslii* KZE.⁶² and *G. populi* THOMPSON⁸³, and one species on *Salix*, *G. carpinea* (FR.) SACC. var. *salicina* SACC.⁷¹, have been described hitherto. Of them, the first and third species apparently differ from the present fungus by their smaller asci and ascospores. Morphologically *G. populi* quite resembles the writers' fungus except its smaller perithecia. According to THOMPSON⁸³, the imperfect stage of *G. populi* is *Septogloeum rhopalodeum* DEARN. et BISBY, but that of the writers' fungus is probably *Macrophoma*. Hence, the writers retain its identification at present.

4. *Sphaerulina populi* KOBAYASHI et CHIBA sp. nov.—(Plate 2: E~F, Plate 11: Fig.1)

Maculis epiphyllis utrinque visibilibus, rotundatis v. irregularibus, albus v. griseobrunneis, margine-brunneis; peritheciis epiphyllis, quandoque amphigenis, sparsis, immersis, epidermice tectis, nigris, globulosis v. globoso-depressis, membranaceis, ostiolatis, $110\sim135\times120\sim150\mu$; poro rotundati papilliformi apertis; ascis hyalinis, clavatis, $50\sim60\times10\sim11\mu$, paraphysatis, 8-sporidis; ascosporidiis irregulariter bi- v. pluristichis, hyalinis, fusoides v. oblongo-fusoides, utrinque acutiusculis, 4~6-septatis, $25\sim30\times3.5\sim5\mu$.

Hab. On living leaves of *Populus serotina* f. *erecta*, Asakawa, Tokyo, VIII—12, 1957, by T. KOBAYASHI. Type specimen in Herb. Gov. For. Exp. Sta., Tokyo.

Notes: There are not found any *Sphaerulina* which attacks poplars so far as the writers are aware. *S. salicina* SYD.⁷⁶¹ which was described from *Salix*, differs distinctly from the writers' fungus by the size of asci and ascospores which are $110\sim140\times9\sim10\mu$ and $15\sim18\times5.5\sim7.5\mu$, respectively, and by the number of septum of ascospores which are usually 3.

5. *Leptosphaeria decaisneana* (CRIE) SACC.—(Plate 6: E, Plate 10: Fig. 4)—Syll.

Fung. 2: 50, 1883

Perithecia epiphyllous, scattered, black, globular to subglobular, $80\sim95\times100\sim110\mu$; asci clavate to oblong-fusoid, hyaline, $44\sim49\times7.5\sim8.5\mu$, 8-spored, irregularly biseriated; ascospores greenish brown to brown, oblong-elliptic to oblong-fusoid, 2 (rare)-3-septated, somewhat constricted at septa, $15.5\sim19.5\times3.9\sim4.2\mu$.

Host: On living leaves of *P. simonii*.

Notes: The spots are epiphyllous, round to irregular, white to grayish brown. From poplars five species of the genus *Leptosphaeria*, namely *L. salicinarum* (PERS.) SACC.⁶³⁾, *L. aegira* SACC. et SPEG.⁶³⁾, *L. decaisneana* (CRIE) SACC.⁶³⁾, *L. alcides* SACC.⁶³⁾, and *L. livida* VOGLINO⁷⁵⁾, have been described hitherto. Among them, *L. alcides* and *L. livida* are distinguished from the present fungus by their larger ascospores and the number of septum of ascospores. *L. aegira* which have 3-septated spores also differs by its larger ascospores. In *L. salicinarum*, a description about the size of asci and ascospores is lacking. The writers' fungus quite agrees with the description of *L. decaisneana* (CRIE) SACC.

6. *Diaporthe medusaea* NIT.—(Plate 3: A~C, Plate 11: Fig. 2)—Pyr. Germ. 251, 1867; WEHMEYER, Univ. Michig. Studies, Sci. Ser. 9: 101, 1933; CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 41: 246~248, 1959

Syn.: *Diaporthe italica* (SACC.) TRAV., SACCARDI, Syll. Fung. 17: 671, 1905

Perithecia immersed in the bark, loosely grouping 1 to several, $390\sim600\mu$ in diam., with black long necks which penetrate the bark and protrude $1\sim5\text{mm}$ from the surface of the bark; necks densely grouped together and surrounded by the stromatic structures of the fungous mycelia containing the fragments of bark tissue, around perithecia loose net of the hyphae being usually found, at the margin of these structural area around both perithecia and necks black dorsal zone⁹³⁾ being commonly recognized; asci cylindric to clavate, $46\sim51\times6.3\sim7\mu$, having two refractive rings or apical rings at their tip; ascospores hyaline, fusoid to elliptic, 2-celled, rarely constricted at maturity, $12\sim14\times3\sim3.5\mu$.

Hosts: On the bark of *P. japonica-gigas* and *P. deltoidea*, causing a dieback or canker.

Notes: This fungus is the perfect stage of a *Phomopsis* (see page 29). Genetic relation between them will be proved satisfactorily in later paper. As the species of the genus *Diaporthe* inhabiting poplars, *D. furfuracea* (FR.) SACC.⁶²⁾, *D. forabilis* NIT.⁶²⁾, *D. putator* NIT.⁶²⁾, *D. pulchella* SACC. et BR.⁶⁵⁾ 63), *D. populea* SACC.⁶³⁾, *D. cupulata* BERL. et DESTREE⁷¹⁾, *D. italica* (SACC.) TRAV.⁷³⁾, *D. simplicior* FELTG.⁷³⁾ and *D. recedens* SACC.⁷⁶⁾ have been found in SACCARDI's Sylloge Fungorum. Among them *D. forabilis*, *D. putator* and *D. simplicior* were placed into the synonym of *D. eres* NIT. by WEHMEYER⁹²⁾. Recently, BUTIN⁴⁾ noted this fungus on poplars after WEHMEYER's sense. *D. recedens*, *D. pulchella*, *D. populea* and *D. cupulata* were transferred to the genus *Cryptodiaporthe* by WEHMEYER⁹²⁾ and BUTIN⁵⁾. According to WEHMEYER⁹²⁾, *D. furfuracea* would be excluded from *Diaporthe* by its furfuraceous disk and uniseriated ascospores. He stated it seems to belong to the genus *Melanconis*. The present fungus is quite accordant with *D. medusaea* NIT. and also *D. italica*, though its original description is very brief. About *D. italica*, WEHMEYER said that "judging from the original description it is probably *D. medusaea* on *Populus*". The writers' fungus completely agrees with *D. medusaea* amended by WEHMEYER in many aspects. The writers, therefore, followed him, adopting the name *D. medusaea* NIT. sens. WEHM.

7. *Nectria mantuana* SACC.—(Plate 3: F~G, Plate 10: Fig. 5)—Mich. I. 52; Syll. Fung. 2: 505, 1883

Perithecia gregariously formed on the basal stroma, which break through the bark epiderms, orange to red, globular, $250\sim300\times165\sim265\mu$; asci clavate or cylindric, $56\sim62\times6.3\sim7\mu$; ascospores irregularly uni- or biseriate, hyaline, elliptic to fusoid, 1-septate, somewhat constricted when mature, $10\sim12.5\times3\sim4\mu$.

Hosts: On dead scions of *P. maximowiczii* and *P. canescens*.

Notes: From poplars six species of *Nectria* have been recorded as follows: *N. coryli* FOCK., *N. peziza* (TODE) FR.⁶³⁾, *N. mantuana* SACC.⁶³⁾, *N. aurantium* (WALLR.) KICKX.⁶³⁾, *N. sulphurata* ELL. et EV.⁶³⁾ and *N. galligena* BRES.⁴⁷⁾ Except *N. mantuana*, the other five species differ much from this fungus by the size of ascospores.

8. *Septotinia populiperda* WATERMAN et CASH—(Plate 4: A~E, Plate 11: Fig. 3)—Mycol. 42: 380, 1950; CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 41: 142~144, 1959

During late March to April one to several apothecia develop from a single sclerotium produced on the fallen leaves attacked by the fungus. Apothecia stalked 1~20mm, tube-like at first, then bowl- to disk-shaped at maturity, Light ochraceous buff to pinkish buff colored,* 1~5mm in diameter; asci arranged at the upper portion of the apothecia together with paraphysis and hyaline, cylindric with thickened wall at their tip, $110\sim125\times7.5\sim8.5\mu$; ascospores hyaline, uniseriate, unicellular, elliptic to ovoid, $11\sim14\times5\sim6\mu$; paraphysis filiform, thickened at their tip, hyaline, $112\sim130\mu$ in length.

Hosts: On the fallen overwintered leaves of *P. marilandica* and *P. "leipzig"*.

Notes: This fungus is the perfect stage of *Septotis populiperda* (MOESZ et SMARODS) WAT. et CASH. WATERMAN and CASH⁹¹⁾ described this fungus based on an apothecial stage which developed from sclerotia on culture medium isolated from conidia. Apothecial stage was also observed by Van den ENDE¹³⁾ in Holland. The writers obtained them not only from sclerotia formed on culture medium isolated from conidia but also from sclerotia formed on fallen diseased leaves. The genus *Septotinia* was established by WHETZEL⁹²⁾ who studied the fungus on *Podophyllum* having the same imperfect stage as that on poplars. He segregated it from the genus *Sclerotinia* based on the imperfect stage distinguishable from others hitherto known genera. Van den ENDE¹³⁾ mentioned that no morphological difference was found between both *Septotinia* on *Podophyllum* and *Populus*, but comparative studies on them have not been made up to the present time.

Basidiomycetes

9. *Helicobasidium mompa* TANAKA, Jour. Coll. Sci. Tokyo Imp. Univ. 4: 193, 1891; K. ITÔ, Bull. Gov. For. Exp. Sta. 43: 31~35, 1949; S. ITÔ, Myc. Flora Jap. 2 (4): 3, 1955

Hosts: On *P. maximowiczii*, *P. nigra* × *P. maximowiczii* and *P. sieboldii*.

Notes: This fungus is one of the most important polyxenic fungi in Japan⁹¹⁾ and seems frequently to be responsible for the death of poplars in young plantations and sometimes in nurseries.

10. *Armillariella mellea* (FR.) KARST., Krit. Oefv. Finl. Basidsv., p. 46, 1889; SINGER, Agaric., p. 216, 1949; S. ITÔ, Myc. Flora Jap. 2 (5): 129, 1959

Syn.: *Armillaria mellea* (VAHL) QUÉL.

Host: On *P. deltoides* var. *monilifera*.

* RIDGWAY, R. (1912): Color standard and nomenclature.

Notes: According to KITAJIMA⁵¹⁾, *P. nigra* planted for ornament in Tokyo were severely attacked by this fungus.

11. *Melampsora larici-populina* KLEB.—(Plate 5: A~C)—Zeits. Pfl. kr. 12: 43, 1902; S. ITO, Myc. Flora Jap. 2 (2): 116~117, 1938

Hosts: On living leaves of *Populus* of section *Aigeiros*—*P. nigra*, *P. deltoides*, *P. deltoides* var. *monilifera*, *P. deltoides* var. *missouriensis*, *P. wislizenii*, *P. vernirubens*, *P. japono-gigas*, *P. carolina*, *P. deltoides* × *P. caudina*, *P. charkowiensis* × *P. caudina*, *P. nigra* × *P. deltoides* var. *monilifera*, *P. deltoides* var. *monilifera* × *P. caudina*, *P. deltoides virginiana* × *P. caudina*, *P. euramericana* I—154, I—214, I—455, I—262, I—476, I—45/51, I—77/51, I—72/51, I—C. B. D., LK—79, LK—83, LK—67, LW—30, *P. robusta*, *P. gelrica*, *P. marilandica*, *P. serotina*, *P. serotina* f. *erecta*, *P. bachelierii*, *P. grandis*, *P. regenerata*, *P. "leipzig"*, *P. "eckhof"*, *P. "eucalyptus"*, *P. "jacomettis"*; section *Aigeiros* × *Tacamahaca*—*P. nigra* × *P. maximowiczii*, *P. nigra* × *P. trichocarpa*, *P. charkowiensis* × *P. trichocarpa*, *P. nigra* × *P. laurifolia*, *P. deltoides* × *P. trichocarpa*, *P. "strathglas"*, *P. "rochester"*, *P. berolinensis*, *P. maximowiczii* × *P. nigra platierens*, *P. maximowiczii* × *P. berolinensis*; section *Tacamahaca*—*P. maximowiczii*, *P. simonii*, *P. koreana*, *P. maximowiczii* × *P. trichocarpa*, *P. koreana* × *P. trichocarpa*; section *Leucoides*—*P. lasiocarpa*.

Notes: In Japan the distribution and heteroecism of this fungus has been reported by MATSUMOTO⁵³⁾, TOGASHI⁵⁹⁾, HIRATSUKA^{19~21)} and SAWADA⁸¹⁾, and, recently several workers^{10) 37) 44) 60)} made studies on the susceptibility to the rust of poplars, both introduced and indigenous. This fungus was collected on *Populus* spp. of the section *Aigeiros*, *Tacamahaca* and *Leucoides*, but never from the section *Leuce*. Wide differences in rust susceptibility were found, however, among the species of the section *Aigeiros* and *Tacamahaca*.

