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Flora of Rust Fungi in the Ryukyu Archipelago*

By

Shun-ichi SHIMABUKURO**

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I. Introduction

The present paper is intended to report the results of the author's studies on the flora of rust fungi in the Ryukyu Archipelago, including Tokara Isls., Satsunan Isls., Amami Isls., Okinawa Isls. and Sakishima Isls.

The intensive studies on the rust fungi from the Ryukyu Islands were begun

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in April 1953, when Dr. Naohide Hiratsuka, who is the authority of Uredinology, came to University of the Ryukyus as a visiting Professor. Thereafter, the author started to study on the present topic under his direction. From October 1958 to July 1959, the author had an opportunity to receive his suggestions and criticisms at Hiratsuka Laboratories of Phytopathology and Mycology at Tokyo, as a dispatched research worker of University of the Ryukyus.

The number of specimens of rust fungi examined is about 3,000. These specimens are all kept in the Hiratsuka Herbarium, Tokyo, Japan, with duplicated thereof deposited in the Herbarium of University of the Ryukyus.

It is a pleasure for the author to express his appreciation to Prof. Dr. Naohide Hiratsuka of Tokyo University of Education, under whose direction the present work was executed, for his useful suggestions and criticisms. Acknowledgements are also due to Dr. Genshu Asato, President of the University of the Ryukyus for making available facilities of the University in order that this research might be carried out. He is also indebted to the late Prof. Takashi Naito (Kagoshima, Japan), Prof. Sumihiko Hatsushima (Kagoshima University), Dr. J. Ohwi (National Science Museum, Tokyo, Japan), Messrs. Tetsuo Amano and Shinjun Tawada of the Government of the Ryukyu Islands for identification of host plants of the fungi, and to Messrs. Yoshima Niuro and Masao Tamori for their faithful assistance on the present investigation.

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II. Geological and climatic description of the Ryukyu Archipelago

The Ryukyu Archipelago, treated in this thesis, will include islands numbering more than one hundred and forty, which are located on the curvilinear chain between southern end of the Kyushu mainland and the northeastern end of Formosa. The Archipelago is 1287 kilometers in length and is located within the area lat. 24°—31°51' N. and long. 123°—131° E.

The archipelago can be divided into the following five groups: 1) Tokara Islands, 2) Satsunan Islands (Osumi Islands), 3) Amami Islands, 4) Okinawa Islands, and 5) Sakishima Islands (Miyako Islands, Yaeyama Islands).

From the standpoint of the geological structure, Dr. Koto (C-3) and Dr. Hanzawa (c-1) advocates that Ryukyu Archipelago consists of three longitudinal zones. The islands belonging to the three zones are as follows:

A. The Outer Zone (Tertiary and Quaternary)—1) Tanegashima Island, 2) Mageshima Island, 3) Kikaishima Island, 4) Okierabu Island, 5) Most of the middle and southern part of Okinawa Island and the dependent islets located in the eastern ocean, 6) The greater part of Iriomote Island, 7) Kuroshima Island of Yaeyama Islands, 8) Hateruma Island and 9) Yonaguni Island.

B. The Middle Zone (consisting mostly of the Paleozoic stratum)—1) Yakushima Island, 2) Amami-oshima Island, 3) Tokunoshima Island, 4) Yoronshima Island, 5) Most of the northern, and a small part of the middle and southern Okinawa Island, 6) Iheya Island, 7) Izena Island, 8) Kouri Island, 9) Iejima Island, 10) Sesoko Island, 11) Yagaji Island, 12) Ishigaki Island, 13) Kobama Island, 14) Taketomi Island and 15) Northeastern of Iriomote Island.

C. The Inner zone (mostly Volcanic Zone)—1) Northern part of Tokara Islands (Takeshima, Kuroshima and Iwoshima Islands), 2) Kuchinoerabu Island, 3) Southern part of Tokara Islands (Nakanoshima, Suwanoseshima, Akusekishima, Takarashima and Kotakarashima Islands), 4) Iwotorishima Island, 5) Aguni Island, 6) Kumejima Island, and 7) Senkaku Islands.

1. Tokara Islands

Tokara Islands are located within the area from lat. 31° N. to lat. 28°46' N. and from long. 128°51' E. to long. 130°30' E. Tokara Islands run in the direction of northeast to southwest, and are a part of the Middle Zone which consist of Volcanic Zones.

The geographical elements of each island belonging to the Tokara Islands are as follows:

Islands	Locality	Circumference (km)	Area in km ²	Highest mountain (m)
Takeshima	Lat. 30°49' N. Long. 130°23' E.	9.2	3.85	228
Iwojima	Lat. 30°48' N. Long. 130°14' E.	18.75	11.71	717
Kuroshima	Lat. 30°50' N. Long. 129°56' E.	13.50	15.60	621
Kuchinoshima	Lat. 29°55'09" N. Long. 129°55' E.	15.28	13.30	675
Nakanoshima	Lat. 29°51'30" N. Long. 129°55' E.	28.04	27.55	1030
Gajashima	Lat. 29°54' N. Long. 129°33'10" E.	9.28	4.50	509
Tairashima	Lat. 29°42' N. Long. 129°34'30" E.	4.52	1.99	245
Suwanoseshima	Lat. 29°36' N. Long. 129°42' E.	24.48	22.33	818
Akusekishima	Lat. 29°27' N. Long. 129°39' E.	8.76	7.04	586
Kotakarashima	Lat. 29°12'30" N. Long. 129°20' E.	3.2	1.17	108
Takarashima	Lat. 29°08' N. Long. 129°13' E.	12.12	5.94	291

(According to Jitto-son & Mishima-mura Office Bulletin, 1954, 1955)

Tokara Islands are under the administration of Ohsima-gun, Kagoshima Pref., Japan and consists of two municipalities; the so-called Mishima-mura and Jitto-son. Mshima-mura is located in lat. 30° N. northward and Jitto-son southward. Mishima-mura consists of the three islands, Takeshima Island, Iwojima Island and Kuroshima Island.

Takeshima Island is located in southwest of Kagoshima city and is 80 kilometers from the city. This island is closest one to the Kyushu mainland. The island runs from east to west, and is approximately 5 kilometers long and approximately 2 kilometers wide. Its outstanding features are its volcanic origin and its plateau type topography. The seashore consists largely of cliffs. There are two mountains, called Magome-dake (228 m.) and Takahira-dake (180 m.). These mountains consist mostly of pyroxene-andesite and Basalt.

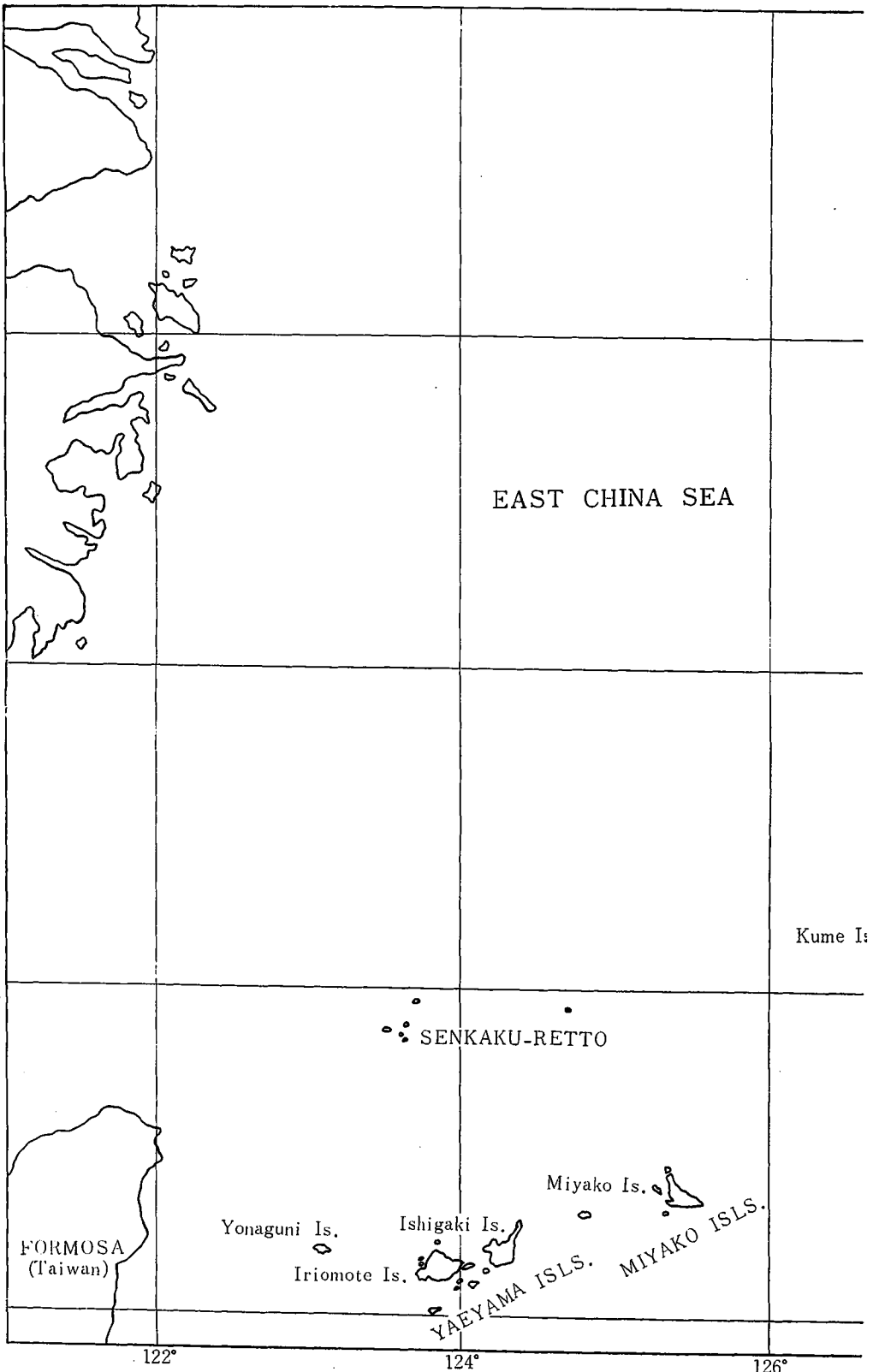
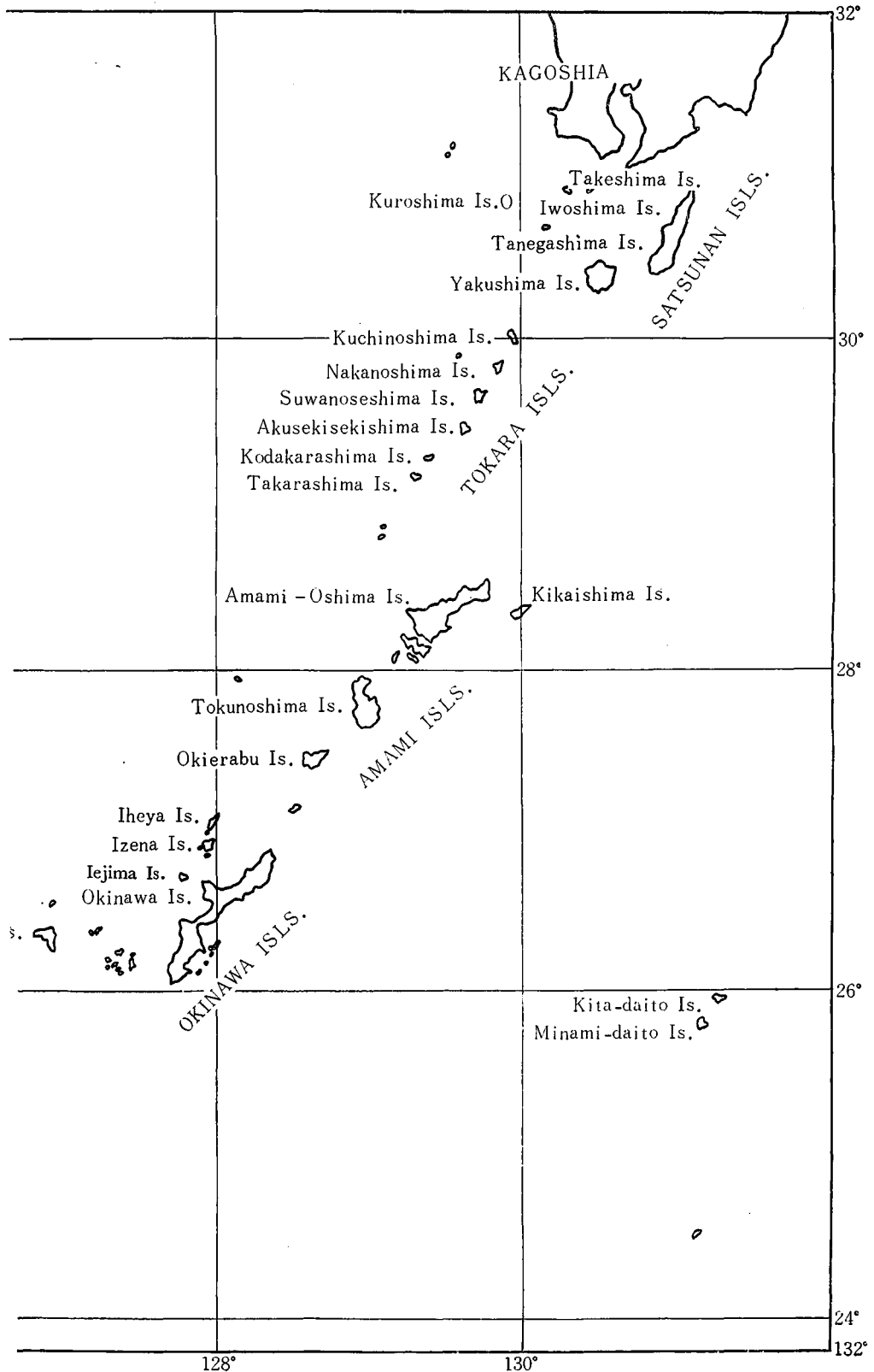


Fig. 1. Map of the



Ryukyu Archipelago.

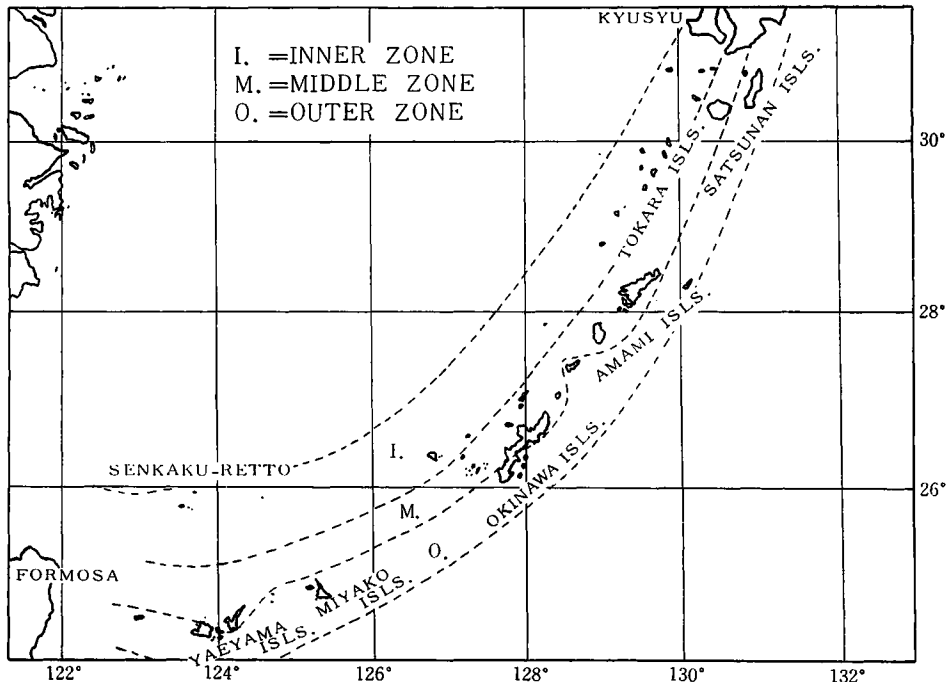


Fig. 2. Three zones of the Ryukyu Curve.

Iwojima Island is 7.5 kilometers west of Takeshima Island, and 6 kilometers long (from east to west) and 3 kilometers wide (from south to north). Mt. Iwo-dake (717 m.) is located near the eastern seashore of the island. It is an active volcanic mountain. The mountain is constantly belching aqueous vapor and sulphuric gas. There is no plant growth on or around the mountain. Mt. Yahazu-dake (340 m.) which runs from east to west is located at the northern seashore of the island. It is an old volcanic mountain.

Kuroshima Island is approximately 30 kilometers west of Iwojima Island. The island is shaped like an ellipse, which runs from east to west. It is 5.5 kilometers long and 4 kilometers wide and is a little larger than Iwojima Island. The mountains are covered with thick woods and forests. The seashore of the island is cliffs which are from 100 to 200 meters high. The rock of the island consists of alternate layers of Pyroxene-andesite lava and agglomerate.

The islands located south of lat. 30° N., that is to say, south of Nakanoshima Island, belong to Jitto-son. These islands can be divided into three groups, according to their geological features.

Nakanoshima Island and Suwanoseshima Island belong to the first group, and have typical volcanic topography, and the volcanic are active, even today.

Kuchinoshima Island belongs to the second group, the mountains of which are extinct volcanoes. Parts of the mountains are collapsed and they are shaped like a caldera.

Tairashima Island, Kotakarashima Island and Takarashima Island belong to the third group. These islands do not retain any volcanic characteristics, but the volcanic products present that there used to be volcanic mountains. The islands are surrounded by well-developed coral reefs, especially in Takarashima Island and Kotakarashima Island.

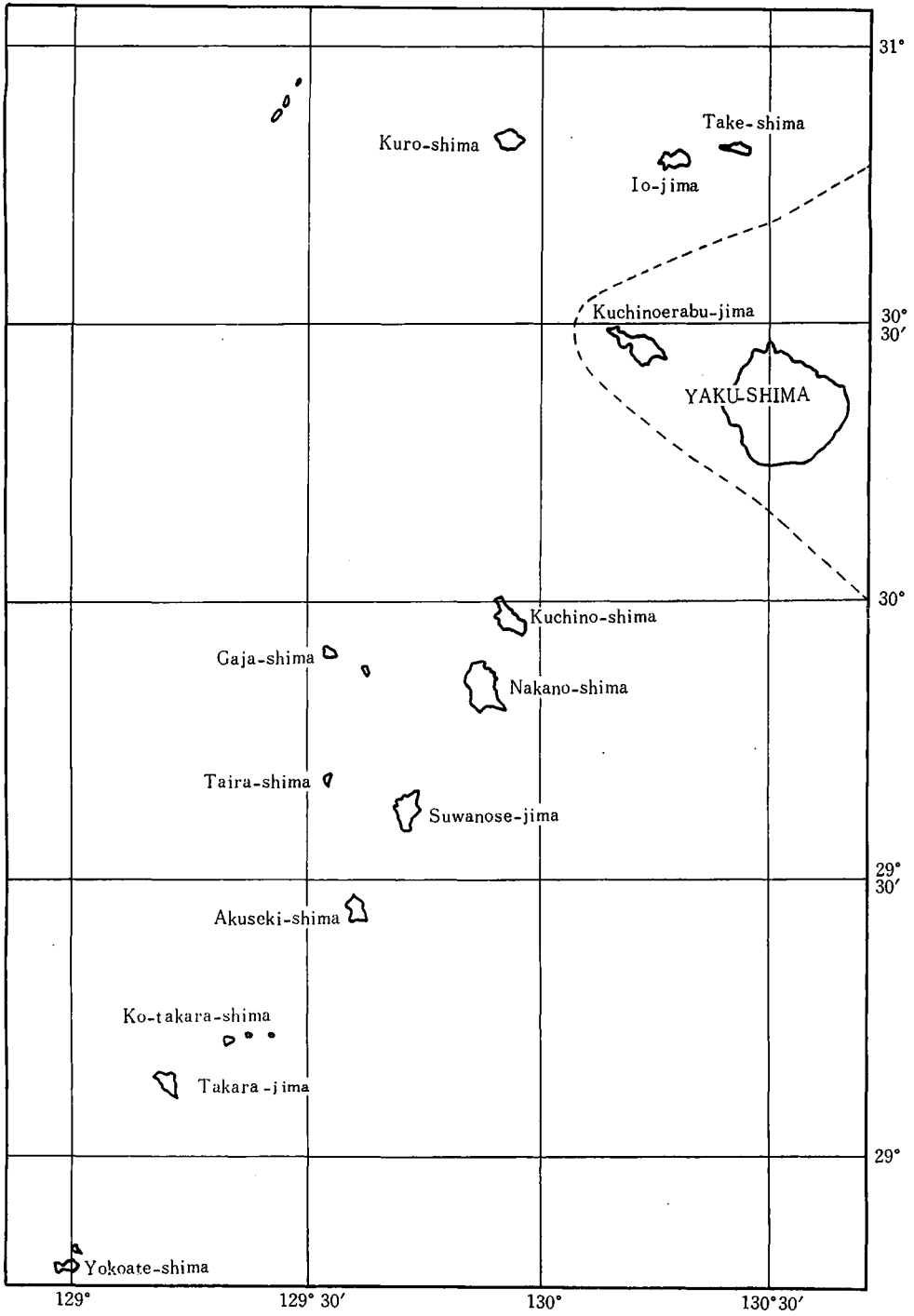


Fig. 3. Tokara Islands

The climatic condition of the Tokara Islands is shown in the following tables.

Table 1. Temperature and precipitation of Takeshima Island

		Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	13.0	18.0	19.5	25.0	24.0	29.5	30.5
	Min.	6.0	4.0	10.0	15.0	13.5	20.0	25.0
	Ave.	9.8	13.3	15.2	20.0	21.3	23.8	28.3
Precipitation (mm)		129.9	65.6	294.4	123.0	312.0	507.0	129.9
		Aug.	Sept.	Oct.	Nov.	Dec.	Annual	
Temperature (°C)	Max.	32.0	30.3	26.0	21.0	21.0	24.1	
	Min.	24.5	25.0	15.0	13.0	12.0	15.2	
	Ave.	28.35	28.0	22.8	17.2	16.6	20.38	
Precipitation (mm)		146.1	118.2	146.4	167.7	58.5	2,261.7	

(Records of 1955 by Takeshima Primary School)

Table 2. Temperature and precipitation of Nakanoshima Island

		Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	14.9	15.4	18.6	22.4	25.9	28.4	30.9
	Min.	9.3	10.1	12.4	15.0	18.8	21.1	23.6
	Ave.	12.1	12.7	15.5	18.7	22.3	24.8	27.3
Precipitation (mm)		165.2	192.4	229.2	264.9	304.3	463.4	248.2
		Aug.	Sept.	Oct.	Nov.	Dec.	Annual	
Temperature (°C)	Max.	31.4	29.9	25.4	21.7	18.1	23.6	
	Min.	24.8	21.9	18.7	14.4	11.0	16.7	
	Ave.	28.1	25.9	22.1	18.0	14.5	20.2	
Precipitation (mm)		182.6	304.8	227.6	144.7	176.2	3,132.1	

(According to the Bulletin of Nase Weather Station, 1954)

Because of the fact that these islands are surrounded by the ocean, they have an oceanic climate. The weather is very warm, the annual average temperature being above 20°C. The warmest month is August and the coldest month is January. There is no forest. The annual rainfall is about 2,260 mm in Takeshima Island and 3,000 mm in Nakanoshima Island. Typhoons occur on the islands in the months of August, September and October.

2. Satsunan Islands

Satsunan Islands include Tanegashima Island, Yakushima Island, Kuchinoshima Island and Mageshima Island. They are the northernmost part of Ryukyu Archipelago, and are close to Kyushu proper.

Tanegashima Island is 43 kilometers southwest of Sata-point of Kyushu proper, and 115 kilometers from Kagoshima port. The gate of the island is Nishinomote

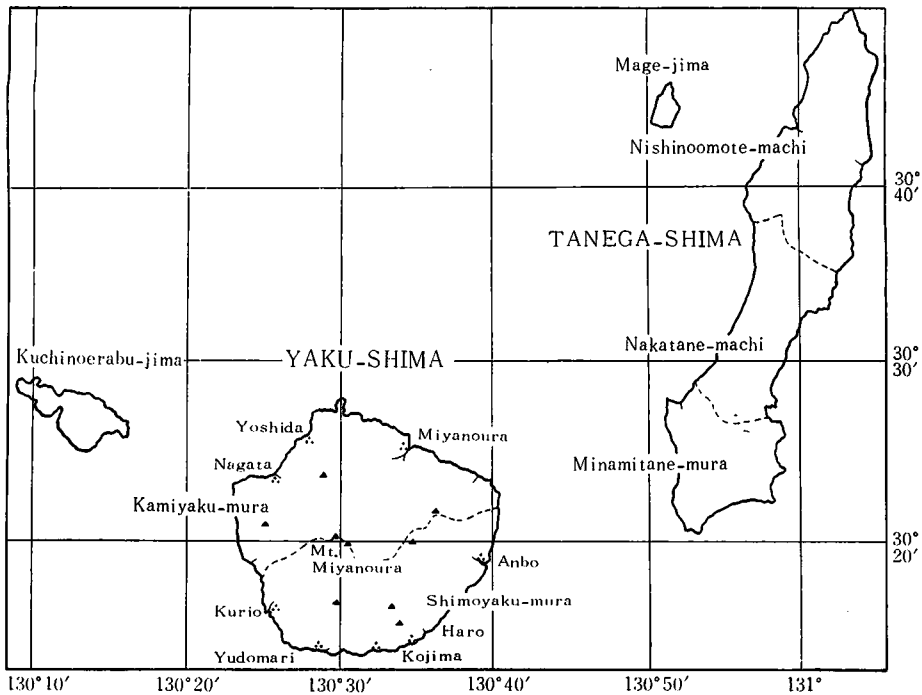


Fig. 4. Satsunan Islands

port, which is located at the northwest of the island. It is situated in long. $131^{\circ}05' E.$ — $130^{\circ}52' E.$ and lat. $30^{\circ}50' N.$ — $30^{\circ}21' N.$ It stretches from N.N.E. to S.S.W., and is 57 kilometers in length, and the width is from 1.2 to 6.5 kilometers. The area of the island is 447 square kilometers and it is 150 kilometers in circumference. This island is plain, like a plateau; the highest point being only 282 meters high. Like other islands within the Ryukyu Archipelago, there is an abrasion bench, from ten to twenty meters above the sea level along the coastline of this island, but this belt is not wide enough to be called a plain. Rice fields are found at several places. The stratum of this island is tertiary; the surface layer being a thick volcanic ash soil, what is called Kuroboku and Akaboku, and underneath this layer there is a clay layer, which has been formed as a result of the weathering of sandstone and shale. Very few rivers are seen in the island, the main one being Komekawa river, which empties into Nishinoomote-machi. Many swamps are seen near Kumano on the east coast, which is between Nakatane-mura and Minamitane-mura.

The climate is rather mild throughout the year, and it never snows on the island. Thus, about 70% of 740 species of pteridophyta and phanerogam in the island are found in Amami-oshima, 64% in Formosa and from 26 to 27% in Philippines and in Indo-China.

An outline of the climatic conditions on the island are as follows; average annual temperature is $19^{\circ}C.$, the warmest month is August and the coldest month is January. The temperature gets as low as $1.5^{\circ}C.$ but it never snows and frost occurs only a few times in January. The annual precipitation is 2,500 mm., which is rather higher compared with other places. During the months from December to March, monsoons blow from the southeast. The average wind velocity is 5.5 meters, which is rather strong. Typhoon visits the island many times in the summer.

Table 3. Climatic situation of Satsunan Islands (Tanegashima Islands)

	Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	14.4	15.5	17.8	21.3	24.0	26.4
	Min.	8.3	9.0	10.8	14.6	17.7	20.9
	Ave.	11.3	12.3	14.2	17.9	20.7	23.4
Precipitation (mm)	104.9	121.9	157.6	207.2	382.3	650.5	209.8
Rainy days	16.4	16.0	16.8	16.4	19.0	21.0	19.8
Clear days	4.0	3.4	3.2	4.2	3.0	1.2	2.4
	Aug.	Sept.	Oct.	Nov.	Dec.	Annual	
Temperature (°C)	Max.	31.9	29.4	24.9	21.2	17.7	22.9
	Min.	25.0	22.7	18.6	15.1	11.0	16.5
	Ave.	27.8	25.6	21.6	18.0	14.3	19.5
Precipitation (mm)	126.6	346.8	173.9	170.6	79.8	2,731.9	
Rainy days	7.6	18.6	14.2	12.0	12.6	190.4	
Clear days	8.8	5.0	5.6	7.8	8.2	56.8	

(According to "Climatic tables of Kyushu region" by Fukuoka District Central Meteorological Observatory, 1957)

Yakushima Island is 80 kilometers south of Sata-point, with an area of 539.37 square kilometers. It is almost round in shape; the diameter from east to west being 27.6 kilometers and 25.2 kilometers from south to north with the circumference being about 104 kilometers. The highest mountain on the island is Miyanoura-dake which is 1935 meters high. It is also the highest of all mountains in the Ryukyu Archipelago. Besides that mountain, there are Nagata-dake and Kuromi-dake which are 1890 and 1836 meters high, respectively. When one sees the island from far away on the water, he gets the impression that there are nothing but rugged mountains on the island. As to the topography, this island forms three steps; the outer one is the abrasion bench, the next one is Maedake slope and to is the Okutake area, which is the center of the island. Along the coastline of the north, east and south sides of the island, there is a plateau which is from two to four kilometers wide and from one hundred to one hundred and eighty meters above the sea level. The west of this island is a bluff which borders on the water. At the second step, the Maedake slope, there are many steep mountains, which are about one thousand meters high. At the Okutake area, which is the innermost part of the island, there are many high rugged mountains, as mentioned above. The rivers which start at the Okutake are Ambo, Miyanoura, Nagata, Kurio and Taino.

An outline of the climatic information of the island is as follows:

This island has an oceanic climate. The temperature is rather high, therefore there is no frost near the coastline area throughout the year. According to the report of the Isso Weather Station, the temperature in July and February are 26.5°C. and 11.3°C., respectively, and the average annual temperature is 18.1°C. The average annual temperature at the Kosugidani office of forestry, which is 650 meters above the sea level, is 14.9°C. There is always snow on the ground twenty centimeters thick during the months December to March. According to the weather observation made from 1938 to 1956, the average annual precipitation at Isso was 3,752 mm. There were 208 rainy days per year during the period cited. At the

Table 4. Climatic situation of Satsunan Islands. No. 1 (Isso*, Yakushima Island)

	Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	13.7	14.1	17.2	20.5	23.8	30.1
	Min.	8.2	8.4	10.5	13.4	17.0	23.7
	Ave.	11.2	11.3	13.8	16.8	20.2	26.5
Precipitation (mm)	177.8	174.1	229.9	239.1	368.0	644.6	403.5
Rainy days	20.3	17.8	18.1	14.5	16.1	18.7	16.8
Clear days	1.2	1.2	1.8	4.2	1.8	1.0	4.2
	Aug.	Sept.	Oct.	Nov.	Dec.	Annual	
Temperature (°C)	Max.	30.1	28.6	24.4	20.4	16.1	22.1
	Min.	24.0	22.2	18.7	14.5	10.2	15.9
	Ave.	26.7	25.2	21.6	17.6	13.3	18.1
Precipitation (mm)	418.5	282.8	366.8	240.1	206.8	3,752.0	
Rainy days	17.0	16.3	16.2	16.2	20.1	208.1	
Clear days	3.8	3.8	2.5	2.6	1.2	29.3	

(According to the same source of the above table)

* Isso is located seashore on the northern part of the island.

Table 5. Climatic situation of Satsunan Islands. No. 2
(Kosugidani*, Yakushima Island)

	Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	8.9	9.7	14.6	17.6	21.1	26.2
	Min.	1.3	2.1	5.7	7.7	11.8	18.4
	Ave.	6.0	6.8	11.3	14.6	16.8	22.5
Precipitation (mm)	442.8	507.1	554.6	637.8	877.1	1120.1	680.8
	Aug.	Sept.	Oct.	Nov.	Dec.	Annual	
Temperature (°C)	Max.	25.7	24.6	17.0	16.8	12.8	18.2
	Min.	18.8	16.2	10.8	9.8	5.6	10.4
	Ave.	22.7	21.5	13.9	12.6	9.5	14.9
Precipitation (mm)	1309.3	619.5	833.9	336.7	389.4	8,299.1	

(Records by Shimoyaku Forest Office)

* Kosugidani is located nearly in the center of the island 650 m. above the sea level.

Kosugidani office of forestry mentioned above, the average annual precipitation is 8,299 mm. There are seventeen rainy days per month. Typhoons pass through this island very often.

3. Amami Islands

The Amami Islands are located in the area from lat. 27° to 28°35' N. and from long. 127°23' to 130°03' E. The over all explanation of the main islands is as follows:

Amami-oshima Island is the largest among the islands. The circumference of the island is 569 kilometers and the area is 833 square kilometers. The island stretches from northeast to southwest. Most of the island is occupied by mountains. Mt. Yuwan-dake (694 m.) is the highest mountain of the island. The longest river is Sumiyo-kawa (16 km. long), which flows into Simuyo-wan (bay).

Kakeroma Island, which is one of dependent islets, is located at south of Amami-oshima Island. It also stretches from northeast to southwest. The oldest stratum of the islands is Paleozoic, and Igneous rock penetrate the Paleozoic stratum here. The second oldest stratum is Riukiu limestone, which can be seen at the east seaside. Kunigami gravel covers the plateau of Kasari peninsula. The islands are surrounded by the raised coral reefs.

Kikaishima Island is approximately 24 kilometers east of Amami-oshima Island. The island is located within the area from lat. $28^{\circ}17'$ to $28^{\circ}23'$ N. and long. $129^{\circ}54'$ to $130^{\circ}03'$ E. The circumference is 43 kilometers and the area is 62 square kilometers. The geological characteristic of the island can be said to be a level plain. The stratum is the Tertiary Shimajiri Group, which consists of marl and sandstone. Some part of the surface of Shimajiri Group is covered by Riukiu limestone, and some is covered by Kunigami gravel. The island is surrounded by high raised coral reefs.

