

# SURVEY OF EPIDEMIC DISEASES OF FOREST TREES IN TAIWAN I\*

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## Introduction

In Taiwan, forests cover over half of the total land area, e. g., 1,969,500 hectares. The hardwood types generally occupy the lower elevations and conifers predominate in higher altitude, i. e., 75 per cent and 19 per cent of the forested area, respectively. Natural stands of fir, spruce, hemlock, alpine pine, and cypress, constitute the main coniferous forest type at the higher elevation. However, they are less accessible than the hardwood species. Of the total growing stock, broad leaves species constitute 70 per cent and coniferous species 30 per cent. It is a world-wide problem of forest situation to turn out continuously much more wood for better living and presective industrilization. Thus, an abrupt increase of timber consumption and transaction with foreign countries has stimulated reforestation and timber production in this area after World War II.

In parallel with growing forestation and timber production, a growing up tendency of forest damages has also been recorded in this district. Among the damages so far noted, wood-decaying fungi played the most prominent role. According to the late Mr. Sawada, about 3,400 species of parasitic and wood-decaying fungi have been indentified and described in Taiwan. Dr. Yamamoto, ex-Professor of mycology in National Taiwan University, also collected diverse numbers of destructive fungi, he made surveys of the sooty molds on the 46 species, 24 genera of forest trees. These fungi may be classified into 11 genera including 18 spp. White pocket rot of *Chamaecyparis formosensis* and brown cubical rot of *C. obtusa* var. *formosa* were also thoroughly studied by Yamamoto and Ito. Hirane also paid his attention to the rust of *Acacia confusa*. However, it is conjectured from the above citation that studies on the forest diseases in Taiwan were really one of the most neglected field, and deserve special attention both from the economic as well as academic stand points of view.

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### 1. *Cercospora* leaf spot of Taiwan acacia\*

*Cercospora acaciae-confusae* Saw.

Chupp, C.—A Monograph of the Fungus Genus *Cercospora*, p. 277, 1953.

Sawada, K.—Descr. Catal. Formosan Fungi. 4: 105-106, 1928.

Symptoms: Brown, round spots appear on the leaves, the spots becoming greyish, elliptic, with a distinct margin, 0.5-2.0mm. in diameter, and becoming larger irregular patches by coalescing of these spots.

Causal organism: Conidiophores yellowish brown, paler at the tips, simple, erect, several in cluster, 0-2-septate, spore scars inconspicuous, rarely branched at the base; conidia cylindrical, erect or slightly curved, rounded at both ends, pale yellowish brown, smooth, 4-8-septate, constricted at septum.

Investigator	Conidiophore				Conidium			
	Length ( $\mu$ )	Width ( $\mu$ )	Septum	Color	Length ( $\mu$ )	Width ( $\mu$ )	Septum	Color
Sawada (1923)	20-45	3-4	1-2	Pale brown	50-81	3.5-5.0	4-10	Hyaline
Chen (1963)	16.6-39.0	3.3-4.4	0-2	Grayish brown	42.8-67.1	3.8-5.0	4-8	Pale yellowish brown

Suscept: *Acacia confusa* Merr.\*\*

Specimens:

Taoyuan, Tachi, (240 m), 12/2/1963. C.-C. Chen & L.-C. Wu.

Hsinchu, Chingtsao Lake, (40 m), 9/6/1963, C.-C. Chen.

Ilan, Chaochi, 10/30/1963, (10 m), C.-C. Chen.

Miaoli, Nanchuang, (350 m), 11/7/1963, C.-C. Chen & H.-S. Chang.

Miaoli, Sanyi, (400 m), 12/23/1963, C.-C. Chen, C.-H. Lee & P.-C. Chen.

Taichung, Yuchu, (650 m), 11/6/1963, C.-C. Chen & H.-S. Chang.

Taipei, Tatumshan, (80-440 m), 3/29/1964, C.-C. Chen & S.-C. Jong.

\* The disease is described by Sawada in Taiwan for the first time and known to cause immature defoliation and suppression the growth of plant.  
Elevation above the sea is given in parenthesis.

\*\* The scientific names of the host plants adopted in this report are according to the Tang-shui Liu's nomenclature which had been demonstrated in his Illustrations of Native and Introduced Ligneous Plants of Taiwan.

- Taichung, Puli, (750 m), 3/15/1964, C.-C. Chen & H.-S. Chang.  
Taipei, Pinglin, (170 m), 3/26/1964, C.-C. Chen & S.-C. Jong.  
Hualien, Tienliao nursery (35 m), 5/11/1964, C.-C. Chen & S.-C. Jong.  
Hualien, Hsiulin, (60 m), 5/12/1964, C.-C. Chen & S.-C. Jong.  
Hualien, Mouwulu, (60-200 m), 5/12/1964, C. C. Chen & S. C. Jong.  
Hualien, Yuli, (240-505 m), 5/13/1964, C. C. Chen & S. C. Jong.  
Hualien, Juisui, (200-350 m), 5/14/1964, C. C. Chen & S. C. Jong.  
Hualien, Peipu, (10 m), 5/15/1964, C. C. Chen & S. C. Jong.

Distribution: China (Taiwan)

## 2. Needle blight of cryptomeria

### *Cercospora cryptomeriae* Shirai

Chupp, C.—A. Monograph of the Fungus Genus *Cercospora*, p. 439, 1953.

Hara, S.—Forest Diseases. p. 66, 1926.

Ideta, A.—Supplement to Handb. Plant Dis. Japan. p. 639, 1926.

Ito, K.—Illustrated Forest Diseases Lecture. p. 63-72, 1955.

Kitashima, K.—On the Red-plaque of "Sugi" Seedling. Botanical Magazine  
30: 411, 1916.

Sawada, K.—Deser. Catal. Formosan Fungi. 4: 107-108, 1928.

Spaulding P.—Foreign Dis. Forest Trees World. Agr. Handb. 197: 48, 1961.

This disease has been a limiting factor for the propagation of cryptomeria, particularly *Cryptomeria japonica* on this island. In Japan, it was firstly discovered in 1902, and spreaded to whole country in a decade. Sawada found this disease occurred at Ilan, estern part of this island (1917) and also Mountain Ali (1922). However, study on the control of this disease was initiated in 1943.

Symptoms: Small, circular, yellowish brown spots appear on leaves at first.

The lesions gradually enlarge and become brown or reddish brown, eventually wither, and dry. Same symptoms also appear on twigs and stems. The surface of the spot is subsequently accompanied with numerous, black dots.

Causal organism: Conidiophores brown to dark brown, curved, aseptate or septate,  $23.8-98 \times 5.3-8 \mu$ , produced on black, subglobose stroma, in clusters, 7-40; conidia clavate or cylindrical, obtuse at the apex, flat at base, erect or slightly curved, brown to dark brown, verrucose, 2-9-septate, constricted at septum, with numerous large oil drops,  $40.9-73.8 \times 3-7 \mu$ . Sporulation occurred in nature, during April to November in Japan; whole year in Taiwan.