Fungi Imperfecti

12. *Phyllosticta populorum* SACC. et ROUM.—(Plate 6: A~B, Plate 11: Fig. 6)—Syll. Fung. 3: 23~24, 1884; CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 39: 77~78, 1957

Pycnidia scattered on the spots, immersed at first and then erumpent, globular to subglobular, 85~115 × 100~125 μ , with dark brown to black membranaceous walls which are 6~9 μ in thickness; conidiophores hyaline, simple 2~3.5 × 2 μ ; pycnosporos hyaline, unicellular, elliptic to oblong-elliptic, 6.5~8.5 × 2~2.5 μ .

Hosts: On living leaves of *Populus* of section *Leuce*—*P. alba* × *P. sieboldii*, *P. alba* × *P. tremula* var. *davidiana*; section *Leuce* × *Aigeiros*—*P. sieboldii* × *P. deltoides* var. *monilifera*; section *Aigeiros*—*P. nigra*, *P. deltoides*, *P. deltoides* var. *monilifera*, *P. deltoides* var. *missouriensis*, *P. wislizenii*, *P. grandis*, *P. japono-gigas*, *P. canadensis*, *P. carolina*, *P. deltoides* × *P. caudina*, *P. nigra* × *P. deltoides* var. *monilifera*, *P. euramericana* I—154, I—172, I—214, I—476, I—455, I—45/51, LK—67, LK—79, LK—83, LW—30, LW—42, *P. robusta*, *P. gelrica*, *P. serotina*, *P. serotina* f. *erecta*, *P. regenerata*, *P. marilandica*, *P. bachelierii*, *P. "eucalyptus"*, *P. "wettstein"*, *P. "jacomettis"*, *P. "eckhof"*; section *Aigeiros* × *Tacamahaca*—*P. berolinensis*, *P. nigra* × *P. maximowiczii*; section *Tacamahaca*—*P. maximowiczii*, *P. maximowiczii* × *P. trichocarpa*, *P. koreana* × *P. trichocarpa*.

Notes: This fungus causes a *Phyllosticta* ring spot, not causing severe damage. Spots are brown, little at first, then enlarge concentrically and turn grayish brown, usually 30~50 mm in diameter. Numerous pycnidia produced concentrically on the spots. They are amphigenous on the poplars belonging to the section *Leuce* and *Aigeiros* on which the fungus

is most frequently found, and epiphyllous on those of section *Tacamahaca*. On poplars eleven *Phyllosticta* have hitherto been described; i. e. *P. populea* SACC.⁶⁴⁾, *P. populina* SACC.⁶⁴⁾, *P. populorum* SACC. et ROUM.⁶⁴⁾, *P. alcides* SACC.⁶⁴⁾, *P. osteospora* SACC.⁶⁴⁾, *P. bacteriiformis* (PASS.) SACC.⁶⁴⁾, *P. maculans* ELL. et EV.⁷⁰⁾, *P. alcides* f. *americana* SACC. et SACC.⁷⁰⁾, *P. prominens* OUD.⁷⁴⁾, *P. brunnea* DEARN. et BARTH.^{11) 77)} and *P. adjuncta* BUB. et SEREB.⁷⁷⁾. Recently, BUTIN⁴⁾ reported four species of *Phyllosticta* on poplars with some observations in Germany, namely *P. populorum*, *P. osteospora*, *P. populina* and *P. populi-nigrae* ALLESCH.* In Asia, MIYAKE⁵⁷⁾ and MIURA⁵⁴⁾ recorded *P. populea* in North China and in Manchuria, respectively. The present fungus apparently differs from *P. populea* by its larger pycnosporos and symptom of the spots.

13. *Phyllosticta alcides* SACC.—(Plate 6: C, Plate 11: Fig. 5)—Syll. Fung. 3: 24, 1884; CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 41: 188, 1959

Pycnidia sparsely scattered on the spots, black, globular to subglobular, 85~105×90~120μ; conidiophores simple, very short, hyaline; pycnosporos elliptic, unicellular, hyaline, 4~5.5×2~2.5μ.

Hosts: On living leaves of *Populus* of section *Leuce*—*P. alba*, *P. tremula* var. *daurica* × *P. canescens*; section *Leuce* × *Aigeiros*—*P. tremula* var. *daurica* × *P. deltoides* var. *monilifera*; section *Aigeiros*—*P. nigra*, *P. deltoides* var. *monilifera*, *P. wislizenii*, *P. deltoides* × *P. caudina*, *P. canadensis*, *P. marilandica*, *P. serotina*, *P. gebrica*, *P. regenerata*, *P. euramericana* LK—79, *P. charkowiensis* × *P. caudina*, *P. nigra* × *P. deltoides* var. *monilifera*; section *Aigeiros* × *Tacamahaca*—*P. nigra* × *P. trichocarpa*, *P. maximowiczii* × *P. berlinensis*, *P. nigra* × *P. maximowiczii*; section *Tacamahaca*—*P. maximowiczii*, *P. simonii*.

Notes: This fungus causes a *Phyllosticta* brown spot. Spots are irregular, small, 5mm in diameter and grayish white or grayish brown.

14. *Phyllosticta longisporum* T. KOBAYASHI et CHIBA, sp. nov.—(Plate 6: D, Plate 11: Fig. 4)

Maculis minutis, sparsis, epiphyllis, 3~5 mm diam., albis v. griseo-brunneis; pycnidii sparsis, nigris, globulis v. subglobulis, membranaceis, 90~105×85~100μ; conidiophoris simplicis, brevissimis, hyalinis; conidiis cylindricis v. oblongo-cylindricis, unicellularibus, hyalinis, 7.5~10.5×1.5μ.

Hab. On living leaves of *Populus alba*, Kamabuchi, Mogami-gun, Yamagata prefecture, IX—12, 1958, by O. CHIBA & T. KOBAYASHI. Type specimen in Herb. Gob. For. Exp. Sta., Tokyo.

Notes: Spots caused by this fungus are white to grayish brown, epiphyllous, 3~5mm in diameter. The present fungus distinctly differs from any known *Phyllosticta* described from *Populus* and also *Salicaceae*; *P. salicina* KAB. et BUB.⁷⁵⁾, *P. eserana* KAB. et BUB.⁷⁵⁾, *P. apicalis* DAVIS⁷⁵⁾, *P. salicicola* THUM.⁶⁹⁾ and *P. translucens* BUB. et KAB.⁷⁷⁾

15. *Macrophoma* sp.—(Plate 2: A, C~D, Plate 12: Fig. 1)

Pycnidia first immersed, then erumpent, sometimes coalesced two to several in a row, black, globular to subglobular, 250~330×240~340μ, with black membranaceous walls which are 18~24μ in thickness; conidiophores simple, hyaline, 10.5~15.5×3~3.5μ; pycnosporos oblong-elliptic to fusoid, unicellular, hyaline, granular, 22.5~29.5×5~6.5μ.

* This is probably a species which is contained in SACCARDO's Sylloge Fungorum as *Phoma populi-nigrae* ALLESCH.⁷⁰⁾ SACCARDO noted that *Phoma populi-nigrae* seems to be very close to the genus *Macrophoma* by its larger pycnosporos which are described as 15×2.5~3.5μ.

Hosts: On living leaves and living and dead stems, scions and branches of *P. nigra*, *P. alba*, *P. maximowiczii*, *P. alba* × *P. sieboldii*, *P. serotina*, *P. serotina* f. *erecta*, *P. regenerata*, *P. marilandica*, *P. robusta*, *P. gelrica*, *P. grandis*, *P. carolina*, *P. deltoides* var. *monilifera*, *P. euramericana* I—214, I—476, I—45/51, LK—67, LK—83, *P. "strathglas"*, *P. "wettstein"*, *P. "jacomettis"*, *P. "eckhof"*, *P. deltoides* × *P. caudina*, *P. nigra* × *P. deltoides* var. *monilifera*, *P. berolinensis*, *P. nigra* × *P. trichocarpa*, *P. koreana*, *P. maximowiczii* × *P. trichocarpa*, *P. japono-gigas*.

Notes: This fungus causes a dieback or canker and leaf blotch. Pycnidia of the fungus are commonly produced together with the perithecia of *Guignardia* sp. which is probably the perfect stage of this *Macrophoma* (see page 23). Fruit bodies of the *Macrophoma* are also recognized on the dead cuttings. Among the *Macrophoma* described on *Populus*, i. e. *Phoma populi* PECK⁶⁹⁾*1, *P. populi-nigrae* ALLESCH.⁷⁰⁾*2, *M. cylindrospora* (DESM.) BERL. et VOGL. var. *populi* SACC.⁷¹⁾, *M. penzigii* FERR.⁷⁴⁾ and *M. tumefaciens* SHEAR²⁶⁾77), the writers could not find any species identical with the present fungus. From other Salicaceous plants, *M. salicaria* (SACC.) BERL. et VOGL.⁶⁹⁾, *M. ascutellata* (OTTH.) SACC.⁷⁰⁾, *M. breckleana* SACC. et SYD.⁷⁷⁾, *M. salicina* SACC.⁷⁷⁾ and *M. salicis* DEARN. et BARTH.¹¹⁾77) have been described. Among them *M. salicina* seems to be similar to the writers' *Macrophoma*, but an identification of this fungus remains at present as mentioned above (see page 23).

16. *Ascochyta vitellinae* PASS.—(Plate 6: F, Plate 12: Fig. 2)—Fung. Gall. novi in Jour. d'Hist. nat. 1885, n. 4, p. 16; SACCARDO, Syll. Fung. 10: 300, 1892

Pycnidia scattered on the spots, amphigenous, globular to subglobular, black to dark brown, $130\sim145\times100\sim125\mu$; conidiophores simple, short, hyaline, $5\sim5.5\times3\mu$; pycnosporos oblong-elliptic to fusoid, hyaline, 2-celled, somewhat constricted at septa when mature, $12.5\sim15.5\times3\sim4\mu$.

Host: On living leaves of *Populus alba* × *P. sieboldii*, not severe.

Notes: Spots caused by the fungus are minute, $2\sim5\text{mm}$ in diameter, grayish brown to grayish white. On poplars, *Ascochyta populina* SACC.⁶⁴⁾, *A. tremulae* THÜM.⁶⁴⁾ and *A. populicola* KAB. et BUB.⁷⁵⁾ have hitherto been described, but they differ from this fungus by their smaller pycnosporos. On the other hand, four species of *Ascochyta*, i. e. *A. martianoffiana* THÜM.⁶⁴⁾, *A. vitellinae* PASS.⁶⁹⁾, *A. salicicola* PASS.⁶⁹⁾ and *A. translucens* KAB. et BUB.⁷⁵⁾ have been described from *Salix*. Of these *A. vitellinae* quite corresponds with the present fungus, so the writers adopted the name for it.

17. *Diplodina populi* ELL. et EV.—(Plate 7: E~F)—Bull. Torr. Cl. 1898, p. 510; SACCARDO, Syll. Fung. 16: 939~940, 1902 (non *D. populi* (DELACR.) ALLESCH.)

Pycnidia occurring on the bark lesions, immersed at first, then erumpent, globular to subglobular, brown to dark brown, membranaceous, $140\sim150\times150\sim200\mu$; conidiophores simple, hyaline, $12.5\sim22.5\mu$ in length; pycnosporos elliptic to fusoid, somewhat inaequilateral, 2-celled, usually not constricted at septa, hyaline, $7.5\sim13.5\times2.5\sim3.5\mu$.

Host: On living or dead stems of *P. euramericana* I—455.

Notes: Lesions seem to appear from the dormant buds or the scars of fallen petioles. They are brown at first and turn grayish to purplish brown. The old lesions have several cracks. There are found five species inhabiting Salicaceae, viz. *D. populi* ELL. et EV.⁷²⁾, *D.*

*1 This species apparently belongs to the genus *Macrophoma* by its large pycnosporos which were described as $15\sim20\times3\mu$.

*2 This may also be *Macrophoma* (see the footnote in page 27).

populi (DELACR.) ALLESCH.⁷⁴⁾, *D. populi* f. *populi albae-niveae* OUD.⁷⁴⁾, *D. salicis* WEST⁶⁴⁾ and *D. pisana* BERL.⁷⁰⁾ This fungus was quite identical with *D. populi* ELL. et EV. among them.

18. *Phomopsis* sp.—(Plate 3: D~E, Plate 12: Fig. 3)

Pycnidial stroma on the bark lesions, immersed at first, then erumpent, small, 0.5~2 mm in diameter; pycnidial cavities appearing as linear crevice and finally becoming mouth like, at maturity these cavities opening ostioles at the center of pycnidial stroma; conidiophores arranging inner side of the cavities, hyaline, slender, 3~4×1.5 μ; pycnosporos having two forms, one which is called "A-spore" elliptic to fusoid, unicellular, hyaline, granular, 5.5~8.5×2~3 μ, mostly 7~8.5×2.5 μ, and the other "B-spore" or "stylospore" straight or hooked, slender, unicellular, hyaline, 17~28×0.7~1 μ; A- and B-spores oozing out from the central pore of the pycnidial stroma as cream colored coils under moist conditions.

Hosts: On living or dead branches, scions and stems of *P. alba* × *P. canescens*, *P. japonogigas*, *P. charkowiensis* × *P. caudina*, *P. "strathglas"*, *P. nigra*, *P. serotina*, *P. serotina* f. *erecta*, *P. regenerata*, *P. marilandica*, *P. robusta*, *P. gelrica*, *P. grandis*, *P. euramericana* I—214, I—476, I—45/51, I—72/51, LK—83, LK—67, *P. deltoides* var. *monilifera*, *P. "wettstein"*, *P. "jacomettis"*, *P. nigra* × *P. deltoides* var. *monilifera*, *P. berolinensis*, *P. nigra* × *P. trichocarpa*, *P. maximowiczii*, *P. koreana*, *P. maximowiczii* × *P. trichocarpa*.