Tokunoshima Island is approximately 28 kilometers southeast of Amami-oshima Island. The island is located within the area from lat. $27^{\circ}39'$ to $27^{\circ}54'$ N. and from long. $128^{\circ}52'$ to $129^{\circ}02'$ E. The circumference is 82 kilometers and the area is 247

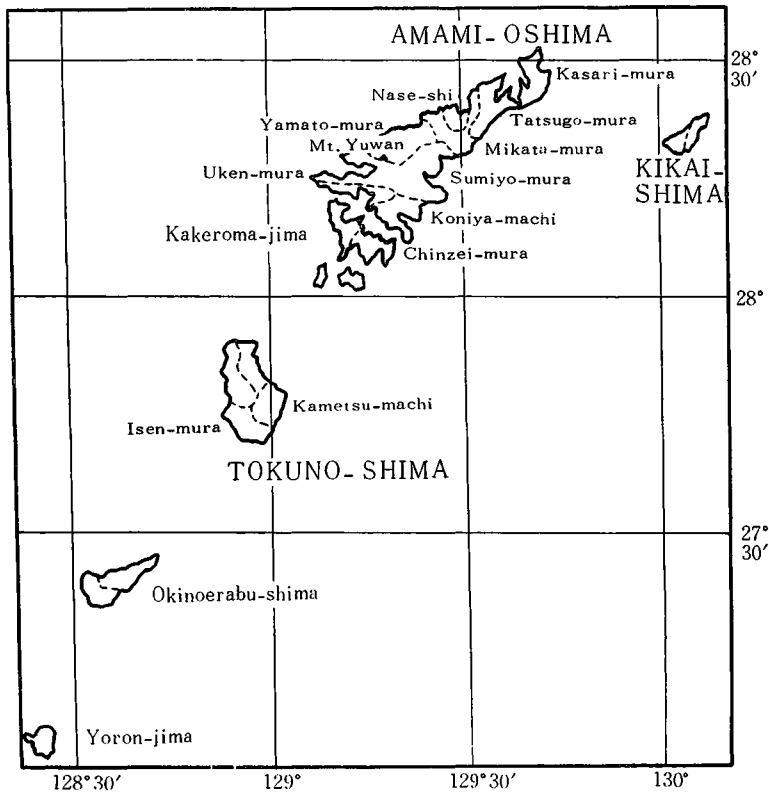


Fig. 5. Amami Islands

square kilometers. The major axis is from north to south, and is 25.3 kilometers in length. The highest mountain of the island is Inokawa-dake, which is 646 meters above the sea level. The other mountains are Amagi-dake (533 m.), Mikatadori-dake (496 m.), Mitada-dake (437 m.) and Inutabu-dake (417 m.). The Akirigami-kawa river is 7 kilometers long, and flows into the East China Sea. The stratum of the island is Paleozoic which is mainly limestone and Kunigami gravel. There is no Shimajiri Group.

Table 6. Climatic situation of Amami Islands. No. 1.
(Amami-oshima Island)

		Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	17.6	17.6	19.7	23.0	25.8	28.9	31.6
	Min.	11.2	11.3	13.0	16.1	18.7	22.3	24.6
	Ave.	14.3	14.4	16.2	19.3	22.0	25.2	27.7
Precipitation (mm)		186.5	207.7	221.0	236.2	345.6	426.9	250.9
Rainy days		22.7	20.9	19.7	18.1	20.1	20.5	17.4
Clear days		0.7	0.5	0.9	1.4	0.9	0.6	1.4
		Aug.	Sept.	Oct.	Nov.	Dec.	Annual	
Temperature (°C)	Max.	31.4	30.1	26.6	23.0	19.5	24.5	
	Min.	24.5	23.0	19.6	16.2	13.0	17.8	
	Ave.	27.5	26.1	22.8	19.4	16.2	20.9	
Precipitation (mm)		307.2	270.5	272.8	223.6	170.2	3,119.1	
Rainy days		19.9	19.2	18.0	16.8	20.0	233.3	
Clear days		1.7	2.0	1.6	1.1	0.8	13.6	

(According to "Climatic tables of Kyushu region" by Fukuoka District Central Meteorological Bureau, 1957)

Table 7. Climatic situation of Amami Islands. No. 2.
(Kikai, Kikai Island)

		Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	18.0	18.0	20.7	23.8	26.7	28.5	32.4
	Min.	12.0	12.4	14.0	15.8	19.2	22.1	25.0
	Ave.	15.0	15.2	17.3	19.8	23.0	25.3	28.7
Precipitation (mm)		120.3	124.8	136.5	142.9	207.4	286.5	137.5
		Aug.	Sept.	Oct.	Nov.	Dec.	Annual	
Temperature (°C)	Max.	32.5	31.4	27.4	23.8	19.8	25.2	
	Min.	24.9	23.2	20.7	16.7	13.7	18.5	
	Ave.*	28.7	27.3	24.0	20.4	16.7	21.8	
Precipitation (mm)		114.5	133.4	114.2	134.5	111.8	1,717.5	

(According to Bull. of Kagoshima Weather Station, 1957)

* Average of Max. and Min.

Table 8. Climatic situation of Amami Islands. No. 3.
(Kametsu, Tokunoshima Island)

		Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	18.3	19.6	21.6	24.6	27.0	28.9	32.5
	Min.	11.7	12.8	14.6	16.7	20.1	22.8	25.9
	Ave.*	15.0	16.2	18.1	20.7	23.6	25.9	29.2
Precipitation (mm)		147.0	156.0	149.1	174.9	246.4	278.8	127.8
		Aug.	Sept.	Oct.	Nov.	Dec.	Annual	
Temperature (°C)	Max.	32.6	32.2	28.2	24.4	20.8	25.8	
	Min.	25.5	24.4	21.6	18.1	14.8	19.1	
	Ave.*	29.1	28.3	24.9	21.3	17.8	22.6	
Precipitation (mm)		144.7	154.5	133.2	131.4	130.8	1,972.7	

(According to the same source as No. 2)

* Average of Max. and Min.

Table 9. Climatic situation of Amami Islands. No. 4.
(Wadomari, Okierabu Island)

		Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	17.9	18.3	20.7	22.7	25.1	28.7	31.4
	Min.	12.5	12.8	15.0	17.7	20.4	23.9	26.1
	Ave.	14.9	15.6	17.6	19.9	22.5	25.9	28.3
Precipitation (mm)		155.5	150.9	146.8	192.3	202.9	305.3	121.5
Rainy days		20.0	19.0	18.0	20.0	22.0	14.0	15.0
Clear days		1.0	3.0	2.0	1.0	1.0	3.0	3.0
		Aug.	Sept.	Oct.	Nov.	Dec.	Annual	
Temperature (°C)	Max.	30.8	29.7	26.7	23.1	20.2	24.6	
	Min.	25.3	24.4	21.4	18.1	15.0	19.4	
	Ave.	27.8	26.8	23.8	20.3	17.2	21.7	
Precipitation (mm)		210.5	409.9	102.5	157.3	95.6	2,251.0	
Rainy days		17.0	17.0	12.0	14.0	16.0	204.0	
Clear days		4.0	5.0	5.0	2.0	2.0	32.0	

(According to "Climatic tables of Kyushu region" (except Precipitation)" by Fukuoka District Central Meteorological Observatory, 1957)

The source of Precipitation is same as No. 2.

Okierabu Island is approximately 34 kilometers southwest of Tokunoshima Island, and is located within the area from lat. 27°26' to 27°19' N. and long. 128°31' to 128°43' E. The island is the shape of a triangle, the main axis of which is from northeast to southwest, and is 20 kilometers in length. The island gets narrower toward the northeast. The circumference of the island is 51 kilometers and the area is 93 square kilometers. Mt. Koshiyama (189 m.) is located at the northeast part of

the island, and Mt. Oyama (246 m.) is located at the southern center part of the island. Other areas of the island are mainly low plains. There is no river on the island. The circumference of the island is Riukiu limestone cliff. The plateau of the island is coral reefs.

Yoronshima Island is a small island, approximately 29.5 kilometers south of Okierabu Island and 22 kilometers from Okinawa Island. The island is covered by the raised coral reefs.

The climatic condition of the Amami Islands is shown in the above table.

4. Okinawa Islands

Okinawa Islands are situated within the area shown by the following points of latitude and longitude: 1) Lat. 28°00' N., long. 124°40' E., 2) Lat. 28°00' N., long. 128°18' E., 3) Lat. 27°00' N., long. 128°18' E., 4) Lat. 27°00' N., long. 131°50' E., 5) Lat. 24°00' N., long. 133°00' E., 6) Lat. 24°00' N., long. 128°00' E. and 7) Lat. 27°00' N., long. 124°02' E.

The total area is 1,500 square kilometers. The main island is Okinawa Island, which is located within the area from lat. 26°04' to 26°52' N. and from long. 127°38' to 128°20' E.

Topographically speaking, Okinawa Island can be divided into three districts, namely; northern district, middle district and southern district.

The northern district is that north of the isthmus where the village of Ishikawa is located. The district is 67 kilometers long and from to 15 kilometers wide.

Most of the central range of mountains, which runs through the district from north to south, is covered by forests. The mountains of the range, from north to south, are Nishime-dake (421 m.), Ibu-dake (355 m.), Ushikuki-dake (457 m.), Yonaha-dake (498 m.), Iyu-dake (454 m.), Tanyu-dake (390 m.) and Onna-dake (366 m.).

Motobu peninsula juts out westward from the side of the district. Mt. Yae-dake (457 m.) and Mt. Katsuu-dake (460 m.) are located at the southern part of the peninsula.

The rivers which flow to the western coast of the district, from north to south, are Benoki-kawa, Sate-kawa, Yona-kawa, Hiji-kawa, Taiho-kawa, Genka-kawa and Hanechi-kawa. Those which flow into the eastern coast, from north to south, are Oku-kawa, Aha-kawa, Fukuji-kawa, Kesaji-kawa, Teima-kawa and Kanna-kawa.

At the northwestern side of the northern district, there is a group of dependent islets called the Iheya Islands, which consist of Iheya Island (19.28 km²), Ijena Island (26.84 km²) and other small islets. The Iheya Islands are situated within the area from lat. 26°53' to 27°05' N. and from long. 127°54' to 128°02' E.

On the eastern side of Motobu Peninsula, lie two islets called Kouri Island (2.93 km²) and Yagaji Island (5.86 km²). On the western side lie Iejima Island (20.20 km²), Sesoko Island (2.78 km²) and Minna Island (0.31 km²).

The mountains and the plateaus of the northern district are made up of Paleozoic group, which consist of Sandstone, Riukiu limestone, slate and Kunigami gravel. The dependent islets consist of the same kind of rocks.

The middle district is the area from the Ishikawa Isthmus southward to the line which connects Naha-shi and Yonabaru-machi. The middle district is 26 kilometers long from north to south, with the greatest width being 17 kilometers.

The central range of mountains of the northern district extends to this middle district from the Yontanzan-dake mountain. There are abraded plateaus on the east and south of the mountain.

Yokatsu Peninsula juts out southeast from the northern part of the middle district. It is 8 kilometers long and 3 kilometers wide, There are only two rivers

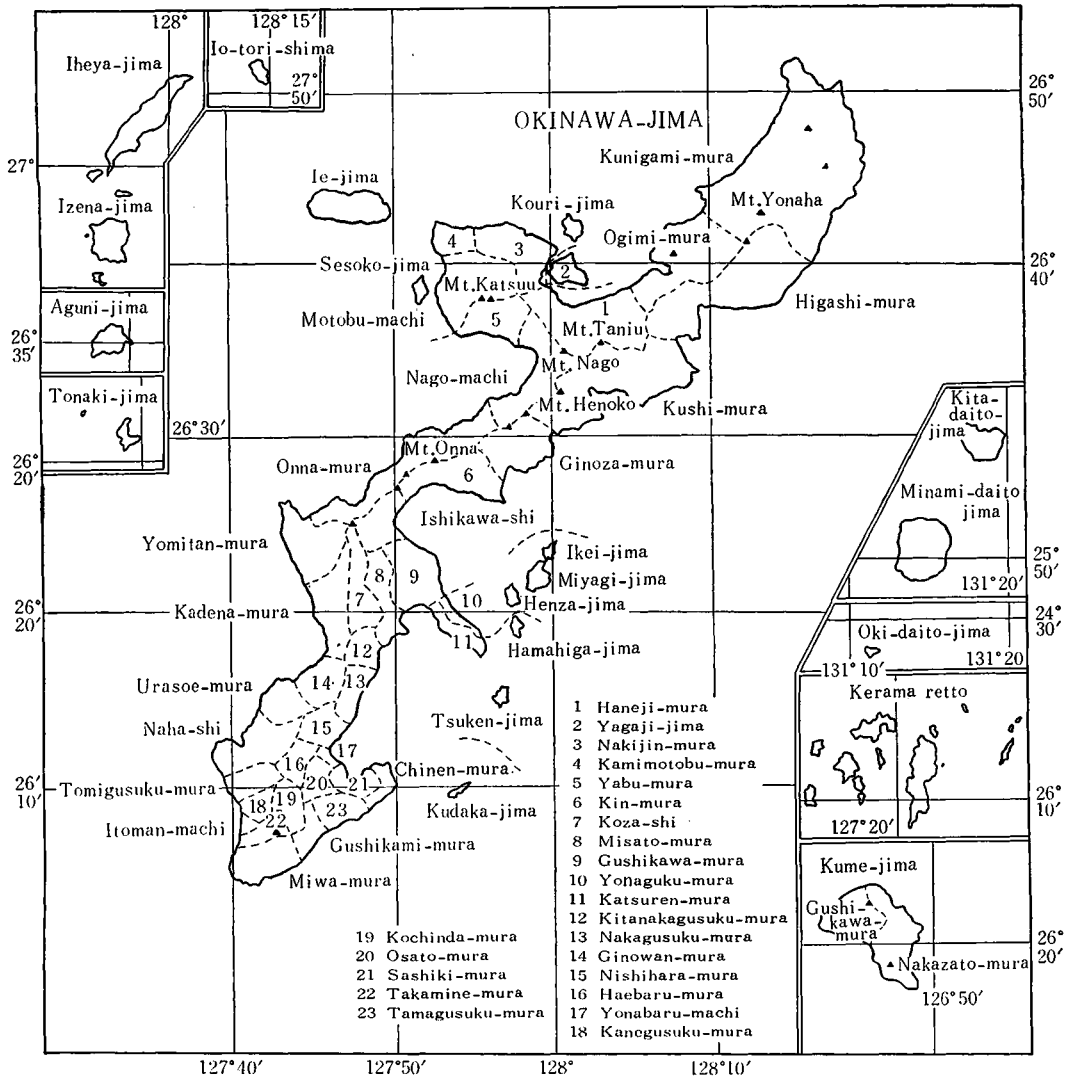


Fig. 6. Okinawa Islands

in this district, one flows to the west coast called Hija-kawa and another flows to the east coast called Tengan-kawa.

The middle district is made up mainly of Tertiary strata and partly by Paleozoic strata which in turn consist of alate, Riuki limestone, Kunigami gravel, and raised coral reefs.

The dependent islets of the middle district are in the sea to the east. They are Ikei Island (1.54 km²), Miyagi Island (4.94 km²), Hamahiga Island (2.16 km²), Tsuken Island (1.70 km²), Henza Island (2.47 km²) and Kudaka Island (8 km²).

The southern district includes all the area southward from the line which connects Naha-shi and Yonabaru-machi. The southern District is nearly triangular, and its greatest width is 20 kilometers.

The outstanding characteristics of this area are the long stretch of hills and

plateaus, the strata of which is made up of Riukiu limestone. The plateaus are surrounded by wide raised beach deposits.

The dependent islets of Okinawa Island, besides those stated in the preceding paragraphs, are Kumejima Island (55.06 km²), Aguni Island (6.69 km²), Tonaki Island (3.24 m²) and the Kerama Islands, which are located west of Okinawa Island.

Kumejima Island lies 105 kilometers west of Naha Port. The exact location of the island is from lat. 26°13' to 26°17' N. and from long. 126°42' to 126°49'5" E. It is shaped like a triangle, and its length from the southeastern end to the northwestern end is 13.5 kilometers.

Mt. Uegusuku-dake (310 m.) is located at northern part of Kumejima Island and Mt. Ara-dake (287 m.) at southern part of the island.

Shimajiri-beds, which belong to Tertiary stratum constitute the foundation of Kumejima Island. The upper layer of the Shimajiri-beds consist of Andesitic agglomerate and Andesitic lava. The foundation of the plateaus, located at western part of the island consists of Riukiu limestone. The upper layer of the Riukiu limestone consists of Kunigami gravel. The western seashore of the island consists mainly of raised coral reefs and raised beach deposits.

Kerama Islands lie 37 kilometers west of Naha Port and consist of Tokashiki Island (8.95 km²), Zamami Island (8.48 km²), Aka Island (1.08 km²), Yakabi Island (1.08 km²) and Kuba Island (1.23 km²). The stratum of the islands belongs to Paleozoic group.

Daito Islands are east of Okinawa Island 287 kilometers and consist of Kita-daito Island, Minami-daito Island and Oki-daito Island.

Kita-daito Island is located at lat. 25°56'40" N. and long. 131°17'30" E. The area of the island is approximately 18.20 square kilometers. Minami-daito Island is located at lat. 25°55' N. and long. 131°14'42" E. It is 8 kilometers long and 4.8 kilometers wide and the area is 28.91 square kilometers. Oki-daito Island is located at lat. 24°32'30" N. and long. 131°19' E. It is a small island with an area of 4.16 square kilometers.

Table 10. Climatic situation of Okinawa Islands. No. 1.
(Naha, Okinawa Islands)

		Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	19.3	19.1	20.9	23.9	26.3	29.2	31.2
	Min.	13.1	13.1	14.7	17.7	20.3	23.6	25.1
	Ave.	16.1	16.0	17.7	20.7	23.1	26.1	27.9
Precipitation (mm)		130.8	130.0	161.1	157.0	253.5	269.0	188.5
Rainy days		18.9	17.3	17.4	14.8	17.4	16.8	16.1
Clear days		1.0	1.0	1.0	1.0	1.0	1.0	2.0
		Aug.	Sept.	Oct.	Nov.	Dec.	Annual	
Temperature (°C)	Max.	30.9	29.9	27.2	24.0	20.9	25.2	
	Min.	25.0	23.9	21.0	18.0	14.8	19.2	
	Ave.	27.7	26.6	23.9	20.8	17.7	22.0	
Precipitation (mm)		265.5	182.9	164.6	134.4	105.2	2,142.5	
Rainy days		18.7	17.6	15.6	14.9	16.2	201.7	
Clear days		2.0	2.0	3.0	2.0	1.0	18.0	

(According to "Climatic tables of Ryukyu" by Ryukyu Weather Bureau, 1958)

Table 11. Climatic situation of Okinawa Islands. No. 2.
(Minami-daito Island)

	Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	20.8	20.9	22.4	24.0	26.7	30.8
	Min.	14.3	14.7	15.8	18.3	20.4	25.4
	Ave.	17.6	17.8	19.1	20.9	23.8	27.8
Precipitation (mm)	93.7	83.3	94.9	160.2	230.6	220.0	153.8
Rainy days	15.8	15.3	14.9	15.1	16.2	14.4	16.4
Clear days	3.3	2.2	2.9	2.0	2.1	1.4	3.3
	Aug.	Sept.	Oct.	Nov.	Dec.	Annval	
Temperature (°C)	Max.	30.9	31.0	23.2	25.2	22.5	26.0
	Min.	25.1	24.8	22.6	20.3	11.8	20.1
	Ave.	27.7	27.5	25.2	22.6	19.6	23.0
Precipitation (mm)	157.5	93.5	156.9	165.9	101.2	1,171.4	
Rainy days	18.2	15.8	18.0	17.4	13.2	192.3	
Clear days	4.4	3.7	3.8	0.9	3.3	33.4	

(According to the same source of No. 1)

The stratum of these islands consists of raised coral reefs. The most peculiar phenomenon of these island is that each of them has a cliff seashore. The climatic data of the Islands are shown in Tables 10 and 11.

As may seen from the tables, the weather is warm all the year, with monthly averages ranging from 16.0 to 27.9°C., and an annual average of 22°C. Okinawa Islands being located in the ocean, its climate is naturally influenced by the semi-tropical ocean; a clear line can not be drawn the four seasons, especially spring and autumn. Even in winter the leaves of a few trees fall. The Ryukyu Islands are in the well-known eastern Asia monsoon region; therefore, the prevailing wind from autumn to spring is northeastern, and southeastern in summer. The monsoons would not exceed 20 m/s. Some typhons occur around the Ryukyu Islands every year, and few of them hit the island of Okinawa.

5. Sakishima Islands

The Sakishima Islands designated here include two subgroups, Miyako Islands and Yaeyama Islands.

Miyako Islands include all the islands within a triangle, of which the three apexes are lat. 27°2' N., long. 124°2' E.; lat. 24° N., long. 124°40' E. and lat. 24° N., long. 128° E. Miyako Islands consist of Miyako, Ikema, Kurima, Irabu, Shimochi, Tarama, Minna and Ogami islands; with the principal island being Miyako Island.

Miyako Island lies to the southwest of Okinawa Island about 250 kilometers. It has an area of 149.91 square kilometers. Its geographical description is as follows. The island lies in lat. 24°55'—24°6' N. and long. 125°29'—125°10'1" E. The shape of the island is that of a triangle, the base line of which is its southern side, with a length of 20 kilometers. Another line which runs 21 kilometers from northwest to southeast constitutes the hypotenuse of the triangle. This line is almost straight, but there is a large embayment on the middle of the coastal line. The west line of the island is equivalent to the height of a right-angled triangle, along which the following are embayments; from north to south, Oura-wan, Harimizu-wan and Yonaha-wan.

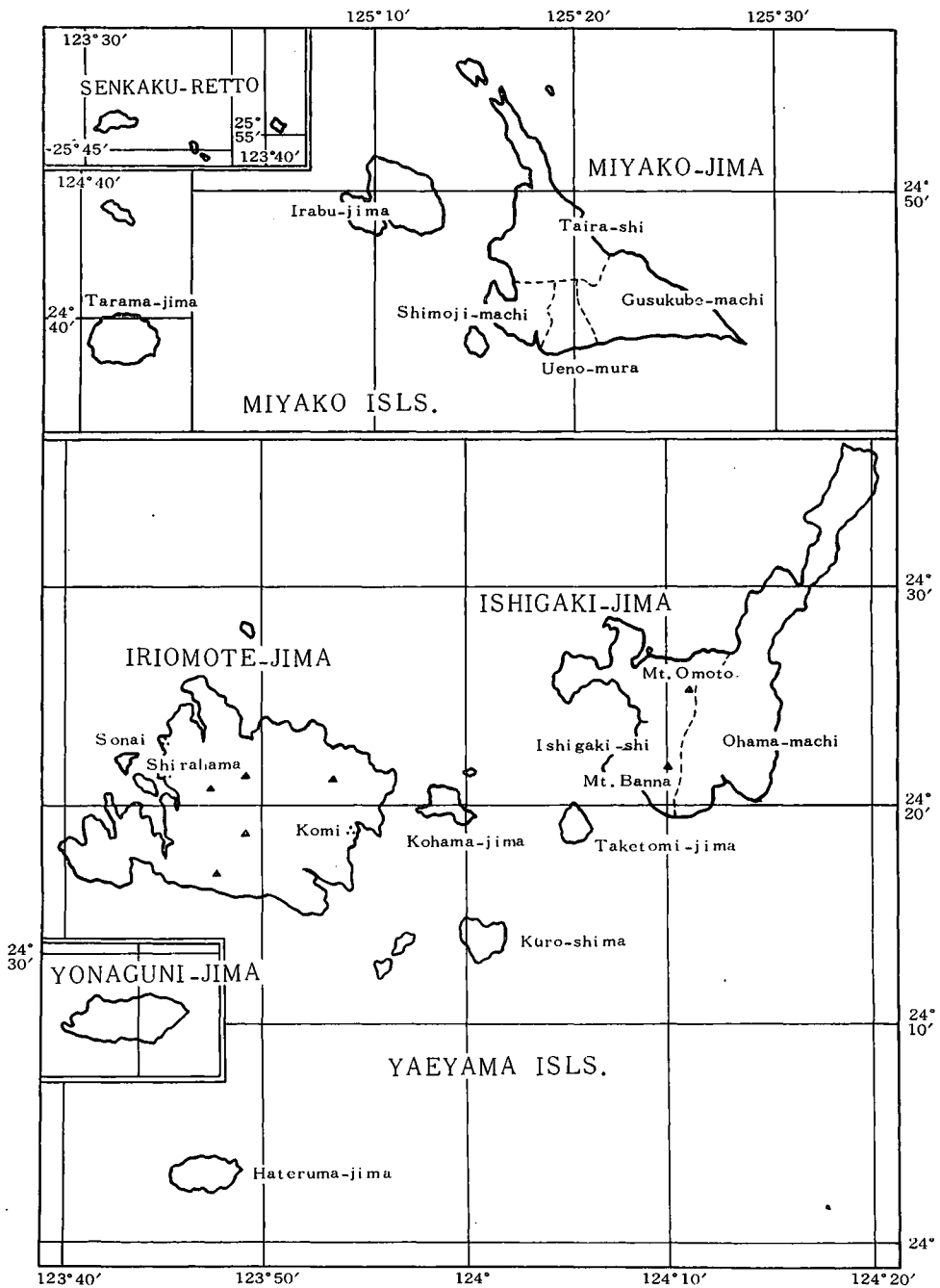


Fig. 7. Sakishima Islands

When one sees Miyako Island from a distance, the island seems to be low and flat, but there are a number of mutually parallel ridges on the northeastern part of the island. All these ridges are nearly parallel on the eastern coast line of the island,

and have a height of about 100 meters. The highest elevation of the island is reached by Nobaru-dake (200 m.) which is a part of one of the ridges. The low and narrow abrasion benches, which developed intermittently along the shore, are a few meters above the sea. The underlying formation of the island is Riukiu limestone, which is generally covered by a reddish lateritic soil, that is thought to have been formed as a result of weathering of the bed rock. There are well-developed karst everywhere. Raised coral reefs are very conspicuous all over Miyako Islands.

Yaeyama Islands consists of Ishigaki, Taketomi, Kohama, Kuroshima, Aragusuku, Hateruma, Iriomote, Hatoma and Yonaguni Islands. The principal islands are Ishigaki and Iriomote. Ishigaki Island is located on the eastern side of Yaeyama Islands, lying between lat. $24^{\circ}01'$ — $24^{\circ}37'$ N. and long. $124^{\circ}4'$ — $124^{\circ}20'4''$ E. It has an area of 258.34 square kilometers, and is 436 kilometers away from Naha of Okinawa Island, and 144 kilometers from Miyako Island. The shape of the main body of the island is nearly subquadrangular, and extends 13.5 kilometers from east to west and north to south, respectively. The area which stretches nineteen kilometers to the north from the northwest corner of the main body of the island is called Ibaruma Peninsula. The width of the peninsula is five kilometers of the widest part and four kilometers at the narrowest part. On the northwestern corner of the main body of the island there are two small peninsulas; one projecting to the north and to the west. The former is called Kabira, and the latter Yarabu. Both are 5 kilometers long and 2.4 kilometers wide at the widest part.

The average height of the ridge which runs along the northern side of the main body of the island is 400 meters, the most prominent elevation being Mt. Omoto-dake (520 m.). On the northern side of Ishigaki-shi, steep mountains lie from east to west, namely, Mt. Banna-dake in the east and Mt. Maise-dake in the west. Both of them are 200 meters above the sea level. The area between these mountains and the northern ridge is occupied by terrace which is eighty meters above the sea. The principal rivers on the island are Miyara, Nagura and Todoroki. The island is not blessed with many rivers. In short, most of the island is mountainous, surrounded by coastal terraces in almost all parts of the island.

Iriomote Island is twenty kilometers long from the east to the west coast, and eighteen kilometers from the north to the west coast. The island lies within an area between lat. $23^{\circ}14'6''$ — $24^{\circ}25'$ N. and long. $123^{\circ}25'7''$ — $123^{\circ}39'$ E., which is nearly the center of Yaeyama Islands group. The total area is 321.88 square kilometers. It is about 32.5 kilometers away from Ishigaki Island. It is generally mountainous, with Mt. Komi-dake (400 m.), Mt. Hateruma-dake (450 m.), Mt. Goza-dake (420 m.), and others. These mountains are separated by many rivers.

On the west and south coast, the ridges of these mountains come to abrupt ends or to precipitous cliffs of two hundred to four hundred meters in height. Along the north and east coast, the dissected plateau is bordered by a high terrace. There are Nakara, Urauchi and Nakama rivers in this island. Urauchi and Nakama rivers are wide enough for a small boat of about five tons to be navigable as far as six to eight kilometers up the rivers.

The sandstones of the Yaeyama formation constitutes most parts of the island. A small area on the northeastern corner of the island is formed by Paleozoic rocks and raised coral reefs.

Yonaguni Island lies between lat. $24^{\circ}28'$ — $25^{\circ}08'$ N. and long. $122^{\circ}56'$ — $123^{\circ}36'$ E. It has an area of 31.46 square kilometers. The long axis of the island is 11.5 kilometers, stretched from east to west. The width of the island is four kilometers, from north to south. Mt. Urabu-dake (231.3 m.) is the highest point in the island. Tertiary and raised coral reefs constitutes most part of the island.

Senkaku Islands is situated at approximately 150 kilometers northwest of Yaeyama Islands. Its exact location is from lat. 25°44' to 25°56' N. and from long. 123°28' to 124°34' E. The area of each island is as follows; 1) Uotsurijima Island (4.32 km²), 2) Kobijima Island (1.08 km²), 3) Minamikojima Island (0.46 km²), 4) Kitakojima Island (0.31 km²) and 5) Taishojima Island (or Akaojima Island) (0.15 km²). The

Table 12. Climatic situation of Sakishima Islands. No. 1.
(Miyako Island)

	Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	20.4	20.7	22.4	24.5	27.6	30.9
	Min.	15.3	15.4	16.9	18.9	22.2	25.4
	Ave.	17.7	17.9	19.4	21.4	24.5	27.7
Precipitation (mm)	132.6	123.4	163.6	221.0	242.6	269.4	266.3
Rainy days	19.3	17.4	17.6	16.8	17.1	16.2	17.0
Clear days	1.9	1.1	1.8	1.8	1.1	0.7	1.3
	Aug.	Sept.	Oct.	Nov.	Dec.	Annual	
Temperature (°C)	Max.	30.6	30.3	27.2	24.8	22.0	25.9
	Min.	25.0	24.7	22.6	20.1	17.2	20.7
	Ave.	27.4	27.0	24.8	22.3	19.4	23.0
Precipitation (mm)	255.9	151.8	190.2	173.0	159.3	2,349.0	
Rainy days	19.2	16.6	19.1	18.6	21.2	216.1	
Clear days	2.7	3.1	2.4	1.8	1.2	20.9	

According to "Climatic table of the Ryukyu" by Ryukyu weather Station, 1958.

Table 13. Climatic situation of Sakishima Islands. No. 2.
(Ishigaki Island)

	Jan.	Feb.	Mar.	Apr.	May	June	July
Temperature (°C)	Max.	21.1	21.0	22.9	25.5	28.2	31.5
	Min.	15.0	14.9	16.7	19.4	22.1	25.5
	Ave.	18.0	17.9	19.7	22.2	24.8	28.2
Precipitation (mm)	141.0	124.8	141.2	140.9	223.1	231.9	201.5
Rainy days	19.8	16.8	16.8	14.3	16.8	16.2	16.5
Clear days	1.3	1.2	1.7	2.1	2.3	2.5	4.9
	Aug.	Sept.	Oct.	Nov.	Dec.	Annual	
Temperature (°C)	Max.	31.2	30.5	28.0	25.1	22.3	26.5
	Min.	25.2	24.0	21.8	19.2	16.5	20.4
	Ave.	27.9	26.9	24.6	22.0	19.4	23.2
Precipitation (mm)	218.2	238.4	199.4	176.6	163.6	2,183.2	
Rainy days	17.3	17.7	17.3	18.3	20.2	208.1	
Clear days	4.7	4.9	4.0	2.5	1.4	33.8	

(According to the same source of No. 1)

stratum of these islands is mainly sandstone of Tertiary. The climatic information of the Sakishima Islands are shown in Tables 12 & 13.

III. Historical review on rust fungi of the Ryukyu Archipelago

Studies on the rust fungi native to the Ryukyu Archipelago were first begun by the late Dr. Hiratsuka, Naoharu (1873-1946) (A-8). He was a teacher of the middle school of Okinawa Prefecture from September 1899 to April 1900. During that period, he collected rust fungi, especially in the vicinity of Shuri, with the aid of his students. From among the specimens collected, he discovered a new species, which is described below: *Phakopsora ehretiae* Hiratsuka on *Ehretia acuminata* R. Br. (*Chisha-no-ki*). Okinawa Isl.: Shuri, Jan. 6, 1899 (II, III), April 18, 1899 (Spermogonia and II) (N. Hiratsuka !), May 6, 1900 (II) (T. Maida). This is the first report on the rust fungi known in the Archipelago.

The important research reports from that time to 1958 are as follows:

1. In 1903, Sydow, P. & H. (A-83) reported the following species; *Uredo ophiopogonis* Syd. on *Ophiopogon jubran* Lodd. "Liukiu Isl."

2. In 1906, Miyake, Tsutomu (A-63) reported the following species; *Puccinia oenanthes* (Diet.) T. Miyake on *Oenanthe stolonifera* DC. var. *japonica* Maxim. Okinawa Isl.: Shuri (II. Naoharu Hiratsuka, Jan. 6, 1899).

3. In 1909, Ito, Seiya (A-51) reported the following species from Okinawa Island; *Diorchidium levigatum* Syd. et Butl. on *Oplismenus compositus* Beauv. Okinawa Isl.: Shuri (II, III. Nov. 27, 1899. Naoharu Hiratsuka).

4. In 1922, Ito, Seiya (A-52) reported the following two species; 1) *Uromyces appendiculatus* (Pers.) Link on *Phaseolus vulgaris* L. (*Ingen-mame*). Okinawa Isl.: Hanechi (Aug. 9, 1904, T. Miyagi) and 2) *Pileolaria shiraiana* (Diet. et Syd.) S. Ito on *Rhus succedanea* L. (*Hazenoki*). Okinawa Isl.: Yagachi (Aug. 10, 1904, T. Miyagi).

5. In 1935, Ide, Kiyoharu (A-50) reported a rust fungus on *Raphiolepis umbellata* Mak. from Yakushima Island as *Coleopuccinia* sp. It is the first account of the rust fungi from the Satsunan Islands.

6. In 1936, Hiratsuka, Naohide (A-19) reported the following species from Yakushima Island; *Kuehneola callicarpae* H. Sydow on *Callicarpa japonica* Thunb. var. *luxurians* Rehd. (*O-murasakishikibu*). (Dec. 1, 1933, K. Ide).

7. In 1936, Hiratsuka, Naohide (A-21) reported the following seven species from Yakushima Island.

1) *Pucciniastrum styracinum* Hiratsuka on *Styrax japonica* Sieb. et Zucc. (*Egonoki*). (Dec. 31, 1933 & Jan. 2, 1934, K. Ide).

2) *Phakopsora artemisiae* Hiratsuka, f. on *Eupatorium luchuense* Nakai (Shima-fujibakama). (Jan. 1, 1934, K. Ide).

3) *Phakopsora ampelopsisidis* Dietel et Sydow on *Ampelopsis heterophylla* Sieb. et Zucc. (*No-budo*). (Jan. 1, 1934, K. Ide).

4) *Coleosporium evodiae* Dietel on *Evodia glauca* Miq. (*Hama-sendan*). (Dec. 31, 1933 & Jan. 2, 1934, K. Ide).

5) *Coleosporium paederiae* Dietel on *Paederia tomentosa* Bl. (*Hekuso-kazura*). (Dec. 31, 1933, K. Ide).

6) *Coleosporium xanthoxyli* Dietel et Sydow on *Fagaria schinifolia* Engl. (*Inuzansho*). (Jan. 2, 1934, K. Ide).

7) *Puccinia solmsii* Hennings on *Persicaria chinensis* Nakai var. *thunbergiana* Nakai (*Tsuru-soba*). (Dec. 31, 1933, K. Ide).

8. In 1936, Hiratsuka, Naohide (A-22) reported the following species from Ishigaki Island; *Phakopsora ehretiae* Hiratsuka on *Ehretia dicksonii* Hance. var. *liukuensis* Nakai (*Ryukyu-chisha-no-ki*). (March 6, 1925, T. Miyagi). This is the first report on rust fungus from the Sakishima Islands.