Investigator	Conidiophore			Conidium		
	Length ( $\mu$ )	Width ( $\mu$ )	Septum	Length ( $\mu$ )	Width ( $\mu$ )	Septum
Kitashima (1916)	—	—	—	60-70	6-7	4-6
Sawada (1928)	30-80	4-6	0-3	38-82	5-9	5-15
Chen (1963)	23.8-98.1	5.3-8	2-9	40.9-73.8	3.3-7.0	2-9

Suscept: *Cryptomeria japonica* D. Don.

Specimens:

Taichung, Yuchih, (650 m), 11/8/1963, C.-C. Chen & H.-C. Chang.

Taipei, Pinglin, (150 m), 8/27/1963, C.-C. Chen.

Ilan, Chaochi, (160 m), 8/30/1963, C.-C. Chen.

Miaoli, Nanchuang, (350 m), 11/6/1963, C.-C. Chen & H.-C. Chang.

Nantou, Tanan, (250 m), 11/7/1963, C.-C. Chen & H.-C. Chang.

Taitung, Kuanshan, (600 m), 2/20/1964, C.-C. Chen & S.-C. Jong.

Nantou, Chiti, (1660-1700 m), 2/25/1964, C.-C. Chen & S.-C. Jong.

Distribution: China (Taiwan), Japan.

### 3. Irregular leaf spot of lemon-gum

*Cercospora epicoccoides* Cke et Mass.

Chupp, C.—A Monograph of the Fungus Genus *Cercospora*, p. 406, 1953.

Cooke, M. C.—Handb. Australian Fungi, p. 308, 1891.

Saccardo, P. A.—Syll. Fung. 10: 644, 1892.

Sawada, K.—Descr. Catal. Formosan Fungi. 8: 104, 1943.

Spaulding, P.—Foreign Dis. Forest Trees World. Agr. Handb. 197: 49, 1961.

Yamamoto, W.—Jour. Soc. Trop. Agr. 6: 599, 1934.

Yamamoto, W.—Hyogo Univ. Agr. 4 (2): 56, 1960.

Symptoms: Lesions on leaves are at first reddish brown, purplish brown or yellowish brown, irregular or angular bounded by veinlets, 1-10 mm., but gradually becoming larger by coalescing of old, grey spots.

Causal organism: Stroma epiphyllous, subglobose, 30-46  $\mu$ ; conidia erect or curved, cylindrical, flat at base, obtuse at apex, 2-8-septate, hyaline, 35.7-88.1  $\times$  26-33  $\mu$  (maximum, 140  $\times$  2.9  $\mu$ ).

Suscept: *Eucalyptus citriodora* Hook.

Specimen: Kaohsiung, Tapei Lake, (40 m), 10/23/1963, C.-C. Chen, L.-C. Wu, and Y. S. Lin.

Distribution: China (Taiwan), Victoria (Australia).

### 4. *Cercospora* leaf-blight of pine

*Cercospora pini-densiflorae* Hori et Nambu

Chen, D.-W.—Plant Protection Bull. 4: 82, 1962.

Chupp, C.—A Monograph of the Fungus Genus *Cercospora*, p. 440, 1953.

Hara, K.—Trees Diseases. p. 84, 1927.

Numbu, N.—Jour. of Plant Protection. 4: 353-354, 1917.

Sawada, K.—Descr. Catal. Formosan Fungi. 4: 111-112, 1928.

Spaulding, P.—Foreign Dis. Forest Trees World. Agr. Handb. 197: 54, 1961.

Leaf-blight is one of the most severe pine nursery diseases in Taiwan. In 1955-1956, more than 700 thousands of two-year old seedlings grown on Pinglin nursery (Hsintien) were severely attacked, and merely a few twigs and needles remained on the infected plant. Nine species of conifers were known to be attacked, i. e. *Pinu elliotii*, *P. luchuensis*, *P. echinate*, *P. Palustris*, *P. massoniana*, *P. morrisonicola*, *P. taeda*, *P. taiwanensis*, and *P. thunbergii*.

Symptoms: At first, yellowish brown spots appear on the middle or tip of needle, and produce numerous black specks. The affected leaves become whitish gray. The disease occurs mostly in Autumn.

Causal organism: Conidiophores dark brown, arising through stomata, fasciculate, rarely septate,  $40.5-64.3 \times 2.4-4.3 \mu$ ; conidia filiform, or long-clavate, somewhat curved, hyaline or yellow, 3-6-septate,  $33.3 \times 64.3 \times 2.4-3.6 \mu$ .

Investigator	Conidiophore		Conidium	
	Size ( $\mu$ )	Septum	Size ( $\mu$ )	Septum
Nambu (1917)	$44.0 \times 4.4$	—	$41.49-50.7 \times 1.23-4.6$	4-6
Hara (1927)	$44.0 \times 4.4$	—	$41.0-50.0 \times 2.3-4.6$	4-6
Sawada (1928)	$38-49 \times 3.6-5.0$	0-1	$41.0-40.0 \times 2.3-5.2$	3-7
Chen (1963)	$40.5-64.3 \times 2.4-4.3$	0-2	$33.3-64.3 \times 2.4-3.6$	3-6

Suscept: *Pinus luchuensis* Mayr.

Specimens: Taipei, Pinglin, (150 m), 8/27/1963, C.-C. Chen.

Hualien, Mouwulu, (560 m), 5/12/1964, C.-C. Chen & S.-C. Jong.

Distribution: China (Taiwan), Japan.

##### 5. Leaf rust of Taiwan pine

*Coleosporium asterum* (Dies) Sydow (O. I.)

Hara, S.—Japanese Destructive Fungi. p. 261, 1936.

Hiratsuka, N.—Uredinological Studies, p. 237, 1955.

Spaulding, P.—Foreign Dis. Forest Trees World. Agric. Handb. 197: 62, 1961.

= *C. pini-asteris* Orishimo.

Hara, S.—Forest Diseases. p. 87-88, 1927.

Hiratsuka, N.—Uredinological Studies, p. 237, 1955.

Ideta, A.—Handb. Plant Dis. Japan. p. 444-445, 1911.

Orishimo, Y.—Bot. Mag. Yokyo 24: 1-5, 1910.

=*C. sonchi* Liv.

Ideta, A.—Handb. Plant Dis. Japan. p. 444-445, 1911.

=*Piridermium pini-densiflorae* P. Henn.

Ideta, A.—Handb. Plant Dis. Japan. p. 444-445, 1911.

Orishimo, Y.—Bot. Mag. Tokyo. 24: 1-3, 1910.

Sawada, K.—Descr. Catal. Formosan Fungi. 8: 52-53, 1943.

=*Stichopsora asterum* Dietel.

Hara, S.—Forest Dis. p. 87-88, 1927.

Symptoms: Small, elliptical, yellowish red spots appear on leaves at first.