Notes: This fungus causes a canker or dieback and may be the imperfect stage of *Diaporthe medusaea* NIT. (see page 24). Lesions are first grayish brown, then become brown to reddish brown and distinctly depressed from the healthy bark areas. On poplars, *P. putator* (SACC.) HÖHN.^{64) 92)} and *P. populina* VOGLINO⁷⁵⁾ have been known hitherto. Of which, *P. putator* was considered as the imperfect stage of *Diaporthe eres* NIT. by WEHMEYER⁹²⁾ and also by BUTIN⁴⁾. BUTIN⁴⁾, moreover, treated *P. populina* as a synonym of *P. putator*, but without any explanation. There is found quite a distinct resemblance between the imperfect stage of *Diaporthe eres* and *D. medusaea*, so the nomenclature of the present *Phomopsis* should be retained in the more critical studies in future.

19. *Phomopsis macrospora* T. KOBAYASHI et CHIBA sp. nov.—(Plate 7: A~D, Plate 12: Fig. 4)

Stromatibus ramicolis, immersis, dein erumpentibus, hemisphaericis, magnus, 3~5 mm diam.; pycnidiiis mono- v. biloculatis; loculis linearis dein lenticularibus; conidiophoris brevissimis, erectis, hyalinis, 7.5~9 μ longis; conidiis fusoideis v. ellipticis, continuis, hyalinis, guttatis 14.5~19×3~3.7 μ; stylosporidiis oblong-cylindricis v. sigmoidis, erectis v. hamatis, continuis, hyalinis, 13~17×1.5 μ.

Hab. On living or dead stems of *Populus deltoides*, V—13, 1959, Meguro, Tokyo, by T. KOBAYASHI (Typus) and others.

Hosts: On living or dead branches, scions and stems of *P. deltoides*, *P. charkowiensis* × *P. caudina*, *P. nigra*, *P. serotina* f. *erecta*, *P. robusta*, *P. "eckhof"*, *P. deltoides* × *P. caudina*, *P. maximowiczii*.

Notes: Lesions caused by this *Phomopsis* are darker and the pustules of fruiting bodies formed on the bark are larger than those of the preceding *Phomopsis*. The most apparent differences between these two are the size and shape of their A- and B-spores. A-spores of this *Phomopsis* are far larger than those known *Phomopsis* listed above, whereas B-spores of this are shorter and wider. Aspects on culture medium of both *Phomopsis* appear to be similar, but the color of spore-horns of this species are more reddish. There is not found any species of *Phomopsis* which in accordant with the present fungus, on Salicaceae or on

the other plants.

20. *Cytospora chrysosperma* (PERS.) FR.—(Plate 8: A~B, Plate 12: Fig.5)—S. M. II, p. 542; SACCARDI, Syll. Fung. 3: 260, 1884; CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 41: 248, 1959

Pycnidial stroma occurring on the bark lesions, and immersed at first, then erumpent, their hemisphaeric pustules on the smooth bark and large diamond-shaped or lenticel-like pustules on the rough bark; in a pycnidial stroma many irregular pycnidial cavities which frequently coalesce and congregate at the central pore being formed, lacking their walls, non conceptacle (blackened zone); conidiophores arising from border of the discolored areas (cavities), hyaline, simple or branched, $12.5\sim 18\mu$ in length, sometimes forming sterile long-filiform bodies among them; pycnosporos hyaline, allantoid, unicellular, $3\sim 4\times 1\mu$; coils of orange colored conidial masses oozing out from the central pores of stroma under moist conditions.

Hosts: On living and dead stems, twigs and trunks of *P. maximowiczii*, *P. "strathglas"* and *P. charkowiensis* $\times$ *P. caudina*.

Notes: This fungus causes a *Cytospora* canker. Since 1924 the presence of this fungus has been well known in Hokkaido district^{(48) (89)}. *Valsa sordida* Fr., the perfect stage of this fungus, has not been found.

21. *Cytospora nivea* (HOFFM.) SACC.—(Plate 8: C~D, Plate 12: Fig. 6)—Mich. II, p. 264; Syll. Fung. 3: 260, 1884; CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 41: 249, 1959

Pycnidial stroma appearing on the bark and immersed at first, then erumpent with white disk which is $1\sim 3mm$ in diameter, surrounded by blackened zone (conceptacle) which is a typical separating point between the genus *Valsa* and *Leucostoma*^{(49) (50)}; many pycnidial cavities also forming in a stroma and congregating at the central pore; pycnidial wall lacking; conidiophores simple, hyaline, short, $6\sim 9\mu$ in length; pycnosporos hyaline, allantoid, unicellular, $4.5\sim 8\times 1\sim 1.5\mu$; bowl like conidial masses usually pushing out from the central pore of the stroma under moist conditions.

Hosts: On living or dead stems and branches of *P. maximowiczii*, *P. "strathglas"* and *P. charkowiensis* $\times$ *P. caudina*.

Notes: This fungus causes a *Leucostoma* canker. The most remarkable characteristic of this fungus is the presence of the conceptacle by which the stroma surrounded and therefore it belongs to the subgenus *Leucocytospora* HÖHNEL. Among the hitherto known *Leucocytospora*, *L. nivea* is the sole species recorded on *Populus*. *C. nivea*, the imperfect stage of *Leucostoma nivea* Fr., is widely distributed in Europe and North America^{(49) (50) (86)}, but has not been found in Japan.

22. *Cytospora* sp.—(Plate 8: E~F, Plate 12: Fig. 7)

Pycnidial stroma occurring on the bark with white disk of $1\sim 2mm$ in diameter, formed single-chambered pycnidia which have distinct walls at their base; pycnidia single or aggregated in two to three; pycnidial walls black, membranaceous; central pore or necks opening ostioles at the surface of the disk through the stroma; height of the stroma which contain flask shaped pycnidia being $350\sim 415\mu$; conidiophores arranging inner side of the walls of pycnidia, hyaline, short, $10\sim 12.5\mu$ in length; pycnosporos allantoid, unicellular, hyaline, $5.5\sim 6.5\times 1\sim 1.5\mu$.

Hosts: On dead twigs of *P. sieboldii* $\times$ *P. canescens* and *P. maximowiczii* $\times$ *P. nigra*.

Notes: This fungus has a distinct feature distinguishable from the two above recorded

Cytospora. The preceding *Cytospora* have pycnidial cavities formed in the well-developed stroma but without pycnidial walls, whereas the fungus produces pycnidium type cavities with distinct walls but very poorly developed stroma. Besides the preceding two *Cytospora*, *C. germanica* SACC.⁶⁴⁾, *C. acharii* SACC.⁶⁴⁾, *C. flavo-virens* SACC.⁶⁴⁾, *C. ambiens* SACC.⁶⁴⁾, *C. harioti* BRIARD⁶⁹⁾ and *C. populina* SPEG.⁷²⁾ have been described on *Populus*. Among them *C. acharii*, *C. flavo-virens* and *C. populina* seem to be somewhat similar to the present fungus in the characteristics of stroma and pycnidial cavities.

23. *Dothiorella populnea* THÜM.—(Plate 13: Fig. 5)—SACCARDI, Syll. Fung. 3: 347, 1884

Stroma formed on the bark, discoid, black, 1~3 mm in diameter; pycnidia or pycnidial cavities in the stroma, botryose, globular to subglobular, 175~290×225~250 μ ; conidiophores simple or branched, hyaline, 10~15 μ in length; pycnosporos elliptic, unicellular, hyaline, 3.5~4×1.5~2 μ , somewhat greenish brown in mass.

Host: On dead twigs of *P. maximowiczii*,

Notes: On poplars eight species of the genus *Dothiorella* have already been known. Of them, *D. populea* SACC.⁶⁴⁾, *D. multicocca* ELL. et BARTH.⁷⁴⁾, *D. platensis* SPEG.⁷⁴⁾, *D. gregaria* SACC.⁶⁴⁾, *D. devorticata* ELL. et EV.⁶⁹⁾ and *D. canadensis* ELL. et EV.⁷²⁾ are distinctly different from the present fungus by their far larger pycnosporos. *D. populina* KARST.⁶⁹⁾ is similar to the writers' fungus but its spore size which was originally described as 5~6×2 μ is somewhat larger. The pycnosporos of *D. populnea* THÜM.⁶⁴⁾ which is quite accordant with our fungus, is 3.5×1 μ large. In Germany, BUTIN⁴⁾ observed *D. populnea* and *D. populina* on *Populus*, and reported their spore size as 3.5~4×0.5~1 μ and 4~4.5×2 μ , respectively. The writers identified the present *Dothiorella* as *D. populnea* after its original description.

24. *Sphaceloma populi* (SACC.) JENKINS—(Plate 9: A~B, Plate 13: Fig. 4)—Jour. Agr. Res. 44: 689~700, 1932; CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 39: 75~77, 1957

Acervuli densely produced on the spots, epiphyllous, hyaline, 55~120 μ in diameter; conidiophores minute, hyaline, simple, 4~5.5×1.5 μ ; conidia hyaline, unicellular, cylindric to elliptic, 4~5.5×1~1.5 μ .

Hosts: On living leaves of *P. serotina*, *P. bachelierii*, *P. gelrica*, *P. euramericana* I—214, *P. marilandica*, *P. deltoides*, *P. canadensis*.

Notes: This fungus causes spot anthracnose. The spots are epiphyllous, white, minute, scab-like, 1~3 mm diameter and produce small sticky conidial masses which are orange or pale brownish orange in color. All specimens listed above are on *Populus* belonging to the section *Aigeiros*. Besides the typical white spots of *Sphaceloma populi*, dark brown spots on which acervuli of *Sphaceloma* are produced, are frequently found on several poplars. No difference in morphological and cultural characters between them. Hence, the writers did not separate them into distinguished species at present. The white type spot lesions are found throughout in the growing season of poplars, especially from June to September, whereas the dark brown spot type are found from late September to October.

25. *Myxosporium rimosum* FAUTR.—(Plate 1: D~E, Plate 13: Fig. 1)—Rev. Myc. 1891, p. 32; SACCARDI, Syll. Fung. 10: 465, 1892

Acervuli produced on the bark of the current shoots, hyaline in early stage, then thick and brownish in old or overwintered stage, without setae; conidiophores hyaline, simple, 6~12×3~4 μ ; conidia elliptic to cylindric, rounded at the ends, unicellular, hyaline, 10~18×3.5~5.5 μ , commonly 10~15×3.5~4.5 μ , pinkish in mass.

Hosts: On living shoots of *P. alba* × *P. sieboldii*, *P. deltoides* var. *monilifera*, causing a shoot blight.

Notes: This is the imperfect stage of *Glomerella cingulata* (STONEM.) SPAULD. et SCHR. (see page 22). On poplars, six species of *Myxosporium* which inhabit on bark and eight species of *Gloeosporium* which inhabit on leaves, have been hitherto known. These *Myxosporium* are as follows; *M. incarnatum* (DESM.) BON.⁷⁰⁾, *M. populinum* SACC.⁶⁴⁾, *M. ellisii* SACC.⁶⁴⁾, *M. tremulae* SACC. et ROUM.⁶⁴⁾, *M. populi-tremulae* (LAMB.) SACC.⁶⁴⁾ and *M. rimosum* FAUTR.⁶⁹⁾. Eight species of *Gloeosporium* are as follows; *G. tremulae* (LIB.) PASS.⁶⁴⁾, *G. sibiricum* THÜM.⁶⁴⁾, *G. populi-albae* DESM.⁶⁴⁾, *G. cytosporium* PASS.⁶⁹⁾, *G. dubium* BAUML.⁶⁹⁾, *G. naevioides* ROMELL et SACC.⁷⁰⁾, *G. populinum* PECK⁷⁰⁾ and *G. tremuloides* ELL. et EV.⁷⁰⁾ Among them *M. rimosum*, *G. sibiricum* and *G. populi-albae* are very similar to the present fungus. These three fungi quite resemble each other in their morphological characteristics. As the writers have not yet proved the parasitism of this fungus to the leaves, they apply the name *M. rimosum* to the present fungus. Recently, J. A. von ARX¹⁾ published a monographical study on the genus *Colletotrichum*. He placed the genus *Gloeosporium* into the genus *Colletotrichum* as the synonym but did not refer to the genus *Myxosporium*. According to his key, the present fungus corresponds to *C. gloeosporioides* PENZ. which was considered as a representative species of the imperfect stage of *Glomerella cingulata*. Though he treated the large number of the species of *Colletotrichum*, *Gloeosporium*, *Myxosporium* and others which have been described hitherto from various host plants, no species described from *Populus* is found in his list of synonyms of *G. gloeosporioides*.

26. *Colletotrichum* sp.—(Plate 9: C~D, Plate 13: Fig. 2)

Acervuli scattered on the spots as black minute points, epiphyllous, somewhat flattened, 72~120 μ in diameter, with dark setae; setae long, erect, brown to dark brown, 45~85 × 4.5~6 μ , arbitrarily protruded intra acervuli; conidiophores simple, hyaline; conidia oblong-elliptic to cylindric, sometimes subacuted at the ends, unicellular, hyaline, 17~24 × 4.5~5.5 μ .