9. In 1936, Hiratsuka, Naohide (A-20) reported the two species from Yakushima Island; 1) *Pucciniastrum agrimoniae* (Diet.) Tranzschel on *Agrimonia pilosa* Ledeb. (*Kin-mizuhiki*) and 2) *P. styracinum* Hiratsuka on *Styrax japonica* Sieb. et Zucc. (*Ego-no-ki*).

10. In 1937, Hiratsuka, Naohide (A-23) reported two species from Yakushima Island, three from Amami-oshima Island, and two from Okinawa Island. These species are listed below.

1) *Maravalia hyalospora* (Sawada) Dietel on *Acacia confusa* Merr. Okinawa Island: Shuri (Jan. 5, 1899, Naoharu Hiratsuka).

2) *Coleopucciniella idei* Hiratsuka, f. on *Raphiolepis umbellata* Mak. Yakushima Isl. (Dec. 1933, K. Ide).

3) *Uromyces pyriformis* Cooke on *Acorus calamus* L. Amami-oshima Island: Nase (April 3, 1935, T. Tamotsu).

4) *Puccinia congesta* Berkeley et Broome on *Persicaria chinensis* Nakai var. *thunbergiana* Nakai. Yakushima Isl. (Dec. 31, 1933, K. Ide). Amami-oshima Isl.: Mikata-mura (July 23, 1936, T. Tamotsu); Nase (July 2, 1935, T. Tamotsu). Okinawa Isl.: Shuri (April 22, 1899, Naoharu Hiratsuka).

5) *Hemileia gardeniae-floridiae* Sawada on *Gardenia jasminoides* Ell. var. *grandiflora* Nakai. Amami-oshima Isl.: Tatsugo-mura (Oct. 15, 1936, T. Tamotsu).

11. In 1938, Ito, Seiya (A-53) reported the following two species as native to the Ryukyus; 1) *Bubakia ehretiae* (Hiratsuka) S. Ito on *Ehretia dicksonii* Hance. var. *liukuensis* Nakai and *E. taiwaniana* Nakai and 2) *Coleosporium asterum* (Diet.) Sydow on *Aster indicus* Fisch.

12. In 1940, Hiratsuka, Naohide and Taira, Yoshihisa (A-44) reported the following interesting species from Okinawa Island; *Skierka agallocha* Raciborski on *Excaecaria agallocha* L. var. *genuina* Müll.-Arg. (*Okinawa-jinko, Shima-shiraki*). Okinawa Isl.: Naha (March 15, 1940, Y. Taira).

13. In 1940, Hiratsuka, Naohide (A-26, 27) reported nineteen genera and seventy-six species from the Ryukyu Archipelago. They are as follows Melampsoraceae (16 sp.)—*Milesina* 2 sp., *Hyalospora* 1 sp., *Pucciniastrum* 1 sp., *Phakopsora* 4 sp., *Coleopucciniella* 1 sp., *Angiopsora* 1 sp., *Coleosporium* 6 sp., Pucciniaceae (50 sp.)—*Skierka* 1 sp., *Hemileia* 1 sp., *Pileolaria* 1 sp., *Kuehneola* 1 sp., *Hamasporea* 1 sp., *Phragmidium* 1 sp., *Ravenelia* 2 sp., *Poliotetium* 1 sp., *Uromyces* 11 sp., *Puccinia* 30 sp. and Uredinales Imperfecti (10 sp.)—*Aecidium* 6 sp., *Uredo* 4 sp. This work is the first intensive study on the rust fungi of the Ryukyu Archipelago. They include seventy-four species from Okinawa Island; and three from Amami-oshima Island. Among them, the following new species is included: *Uromyces tairae* Hiratsuka, f. on *Messerschmidia argentea* John. Okinawa Isl.: Mabunimura (March, 1940, Y. Taira).

14. In 1940, Hiratsuka, Naohide (A-28) reported the following species; *Uromyces lespedezae-procumbentis* (Schw.) Curtis on *Lespedeza cuneata* G. Don. Okinawa Isl.: Kanegusuku-mura (Hiratsuka, f.).

15. In 1941, Hiratsuka, Naohide (A-30) reported twenty genera and ninety-six species native to Okinawa Island. In his paper, the following three new species were described; 1) *Puccinia benokiyamensis* Hiratsuka, f. on *Ampelogygonum umbellatum* Masam. Mt. Benokiyama (Kunigami-gun) (April 10 & 11, 1940, Y. Taira), 2) *Puccinia lepturi* Hiratsuka, f. on *Lepturus repens* R. Br. Naha-shi (Jan. 15, 1940, Hiratsuka, f.) and 3) *Puccinia scirpi-ternatani* Hiratsuka, f. on *Scirpus ternatanus* Reinwardt.

Mt. Benokiyama (Kunigami-gun) (April 11, 1940, Y. Taira).

16. In 1944, Hiratsuka, Naohide (A-32) reported seven genera and twenty-one species of Melampsoraceae, as native to the Ryukyu Archipelago, in his paper, entitled, "Melampsoracearum Nipponicarum". In this paper, seventeen species from Okinawa Island, eight from Yakushima Island, five from Amami-oshima Island, and one from Ishigaki Island, are reported.

The papers listed below have been published from the end of the War to the present:

17. In 1952, Hiratsuka, Naohide (A-34) reported "Uredinales of Kiushu." In this paper, he reported forty-one species from Yakushima Island, eight from Amami-oshima Island, and one from Tanegashima Island. Among them, the following two new species are included; 1) *Aecidium satsumense* Hiratsuka, f. on *Arisaema ringens* Schott. var. *praecox* Engl. (*Musashi-abumi*). Tanegahimsa Isl.: Nakatane-mura (May 3, 1940, S. Itoga) and 2) *Uromyces yakushimensis* Hiratsuka, f. et Katsuki on *Trichosanthes multiloba* Miq. (*Momiji-karasuuri*). Yakushima Isl. (Oct. 13, 1949, S. Katsuki).

18. In 1953, Katsuki, Shigetaka (A-59) reported five species of rust fungi from Yakushima Island.

19. In 1953, Morimoto, Yasuji (A-64) reported seventeen species belonging to Melampsoraceae, fifteen of Pucciniaceae and five of Uredinales Imperfecti from Yakushima Island. Among them, the following three new species are included; 1) *Milesina hiratsukai* Y. Morimoto on *Plagiogyria japonica* Nakai. Yakushima Isl.: Kosugidani (June 2, 1951, Y. Morimoto), 2) *Uredo yakushimensis* Y. Morimoto on *Psychotria serpens* L. Yakushima Isl.: Haro-mura (June 5, 1951, Y. Morimoto), and 3) *Uredo horikawai* Y. Morimoto on *Diospyros nipponica* Nakai. Yakushima Isl.: Haro-mura (June 5, 1951, Y. Morimoto).

20. In 1955, Katsuki, Shigetaka (A-60, 61) reported thirty-eight species of Melampsoraceae, forty-nine of Pucciniaceae, and nine of Uredinales Imperfecti; a total of ninety-six species from Yakushima Island.

21. In 1956, Morimoto, Yasuji (A-65) reported fourteen genera and forty-eight species from Amami Islands.

22. From 1954 to 1957, Hiratsuka, Naohide, Shimabukuro, Shunichi et al. (A-38, 39, 40, 41, 43, 44) engaged in more intensive studies on rust-flora of the Archipelago. The papers disclosed the following four species; 1) *Hamaspora okinawensis* Hiratsuka, f. on *Rubus utchinensis* Koidz. Okinawa Isl.: Mt. Katsuu-dake (Jan. 14, 1941, Hiratsuka, f.), 2) *Puccinia caricis-boottianae* Hiratsuka, f. on *Carex brunnea* Thunb. Okinawa Isl. etc., 3) *Uromyces thermopsisicola* Shimabukuro on *Thermopsis chinensis* Benth. Okinawa Isl. etc. and 4) *Didymopsorella lemanensis* (Doidge) Hiratsuka, f. on *Toddalia asiatica* Lam. Okinawa Isl.

23. In 1958, Hiratsuka, Naohide (A-37) reported the following seventeen species belonging to Pucciniastreae native to the Archipelago; *Uredinopsis* 2 sp., *Milesina* 5 sp., *Hyalopsora* 2 sp., and *Pucciniastrum* 8 sp.

24. In 1958, Hiratsuka, Toshiko (A-46) published the results of her taxonomic studies on the species of the rust fungi parasitic on the grasses from the southern Kyushu and the Ryukyu Islands. In her paper, the following 44 species are recorded from the Archipelago; *Phakopsora* 1 sp., *Dasturella* 1 sp., *Uromyces* 5 sp., *Puccinia* 36 sp. and *Uredo* 1 sp. Among them, the following new species is included; *Puccinia arundinis-donacis* T. Hiratsuka on *Arundo donax* L. (*Danchiku*). Miyako Isl.: Shimochi-machi (Feb. 17, 1955, M. Tamori).

IV. Geographical distribution of rust fungi found in the Ryukyu Archipelago

1. The number of species in each group of islands.

According to the study on the number of species in each group of Islands in the Ryukyu Archipelago, the total number known up to 1959 is 269 species. A summary of the data by islands is shown below, and a detailed distribution is shown in Table 15.

Table 14. Number of Species of rust fungi in each group of islands in the Ryukyu Archipelago

Islands	Number of genera	Number of species
Satsunan	25	154
Tokara	17	104
Amami	24	110
Okinawa	31	174
Sakishima	20	112
Total	39	269

The largest number is found on Okinawa Islands, and fewer in the regions of Satsunan Islands, Sakishima Islands, Amami Islands and Tokara Islands, in that order.

This is due to Okinawa Islands having many species of host plants, and because of the comparatively large area. The main reason causing the abundance in the number of species in the Satsunan Islands, which is second largest in the number of fungi species concerned, is that it has high mountains, which usually cause the vertical distribution of fungi.

In order to compare the number of species common in the neighboring regions, the Japan Archipelago was divided into the following four regions; Kyushu, Shikoku, Honshu and Hokkaido; and Formosa, which is located south of the Ryukyu Archipelago, was added as one region. Tables 16 & 17 show the comparison of each of the above regions with five groups of islands which make up the Ryukyu Archipelago.

Analysis of Tables 15 and 16:

1) Seventy-six percent of the species found on Sakishima Islands are common to Formosa, and a smaller percent in the regions of Shikoku, Kyushu, Honshu and Hokkaido. This is due to the fact that Sakishima Islands are geographically closest to Formosa.

2) Sixty-nine percent of the species found on Okinawa Islands are common to Formosa. It becomes less in the regions of Kyushu, Honshu, Shikoku and Hokkaido, in that order.

3) Eighty-three percent of the species found on Amami Islands are common to Formosa. It becomes less in the regions of Kyushu, Honshu, Shikoku and Hokkaido, in that order.

4) In Tokara Islands, seventy-eight percent of the species are common to Honshu. It becomes less in the regions of Kyushu, Formosa, Shikoku and Hokkaido, in that order.

5) In Satsunan Islands, seventy-eight percent of the species are common to Kyushu. It becomes less in the regions of Shikoku, Honshu, Formosa and Hokkaido, in that order. This fact can be easily understood because the islands lie geographically closer to Kyushu.

Table 15. Number of species of rust fungi on each group of Islands

Fam.	Islands Regions Genera	Satsunan					Tokara				
		Formosa	Kyushu	Shikoku	Honshu	Hokkaido	Formosa	Kyushu	Shikoku	Honshu	Hokkaido
Melampsoraceae	Uredinopsis	1	1	1	2	2	1			1	1
	Milesina	2	6	6	6	1	1	3	3	3	1
	Hyalopora	1	2	2	2	2		1	1	1	1
	Melampsoridium										
	Pucciniastrum	5	7	7	6	3	3	3	3	2	2
	Thekopsora		1	1	1	1					
	Melampsora	2	3	3	3	1					
	Phakopsora	8	5	6	4	2	6	4	4	3	2
	Cronartium										
	Crossopora	1									
	Cerotelium										
	Coleopucciniella		1		1			1			1
	Dasturella	1			1		1				1
	Pucciniosteles	2	1	1	1	1					
	Coleosporium	12	13	13	13	7	10	10	10	10	4
Ochropsora		1	1	1							
	Total	35	41	41	41	20	22	22	21	22	11
Pucciniaceae	Zaghouania						1	1		1	
	Skierka										
	Didymopsores										
	Gerwasia	1	1	1	1		1	1	1	1	
	Hemileia	1	1	1							
	Pileolaria	2	1	1	1	1	1	1	1	1	1
	Kuehneola	1	2	1	2		1	2	1	2	
	Tranzschelia										
	Hamapsora		1	1	1			1	1	1	
	Phragmidium	2	2	2	2	2	2	2	3	3	2
	Hapalophragmium										
	Sphaerophragmium										
	Ravenelia										
	Nothoravenelia								1	1	
	Endophyllum										
	Maravalia										
	Poliotelium	1			1						
	Gymnosporangium										
Uromyces	10	13	13	12	4	6	8	8	8	3	
Puccinia	42	51	50	49	32	36	36	35	36	20	
Xenosteles			1								
	Total	60	72	71	69	39	47	51	51	54	26
Uredinales Imperfecti	Aecidium	6	6	4	3	2	4	5	4	5	3
	Uredo	9	3	5	5	1	5	1	2	1	
	Total	15	9	9	8	3	9	6	6	6	3
	Total	110	122	121	118	62	78	79	78	82	40

6) From the above mentioned facts regarding the distribution of the fungi, the boundary separating for the species in to subtropical-and-tropical and warm-temperate zones appears to lie between Amami Islands and Satsunan Islands.

7) Table 16 is the comparison of the number of common species of neighboring regions with the Ryukyu Archipelago as a whole. It shows that Formosa comes first, Kyushu second, Honshu third, Shikoku fourth and Hokkaido fifth.

in the Ryukyu Archipelago common to the neighboring regions

Amami					Okinawa					Sakishima				
Formosa	Kyushu	Shikoku	Honshu	Hokkaido	Formosa	Kyushu	Shikoku	Honshu	Hokkaido	Formosa	Kyushu	Shikoku	Honshu	Hokkaido
1			1	1	1			1	1					
1	3	3	3	1		2	2	2						
1	2	1	2	2		1	1	1	1					
5	5	4	4	2	3	3	3	2	2	1	1	1		
1	2	2	2											
10	5	6	4	2	10	5	6	4	2	11	6	7	4	1
1	1	1	1	1						1				
	1		1		1	2	1	2		1	1		1	
1			1		1			1		1			1	
10	10	10	9	4	10	10	10	9	4	5	5	5	4	2
						1	1	1						
32	29	27	28	13	26	24	25	24	11	20	12	13	10	3
1					1									
1	1	1			1	1	1			1	1	1	1	1
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1	2	1	2		1	2	1	2		1	2	1	2	
1	1	1	1		1	1	1	1		1	1	1	1	
1	1	1	1		1	1	1	1		1	1	1	1	
2	2	2	2	2	2	2	2	2	2	1	1	1	1	1
					1									
					2					1				
1		1	1		1		1	1		1		1	1	
1			1		1					1			1	
1					1			1	1	1			1	
14	17	16	15	7	18	21	19	19	9	10	12	12	11	5
28	26	25	24	14	49	51	46	49	32	35	29	30	27	15
					1	1	2	1						
51	51	49	48	24	82	82	76	79	45	51	45	46	44	22
4	3	3	3		6	7	5	6	3	7	4	3	3	1
5	1	1	1		7	2	1	1		8	1	1		
9	4	4	4		13	9	6	7	3	15	5	4	3	1
92	84	80	80	37	121	115	107	110	59	86	62	63	57	26

This is reasonable because of the geographical location of the Ryukyu Archipelago. Especially, it is noteworthy to know that many species belonging to Uredinales Imperfecti in the Ryukyu Archipelago are common to those of Formosa. Namely, the rust fungi which are native to tropical and subtropical regions seldom produce teleutospores. Those statements generally coincide with already existing opinions.

A part of the Ryukyu Archipelago—Satsunan Islands, Tokara Islands and Amami

Table 16. Number of species of rust fungi in the Ryukyu Archipelago common to the neighboring regions

Fam.	Regions	Ryukyu (Total)	Formosa	Kyushu	Shikoku	Honshu	Hok- kaido
	Genera						
Melampsoraceae	Uredinopsis	2	1	1	1	2	2
	Milesina	8	2	8	8	8	1
	Hyalopsora	3	1	3	2	3	3
	Melampsoridium	1			1	1	1
	Pucciniastrum	8	6	8	7	7	3
	Thekopsora	1		1	1	1	1
	Melampsora	3	2	3	3	3	1
	Phakopsora	12	12	7	8	5	2
	Cronartium	1	1	1	1	1	1
	Crossopsora	3	2				
	Cerotelium	1	1				
	Coleopucciniella	2	1	2	1	2	
	Dasturella	1	1			1	
	Pucciniosteles	2	2	1	1	1	1
Coleosporium	14	12	13	13	13	7	
Ochropsora	1		1	1	1		
	Total	63	44	49	48	49	23
Pucciniaceae	Zaghouania	1	1	1		1	
	Skierka	1					
	Didymopsoresella	1	1				
	Gerwasia	1	1	1	1	1	
	Hemileia	1	1	1	1		
	Pileolaria	2	2	1	1	1	1
	Kuehneola	3	1	2	1	2	
	Tranzschelia	1	1	1	1	1	
	Hamaspora	3		1	1	1	
	Phragmidium	4	3	3	4	4	3
	Hapalophragmium	1					
	Sphaerophragmium	1	1				
	Ravenelia	2	2				
	Nothoravenelia	1			1	1	
	Endophyllum	2	1				
	Maravalia	1	1				
	Poliotelium	1	1			1	
	Gymnosporangium	1		1	1	1	
Uromyces	30	19	23	21	21	10	
Puccinia	100	65	71	65	68	44	
Xenosteles	2	1	1	2	1	0	
	Total	161	102	107	100	104	59
Uredinales Imperfecti	Aecidium	21	13	10	8	8	4
	Uredo	25	17	3	6	5	1
	Total	45	30	13	14	13	5
	Total	269	176	169	162	166	87

Islands—belongs politically to Kagoshima prefecture, Japan, the rest being governed by the Government of the Ryukyus. The following is the table of number of species found in the two regions:

Table 17. Number of species of rust fungi in Kagoshima Pref. and that of Okinawa Pref., prior to the War

Family	Number of species	
	Kagoshima Pref.	Okinawa Pref. prior to the War
Melampsoraceae	57	40
Pucciniaceae	118	134
Uredinales Imperfecti	30	29
Total	205	203

2. The rust-flora in each zone of the Ryukyu Archipelago.

As has been described previously, the Ryukyu Archipelago can be divided into three zones—outer, middle and inner—in accordance with geographical differences.

The number of genera and species of rust fung in each zone is listed accordingly, in Tables 18, 19 & 20. Table 18 shows that the largest number of species is in the middle zone, next in the outer, and last in the inner; being 223, 167 and 129, respectively.

The difference in the number of species from one zone to the other, is not thought to be caused by the geological constitution of each zone, but rather by the size, shape and especially the elevation of the islands belonging to each zone. In addition to these factors, the species and number of host plants in each zone seem to affect the number of species of rust fungi.

Table 19 indicates the number of particular species according to the following classification:

- a) Those found only middle zone, but not in the other zones (outer and inner zones).
- b) Those found only in outer zone, but not in the others.
- c) Those found only in inner zone, but not in the others.

It can be seen in Table 19, that species peculiar to each zone are around in the largest number in the middle zone, and the least in the inner zone. In Table 20, the common species in each zone for neighboring regions are listed.

For Melampsoraceae, the species in the inner and outer zones are found in the greatest number in Formosa, and the species in the middle zone occur rather densely in Kyushu and Honshu.

For Pucciniaceae, the outer zone is most highly tied with Kyushu, middle zone with Formosa and Kyushu, and inner zone with Honshu.

For Uredinales Imperfecti, all zones—inner, middle and outer—are related mostly to Formosa. In general, the outer and middle zones are most similar to Formosa; with the inner zone being more similar to Kyushu; but the degree of similarity is almost negligible.

3. The endemic and introduced species of the rust fungi in the Ryukyu Archipelago.

Biologists have different opinions as to the meaning of endemic species. The author considers endemic species to be those native to the Ryukyu Archipelago, and which have not yet found in other regions. It is impossible to tell whether these species are palaeoendemic, i.e. these having been existed from the remote past, or neo-endemic, i.e., these generated in comparatively recent times.

In accordance with the above concept, the endemic species in the Ryukyu Archipelago are the nine species listed below; 1) *Hamasporea okinawensis* Hiratsuka, f., 2) *Uromyces kunigamiensis* Shimabukuro, 3) *U. tairae* Hiratsuka, f., 4) *U. thermopsidiocola* Shimabukuro, 5) *U. yakushimensis* Hiratsuka, f. et Katsuki, 6) *Puccinia*

Table 18. Number of species of rust fungi found in each zone of the Ryukyu Archipelago

Families	Genera	Number of species		
		Outer	Middle	Inner
Melamp- soraceae	Uredinopsis		2	1
	Milesina	3	5	3
	Hyalopsora		3	1
	Melampsorium		1	
	Pucciniastrum	4	8	3
	Thekopsora		1	
	Melampsora	2	3	
	Phakopsora	11	11	9
	Cronartium		1	
	Crossopsora	3	2	1
	Cerotelium		1	
	Coleopucciniella	1	2	1
	Dasturella	1	1	1
	Pucciniostele		2	
Coleosporium	9	14	12	
Ochropsora		1		
	Total	34	58	32
Pucciniaceae	Zaghouania			1
	Skierka	1		
	Didymoporella	1	1	
	Gerwasia	1	1	1
	Hemileia		1	
	Pileolaria	1	2	1
	Kuehneola	3	2	2
	Tranzschelia		1	
	Hamaspora	1	3	1
	Phragmidium	2	2	3
	Hapalophragmium	1		
	Sphaerophragmium		1	
	Ravenelia	1	2	1
	Nothoravenelia	1	1	1
	Endophyllum	2	2	
	Maravalia	1		
	Poliotelium	1	1	1
Gymnosporangium	1			
Uromyces	27	24	13	
Puccinia	72	83	57	
Xenosteles		2		
	Total	117	128	82
Uredinales Imperfecti	Aecidium	8	17	7
	Uredo	8	21	8
	Total	16	38	15
	Total	167	224	129

lepturi Hiratsuka, f., 7) *P. scirpi-ternatani* Hiratsuka, f., 8) *Uredo horikawai* Y. Morimoto and 9) *U. yakushimensis* Y. Morimoto. They constitute 0.033% of the total number of the rust fungi in the Ryukyu Archipelago.

Besides the above eight species, the following twenty genera, sixty-five species found in the Ryukyu Archipelago have not yet been found in Japan proper.

1) *Phakopsora formosana* Syd., 2) *Ph. glochidii* (Syd.) Arch., 3) *Ph. malloti* Cummins, 4) *Ph. tecta* Jackson, 5) *Crossopsora antidesmae-dioicae* (Syd.) Arch. et Cummins, 6) *C. malloti* (Racib.) Cummins, 7) *C. premnae* (Petch) Syd., 8) *Cerotelium*

Table 19. Number of species of rust fungi peculiar to each zone in the Ryukyu Archipelago

Families	Genera	Number of species		
		Outer	Middle	Inner
Melamp- soraceae	Uredinopsis		1	
	Milesina	2	3	1
	Hyalopora		1	
	Melampsoridium		1	
	Pucciniastrum		4	
	Thekopsora		1	
	Melampsora		1	
	Phakopsora	1	1	
	Cronartium		1	
	Crossopora	1		
	Cerotelium		1	
	Coleopucciniella		1	
	Pucciniosteles		2	
	Coleosporium		2	
Ochropsora		1		
	Total	4	21	1
Pucciniaceae	Zaghouania			1
	Skierka	1		
	Hemileia		1	
	Pileolaria		1	
	Kuehneola	1		
	Tranzschelia		1	
	Hamaspora		2	
	Phragmidium		1	1
	Hapalophragmium	1		
	Sphaerophragmium		1	
	Ravenelia		1	
	Maravalia	1		
	Gymnosporangium	1		
	Uromyces	5	3	
Puccinia	15	17	1	
Xenosteles		2		
	Total	25	30	3
Uredinales Imperfecti	Acidium	2	8	1
	Uredo	1	12	2
	Total	3	20	3
	Total	32	71	7

fici (Butl.) Arch., 9) *Pucciniosteles hashiokai* (Hirats. f.) Cummins, 10) *Skierka agallocha* Racib., 11) *Didymopsorella lemanensis* (Doidge) Hirats. f., 12) *Pileolaria pistaciae* Tai et Wei, 13) *Kuehneola malvicola* Arch., 14) *Hamaspora acutissima* Syd., 15) *Hapalophragmium derridis* Syd., 16) *Sphaerophragmium acasiae* (Cooke) Magn., 17) *Ravenelia hobsoni* Cooke, 18) *R. tephrosiicola* Hirats. f., 19) *Endophyllum emasculatum* Arch. et Cummins, 20) *E. griffithiae* (P. Henn.) Racib., 21) *Maravalia achroa* (Syd.) Arch. et Cummins, 22) *Poliotelium hyalospora* (Saw.) Mains, 23) *Uromyces leptodermus* Syd., 24) *U. mucunae* Rabenh., 25) *U. orientalis* Syd., 26) *Puccinia ainshiae* Syd., 27) *P. anundinisdonacis* T. Hirats., 28) *P. benokiyamensis* Hirats. f., 29) *P. caricis-filicinae* Barcl., 30) *P. citrina* Syd., 31) *P. curculigonis* Racib., 32) *P. erebia* Syd., 33) *P. hashiokai* Hirats. f., 34) *P. levigata* (Syd. et Butl.) Hirats.

Table 20. Number of species of rust fungi in the three zones of the Ryukyu Archipelago common to the neighboring regions.

Fam.	Zones		Outer					Middle					Inner					
	Regions	Genera	Formosa	Kyushu	Shikoku	Honshu	Hokkaido	Formosa	Kyushu	Shikoku	Honshu	Hokkaido	Formosa	Kyushu	Shikoku	Honshu	Hokkaido	
Melampsoraceae	Uredinopsis							1	1	1	2		1			1		
	Milesina		3	3	3			2	5	5	5	1	1	3	3	3	1	
	Hyalopsora							1	3	2	3	3		1	1	1	1	
	Melampsoridium									1	1	1						
	Pucciniastrum		4	4	4	3	2	6	8	7	7	3	3	3	3	2	2	
	Thekopsora								1	1	1	1						
	Melampsora		1	2	2	2	1	2	3	3	3	1						
	Phakopsora		11	6	7	5	2	11	6	7	4	2		9	5	6	4	2
	Cronartium							1	1	1	1	1						
	Crossopsora		2					1										
	Cerotelium							1										
	Coleopucciniella			1		1		1	2	1	2			1		1		
	Dasturella		1			1		1			1			1		1		
Pucciniosteles							2	1	1	1	1							
Coleosporium		9	9	9	8	3	12	13	13	13	7		11	11	11	11	5	
Ochropsora							1	1	1	1								
	Total		28	25	25	23	8	42	45	44	45	21	26	24	24	24	11	
Pucciniaceae	Zaghouania												1	1		1		
	Skierka							1										
	Didymopsorella		1					1										
	Gerwasia		1	1	1	1		1	1	1	1		1	1	1	1		
	Hemileia		1	1	1	1	1	1	1	1	1		1	1	1	1	1	
	Pileolaria		1	1	1	1	1	2	1	1	1	1		1	1	1	1	
	Kuehneola		1	2	1	2		1	2	1	2		1	2	1	2		
	Tranzschelia							1	1	1	1							
	Hamaspora			1	1	1		1	1	1	1			1	1	1		
	Phragmidium		2	2	2	2	2	2	2	2	2	2	2	2	2	3	3	2
	Hapalophragmium		1															
	Sphaerophragmium							1										
	Ravenelia		1					2						1				
	Nothoravenelia				1	1				1	1				1	1		
	Endophyllum		1					1										
	Maravalia		1															
	Poliotelium		1			1		1			1			1		1		
Gymnosporangium			1	1	1	1												
Uromyces		18	22	20	20	10	18	19	17	17	7		9	12	12	11	4	
Puccinia		45	50	48	49	30	56	61	57	58	37		40	43	41	42	25	
Xenosteles							1	1	2	1								
	Total		74	80	76	79	44	91	90	85	86	47	57	63	61	64	32	
Uredinales Imperfecti	Aecidium		8	3	3	3	1	11	10	7	7	3	4	5	4	5	3	
	Uredo		5	2	2	2	1	14	3	4	4		6	1	2	1		
	Total		13	5	5	5	2	25	13	11	11	3	10	6	6	6	3	
	Total		115	110	106	107	54	158	148	140	142	71	93	93	91	94	46	

f., 35) *P. lophatheri* (Syd.) Hirats. f., 36) *P. ophiopogonis* Cummins, 37) *P. paspalina* Cummins, 38) *P. pogonatheri* Petch, 39) *P. polliniicola* Syd., 40) *P. scleriae* (Paz.) Arch., 41) *P. taiwaniana* Hirats. f., 42) *P. thaliae* Diet., 43) *P. variiformis* Pat., 44) *P. wattiana* Barcl., 45) *Aecidium clerodendri* P. Henn., 46) *Ae. formosanum* Syd., 47) *Ae. fornolinum* Cummins, 48) *Ae. innatum* Syd. et Butl., 49) *Ae. kaernbackii*

P. Henn., 50) *Ae. smilacis-chinae* Sawada, 51) *Uredo desmodii-pulchelli* Syd., 52) *U. fagarae* Syd., 53) *U. guettardae* Hirats. f. et Hashioka, 54) *U. lasianthi* Syd., 55) *U. leucanae-glaucacae* Hirats. f. et Hashioka, 56) *U. moricola* P. Henn., 57) *U. morifolia* Sawada, 58) *U. panici-plicati* Sawada, 59) *U. pipturi* (H. Syd.) Hirats. f., 60) *U. polypodii-superficialis* (Hirats. f.) Hirats. f., 61) *U. psychotricola* P. Henn., 62) *U. sawadae* S. Ito et Otani, 63) *U. sinensis* Trotter, 64) *U. tenuis* (Faull) Hirats. and 65) *U. yakushimensis* Y. Morimoto.

It is difficult to know when the introduced species, were brought into the Ryukyu Archipelago. The following are examples of "Introduced species."

1) *Coleopucciniella simplex* (Diet.) S. Ito. The date, *Eriobotrya japonica* Lindl. was introduced into Okinawa Island is not positively known, but it is considered to be not so old. This fungus might have been introduced at the same time.

2) *Ravenelia tephrosiicola* Hiratsuka, f. The host plant of the fungus, *Tephrosia candida* DC. was originated in India. It is not known the exact date of the introduction of the plant, but it is thought to be comparatively recent. The fungus might have introduced at the same time.

3) *Gymnosporangium haraceanum* Sydow. The seedling of the host plant of the fungus, *Junniperus chinensis* L. was brought from Kagoshima Prefecture, Japan, in 1953, but since then there have been no outbreaks of this fungus.

4) *Poliotetium hyalospora* (Saw.) Mains. The origin of the host plant of this fungus, *Acacia confusa* Merr. was in the Philippines. This fungus is thought to have spread to Okinawa Island through Formosa.

5) *Tranzschelia discolor* (Fuck.) Tranzschel et Litwinow. Since the host plant of the fungus, *Prunus salicina* Lindl. is of recent introduction to Okinawa Island, the fungus might have been introduced with the host plant recently.

6) *Uromyces acori* Ramakrishnan et Rangaswami. There are no native species of the host plant of the fungus, *Acorus asiatica* Nakai. This fungus, also, is considered to have been introduced to the Ryukyu Archipelago with the host plant at an unknown date, but not so remote.

7) *Uromyces appendiculatus* Link. This fungus might have been introduced with the host plant, *Phaseolus vulgaris* L., at an unknown date.

8) *Uromyces baeumlerianus* Bubak. This fungus was taken from *Melilotus alba* Desv. cultivated in the site of the University of the Ryukyus by Dr. Hiratsuka in June 1953. As the seeds of the plant were introduced from North America in previous year, the fungus might have been introduced with the seeds.

9) *Uromyces fabae* De Bary. It is thought that the introduction of the host plant of the fungus, *Vicia faba* L., is pretty old; and that the occurrence of the fungus is also old.

10) *Uromyces mucunae* Rabenhorst. Since the host plant of the fungus, *Mucuna hasjoo* Rodk. (*M. capitata* Wight. et Arn.) was introduced in comparatively recent days, the introduction of the fungus probably is recent.

11) *Puccinia cenchri* Dietel et Holway. The host plant of the fungus, *Cenchrus brownii* Roem. et Scult. was naturalized in Okinawa Island after the World War II. Therefore, the fungus probably was introduced after the war. Dr. T. Hiratsuka is of the same opinion (A-46).

V. Host plants of rust fungi found in the Ryukyu Archipelago

As shown in Table 20, the host plants of rust fungi found in the Ryukyu Archipelago are those of four classes; Filicinae, Coniferae, Monocotyledoneae and Dico-

tyledoneae. Rust fungi are mainly parasitic on the following families; Gramineae 47 sp., Leguminosae 22 sp., Compositae 22 sp., Cyperaceae 17 sp., Rosaceae 14 sp., Liliaceae 11 sp., Euphorbiaceae 11 sp., Rubiaceae 9 sp. and Aspiadaceae 8 sp.

VI. Enumeration of species

Fam. Melampsoraceae

Uredinopsis Magnus, 1893

1. *Uredinopsis kameiana* Faull in Contrib. Arnold Arboretum, Harvard Univ. XI, p. 82, pl. IV, fig. 20 (2-d), 1938. (Hiratsuka, f., Melampsorac. Nippon. p. 137, 1944; Ured. Kiushu. p. 5, 1952; Uredinolog. Stud. p. 249, 1955; Rev. Taxon. Pucciniestr. p. 19, 1958; Kamei, Jour. Facul. Agric. Hokkaido Imp. Univ. XLVII, p. 33, 1940; Katsuki, Jour. Jap. Bot. XXX, p. 30, 1955).

Hab. in the Ryukyus. II. on *Pteridium aquilinum* Kuhn var. *latiusculum* Underw. (*Warabi*). Yakushima Isl. (S. K.*).

Distrib. in the Ryukyus: Satsunan Isls.

2. *Uredinopsis pteridis* Dietel et Holway ex Dietel in Ber. Deutsch. Bot. Ges. XIII, p. 331, 1895. (Hiratsuka, f., Rev. Taxon. Pucciniestr. p. 26, 1958).

Syn. *Uredinopsis macrosperma* Magnus ex Hiratsuka, f., Monogr. Pucciniestr. p. 77, pl. II, fig. 2, 1936. (Hiratsuka, f., Ured. Formosa. p. 3, 1943; Melampsorac. Nippon. p. 139, 1944; Uredinolog. Stud. p. 249, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. LI, p. 41, 1937; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 6, 1954; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 18, 1955; no. 3, p. 6, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agr. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 40, 1955; Sawada, Descript. Cat. Formosan Fung. VII, p. 59, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 20, fig. 12, 1938).