The lesions are gradually raised and form white peridia on which numerous, yellow, mass-like aeciospores are present. A leaf usually bears several to 20 lesions and withers.

Causal organism: Mycelium hyaline or grey in color, 3.3-4.8  $\mu$  in diameter, daedaleus in host tissue, becoming larger, 7.6  $\mu$  under the spermogonium and aecium; spermogonia amphigenous, single or gregarious on leaves, grey brown to brown, 131-162  $\mu$ ; spermatia ellipsoid or elongate-ellipsoid, hyaline, simple, 4.7-6.2  $\times$  2.1-2.6  $\mu$ ; aecia amphigenous, scattered or grouped, ellipsoid or short-linear, carnelian red, 238-314  $\mu$ ; pseudoperidia epiphyllous, cylindrical or odontoid, hyaline, 0.5-2.5 mm; cells of pseudoperidia continued, obovate, irregularly ellipsoid, 23.8-71.4  $\times$  17.6-26.2  $\mu$  wall 4-8  $\mu$  in thickness; aeciospores ovate to elongate-elliptical or echinulate, yellowish orange, 24.8-35.7  $\times$  14.8-21.4  $\mu$ ; episporium 1.8-2.4  $\mu$  in thickness.

Suscept: *Pinus taiwanensis* Hay.

Specimen: Mountain Ali (2450 m), 5/24/1963, C.-R. Ying (Taiwan Forestry Bureau).

Distribution: China (Taiwan), Japan.

## 6. Anthracose of Cinnamomi

*Glomerella cinnamomi* Yoshino

Ideta, A.—Handb. Plant Dis. Japan p. 673-676, 1911.

Kurozuwa, R.—Bot. Mag. (Tokyo) 22: 53-56, 1908.

Sawada, K.—Descr. Catal. Formosan Fungi. 1: 306-307, 1919.

Spaulding, P.—Foreign Dis. Forest Trees World. Agr. Handb. 197: 123, 1961.

Yoshino, T.—Bot. Mag. (Tokyo) 21: 229-235, 1907.

=*G. cingulata* (Stonet) Spauld et V. Schrenk (*G. cinnamomi* Yoshino)

Ito, K.—New Illustrated Forest Diseases Lecture. p. 183-184, 1962.

Symptoms: The fungus attacks the leaves and twigs, mostly in nursery stage.

On the leaves, the lesions first appear brown, circular spots, starting from the margin of leaves, but irregularly enlarge, 3-4 cm in size. Deformation is observed when the midribs or younger twigs are attacked. On the twigs, circular, ellipsoid, brown or grey lesions are formed, usually varied in size. The diseased twigs are eventually broken, and withered at tips.

Causal organism: Mycelia intracellular, scariose, hyaline to yellowish brown, 2.4-4.8  $\mu$ ; acervuli subepidermal, later erumpent; basidia hyaline, single, erect or slightly curved, 14.3-24.7 $\times$ 3.3-4.8  $\mu$ ; conidiophores hyaline, simple, smooth, elongate-ellipsoid or fusiform, rounded at the both ends, erect or slightly crooked, 11.9-21.4 $\times$ 3.6-5.2  $\mu$ ; perithecia subepidermal, brown to dark brown, ostiolate, 78.5-111.9 $\times$ 95.2-142.8  $\mu$ ; asci clavate to fusiform, rounded at the apex, 50.0-61.9 $\times$ 6.7-11.9  $\mu$ ; asciospores elongate-ellipsoid, hyaline, simple, smooth, 8.1-11.9 $\times$ 3.8-5.7  $\mu$ .

Suscept: *Cinnamomum camphora* Sieber.

Specimens:

Taipei, NTU Hospital, (10 m), 8/24/1963, C.-C. Chen.

Taitung, Kuanshan, (600 m), 2/20/1964, C.-C. Chen & S.-C. Jong.

Taitung nursery, (12 m), 2/21/1964, C.-C. Chen & S.-C. Jong.

Hualien, Tienliao nursery, (35 m), 5/11/1964, C.-C. Chen & S.-C. Jong.

Hualien, Hsiulin, (60 m), 5/12/1964, C.-C. Chen & S.-C. Jong.

Distribution: China (Taiwan), Japan.

## 7. Pine needle cast

*Lophodermium pinastri* (Schrad) Chev.

Hubert, E. E.—An Outline of Forest Pathology p. 198-204, 1931.

Ito, K.—New Illustrated Forest Disease Lecture. p. 243, 1962.

Ito, A.—Agric. Forest. Taipei 1: 297-302, 1937.

Massee, G.—Diseases of Cultivated Plants and Trees. p. 249, 1915.

Spaulding, P.—Foreign Dis. Forest Trees World. Agric. Handb. 197: 146, 1961.

Saccardo, P. A.—Syll. Fung. 2: 794, 19, 1883.

Sawada, K.—Descr. Catal. Formosan Fungi. 11: 48, 1959.

Needle cast is one of the most destructive diseases of pine in Taiwan. The disease causes immature defoliation and suppress the growth and subsequently facilitate pine to be attacked by wood-decay fungi and insect pests. This disease frequently recurs in both nurseries and pine plantations. There are a number of host plant attacked by needle cast fungus. In the United States, Hubert (1931) reported that 11 species of *Abies*, 3 species of *Larix*, 2 species of *Picea*, and 1 species of *Thuja* were susceptible, Ito (1937) investigating the occurrence of this disease in the northern part of this island, indicated that 4

species of pine were attacked, i. e. *Pinus luchuensis*, *P. massoniana*, *P. taede*, and *P. thunbergii*. In 1952, the author, invited by the Taiwan Forestry Bureau, made a survey in the central part of this island and found that 26 year-old Luchu and Taede pines located in Yuchih were seriously damaged by this disease.

**Symptoms:** The first indication of the disease is the appearance of yellowish bands or spots on the needles. The spots gradually turn pale greenish brown to yellowish brown and may fall off. Disease development seems to be blocked and the heavily infected foliages remain attached to the trees throughout the winter. In spring the fruiting-bodies of the fungus appear, reddish to black colored, cylindrical or fusiform along the central portion of the affected needles. Frequently these ascocarps are not formed until the needles fall to the ground. The fruiting-body splits longitudinally and eventually folds backward to expose the spores.

**Causal organism:** Ascocarps scattered on the infected needle, ellipsoid or fusiform, lustrous, black, gradually raised, then splitting longitudinally, 0.5–2.5×0.5–1.5 mm; asci clavate, hyaline, 71.4–133.3×9.5–13.1  $\mu$ , with 8 spores arranged in a parallel fascicle; ascospores filiform, hyaline, single, erect, 61.9–102.3×0.9–1.9  $\mu$ , with several oil drops; paraphyses needle-shaped, simple, aseptate, slightly crooked at the apex, 90.4–133.0×3.3–4.1  $\mu$ .

**Suscepts:** *Pinus elliottii*; *P. luchuensis*; *P. taiwanensis*; *P. thunbergii*,

**Specimens:**

Hualien, Yuli, (505 m), 5/13/1964, C.-C. Chen and S.-C. Jong.