Hosts: On living leaves of *P. sieboldii* × *P. deltoides*, *P. koreana* × *P. trichocarpa*, *P. nigra*, *P. sieboldii*, *P. tremuloides*, *P. tomentosa*, *P. tremula* var. *davidiana*, *P. tremula* var. *davidiana* × *P. deltoides*, *P. maximowiczii*.

Notes: This fungus differs from the above listed species by the constant presence of setae and size of conidia as well as cultural characters. No species of the genus *Colletotrichum* described hitherto from Salicaceae are found. Among *Gloeosporium* species hitherto known from poplars, an identical one with the present fungus is not found. According to ARX's key¹⁾ for *Colletotrichum*, the morphological characteristics of the present fungus corresponds to those of *C. phyllachoroides* (ELL. et EV.) ARX which is recorded only from *Artemisia*. The writers, however, have not any evidence about its parasitism on *Artemisia* and related plants.

27. *Marssonina brunnea* (ELL. et EV.) MAGN.—(Plate 5: D~E, Plate 13: Fig. 3)—Hedw. 45: 90, 1906; CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 41: 144~146, 1959

Syn.: *Marssonina populicola* MIURA, Flora Manchuria & E. Mongolia, Cryptog. & Fungi, p. 480~481, 1928

Acervuli producing at the center of the spots, amphigenous, epiphyllous or hypophyllous, hyaline, variable in size; conidiophores short, cylindric, broader at their base; conidia obpyriform, somewhat curved, one end rounded and the other end bluntly pointed, hyaline, unequally 2-celled, constricted or not constricted at septa, 14~18 × 5~7 μ , white in mass.

Hosts: On living leaves and shoots of *Populus* of section *Aigeiros*—*P. nigra*, *P. deltoides*, *P. deltoides* var. *monilifera*, *P. japono-gigas*, *P. serotina*, *P. marilandica*, *P. deltoides* var. *missouriensis*, *P. wislizenii*, *P. serotina* f. *erecta*, *P. gelrica*, *P. robusta*, *P. bachelierii*, *P. grandis*, *P. "strathglas"*, *P. euramericana* I—154, I—214, I—455, I—476, I—C. B. D., I—45/51, FS. 350, LD—131, LK—67, *P. "jacomettis"*, *P. "eckhof"*, *P. "eucalyptus"*, *P. "leipzig"*, *P. regenerata*, *P. deltoides* × *P. caudina*, *P. nigra* × *P. deltoides* var. *monilifera*, *P. angulata* × *P. incrassata*; section *Aigeiros* × *Tacamahaca*—*P. nigra* × *P. laurifolia*, *P. nigra* × *P. maximowiczii*, *P. nigra* × *P. trichocarpa*, *P. deltoides* × *P. trichocarpa*, *P. berolinensis*; section *Tacamahaca*—*P. maximowiczii*, *P. simonii*; section *Leucoides*—*P. lasiocarpa*.

Notes: This fungus causes serious defoliation (*Marssonina* leaf blight) and shoot blight. As listed above, this fungus has not been recognized from the section *Leuce*. Spots caused by the fungus are usually amphigenous but on the *Populus* belonging to the section *Tacamahaca*, hypophyllous spots are more dominant. These spots are minute, brown to dark brown, 1~4mm in diameter. White sticky masses of conidia are commonly recognized at the center of them. On the shoots and petioles, small black dots are produced at first and then they enlarge somewhat longitudinally. These spots which are 3~5 × 2~3mm in size become scab-like and frequently form slits at their center. White sticky masses are also produced on them.

On poplars, ten species of *Marssonina** have been hitherto known. They are as follows; *M. populi* (LIB.) MAGN.^(4) 52) 64), *M. piriformis* (REISS.) MAGN.^(52) 64), *M. castagnei* (DESM. et MONT.) MAGN.^(52) 64), *M. castagnei* var. *moniliferae* (OUD.) MAGN.^(52) 72), *M. stenospora* (ELL. et KELL.) MAGN.^(52) 69), *M. rhabdospora* (ELL. et EV.) MAGN.^(52) 70), *M. brunnea* (ELL. et EV.) MAGN.^(52) 69), *M. populicola* MIURA⁽⁵⁴⁾ and *Marsonia curvata* BUB. et KAB.⁽⁷⁴⁾ Among them *M. brunnea* and *M. populicola* are quite similar with the present fungus. The other *Marssonina* apparently differ from the writers' fungus by their conidial size. The size of conidia of *M. populicola* which was described as 16~21 × 6~7μ are mostly overlapped by those of our fungus, and its description quite agrees with our fungus. According to MIURA⁽⁵⁴⁾, the author of *M. populicola*, he separated it from the other *Marssonina* based on the differences that the spots are hypophyllous and conidia are not constricted, but he did not compare his species with *M. brunnea*. In the original description of *M. brunnea*, there is no mention made about the constriction of the conidia, but the writers' fungus is quite accordant with it in general. The conidia of the present fungus are commonly not constricted. Whether either epiphyllous or hypophyllous spots are more dominant depends mainly on the kinds of poplars. Hence, the writers identified the present fungus as *M. brunnea* and treated *M. populicola* as its synonym.

28. *Pestalotia populi-nigrae* SAWADA et K. ITO—(Plate 9: E~F, Plate 14: Fig. 1)—Bull. Gov. For. Exp. Sta. 45: 140, 1950; SAWADA, Ibid. 105: 78, 1958; CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 41: 146~147, 1959

Hosts: On living shoots and leaves of *P. tremula* var. *davidiana*, *P. nigra*, *P. nigra* × *P. maximowiczii*, *P. maximowiczii* × *P. trichocarpa*, *P. alba* × *P. sieboldii*, *P. "strathglas"*, *P. simonii*.

Notes: Shoot blight caused by this fungus was reported by K. ITO⁽³²⁾ in detail. In our examinations it is confirmed that morphological characteristics of the *Pestalotia* produced ring spot quite agree with those of *P. populi-nigrae* described by K. ITO as a shoot blight

* SACCARDO^(64) 72) had introduced this genus name as *Marsonia* FIS. in his Sylloge Fungorum. However, the writers accept *Marssonina* after MAGNUS⁽⁵²⁾ and S. ITO's⁽³²⁾ opinion.

fungus. Damage by the *Pestalotia* ring spot are less serious than those of the shoot blight. In Europe there has been known *P. truncata* LEV.⁽⁴⁾⁽⁸⁴⁾, but GAMBOGI and VERONA⁽¹⁵⁾ recently confirmed the presence of *P. populi-nigrae* in Italy.

29. *Septotis populiperda* (MOESZ et SMARODS) WAT. et CASH—(Plate 4: F~G, Plate 14: Fig. 4)—Mycol. 42: 377, 1950; CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 41: 142~144, 1959

Syn.: *Septogloeum populiperdum* JOHANNES, Phytop. Zeits. 17: 407, 1951

Sporodochia amphigenous, concentric, 0.1~0.2mm in diameter, their lower part consisting of net-like structures of mycelia and upper part consisting of pseudoparenchymatous or acervuli-like structures, sometimes these net-like structures lacking; conidiophores hyaline, 21~30×3.5~4μ in size, with two to several septa, simple, rarely branched; conidia shell shaped at first, finally cylindric, 1~3-septated, constricted and segregated at medium septum, hyaline, 14~18×5.5~6μ in two to three-celled conidia, 20~35×5.5~6.5μ in three to four-celled conidia; sclerotia on the fallen diseased leaves, black, flat, minute, irregular, 2~5mm in size.

Hosts: On living leaves of *Populus* of section *Leuce*—*P. tremula* var. *daurica* × *P. canescens*, *P. tremula* × *P. tremuloides*, *P. alba* × *P. sieboldii*, *P. alba* × *P. tremula* var. *daurica*, *P. sieboldii*, *P. tremula* var. *daurica* × *P. sieboldii*, *P. sieboldii* × *P. canescens*, (*P. alba* × *P. sieboldii*) × *P. canescens*; section *Aigeiros*—*P. deltoides*, *P. deltoides* var. *missouriensis*, *P. japonica*, *P. canadensis*, *P. gelrica*, *P. carolina*, *P. serotina*, *P. serotina* f. *erecta*, *P. bachelieri*, *P. regenerata*, *P. robusta*, *P. marilandica*, *P. grandis*, *P. euramericana* I—154, I—214, I—455, I—45/51, I—476, I—172, I—C. B. D., FS—350, LK—67, LK—79, LW—42, *P. "jacomettis"*, *P. "wettstein"*, *P. "leipzig"*, *P. "eucalyptus"*, *P. deltoides* × *P. caudata*, *P. charkowiensis* × *P. incrassata*, *P. "strathgiles"*; section *Aigeiros* × *Tacamahaca*—*P. charkowiensis* × *P. trichocarpa*, *P. nigra* × *P. maximowiczii*, *P. deltoides* × *P. laurifolia*, *P. nigra* × *P. trichocarpa*, *P. berlinensis*, *P. "rochester"*, *P. deltoides* × *P. trichocarpa*, *P. maximowiczii* × *P. berlinensis*, *P. maximowiczii* × *P. nigra platensis*; section *Tacamahaca*—*P. maximowiczii*, *P. simonii*, *P. koreana*, *P. maximowiczii* × *P. trichocarpa*, *P. koreana* × *P. trichocarpa*; section *Leucoides*—*P. lasiocarpa*.

Notes: This fungus is the imperfect stage of *Septotinia populiperda* WAT. et CASH (see page 25) and causes a *Septotis* leaf blotch. Blotches seem to start at the leaf margin or from the scar following injury by insects and rapidly enlarge with concentric dark zones, which are indistinct on the under surface of the leaf. On the blotches numerous white powdery sporodochia are produced. Usually white fan-like mycelia are recognized at the marginal area of the blotches. Among poplars, several hybrid black poplars (section *Aigeiros*) seem to be more susceptible to this fungus. According to WATERMAN and CASH⁽⁹¹⁾, this fungus was first described by MOESZ and SMARODS in Latvia as *Septogloeum populiperdum*. Then they transferred it to the genus *Septotis* after BUCHWALD. Thereafter, JOHANNES⁽⁴⁷⁾ described a species of *Septogloeum* which occurs on the leaf spot of poplars, as a new species, i. e. *S. populiperdum* JOHANNES. As noticed by the several workers⁽¹³⁾⁽¹⁴⁾⁽⁸⁸⁾⁽⁸⁴⁾⁽⁹⁴⁾, no distinguishable differences are found in morphological characters between *Septotis populiperda* and *Septogloeum populiperdum* JOHANNES. However, the symptoms of *S. populiperdum* described by JOHANNES distinctly differ from those of *Septotis populiperda* observed by others. Because of this difference, SCHMIDLE⁽⁸³⁾ and Van den ENDE⁽¹³⁾ hesitated to treat *S. populiperdum* JOHANNES as a synonym of *Septotis populiperda*. After careful studies about materials obtained at type locality of JOHANNES' species, SCHMIDLE⁽⁸³⁾⁽⁸⁴⁾ came to the conclusion that JOHANNES had described

the symptoms of his new disease based on the material with complex symptoms. He collected materials which were caused by neither *Septogloeum* nor *Septotis* in spite of showing the same symptoms described by JOHANNES. More recently, BUTIN⁴⁾ came to the same conclusion and he treated *S. populiperdum* JOHANNES as a synonym of *Septotis populiperda*. The writers also accept BUTIN's opinion.

30. *Epicoccum nigrum* LINK sens. SCHOL-SCHWARZ—(Plate 5: G, Plate 13: Fig. 6)—Mag. Ges. Naturf. Fr. Berl. 7: 32, 1816; SCHOL-SCHWARZ, Trans. Brit. Myc. Soc. 42: 170~171, 1959

Syn.: *Epicoccum eucalypti* HENN., Hedw. 42: 311, 1902; SACCARDO, Syll. Fung. 18: 679, 1906

Sporodochia on the spots amphigenous, gregarious or sparsis, brown to olivish brown, hemicircular, conidiophores short, pale brown, $5.5\sim7\times2\sim3.5\mu$; conidia globular to subglobular, brown to dark brown, irregularly septated, densely warted, $15.5\sim24\times14\sim21\mu$, stalked; stalks short, hyaline, $5.5\sim7\times2\sim3.5\mu$.

Hosts: On living leaves and dead shoots of *P. maximowiczii* × *P. nigra platierens*, *P. euramericana* I—154, I—262, I—476, *P. bachelierii*, *P. nigra* × *P. laurifolia*, *P. koreana* × *P. trichocarpa*.

Notes: Spots caused by this fungus are grayish brown to brown, irregular or indistinct. Until 1959 when SCHOL-SCHWARZ³⁵⁾ studied on the genus *Epicoccum* were published, four species of *Epicoccum* had been known on poplars, i. e. *E. purpurascens* EHRENB.^{4) 65)}, *E. diversisporum* PREUSS^{4) 65)}, *E. neglectum* DESM.^{4) 65)} and *E. majus* ROSTR.⁷⁴⁾ Of them *E. majus* has very large conidia. *E. purpurascens* and *E. neglectum* have net-like arrangement of warts on conidia while the present fungus has dense granular warts on conidia. In the original description of *E. diversisporum*, the size of conidia is lacking. The present fungus is quite accordant with *E. eucalypti* HENN.⁷⁴⁾ which was described on *Eucalyptus*, in its size of conidia and structure of warts on conidia. These five species, however, are now rearranged into one species by SCHOL-SCHWARZ³⁵⁾. She treated *E. nigrum* LINK as a large species containing many synonyms based on cultural and morphological comparison, but she did not notice the difference of the arrangement of warts on conidia as taxonomic value. Though there remain some doubt concerning her treatment, the writers concur with her opinion at present.