Hab. in the Ryukyus. II. on *Pteridium aquilinum* Kuhn var. *latiusculum* Underw. (*Warabi*). Yakushima Isl.: Kosugidani (June 1, 1951, Y. M., no. 2033); Miyounoura (Aug. 9, 1957, S. S. & M. T., no. Yaku-106). Nakanoshima Isl. (July 31, 1955, S. S. & Y. N., no. Tokara-42). Amami-oshima Isl.: Mt. Yuwan-dake (Dec. 31, 1954, Y. M., no. 1778). Okinawa Isl.: Higashi-mura (June 12, 1953, H. f. & S. S., no. 1039); Mt. Yonaha-dake (May 30, 1953, H. f. & S. S., no. 1038).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Okinawa Isls.

Milesina Magnus, 1909

1. *Milesina coniogrammes* Hiratsuka, f. in Bot. Mag. Tokyo, XLVIII, p. 45, fig. 6, 1934. (Hiratsuka, f., Monogr. Pucciniestr. p. 99, pl. V, fig. 6, 1936; Ured. Formosa. p. 4, p. 43; Melampsorac. Nippon. p. 145, 1944; Ured. Kiushu. p. 5, 1952; Uredinolog. Stud. p. 250, 1955; Rev. Taxon. Pucciniestr. p. 37, 1958; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 18, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 40, 1955; Sawada, Descript. Cat. Formosan Fung. VII, p. 58, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 24, fig. 16, 1938).

Syn. *Milesina hiratsukai* Y. Morimoto in Jour. Jap. Bot. XXVIII, p. 313, 1953.

* The following abbreviations are used for the name of the collectors of fungi mostly frequently named in the list: H. f. = Naohide Hiratsuka; S. S. = Shun-ichi Shimabukuro; Y. T. = Yoshihisa Taira; S. Sa. = Shoji Sato; S. K. = Shigetaka Katsuki; Y. M. = Yasuji Morimoto; K. I. = Kiyoharu Ide; Y. N. = Yoshima Niiro; M. T. = Masao Tamori; Y. H. = Yasuyuki Hiratsuka; T. H. = Toshiko Hiratsuka.

Hab. in the Ryukyus. II. on *Flagiogyria japonica* Nakai (*Kijinoo-shida*). Yakushima Isl.: Kosugidani (June 2, 1951, Y. M., no. 2031); Ishizuka—Hananoego (July 31, 1954, S. Sa. & Y. H., no. 2032). Amami-oshima Isl.: Mt. Yuwan-dake (Dec. 31, 1954, Y. M., no. 2346; Jan. 1, 1955, Y. N., no. 2347).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls.

2. *Milesina erythrosora* (Faull) Hiratsuka, f. ex Hiratsuka, f. & Yoshinaga in Mem. Tottori Agric. Coll. III, p. 255, 1935. (Hiratsuka, f., Monogr. Pucciniastr. p. 119, 1936; Melampsorac. Nippon. p. 149, 1944; Ured. Formosa. p. 4, 1943; Ured. Kiushu. p. 6, 1952; Uredinolog. Stud. p. 251, 1955; Rev. Taxon. Pucciniastr. p. 46, 1958; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. LI, p. 41, 1937; Sawada, Descript. Cat. Formosan Fung. VII, p. 58, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 30, fig. 21, 1938).

Syn. *Milesia carpatica* Faull var. *erythrosora* Faull in Contrib. Arnold Arboretum, Harvard Univ. II, p. 57, 1932.

Hab. in the Ryukyus. II. on *Dryopteris lacera* O. Kuntze (*Kuma-warabi*). Tanegashima Isl.: Nishinoomote-machi (Aug. 13, 1957, S. S. & Y. N., no. Tane-54).

Distrib. in the Ryukyus: Satsunan Isls.

3. *Milesina exigua* (Faull) Faull ex Hiratsuka, f., Monogr. Pucciniastr. p. 104, 1936. (Hiratsuka, f., Ured. Formosa. p. 4, 1943; Ured. Kiushu. p. 7, 1952; Uredinolog. Stud. p. 251, 1955; Rev. Taxon. Pucciniastr. p. 39, 1958; Hiratsuka, f. & Yoshinaga, Mem. Tottori Agric. Coll. III, p. 256, 1935; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 18, 1955; no. 3, p. 6, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agri. & Hom. Econ. Div. Univ. Ryukyus. no. 2, p. 40, 1955; Kamei, Jour. Facul. Agric. Hokkaido Imp. Univ. XLVII, p. 102, 1940; S. Ito, Myc. Fl. Jap. II, no. 2, p. 40, figs. 30 & 31, 1938; Sawada, Descript. Cat. Formosan Fung. VII, p. 58, 1942).

Syn. *Milesina exigua* Faull in Jour. Arnold Arboretum. XII, p. 219, 1931 (II). *Milesina vogesiaca* (non P. et H. Sydow) Kamei in Transact. Sapporo Nat. Hist. Soc. XI, p. 141, 1930.

Hab. in the Ryukyus. II. on *Ctenis subglandulosa* (Hance) Ching (*Katsumo-inode*). Takara-shima Isl. (Aug. 7, 1955, S. S. & Y. N., no. Tokara-152). II. on *Dennstaedtia scabra* Moore (*Kobano-ishikaguma*). Yakushima Isl.: Ishizuka—Hananoego (July 31, 1954, S. Sa. & Y. H., no. 1904); Hananoego—Mt. Miyanoura-dake (Aug. 1, 1954, S. Sa. & Y. H., no. 1905). II. on *Hypolepis punctata* Mett. (*Iwahimewarabi*). Yakushima Isl.: Hananoego—Kosugidani (Aug. 1, 1954, S. Sa. & Y. H., no. 1906). II. on *Microlepia strigosa* Presl (*Ishikaguma*). Yakushima Isl.: Kurio (June 1, 1951, Y. M., no. 1907); Anbo (June 7, 1951, Y. M., no. 1908). Amami-oshima Isl.: Yamato-mura (Jan. 1, 1955, Y. M., no. 1777); Mt. Yuwan-dake (Jan. 1, 1955, Y. N., no. 1886); Santaro-toge (Jan. 6, 1955, Y. M., no. 2024).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls.

4. *Milesina faulliana* Hiratsuka, f. et Uemura ex Hiratsuka, f. in Bot. Mag. Tokyo. XLVIII, p. 41, fig. 3, 1934. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 707, 1935; Monogr. Pucciniastr. p. 142, pl. III, fig. 5, 1936; Melampsorac. Nippon. p. 150, 1944; Ured. Kiushu. p. 7, 1952; Uredinolog. Stud. p. 251, 1955; Rev. Taxon. Pucciniastr. p. 55, 1958; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 4, p. 160, 1957; S. Ito, Myc. Fl. Jap. II, no. 2, p. 25, fig. 17, 1938).

Hab. in the Ryukyus. II. on *Phanerophlebia falcata* (L.f.) Copel (*Cyrtomium falcatum* Presl) (*Oni-yabusotetsu*). Takeshima Isl. (Aug. 6, 1956, Y. N., no. Mi-shima-104).

Distrib. in the Ryukyus: Tokara Isls.

5. *Milesina microspora* Hiratsuka, f. in Bot. Mag. Tokyo. XLVIII, p. 43, 1934. (Hi-

tsuka, f., Monogr. Pucciniestr. p. 125, 1936; Bot. Mag. Tokyo. LIV, p. 157, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 18, 1941; Melampsorac. Nippon. p. 148, 1944; Uredinolog. Stud. p. 252, 1955; Rev. Taxon. Pucciniestr. p. 49, 1958; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 6, 1954; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 18, 1955; S. Ito, Myc. Fl. Jap. II, no. 2, p. 32, fig. 23, 1938).

Hab. in the Ryukyus. II, III. on *Cyclosorus acuminatus* (Houtt.) Nakai (*Dryopteris acuminata* Nakai) (*Ho-shida*). Amami-oshima Isl.: Mt. Yuwan-dake (Jan. 1, 1955, Y. N., no. 1775; Yamato-mura (Dec. 31, 1954, Y. M., no. 1774); Santaro-toge (Jan. 6, 1955, Y. M., no. 1772). Okinawa Isl.: Mt. Katsuu-dake (Jan. 14, 1940, H. f., nos. 223, 227 & 247); Haneji-mura (April 8, 1940, Y. T., no. 423); Nakijin-mura (April 15, 1940, Y. T., no. 462).

Distrib. in the Ryukyus: Amami Isls., Okinawa Isls.

6. *Milesina odontosoriae* Hiratsuka, f., Monogr. Pucciniestr. p. 122, 1936. (Hiratsuka, f., Bot. Mag. Tokyo. XLVIII, p. 46, 1934; LIV, p. 157, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 18, 1941; Melampsorac. Nippon. p. 149, 1944; Ured. Kiushu. p. 8, 1952; Uredinolog. Stud. p. 252, 1955; Rev. Taxon. Pucciniestr. p. 48, 1958; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 6, 1954; S. Ito, Myc. Fl. Jap. II, no. 2, p. 47, 1938).

Hab. in the Ryukyus. II. on *Sphenomeris chinensis* (L.) Maxon. (*Stenoloma chusanum* Ching) (*Hora-shinobu*). Yakushima Isl.: Kosugidani (June 1, 1951, Y. M., no. 1914). Okinawa Isl.: Mt. Onna-dake (Jan. 12, 1940, H. f., no. 83); Kunigami-mura (May 29, 1953, H. f. & S. S., no. 1037).

Distrib. in the Ryukyus: Satsunan Isls., Okinawa Isls.

7. *Milesina pteridicola* Hiratsuka, f. ex Hiratsuka, f. & Yoshinaga in Mem. Totori Agric. Coll. III, p. 256, 1935. (Hiratsuka, f., Jour. Jap. Bot. XII, p. 271, 1936; Monogr. Pucciniestr. p. 110, 1936; Melampsorac. Nippon. p. 146; Ured. Kiushu. p. 8, 1952; Uredinolog. Stud. p. 252, 1955; Rev. Taxon. Pucciniestr. p. 43, 1958; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 18, 1955; no. 3, p. 61, 1956; no. 4, p. 160, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 41, 1955; S. Ito, Myc. Fl. Jap. II, no. 2, p. 44, fig. 34, 1938).

Hab. in the Ryukyus. II. on *Pteris dispar* Kunze (*Amakusa-shida*). Yakushima Isl.: Onoaida—Kojima (Aug. 3, 1954, S. S. & Y. H., nos. 1909 & 1910). Takeshima Isl. (Aug. 7, 1955, S. S. & Y. N., no. Tokara-151; Dec. 22, 1955, Y. N., no. Tokara-243). II, III. on *Pteris fauriei* Hieron. (*Shima-hachijo-shida*). Tanegashima Isl.: Furuta (Aug. 14, 1957, S. S. & M. T., no. Tane-85). Kuroshima Isl. (July 25, 1956, S. S. & Y. N., no. Mishima-119). Takeshima Isl. (Aug. 6, 1956, Y. N., no. Mishima-120). Nakanoshima Isl. (Dec. 24, 1955, Y. N., no. Tokara-319). Amami-oshima Isl.: Mikata-mura (June 6, 1955, Y. N., no. 1772). II. on *Pteris hachijoensis* Nakai (*Hachijo-shida*). Yakushima Isl.: Haro (June 5, 1951, Y. M., no. 1911).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls.

8. *Milesina vogesiaca* (Faull) Sydow ex Hiratsuka, f., Monogr. Pucciniestr. p. 96, pl. V, figs. 4 & 5, 1936. (Hiratsuka, f., Melampsorac. Nippon. p. 144, 1944; Uredinolog. Stud. p. 253, 1955; Rev. Taxon. Pucciniestr. p. 36, 1958; Hiratsuka, f. & Shimabukuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 4, p. 117, 1957; S. Ito, Myc. Fl. Jap. II, no. 2, p. 39, fig. 29, 1938).

Syn. *Milesina vogesiaca* P. et H. Sydow in Ann. Myc. VIII, p. 491, 1910 (II).

Hab. in the Ryukyus. II. on *Dryopteris varia* O. Kuntze (*Itachi-shida*). Tanegashima Isl.: Nishinoomote-machi (Aug. 13, 1957, S. S. & M. T., no. Tane-54).

Distrib. in the Ryukyus: Satsunan Isls.

Hyalopsora Magnus, 1901

1. *Hyalopsora aculeata* Kamei in Transact. Sapporo Nat. Hist. Soc. XII, p. 128, figs. 1-3, 1932. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 41, 1935; Monogr. Pucciniastr. p. 172, pl. VI, fig. 1, 1936; Melampsorac. Nippon. p. 155, 1944; Ured. Kiushu. p. 9, 1952; Uredinolog. Stud. p. 253, 1955; Rev. Taxon. Pucciniastr. p. 69, 1958; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 41, 1955; S. Ito, Myc. Fl. Jap. II, no. 2, p. 56, fig. 43, 1938; S. Ito & Homma, Transact. Sapporo Nat. Hist. Soc. XV, p. 115, 1938).

Hab. in the Ryukyus. II. on *Blechnum nipponicum* (Kunze) Makino (*Shishiga-shira*). Yakushima Isl.: Ishizuka—Hananoego (July 31, 1954, S. Sa. & Y. H., nos. 1902 & 1903); Kosugidani (Aug. 3, 1957, S. S. & M. T., no. Yaku-143); Hananoego (Aug. 3, 1957, S. S. & M. T., no. Yaku-144).

Distrib. in the Ryukyus: Satsunan Isls.

2. *Hyalopsora hakodatensis* Hiratsuka, f., Monogr. Pucciniastr. p. 171, 1936. (Hiratsuka, f., Melampsorac. Nippon. p. 157, 1944; Hiratsuka, f., Rev. Taxon. Pucciniastr. p. 67, 1958; S. Ito, Myc. Fl. Jap. II, no. 2, p. 55, 1938; Y. Morimoto, Jour. Jap. Bot. XXXI, p. 41, 1956).

Syn. *Hyalopsora hakodatensis* Hiratsuka, f. et Uemura in Transact. Tottori Soc. Agric. Sci. IV, p. 25, 1932.

Hab. in Ryukyus. II. on *Athyrium maximum* (Don.) Copel (*Hiroha-nokogirishida*). Amami-oshima Isl.: Mt. Yuwan-dake (Dec. 31, 1954, Y. M., no. 1770; Jan. 1, 1955, Y. N., no. 1771).

Distrib. in the Ryukyus: Amami Isls.

3. *Hyalopsora polypodii* (Dietel) Magnus in Ber. Deutsch. Bot. Ges. XIX, p. 582, 1901. (Hiratsuka, f., Monogr. Pucciniastr. p. 162, pl. VI, figs. 2-6, 1936; Ured. Formosa. p. 6, 1943; Melampsorac. Nippon. p. 156, 1944; Ured. Kiushu. p. 9, 1952; Uredinolog. Stud. p. 253, 1955; Rev. Taxon. Pucciniastr. p. 64, 1958; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 26 & 524, 1935; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 7, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 18, 1955; no. 3, p. 6, 1956; no. 4, p. 160, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 41, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 15, 1933; Sawada, Descript. Cat. Formosan Fung. VI, p. 51, 1933; S. Ito, Myc. Fl. Jap. II, no. 2, p. 49, fig. 37, 1938).

Syn. *Pucciniastrum polypodii* Dietel in Hedwigia. XXXVIII, p. (260), 1899. *Hyalopsora filicum* Dietel in Engl. Bot. Jahrb. XXXVII, p. 105, 1905. *Uredo orientalis* Raciborski in Bull. Acad. Sci. Cracovie Cl. Sci. Math. et Nat. (1909), p. 279, 1909.

Hab. in the Ryukyus. II. on *Athyrium japonicum* (Thunb.) Copel (*Diplazium oshimense* H. Ito) (*Shike-shida*). Yakushima Isl.: Miyanoura (Aug. 9, 1957, S. S. & M. T., no. Yaku-100). Nakanoshima Isl. (Dec. 24, 1955, Y. N., no. Tokara-334). Amami-oshima Isl.: Sumiyo-mura (Dec. 30, 1954, Y. N., no. 1769); Koniya (Dec. 13, 1955, S. Sa. & N. Hirai). Okinawa Isl.: Motobu-machi (April 15, 1940, Y. T., no. 458). II. on *Lastrea totta* (Schltdl.) Ohwi (*Leptogramma totta* J. Sm.) (*Mizo-shida*). Yakushima Isl.: Kosugidani (Aug. 7, 1951, K. Togashi & S. K., no. 1918). Kuroshima Isl. (July 29, 1956, S. S. & Y. N., no. Mishima-114). II. on *Lastrea laxa* (Franch. et Sav.) Copel (*Thelypteris laxa* Ching) (*Yawara-shida*). Yakushima Isl.: Kosugidani—Anbo (Aug. 2, 1954, S. Sa. & Y. H., no. 1920). II. on *Woodwardia orientalis* Swartz (*Komochi-shida*). Kuroshima Isl. (July 29, 1956, S. S. & Y. N., no. Mishima-19).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls.

Melampsoridium Klebahn, 1899

1. *Melampsoridium hiratsukanum* S. Ito ex Hiratsuka, f. in Jour. Facul. Agric.

Hokkaido Imp. Univ. XXI, p. 9, 1927. (Hiratsuka, f., Transact. Sapporo Nat. Hist. Soc. XVI, p. 140, 1940; Monogr. Pucciniastr. p. 194, 1936; Melampsorac. Nippon. p. 159, 1944; Ured. Kiushu. p. 11, 1952; Uredinolog. Stud. p. 255, 1955; Rev. Taxon. Pucciniastr. p. 79, 1958; S. Ito, Myc. Fl. Jap. II, no. 2, p. 108, fig. 64, 1938).

Hab. in the Ryukyus. II. on *Alnus formosana* Makino (*Taiwan-hannoki*) (Cult.). Okinawa Isl.: Kunigami-mura (Aug. 11, 1958, S. S., no. Oki-1354).

Distrib. in the Ryukyus: Okinawa Isls.

Pucciniastrum Otth, 1861

1. *Pucciniastrum actinidiae* Hiratsuka, f. in Jour. Jap. Bot. XXVII, p. 111, 1952 (III). (Hiratsuka, f., Rev. Taxon. Pucciniastr. p. 105, 1958).

Syn. *Pucciniastrum actinidiae* Hiratsuka, f., Monogr. Pucciniastr. p. 279, 1936 (II). (Hiratsuka, f., Ured. Formosa. p. 9, 1943; Melampsorac. Nippon. p. 178, 1944; Uredinolog. Stud. p. 255, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. LI, p. 42, 1937; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 7, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 19, 1955; no. 3, p. 6, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 41, 1955; Sawada, Descript. Cat. Formosan Fung. VII, p. 55, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 92, 1938).

Hab. in the Ryukyus. II, III. on *Actinidia rufa* Planch. (*Nashikazura*). Tanegashima Isl.: Nishinootemachi (Sept. 22, 1954, S. S., no. 1915); Minamitane-mura (Sept. 23, 1954, S. S., no. 1916). Yakushima Isl.: Hirano (Dec. 30, 1952, S. K., no. 1917); Miyanoura (Aug. 9, 1957, S. S. & M. T., no. Yaku-109). Nakanoshima Isl. (Dec. 24, 1955, Y. N., no. Tokara-274). Amami-oshima Isl.: Yamato-mura (Jan. 1, 1955, Y. M., no. 1864; Jan. 7, 1955, Y. N., no. 1865); Sumiyō-mura (Dec. 29, 1954, Y. N., no. 1866); Mt. Yuwan-dake (Dec. 31, 1954, Y. N., no. 1867); Shin-mura (Dec. 30, 1954, Y. M., no. 1868); Tatsugo-mura (Dec. 27, 1953, Y. N., no. 1869); Mikata-mura (Jan. 6, 1955, Y. N., no. 1870). Tokunoshima Isl.: Mt. Mikyo-dake (Sept. 14, 1954, Y. N., no. 1871); Kametsu-machi (Sept. 16, 1954, Y. N., no. 1872). Okinawa Isl.: Kunigami-mura (Oct. 14, 1953, S. S., no. 1010). Iriomote Isl. (Nov. 8, 1957, S. S., no. Yae-398).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

2. *Pucciniastrum agrimoniae* (Dietel) Tranzschel Script. Bot. Hort. Univ. Petro-pol. IV, p. 301, 1895. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 41, 1935; Monogr. Pucciniastr. p. 231, 1936; Ured. Formosa. p. 7, 1943; Melampsorac. Nippon. p. 167, 1944; Ured. Kiushu. p. 11, 1952; Uredinolog. Stud. p. 256, 1955; Rev. Taxon. Pucciniastr. p. 95, 1958; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 162, 1933; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 7, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 19, 1955; no. 3, p. 6, 1956; no. 4, p. 160, 1957; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 15, 1933; Sawada, Descript. Cat. Formosan Fung. VI, p. 51, 1933; S. Ito, Myc. Fl. Jap. II, no. 2, p. 84, fig. 56, 1938).

Syn. *Thekopsora agrimoniae* Dietel in Hedwigia. XXIX, p. 152, 1890.

Hab. in the Ryukyus. II, III. on *Agrimonia pilosa* Ledeb. var. *japonica* Nakai (*Kinmizuhiki*). Tanegashima Isl.: Minamitane-mura (Sept. 23, 1954, S. S., no. 1921). Yakushima Isl.: Kosugidani (Sept. 8, 1954, S. S., no. 1922; Aug. 3, 1957, S. S. & M. T., no. Yaku-161); Kosugidani—Anbo (Aug. 2, 1954, S. Sa. & Y. H., nos. 1925, 1926, 1927, 1928, 1930 & 1931); Hananoego—Kosugidani (Aug. 1, 1954, S. Sa. & Y. H., no. 1924). Kuroshima Isl. (July 25, 1956, S. S. & Y. N., no. Mishima-11). Takeshima Isl. (Aug. 7, 1956, Y. N., no. Mishima-61). Takarashima Isl. (Aug. 13, 1955, S. S. & Y. N., no. Tokara-147; Dec. 22, 1955, Y. N., no. Tokara-223). Amami-

oshima Isl.: Yamato-mura (Dec. 31, 1954 & Jan. 1, 1955, Y. M., nos. 1856 & 1857); Santaro-toge (Dec. 29, 1954 & Jan. 6, 1955, Y. M., nos. 1858 & 1859); Mt. Yuwan-dake (Dec. 30, 1954, Y. M., no. 1861; Dec. 30, 1954, Y. N., no. 1862); Mikata-mura (Oct. 6, 1954, S. K., no. 1863; July 23, 1936, T. Tamotsu, no. 1118). Okinawa Isl.: Mt. Katsuu-dake (Jan. 14, 1940, H. f., no. 226).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls.

3. **Pucciniastrum boehmeriae** P. et H. Sydow in Ann. Myc. I, p. 19, 1903. (Hiratsuka, f., Monogr. Pucciniastr. p. 242, pl. IX, fig. 3, 1936; Melampsorac. Nippon. p. 170, 1944; Ured. Kiushu. p. 12, 1952; Uredinolog. Stud. p. 256, 1955; Rev. Taxon. Pucciniastr. p. 100, 1958; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 19, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 42, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 16, 1933; S. Ito, Myc. Fl. Jap. II, no. 2, p. 82, fig. 54, 1938).

Syn. *Pucciniastrum formosanum* Sawada in Descript. Cat. Formosan Fung. X, p. 42, 1954 (II, nomen nudum).

Hab. in the Ryukyus. II, III. on *Boehmeria frutescens* Thunb. var. *viridula* Suzuki (*No-karamushi*). Kikaishima Isl.: Somachi-mura (Aug. 29, 1954, Y. N., no. 1855). II, III. on *Boehmeria holocericea* Bl. (*Oni-yabumao*). Yakushima Isl. Nagata (Aug. 11, 1957, S. S. & M. T., no. Yaku-72). II. on *Boehmeria* sp. Yakushima Isl.: Kosugidani—Anbo (Aug. 2, 1954, S. Sa. & Y. H., no. 1933).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls.

4. **Pucciniastrum corni** Dietel in Engl. Bot. Jahrb. XXXIV, p. 587, 1905. (Hiratsuka, f., Transact. Sapporo Nat. Hist. Soc. XVI, p. 140, 1940, Ured. Kiushu. p. 13, 1952; Monogr. Pucciniastr. p. 266, 1936; Melampsorac. Nippon. p. 173, 1944; Uredinolog. Stud. p. 256, 1955; Rev. Taxon. Pucciniastr. p. 113, 1958; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 42, 1955; S. Ito, Myc. Fl. Jap. II, no. 2, p. 97, fig. 59, 1938).

Hab. in the Ryukyus. II, III. on *Cynoxylon japonica* Nakai (*Yamaboshi*). Yakushima Isl.: Kosugidani (Oct. 16, 1949, S. K., no. 1934).

Distrib. in the Ryukyus: Satsunan Isls.

5. **Pucciniastrum hikosanense** Hiratsuka, f. in Ann. Phytopath. Soc. Japan. X, p. 154, 1940 (Hiratsuka, f., Bot. Mag. Tokyo. LV, p. 267, 1941; Ured. Formosa. p. 8, 1943; Melampsorac. Nippon. p. 172, 1944; Uredinolog. Stud. p. 257, 1955; Rev. Taxon. Pucciniastr. p. 103, 1958; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 19, 1955).

Hab. in the Ryukyus. II, III. on *Acer insulare* Mak (*Shima-wrikaede*). Amami-oshima Isl.: Uken-mura (Dec. 30, 1954, Y. N., no. 1816); Sumiyo-mura (Dec. 30, 1954, Y. N., no. 1817); Mt. Yuwan-dake (Dec. 31, 1954, Y. M., no. 1818); Santaro-toge (Jan. 6, 1955, Y. M., no. 1819); Mikata-mura (Oct. 6, 1954, S. K., no. 1820); Shin-mura (Dec. 30, 1954, Y. M., no. 1822).

Distrib. in the Ryukyus: Amami Isls.

6. **Pucciniastrum hydrangeae-petioleae** Hiratsuka, f. in Jour. Facul. Agric. Hokkaido Imp. Univ. XXI, p. 27 & 93, pl. I, fig. 4, 1927 (sub nom. "*Pucciniastrum hydrangeae-petioleae*"). (Hiratsuka, f., Ured. Formosa. p. 8, 1943; Ured. Kiushu. p. 13, 1952; Monogr. Pucciniastr. p. 245, 1936; Melampsorac. Nippon. p. 171, 1944; Uredinolog. Stud. p. 257, 1955; Rev. Taxon. Pucciniastr. p. 102, 1958; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLVIII, p. 237, 1934; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 42, 1955; Katsuki, Jour. Jap. Bot. XXX, p. 30, 1955; Sawada, Descript. Cat. Formosan Fung. VII, p. 56, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 83, fig. 55, 1938).

Hab. in the Ryukyus. II. on *Hydrangea petiolaris* Sieb. et Zucc. (*Gotozuru*, *Tsuru-ajisai*). Yakushima Isl.: Kosugidani (Sept. 7 & 10, 1954, S. S., nos. 1938 & 1939); Kosugidani—Anbo (Aug. 2, 1954, S. Sa. & Y. H., nos. 1935, 1936 & 1937).

Distrib. in the Ryukyus: Satsunan Isls.

7. *Pucciniastrum kusanoi* Dietel in Engl. Bot. Jahrb. XXXII, p. 629, 1903. (Hiratsuka, f., Transact. Sapporo Nat. Hist. Soc. XVI, p. 141, 1940; Monogr. Pucciniastr. p. 267, 1936; Melampsorac. Nippon. p. 173, 1944; Ured. Kiushu. p. 14, 1952; Uredinolog. Stud. p. 258, 1955; Rev. Taxon. Pucciniastr. p. 114, 1958; Katsuki, Jour. Jap. Bot. XXX, p. 30, 1955; S. Ito, Myc. Fl. Jap. II, no. 2, p. 98, fig. 60, 1938).

Hab. in the Ryukyus. II. on *Clethra barbinervis* Sieb. et Zucc. (*Ryobu*). Yakushima Isl.: Kosugidani (Jan. 1, 1953, S. K., no. S. K.-556).

Distrib. in the Ryukyus: Satsunan Isls.

8. *Pucciniastrum styracinum* Hiratsuka in Bot. Mag. Tokyo. XII, p. 31, pl. II, figs. 7-13, 1898. (Hiratsuka, f., Jour. Facul. Agric. Hokkaido Imp. Univ. XXI, p. 67, 1927; Bot. Mag. Tokyo. XLIV, p. 264, 1930; Monogr. Pucciniastr. p. 269, 1936; Ured. Formosa. p. 8, 1943; Melampsorac. Nippon. p. 174, 1944; Ured. Kiushu. p. 14, 1952; Uredinolog. Stud. p. 258, 1955; Rev. Taxon. Pucciniastr. p. 114, 1958; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 162, 1933; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 7, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 19, 1955; no. 3, p. 6, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 42, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 17, 1933; Sawada, Descript. Cat. Formosan Fung. VI, p. 52, 1933; S. Ito, Myc. Fl. Jap. II, no. 2, p. 101, fig. 61, 1938).

Hab. in the Ryukyus. II, III. on *Styrax japonica* Sieb. et Zucc. (*Egonoki*). Tane-ga-shima Isl.: Nishinoomote-machi (Sept. 27, 1954, S. S., no. 1992; Aug. 13, 1957, S. S. & M. T., nos. Tane-111 & 121). Yakushima Isl. (Dec. 31, 1933 & Jan. 2, 1934, K. Ide, nos. 581 & 582); Anbo (July 30, 1954, S. Sa. & Y. H., no. 1988; Aug. 6, 1957, S. S. & M. T., no. Yaku-138); Kosugidani (Sept. 8, 1954, S. S., no. 1989); Miyanoura (Oct. 13, 1949, S. K., no. 1991). Nakanoshima Isl. (Dec. 25, 1955, Y. N., no. Tokara-285). Amami-oshima Isl.: Kasari-mura (Dec. 25, 1953, Y. N., no. 1172); Mt. Yuwanda-dake (Jan. 1, 1955, Y. N., no. 1812); Mikata-mura (Oct. 6, 1954, S. K., no. 1811; Jan. 6, 1955, Y. N., no. 1813); Santaro-toge (Jan. 6, 1955, Y. M., no. 1814); Sumiyo-mura (Sept. 23, 1954, Y. N., no. 1815). Tokunoshima Isl.: Amagi-mura (Sept. 15, 1954, Y. N., no. 1810); Mt. Inokawa-dake (Sept. 19, 1954, Y. N., no. 1809). Kikaishima Isl.: Isen-mura (Sept. 16, 1954, Y. N., no. 1808). II, III. on *Styrax japonica* var. *kotoensis* Masam. (*Styrax kotoensis* Hayata) (*Koto-egonoki*). Okinawa Isl.: Mt. Taniu-dake (June 12, 1953, H. f. & S. S., no. 843); Kunigami-mura (Oct. 14, 1953, S. S., no. 1041); Mt. Nago-dake (Nov. 27, 1953, S. S., no. 1199). Iheya Isl. (Sept. 21, 1955, Y. N., no. Oki-1085).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls.

Thekopsora Magnus, 1875

1. *Thekopsora vaccinii* (Wint.) Hiratsuka, f., Uredinolog. Stud. p. 260, 1955. (Hiratsuka, f., Rev. Taxon. Pucciniastr. p. 128, 1958).

Syn. *Thekopsora myrtilлина* Karsten, Myc. Fenn. IV, p. 59, 1879. (Hiratsuka, f., Monogr. Pucciniastr. p. 309, 1936; Ured. Kiushu. p. 15, 1952; Melampsorac. Nippon. p. 185, 1944; S. Ito, Myc. Fl. Jap. II, on. 2, p. 65, 1938).

Hab. in the Ryukyus. II. on *Hugeria japonica* (Miq.) Nakai (*Akushiba*). Yakushima Isl.: Hananoego (Aug. 4, 1957, S. S. & M. T., no. Yaku-66).

Distrib. in the Ryukyus: Satsunan Isls.

Melampsora Castagne, 1843

1. *Melampsora coleosporioides* Dietel in Engl. Bot. Jahrb. XXXII, p. 50, 1902. (Hiratsuka, f., Ured. Formosa. p. 9, 1943; Ured. Kiushu. p. 16, 1952; Melampsorac. Nippon. p. 198, 1944; Uredinolog. Stud. p. 261, 1955; Hiratsuka, f. & Shimabukuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 4, p. 117, 119 & 120, 1957; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 24, 1933; S. Ito, Myc. Fl. Jap. II, no. 2, p. 123, 1938).

Hab. in the Ryukyus. II. on *Salix babylonica* Linn. (*Shidare-yanagi*) (Cultivated). Yakushima Isl.: Nagata (Aug. 11, 1957, S. S. & M. T., no. Yaku-68). Okinawa Isl.: Chinen-mura (April 4, 1955, M. T., no. Oki-1005); Shuri (Naha-shi) (June 12, 1955, M. T., no. Oki-1018). Ishigaki Isl.: Uehara (July 15, 1957, S. Higashihirachi, no. Yae-317).

Distrib. in the Ryukyus: Satsunan Isls., Okinawa Isls., Sakishima Isls.

2. *Melampsora idesiae* Miyabe ex Hiratsuka in Bot. Mag. Tokyo. XI, p. 45 & pl. IV, figs. 1-3, 1897. (Hiratsuka, f., Melampsorac. Nippon. p. 190, 1944; Ured. Kiushu. p. 17, 1952; Uredinolog. Stud. p. 262, 1955; Hiratsuka, f. & Shimabukuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 6, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 20, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 43, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 25, 1933; S. Ito, Myc. Fl. Jap. II, no. 2, p. 135, fig. 74, 1938).

Hab. in the Ryukyus. II, III. on *Cathayaia polycarpa* Ohwi (*Idesia polycarpa* Maxim.) (*Iigiri*). Yakushima Isl.: Ishizuka—Hananoego (July 31, 1954, S. Sa. & Y. H., no. 1986). Amami-oshima Isl.: Uken-mura (Dec. 30, 1954, Y. N., no. 1875); Sumiyo-mura (Dec. 30, 1954, Y. N., no. 1876). Iriomote Isl. (Oct. 1, 1940, T. Naito, no. 2059).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls., Sakishima Isls.

3. *Melampsora yoshinagai* Hennings in Hedwigia. XLII, p. (108), 1903. (Hiratsuka, f., Jour. Soc. Agric. & Forestr. Sapporo, XXI, p. 326, 1930; Ured. Formosa. p. 10, 1943; Ured. Kiushu. p. 17, 1952; Melampsorac. Nippon. p. 194, 1944; Uredinolog. Stud. p. 264, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. LI, p. 42, 1937; Sawada, Descript. Cat. Formosa Fung. VII, p. 54, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 136, fig. 75, 1938).

Syn. *Melampsora wikstroemiae* Hennings in litt. (Fujikuro in Transact. Nat. Hist. Soc. Formosa. no. 19, p. 10, 1914; Sawada, Descript. Cat. Formosan Fung. IV, p. 32, 1928).

Hab. in the Ryukyus. II. on *Wikstroemia phymatoglossa* Koidz. (*Oshima-ganpi*). Amami-oshima Isl.: Mt. Yuwan-dake (Dec. 31, 1954, Y. M., no. 1873). II. on *Wikstroemia yakushimensis* Nakai (*Shima-sakura-ganpi*). Yakushima Isl.: Kosugidani—Anbo (Aug. 2, 1954, S. Sa. & Y. H., no. 1976).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls.