Hualien, Liyuchin, (190 m), 5/14–1964, C.-C. Chen and S.-C. Jong.

Taipei, Shanchi, 5/26/1964, H.-S. Chang.

Taipei, Yangmingshan, 6/13/1964, H.-S. Chang.

Taipei, Pinglin, (150 m), 3/15/1964, C.-C. Chen and H.-S. Chang.

Nantou, Lushan, (1140 m), 3/15/1964, C.-C. Chen and H.-S. Chang.

**Distribution:** Belgium, China (Taiwan), Czechoslovakia, Denmark, Dominican republic, Estonia, Finland, France, Germany Greece, Hungary, India, Italy, Japan, Norway, Poland, Portugal, Russia, Siberia, Spain, Sweden, Switzerland, Yugoslavia.

#### 8. Rust of sissoo tree

*Maravolia achroa* (Syd) Authur et Cummins.

Hiratsuka, N.—Uredinological Studies. p. 186, 1955.

Ito, S.—Mycological flora of Japan 2-3: 56, 1950.

Sawada, K.—Descr. Catal. Formosan Fungi. 11: 86, 1959.

=*Uromyces achrous* Syd.



Miyake, T.—Ann. Taiwan Forestry 138: 1-10, 1937.

Spoulding, P.—Foreign Dis. Forest Trees World. Agric. Handb. 197: 269, 1961.

Saccardo, P. A.—Syll. Fung. 21: 548-549, 1912.

Symptoms: Spots usually appear on younger leaves and twigs, mostly on the lower surface rather than the upper surface. The small, yellowish orange lesions are at first subepidermal, later erumpent, and gradually spread toward the newly formed leaves. The spots are concentrically zonate with grey brown color. Malformation of petioles and twigs cause withering and crooking.

Causal organism: Urediosori subepidermal, then naked, pulverulent, pale brown in color; urediospores globose, ovate, yellowish orange, 12.4-14.2  $\mu$  in globose, 12.9-16.2 $\times$ 10.5-12.8  $\mu$  in ovate; epispore uniform, transparent, finely verrucose, germ-pores inconspicuous.

Teleutosori hypophyllous, similar to uredosori; teleutospores fusiform or ellipsoid 26.1-28.6 $\times$ 8.1-10.5  $\mu$ ; paraphyses intermixed, hyaline, 42.8-61.9 $\times$ 1.9-4.8  $\mu$ ; epispore hyaline, transparent, smooth.

Suscept: *Dalbergia sisso* Roxb.

Specimen: Hualien, Peipu, (10 m), 5/15/1964, C.-C. Chen & S.-C. Jong.

Distribution: China (Taiwan), India, Pakistan, Philippines, Ryukyus.

### 9. Small sooty mold (black midew) of Taiwan acacia

*Meliola koeae* Stev.

Sawada, K.—Desce. Catal. Formosan Fungi. 7: 25-26, 1942.

Stevens, F. L.—Ann. Mycologia 26:220, 1928.

Yamamoto, W.—Trans. Nat. Hist. Soc. Form. 30: 154, 1940.

=*M. acaciae-cofusae* Sawada sp. nov.

Sawada, K.—Descr. Catal. Formosan Fungi. 5: 16-17, 1931.

Symptoms: Black velvet mycelial mass appear both sides of leaves. Diameter of colonies is about 1-4 mm, gradually becoming larger by coalescing numerous colonies to cover the entire leaf-blade with black dots (perithecia).

Causal organism: Hyphae epigenous, branched, septate, dark brown, 6.2-9.1  $\mu$  thick; hypopodia alternate, dark brown, 1-septate, 14.2-17.6 $\times$ 8.1-9.5  $\mu$ ; head cell subglobose, 11.4-13.8  $\mu$ ; stipe cell 2.4-6.3  $\mu$  long; perithecia subglobose, black, smooth, no ostiole, 128.5-190.4 $\times$ 133.3-223.7  $\mu$ ; simple setae bearing at the bottom of perithecia, erect or somewhat curved, deeply black, tapering towards the apex, 2-4-septate, 176.1-230.8 $\times$ 5.7-9.1  $\mu$ ; mycelial setae shorter, rounded at the apex, 109.5-200 $\times$ 8.6-9.5  $\mu$ ; asci ovoid, hyaline, scariose, 47.6-57.5 $\times$ 34.2-38.5  $\mu$ , 2-spored; asciospores ellipsoid or elongate-elliptical, yellow to dark brown, 4-septate.

Suscept: *Acacia confusae* Merr.

Specimens: Taipei, Pinglin, (170 m), 3/26/1964, C.-C. Chen & S.-C. Jong.

Taipei, Hsintien, (15 m), 4/4/1964, C.-C. Chen.

Hualien, Juisui, (350 m), 5/14/1964, C.-C. Chen & S.-C. Jong.

Hualien, Yuli, (505 m), 5/13/1964, C.-C. Chen & S.-C. Jong.

Hualien, Peipu, (10 m), 5/15/1964, C.-C. Chen & S.-C. Jong.

Distribution: China (Taiwan), Hawaii.

#### 10. Powdery mildew of Camphor tree

*Microsphaera alaphitoidies* Griffon et Manblanc.

Homma, Y.—Erysiphaceae of Japan p. 383-87, 1937.

Sawada, K.—Discr. Catal. Formosan Fungi. 11: 22, 1959.

= *Erysiphe connamomi* Saw.

Kitashima, K.—Tree Diseases and Wood Decay p. 185, 1923.

Ideta, A.—Supplement to Handb. Plant Dis. Japan 1: 198, 1925.

Sawada, K.—Descr. Catal. Formosan Fungi 1: 144, 1919.

Symptoms: The fungus attacks young leaves and twigs in nursery stage.

The lesions are amphigenous, circular, with white flour-like masses, and gradually enlarged. The affected leaves and twigs are crooked, rolled, and stopped to grow.

Causal organism: Mycelia epiphyllous, hyaline, 4.3-7.1  $\mu$ ; houstoria ovoid to ellipsoid; conidiophores erect, 1-3-septate, hyaline, 90.4-164.2  $\times$  8.1-11.9  $\mu$ ; conidia ellipsoid or elliptic-oblong with vacuoles, but not fibrosin body, 26.2-42.8  $\times$  17.2-22.8  $\mu$ ; perithecia less frequently found in Taiwan.

Suscept: *Cinnamomum camphora* Nees et Eb.

Specimens: Hualien, Tienliao nursery, (35 m), 5/11/1964, C.-C. Chen & S.-C. Jong.

Hualien, Sunmin, (150 m) 5/13/1964, C.-C. Chen & S.-C. Jong.

Hualien, Juisui, (350 m) 5/14/1964, C.-C. Chen & S.-C. Jong.

Taitung, Kusnshan, (600 m), 2/20/1964, C.-C. Chen & L.-C. Wu.