31. *Cercospora populina* ELL. et EV.—(Plate 5: F)—Jour. Myc. 3: 20, 1887; K. ITÔ & KOBAYASHI, Bull. Gov. For. Exp. Sta. 59: 1~28, 1953, CHIBA & KOBAYASHI, Jour. Jap. For. Soc. 39: 78, 1957

Hosts: On living leaves of *P. alba*, *P. tremula* var. *davidiana*, *P. euramericana* F. S. 350, *P. sieboldii*, *P. alba* × *P. sieboldii*, *P. sieboldii* × *P. canescens*, *P. nigra* × *P. trichocarpa*, *P. maximowiczii* × *P. berlinensis*, *P. maximowiczii*, *P. koreana* × *P. trichocarpa*, *P. simonii*.

Notes: This fungus is the imperfect stage of *Mycosphaerella togashiana* K. ITÔ et KOB.³⁶⁾ and is commonly found on poplars belonging to the section *Leuce* and *Tacamahaca*. Damage by this fungus on young cuttings is not so severe. Early defoliations caused by the present fungus are commonly observed on adult trees in Tokyo.

32. *Cladosporium martianoffianum* THÜM.—(Plate 14: Fig. 2)—Pilzfl. Sibir. n. 574 et 653; SACCARDO, Syll. Fung. 4: 357~358, 1886

Conidial layer on the surface of the spots, appearing felty or velvety; conidiophores large, brown, pluri-septated, smooth, erect or somewhat zig-zag shaped, $185\sim270\times4.5\sim6\mu$, fascicled at their base; conidia elliptic to fusoid, usually rounded at each end, sometimes acute at one end, 1- rarely 2-septated, brown to olivish brown, $10\sim18\times5\sim7\mu$, mostly $14\sim17\times5.5\mu$.

Host: On living leaves of *P. euramericana* I—455

Notes: In Sylloge Fungorum six species of *Cladosporium* have been hitherto described on poplars; i. e. *C. ramulorum* DESM.⁶⁵⁾, *C. asteroma* FUCK.⁶⁵⁾, *C. brunneum* CDA.⁶⁵⁾, *C. martianoffianum* THÜM.⁶⁵⁾, *C. epiphyllum* (PERS.) MART.⁶⁵⁾ and *C. lethiferum* PECK⁶⁹⁾. Thereafter, BISBY²⁾ and DEARNES¹²⁾ listed *C. subsessile* ELL. et BARTH. on *P. tremuloides*. Recently, BUTIN⁴⁾ noted *C. subsessile*, *C. herbarum* (PERS.) LINK, *C. fasciculatum* CDA. and *C. epiphyllum* on poplars. Among them the writers' fungus agrees with *C. martianoffianum*.

33. *Alternaria tenuis* NEES—(Plate 14: Fig. 3)—Syst. p. 72; SACCARDO, Syll. Fung. 4: 545~546, 1886.

Conidial bodies on the surface of the spots showing sooty appearance; conidiophores erect, brown to dark brown, somewhat fascicled at their base, many-septated, $45\sim95\times3.5\sim4.5\mu$; conidia piriform or flask-shaped, chained several, muriform (transversely and vertically septated), greenish brown to olivish brown, smooth, $29\sim58\times11.5\sim17.5\mu$, mostly $40\sim47\times14\sim16\mu$.

Hosts: On living leaves of *P. maximowiczii* × *P. nigra platierens*, *P. deltoides* × *P. trichocarpa*, *P. bachelierii*, *P. nigra* × *P. deltoides* var. *monilifera*, *P. "strathglas"*, *P. maximowiczii*, *P. simonii*, *P. euramericana* I—455, *P. marilandica*, *P. gelrica*, *P. grandis*.

Notes: Spots caused by this fungus are irregular, grayish brown, more or less epiphyllous and may be started from wounds caused by insects. No species of *Alternaria* have been reported on *Populus* and other Salicaceae. In 1918, BRECKLE³⁾ listed *A. tenuis* NEES on *P. deltoides* but no mycological notes have been made. *A. tenuis*, the type species of this genus, was recorded on many hosts, both harbacious and woody plants. Morphological characteristics of the writers' fungus are almost accordant with the hitherto given descriptions of *A. tenuis*.

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Explanation of plates

Plate 1

Taphrina populina FR.

- A: Upper leaf surface of *Populus canadensis* showing convex spots $\times 1.2$
B: Under leaf surface of *Populus canadensis* showing concave spots $\times 1.2$
C: Mature asci containing blastospores $\times 180$

Myxosporium rimosum FAUTR.

- D: Lesions on twigs of *Populus deltoides* var. *monilifera* showing conidial masses $\times 1.2$
E: Part of acervulus $\times 180$

Glomerella cingulata (STONEM.) SPAULD. et SCHR.

- F: Lesions on shoots of *Populus alba* $\times$ *P. sieboldii* showing minute black dots of perithecia. $\times 1.2$
G: Perithecia without setae $\times 150$
H: Perithecium with setae $\times 310$

Plate 2

Guignardia sp. and *Macrophoma* sp.

- A: Pustules of perithecia (*Guignardia*) and pycnidia (*Macrophoma*) on stems of *Populus japoni-gigas* $\times 2$
B: Perithecium of *Guignardia* sp. $\times 90$
C: Perithecium of *Guignardia* sp. (left) and pycnidium of *Macrophoma* sp. (right) $\times 90$
D: Pycnidium of *Macrophoma* sp. $\times 150$

Sphaerulina populi KOBAYASHI et CHIBA

- E: Lesions on leaf of *Populus alba* $\times$ *P. sieboldii* $\times 1$
F: Perithecium (stained by I—IK solution) $\times 180$

Plate 3

Diaporthe medusaea NIT.

- A: Elongated necks of perithecia on *Populus deltoides* (in nature) $\times 1.2$
B: Elongated necks of perithecia on *Populus japoni-gigas* (in moist chamber) $\times 1.2$
C: Perithecia $\times 90$

Phomopsis sp.

- D: Pustules on stems of *Populus japoni-gigas* $\times 1$
E: Pycnidial stroma with mature cavity $\times 150$

Nectria mantuana Sacc.

- F: Perithecial stroma on dead scion of *Populus maximowiczii* $\times 1.5$
G: Part of perithecial stroma $\times 150$

Plate 4

Septotinia populiperda WATERM. et CASH

- A: Apothecia developed from sclerotia on fallen infected leaves $\times 1$
B: Apothecia and sclerotia $\times 1.2$
C: Apothecia developed from sclerotia on culture of *Septotia populiperda* $\times 1.5$
D: Apothecia and sclerotia from conidial isolate $\times 1.5$

E: Apothecia developed on potato agar in test-tube $\times 1$

Septotis populiperda (MOESZ et SMARODS) WATERM. et CASH

F: Affected leaf of *Populus gelrica* showing typical zonate spot $\times 1$

G: Sporodochia (acervulus-like) $\times 180$

Plate 5

Melampsora larici-populina KLEB.

A: Affected leaf of *Populus charkowiensis* $\times$ *P. caudina* with uredosorus $\times 1$

B: Affected leaf of *Populus angulata* $\times$ *P. incrassata* with teleutosorus $\times 1.2$

C: Teleutosorus $\times 180$

Marssonina brunnea (ELL. et EV.) MAGN.

D: Lesions on shoots of *Populus japono-gigas* showing scab-like symptom $\times 1$

E: Lesions on leaves of *Populus japono-gigas* $\times 1$

Cercospora populina ELL. et EV.?

F: Lesions on leaf of *Populus nigra* $\times$ *P. trichocarpa* $\times 1$

Epicoccum nigrum LINK

G: Lesions on leaf having black sporodochia $\times 3$

Plate 6

Phyllosticta populorum Sacc. et Roum.

A: Lesions on leaf of *Populus alba* $\times$ *P. sieboldii* showing typical ring spots $\times 1.2$

B: Pycnidium $\times 180$

Phyllosticta alcides Sacc.

C: Lesions on leaf of *Populus serotina* $\times 1$

Phyllosticta longisporum KOBAYASHI et CHIBA

D: Pycnidium $\times 180$

Leptosphaeria decaisneana (CRIE) Sacc.

E: Perithecium $\times 150$

Ascochyta vitellinae Pass.

F: Pycnidium $\times 310$

Plate 7

Phomopsis macrospora KOBAYASHI et CHIBA

A: Pustules on stem of *Populus deltoides* $\times 1.2$

B: Spore-horns developed in moist chamber $\times 1.7$

C: Pycnidial stroma with mature cavity $\times 90$

D: A- and B-spores $\times 400$

Diplodina populi ELL. et EV.

E: Pustules on shoots of *Populus euramericana* I—455 $\times 1.2$

F: Pycnidium $\times 310$

Plate 8

Cytospora chrysosperma (PERS.) Fr.

A: Pustules and spore-horns on bark of *Populus maximowiczii* $\times 1.2$

B: Stroma having pycnidial cavities $\times 90$

Cytospora nivea (HOFFM.) Sacc.

C: White disks of stroma on bark of *Populus maximowiczii* $\times 1$

D: Stroma having pycnidial cavities and conceptacle $\times 50$

Cytospora sp.

E: Pustules on twigs of *Populus sieboldii* × *P. canescens* showing white disks ×1.2

F: Pycnidial stroma ×150

Plate 9

Sphaceloma populi (SACC.) JENKINS

A: White spot type lesions on leaf of *Populus* sp. ×1.2

B: Black spot type lesions on leaf of *Populus* sp. ×1.2

Colletotrichum sp.

C: Lesions on leaf of *Populus sieboldii* × *P. davidiana* ×1

D: Acervuli having setae ×180

Pestalotia populi-nigrae SAWADA et ITÔ

E: Lesions on leaf of *Populus simonii* showing typical ring spots ×1

F: Acervulus ×90

Plate 10

Fig. 1: *Taphrina populina* FR.

a: Asci and blastospores b: Part of ascus c: Blastospores

Fig. 2: *Glomerella cingulata* (STONEM.) SPAULD. et SCHR.

a: Part of perithecial wall with seta b: Asci and ascospores c: Ascospores
d: Germinating ascospores

Fig. 3: *Guignardia* sp.

a: Ascus and ascospores b: Ascospores c: Germinating ascospores

Fig. 4: *Leptosphaeria decaisneana* (CRIE) SACC.

a: Asci and ascospores b: Ascospores

Fig. 5: *Nectria mantuana* SACC.

a: Asci and ascospores b: Ascospores

Plate 11

Fig. 1: *Sphaerulina populi* KOBAYASHI et CHIBA

a: Asci and ascospores b: Ascospores c: Germinating ascospores

Fig. 2: *Diaporthe medusaea* NIT.

a: Asci and ascospores b: Ascospores c: Germinating ascospores

Fig. 3: *Septotinia populiperda* WATERM. et CASH

a: Asci, ascospores and paraphysis b: Part of ascus and paraphyses c: Ascospores
d: Germinating ascospores

Fig. 4: *Phyllosticta longisporum* KOBAYASHI et CHIBA

a: Part of pycnidium b: Pycnosporos

Fig. 5: *Phyllosticta alcides* SACC.

a: Pycnosporos b: Germinating pycnosporos

Fig. 6: *Phyllosticta populorum* SACC. et ROUM.

a: Pycnosporos b: Germinating pycnosporos

Plate 12

Fig. 1: *Macrophoma* sp.

a: Part of pycnidium b: Pycnosporos c: Germinating pycnosporos

Fig. 2: *Ascochyta vitellinae* PASS.

a: Part of pycnidium b: Pycnosporos

Fig. 3: *Phomopsis* sp.

a: Part of pycnidial cavity b: A-spores c: Germinating A-spores d: B-spores

Fig. 4: *Phomopsis macrospora* KOBAYASHI et CHIBA

a: A-spores b: B-spores

Fig. 5: *Cytospora chrysosperma* (PERS.) FR.

a: Part of pycnidial cavity b: Pycnosporos c: Germinating pycnosporos

Fig. 6: *Cytospora nivea* (HOFFM.) SACC.

a: Part of pycnidial cavity b: Pycnosporos c: Germinating pycnosporos

Fig. 7: *Cytospora* sp.

a: Part of pycnidial cavity b: Pycnosporos c: Germinating pycnosporos

Plate 13

Fig. 1: *Myxosporium rimosum* FAUTR.

a: Part of acervulus b: Conidia

Fig. 2: *Colletotrichum* sp.

a: Acervulus with setae b: Conidia c: Germinating conidia

Fig. 3: *Marssonina brunnea* (ELL. et EV.) MAGN.

a: Part of acervulus b: Conidia c: Germinating conidia

Fig. 4: *Sphaceloma populi* (SACC.) JENKINS

a: Part of acervulus b: Conidia

Fig. 5: *Dothiorella populnea* THÜM.

a: Part of pycnidia b: Pycnosporos

Fig. 6: *Epicoccum nigrum* LINK

a: Part of sporodochium b: Conidia

Plate 14

Fig. 1: *Pestalotia populi-nigrae* SAWADA et ITÔ

a: Part of acervulus b: Conidia c: Germinating conidia

Fig. 2: *Cladosporium martianoffianum* THÜM.