Phakopsora Dietel, 1895

1. *Phakopsora ampelopsidis* Dietel et P. Sydow apud Dietel in Hedwigia. XXXVII, p. 217, 1898. (Hiratsuka, Bot. Mag. Tokyo. XIV, p. 89, pl. III, figs. 1-9, 1900; Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 157, 1940; Jour. Jap. Bot. XII, p. 269, 1936; Transact. Sapporo Nat. Hist. Soc. XVII, p. 19, 1914; Ured. Formosa. p. 11, 1943; Ured. Kiushu. p. 17, 1952; Melampsorac. Nippon. p. 205, 1944; Uredinolog. Stud. p. 265, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 162, 1933; Bot. Mag. Tokyo. LI, p. 46, 1937; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 8, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 6, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Ryukyus no. 2,

p. 20, 1955; no. 3, p. 7, 1956; no. 4, p. 161, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 43, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 17, 1933; Sawada, Descript. Cat. Formosan Fung. VII, p. 54, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 144, fig. 79, 1938).

Syn. *Uredo vitis* Thümen, Pilze Weinst. p. 182, pl. V, fig. 10, 1878. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 12, 1914; Sawada, Transact. Nat. Hist. Soc. Formosa. IV, p. 83, 1928). *Uredo vialae* Lagerheim in Compt. Rend. CX, p. 728, 1890. (Fujikuro, Bot. Mag. Tokyo. XXVIII, p. (486), 1914). *Phakopsora vitis* P. Sydow in Hedwigia. XXXVIII, p. (141), 1899. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 10, 1914; Sawada, Descript. Cat. Formosan Fung. IV, p. 33, 1928).

Hab. in the Ryukyus. II, III. on *Ampelopsis brevipedunculata* Trautv. var. *maximowiczii* Rehd. (*No-budo*). Tanegashima Isl.: Nishinootemachi (Sept. 20, 1954, S. S., no. 1983); Furuta (Aug. 14, 1957, S. S. & M. T., no. Tane-93 & 94). Yakushima Isl. (Jan. 1, 1934, K. Ide); Anbo (Aug. 9, 1951, K. Togashi & S. K., no. 1978); Onoaida (Aug. 3, 1954, S. Sa. & Y. H., nos. 1980, 1981 & 1982). Kuroshima Isl. (July 25, 1956, S. S. & Y. N., no. Mishima-94). Nakanoshima Isl. (Aug. 3, 1955, S. S. & Y. N., no. Tokara-46; Dec. 25, 1955, Y. N., no. Tokara-277; April 18, 1935, T. Naito). Suwanoseshima Isl. (Aug. 4, 1955, S. S. & Y. N., no. Tokara-99). Akusekishima Isl. (Aug. 6, 1955, S. S. & Y. N., no. Tokara-132). Takarashima Isl. (Dec. 22, 1955, Y. N., no. Tokara-245). Koda-Karashima Isl. (Dec. 23, 1955, Y. N., no. Tokara-269). Amami-oshima Isl.: Nase-shi (Oct., 1936, T. Tamotsu, no. 1159); Kasari-mura (Jan. 4, 1955, Y. M., nos. 1596 & 1597); Tatsugo-mura (Dec. 28, 1953 & Aug. 25, 1954, Y. N., nos. 1178 & 1598); Sumiyo-mura (Dec. 29, 1954, Y. N., no. 1599); Mt. Yuwandake (Jan. 1, 1955, Y. N., no. 1600); Mikata-mura (Jan. 6, 1955, Y. N., no. 1602); Yamato-mura (Dec. 31, 1954, Y. M., no. 1603); Shin-mura (Dec. 29, 1954, Y. M., no. 1604); Chinzei-mura (Sept. 21, 1954, Y. N., no. 1606). Kikaishima Isl.: Kikaimachi (Aug. 28, 1954, Y. N., no. 1607). Tokunoshima Isl.: Isen-mura (Sept. 19, 1954, Y. N., no. 1608); Mt. Inokawa-dake (Sept. 19, 1954, Y. N., no. 1609). Okinawa Isl.: Mawa-shi (Naha-shi) (Jan. 12, 1940, H. f., no. 49); Kanegusuku-mura (Jan. 21, 1940, H. f., no. 196). Miyako Isl.: Taira-shi (Aug. 5, 1953, S. S., no. 1019); Ueno-mura (Aug. 5, 1953, S. S., no. 1018). Ishigaki Isl.: Mt. Banna (June 17, 1954, S. S., no. 2070). Yonaguni Isl. (Aug. 6, 1955, M. T., no. Yae-266). II, III. on *Ampelopsis brevipedunculata* var. *hancei* Rehd. (*Teriha-nobudo*). Kumejima Isl.: Gushikawa-mura (Feb. 16, 1957, S. S. & M. T., no. Oki-1322). II. on *Vitis vinifera* Linn. (*Budo*) (*Cult.*). Amami-oshima Isl.: Nase-shi (Oct. 3, 1954, S. K., no. 1610); Chinzei-mura (Sept. 22, 1954, Y. N., no. 1611).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

2. *Phakopsora artemisiae* Hiratsuka, f. in Jap. Jour. Bot. III, p. 298, 1927. (Hiratsuka, f., Bot. Mag. Tokyo. XLIX, p. 854, 1935; Jour. Jap. Bot. XII, p. 269, 1936; Ured. Formosa. p. 12, 1943; Melampsorac. Nippon. p. 207, 1944; Ured. Kiushu. p. 18, 1952; Uredinolog. Stud. p. 265, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLVIII, p. 237, 1934; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 8, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 20, 1955; no. 3, p. 7, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 43, 1955; Sawada, Descript. Cat. Formosan Fung. VII, p. 54, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 146, fig. 80, 1938).

Syn. *Uredo autumnalis* Dietel in Engl. Bot. Jahrb. XXXVII, p. 108, 1905. *Phakopsora circumvallata* Sawada, Descript. Cat. Formosan Fung. V, p. 49, pl. III, figs. 4-9, 1931 (nom. seminudum).

Hab. in the Ryukyus. II. on *Artemisia dubia* Wall. (*Artemisia asiatica* Nakai) (*Yomogi*). Okinawa Isl.: Haneji-mura (Jan. 13, 1940, H. f., no. 209); Mawashi (Naha-shi) (Jan. 22, 1940, H. f., no. 331). II. on *Artemisia japonica* Thunb. (*Otokoyomogi*). Nakanoshima Isl. (Dec. 25, 1955, Y. N., no. Tokara-292). Okinawa Isl.: Urasoe-mura (March 13, 1940, Y. T., no. 390). II. on *Eupatorium variable* Mak. (*Yamahiyodori*). Yakushima Isl.: Mt. Mochomu (Oct. 19, 1949, S. K., no. 1970); "Yakushima" (Jan. 1, 1934, K. Ide, no. 1969, sub "*Eupatorium luchuense* Nakai").
Distrib. in the Ryukyus: Satsunan Isls., Amami Isls., Okinawa Isls.

3. *Phakopsora ehretiae* Hiratsuka in Bot. Mag. Tokyo. XIV, p. 91, pl. III, figs. 10-13, 1900. (Hiratsuka, f., Bot. Mag. Tokyo. L, p. 3, 1936; LIV, p. 158, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 19, 1941; Ured. Formosa. p. 14, 1943; Ured. Kiushu. p. 19, 1952; Melampsorac. Nippon. p. 210, 1944; Uredinolog. Stud. p. 265, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 8, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 6, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 21, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. on. 2, p. 44, 1955).

Syn. *Schroetcriaster ehretiae* Sydow et Butler in Ann. Myc. X, p. 270, 1912. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 10, 1914; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 23, 1935; Sawada, Descript. Cat. Formosan Fung. I, p. 349, 1919; VIII, p. 50, 1943). *Bubakia ehretiae* S. Ito ex S. Ito & Homma, Transact. Sapporo Nat. Hist. Soc. XV, p. 116, 1938. (S. Ito, Myc. Fl. Jap. II, no. 2, p. 150, 1938).

Hab. in the Ryukyus. II, III. on *Ehretia dicksoni* Hance. (*Maruba-chishanoki*). Kumejima Isl.: Gushikawa-mura (Feb. 16, 1957, S. S. & M. T., no. Oki-1266). II, III. on *Ehretia ovalifolium* Hassk. (*Ehretia thyrsiflora* Nakai, *E. taiwaniana* Nakai) (*Chishanoki*). Tanegashima Isl.: Nishinoomote-machi (Aug. 13, 1957, S. S. & M. T., nos. Tane-109 & 110). Yakushima Isl.: Miyanoura (Sept. 16, 1954, S. S., no. 1975); Kurio (Aug. 7, 1957, S. S. & M. T., no. Yaku-173). Tokunoshima Isl.: Isen-mura (Sept. 16, 1954, Y. N., no. 1575). Okinawa Isl.: Shuri (Naha-shi) (Jan. 7, 1899, Naoharu Hiratsuka, nos. 1046, 1047 & 1048; Jan. 11, 1940, H. f., nos. 37 & 38; Jan. 10, 1940, H. f., nos. 1, 9 & 10); Mawashi (Naha-shi) (Jan. 22, 1940; H. f., no. 327); Kanegusuku-mura (Jan. 21, 1940, H. f., nos. 194 & 200). Theya Isl. (Sept. 21, 1955, Y. N., no. Oki-1086).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

4. *Phakopsora fici-erectae* S. Ito et Otani in Bot. & Zool. IX, p. 663, text-fig. 2, 1941. (Hiratsuka, f., Ured. Formosa. p. 12, 1943; Metampsorac. Nippon. p. 208, 1944; Ured. Kiushu. p. 19, 1952; Uredinolog. Stud. p. 266, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 8, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 6, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 21, 1955; no. 3, p. 7, 1956; no. 4, p. 161, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 44, 1955).

Syn. *Phakopsora nishidana* (non S. Ito) (Hiratsuka, f., Transact. Sapporo Nat. Hist. Soc. XVI, p. 142, 1940; Sawada, Descript. Cat. Formosan Fung. IX, p. 91, 1944). *Cerotelium fici* (non Arthur) (Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 23, 1935).

Hab. in the Ryukyus. II, III. on *Ficus erecta* Thunb. (*Inu-biwa*). Tanegashima Isl.: Nishinoomote-machi (Sept. 20, 1954, S. S., no. 1966). Yakushima Isl.: Anbo (July 30, 1954, S. Sa. & Y. H., no. 1961; Sept. 5, 1954, S. S., no. 1962); Onoaida (Aug. 3, 1954, S. Sa. & Y. H., no. 1963); Kurio—Okawa (Aug. 4, 1954, S. Sa. & Y. H., nos.

1964 & 1965). Kuroshima Isl. (July 28, 1956, S. S. & Y. N., nos. Mishima-9, 27 & 29). Takeshima Isl. (Aug. 6, 1956, Y. N., no. Mishima-70). Iwojima Isl. (Tokara Isls.) (Aug. 7, 1956, S. S., no. Mishima-71). Nakanoshima Isl. (Aug. 2, 1955, S. S. & Y. N., no. Tokara-41; Dec. 24, 1955, Y. N., no. Tokara-289). Suwanoseshima Isl. (Aug. 4, 1955, S. S. & Y. N., no. Tokara-101). Akusekishima Isl. (Aug. 6, 1955, S. S. & Y. N., no. Tokara-123). Takarashima Isl. (Aug. 9, 1955, S. S. & Y. N., no. Tokara-154; Dec. 22, 1955, Y. N., no. Tokara-240). Amami-oshima Isl.: Kasari-mura (Dec. 26, 1953; Y. N., no. 1580; Jan. 4 & 5, 1955, Y. M., nos. 1581 & 1582); Santaro-toge (Jan. 6, 1955, Y. M., no. 1583); Mt. Yuwan-dake (Dec. 31, 1954, Y. M., no. 1584; Jan. 1, 1954, Y. N., no. 1585); Mikata-mura (Oct. 4, 1954, S. K., no. 1586); Sumiyo-mura (Sept. 23, 1954, Y. N., no. 1587); Tatsugo-mura (Aug. 26, 1954, Y. N., no. 1588). Kikaishima Isl.: Kikai-machi (Aug. 29, 1954, Y. N., no. 1578). Tokunoshima Isl.: Isen-mura (Sept. 15, 1954, Y. N., no. 1592); Mt. Inokawa-dake (Sept. 14, 1954, Y. N., no. 1593). Okinawa Isl.: Shuri (Naha-shi) (Oct. 31, 1953, S. S., no. 1016). Iheya Isl. (Sept. 21, 1955, Y. N., no. Oki-1091; March 26, 1957, M. T., no. Oki-1092). Kita-daito Isl. (Aug. 6, 1958, M. T., no. Oki-1398). Kumejima Isl.: Nakazato-mura (Feb. 17, 1957, S. S. & M. T., no. Oki-1299). Miyako Isl.: Taira-shi (Dec. 22, 1954, S. S., no. 2352). Ishigaki Isl.: Ohama-machi (Aug. 6, 1954, M. T., no. 2067); Mt. Banna (Feb. 19, 1955, S. S., no. 2079). II. on *Morus australis* Poir. (*Shima-guwa*). Tanegashima Isl.: Nishinomote-machi (Sept. 21, 1954, S. S., no. 1968). Nakanoshima Isl. (Dec. 24, 1955, Y. N., no. Tokara-293). Amami-oshima Isl.: Sumiyo-mura (Dec. 29, 1954, Y. N., no. 1591); Mt. Yuwan-dake (Dec. 28, 1954, Y. N., no. 1590). Kikaishima Isl.: Kikai-machi (Aug. 28, 1954, Y. N., no. 1589). Tokunoshima Isl.: Mt. Mikyo-dake (Sept. 15, 1954, Y. N., no. 1594). II. on *Ficus harlandii* Benth. var. *kotoensis* Sata (*Koto-inubiwa*). Iriomote Isl.: Sonai (June 20, 1954, S. S., no. 2068). II. on *Ficus konishii* Hayata (*Giran-inubiwa*). Ishigaki Isl.: Mt. Banna (Feb. 19, 1955, S. S., no. 2079). II. on *Ficus miyagii* Koidz. (*Akame-inubiwa*). Yakushima Isl.: Anbo (Sept. 5, 1954, S. S., no. 1967). II. on *Ficus* sp. Okinawa Isl.: Mawashi (Naha-shi) (Jan. 22, 1940, H. f., no. 336).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

5. *Phakopsora formosana* P. et H. Sydow in Ann. Myc. XII, p. 109, 1914. (Fuji-kuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 10, 1914; Hiratsuka, f., Transact. Sapporo Nat. Hist. Soc. XVII, p. 19, 1941; Ured. Formosa. p. 14, 1943; Melampsorac. Nippon. p. 204, 1944; Uredinolog. Stud. p. 266, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 162, 1933; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 9, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 4, p. 120, 1957; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 21, 1955; no. 3, p. 7, 1956; Sawada, Descript. Cat. Formosan Fung. I, p. 348, 1919; Jour. Taihoku Soc. Agric. & Forestr. VII, p. 30, 1943; S. Ito, Myc. Fl. Jap. II, no. 2, p. 142, 1938).

Hab. in the Ryukyus. II, III. on *Glochidion ovovatum* Sieb. et Zucc. (*Kankonoki*). Suwanoseshima Isl. (Aug. 4, 1955, S. S. & Y. N., no. Tokara-106). Takarashima Isl. (Aug. 7, 1955, S. S. & Y. N., no. Tokara-180; Dec. 22, 1955, Y. N., no. Tokara-224). Okinawa Isl.: Iheya Isl. (Sept. 21, 1955, Y. N., no. Oki-1093; March 21, 26 & 27, 1957, M. T., nos. Oki-1093, 1094 & 1911; June 8, 1956, S. S. & M. T., no. Oki-1251). Kumejima Isl.: Gushikawa-mura (Feb. 16, 1957, S. S. & M. T., no. Oki-1273). Ishigaki Isl.: Nagura (Aug. 10, 1956, M. T., no. Yae-316). II, III. on *Glochidion hayatai* Groizat et Hara (*Urajiro-kankonoki*). Amami-oshima Isl.: Mt. Yuwan-dake (Dec. 31, 1954, Y. N., no. 1570); Uken-mura (Dec. 30, 1954, Y. N., no. 1571). Okinawa Isl.: Mt. Benoki-yama (April 11, 1940, Y. T., no. 439); Mt. Yonaha-dake (May 30, 1953, H. f. & S. S., nos. 939 & 940); Mt. Taniu-dake (June 12, 1953, H. f. & S. S., nos. 937

& 938). II, III. on *Glochidion lanceolatum* Hayata (*Kiirun-kankonoki*). Ishigaki Isl.: Mt. Banna (Feb. 19, 1955, S. S., no. Yae-106); Ishigaki-shi (Feb. 19, 1955, M. T., no. Yae-454); Ohama-machi (Aug. 17, 1954, M. T., no. Yae-87). II. on *Bridelia ovata* Decaisne (*Maruyama-kankonoki*). Iriomote Isl.: Komi (Aug. 16, 1955, M. T., no. Yae-446).

Distrib. in the Ryukyus: Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

6. *Phakopsora glochidii* (Syd.) Arthur in Bull. Torr. Bot. Club. XLIV, p. 508, 1917. (Hiratsuka, f., Bot. Mag. Tokyo. L, p. 2, 1936; Ured. Formosa. p. 15, 1943; Melampsorac. Nippon. p. 211, 1944; Uredinolog. Stud. p. 266, 1955; Hiratsuka, f. & Shimabukuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 4, p. 117 & 121, 1957; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 21, 1955).

Syn. *Schroeteriaster glochidii* P. et H. Sydow in Ann. Myc. XII, p. 108, 1914. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 10, 1914; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 23, 1935; Sawada, Descript. Cat. Formosan Fung. I, p. 350, 1919; Jour. Taihoku Soc. Agric. & Forestr. VII, p. 30, 1943). *Bubakia glochidii* Dietel in Engl.-Prantl, Natürl. Pflanzenfam. II. Aufl. VI, p. 48, 1928; S. Ito, Myc. Fl. Jap. II, no. 2, p. 150, 1938).

Hab. in the Ryukyus. II, III. on *Glochidion hongkongense* Müll.-Arg. (*Kakiba-kankonoki*). Yakushima Isl.: Anbo—Haro (Aug. 6, 1957, S. S. & M. T., no. Yaku-52). Tokunoshima Isl.: Amagi-mura (Sept. 15, 1954, Y. N., no. 1577). Okinawa Isl.: Iheya Isl. (June 9, 1956, S. S. & M. T., no. Oki-1210; Sept. 21, 1955, Y. N., no. Oki-1217; March 27, 1957, M. T., nos. Oki-1095 & 1211). Miyako Isl.: Karimata (March 26, 1956, S. S. & M. T., no. Miyako-138). Ishigaki Isl.: Mt. Omoto (Aug. 21, 1956, M. T., no. Yae-319); Ohama-machi (Aug. 25, 1954, M. T., no. Yae-163); Nosoko (Aug. 11, 1956, M. T., no. Yae-319); Nagura (Aug. 10, 1956, M. T., no. Yae-322).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

7. *Phakopsora incompleta* (Syd.) Cummins in Mycologia. XLII, p. 786, 1950. (Hiratsuka, f., Uredinolog. Stud. p. 266, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 9, 1954; Sci. Bull. Agric. & Home Econ. Div. Ryukyus. no. 2, p. 7, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 44, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 21, 1955; Katsuki, Jour. Jap. Bot. XXX, p. 30, 1955; T. Hiratsuka, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 5, p. 27, 1958).

Syn. *Puccinia incompleta* Sydow in Ann. Myc. X, p. 261, 1912. (Hiratsuka, f., Transact. Sapporo Nat. Hist. Soc. XVII, p. 28, 1941; Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 5, 1914; Hiratsuka, f., Ured. Formosa. p. 56, 1943; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 20, 1935; Sawada, Descript. Cat. Formosan Fung. IV, p. 57, 1928; IX, p. 54, 1943; S. Ito, Myc. Fl. Jap. II, no. 3, p. 158, 1950). *Puccinia pollinae-imberbis* (non Hiratsuka, f.) (Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 376, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 30, 1941).

Hab. in the Ryukyus. II, III. on *Ischaemum crassipes* Thell. var. *formosanum* Nakai (*Taiwan-kamonohashi*). Tanegashima Isl.: Minamitane-mura (Sept. 24, 1954, S. S., no. 2022). Yakushima Isl.: Anbo (Dec. 29, 1952, S. K., no. 2005; July 30, 1954, S. Sa. & Y. H., no. 2008; Sept. 5, 1954, S. S., no. 2009); Anbo—Haro (Aug. 6, 1957, S. S. & M. T., nos. Yaku-176 & 177); Kosugidani—Anbo (Aug. 2, 1954, S. Sa. & Y. H., nos. 2010 & 2011); Kurio (Aug. 3, 1954, S. Sa. & Y. H. no. 2014) Onoaida (Aug. 3, 1954, S. Sa. & Y. H., no. 2018); Onoaida—Kojima (Aug. 3, 1954, S. Sa. & Y. H., no. 2019); Kurio—Okawa (Aug. 4, 1954, S. Sa. & Y. H., no. 2021). Okinawa Isl.: Nago-machi (April 14, 1940, Y. T., no. 451; Jan. 14, 1940, H. f., no. 244). Iheya Isl. (June 8, 1956, S. S. & M. T., no. Oki-1096; March 26, 1956, M. T., no. Oki-1097). Kumejima Isl.: Nakazato-mura (Feb. 17, 1957, S. S. & M. T., no.

Oki-1309). Miyako Isl.: Shimochi-machi (Feb. 17, 1955, M. T., no. 2321, Miya-18). Yonaguni Isl. (Aug. 4, 1955, M. T., no. Yae-276). II. on *Microstegium ciliatum* A. Camus. (*O-sasagaya*). Yakushima Isl.: Onoaida (Aug. 3, 1954, S. Sa. & Y. H., nos. 1973 & 1974). Okinawa Isl.: Tomigusuku-mura (Feb. 24, 1940, Y. T., no. 364). Ishigaki Isl.: Mt. Banna (June 18, 1954, S. S., no. 2319). II. on *Microstegium vimineum* A. Camus. (*Hime-ashiboso*). Yakushima Isl. (S. K.). Amami-oshima Isl.: Nase-shi (March, 1936, T. Tamotsu, no. 1147).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

8. **Phakopsora malloti** Cummins in Mycologia. XLII, p. 783, fig. 3, 1950. (Hiratsuka, f., Uredinolog. Stud. p. 267, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 9, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 7, 1955; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 22, 1955; no. 3, p. 7, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 44, 1955).

Syn. *Pucciniastrum malloti* Hiratsuka, f. in Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 23, 1935; Monogr. Pucciniastr. p. 278, 1936; Melampsorac. Nippon. p. 178, 1944; Sawada, Descript. Cat. Formosan Fung. VII, p. 56, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 88, 1938). *Crossopsora malloti* (non Cummins) (Katsuki, Jour. Jap. Bot. XXXVIII, p. 281, 1953; XXX, p. 286, 1955).

Hab. in the Ryukyus. II. on *Mallotus japonicus* Müll.-Arg. (*Akame-gashiwa*). Yakushima Isl.: Anbo (Dec. 29, 1952, S. K., no. 1972). Nakanoshima Isl. (Dec. 25, 1955, Y. N., no. Tokara-279). Amami-oshima Isl.: Mt. Yuwan-dake (Dec. 31, 1954, Y. M., no. 1569). Okinawa Isl.: Shuri (Naha-shi) (Jan. 10, 1940, H. f., no. 257). Ishigaki Isl.: Ohama-machi (Aug. 8, 1954, M. T., no. 2322).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

9. **Phakopsora meliosmae** Kusano in Bot. Mag. Tokyo. XVIII, p. 148, fig. a-c, 1904. (Hiratsuka, f., Bot. Mag. Tokyo. XLIX, p. 857, 1935; Transact. Sapporo Nat. Hist. Soc. XVI, p. 142, 1940; Ured. Formosa. p. 12, 1943; Ured. Kiushu. p. 20, 1952; Melampsorac. Nippon. p. 205, 1944; Uredinolog. Stud. p. 267, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLVIII, p. 237, 1934; Sawada, Descript. Cat. Formosan Fung. VII, p. 55, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 143, 1938).

Hab. in the Ryukyus. II, III. on *Meliosma rhoifolia* Maxim. (*Yanbaru-awabuki*). Iriomote Isl. (Nov. 8, 1957, S. S., no. Yae-396); Komi (Aug. 15, 1955, M. T., no. Yae-393). Yonaguni Isl.: Mt. Urabu (Aug. 7, 1955, M. T., no. Yae-392).

Distrib. in the Ryukyus: Sakishima Isls.

10. **Phakopsora pachyrhizi** P. et H. Sydow in Ann. Myc. XII, p. 108, 1914. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 10, 1914; Hiratsuka, f., Jour. Jap. Bot. XII, p. 270, 1936; Transact. Sapporo Nat. Hist. Soc. XVI, p. 142, 1940; Ured. Formosa. p. 13, 1943; Melampsorac. Nippon. p. 204, 1944; Ured. Kiushu. p. 20, 1952; Uredinolog. Stud. p. 267, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 162, 1933; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isl., p. 9, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 7, 1955; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyu no. 2, p. 22, 1955; no. 3, p. 7, 1956; no. 4, p. 161, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 45, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kaogshima. no. 11, p. 18, 1933; Sawada, Descript. Cat. Formosan Fung. I, p. 348, 1919; VI, p. 46, 1933; IX, p. 91, 1944; S. Ito, Myc. Fl. Jap. II, no. 2, p. 141, 1938).

Syn. *Phakopsora sojae* Sawada in Transact. Nat. Hist. Soc. Formosa. XXI, p. 230, 1931 (nomen seminudum). (Sawada, Descript. Cat. Formosan Fung. VI, p. 47, pl. II, figs. 1-4, 1933).

Hab. in the Ryukyus. II, III. on *Glycine max* Merr. (*Glycine soja* Benth.) (*Daizu*) (Cult.). Tanegashima Isl.: Nishinoomote-machi (Sept. 22, 1954, S. S., no. 1985). Kikaishima Isl.: Kikai-machi (Aug. 29, 1954, Y. N., no. 1569). Okinawa Isl.: Mawashi (Naha-shi) (May 23, 1953, H. f. & S. S., nos. 875 & 976); Miwa-mura (May 15, 1953, H. f. & S. S., nos. 877 & 879); Haneji-mura (May 9, 1953, H. f. & S. S., no. 881); Nago-machi (Nov. 21, 1953, S. S., no. 1198); Itoman-machi (May 15, 1953, H. f. & S. S., no. 878); Takamine-mura (May 15, 1953, H. f. & S. S., no. 880). Iheya Isl. (Sept. 22, 1955, Y. N., no. Oki-1098). Iriomote Isl.: Shirahama (June 23, 1954, S. S., no. 2324). II. on *Pueraria lobata* (Willd.) Ohwi (*Pueraria thunbergiana* Benth.) (*Kuzu*). Yakushima Isl.: Anbo (Sept. 18, 1954, S. S.); Onoaida—Kojima (Aug. 3, 1954, S. Sa. & Y. H., no. 5551; "Yakushima Isl." (S. K.). Kuroshima Isl. (July 24, 1956, S. S. & Y. N., nos. Mishima-14, 83 & 99). II. on *Pueraria montana* Merr. (*Pueraria tokinensis* Gagnep.) (*Taiwan-kuzu*). Yakushima Isl.: Kurio—Onoaida (Aug. 8, 1957, S. S. & M. T., no. Yaku-70). Nakanoshima Isl. (Aug. 3, 1955, S. S. & Y. N., no. Tokara-45; Dec. 25, 1955, Y. N., no. Tokara-287). Takara-shima Isl. (Aug. 7, 1955, S. S. & Y. N., no. Tokara-168; Dec. 22, 1955, Y. N., no. Tokara-217). Kodakarashima Isl. (Dec. 23, 1955, Y. N., no. Tokara-264). Okinawa Isl.: Shuri (Naha-shi) (June 9, 1953, S. S., no. 882).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Okinawa Isls., Sakishima Isls.

11. *Phakopsora tecta* Jackson et Holway apud Jackson in Mycologia. XVIII, p. 148, pl. XIX, 1926. (Hiratsuka, f., Bot. Mag. Tokyo. XLIX, p. 785, 1935; Transact. Sapporo Nat. Hist. Soc. XVII, p. 19, 1941; Ured. Formosa. p. 13, 1943; Melampsorac. Nippon. p. 203, 1944; Uredinolog. Stud. p. 267, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLVIII, p. 237, 1934; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 10, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 22, 1955; Sawada, Descript. Cat. Formosan Fung. VII, p. 55, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 139, 1938).

Hab. in the Ryukyus. II. on *Commelina communis* L. (*Tsuyu-kusa*). Okinawa Isl.: Mt. Katsuu-dake (Jan. 4, 1940, H. f., no. 253). II, III. on *Commelina nudiflora* L. (*Shima-tsuyukusa*, *Hadaka-tsuyukusa*). Amami-oshima Isl.: Tatsugo-mura (Dec. 27, 1953, Y. N., no. 1572); Mitaka-mura (Jan. 6, 1955, Y. N., no. 1573). Kikaishima Isl.: Kikai-machi (Aug. 29, 1954, Y. N., no. 1574). Tokunoshima Isl.: Isen-mura (Sept. 16, 1954, Y. N., no. 1575); Amagi-mura (Sept. 14, 1954, Y. N., no. 1576). Okinawa Isl.: Kanegusuku-mura (Jan. 21, 1940, H. f., no. 317); Shuri (Naha-shi) (March 25, 1940, Y. T., no. 479; May 2, 1953, H. f., no. 941). Miyako Isl.: Ueno-mura (Aug. 3, 1953, S. S., no. Miyako-69).

Distrib. in the Ryukyus: Amami Isls., Okinawa Isls., Sakishima Isls.

12. *Phakopsora zizyphi-vulgaris* Dietel in Ann. Myc. VIII, p. 469, 1910. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 10, 1914; Hiratsuka, f., Bot. Mag. Tokyo. XLIX, p. 853, 1935; Ured. Formosa. p. 13, 1943; Melampsorac. Nippon. p. 209, 1944; Uredinolog. Stud. p. 267, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 523, 1935; Hiratsuka, f. & Shimabukuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 4, p. 121, 1957; Hiratsuka, f. & Yoshinaga, Mem. Tottori Agric. Coll. III, p. 266, 1935; Sawada, Descript. Cat. Formosan Fung. IV, p. 33, 1928; S. Ito, Myc. Fl. Jap. II, no. 2, p. 143, fig. 78, 1950).

Syn. *Uredo zizyphi-vulgaris* Hennings in Hedwigia. XLI, p. (21), 1902. (Fujikuro, Bot. Mag. Tokyo. XXVIII, p. (487), 1914).

Hab. in the Ryukyus. II, III. on *Colubrina asiatica* Brogn. (*Yaeyama-hamana-tsume*). Ishigaki Isl.: Ohama-machi (Feb. 21, 1955, S. S., no. Yae-251; Feb. 2, 1955, M. T., no. Yae-238).

Distrib. in the Ryukyus: Sakishima Isls.

Cronartium Fries, 1815

1. *Cronartium quercuum* Miyabe ex Shirai in Bot. Mag. Tokyo. XIII, p. 74, pl. IV-V, 1899. (Hiratsuka, f., Jap. Jour. Bot. III, p. 318, 1927; Jour. Jap. Bot. XI, p. 283 & 708, 1935; Ured. Formosa. p. 16, 1943; Ured. Kiushu. p. 22, 1952; Melampsorac. Nippon. p. 212, 1944; Uredinolog. Stud. p. 268, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. II, p. 42, 1937; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 18, 1933; Sawada, Descript. Cat. Formosan Fung. VII, p. 61, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 152, fig. 81, 1938).

Syn. *Uredo castaneae* (non Hennings) (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 11, 1914; Sawada, Descript. Cat. Formosan Fung. IV, p. 81, 1928). *Uredo querci* Sawada, Transact. Nat. Hist. Soc. Formosa. XXXIII, p. 99, 1943 (nomen nudum).

Hab. in the Ryukyus. II. on *Castanopsis sieboldii* (Mak.) Hatsusima (*Ita-shii*). Amami-oshima Isl.: Kakeroma Isl. (Dec. 15, 1955, S. Sa.); Okachi—Kise (Dec. 22, 1955, S. Sa.).

Distrib. in the Ryukyus: Amami Isls.

Crossopora H. Sydow, 1918

1. *Crossopora antidesmae-dioicae* (Syd.) Arthur et Cummins in Philippine Jour. Sci. LXI, p. 474, 1936. (Hiratsuka, f. & Shimabukuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 7, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus no. 2, p. 22, 1955).

Syn. *Cronartium antidesmae-dioicae* P. et H. Sydow in Ann. Myc. XIV, p. 259, 1916.

Hab. in the Ryukyus. II. on *Antidesma japonicum* Sieb. et Zucc. (*Yama-hihatsu*). Amami-oshima Isl.: Mt. Yuwan-dake (Dec. 31, 1954, Y. N., no. 1731); Mikata-mura (Jan. 6, 1955, Y. N., no. 1732); Santaro-toge (Jan. 6, 1955, Y. N., no. 1733). Iheya Isl. (June 8, 1956, S. S. & M. T., no. Oki-1099). Kumejima Isl.: Gushikawa-mura (March 4, 1954, S. S., no. 1210; Feb. 16, 1957, S. S. & M. T., no. Oki-1276). Ishigaki Isl.: Mt. Omoto (Aug. 7, 1954, M. T., no. 2075, Yae-2). Iriomote Isl. (Nov. 8, 1957, S. S., no. Yae-400).

Distrib. in the Ryukyus: Amami Isls., Okinawa Isls., Sakishima Isls.

2. *Crossopora malloti* (Racib.) Cummins in Mycologia. XXXII, p. 372, 1940. (Hiratsuka, f., Uredinolog. Stud. p. 268, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 10, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 7, 1955; Katsuki, Jour. Jap. Bot. XXX, p. 30, 1955).

Syn. *Cronartium malloti* Raciborski, Parasit. Algen u. Pilze Javas. I, p. 23, 1900.

Hab. in the Ryukyus. II, III. on *Mallotus japonicus* Müll-Arg. (*Akame-gashiwa*). Takushima Isl. (S. K.). II, III. on *Mallotus moluccanus* Müll-Arg. (*Yanbaru-akame-gashiwa*). Miyako Isl.: Ueno-mura (Aug. 3, 1953, S. S., no. 1022); Shimochi-machi (Aug. 2, 1953, S. S., no. 1021, Miya-15). Ishigaki Isl.: Ohama-machi (Aug. 11, 1954, M. T., no. 2076). Yonaguni Isl. (Aug. 3, 1955, M. T., no. Yae-315).

Distrib. in the Ryukyus: Satsunan Isls., Sakishima Isls.

3. *Crossopora premnae* (Petch) P. et H. Sydow in Ann. Myc. XVI, p. 243, 1918. (Hiratsuka, f., Bot. Mag. Tokyo. LV, p. 268, 1941; Ured. Formosa. p. 17, 1943; Melampsorac. Nippon. p. 215, 1944; Uredinolog. Stud. p. 269, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 22, 1955).

Syn. *Cronartium premnae* Petch in Ann. Roy. Bot. Gard. Peradeniya. V (IV), p. 240, 1912.

Hab. in the Ryukyus. II. on *Premna obtusifolia* R. Br. (*Taiwan-uokusagi*). Kikaishima Isl.: Kikai-machi (Aug. 28, 1954, Y. N., no. 1712).

Distrib. in the Ryukyus: Amami Isls.

Cerotelium Arthur, 1906

1. **Cerotelium fici** (Butl.) Arthur in Bull. Torr. Bot. Club. XLIV, p. 509, 1917.
Syn. *Kuehneola fici* Butler in Ann. Myc. XII, p. 76, 1914.
Hab. in the Ryukyus. II, III. on *Ficus wightiana* Wallich (*Ako*). Ishigaki Isl.: Ohama-machi (March 8, 1955, M. T., no. Yae-223).
Distrib. in the Ryukyus: Sakishima Isls.