Hsinchu, Nanchuang, (250 m), C.-C. Chen & H.-S. Chang.

Taoyuan, Tachi, (540 m), 7/2/1963, C.-C. Chen & L.-C. Wu.

Taichung, Wusheh, (1140 m), 6/9/1963, C.-C. Chen & H.-S. Chang.

Distribution: China (Taiwan), Europe, Japan, Saghalien.

#### 11. Nectria canker of maple-leaved pterospermum

*Nectria pterospermi* Sawada.

Sawada, K.—Descr. Catal. Formosan Fungi 5: 33, 1931.

Symptoms: Cankered lesions appear on the bark of trunk and branch, 10-15 cm. in depth, forming callus and becoming deeply black at the center, irregularly broken. The affected areas eventually coalesce to involve the whole stem,

and produce numerous red tiny specks (perithecia) on the surface. The disease occurs especially in the Autumn.

Causal organism: Perithecia superficial, gregarious, globose, carnelian red or coral red, gradually turning to Hay's russet, 266-420  $\mu$  high, 210-336  $\mu$  in diameter, papillate at the ostioles, not pedicellate, paraphyses none; asci clavate, cylindrical, rounded at the apex, tapering towards the base, hyaline, 52-67  $\times$  6-10  $\mu$ , containing 8 spores in single row; ascospores long-elliptical, 1-septate, constricted or not at the septum, hyaline, smooth, 12-21  $\times$  5-8  $\mu$ , germination from both ends.

Investigator	Perithecium		Ascus ( $\mu$ )	Ascospore ( $\mu$ )
	Height ( $\mu$ )	Diameter ( $\mu$ )		
Sawada (1931)	410-425	360-390	91-108 $\times$ 12-14	14-19 $\times$ 6-8
Jong (1963)	266-420	210-336	52-67 $\times$ 8-10	12-21 $\times$ 5-8

Suscept: *Pterospermum acerifolium* Wild.

Specimens: National Taiwan University, (10 m), 11/12/1963, P.-C. Chen.

National Taiwan University, (10 m), 12/8/1963, C.-C. Chen & S.-C. Jong.

Distribution: China (Taiwan).

## 12. *Nectria* canker of Mahogani\*

*Nectria* sp. of Mahogani

Chen, C.-C.—Lecture of Forest Pathology (in Mimieograph) p. 202-204, 1958.

Wan, C.-C.—Taiwan Forest Res. Inst. News 78: 587-889, 1960.

*Nectria swieteniae-mahoganii* sp. nov.

Perithciis pallescenti-rubois, sphaerice vel hemisphaerice, 288-530  $\times$  270-510  $\mu$ , pseudoparanchymatico, ascio clavatis vel cyllindratis, apice rotundatis basis attenuatis, hyalinis vel conteptim coloratis, 72-78.8  $\times$  5.3-9.6  $\mu$ ; ascosporis clavatis vel oblongo-ovatis 1-2-guttatis, dein 1 saptatis constrictis ad septum vel non, hyalinis vel contemptim colorati, levis, 11.0-14.9  $\times$  4.8-6.0  $\mu$ ; aparaphysatis.

Hab. ad corices truncorum vivum, Swieteniae mahoganiae jacq, August 22 1958.

\* The disease was primarily discovered on 40 year old mahogani trees in the Hongehun Forestry Research Branch Station where the exotic trees were examined befoore forestation.

References: Boyce, J. S.—Forest pathology p. 287-293, 1938.

Ideta, A.—Hendb. plant dis. Japan p. 232-236, 1911.

Saccardo, P. A.—Syll, Furg. 2: 4479-511, 1883; 9: 955-71, 1891; 11: 357-359, 1895; 14: 640, 1899; 16: 565-580, 1902; 17: 784-797, 1909; 22: 455-474, 1913; 24: 651-664, 1926.

Spaulding, P.—Dis. North American For. Trees Planted Abroad. Agric. Handb. 100: 27-28, 1956.

\_\_\_\_\_, Doreign dis. Ferest Trees World. Agric. Handb. 197. p. 173-176, 1961.

Seymour, A. B.—Host Index of the Fungi of North America. p. 455, 1929.

Symptoms: The lesions occur on the bark of trunk, twigs and roots exposed in air. The affected areas are commonly cankered, flesh-colored, becoming chocolate-brown subsequently. Callus may girdle the limb until an open canker formed. In severe case, the sapwood is splitted. (Fig. 1).

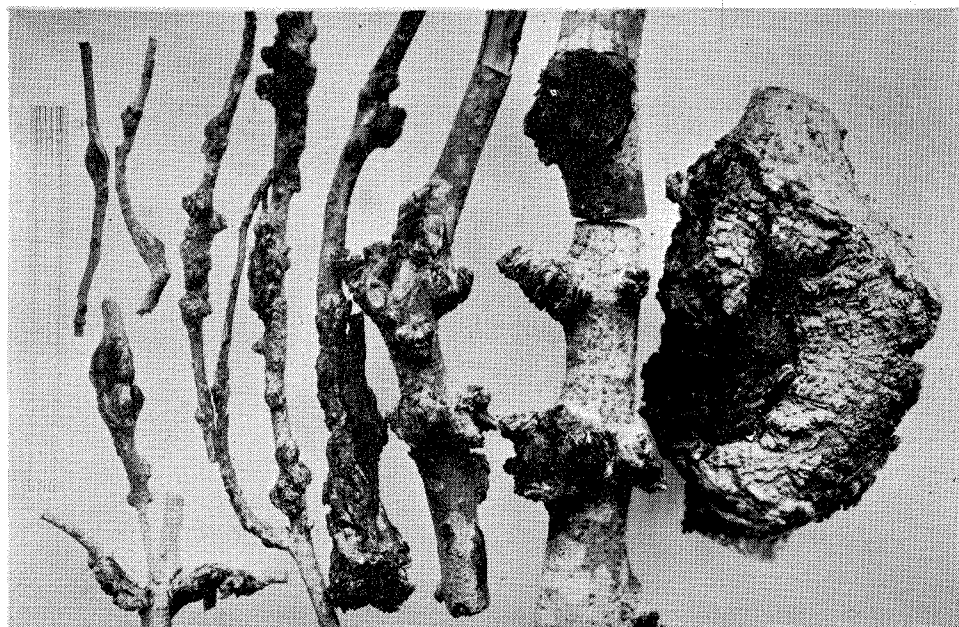


Fig. 1. Showing the symptoms of "Necteria canker of mahogani"

Causal organism: Perithecia pale yellowish red, spherical or subspherical,  $288-530 \times 270-510 \mu$ , pseudoparanchymatous; asci clavate or cylindrical, round at the apex, tapering towards the base, hyaline or slightly colored,  $72-78.8 \times 5.3-9.6 \mu$ ; ascospores clavate or long-ovate, 1-2-celled, clearly septated at maturity, constricted at the septum or not, hyaline or slightly colored, smooth,  $11.0-14.9 \times 4.8-6.0 \mu$ ; no paraphyses.