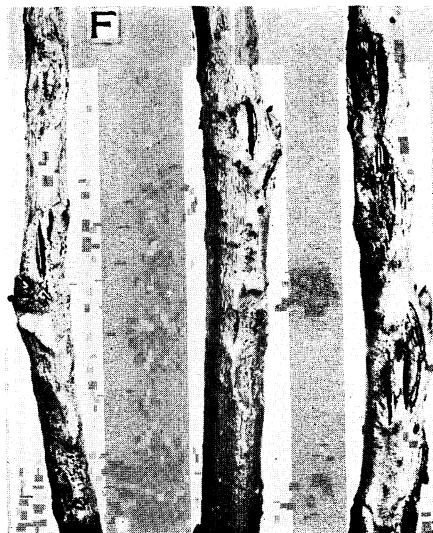
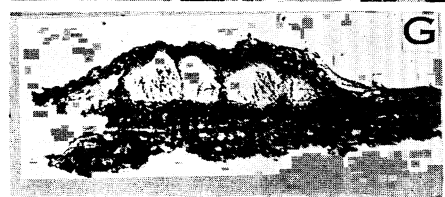
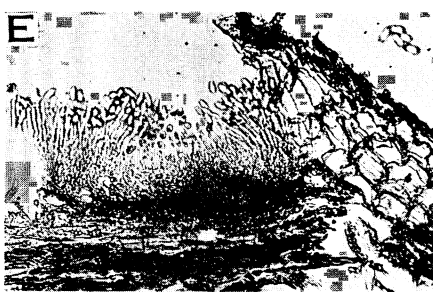
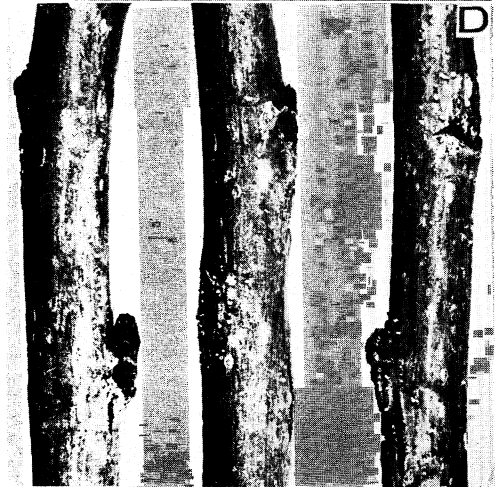
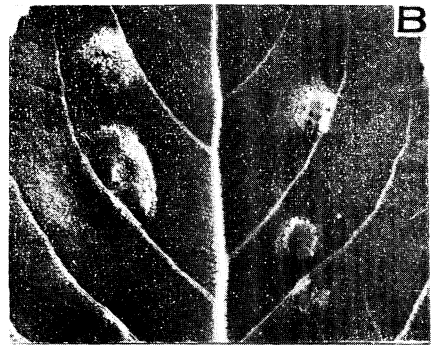
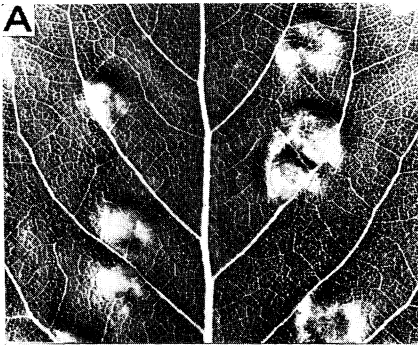
a: Conidiophores b: Conidia

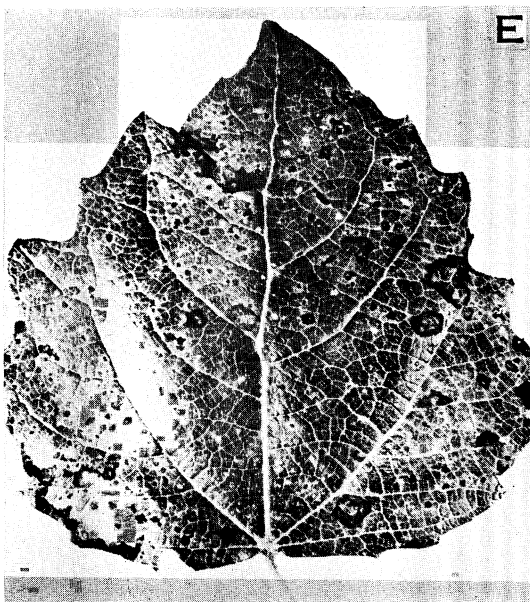
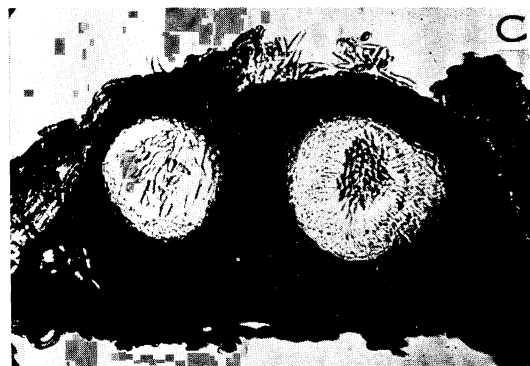
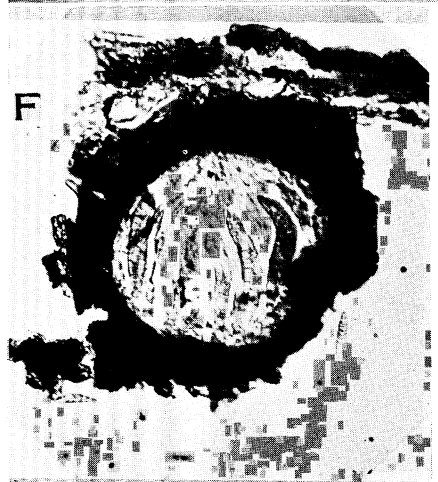
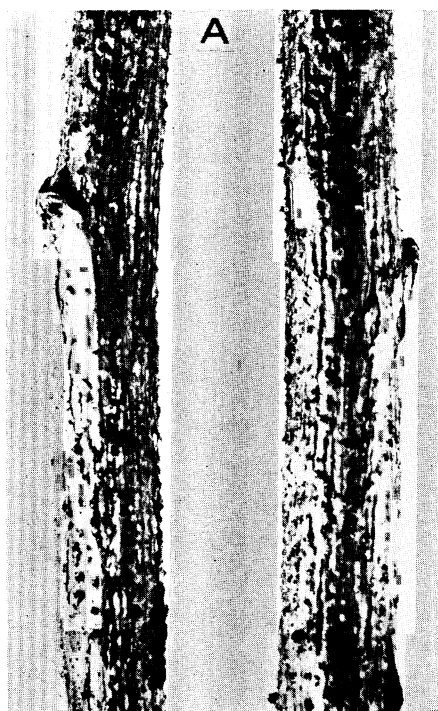
Fig. 3: *Alternaria tenuis* NEES

a: Conidiophores and conidium b: Conidia

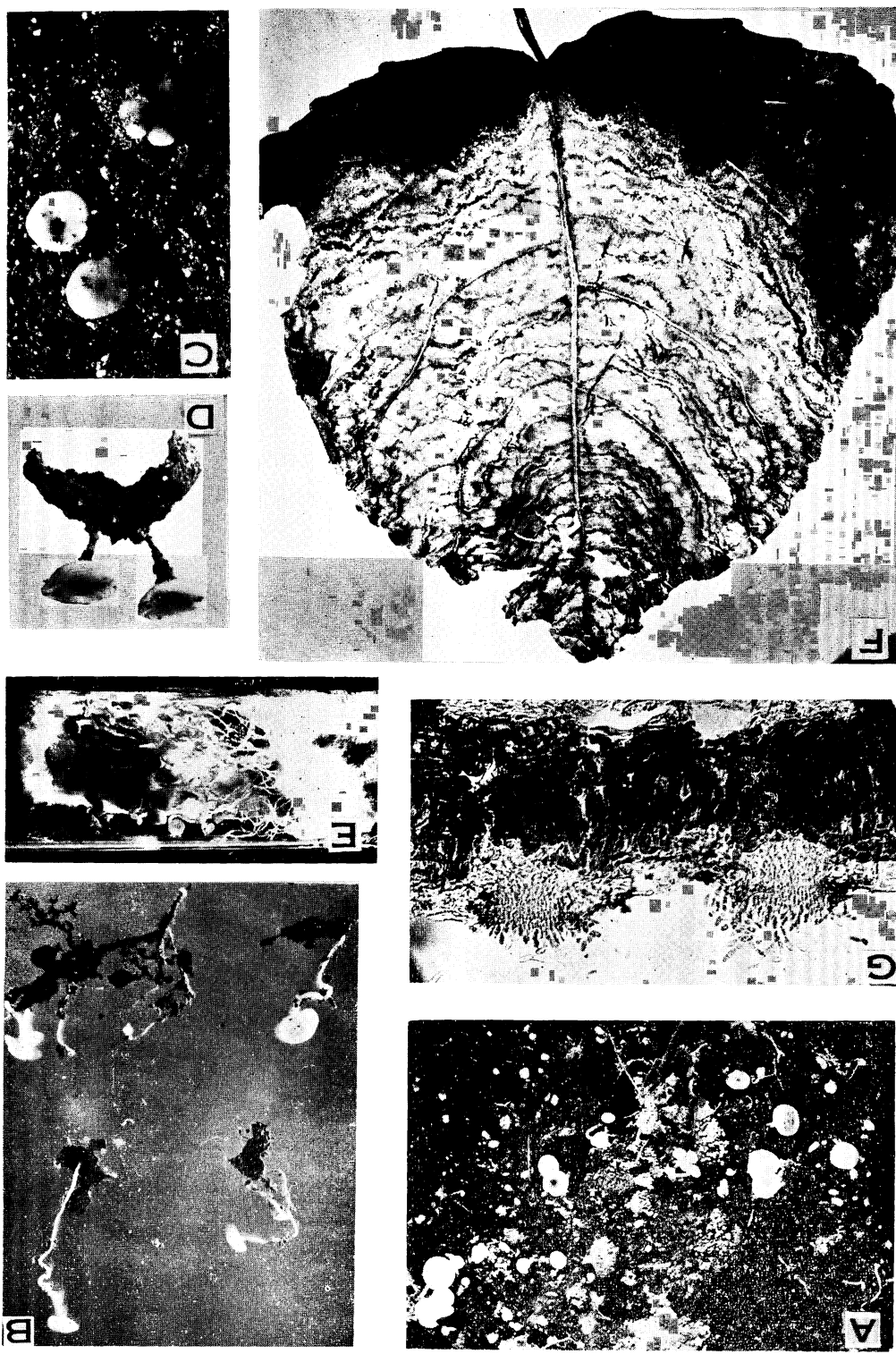
Fig. 4: *Septotis populiperda* (MOESZ et SMARODS) WATERM. et CASH

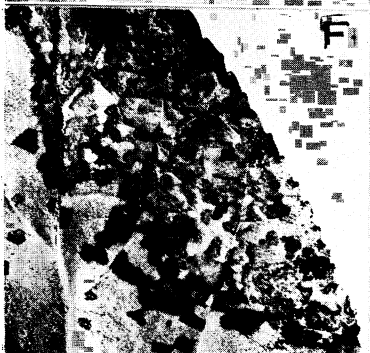
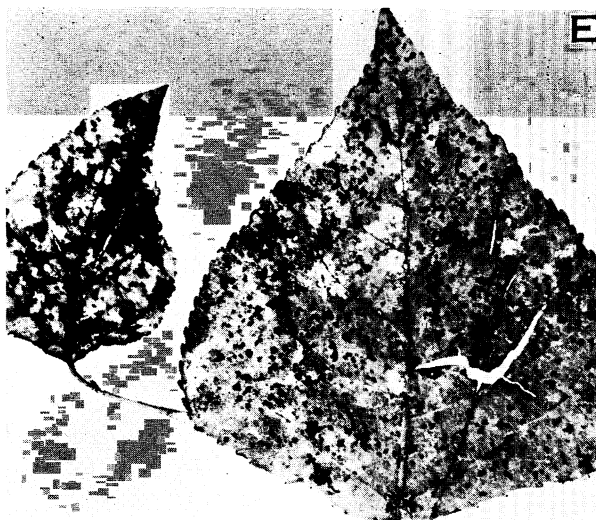
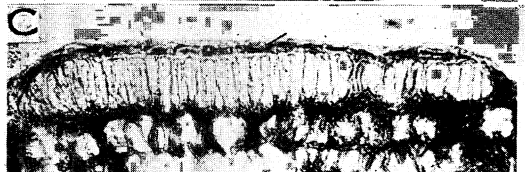
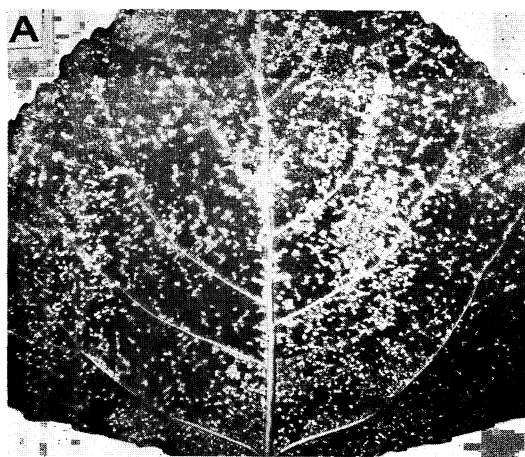
a: Part of sporodochium b: Germinating conidia