Coleopucciniella Hara, 1936

1. **Coleopucciniella ideii** Hiratsuka, f. in Jour. Jap. Bot. XIII, p. 245, 1937. (Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 158, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 20, 1941; Melampsorac. Nippon. p. 225, 1944; Ured. Kiushu. p. 22, 1952; Uredinolog. Stud. p. 271, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 10, 1954; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 22, 1955; no. 3, p. 8, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 45, 1955; S. Ito, Myc. Fl. Jap. II, no. 2, p. 180, 1938).

Syn. *Coleopuccinia* sp. (Ide, Jour. Jap. Bot. VI, p. 334, figs. 1-5, 1935).

- Hab. in the Ryukyus. III. on *Raphiolepis liukiensis* Nakai (*Hosoba-sharinbai*). Okinawa Isl.: Mt. Onna-dake (Jan. 12, 1940, H. f., no. 85); Mt. Kushi-dake (June 5, 1953, H. f. & S. S., no. 949); Nago-machi (May 8, 1953, H. f. & S. S., no. 950); Higashi-mura (June 13, 1953, H. f. & S. S., no. 951). Kumejima Isl.: Gushikawa-mura (March 4, 1954, S. S., no. 1225). III. on *Raphiolepis umbellata* Mak. (*Sharinbai*). Tanegashima Isl.: Nishinoomote-machi (Sept. 27, 1954, S. S., no. 1472). Takarashima Isl. (Dec. 22, 1955, Y. N., no. Tokara-229). Amami-oshima Isl.: Mikata-mura (Jan. 6, 1955, Y. N., no. 1713). Okinawa Isl.: Mt. Yonaha-dake (May 30, 1953, H. f. & S. S., no. 953). Iheya Isl. (March 27, 1957, M. T., no. Oki-1100) Miyako Isl.: Taira-shi (March 26, 1956, S. S. & M. T., no. Miyal13). III. on *Raphiolepis hiiranesis* Kanehira (*Hiiran-sharinbai*). Kumejima Isl.: Nakazato-mura (Feb. 17, 1957, S. S. & M. T., no. Oki-1308); Gushikawa-mura (Feb. 20, 1957, S. S. & M. T., Oki-1292).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

2. **Coleopucciniella simplex** (Diet.) Hara ex Hiratsuka, f. in Jour. Jap. Bot. XIII, p. 245, 1937. (Hiratsuka, f., Melampsorac. Nippon. p. 225, 1944; Ured. Formosa. p. 18, 1943; Ured. Kiushu. p. 23, 1952; Uredinolog. Stud. p. 271, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 11, 1954; S. Ito, Myc. Fl. Jap. II, no. 2, p. 179, fig. 90, 1939).

Syn. *Coleopuccinia simplex* Dietel in Ann. Myc. VII, p. 355, 1909. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 708, 1935; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 523, 1935; Ide, Jour. Jap. Bot. XI, p. 336, fig. 6, 1935; Sawada, Descript. -Cat. Formosan Fung. VII, p. 61, 1942).

Hab. in the Ryukyus. III. on *Eriobotrya japonica* Lindl. (*Biwa*) (*Cult.*). Okinawa Isl.: Nago-machi (May 9, 1953, H. f. & S. S., no. 1051).

Distrib. in the Ryukyus: Okinawa Isls.

Dasturella Mudkur et Kheswalla, 1943

1. **Dasturella divina** (Syd.) Mundkur et Kheswalla in Mycologia XXXV, p. 202, 1943. (Hiratsuka, f., Uredinolog. Stud. p. 271, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 11, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 4, p. 121, 1957; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 22, 1955; no. 3, p. 8, 1956; T. Hiratsuka, f. Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 5, p. 28, 1958).

Syn. *Uredo inflexa* S. Ito in Jour. Coll. Agric. Tohoku Imp. Univ. III, p. 247, Pl. XII, fig. 12, 1909. (Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 24, 1935; Sawada, Descript. Cat. Formosan Fung. IV, p. 57, 1928). *Kuehneola bambusae* Fujikuro ex Sawada, Descript. Cat. Formosan Fung. IV, p. 71, 1928 (nom. nudum). *Angiopsora divina* H. Sydow in Ann. Myc. XXXIV, p. 71, 1936. (Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 160, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 22, 1941; S. Ito, Myc. Fl. Jap. II, no. 2, p. 181, fig. 91, 1938).

Hab. in the Ryukyus. II. on *Leleba floribunda* Nakai (*Howo-chiku*) (*Cult.*). Okinawa Isl.: Shuri (Naha-shi) (March 25, 1940, Y. T., no. 416). II, III. on *Leleba multiplex* Nakai (*Horai-chiku*). Okinawa Isl.: Haneji-mura (Jan. 13, 1940, H. f., nos. 203 & 204); Naha-shi (Jan. 11, 1940, H. f., no. 29); Takamine-mura (Jan. 21, 1940, H. f., nos. 178 & 179). II. on *Leleba vulgaris* Nakai (*Daisan-chiku*). Nakanoshima Isl. (Aug. 3, 1955, S. S. & Y. N., no. Tokara-25). Amami-oshima Isl.: Sumiyomura (Dec. 29, 1954, Y. N., no. 1646). Okinawa Isl.: Mawashi (Naha-shi) (March 19, 1940, Y. T., no. 409); Haneji-mura (April 8, 1940, Y. T., no. 422). Iriomote Isl.: Komi (Aug. 15, 1955, M. T., no. Yae-297). II. on *Phyllostachys bambusoides* Sieb. et Zucc. (*Ma-dake*). Yakushima Isl.: Kosugidani (Aug. 2, 1957, S. S. & M. T., no. Yaku-133).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

Pucciniostele Tranzschel et Komarov, 1899

1. *Pucciniostele clarkiana* (Barcl.) Dietel in Engl. Bot. Jahrb. XXVII, p. 564, pl. VII, figs. 1-5, 1899. (Hiratsuka, f., Transact. Tottori Soc. Agric. Sci. IV, p. 38, 1932; Ured. Formosa. p. 19, 1943; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 161, 1933; Melampsorac. Nippon. p. 227, 1944; Uredinolog. Stud. p. 272, 1955; Hiratsuka, f., Shimabukuro & Sato, Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 48, 1955; Sawada, Descript. Cat. Formosan Fung. VI, p. 46, 1933; Transact. Nat. Hist. Soc. Formosa. XXXII, p. 222, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 184, fig. 92, 1938).

Syn. *Xenodochus clarkianus* Barclay in Jour. Asiatic Soc. Bengal. IX. pt. 2, p. 222, pl. IV, fig. 4, 1891.

Hab. in the Ryukyus. I, II. on *Astilbe thunbergii* Miq. var. *terrestris* Ohwi (*Astilbe glaberrima* Nakai) (*Yakushima-shoma*). Yakushima Isl.: Hanaoego—Mt. Miyanoura-dake (Aug. 1, 1954, S. Sa. & Y. H., nos. 1406 & 1407).

Distrib. in the Ryukyus: Satsunan Isls.

2. *Pucciniostele hashiokai* (Hiratsuka, f.) Cummins in Mycologia. XLII, p. 790, figs. 6 & 7, 1951. (Hiratsuka, f. Uredinolog. Stud. p. 272, 1955).

Syn. *Cerotelium hashiokae* Hiratsuka, f. in Jour. Jap. Bot. XIII, p. 248, 1937. (Hiratsuka, f., Ured. Formosa. p. 15, 1943; Melampsorac. Nippon. p. 223, 1944; S. Ito, Myc. Fl. Jap. II, no. 2, p. 177, 1938).

Hab. in the Ryukyus. II. on *Ampelopsis leeoides* (Maxim.) Planch. (*Udo-kazura*). Yakushima Isl.: Kosugidani (Aug. 2, 1957, S. S. & M. T., no. Yaku-214).

Distrib. in the Ryukyus: Satsunan Isls.

Coleosporium Léveillé, 1847

1. *Coleosporium asterum* (Diet.) P. et H. Sydow in Ann. Myc. XII, p. 109, 1914. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 8, 1914; Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 158, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 20, 1941; Ured. Formosa. p. 23, 1943; Ured. Kiushu. p. 23, 1952; Melampsorac. Nippon. p. 240, 1944; Uredinolog. Stud. p. 272, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 163, 1933; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls.

p. 11, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 4, p. 117, 1957; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Ryukyus. no. 2, p. 22, 1955; no. 4, p. 161, 1957; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 19, 1933; Sawada, Descript. Cat. Formosan Fung. I, p. 381, 1919; IX, p. 105, 1944; S. Ito, Myc. Fl. Jap. II, no. 2, p. 210, 1938).

Syn. *Stichopsora asterum* Dietel in Engl. Bot. Jahrb. XXVII, p. 566, pl. VII, fig. 7, 1899. *Coleosporium sonchi* (non Lev.) (Hennings in Engl. Bot. Jahrb. XXVIII, p. 262, 1901).

Hab. in the Ryukyus. II, III. on *Kalimeris indica* (L.) Schultz-Bip. (*Ko-yomena*). Amami-oshima Isl.: Tatsugo-mura (Dec. 28, 1953, Y. N., no. 1192); Nase-shi (March, 1935, T. Tamotsu, no. 1035); Mikata-mura (Jan. 6, 1955, Y. N., no. 1729). Kikaishima Isl.: Kikai-machi (Aug. 30, 1954, Y. N., no. 1730). Tokunoshima Isl.: Amagi-mura (Sept. 14, 1954, Y. N., no. 1728). Okinawa Isl.: Osato-mura (Jan. 20, 1940, H. f., nos. 156 & 160); Mt. Katsuu-dake (Jan. 14, 1940, H. f., nos. 216 & 256); Nago-machi (Jan. 16, 1940, H. f., nos. 105 & 110); Onna-mura (Jan. 12, 1940, H. f., no. 80); Haneji-mura (Jan. 15, 1940, H. f., nos. 288 & 292); Kanegusuku-mura (Jan. 21, 1940, H. f., nos. 187 & 303); Naha-shi (Jan. 19, 1940, H. f., no. 139); Mawashi (Naha-shi) (Jan. 22, 1940, H. f., no. 330; May 3, 1953, H. f. & S. S., no. 957); Shuri (Naha-shi) (Jan. 10, 1940, H. f., no. 16). Ieshima Isl. (May 23, 1954, S. S., no. Oki-1052). Kumejima Isl.: Gushikawa-mura (Feb. 16, 1957, S. S. & M. T., no. Oki-1287). II. on *Kalimeris yomena* Kitam. (*Yomena*). Tanegashima Isl.: Nishinootemachi (Aug. 13, 1957, S. S. & Y. N., no. Tane-67). Yakushima Isl.: Miyanoura (Aug. 9, 1957, S. S. & M. T., no. Yaku-60). Kuroshima Isl. (July 25, 1956, S. S. & Y. N., no. Mishima-12). II. on *Aster scaber* Thunb. (*Shirayama-giku*). Tanegashima Isl.: Nishinootemachi (Sept. 27, 1954, S. S., no. Tane-50).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls.

2. *Coleosporium bletiae* Dietel in Hedwigia. XXXVII, p. 216, 1898. (Hiratsuka, f., Transact. Sapporo Nat. Hist. Soc. XVII, p. 20, 1941; Ured. Formosa. p. 24, 1943; Ured. Kiushu. p. 24, 1952; Melampsorac. Nippon. p. 248, 1944; Uredinolog. Stud. p. 273, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 523, 1935; LI, p. 47, 1937; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 12, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 23, 1955; no. 3, p. 8, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 45, 1955; Katsuki, Jour. Jap. Bot. XXX, p. 30, 1955; Sawada, Descript. Cat. Formosan Fung. VII, p. 61, 1942; S. Ito, Myc. Fl. Jap. II, no. 2, p. 188, 1938).

Hab. in the Ryukyus. II, III. on *Calanthe furcata* Bateman (*Tsuru-ran*). Tanegashima Isl.: Furuta (Aug. 14, 1957, S. S. & M. T., no. Tane-84). Nakanoshima Isl. (Aug. 1, 1955, S. S. & Y. N., no. Tokara-31; Dec. 24, 1955, Y. N., no. Tokara-273). Okinawa Isl.: Mt. Benokiyama (April 10, 1940, Y. T., no. 433); Nago-dake (April 24, 1954, Y. N., no. Oki-1034).

II, III. on *Calanthe discolor* Lindl. (*Ebine*). Tanegashima Isl.: Furuta (Aug. 14, 1957, S. S. & M. T., no. Tane-81). Yakushima Isl.: Haro (June 5, 1951, Y. M., no. 1458); Mt. Mochomu (Oct. 19, 1949, S. K., no. 1459). Amami-oshima Isl.: Santarotoge (Jan. 6, 1955, Y. M., no. 1711). II, III. on *Calanthe* sp. Okinawa Isl.: Mt. Yonaha-dake (Dec. 30, 1939, Y. T., no. 341). II, III. on *Phajus tankervilleae* Bl. (*Kaku-ran*) (Cult.). Okinawa Isl.: Chatan-mura (Feb. 20, 1940, Y. T., no. 354).

Distrib. in Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls.

3. *Coleosporium campanulae* Léveillé ex Kickx, Fl. Flandres. II, p. 54, 1867. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 8, 1914; Hiratsuka, f., Bot. Mag. Tokyo. XLVIII, p. 463, 1934; Jour. Jap. Bot. XI, p. 42, 1935; Ured. Formosa.

p. 21, 1943; Melampsorac. Nippon. p. 238, 1944; Ured. Kiushu. p. 24, 1952; Uredinolog. Stud. p. 273, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLVIII, p. 238, 1934; XLIX, p. 26 & 524, 1935; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 12, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 23, 1955; no. 3, p. 8, 1956; no. 4, p. 161, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 45, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 20, 1933; Sawada, Descript. Cat. Formosan Fung. IV, p. 73, 1928; S. Ito, Myc. Fl. Jap. II, no. 2, p. 206, fig. 97, 1938).

Hab. in the Ryukyus. II, III. on *Adenophora triphylla* DC. var. *insularis* Kitam. (*Ryukyu-shajin*). Nakanoshima Isl. (July 31, 1955, S. S. & Y. N., no. Tokara-77; Dec. 25, 1955, Y. N., no. Tokara-300). Amami-oshima Isl.: Koniya-machi (Oct. 5, 1954, S. K., no. 1710); Mt. Yuwan-dake (Dec. 31, 1954, Y. M. nos. 1708 & 1709). Kumejima Isl.: Nakazato-mura (March 5, 1954, S. S., no. 1214). II. on *Adenophora triphylla* DC. var. *japonica* Hara (*Tsurigane-ninjin*). Amami-oshima Isl.: Mt. Yuwan-dake (Dec. 31, 1954, Y. M., no. 1750). II, III. on *Wahlenbergia marginata* DC. (*Hinagikyō*). Yakushima Isl.: Kurio (Aug. 3, 1954, S. Sa. & Y. H., nos. 1418 & 1419). Kuroshima Isl. (July 26, 1956, S. S. & Y. N., no. Mishima-42). Okinawa Isl.: Kuni-gami-mura (Feb. 7, 1956, S. Nakamine, no. Oki-1007).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls.

4. *Coleosporium carpesii* Saccardo in Riv. Acc. di Padova. XXIV, p. 208, 1874. (Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 158, 1940; LV, p. 268, 1941; Transact. Sapporo Nat. Hist. Soc. XVII, p. 20, 1941; Ured. Formosa. p. 22, 1943; Ured. Kiushu. p. 25, 1952; Melampsorac. Nippon. p. 243, 1944; Uredinolog. Stud. p. 274, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLVIII, p. 238, 1934; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 12, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 23, 1955; no. 4, p. 161, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Ryukyus. no. 2, p. 45, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 20, 1933; Sawada, Descript. Cat. Formosan Fung. VII, p. 62, 1942; Jour. Taihoku Soc. Agric. & Forestr. VII, p. 27, 1943; S. Ito, Myc. Fl. Jap. II, no. 2, p. 215, 1938).

Hab. in the Ryukyus. II, III. on *Carpesium abrotanoides* L. (*Yabu-tabako*). Yakushima Isl.: Kosugidani (Aug. 2, 1957, S. S. & M. T., no. Yaku-82). Amami-oshima Isl.: Tatsugo-mura (Dec. 27, 1953, Y. N., no. 1175). II, III. on *Carpesium cernuum* L. (*Ko-yabutabako*). Yakushima Isl.: Onoaida (Aug. 3, 1954, S. Sa. & Y. H., no. 2334); Miyanoura (Aug. 9, 1957, S. S. & M. T., no. Yaku-209). Kuroshima Isl. (July 26, 1956, S. S. & Y. N., nos. Mishima-41, 102 & 105; July 31, 1956, S. S. & Y. N., no. Mishima-106). Amami-oshima Isl.: Mikata-mura (Jan. 6, 1955, Y. N., no. 1648); Shin-mura (Dec. 30, 1954, Y. N., nos. 1649 & 1653); Mt. Yuwan-dake (Jan. 2, 1955, Y. N., no. 1650); Uken-mura (Dec. 30, 1954, Y. N., no. 1651). Okinawa Isl.: Takamine-mura (March 19, 1940, Y. T., no. 406); Haneji-mura (Nov. 14, 1953, S. S., no. 1205). II, III. on *Carpesium divaricatum* Sieb. et Zucc. (*Gankubiso*). Tanegashima Isl.: Nishinootomote-machi (Aug. 13, 1957, S. S. & M. T., no. Tane-130). Yakushima Isl.: Kosugidani (Sept. 8, 1954, S. S., no. 2335). Amami-oshima Isl.: Shin-mura (Dec. 30, 1954, Y. M., no. 1653); Mikata-mura (Oct. 6, 1954, S. K., no. 1652). II, III. on *Carpesium rosulatum* Miq. (*Hime-gankubiso*). Tanegashima Isl.: Nishinootomote-machi (Sept. 21, 1954, S. S., no. 2336).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls.

5. *Coleosporium clematidis* Barclay in Jour. Asiatic Soc. Bengal. LIX, pt. 2, p. 89, pl. VI, figs. 3 & 5, 1890. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 9, 1914; Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 159, 1940; Transact. Tottori Soc. Agric.

Sci. IV, p. 43, 1932; Transact. Sapporo Nat. Hist. Soc. XVII, p. 20, 1941; Ured. Formosa. p. 1943; Melampsorac. Nippon. p. 230, 1944; Ured. Kiushu. p. 25, 1953; Uredinolog. Stud. p. 274, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 164, 1933; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 12, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 7, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 23, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 45, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 21, 1933; Sawada, Descript. Cat. Formosan Fung. I, p. 382, 1919; S. Ito, Myc. Fl. Jap. II, no. 2, p. 191, fig. 94, 1938).

Hab. in the Ryukyus. II, III. on *Clematis grata* Wall. (*Ke-botanzuru*). Okinawa Isl.: Onna-mura (Jan. 12, 1940, H. f., no. 62); Nago-machi (Jan. 16, 1940, H. f., no. 107; April 19, 1940, Y. T., no. 475; Mt. Taniu-dake (June 12, 1953, H. f. & S. S., no. 962); Mt. Katsuu-dake (Jan. 14, 1940, H. f., no. 251); Motobu-machi (May 29, 1953, H. f. & S. S., no. 961); Haneji-mura (Jan. 15, 1940, H. f., nos. 276, 294 & 295; Mawashi (Naha-shi) (May 3, 1953, H. f. & S. S., no. 963); Shuri (Naha-shi) (Jan. 21, 1940, H. f., no. 7); Takamine-mura (May 15, 1953, H. f., & S. S., no. 964); Itoman-machi (Jan. 21, 1940, H. f., no. 322). Minna Isl. (Motobu-machi) (Sept. 22, 1954, Y. N., no. Oki-1220). Kumejima Isl.: Gushikawa-mura (March 7, 1953, S. S., no. 1222). Iheya Isl. (Sept. 22, 1955, Y. N., no. Oki-1101). Izena Isl. (Sept. 20, 1955, Y. N., no. Oki-1197). Ishigaki Isl.: Ohama-machi (Aug. 5, 1954, M. T., no. 2301, Yae-14). Iriomote Isl.: Komi (Aug. 15, 1955, M. T., no. Yae-304). II, III. on *Clematis terniflora* var. *robusta* Tamura (*Senninso*). Tanegashima Isl.: Nishinoomote-machi (Sept. 25, 1954, S. S., no. 1448). Yakushima Isl.: Onoaida—Haro (Aug. 5, 1954, S. Sa. & Y. H., nos. 1444, 1445, 1446 & 1447). Amami-oshima Isl.: Yamato-mura (Dec. 31, 1954, Y. M., no. 1645); Tatsugo-mura (Jan. 4, 1955, Y. M., no. 1644). II, III. on *Clematis leschenaultiana* DC. (*Birodo-botanzuru*). Amami-oshima Isl.: Mt. Yuwan-dake (Jan. 1, 1955, Y. N., no. 1647).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

6. *Coleosporium clematidis-apiifoliae* Dietel in Engl. Bot. Jahrb. XXVIII, p. 287, 1900. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 283, 1935; Ured. Kiushu. p. 26, 1952; Melampsorac. Nippon. p. 231, 1944; Uredinolog. Stud. p. 274, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 3, p. 8, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 46, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 21, 1933; S. Ito, Myc. Fl. Jap. II, no. 2, p. 192, 1938; Yoshinaga, Bot. Mag. Tokyo. XV, p. (96), 1901).

Hab. in the Ryukyus. II, III. on *Clematis apiifolia* DC. (*Botanzuru*). Yakushima Isl.: Anbo (Sept. 18, 1954, S. S., no. 1417). II. on *Clematis pierotii* Miq. (*Koba-no-botanzuru*). Nakanoshima Isl. (July 31, 1955, S. S. & Y. N., no. Tokara-47; Dec. 24, 1955, Y. N., no. Tokara-311).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls.

7. *Coleosporium clerodendri* Dietel in Engl. Bot. Jahrb. XXVIII, p. 566, 1899. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 9, 1914; Hiratsuka, f., Transact. Tottori Soc. Agric. Sci. IV, p. 43, 1932; Jour. Jap. Bot. XI, p. 42 & 283, 1935; Bot. Mag. Tokyo. LIV, p. 156, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 20, 1941; Ured. Formosa. p. 20, 1943; Melampsorac. Nippon. p. 234, 1944; Ured. Kiushu. p. 26, 1952; Uredinolog. Stud. p. 274, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 163, 1933; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 13, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 7, 1955;

Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 46, 1955; no. 3, p. 8, 1956; no. 4, p. 161, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 46, 1955; Morimoto, Jour. Jap. Bot. XXVIII, p. 26, 1953; Sawada, Descript. Cat. Formosan Fung. IV, p. 73, 1928; S. Ito, Myc. Fl. Jap. II, no. 2, p. 19, 1938).

Hab. in the Ryukyus. II, III. on *Clerodendron fragrans* Vent. (*Yaezaki-kusagi*). Okinawa Isl.: Takamine-mura (March 19, 1940, Y. T., no. 404); Shuri (Naha-shi) (Nov. 27, 1898, Naoharu Hiratsuka, no. 1117; Feb. 19 & March 25, 1940, Y. T., nos. 350 & 418). II, III. on *Clerodendron trichotomum* Thunb. (*Kusagi*). Tanegashima Isl.: Nishinoomote-machi (Sept. 20, 1954, S. S., no. 1428; Aug. 13, 1957, S. S. & M. T., no. Tane-135). Yakushima Isl.: Anbo (July 30, 1954, S. Sa. & Y. H., no. 1420); Kosugidani (Sept. 8, 1954, S. S., no. 1422); Kosugidani—Anbo (Aug. 2, 1954, S. Sa. & Y. H., no. 1423); Onoaida (Aug. 3, 1954, S. Sa. & Y. H., no. 1424); Onoaida—Haro (Aug. 1, 1954, S. Sa. & Y. H., no. 1425); Kurio (Aug. 3, 1954, S. Sa. & Y. H., no. 1426); Kurio—Okawa (Aug. 4, 1954, S. Sa. & Y. H., no. 1427). Kuroshima Isl. (July 25, 1956, S. S. & Y. N., no. Mishima-15). Iwojima Isl. (Tokara Isls.) (Aug. 6, 1956, S. S., no. Mishima-48). Nakanoshima Isl. (July 31, 1955, S. S. & Y. N., no. Tokara-32; Dec. 24, 1955, Y. N., no. Tokara-282). Akusekishima Isl. (Aug. 7, 1955, S. S. & Y. N., no. Tokara-119). Takarashima Isl. (Aug. 8, 1955, S. S. & Y. N., no. Tokara-150). Kodakarashima Isl. (Dec. 23, 1955, Y. N., no. Tokara-266). Amami-oshima Isl. (Dec. 28, 1954, Y. M., no. 1625); Kasari-mura (Jan. 4 & 5, 1955, Y. M., nos. 1626, 1627 & 1628); Mikata-mura (Jan. 6, 1955, Y. N., no. 1631); Shin-mura (Dec. 30, 1954, Y. M., no. 1630); Mt. Yuwan-dake (Dec. 31, 1954, Y. N., no. 1632); Sumiyo-mura (Sept. 22, 1954, Y. N., no. 1633); Tatsugo-mura (Aug. 26, 1954, Y. N., no. 1634). Tokunoshima Isl.: Isen-mura (Sept. 16, 1954, Y. N., no. 1635); Amagi-mura (Sept. 16, 1954, Y. M., no. 1636). Okinawa Isl.: Shuri (Naha-shi) (Jan. 6, 1899, Naoharu Hiratsuka, no. 1120; Feb. 26, 1954, S. S., no. 1203); Kanegusuku-mura (Jan. 21, 1940, H. f., no. 198); Haneji-mura (Jan. 13, 1940, H. f., no. 89; Jan. 15, 1940, H. f., no. 291). Iejima Isl. (May 21, 1954, S. S., no. Oki-1066). Iheya Isl. (Sept. 22, 1955, Y. N., no. Oki-1102). Kumejima Isl.: Gushikawa-mura (Feb. 15, 1957, S. S. & M. T., no. Oki-1337); Nakazato-mura (Feb. 17, 1957, S. S. & M. T., no. Oki-1316). Ishigaki Isl.: Mt. Banna (June 18, 1954, S. S., no. 2072). Yonaguni Isl. (Aug. 7, 1955, M. T., no. Yae-270).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isl., Okinawa Isls., Sakishima Isls.

8. *Coleosporium eupatorii* Arthur in Bull. Torr. Bot. Club. XXXIII, p. 31, 1906. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 9, 1914; Hiratsuka, f., Transact. Sapporo Nat. Hist. Soc. IX, p. 221, 1927; Jour. Jap. Bot. XI, p. 233, 1935; Ured. Formosa. p. 23, 1943; Melampsorac. Nippon. p. 244, 1944; Uredinolog. Stud. p. 275, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLVIII, p. 238, 1934; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 4, p. 161, 1957; Katsuki, Jour. Jap. Bot. XXX, p. 31, 1955; Sawada, Descript. Cat. Formosan Fung. IV, p. 75, 1928; S. Ito, Myc. Fl. Jap. II, no. 2, p. 216, 1938).

Hab. in the Ryukyus. II, III. on *Eupatorium tuchuense* Nakai (*Shima-fujibakama*). Kuroshima Isl. (Aug. 3, 1956, S. S. & Y. N., no. Mishima-107).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls.

9. *Coleosporium evodiae* Dietel in Ann. Myc. VII, p. 355, 1909. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 9, 1914; Hiratsuka, f., Jour. Jap. Bot. XII, p. 271, 1936; Bot. Mag. Tokyo. LIV, p. 363, 1940; Uredo. Formosa. p. 20, 1943; Melampsorac. Nippon. p. 249; 1944; Ured. Kiushu. p. 27, 1952; Uredinolog. Stud. p. 275, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLVIII, p. 239, 1934; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 13, 1954; Sci. Bull. Agric. & Home

Econ. Div. Univ. Ryukyus. no. 2, p. 6, 1955; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 24, 1955; no. 3, p. 8, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 46, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 22, 1933; Sawada, Descript. Cat. Formosan Fung. I, p. 383, 1019; S. Ito, Myc. Fl. Jap. II, no. 2, p. 195, 1938).

Hab. in the Ryukyus. II, III. on *Evodia glauca* Miq. (*Evodia meliaefolia* Benth.) (*Shima-kuroki*, *Hama-sendan*). Tanegashima Isl.: Nishinootemachi (Sept. 22, 1954, S. S., no. 1457). Yakushima Isl. (Dec. 31, 1933 & Jan. 2, 1934, K. Ide, nos. 648 & 651); Onoaida—Kojima (Aug. 3, 1954, S. Sa. & Y. H., no. 1455); Anbo (Sept. 18, 1954, S. S., no. 1456). Nakanoshima Isl. (July 31, 1955, S. S. & Y. N., no. Tokara-76; Dec. 25, 1955, Y. N., no. Tokara-302). Takarashima Isl. (Aug. 7, 1955, S. S. & Y. N., no. Tokara-178; Dec. 22, 1955, Y. N., no. Tokara-233). Amami-oshima Isl.: Mikata-mura (Oct. 20, 1936, T. Tamotsu, no. 1052); Tatsugo-mura (Dec. 27, 1953, Y. N., no. 1193); Yamato-mura (Jan. 1, 1955, Y. M., no. 1637); Uken-mura (Dec. 30, 1954, Y. M., no. 1643); Shin-mura (Dec. 30, 1954, Y. M., no. 1638); Mt. Yuwan-dake (Jan. 1, 1954, Y. N., no. 1639). Tokunoshima Isl.: Isen-mura (Sept. 15, 1954, Y. N., no. 1640); Amagi-mura (Sept. 14, 1954, Y. N., no. 1641); Higashi-amagi-mura (Sept. 14, 1954, Y. N., no. 1642). Iheya Isl. (Sept. 21, 1955, Y. N., no. Oki-1104). Kumejima Isl.: Gushikawa-mura (March 5, 1954, S. S., no. 1224). Ishigaki Isl.: Mt. Banna (Feb. 19, 1955, S. S., no. 2074, Yae-102). Yonaguni Isl. (Aug. 7, 1955, M. T., no. Yae-286).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

10. *Coleosporium paederiae* Dietel in Ann. Myc. VII, p. 355, 1909. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 9, 1914; Hiratsuka, f., Jour. Jap. Bot. XII, p. 272, 1936; XV, p. 439, 1939; Bot. Mag. Tokyo. LIV, p. 159, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 21, 1941; Ured. Formosa. p. 21, 1943; Melampsorac. Nippon. p. 238, 1944; Ured. Kiushu. p. 28, 1952; Uredinolog. Stud. p. 276, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLVIII, p. 238, 1934; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 13, 1954; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 24, 1955; no. 3, p. 9, 1956; no. 4, p. 161, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 46, 1955; Morimoto, Jour. Jap. Bot. XXVIII, p. 26, 1935; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 22, 1933; Sawada, Descript. Cat. Formosan Fung. I, p. 384, 1920; S. Ito, Myc. Fl. Jap. II, no. 2, p. 205, 1938).

Hab. in the Ryukyus. II. on *Paederia scandens* (Lour.) Merr, var. *mairei* Hara. (*Yaitobana*). Yakushima Isl.: Anbo (July 30, 1954, S. Sa. & Y. H., no. 1452); Kogugidani—Anbo (Aug. 2, 1954, S. Sa. & Y. H., no. 1453); Anbo—Haro (Aug. 6, 1957, S. S. & M. T., no. Yaku-156); Miyanoura (Sept. 17, 1954, S. S., no. 1454). Kuroshima Isl. (July 28, 1956, S. S. & Y. N., no. Mishima-18). Takeshima Isl. (Aug. 6, 1956, Y. N., nos. Mishima-76 & 79). Iwojima Isl. (Tokara Isls.) (Aug. 8, 1956, S. S., no. Mishima-78). Nakanoshima Isl. (July 31, 1955, S. S. & Y. N., no. Tokara-8; Dec. 24, 1955, Y. N., no. Tokara-286). Suwanoseshima Isl. (Aug. 6, 1955, S. S. & Y. N., no. Tokara-89). Takarashima Isl. (Aug. 13, 1955, S. S. & Y. N., no. Tokara-146; Dec. 22, 1955, Y. N., no. Tokara-213). Kodakarashima Isl. (Dec. 26, 1955, Y. N., no. Tokara-267). Amami-oshima Isl.: Kasari-mura (Jan. 4, 1955, Y. M., no. 1723); Koniya-machi (Jan. 7, 1955, Y. M., no. 1724); Shin-mura (Dec. 30, 1954, Y. M., nos. 1725 & 1726); Santaro-toge (Dec. 29, 1954, Y. M., no. 1727). Okinawa Isl.: Haneji-mura (Jan. 15, 1940, H. f., no. 274b). Iejima Isl. (May 23, 1954, S. S., no. Oki-1065). Minna Isl. (Motobu-machi) (Sept. 22, 1955, Y. N., no. Oki-1223). Iheya Isl. (Sept. 21, 1955, Y. N., no. Oki-1105; June 8, 1956, S. S. & M. T., no. Oki-1106). Izena Isl. (Sept. 19, 1955,

Y. N., no. Oki-1204).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls.

11. *Coleosporium perillae* P. Sydow in Hedwigia. XXXVIII, p. (141), 1899. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 9, 1914; Bot. Mag. Tokyo. XXXII, p. 362, 1918; Hiratsuka, f., Jour. Jap. Bot. XI, p. 42, 1935; Transact Sapporo Nat. Hist. Soc. XVII, p. 21, 1941; Ured. Formosa. p. 21, 1943; Melampsorac. Nippon. p. 236, 1944, Ured. Kiushu. p. 28, 1952; Uredinolog. Stud. p. 276, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 163, 1933; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 13, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 24, 1955; no. 3, p. 9, 1956; no. 4, p. 161, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 46, 1955; Naito & Yagi Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 22, 1933; Sawada, Descript. Cat. Formosan Fung. IV, p. 76, 1928; V, p. 53, 1931; IX, p. 114, 1943; S. Ito, Myc. Fl. Jap. II, no. 2, p. 202, 1938; T. Tamotsu, Jour. Pl. Protect. XXIII, p. 954, 1936).

Hab. in the Ryukyus. II, III. on *Orthodon grosseserratum* Kudo (*Hime-jiso*). Tanegashima Isl.: Furuta (Aug. 14, 1957, S. S. & M. T., no. Tane-102). Takeshima Isl. (Aug. 7, 1956, Y. N., no. Mishima-103). Takarashima Isl. (Aug. 8, 1955, S. S. & Y. N., no. Tokara-177). Kodakarashima Isl. (Dec. 23, 1955, Y. N., no. Tokara-263). Amami-oshima Isl.: Sumiyo-mura (Oct. 5, 1954, S. K., no. 1675). II, III. on *Orthodon punctulatum* Ohwi (*Inu-koju*). Tanegashima Isl.: Nishinoomote-machi (Sept. 25, 1954, S. S., no. 1450). Yakushima Isl.: Miyanoura (Sept. 17, 1954, S. S., no. 1449); Anbo (Aug. 6, 1957, S. S. & M. T., no. Yaku-197); Nagata (Aug. 11, 1957, S. S. & M. T., no. Yaku-198). Amami-oshima Isl.: Chinzei-mura (Sept. 22, 1954, Y. N., no. 1576); Mt. Yuwan-dake (Dec. 31, 1954, Y. N., no. 1677). Tokunoshima Isl.: Mt. Inokawa-dake (Sept. 16, 1954, Y. M., no. 1678). II, III. on *Perilla frutescens* Brit. var. *crispa* Decne. form. *purpurea* Mak. (*Shiso*) (*Cult.*). Okinawa Isl.: Shuri (Nahashi) (Oct., 1898, Naoharu Hiratsuka, no. 1125; May 20, 1953, C. Gushigami, no. 954). II. on *Perilla frutescens* Brit. var. *crispa* Decne. form. *viridis* Mak. (*Ao-shiso*) (*Cult.*). Yakushima Isl.: Kurio—Yudomari (Aug. 3, 1957, S. S. & M. T., no. Yaku-87). II. on *Perilla frutescens* Brit. var. *citriodora* Ohwi (*Remon-egoma*) (*Cult.*). Tanegashima Isl.: Nishinoomote-machi (Sept. 21, 1954, S. S., no. 1451). II. on *Perilla frutescens* Brit. var. *typica* Mak. (*Egoma*) (*Cult.*). Yakushima Isl. (S. K.).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls.