Suscept: *Swietenia manogani* Jacq.

Specimen: Hengchun, 8/22/1958, C.-C. Chen; 11/3/1964, C.-C. Chen and K.-N. Lee.

Distribution: China (Taiwan).

### 13. *Tectona rust*\*

*Olivea tectonae* Thirumalachar.

Hiratsuka, N.—Uredinological Studies. p. 237, 1955.

=*Uredo tectonae* Rac.

Saccardo, P. A.—Syll. Fung. 16: 362, 1902.

\* The disease is most prevalent in forest plantation as well as in nursery and causes immature defoliation and suppresses the growth of plants.

Sawada, K.—Descr. Catal. Formosan Fungi. 5156, 1931.

Spaulding, P.—Foreign Dis. Forest Trees World. Agr. Handb. 197: 267, 1961.

Symptoms: Spots on the lower side of old leaves are at first yellow, gradually turning to yellowish brown, small, circular, 0.2-0.3 mm in diameter, scattered or gregarious, occasionally involving the whole leaf.

Causal organism: Urediospores obclavate, ellipsoid or obovate, round at both ends,  $19-26.2 \times 15-20.2 \mu$ , wall hyaline,  $1.5 \mu$  in thickness, a germ pore obscure at the tip, containing many carolian red granules; paraphyses clavate, curved, round at the apex, smooth, hyaline, slightly yellow,  $41-45 \times 12-12 \mu$ , produced around the uredia, thin wall becoming thicker at apex,  $3 \mu$ .

Investigator	Size of urediospore ( $\mu$ )
Saccardo (1902)	20-27 $\times$ 16-33
Sawada (1931)	22-32 $\times$ 18-26
Jong (1963)	19-26.2 $\times$ 15.5-20.2

Suscept: *Tectona gradis* L. f.

Specimens: Kaohsiung Tapei Lake, (40 m), 10/23/1963, C.-C. Chen, L.-C. Wu and Y.-S. Lin.

Miaoli, Nanchuang (350 m), 11/7/1963, C.-C. Chen and H.-S. Chang.

Distribution: Ceylon, China (Taiwan), India, Indo-China, Pakistan, Java.

#### 14. Ring spot of Siebold ardisia

*Pestalotia bladhaie* Sawada.

Sawada, K.—Jour. Taichu Agr. Forest. 7 (2): 115, 1942.

\_\_\_\_\_, Descr. Catal. Formosan Fungi. 10: 67, 1944.

Symptoms: The lesions start from the tip or margin of the leaves. The ring spots are grayish brown, circular, occasionally concentrically zonated, with a darker margin, and about 24-30 mm in size. Numerous tiny black dots (acervuli) eventually appear on the surface of the old lesions.

Causal organism: Acervuli, at first subepidermal, erumpent later, more or less blister-like; conidiophores hyaline, short, simple; conidia fusiform, 4-septate, slightly constricted at the septum, 3 conical cells dark brown, apical cell triangular, bearing 2-4 hair-like appendages, basal cell hyaline, with a short pedicel.

Investigator	Diameter of acervulus ( $\mu$ )	Conidium		Appendage	
		Size ( $\mu$ )	Septum	Length ( $\mu$ )	Number
Sawada (1944)	300-325	14-16 $\times$ 5-6	4	10-17	3-4
Jong (1963)	236-336	20-31 $\times$ 6-7	4	6-18	2-4

Suscept: *Ardisia sieboldii* Miq. = *Bladhia sieboldii* (Miq.) Nak. = *Ardisia formosana* Rolfe.

Specimens: National Taiwan University, (10 m), 10/21/1963, C.-C. Chen, and S. C. Jong.

Nantou Lungyen lin, (150 m), 11/8/1963, C.-C. Chen, and H.-S. Chang.

Distribution: China (Taiwan).

### 15. *Pestalotia* blight of *Chamaecyparis*\*

*Pestalotia funerea* Desm.

Ito, K.—New Illustrated Forest Diseases Lecture p. 128–28, 1962.

Kitashima, K.—Forest Dis. and Wood Decay p. 89, 1933.

Saccardo, P. A.—Syll. Fung. 3: 791, 1884.

Spaulding, P.—Foreign Dis. Forest Trees World. Agric. Handb. 197: 183, 1961.

Symptoms: The disease usually appears on the younger branches or leaves.

The lesions are at first reddish brown, gradually becoming larger with greyish brown, eventually withered from the tip of the affected leaves which are greyish white, not frequently covered with black tuberous acervuli. In mild case, the affected tissue become brittle.

Causal organism: Acervuli at first subepidermal, but later erumpent, light brown in color, 120–176  $\mu$  in diameter; conidiophores densely in cluster; conidia fusiform, 4-septate, slightly curved, 21.4–26.2  $\times$  5.1–7.1  $\mu$ , central 3-cell dark brown, end cells hyaline, triangle shape, apical cell bearing 3 hair-like appendages, less frequently 2, 14.3–18.6  $\times$  0.4–1.0  $\mu$ .

Suscept: *Chamaecyparis obtusa* S. et Z. = *C. taiwanensis* M. et S.

Specimen: Hualien, Mouwulu, (550 m), 5/12/1964, C.-C. Chen & S.-C. Jong.

Distribution: China (Taiwan), Europe, India, Japan, Kenya, New Zealand, North America, Philippines, South Africa, West Indies.

### 16. Leaf blight of China fir

*Pestalotia shiraiana* P. Henn.

Chen, D.-W.—Plant Protection Society of China. 4 (2): 79–80, 1962.

Ideta, A.—Handb. Plant Dis. Japan. 708–709, 1909.

Hara, S.—Forest Dis. p. 66, 1927.

Spaulding, P.—Foreign Diseases Forest Trees World. Agr. Handb. 197: 185, 1961.

Symptoms: This disease is one of the most universal diseases of China fir in Taiwan, occurring on both nursery and mature stages. The lesions start from the tip of leaves. The spots are firstly pale reddish brown, gradually

\* First time described in Taiwan.

turning reddish brown to grayish brown, and becoming larger towards the base of the leaves. The border between affected and the normal tissues is obscure. Raised, elliptical, black specks (acervuli) appear on both sides of leaves, erumpent to expose the black mass of spore ooze. The older lesions become grayish white, and dry up.

Causal organism: Acervuli, at first hypophyllous, raised, nearly ellipsoid, lustrous, tiny, black, and erumpent later; conidia fusiform, 4-septate, 3 central cells dark brown or black brown, end cells triangular, hyaline, the apical cell bearing 3 hair-like appendages.

Investigator	Conidium ( $\mu$ )	Appendage ( $\mu$ )
Ideta, (1909)	25 × 6	—
Hara, (1926)	18-25 × 7-9	—
Chen, D.-W. (1962)	18.23-28.45 × 5.42-9.13	7.64-21.75
Chen, C.-C. (1963)	20.09-25.7 × 5.2-6.2	9.0-15.2 × 0.2-0.3

Suscept: *Cunninghamia lanceolata* (Lamb) Hook.