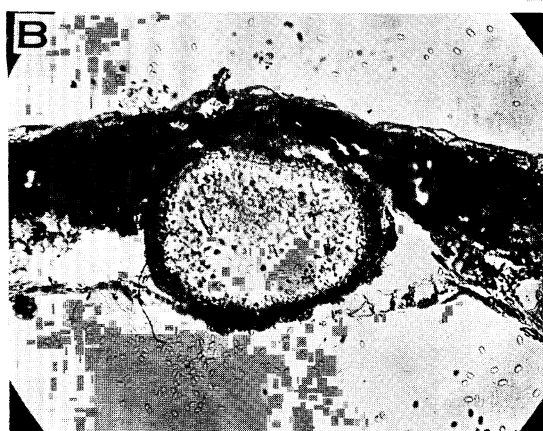
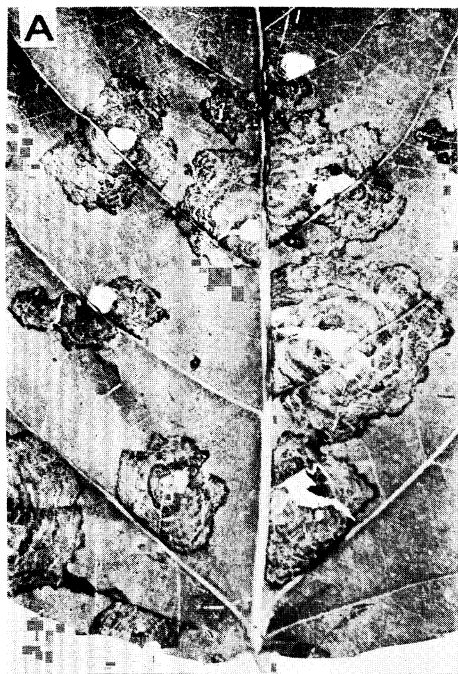


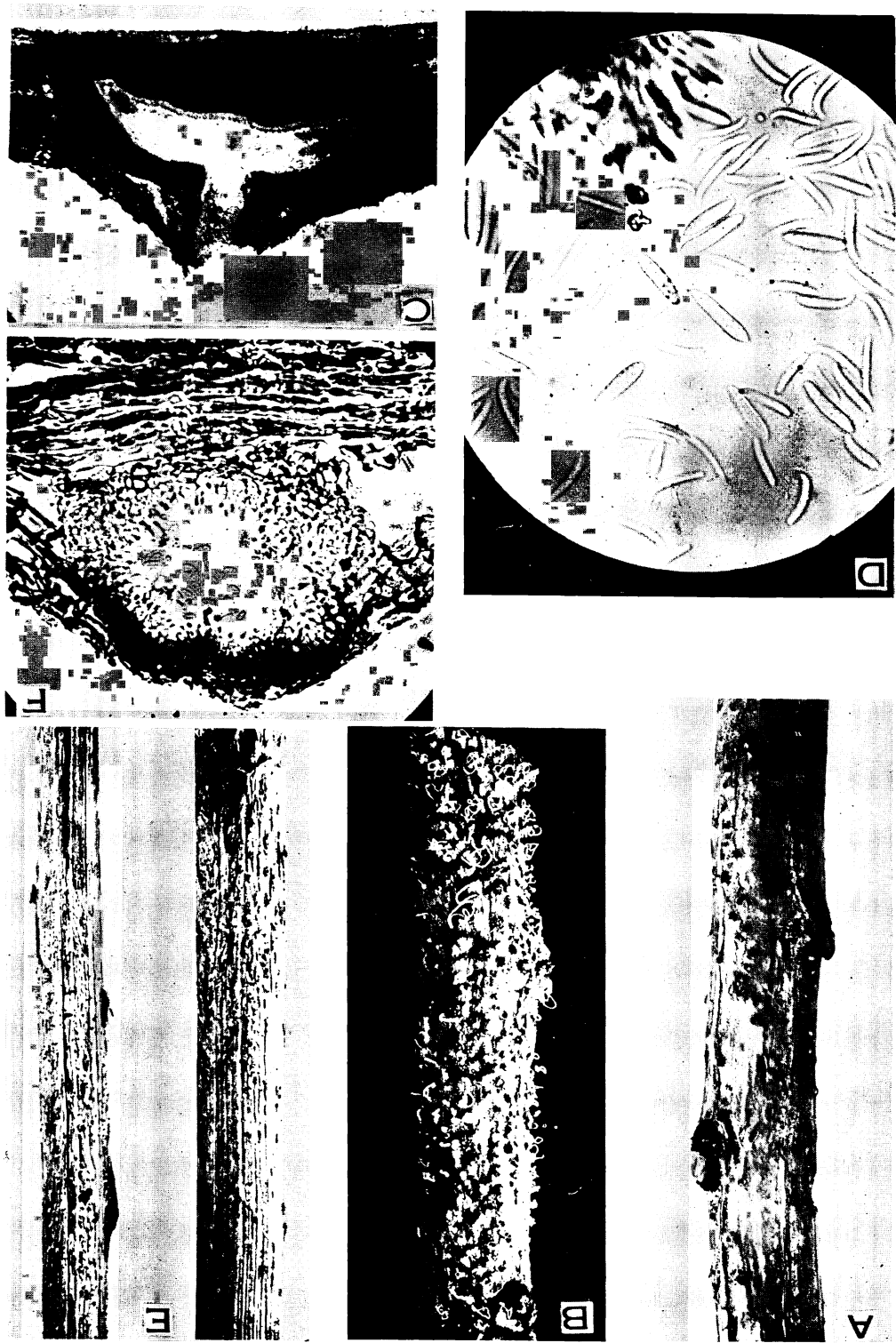


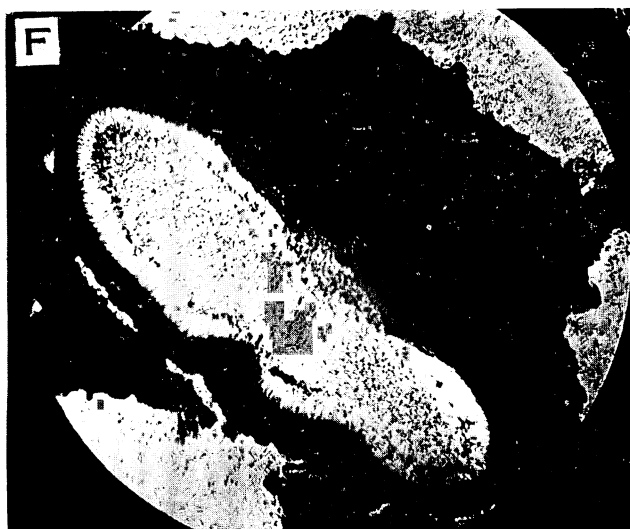


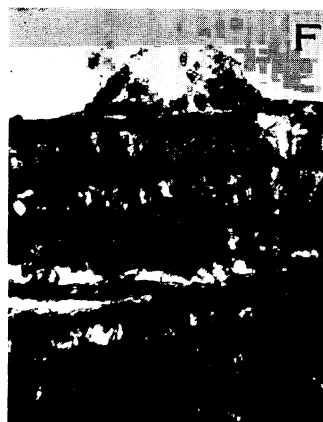
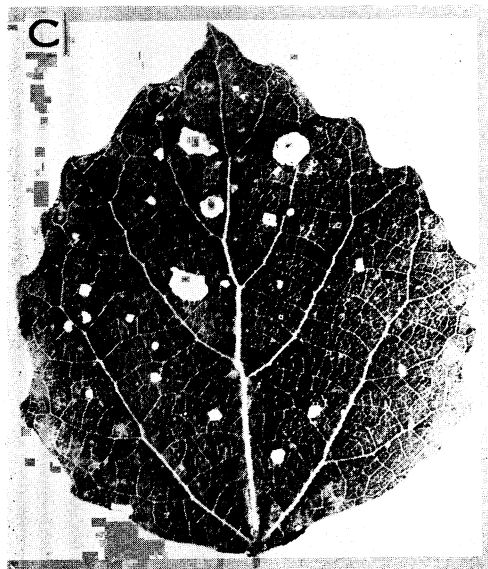
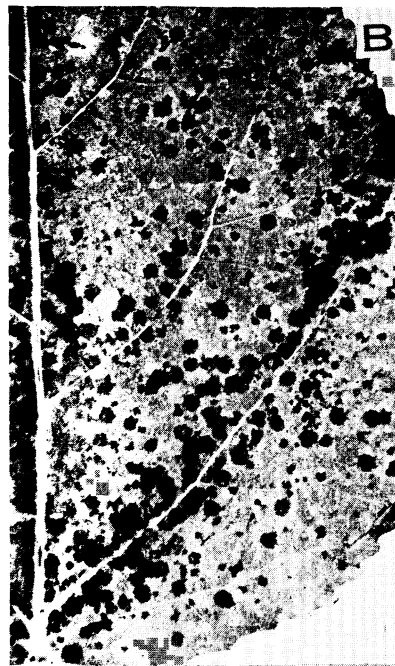