12. *Coleosporium petasitis* (DC.) Léveillé ex Cooke, Handb. Brit. Fungi. p. 521, 1871. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 43 & 283, 1935; Ured. Formosa. p. 22, 1943; Melampsorac. Nippon. p. 245, 1944; Ured. Kiushu. p. 29, 1953; Mem. Tottori Agric. Coll. VII, p. 245, 1944; Uredinolog. Stud. p. 276, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 47, 1955; Morimoto, Jour. Jap. Bot. XXVIII, p. 26, 1953; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 23, 1933; Sawada, Descript. Cat. Formosan Fung. IX, p. 116, 1944; S. Ito, Myc. Fl. Jap. II, no. 2, p. 218, 1938).

Hab. in the Ryukyus. II, III. on *Petasites japonicus* Miq. (*Fuki*). Yakushima Isls.: Anbo—Kosugidani (Aug. 2, 1954, S. Sa. & Y. H., no. 1411); Kosugidani (Sept. 7, 1954, S. S., no. 1412; Aug. 2, 1957, S. S. & M. T., no. Yaku-130); Hananoego—Kosugidani (Aug. 1, 1954, S. Sa. & Y. H., nos. 1413 & 1414); Ishizuka—Hananoego (July 31, 1954, S. Sa. & Y. H., nos. 1415 & 1416).

Distrib. in the Ryukyus: Satsunan Isls.

13. *Coleosporium plectranthi* Barclay in Jour. Asiatic Soc. Bengal. LIX, p. 89 & pl. VI, fig. 4, 1890. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 42 & 283, 1935; Melampsorac. Nippon. p. 235, 1944; Ured. Kiushu. p. 29, 1952; Uredinolog. Stud. p. 277, 1955; Hira-

tsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 47, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 23, 1933; S. Ito, Myc. Fl. Jap. II, no. 2, p. 200, 1938).

Hab. in the Ryukyus. II, III. on *Isodon japonicus* Hara (*Amethystanthus japonicus* Nakai) (*Hikiokoshi*). Yakushima Isl.: Miyanoura (Sept. 16, 1954, S. S., no. 1408).

Distrib. in the Ryukyus: Satsunan Isls.

14. *Coleosporium xanthoxyli* Dietel et P. Sydow ex Dietel in Hedwigia. XXXVII, p. 217, 1898. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 9, 1914; Hiratsuka, f., Jour. Jap. Bot. XI, p. 284, 1935; XII, p. 272, 1936; XIII, p. 248, 1937; Ured. Formosa. p. 20, 1943; Melamporac. Nippon. p. 232, 1944; Ured. Kiushu. p. 30, 1952; Uredinolog. Stud. p. 277, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLVIII, p. 238, 1934; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 14, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 8, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 24, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 47, 1955; Naito & Yagi, Transact. Nat. Hist. Soc. Kagoshima. no. 11, p. 24, 1933; Sawada, Descript. Cat. Formosan Fung. I, p. 385, 1919; IX, p. 117, 1944; S. Ito, Myc. Fl. Jap. II, no. 2, p. 195, 1938).

Hab. in the Ryukyus. II, III. on *Fagara ailanthoides* Engl. (*Karasu-zansho*). Tanegashima Isl.: Minamitane-mura (Sept. 23, 1954, S. S., no. 1479). Yakushima Isl.: Miyanoura (Aug. 5, 1951, K. Togashi & S. K., no. 1478); Anbo (Aug. 1, 1957, S. S. & M. T., no. Yaku-149); Nagata (Aug. 11, 1957, S. S. & M. T., no. Yaku-167). Iwojima Isl. (Tokara Isls.) (Aug. 6, 1956, S. S., no. Mishima-44). Nakanoshima Isl. (July 31, 1955, S. S. & Y. N., no. Tokara-55; Dec. 24, 1955, Y. N., no. Tokara-298). Amami-oshima Isl.: Mt. Yuwan-dake (Jan. 1, 1954, Y. N., no. 1702); Sumiyo-mura (Sept. 22, 1954, Y. N., no. 1703); Kasari-mura (Dec. 23, 1953, Y. N., no. 1206). Ishigaki Isl.: Nagura (Aug. 10, 1956, M. T., no. Yae-425); Ohama-machi (Feb. 22, 1955, S. S., no. 2073, Yae-109). II, III. on *Fagara fauriei* Nakai (*Ko-karasu-zansho*). Tanegashima Isl.: Nishinootemachi (Aug. 13, 1957, S. S. & M. T., no. Tane-127). Amami-oshima Isl.: Shin-mura (Dec. 30, 1954, Y. M., no. 1704). II, III. on *Fagara manchuria* Honda (*Inu-zansho*). Tanegashima Isl.: Nishinootemachi (Sept. 21, 1954, S. S., no. 1485; Aug. 13, 1957, S. S. & M. T., nos. Tane-117, 118 & 119). Amami-oshima Isl.: Kasari-mura (Jan. 5, 1955, Y. M., no. 1705). II, III. on *Fagara okinawaensis* Nakai (*Shima-inu-zansho*). Amami-oshima Isl.: Kasari-mura (Jan. 5, 1955, Y. M., no. 1706). Tokunoshima Isl.: Isen-mura (Sept. 16, 1954, Y. N., no. 1707). II. on *Zanthoxylum arnothianum* Maxim. (*Hire-zansho*). Iheya Isl. (Sept. 22, 1954, Y. N., no. Oki-1107; June 8, 1956, S. S. & M. T., no. Oki-1108). Ishigaki Isl.: Mt. Banna (Feb. 23, 1955, S. S., no. 2085).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

Ochropsora Dietel, 1895

1. *Ochropsora nambuana* (P. Henn.) Dietel in Ann. Myc. VI, p. 228, 1908. (Hiratsuka, f., Jour. Jap. Bot. XIV, p. 559, 1938; Melamporac. Nippon. p. 251, 1944; Ured. Kiushu, p. 32, 1952; Uredinolog. Stud. p. 278, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 47, 1955; S. Ito, Myc. Fl. Jap. II, no. 2, p. 226, fig. 103, 1938).

Syn. *Coleosporium nambuanaum* Hennings in Hedwigia. XL, p. (25), 1901.

Hab. in the Ryukyus. II, III. on *Elaeagnus crispa* Thunb. (*Aki-gumi*). Yakushima Isl.: Isso (Aug. 5, 1951, K. Togashi & S. K., no. 1476); Anbo (Oct. 23, 1949, S. K., no. 1477). Okinawa Isl.: Mt. Katsuu-dake (Sept. 13, 1953, S. S.). II. on *Elaeagnus umbellata* Thunb. var. *rotundigolia* Mak. (*Maruba-akigumi*). Yakushima

Isl.: Kurio (Aug. 3, 1954, S. Sa. & Y. H., nos. 1474 & 1475). II. on *Elaeagnus macrophylla* Thunb. (*Maruba-gumi*). Okinawa Isl.: Iejima Isl. (May 23, 1954, S. S., no. Oki-1083).

Distrib. in th Ryukyus: Satsunan Isls., Okinawa Isls.

Fam. Pucciniaceae

Zaghouania Patouillard, 1901

1. *Zaghouania phillyreae* Patouillard in Bull. Soc. Myc. Fr. XVII, p. 187 & pl. VII, figs. 1-13, 1901. (Hiratsuka, f., Jour. Jap. Bot. X, p. 6, figs. 2 & 3, 1934; XI, p. 708, 1935; XIII, p. 244, 1937; Hiratsuka, f., Uredinolog. Stud. p. 278, 1955; Ide, Transact. Nat. Hist. Soc. Kagoshima Imp. Coll. Agric. & Forestr. no. 13, p. 46 & figs. 1-7, 1934; S. Ito, Myc. Fl. Jap. II, no. 3, p. 2, fig. 1, 1950).

Hab. in the Ryukyus. I. on *Osmanthus zentaroanus* Makino (*Nataorenoki*, *Satsuma-mokusei*). Nakanoshima Isl. (Aug. 2, 1955, S. S. & Y. N., no. Tokara-4).

Distrib. in the Ryukyus: Tokara Isls.

Skierka Raciborski, 1900

1. *Skierka agallocha* Raciborski in Bull. Acad. Sci. Cracovie. Cl. Sci. Math. et Nat. (1909), p. 275, 1909. (Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 373 & text-figs. 1 (a, b), 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 21, 1941; Hiratsuka, f. & Taira, Bot. & Zool. VIII, p. 1642, 1940; Hiratsuka, f., Uredinolog. Stud. p. 278, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 14, 1954; S. Ito, Myc. Fl. Jap. II, no. 3, p. 3, fig. 2, 1950).

Hab. in the Ryukyus. II, III. on *Excoecaria agallocha* L. (*Okinawa-jinko*). Okinawa Isl.: Naha-shi (March 15, 1940, Y. T., no. 398).

Distrib. in the Ryukyus: Okinawa Isls.

Didymopsorella Thirumalachar, 1950

1. *Didymopsorella lemanensis* (Doidge) Hiratsuka, f. in Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 14, 1954. (Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 25, 1955; Hiratsuka, f., Uredinolog. Stud. p. 279, 1955).

Syn. *Puccinia lemanensis* Doidge, S. African Rust Fungi. p. 95, 202 & text-fig. (p. 95), 1926. *Skierka toddaliae* Hiratsuka, f. ex S. Ito & Murayama in Transact. Sapporo Nat. Hist. Soc. XVII, p. 165, 1943. (Hiratsuka, f., Ured. Formosa. p. 25, 1943; S. Ito, Myc. Fl. Jap. II, no. 3, p. 3, 1950). *Didymopsorella toddaliae* Thirumalachar in Sci. & Cult. XVI, p. 211, 1950. (Thirumalachar in Sydowia. V, p. 28, 1951).

Hab. in the Ryukyus. O, II. on *Toddalia asiatica* Lam. (*Sarukake-mikan*). Kikaishima Isl.: Kikai-machi (Aug. 29, 1954, Y. N., no. 1722). Okinawa Isl.: Mt. Yoza-dake (Takamine-mura) (March 19, 1940, Y. T., no. 401); Motobu-machi (May 9, 1953, H. f. & S. S., nos. 946 & 947). Iheya Isl. (Sept. 21, 1955, Y. N., no. Oki-1110).

Distrib. in the Ryukyus: Amami Isls., Okinawa Isls.

Gerwasia Raciborski, 1909

1. *Gerwasia rubi* Raciborski in Bull. Acad. Sci. Cracovie. Cl. Sci. Math. et Nat. (1909), p. 271, 1909. (Hiratsuka, f., Ured. Formosa. p. 26, 1943; Ured. Kiushu. p. 34, 1952; Uredinolog. Stud. p. 279, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 48, 1955; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 4, p. 161, 1957; Morimoto, Jour. Jap. Bot. XXVIII, p. 314, 1953; S. Ito, Myc. Fl. Jap. II, no. 3, p. 6, fig. 6, 1950).

Syn. *Uredo constellata* Berkeley et Curtis in Proc. Amer. Acad. Arts & Sci. IV, p. 126, 1858. *Uredo chinensis* Dietel in Hedwigia. XXXVII, p. 213, 1898. *Uromyces chinensis* Dietel in Ann. Myc. X, p. 206, 1912. *Mainsia chinensis* Jackson in Mycologia. XXIII, p. 107, 1931. *Gerwasia fasciculata* Arthur et Cummins in Philipp. Jour. Sci. LXI, p. 466, 1936. *Gerwasia chinensis* Hiratsuka, f. in Jour. Jap. Bot. XV, p. 437, 1939.

Hab. in the Ryukyus. II. on *Rubus buergeri* Miq. (*Fuyu-ichigo*). Tanegashima Isl.: Nishinoomote-machi (Aug. 14, 1957, S. S. & M. T., no. Tane-120). Yakushima Isl.: Kosugidani (June 1, 1951, Y. M., no. 1409; Aug. 3, 1957, S. S. & M. T., no. Yaku-102). Kuroshima Isl. (July 31, 1956, S. S. & Y. N., nos. Mishima-108 & 112).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls.

Hemileia Berkeley et Broome, 1869

1. *Hemileia gardeniae-floridiae* Sawada in Transact. Nat. Hist. Soc. Formosa. XXI, p. 234, 1931. (Hiratsuka, f., Bot. Mag. Tokyo, LIV, p. 373, 1940; Ured. Formosa. p. 25, 1943; Ured. Kiushu. p. 33, 1952; Uredinolog. Stud. p. 279, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 17, 1954; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 26, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 49, 1955; Sawada, Descript. Cat. Formosan Fung. VI, p. 43 & pl. I, figs. 27 & 28, 1933; S. Ito, Myc. Fl. Jap. II, no. 3, p. 7, fig. 7, 1950).

Hab. in the Ryukyus. II. on *Cardenia jasminoides* Ell. var. *grandiflora* Nakai (*Kuchinashi*). Yakushima Isl.: "Yakushima" (T. Tamotsu). Amami-oshima Isl.: Tatsugo-mura (Oct. 15, 1936, T. Tamotsu, no. 875); Mikata-mura (Dec. 28, 1954, Y. N., no. 1654); Mt. Yuwan-dake (Dec. 31, 1954, Y. N., no. 1655); Santaro-toge (Jan. 6, 1955, Y. M., no. 1656). Tokunoshima Isl.: Mt. Inokawa-dake (Sept. 19, 1954, Y. N., no. 1657). Okinawa Isl.: Mt. Yonaha-dake (May 30, 1953, H. f & S. S., no. 852); Haneji-mura (Feb. 20, 1954, S. S., no. 1202); Yabu-mura (Sept. 7, 1955, M. T., no. Oki-1259).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls., Okinawa Isls.

Pileolaria Castagne, 1842

1. *Pileolaria pistaciae* Tai et Wei in Sinensia. IV, p. 108 & fig. 39, 1933. (Hiratsuka, f., Jour. Jap. Bot. XIII, p. 251, 1937; XIV, p. 34, 1938; Ured. Formosa. p. 32, 1943; Ured. Kiushu. p. 39, 1952; Uredinolog. Stud. p. 280, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 49, 1955; Katsuki, Jour. Jap. Bot. XXVIII, p. 281, 1953; S. Ito, Myc. Fl. Jap. II, no. 3, p. 8, 1950).

Hab. in the Ryukyus. II, III. on *Pistacia chinensis* Bunge (*Toriba-haze*, *Tonerikoba-haze*, *Ranshinboku*). Yakushima Isl.: Anbo (Aug. 6, 1951, K. T. & S. K., no. 2337).

Distrib. in the Ryukyus: Satsunan Isls.

2. *Pileolaria shiraiana* (Diet. et Syd.) S. Ito in Jour. Coll. Agric. Hokkaido Imp. Univ. XI, p. 273 & pl. IX, fig. 13, 1922. (Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 160, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 22, pl. I, fig. 2, 1941; Ured. Formosa. p. 32, 1943; Ured. Kiushu. p. 39, 1952; Uredinolog. Stud. p. 280, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 18, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 8, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 49, 1955; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 3, p. 9, 1956; S. Ito, Myc. Fl. Jap. II, no. 3, p. 8, fig. 8, 1950).

Syn. *Uromyces shiraianus* Dietel et P. Sydow apud Dietel in Hedwigia. XXXVII,

p. 213, 1898.

Hab. in the Ryukyus. II, III. on *Rhus succedanea* L. (*Hazenoki*). Yakushima Isl.: Haro (Aug. 5, 1954, S. Sa. & Y. H., no. 2342). Nakanoshima Isl. (Dec. 26, 1955, Y. N., no. Tokara-309). Amami-oshima Isl.: Tatsugo-mura (Dec. 27, 1953 & Aug. 25, 1954, Y. N., nos. 1208 & 1668), Sumiyo-mura (Dec. 30, 1954, Y. N., no. 1667), Uken-mura (Dec. 30, 1954, Y. N., no. 1666); Santaro-toge (Jan. 6, 1955, Y. M., no. 1665); Shin-mura (Dec. 30, 1954, Y. M., no. 1664); Mt. Yuwan-dake (Dec. 30, 1954, Y. M., no. 1663); Yamato-mura (Dec. 31, 1954 & Jan. 1, 1955, Y. M., nos. 1662 & 1661); Koniya-machi (Oct. 5, 1954, S. K., no. 1660). Kikaishima Isl.: Kikai-machi (Aug. 30, 1954, Y. N., no. 1659). Tokunoshima Isl.: Isen-mura (Sept. 16, 1954, Y. N., no. 1658). Okinawa Isl.: Onna-mura (Jan. 12, 1940, H. f., no. 70); Mt. Onna-dake (Jan. 12, 1940, H. f., no. 72); Mt. Nago-dake (Nov. 27, 1953, S. S., no. 1195); Haneji-mura (Jan. 13, 1940, H. f., no. 87); Naha-shi (Jan. 19, 1940, H. f., no. 129); Shuri (Naha-shi) (Jan. 11, 1940, H. f., no. 40); Mt. Benoki-yama (April 11, 1940, Y. T., no. 437); Mt. Kushi-dake (June 5, 1953, H. f. & S. S., nos. 942 & 945); Mt. Taniu-dake (June 12, 1953, H. f. & S. S., no. 943); Mt. Yonaha-dake (May 30, 1953, H. f. & S. S., no. 944). Kumejima Isl.: Gushikawa-mura (Feb. 16, 1957, S. S. & M. T., no. Oki-1288). Iheya Isl. (Sept. 21 1955, Y. N., no. Oki-1111). Ishigaki Isl.: Mt. Omoto (Aug. 7, 1954, M. T., no. 2054, Y-4; Aug. 10, 1956, M. T., no. Y-410). Iriomote Isl.: Inaba (June 22, 1954, S. S., no. 2055). Yonaguni Isl. (Aug. 4 & 5, 1955, M. T., nos. Y-260 & 271).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

Kuehneola Magnus, 1898

1. *Kuehneola callicarpae* H. Sydow in Ann. Myc. XXVI, p. 420, 1928. (Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 159, 1940; Transact. Sapporo Nat. Hist. Soc. XVI, p. 143, 1940; XVII, p. 21, 1941; Ured. Kiushu. p. 35, 1952; Uredinolog. Stud. p. 280, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 15, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 8, 1955; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 48, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 25, 1955; no. 3, p. 9, 1956; no. 4, p. 162, 1957; S. Ito, Myc. Fl. Jap. II, no. 3, p. 12, fig. 13, 1950).

Hab. in the Ryukyus. II, III. on *Callicarpa japonica* Thunb. (*Murasaki-shikibu*). Tanegashima Isl.: Nishinoomote-machi (Sept. 27, 1954, S. S., no. 1410). O, II, III. on *Callicarpa japonica* Thunb. var. *luxurians* Rehd. (*O-murasakishikibu*). Tanegashima Isl.: Nishinoomote-machi (Aug. 13, 1957, S. S. & M. T., no. Tane-88). Yakushima Isl.: "Yakushima" (Dec. 31, 1933, K. Ide, no. 2341); Anbo—Haro (Aug. 6, 1957, S. S. & M. T., nos. Yaku-137 & 159). Kuroshima Isl. (July 26, 1956, S. S. & Y. N., nos. Mishima-35, 40 & 69). Takeshima Isl. (Aug. 6, 1956, Y. N., no. Mishima-65). Nakanoshima Isl. (July 31, 1955, S. S. & Y. N., no. Tokara-68; Dec. 24, 1955, Y. N., no. Tokara-290). Akusekishima Isl. (Aug. 6, 1955, S. S. & Y. N., no. Tokara-126). Takarashima Isl. (Aug. 8, 1955, S. S. & Y. N., no. Tokara-153); Dec. 22, 1955, Y. N., no. Tokara-215). Amami-oshima Isl.: Kasari-mura (Dec. 25, 1953 & Jan. 2, 1954, Y. N., nos. 1179 & 1186); Santaro-toge (Dec. 29, 1954 & Jan. 6, 1955, Y. N., nos. 1715 & 1720); Mt. Yuwan-dake (Jan. 1, 1955, Y. N., no. 1716). Kikaishima Isl.: Kikai-machi (Aug. 29, 1954, Y. N., no. 1717). Tokunoshima Isl.: Isen-mura (Sept. 16, 1954, Y. N., no. 1718); Higashiamagi-mura (Sept. 14, 1954, Y. N., no. 1719). Okinawa Isl.: Mt. Onna-dake (Jan. 12, 1940, H. f., nos. 68, 78 & 82); Nago-machi (Nov. 27, 1953, S. S., no. 1204); Haneji-mura (Jan. 15, 1940, H. f., no. 270); Naha-shi (Jan. 19, 1940, H. f., no. 140); Shuri (Naha-shi) (Jan. 11, 1940, H. f., no. 41); Kanegusuku-mura

(Jan. 21, 1940, H. f., no. 197); Mt. Kushi-dake (June 5, 1953, H. f. & S. S., no. 1001); Kunigami-mura (Oct. 14, 1953, S. S., no. 1141), Mt. Taniu-dake (June 12, 1953, H. f. & S. S., nos. 1000 & 1142). Kumejima Isl.: Nakazato-mura (March 5, 1954, S. S., no. 1219); Gushikawa-mura (Feb. 20, 1957, S. S. & M. T., no. Oki-1300). Ishigaki Isl.: "Ishigaki-shima" (Aug. 6, 1953, Y. N., no. 1013). Yonaguni Isl. (Aug. 4, 1955, M. T., no. Yae-263). O, II, III. on *Callicarpa oshimensis* Hayata (*Oshima-murasaki*). Amami-oshima Isl.: Santaro-toge (Jan. 6, 1955, Y. M., no. 2347). II. on *Callicarpa oshimensis* Hayata var. *iriomotensis* (Masam.) Hatsusima (*Iriomote-murasakishikibu*). Ishigaki Isl.: Mt. Omoto (Aug. 29, 1956, M. T., no. Yae-384). Yonaguni Isl. Mt. Urabu (Aug. 7, 1955, M. T., no. Yae-367).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

2. *Kuehneola japonica* (Dietel) Dietel in Ann. Myc. X, p. 205, 1912. (Hiratsuka, f., Jour. Jap. Bot. X, p. 131, 1934; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 22, 1935; Hiratsuka, f., Ured. Formosa. p. 26, 1943; Ured. Kiushu. p. 35, 1952; Uredinolog. Stud. p. 280, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 15, 1954; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 48, 1955; Hiratsuka, f., Shimabukuro & Niiri, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 25, 1954; no. 3, p. 9, 1956; Sawada, Descript. Cat. Formosan Fung. IV, p. 72, 1928; S. Ito, Myc. Fl. Jap. II, no. 3, p. 11, fig. 11, 1950).

Syn. *Phragmidium japonicum* Dietel in Engl. Bot. Jahrb. XXVIII, p. 567 & pl. VII, fig. 8, 1899. *Kuehneola rosae* Sawada in Transact. Sapporo Nat. Hist. Soc. VII, p. 40 & text-figs. 1-3, 1918.

Hab. in the Ryukyus. III. on *Rosa chinensis* Jacq. subsp. *indica* Koehne (*Koshinbara*) (Cult.). Okinawa Isl.: Shuri (Naha-shi) (June 4, 1953, H. f., no. 1040). III. on *Rosa wichuraiana* Crep. (*Teriha-noibara*). Tanegashima Isl.: Nishinoomote-machi (Sept. 25, 1954, S. S., no. 1438; Aug. 13, 1957, S. S. & M. T., no. Tane-87). Yakushima Isl.: Anbo (July 30, 1954, S. Sa. & Y. H., nos. 1431 & 1432; Sept. 14, 1954, S. S., 1435; Aug. 1, 1957, S. S. & M. T., no. Yaku-151); Kurio (Aug. 3, 1954, S. Sa. & Y. H., no. 1436); Kurio—Okawa (Aug. 4, 1954, S. Sa. & Y. H., no. 1437). Takarashima Isl. (Aug. 7, 1855, S. S. & Y. N., no. Tokara-184). III. on *Rosa wichuraiana* Crep. var. *ampullicarpa* Honda (*Tokkuri-ibara*). Amami-oshima Isl.: Kasari-mura (Jan. 3, 1955, Y. N., no. 1683; Jan. 5, 1955, Y. M., no. 1681). III. on *Rosa wichuraiana* Crep. var. *glandulifera* Honda (*Ryukyu-teriha-noibara*). Iheya Isl. (June 8, 1956, S. S. & M. T., no. Oki-1114). III. on *Rosa bracteata* Wendland (*Yaeyama-noibara*). Ishigaki Isl.: Ohama-machi (Feb. 27, 1955, M. T., no. Yae-347; Feb. 27, 1955, S. S., nos. Yae-98 & 138). III. on *Rosa* sp. Yakushima Isl.: Ishizuka—Hananoego (July 31, 1954, S. Sa. & Y. H., no. 1439).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

3. *Kuehneola malvicola* Arthur in N. Amer. Fl. VII, p. 187, 1912. (Hiratsuka, f., Jour. Jap. Bot. X, p. 470, 1934; XII, p. 811, 1936; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 22, 1935; Hiratsuka, f., Ured. Formosa. p. 26, 1943; Uredinolog. Stud. p. 280, 1955; Sawada, Descript. Cat. Formosan Fung. VII, p. 53, 1942; S. Ito, Myc. Fl. Jap. II, no. 3, p. 12, 1950).

Hab. in the Ryukyus. II. on *Malvastrum coromandelianum* Garke (*Malvastrum tricuspdatum* A. Gray) (*Enoki-aoi*). Minami-daito Isl. (July 31, 1958, M. T., no. Oki-1364).

Distrib. in the Ryukyus: Okinawa Isls.

Tranzschelia Arthur, 1906

1. *Tranzschelia discolor* (Fuck.) Tranzschel et Litwinow in Jour. Bot. XXIV,

p. 248, 1939. (Hiratsuka, f., Ured. Kiushu, p. 33, 1952; Uredinolog. Stud. p. 281, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 25, 1955; S. Ito, Myc. Fl. Jap. II, no. 3, p. 16, 1950).

Syn. *Tranzschelia pruni-spinosae* Diet. var. *discolor* Dunegan in Phytopath. XXVIII, p. 425, 1938.

Hab. in the Ryukyus. II. on *Prunus salicina* Lindl. var. *typica* Nakai (*Sumomo*) (Cult.). Amami-oshima Isl.: Kasari-mura (Oct. 9, 1954, S. K., no. 1721). Okinawa Isl.: Motobu-machi (July 17, 1955, M. T., no. 1006; Oct. 21, 1955, S. S., no. Oki-1047).

Distrib. in the Ryukyus: Amami Isls., Okinawa Isls.

Hamaspora Körnicke, 1877

1. *Hamaspora acutissima* P. et H. Sydow, Monogr. Ured. III, p. 80 & pl. IV, fig. 41, 1912. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 8, 1914; Hiratsuka, f., Transact. Sapporo Nat. Hist. Soc. XVII, p. 22, 1941; Ured. Formosa. p. 27, 1943; Uredinolog. Stud. p. 283, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 15, 1954; Sawada, Descript. Cat. Formosan Fung. I, p. 380, 1919; Jour. Taihoku Soc. Agric. & Forestr. VII, p. 28, 1943; Ito, Myc. Fl. Jap. II, no. 3, p. 22, fig. 24, 1950).

Hab. in the Ryukyus. III. on *Rubus nesiotetes* Focke (*Kuwanoha-ichigo*). Okinawa Isl.: Mt. Katsuu-dake (Jan. 14, 1940, H. f., no. 234).

Distrib. in the Ryukyus: Okinawa Isls.

2. *Hamaspora okinawensis* Hiratsuka, f. ex Hiratsuka, f. & Shimabukuro, Ured. Ryukyus Isl., p. 15, 1954. (Hiratsuka, f., Uredinolog. Stud. p. 263, 1955).

Hab. in the Ryukyus. III. on *Rubus utchinensis* Koidz. (*Hozaki-ichigo*). Okinawa Isl.: Mt. Katsuu-dake (Jan. 14, 1940, H. f., no. 288, type.).

Distrib. in the Ryukyus: Okinawa Isls.

3. *Hamaspora rubi-sieboldii* (Kawagoe) Dietel in Ann. Myc. XX, p. 293, 1922. (Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 159, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 22, pl. I, fig. 1, 1941; Ured. Kiushu. p. 36, 1952; Uredinolog. Stud. p. 283, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 16, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 25, 1955; no. 3, p. 9, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Ryukyus. no. 2, p. 49, 1955; Katsuki, Jour. Jap. Bot. XXX, p. 287, 1955; Morimoto, Jour. Jap. Bot. XXVIII, p. 314, 1953; S. Ito, Myc. Fl. Jap. II, no. 3, p. 21, fig. 22, 1950).

Syn. *Phragmidium rubi-sieboldii* Kawagoe in Bull. Kagoshima Imp. Coll. Agric. & Forestr. I, p. 201 & 1 pl., 1915.

Hab. in the Ryukyus. II, III. on *Rubus sieboldii* Bl. (*Horoku-ichigo*). Yakushima Isl.: Anbo (June 8, 1951, Y. M., no. 2329), Kosugidani (June 1, 1951, Y. M., no. 2328; Aug. 8, 1951, K. T. & S. K., no. 2327); Hananoego (Aug. 4, 1957, S. S. & M. T., no. Yaku-204); Ishizuka—Hananoego (July 31, 1954, S. Sa. & Y. H., nos. 1460 & 1461). Takarashima Isl. (Dec. 22, 1955, Y. N., no. Tokara-216). Amami-oshima Isl.: Kasari-mura (Dec. 23, 1953, Y. N., no. 1184); Mt. Yuwaun-dake (Dec. 31, 1954, Y. M., no. 1715); Uken-mura (Jan. 2, 1955, Y. N., no. 1816). Okinawa Isl.: Kunigami-mura (Feb. 10, 1956, S. S. & M. T., nos. Oki-1031 & 1032); Mt. Onna-dake (Jan. 12, 1940, H. f., nos. 76 & 77); Mt. Katsuu-dake (Jan. 14, 1940, H. f., nos. 214 & 229); Takamine-mura (March 19, 1940, Y. T., no. 403); Motobu-machi (April 15, 1940, Y. T., no. 456; May 29, 1953; H. f. & S. S., nos. 1008 & 1009); Mt. Benoki-yama (April 11, 1940, Y. T., no. 434); Mt. Taniu-dake (June 12, 1953, H. f. & S. S., no. 1007); Nakijin-mura (April 15, 1940, Y. T., no. 463). Iheya Isl. (March 27, 1957, M. T., no. Oki-1115).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls.

Phragmidium Link, 1824

1. *Phragmidium griseum* Dietel in Engl. Bot. Jahrb. XXXII, p. 49, 1902. (Hira-

tsuka, f., Jour. Jap. Bot. VII, p. 277 & text-figs. 5 & 6, 1935; Transact. Sapporo Nat. Hist. Soc. XVII, p. 23, 1941; Ured. Formosa. p. 30, 1943; Ured. Kiushu. p. 37, 1952; Uredinolog. Stud. p. 284, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyus Isls. p. 17, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 26, 1955; no. 3, p. 10, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 49, 1955; Katsuki, Jour. Jap. Bot. XXX, p. 287, 1955; Sawada, Descript. Cat. Formosan Fung. VII, p. 44, 1942; S. Ito, Myc. Fl. Jap. II, no. 3, p. 42, fig. 46, 1950).

Syn. *Phragmidium yoshinagai* Dietel in Engl. Bot. Jahrb. XXXIV, p. 586, 1905.

Hab. in the Ryukyus. II. on *Rubus croceacanthus* Lev. (*Rubus rosaefolius* var. *tropicus* f. *minor* Mak.) (*O-bara-ichigo*). Yakushima Isl.: Miyanoura (Sept. 17, 1954, S. S., no. 1463). II, III. on *Rubus illecebrosus* Focke (*Bara-ichigo*). Tanegashima Isl.: Furuta (Aug. 14, 1957, S. S. & M. T., no. Tane-79). II, III. on *Rubus rosaefolius* Sm. var. *maximowiczii* Focke (*Ryukyu-bara-ichigo*). Yakushima Isl.: Nagata (Aug. 11, 1957, S. S. & M. T., no. Yaku-84); Miyanoura (Aug. 9, 1957, S. S. & M. T., no. Yaku-113). Nakanoshima Isl. (Aug. 1, 1955, S. S. & Y. N., no. Tokara-21). Amami-oshima Isl.: Sumiyo-mura (Dec. 29, 1954, Y. N., no. 1637). Okinawa Isl.: Haneji-mura (Jan. 13, 1940, H. f., nos. 99 & 211), Nago-machi (May 8, 1953, H. f. & S. S., nos. 1157 & 1158). Iheya Isl. (June 8, 1956, S. S. & M. T., no. Oki-1116).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls.

2. *Phragmidium heterosporum* Dietel in Engl. Bot. Jahrb. XXXII, p. 626, 1903. (Hiratsuka, f., Jour. Jap. Bot. VII, p. 273, 1935; Hiratsuka, f., Uredinolog. Stud. p. 285, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 3, p. 10, 1956; S. Ito, Myc. Fl. Jap. II, no. 3, p. 41, 1950).

Hab. in the Ryukyus. II. on *Rubus ribisoides* Matsum. (*Hachijo-ichigo*). Nakanoshima Isl. (Aug. 2, 1955, S. S. & Y. N., no. Tokara-5). II. on *Rubus trifidus* Thunb. (*Kaji-ichigo*). Kuroshima Isl. (July 31, 1956, S. S. & Y. N., no. Mishima-123).

Distrib. in the Ryukyus: Tokara Isls.

3. *Phragmidium pauciloculare* (Dietel) P. et H. Sydow, Monogr. Ured. III, p. 138 & pl. IV, fig. 60, 1912. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 8, 1914; Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 16, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 23, 1941, Ured. Kiushu. p. 37, 1952; Uredinolog. Stud. p. 285, 1955, Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 17, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 3, p. 10, 1956; no. 4, p. 162, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 49, 1955; Sawada, Descript. Cat. Formosan Fung. IV, p. 35, 1928; S. Ito, Myc. Fl. Jap. II, no. 3, p. 43, fig. 47, 1950).

Syn. *Phragmidium barnardi* Plowright et Winter var. *pauciloculare* Dietel, Engl. Bot. Jahrb. XXXII, p. 49, 1902.