Specimens: Miaoli, Nanchuang, (350 m), 11/7/1963, C.-C. Chen & H.-S. Chang.

Taichung, Puli, (150 m), 11/8/1963, C.-C. Chen & H.-S. Chang.

Nantou, Chiti, (1660-1700 m), 2/25/1964, C.-C. Chen & S.-C. Jong.

Suscept and specimens:

*Cryptomeria japonica* D. Don.

Taitung, Chihpen nursery, (190 m), 2/20/1964, C.-C. Chen & S.-C. Jong.

Hualien, Mouwulu, (500 m), 5/12/1964, C.-C. Chen & S.-C. Jong.

Distribution: China (Taiwan), Japan.

### 17. *Phoma* needle blight (red plaqa) of Japanese cryptomeria

*Phoma cryptomeria* Kaw.

Kawanura, K.—Ann. For. Soc. Japan No. 353, 1912.

Kitajima, K.—Tree Dis. and Wood Decay p. 59-61, 1933.

Spaulding, P.—Foreign Dis. Forest Tree World. Agric. Handb. 197: 188, 1961.

Symptoms: Small, brown spots appear on the leaves and twigs at first, frequently on the basal part of the leaves with reddish brown colored lesions, gradually extending to twigs and becoming dark brown or greyish brown, subsequently accompanied with numerous, minute, black dots (pycnidia) and the affected leaves and twigs becoming withered.

Causal organism: Pycnidia subepidermal, globose or subglobose, dark brown with an opening, 115.9-200 × 114.7-282.0  $\mu$  in diameter; conidiophores hyaline, filiform, simple, 5.2-6.4  $\mu$ ; pycnidiospores hyaline, ellipsoidal globose or angular globose, 5.8-9.1  $\mu$ ; mycelia brown, 3.1-6.4  $\mu$  in diameter.

Suscept: *Cryptomeria japonica* D. Don.

Specimens: Miaoli, Nanchuang, (300–350 m), 11/7/1963, C.-C. Chen & H.-S. Chang.

Nantou, Lushan, (1040 m), 11/9/1963, C.-C. Chen & H.-S. Chang.

Nantou, Chitou, (1200–1350 m), 2/24/1964, C.-C. Chen & S.-C. Jong.

Nantou, Chishan, 2/23/1964, C.-C. Chen & S.-C. Jong.

Taipei, Siaokotou, (420 m), 3/26/1964, C.-C. Chen & H.-S. Chang.

Hualien, Mouwulu, (600 m), 5/12/1964, C.-C. Chen & S.-C. Jong.

Hualien, Sanmin, (150 m), 5/13/1964, C.-C. Chen & S.-C. Jong.

Distribution: China (Taiwan), Japan.

#### 18. Rust of Taiwan acacia\*

*Polioteliium hyalospora* (Saw.) Mains.

Hiratsuka, f.—Uredinales of Formosa, Men. Tottori Agr. Call. 7 (1): 1–90, 1943.

Ito, S.—Myc. Fl. Jap. 2 (3): 57, 1950.

Sawada, K.—Descr. Catal. Formosan Fungi. 11: 86, 1959.

= *Maravalia hyalospora* Dietel.

Dietel,—Ann. Myc. 22: 270, 1924.

Hirane, S.—Jour. Soc. Tropic. Agr. 6: 684, 1934.

Sawada, K.—Descr. Catal. Formosan Fungi. 11: 86, 1959.

Hirane, S.—Trans Nat. Hist. Soc. Form. 27: 69–89, 1937.

\_\_\_\_\_, Trans Nat. Hist. Soc. Form. 29: 13–21, 1939.

\_\_\_\_\_, Ann. Phytopath. Soc. Japan 10: 171–185, 1940.

= *Uromyces hyalosporus* Saw.

Sawada, K.—The Formosan Agr. Review No. 72: 1–3, 1912.

Sawada, K.—Bot. Mag. Tokyo 27 (313): 16, 1913.

Sawada, K.—Descr. Catal. Formosan Fungi. 1: 353–3600, 1919.

Spaulding, P.—Foreign Dis. Forest Trees World. Agr. Handb. 197: 269, 1961.

Symptoms: The disease occurs whole year long from nursery stage to mature stage. The lesions appear on young leaves, twigs, and fruits. Numerous red, powdery, curly, pustules are produced on lower side of leaves. The growth is affected and subsequently withered. Malformed and premature fruits are often found.

Causal organism: Uredesori appear on young shoots, twigs and fruits, mostly hypophyllous. The tissue of affected area swollen, one side raised, the other side depressed, and yellowish in color. The raised part is hard, brown, and becoming pulverulent (urediospores). The attacked twigs and fruits are swollen, lower side curled.

\* Rust is a common and destructive disease of Taiwan acacia, An extensive studies concerning physiological specilization and ecology of this parasite was made by Hiranés.



Urediospores ovate, broad fusiform, obtuse at the apex, flat or obtuse at the base,  $30-84 \times 17-27 \mu$ ; epispore yellow to golden brown,  $2-4 \mu$  thick, verrucose; germ-pores  $4-6 \mu$ , equatorial.

Teleutosori amphigenous, small, whitish gray, subglobose, gregarious; the affected tissue circular, long-elliptical,  $0.3-2.0$  mm; teleutospores ovate to long-ellipsoid, hyaline, 1-celled, round at both ends,  $33.3-57.1 \times 16.7-27.1 \mu$ ; epispore smooth,  $1 \mu$  thick; pedicels hyaline,  $42.8-111.9 \times 5.2-8.6 \mu$ . Pycnospores not discovered.

Suscept: *Acacia confusa* Merr.

Specimens: Touyuan, Tachi, (240 m), 12/2/1963, C.-C. Chen & L.-C. Wu.

Ilan, Tungshan, (9 m), (40 m), 8/27/1963, C.-C. Chen.

Hsinchu, Chingtsao Lake, 9/6/1963, C.-C. Chen.

Kaohsiung, Tapei Lake, (45 m), 10/23/1963, C.-C. Chen, L.-C. Wu, & Y.-S. Lin.

Miaoli, Nanchuang, 11/6/1963, C.-C. Chen & H.-S. Chang.

Ilan, Chauchi, (540 m), 8/30/1963, C.-C. Chen.

Taipei, Yangmingshan, 3/16/1962, C.-C. Chen.

Taipei, Hsintien, (15 m), 4/4/1963, C.-C. Chen.

Taichung, Wusheh, (1142 m), 11/9/1963, C.-C. Chen & H.-S. Chang.

Nantou, Chushan, (165 m), 2/23/1964, C.-C. Chen & S.-C. Jong.

Nantou, Puli, (750 m), 3/15/1964, C.-C. Chen & H.-S. Chang.

Taipei, Pinglin, (170 m), 3/26/1964, C.-C. Chen & S.-C. Jong.