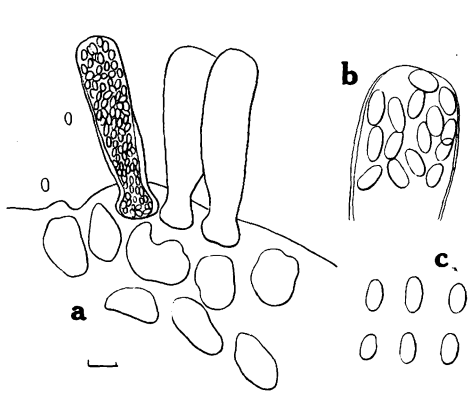


Fig. 1

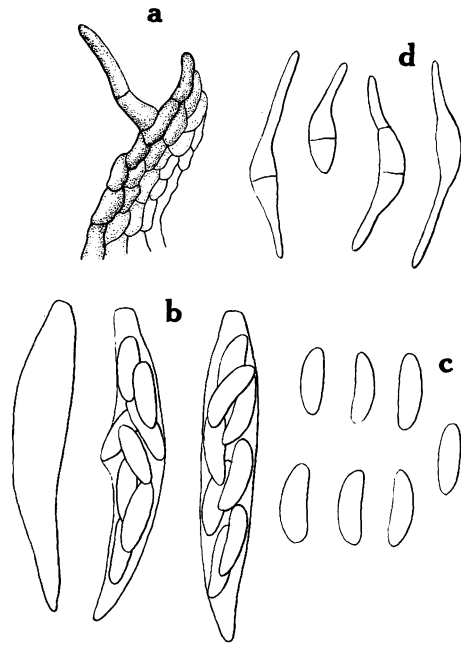


Fig. 2

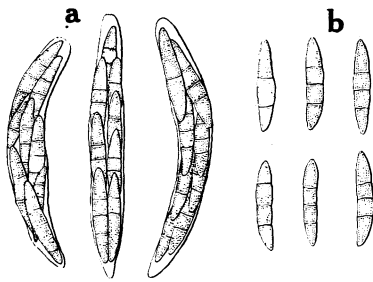


Fig. 4

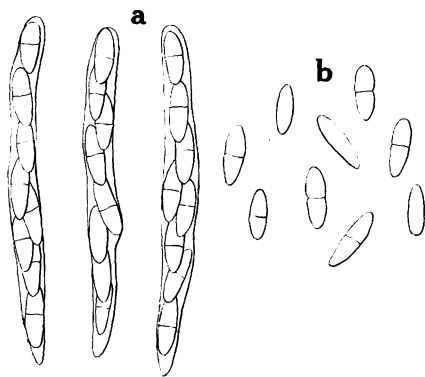


Fig. 5

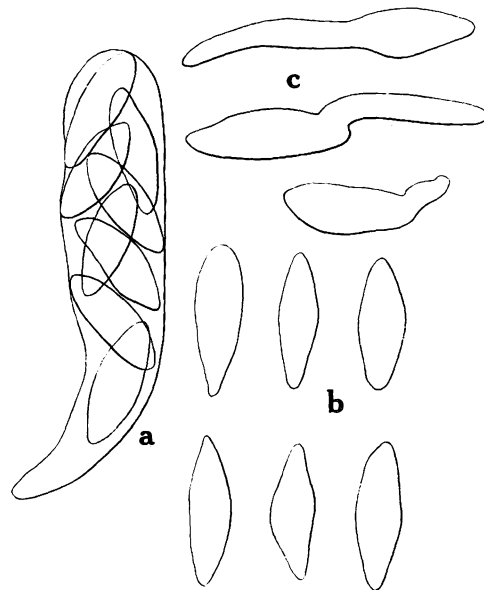


Fig. 3

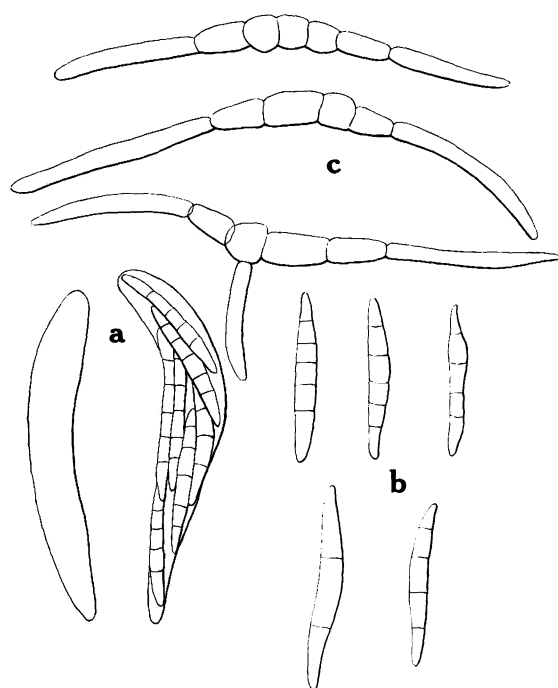


Fig. 1

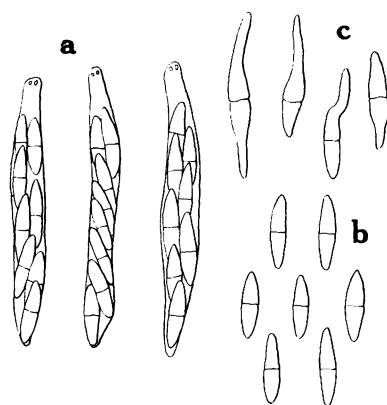


Fig. 2

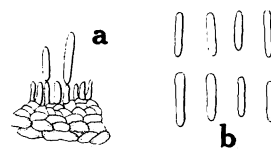


Fig. 4

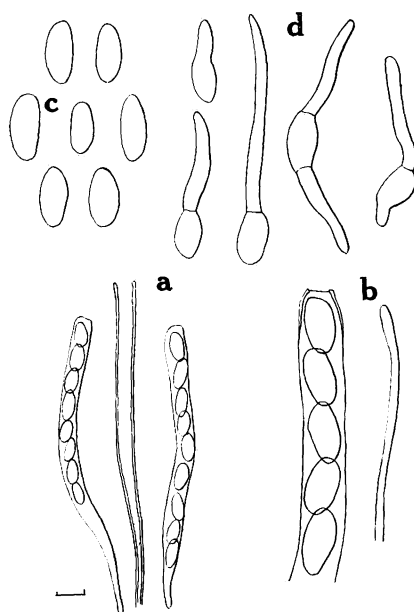


Fig. 3

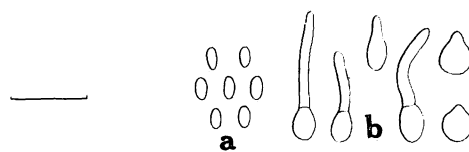


Fig. 5

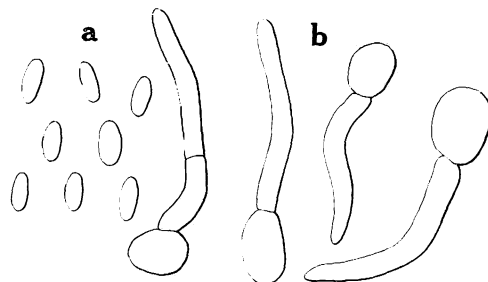


Fig. 6

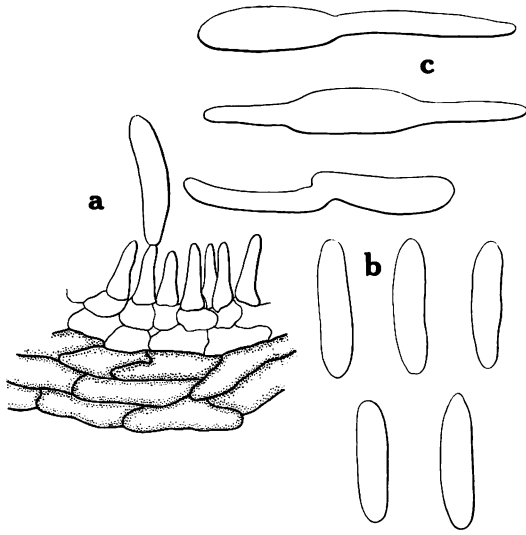


Fig. 1

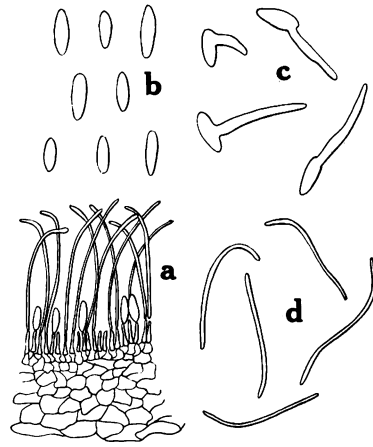


Fig. 3

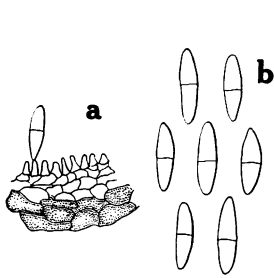


Fig. 2

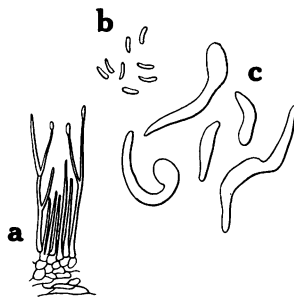


Fig. 5

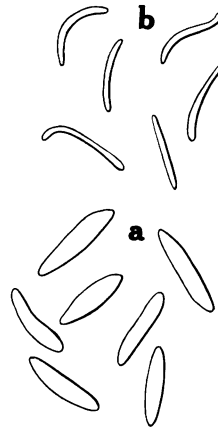


Fig. 4

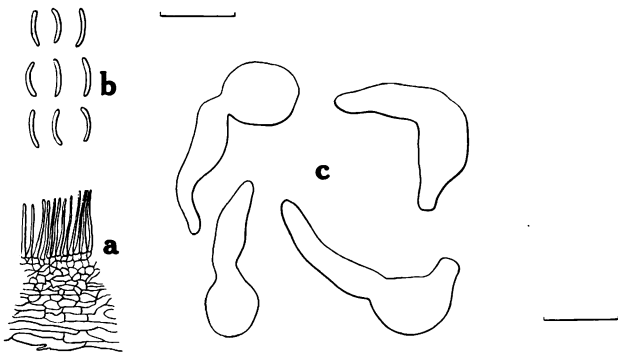


Fig. 7

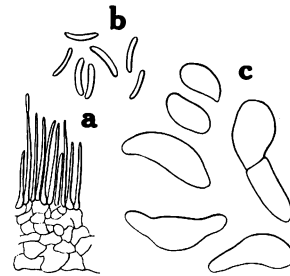


Fig. 6

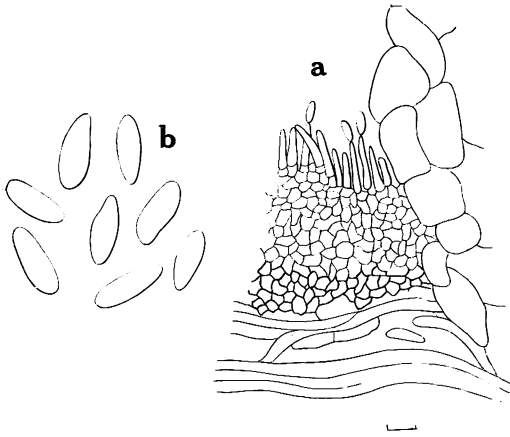


Fig. 1

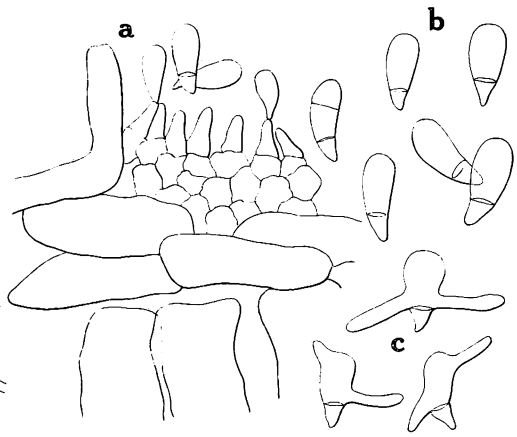


Fig. 3

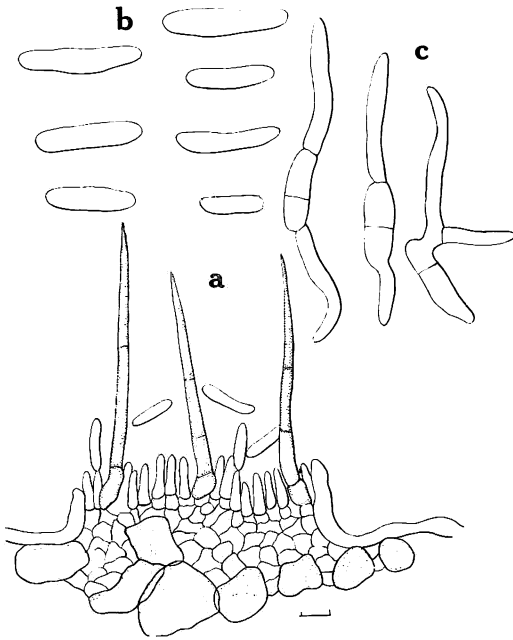


Fig. 2

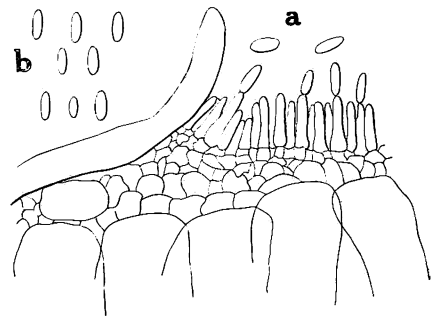


Fig. 4



Fig. 5

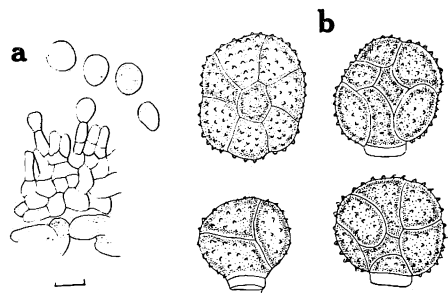


Fig. 6

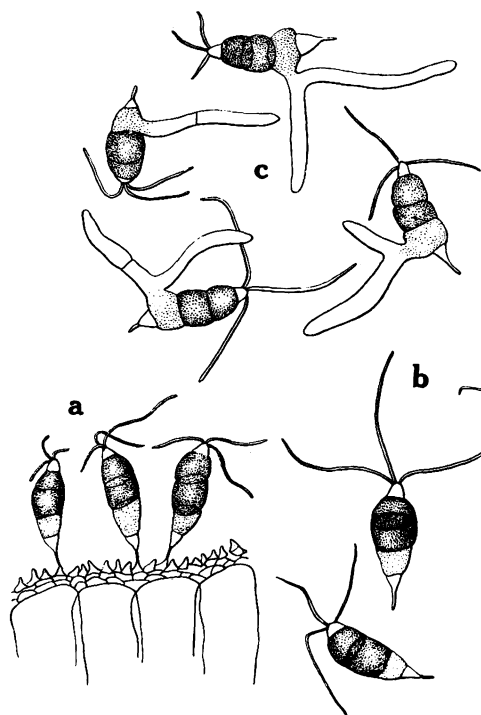


Fig. 1

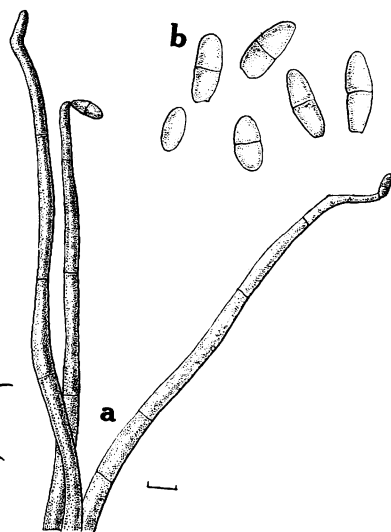


Fig. 2

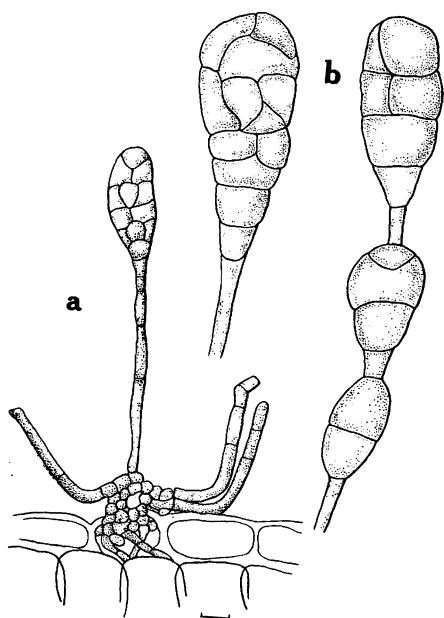


Fig. 3

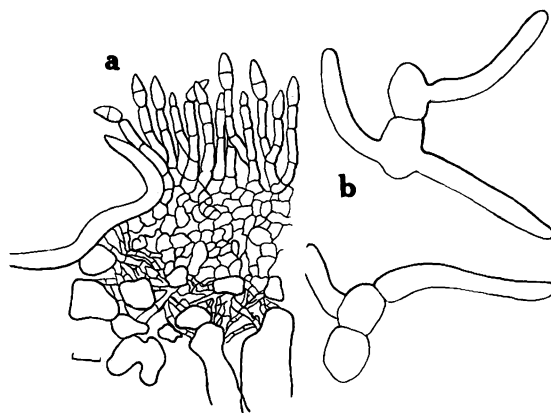


Fig. 4