Taipei, Tatun, (400-440 m), 3/29/1964, C.-C. Chen & S.-C. Jong.

Hualien, Tienliao, (15 m), 5/11/1964, C.-C. Chen & S.-C. Jong.

Hualien, Mouwulu, (60-440 m), 5/12/1964, C.-C. Chen & S.-C. Jong.

Hualien, Hsiulin, (60 m), 5/12/1964, C.-C. Chen & S.-C. Jong.

Hualien, Yuli, (505 m), 5/13/1964, C.-C. Chen & S.-C. Jong.

Hualien, Juisui, (200 m), 5/14/1964, C.-C. Chen & S.-C. Jong.

Hualien, Peipu, (10 m), 5/15/1964, C.-C. Chen & S.-C. Jong.

Distribution: China (Taiwan), Japan, Ryukyu.

#### 19. Plaster disease of Cinnamomi

*Septobasidium albidium* Pat.

Hara, S.—Experimental Forest Pathology. p. 283-284, 1927.

Saccardo, P.—Syll. Fung. 11: 118, 1895.

Sawada, K.—Dept. Agric. Gov. Res. Inst. Formosa Special report 2: 87-98, 1911.

\_\_\_\_\_, Discr. Cata. Formosan Fungi. 1: 414-416, 1919.

Yamamoto, Y.—Ann. Phytopath. Soc. Japan 21: 9-12, 1956.

Symptoms: Pale brown, leathery velvet, distinctly outlined with pale color is formed over the trunks, twigs and leaves. At first it is pale white circular,

smooth, but gradually becoming enlarged, leathery, scariose, usually pale brown to greyish brown, spongilliform in the center and finally scaled due to partially breaking. The lesions measure mostly 3–6 cm, even over 10 cm, usually accompanied with scale-insect.

Causal organism: Circular, diffuse, 1 mm thick velvet divided into 3 layer; subiculum brown, compact, plaster-like, unsmooth, usually buried scale-insect, 143–214  $\mu$  thick, hyphae 2.4–4.8  $\mu$  in diameter; mediculum 619–750  $\mu$  in thickness; mycelia of mediculum daedaleus, 3.1–4.0  $\mu$  in diameter; epiculum scariose, 42.8–61.9  $\mu$  (average 52  $\mu$ ) in size; mycelia of epiculum compact, 2.9–4.0  $\mu$  in diameter; probasidia hyaline, smooth, numerous, globose, subglobose or obovate, 7.6–11.3  $\times$  8.2–11.3  $\mu$  in globose, 9.5–15.2  $\times$  8.1–14.8  $\mu$  in subglobose, 14.8–18.5  $\times$  10.5–14.3  $\mu$  in obovate, bearing basidia at the apex; basidia elongate, cylindrical, crooked, hyaline, 1–3-septate, with 1–2 small angular stalks, 20–39  $\times$  3–4.5  $\mu$ ; basidiospores hyaline, curved, scariose, 26.2–30  $\times$  4.8–5.4  $\mu$ .

Suscept: *Cinnamomum camphora* Hees et. Eb.

Specimen: Hualien, Juisui, (340 m), 5/15/1964, C. C. Chen & S. C. Jong.

Distribution: Aequatoria, China (Taiwan), Japan.

## 20. Fortune paulownia scab\*

*Sphaceloma tsujii* Hara

Hara, S.—Forest Dis. p. 116–117, 1927.

Ito, K.—New Illustrated Forest Dis. Lecture p. 195, 1962.

Symptoms: The fungus usually attacks on younger buds and leaves in poorly aerated nursery and older trees, a few years after transplantation. In former case circular or elliptical small brown spots with yellow margin appear predominantly on the twigs and petioles, and finally become scabby spots. The similar lesions appear on the leaves and eventually become fragile, ragged or perforated. The lesions become larger by coalescing numerous spots, grey yellow in color. The disease often cause malformation and distortion of the leaves, particularly one edge of a leaf is infected.

Causal organism: The mycelium hyaline or grey in color, 31–38  $\mu$  in diameter; acervuli at first subepidermal, finally erumpent. 35.7–52.4  $\mu$ ; conidiophores cylindrical, obtuse at the base, 3.5–10.5  $\mu$  in length; conidia ovate, ellipsoid or elongate-ellipsoid, smooth, hyaline, with 2 oil drops, 3.3–7.5  $\times$  2.4–3.8  $\mu$ .

Suscept: *Paulownia fortunei* Hemsl.

Specimens: Hualien, Tienliao nursery, (35 m), 4/11/1964, C.-C. Chen & S.-C. Jong.

\* First time described in Taiwan.

Nantou, Chitou, (1150 m), 8/13/1963, C.-C. Chen & L.-C. Wu.

Distribution: China (Taiwan), Japan.

## 臺灣之森林傳染性病害調查 第一報

陳 其 昌

有關臺灣森林之傳染性病害調查，已有不少報告，其中澤田兼吉之臺灣菌類調查報告，與山本和太郎之 Meliolaceae 一科及 Cercospora 屬之調查，尤為可貴。雖無系統性之研究報告，但乃為後人研究所不可或缺之重要文獻。此次蒙美國農業部 (U. S. D. A.) 之補助，已查悉重要病害共有20種，茲列記其病原菌名如下：

相思樹圓星病菌 (*Cercospora acaciae-confusa* Saw.)，杉苗赤枯病菌 (*C. cryptomeriae* Shirai)，桉木角斑病菌 (*C. epicoccoides* Cke et Mass.)，松葉枯病菌 (*C. pine-densiflorae* Hori et Nambu)，二葉松葉銹病菌 (*Coleosporium Aeterum* (Dies) Sydow)，樟黑點病菌(炭疽病) (*Glomerella Cinnamomi* Yashino.)，松類葉震病菌 (*Lophodermium pinastri* (schred) Chev.)，印度黃檀銹病菌 (*Marvalia achroa* (syd) Anth. et Cumm.)，相思樹小煤煙病菌 (*Meliola koae* stev.)，樟白粉病菌 (*Microsphaera alphi-toideis* Grif. et Maub.)，梧桐瘤腫病菌 (*Nectria pteraspermi* Sawada)，桃花心木瘤腫病菌 (*N. swieteniae-mahoganii* sp. nov.)，柚木銹病菌 (*Olivea tectonae* Thir.)，樹杞輪斑病菌 (*Pestalotia bladhaie* Saw.)，扁柏葉枯病菌 (*P. funerea* Desm.)，廣葉杉葉枯病菌 (*P. shiraiana* P. Henn.)，柳杉赤枯病菌 (*Phoma cryptomeriae* Kaw.)，相思樹銹病菌 (*Poliotelium hyalospora* (saw) Mains)，樟膏藥病菌 (*Septobasidium albidum* pat.)，泡桐瘡痂病菌 (*Sphaceloma tsujii* Hara) 等。其中桃花心木瘤腫病菌為新種；扁柏葉枯病菌及泡桐瘡痂病菌為臺灣新記錄。