Hab. in the Ryukyus. II, III. on *Rubus parvifolius* L. var. *triphyllus* Nakai (*Nawashiro-ichigo*). Tanegashima Isl.: Nishinoomote-machi (Aug. 13, 1957, S. S. & M. T., no. Tane-108). Yakushima Isl.: Onoaida (Aug. 3, 1954, S. S. & Y. H., no. 1400); Miyanoura (Sept. 16, 1954, S. S., no. 1402). Kuroshima Isl. (July 25, 1956, S. S. & Y. N., no. Mishima-6; July 31, 1956, S. S. & Y. N., nos. Mishima 21 & 85). Takeshima Isl. (Aug. 6, 1956, Y. N., nos. Mishima-56 & 60) Nakanoshima Isl. (July 31, 1955, S. S. & Y. N., no. Tokara-34; Dec. 25, 1955, Y. N., no. Tokara-288). Takarashima Isl. (Dec. 22, 1955, Y. N., no. Tokara-231). Okinawa Isl.: Katsuu-dake (Jan. 14, 1940, H. f., no. 252); Haneji-mura (Jan. 15, 1940, H. f., no. 296); Shuri (Nahashi) (Feb. 1, 1940, Y. T., no. 343). Miyako Isl.: Taira-shi (Dec. 3, 1955; S. S., no. Miyako-86).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Okinawa Isls., Sakishima Isls.

4. *Phragmidium rosae-multiflorae* Dietel in Hedwigia. XLIV, p. 132, 345 & pl. IV, fig. 8, 1905. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 8, 1914; Hiratsuka, f., Jour. Jap. Bot. VII, p. 244, 1935; Ured. Formosa. p. 29, 1943; Ured. Kiushu. p. 37, 1952; Uredinolog. Stud. p. 285, 1955; Hiratsuka, f., Shimabukuro & Niino, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 26, 1955; Sawada, Descript. Cat. Formosan Fung. IV, p. 36, 1928; S. Ito, Myc. Fl. Jap. II, no. 3, p. 29, 1950).
Syn. *Phragmidium rosae-laevigatae* Fujikuro ex Ideta, Suppl. Handb. Pl. Dis. Japan. p. 536, 1926 (nom. nud.); Sawada, Descript. Cat. Formosan Fung. IV, p. 36, 1928 (nom. nud.).

Hab. in the Ryukyus. II, III. on *Rosa wichuraiana* Crep. (*Teriha-noibara*). Amami-oshima Isl.: Kasari-mura (Jan. 4, & 5, 1955, Y. M., nos. 1638 & 1639).

Distrib. in the Ryukyus: Amami Isls.

Hapalophragmium P. Sydow, 1901

1. *Hapalophragmium derridis* P. Sydow in Hedwigia, XL, p. (64), 1901. (Hiratsuka, f., Uredinolog. Stud. p. 286, 1955; Hiratsuka, f. & Shimabukuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 8, 1955; S. Ito, Myc. Fl. Jap. II, no. 3, p. 46, 1950).

Hab. in the Ryukyus. III. on *Derris uliginosa* Benth. (*Shiinoki-kazura*). Miyako Isl.: Taira-shi (Dec. 23, 1954, S. S., no. 2054, Miya-70).

Distrib. in the Ryukyus: Sakishima Isls.

Sphaerophragmium Magnus, 1891

1. *Sphaerophragmium acaciae* (Cooke) Magnus in Ber. Deutsch. Bot. Ges. IX, p. 121 & pl. VI, figs. 18-26, 1891. (Fujikuro, Bot. Mag. Tokyo. XXXII, p. 358, 1918; Hiratsuka, f., Uredinolog. Stud. p. 287, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 161, 1933; Sawada, Descript. Cat. Formosan Fung. II, p. 97 & pl. IV, figs. 26-28, 1922; S. Ito, Myc. Fl. Jap. II, no. 3, p. 51, fig. 57, 1950).

Syn. *Triphragmium acaciae* Cooke in Grevillea. VIII, p. 94, 1880.

Hab. in the Ryukyus. II. on *Albizia lebbek* Benth. (*Biruma-nemu*) (*Cult.*). Okinawa Isl.: Yabu-mura (Sept. 7, 1955, M. T., no. Oki-1026; Nov. 20, 1955, S. S., no. Oki-1045).

Distrib. in the Ryukyus: Okinawa Isls.

Ravenelia Berkeley, 1853

1. *Ravenelia hobsoni* Cooke in Jour. Ray. Mier. Soc. III, p. 386 & pl. XI, fig. 4, 1880. (Hiratsuka, f., Bot. Mag. Tokyo. LV, p. 269, 1941; Transact. Sapporo Nat. Hist. Soc. XVII, p. 22, 1941; Ured. Formosa. p. 33, 1943; Uredinolog. Stud. p. 288, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 18, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 8, 1955; S. Ito, Myc. Fl. Jap. II, no. 3, p. 54, fig. 61, 1950).

Syn. *Haploravenelia hobsoni* S. Ito apud S. Ito & Murayama in Transact. Sapporo Nat. Hist. Soc. XVII, p. 166, 1943.

Hab. in the Ryukyus. II, III. on *Pongamia pinnata* Merr. (*Pongamia glabra* Vent.) (*Kuro-yona*). Okinawa Isl.: Naha-shi (Jan. 19, 1940, H. f., nos. 132 & 133); Kanegusuku-mura (Jan. 21, 1940, H. f., no. 301); Iheya Isl. (March 27, 1957, M. T., no. Oki-1119). Kumejima Isl.: Gushikawa-mura (Feb. 20, 1957, S. S. & M. T., no. Oki-1329). Miyako Isl.: Ueno-mura (Aug. 3, 1953, S. S., no. 1012). Ishigaki Isl.: Ohama-machi (Aug. 12, 1956, M. T., no. Yae-415). Yonaguni Isl. (Aug. 16, 1955, M. T., no. Yae-288).

Distrib. in the Ryukyus: Okinawa Isls., Sakishima Isls.

2. *Ravenelia tephrosiicola* Hiratsuka, f. in Jour. Jap. Bot. XIII, p. 249, 1937. (Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 161, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 23, 1941; Ured. Formosa. p. 33, 1943; Uredinolog. Stud. p. 288, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 19, 1954; S. Ito, Myc. Fl. Jap. II, no. 3, p. 55, 1950).

Hab. in the Ryukyus. II, III. on *Tephrosia candida* DC. (*Nanban-ikusafuji*) (*Cult.*). Okinawa Isl.: Haneji-mura (Jan. 13, 1940, H. f., nos. 212 & 213).

Distrib. in the Ryukyus: Okinawa Isls.

Nothoravenelia Dietel, 1910

1. *Nothoravenelia japonica* Dietel in Ann. Myc. VIII, p. 310, 1910. (Hiratsuka, f., Uredinolog. Stud. p. 288, 1955; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 26, 1955; no. 3, p. 10, 1956; S. Ito, Myc. Fl. Jap. II, no. 3, p. 55, fig. 62, 1950).

Hab. in the Ryukyus. II, III. on *Securinega ramiflora* Müll.-Aug. (*Hitotsubahagi*). Takarashima Isl. (Aug. 10, 1955, S. S. & Y. N., no. Tokara-161). Kikaishima Isl.: Kikai-machi (Oct. 9, 1954, S. K., no. 1714). Miyako Isl.: Taira-shi (March 22, 1956, S. S. & M. T., no. Miya-149). II, III. on *Securinega suffruticosa* var. *amamiensis* Hurusawa (*Amami-hitotsubahagi*). Iheya Isl. (June 8, 1956, S. S. & M. T., no. Oki-1237).

Distrib. in the Ryukyus: Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

Endophyllum Léveillé, 1825

1. *Endophyllum emasculatum* Arthur et Cummins in Philippine Jour. Sci. LXI, p. 475, 1936. (Hiratsuka, f., Bot. Mag. Tokyo. LV, p. 272, 1941; Transact. Sapporo Nat. Hist. Soc. XVII, p. 32, 1941; Uredinolog. Stud. p. 288, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 41, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 13, 1955; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 35, 1955; S. Ito, Myc. Fl. Jap. II, no. 3, p. 56, fig. 63, 1950).

Syn. *Aecidium breyniae* (non Sydow) Hiratsuka, f. in Bot. Mag. Tokyo. LIV, p. 166, 1940. *Aecidium securinegae* Sawada in Transact. Nat. Hist. Soc. Formosa. XXXIII, p. 100, 1943 (nom. nud.).

Hab. in the Ryukyus. I(III). on *Breynia rhamnoides* Müll.-Arg. (*Oshima-kobanoki*). Kikaishima Isl.: Kikai-machi (Oct. 7, 1954, S. K., no. 1758). Okinawa Isl.: Shuri (Naha-shi) (Jan. 20, 1940, H. f., nos. 20 & 24; Dec. 27, 1898, Naoharu Hiratsuka, no. 7649); Naha-shi (Jan. 19, 1940, H. f., no. 136); Mawashi (Naha-shi) (Jan. 22, 1940, H. f., no. 332); Sashiki-mura (Jan. 20, 1940, H. f., no. 152); Osato-mura (Jan. 20, 1940, H. f., no. 158; Nov. 14, 1953, S. S., no. 1201); Kanegusuku-mura (Jan. 21, 1940, H. f., nos. 193 & 313); Mt. Katsuu-dake (Jan. 14, 1940, H. f., no. 250); Oroku (Jan. 19, 1940, H. f., nos. 123 & 128). Iheya Isl. (Sept. 21, 1955, Y. N., no. Oki-1120). Ishigaki Isl.: Mt. Banna (June 18, 1954, S. S., no. 2057, Yae-52). Yonaguni Isl. (Aug. 5, 1955, M. T., no. Yae-272). III. on *Breynia formosana* Hayata (*Taiwan-himekobanoki*). Miyako Isl.: Shimochi-machi (Dec. 25, 1954, S. S., no. Miya-48).

Distrib. in the Ryukyus: Amami Isls., Okinawa Isls., Sakishima Isls.

2. *Endophyllum griffithiae* (P. Henn.) Raciborski, Parasit. Algen u. Pilze Javas. I, p. 20, 1900. (Hiratsuka, f. & Shimabukuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 14, 1955).

Hab. in the Ryukyus. I(III). on *Randia sinensis* Schult. (*Hijiharinoki*, *Shinamisaonoki*). Ishigaki Isl.: Ohama-machi (March 8, 1955, M. T., no. 2058; Aug. 17,

1956, M. T., no. Yae-420). I(III). on *Randia canthoides* Champ. (*Shima-misaonoki*). Amami-oshima Isl.: Uken-mura (Dec. 30, 1954, Y. N., no. Amami-151). Okinawa Isl.: Kunigami-mura (July 26, 1958, S. S., no. Oki-1228). Ishigaki Isl.: Mt. Omoto (Aug. 29, 1956, M. T., no. Yae-382). Iriomote Isl. (Nov. 8, 1957, S. S., no. Yae-395).

Distrib. in the Ryukyus: Amami Isls., Okinawa Isls., Sakishima Isls.

Maravalia Arthur, 1922

1. *Maravalia achroa* (Syd.) Arthur et Cummins in Philippine Jour. Sci. LXI, p. 458 & pl. II, fig. 5, 1936. (Hiratsuka, f., Jour. Jap. Bot. XIV, p. 34, 1938; Ured. Foromsa. p. 31, 1943; Hiratsuka, f., Uredinolog. Stud. p. 288, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyus Isls. p. 16, 1954; S. Ito, Myc. Fl. Jap. II, no. 3, p. 57, fig. 64, 1950).

Syn. *Uromyces achrous* P. et H. Sydow in Ann. Myc. V, p. 491, 1907.

Hab. in the Ryukyus. II, III. on *Dalbergia sisso* Roxb. (*Shisso-no-ki*) (*Cult.*). Okinawa Isl.: Mawashi (Naha-shi) (March 25, 1940, Y. T., no. 1056).

Distrib. in the Ryukyus: Okinawa Isls.

Poliotelium H. Sydow, 1922

1. *Poliotelium hyalospora* (Sawada) Mains in Bull. Torrey Bot. Club. LXVI, p. 175, 1936. (Hiratsuka, f., Bot. Mag. Tokyo. LIV, p. 160, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 22, 1941; Ured. Formosa. p. 31, 1943; Uredinolog. Stud. p. 289, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyus Isls. p. 16, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 8, 1955; no. 4, p. 118, 1957; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 26, 1955; S. Ito, Myc. Fl. Jap. II, no. 3, p. 57, fig. 65, 1950).

Syn. *Uromyces hyalosporus* Sawada in Bot. Mag. Tokyo. XXVII, p. 19 & text-figs. 1-6, 1913. (Fujikuro, Bot. Mag. Tokyo. XXVIII, p. (391), 1914; Transact. Nat. Hist. Soc. Formosa. no. 19, p. 2, 1914; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 156, 1933; S. Ito, Jour. Coll. Agric. Hokkaido Imp. Univ. XI, p. 200 & pl. VII, fig. 6, 1922; Sawada, Descript. Cat. Formosan Fung. I, p. 353, 1919).

Hab. in the Ryukyus. O, II, III. on *Acacia confusa* Merr. (*Soshiju*). Tanegashima Isl.: Nishinoomote-machi (Aug. 15, 1957, S. S. & Y. N., no. Tane-58). Amami-oshima Isl.: Sumiyo-mura (Dec. 30, 1954, Y. N., no. 1679). Tokunoshima Isl.: Isenmura (Sept. 15, 1954, Y. N., no. 1680). Okinawa Isl.: Onna-mura (Jan. 12, 1940, H. f., no. 66); Nago-machi (May 9, 1953, H. f. & S. S., no. 833); Haneji-mura (June 12, 1953, H. f. & S. S., no. 834); Shuri (Naha-shi) (Jan. 5, 1899, Naoharu Hiratsuka, no. 1057); Mawashi (Naha-shi) (Jan. 11, 1940, H. f., no. 57); Oroku (Jan. 19, 1940, H. f., no. 118); Motobu-machi (May 29, 1953, H. f. & S. S., no. 835); Yabu-mura (May 8, 1953, H. f. & S. S., no. 832); Iejima-mura (May 23, 1954, S. S., no. Oki-1053). Kumejima Isl. (Feb. 19, 1957, S. S. & M. T., no. Oki-1293). Iheya Isl. (March 27, 1957, M. T., no. Oki-1121). Minami-daito Isl. (July 30 & Aug. 1, 1958, M. T., nos. Oki-1365 & 1366). Miyako Isl.: Shimochi-machi (Aug. 2, 1953, S. S., no. 1102). Ishigaki Isl.: Ishigaki-shi (Aug. 5, 1953, Y. N., no. 1101); Mt. Banna (Feb. 19, 1955, S. S., no. 2071).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

Gymnosporangium Hedwig, f. 1805

1. *Gymnosporangium haraeum* P. et H. Sydow in Ann. Myc. X, p. 405, 1912. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 41, 1935; Bot. Mag. Tokyo. L. p. 482, 1936; Ured. Kiushu. p. 40, 1952; Uredinolog. Stud. p. 289, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyus Isls. p. 18, 1954; S. Ito, Myc. Fl. Jap. II, no. 3, 60, fig. 67, 1950).

Hab. in the Ryukyus. III. on *Juniperus chinensis* L. (*Byakushin*) (*Cult.*). Oki-

nawa Isl.: Shuri (Naha-shi) (April 26, 1953, H. f., no. 851).

Distrib. in the Ryukyus: Okinawa Isls.

Uromyces Link, 1816

1. *Uromyces acori* Ramakrishnan et Rangaswami in Current Science, XVII, p. 240, 1948. (Hiratsuka, f. & Shimabukuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 27, 1955; Hiratsuka, f., Uredinolog. Stud. p. 290, 1955).

Syn. *Uromyces pyriformis* (non Cooke) (Hiratsuka, f., Jour. Jap. Bot. XIII, p. 588, 1937; Ured. Formosa. p. 43, 1943; Ured. Kiushu. p. 51, 1952; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 22, 1954; S. Ito, Myc. Fl. Jap. II, no. 3, p. 77, 1950). *Uromyces sparganii* Clinton et Peck subsp. *asiatica* Parmelee et Savile in Mycologia. XLVI, p. 833, 1954.

Hab. in the Ryukyus. II. on *Acorus asiaticus* Nakai (*Acorus calamus* L. var. *angustatus* Bess.) (*Shobu*) (*Cult.*). Amami-oshima Isl.: Naseshi (April 3, 1935, T. Tamotsu, no. 1120; Oct. 3, 1954, S. K., no. 1840); Sumiyo-mura (Sept. 22, 1954, Y. N., no. 1841). Kikaishima Isl.: Kika-machi (Aug. 30, 1954, Y. N., no. 1842). Tokunoshima Isl.: Amagi-mura (Sept. 15, 1954, Y. N., no. 1843). Okinawa Isl.: "Shimajiri" (March 29, 1902, T. Kuroiwa, no. 1119); Naha-shi (Feb. 25, 1940, Y. T., no. 365); Takamine-mura (March 19, 1950, Y. T., no. 407); Mawashi (Naha-shi) (May 23, 1953, H. f. & S. S., no. 935); Shuri (Naha-shi) (June 9, 1953, S. S., no. 1030); Yontan-mura (Yontan-zan-mura) (March 8, 1940, Y. T., no. 378).

Distrib. in the Ryukyus: Amami Isls., Okinawa Isls.

2. *Uromyces amurensis* Komarov in Jaczewski, Komarov et Tranzschel, Fungi Ross. exsicc. nos. 157 & 158, 1899. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 332, 1935; Hiratsuka, f., Ured. Kiushu. p. 43, 1952; Uredoinolog. Stud. p. 291, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 3, p. 10, 1956; no. 4, p. 162, 1957; Katsuki, Jour. Jap. Bot. XXX, p. 287, 1955; S. Ito, Myc. Fl. Jap. II, no. 3, p. 98, fig. 114, 1950).

Hab. in the Ryukyus. II, III. on *Maackia tashiroi* Mak. (*Shima-enju*). Yaku-shima Isl. (S. K.). Kuroshima Isl. (July 26, 1956, S. S. & Y. N., no. Mishima-116). Takarashima Isl. (Aug. 7, 1955, S. S. & Y. N., no. Tokara-185). Kikaishima Isl.: Kikai-machi (Aug. 27 & 30, 1954, Y. N., nos. Amami-131 & 140). Miyako Isl.: Taira-shi (Dec. 23, 1954, S. S. & M. T., no. Miya-157).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Sakishima Isls.

3. *Uromyces appendiculatus* Link in Ges. Nat. Freunde Berlin Mag. VII, p. 28, 1815. (Hiratsuka, f., Ured. Formosa. p. 36, 1943; Ured. Kiushu. p. 44, 1952; Uredinolog. Stud. p. 291, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 19, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 4, p. 121 & 124, 1957; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 27, 1955; S. Ito, Jour. Coll. Agric. Hokkaido Imp. Univ. XI, p. 228, 1922; Myc. Fl. Jap. II, no. 3, p. 100, fig. 117, 1950).

Hab. in the Ryukyus. II. on *Phaseolus angularis* var. *nipponensis* Ohwi (*Yabusuru-azuki*). Ishigaki Isl.: Tomino (Aug. 11, 1955, M. T., no. Yae-314); Mt. Banna (Feb. 19, 1955, S. S., no. Yae-125). II, III. on *Phaseolus vulgaris* L. (*Ingen-mame*) (*Cult.*). Tanegashima Isl.: Nishinoomote-machi (Aug. 13, 1957, S. S. & M. T., no. Tane-59). Amami-oshima Isl.: Kasari-mura (May, 1935, T. Tamotsu, no. 2348). Okinawa Isl.: Haneji-mura (Aug. 9, 1904, T. Miyagi, no. 1140); Shuri (Naha-shi) (April 25, 1953, H. f., no. 932). Iheya Isl. (June 8, 1956, S. S. & M. T., no. Oki-1122). Ishigaki Isl.: Nagura (Aug. 10, 1956, M. T., no. Yae-321). II. on *Vigna marina* Merr. (*Hama-sasage*). Okinawa Isl.: Yonabaru (June 6, 1953, H. f.). II. on *Vigna sinensis* Savi var. *sesquipedalis* Koern. (*Juroku-sasage*) (*Cult.*). Iriomote Isl. (Aug. 14, 1955, M. T., no. Yae-348).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

4. *Uromyces azukicola* S. Hirata in Ann. Phytopath. Soc. Jap. XVI, p. 18 & text-fig. 3, 1952. (Hiratsuka, f., Uredinolog. Stud. p. 291, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 19, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 9, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 27, 1955; no. 3, p. 10, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 50, 1955).

Hab. in the Ryukyus. II, III. on *Phaseolus angularis* Wight. (*Azuki*) (*Cult.*). Tanegashima Isl.: Nishinootomote-machi (Sept. 27, 1954, S. S., no. 1464). Takarashima Isl. (Aug. 7, 1955, S. S. & Y. N., no. Tokara-164). Kikaishima Isl.: Somachi-mura (Aug. 30, 1954, Y. N., no. 1852). Miyako Isl.: Taira-shi (Aug. 4, 1953, S. S., no. 1100). Iriomote Isl.: Komi (Sept. 11, 1954, M. T., no. 2091, Yae-183). II, III. on *Phaseolus minimus* Roxb. (*Koba-no-tsuruazuki*). Okinawa Isl.: Mawashi (Naha-shi) (Feb. 11, 1940, Y. T., no. 344); Kanegusuku-mura (Jan. 21, 1940, H. f., no. 311).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

5. *Uromyces baeumlerianus* Bubak in Hedwigia. XLII, p. 363, 1908. (Hiratsuka, f., Uredinolog. Stud. p. 291, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 20, 1954).

Hab. in the Ryukyus. II, III. on *Melilotus alba* Desv. (*Kogome-hagi*) (Sweet clover) (*Cult.*). Okinawa Isl.: Shuri (Naha-shi) (June 21, 1953, H. f., no. 847; June 25, 1953, H. f. & S. S., no. 1029).

Distrib. in the Ryukyus: Okinawa Isls.

6. *Uromyces commelinae* Cooke in Transact. Roy. Soc. Edinb. XXXI, p. 342, 1888. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 2, 1914; Hiratsuka, f. Jour. Jap. Bot. XII, p. 163, 1936; XIII, p. 743, 1937; Ured. Formosa. p. 43, 1943; Ured. Kiushu. p. 45, 1952, Uredinolog. Stud. p. 292, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 157, 1933; V, p. 243, 1935; Bot. Mag. Tokyo. XLIX, p. 25, 1935; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 20, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 9, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 28, 1955; no. 3, p. 10, 1956; no. 4, p. 162, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 50, 1955; Sawada, Descript. Cat. Formosan Fung. IV, p. 37, 1928; S. Ito, Myc. Fl. Jap. II, no. 3, p. 77, 1950).

Hab. in the Ryukyus. II. on *Commelina auriculata* Bl. (*Horai-tsuyukusa*). Amami-oshima Isl.: Kasari-mura (Dec. 26, 1953, Y. N., no. Amami-37). Okinawa Isl.: Motobu-machi (May 29, 1953, H. f. & S. S., no. 848). II. on *Commelina communis* L. (*Tsuyu-kusa*). Tanegashima Isl.: Nishinootomote-machi (Aug. 13, 1957, S. S. & M. T., no. Tane-125). Yakushima Isl.: Onoaida—Haro (Aug. 5, 1954, S. Sa. & Y. H., no. 1441, Aug. 6, 1957, S. S. & M. T., no. Yaku-128), Kosugidani—Anbo (Aug. 2, 1954, S. Sa. & Y. H., no. 1442). Kuroshima Isl. (July 26, 1956, S. S. & Y. N., no. Mishima-37). Amami-oshima Isl.: Nase-shi (Sept., 1935, T. Tamotsu, no. 2351). Okinawa Isl.: Mt. Katsuu-dake (Jan. 14, 1940, H. f., no. 233), Yabu-mura (Nov. 20, 1955, S. S., no. Oki-1042). II. on *Commelina nudiflora* L. (*Shima-tsuyukusa*). Nakanoshima Isl. (Aug. 1, 1955, S. S. & Y. N., no. Tokara-50; Dec. 24, 1955, Y. N., no. Tokara-291). Suwanoseshima Isl. (Aug. 4, 1955, S. S. & Y. N., no. Tokara-87). Takarashima Isl. (Aug. 13, 1955, S. S. & Y. N., no. Tokara-149). Okinawa Isl.: Oroku (Jan. 19, 1940, H. f., no. 125); Nago-machi (Jan. 14, 1940, H. f., no. 220); Osato-mura (Jan. 20, 1940, H. f., no. 164). Kumejima Isl.: Gushikawa-mura (Feb. 16, 1957, S. S. & M. T.,

no. Oki-1272). Ishigaki Isl.: Ohama-machi (Feb. 27, 1955, S. S., no. 2105), Mt. Banna (June 17, 1954, S. S., no. 2095). II. on *Commelina* sp. Yakushima Isl.: Kosugidani—Anbo (Aug. 2, 1954, S. Sa. & Y. H., no. 1443). II. on *Pollia japonica* Thunb. (*Yabumyoga*). Kuroshima Isl. (July 25, 1956, S. S. & Y. N., no. Mishima-95). Nakanoshima Isl. (July 31, 1955, S. S. & Y. N., no. Tokara-27).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

7. *Uromyces coronatus* Miyabe et Nishida ex Deitel in Bot. Centralbl. CV, p. 495, 1905. (Hiratsuka, f., Jour. Jap. Bot. XIII, p. 743, 1937; Ured. Formosa. p. 43, 1943; Ured. Kiushu. p. 45, 1952; Uredinolog. Stud. p. 292, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 158, 1933; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 20, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 9, 1955; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. no. 2, p. 28, 1955; S. Ito, Myc. Fl. Jap. II, no. 3, 75, fig. 82, 1950).

Syn. *Uromyces zizaniae-latifoliae* Sawada, Descript. Cat. Formosan Fung. II, p. 93 & pl. V, figs. 5-9, 1922 (nom. nud.).

Hab. in the Ryukyus. II, III. on *Zizania latifolia* Turcz. (*Makomo*) (*Cult.*). Amami-oshima Isl.: Nase-shi (Sept., 1935, T. Tamotsu, no. 1006; Oct. 3, 1954, S. K., no. 1853); Tatsugo-mura (Aug. 26, 1954 & Dec. 29, 1953, Y. N., nos. 1854 & 1187). Okinawa Isl.: Yabu-mura (May 8, 1953, H. f. & S. S., no. 936). Minami-daito Isl. (Aug. 8, 1958, M. T., no. Oki-1367). Kita-daito Isl. (Aug. 6, 1958, M. T., no. Oki-1399). Ishigaki Isl.: Mt. Omoto (June 25, 1954, S. S., no. 2099); "Ishigaki Isl." (Aug. 5, 1953, Y. N., no. 1103).

Distrib. in the Ryukyus: Amami Isls., Okinawa Isls., Sakishima Isls.

8. *Uromyces dactylidis* Otth in Mitth. Nat. Ges. Bern (1861), p. 85, 1861. (T. Hiratsuka, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 5, p. 37, 1958).

Syn. *Uromyces alopecuri* Seymour var. *japonica* S. Ito in Jour. Coll. Agric. Tohoku Imp. Univ. III, p. 184, pl. X, fig. 3, 1909. *Uromyces alopecuri* Seymour in Proc. Boston Soc. Nat. Hist. XXIV, p. 186, 1889. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 702, 1935; XIII, p. 587, 1937; Ured. Kiushu. p. 43, 1952; Uredinolog. Stud. p. 291, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 19, 1954; Hiratsuka, f. Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 27, 1955; S. Ito, Myc. Fl. Jap. II, no. 3, p. 70, fig. 76, 1950).

Hab. in the Ryukyus. II, III. on *Alopecurus aequalis* Sobol. var. *amurensis* Ohwi (*Suzume-no-teppo*). Amami-oshima Isl.: Nase-shi (Sept., 1935, T. Tamotsu, no. 1105). Okinawa Isl.: Nago-machi (May 9, 1953, H. f. & S. S., no. 849; May 23, 1953, M. Nagayama, no. 850).

Distrib. in the Ryukyus: Amami Isls., Okinawa Isls.

9. *Uromyces dianthi* Niessl in Verh. Naturf. Ver. Brünn. X, p. 162, 1872. (Hiratsuka, f., Uredinolog. Stud. p. 292, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 20, 1954).

Syn. *Uromyces caryophyllinus* (Schrank) Winter in Pilze Deutschl. I, p. 149, 1881. (Fujikuro, Bot. Mag. Tokyo. XXVIII, p. (396), 1914; Hiratsuka, f., Jour. Jap. Bot. XII, p. 164 & 165, 1936; Jour. Jap. Bot. XIII, p. 733, 1937; Ured. Formosa. p. 35, 1943; Ured. Kiushu. p. 44, 1952; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 157, 1933; Sawada, Descript. Cat. Formosan Fung. IV, p. 36, 1928; S. Ito, Myc. Fl. Jap. II, no. 3, p. 86, fig. 97, 1950).

Hab. in the Ryukyus. II. on *Dianthus chinensis* L. (*Kara-nadeshiko*, *Sekichiku*) (*Cult.*). Okinawa Isl.: Shuri (Naha-shi) (May 3, 1953, H. f., no. 1041).

Distrib. in the Ryukyus: Okinawa Isls.

10. *Uromyces durus* Dietel in Ann. Myc. V, p. 70, 1907. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 702, 1935; Ured. Kiushu. p. 45, 1952; Uredinolog. Stud. p. 293, 1955;

Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 20, 1954; S. Ito, Myc. Fl. Jap. II, no. 3, p. 78, fig. 85, 1950).

Hab. in the Ryukyus. II, III. on *Allium nipponicum* Franch. et Sav. (*Nobiru*). Okinawa Isl.: Takamine-mura (May 15, 1953, H. f. & S. S., nos. 929 & 930).

Distrib. in the Ryukyus: Okinawa Isls.

11. *Uromyces ervi* Westendorp in Bull. Acad. Roy. Sci. d. Belg. XXI, pt. 2, p. 246 & fig. 3, 1854. (Hiratsuka, f., Jap. Jour. Bot. VI, p. 372-373, 1933; Ured. Kiushu. p. 46, 1952; Uredinolog. Stud. p. 293, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. LI, p. 43, 1937; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 20, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 9, 1955; Sawada, Descript. Cat. Formosan Fung. VI, p. 41, 1933; S. Ito, Myc. Fl. Jap. II, no. 3, p. 106, fig. 124, 1950).

Hab. in the Ryukyus. O, I, II, III. on *Vicia hirsuta* Koch. (*Suzumenoendo*). Okinawa Isl.: Gushikawa-mura (May 1, 1953, H. f. & S. S., nos. 919 & 920); Shuri (Naha-shi) (April 21, 1953, H. f., nos. 911 & 915; May 2, 1953, H. f., no. 916); Mawashi (Naha-shi) (May 3, 1953, H. f., no. 917); Haeburu-mura (May 16, 1953, H. f. & S. S., no. 918). O, I, II, III. on *Vicia sativa* L. (*Karasunoendo*). Okinawa Isl.: Shuri (Naha-shi) (April 25, 1953, H. f., no. 912); Mawashi (Naha-shi) (May 3, 1953, H. f., no. 913). Kumejima Isl.: Gushikawa-mura (Feb. 15, 1957, S. S. & M. T., no. Oki-1328). Ishigaki Isl.: Ohama-machi (March 8, 1955, M. T., no. 2096). O, I, II, III. on *Vicia tetrasperma* Moench. (*Kasumagusa*). Okinawa Isl.: Shuri (Naha-shi) (May 2, 1953, H. f., nos. 921, 922 & 923); Motobu-machi (May 29, 1953, H. f. & S. S., no. 924).

Distrib. in the Ryukyus: Okinawa Isls., Sakishima Isls.

12. *Uromyces euphorbiae* Cooke et Peck ex Peck in Ann. Rept. N. Y. State Mus. XXV, p. 90, 1873.

Syn. *Uromyces proeminens* Lévillé in Ann. Sci. Nat. (III), VIII, p. 371, & 375, 1847. (Hiratsuka, f., Jour. Jap. Bot. XII, p. 163 & 266, 1936; Ured. Kiushu. p. 51, 1952; Uredinolog. Stud. p. 297, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 22, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 10, 1955; no. 4, p. 118, 1957; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 28, 1955; S. Ito, Myc. Fl. Jap. II, no. 3, p. 112, fig. 130, 1950).

Hab. in the Ryukyus: O, I, II, III. on *Euphorbia makinoi* Hayata (*Chamaesyce makinoi* Hara) (*Koba-no-nishikiso*). Amami-oshima Isl.: Kasari-mura (Sept. 26, 1954, Y. N., no. 1846). Tokunoshima Isl.: Isen-mura (Sept. 14, 1954, Y. N., no. 1847). Okinawa Isl.: Naha-shi (April 23, 1953, H. f., nos. 840 & 841); Shuri (Naha-shi) (May 5, 1953, H. f., no. 842); Nakijin-mura (June 18, 1953, H. f. & S. S., no. 1031). Kumejima Isl.: Gushikawa-mura (Feb. 15, 1957, S. S. & M. T., no. Oki-1325). Iheya Isl. (Sept. 21, 1955, Y. N., no. Oki-1125; June 8, 1956, S. S. & M. T., no. Oki-1127; March 26, 1957, M. T., no. Oki-1626). Izena Isl. (Sept. 19, 1955, Y. N., no. Oki-1192). Minami-daito Isl. (July 30, 1958, M. T., no. Oki-1371). Kitadaito Isl. (Aug. 6, 1958, M. T., no. Oki-1411). Miyako Isl.: Taira-shi (Dec. 26, 1954, S. S., no. Miyako-21). Ishigaki Isl.: Ohama-machi (Feb. 27, 1955, S. S., no. 2101). Yonaguni Isl. (Aug. 3, 1955, M. T., no. Yae-259). II, III. on *Euphorbia supina* Rafin. (*Chamaesyce supina* Moldenke) (*Ko-nishikiso*). Tanegashima Isl.: Nishinoomote-machi (Aug. 15, 1957, S. S. & M. T., no. Tane-63).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

13. *Uromyces fabae* De Bary in Ann. Sci. Nat. (IV), XX, p. 80, 1863; De Bary ex Cooke in Grevillea. VII, p. 135, 1879. (Fujikuro, Bot. Mag. Tokyo, XXVIII, p. (485),

1914, p.p.; Transact. Nat. Hist. Soc. Formosa, no. 19, p. 2, 1914, p.p.; Jour. Pl. Protect. VI, p. 446, 1919, p.p.; Hiratsuka, f., Jap. Jour. Bot. VI, p. 368, 1933; Ured. Formosa. p. 39, 1943; Ured. Kiushu. p. 46, 1952; Uredinolog. Stud. p. 293, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 156, 1933; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 21, 1954; Sawada, Descript. Cat. Formosan Fung. IV, p. 37, 1928; S. Ito, Myc. Fl. Jap. II, no. 3, p. 107, fig. 125, 1950).

Syn. *Uromyces yoshinagai* Hennings in Hedwigia. XL, p. (124), 1901.

Hab. in the Ryukyus. II, III. on *Vicia faba* L. (*Sora-mame*) (*Cult.*). Okinawa Isl.: Yontan-mura (March 8, 1940, Y. T., no. 382); Ginowan-mura (Feb. 27, 1940, Y. T., no. 367); Takamine-mura (March 2, 1940, Y. T., no. 376); Goeku-mura (May 1, 1953, H. f. & S. S., no. 927); Gushikawa-mura (May 1, 1953, H. f. & S. S., no. 928). Kumejima Isl.: Nakazato-mura (March 5, 1954, S. S., no. 1229); Gushikawa-mura (Feb. 15, 1957, S. S. & M. T., no. Oki-1284). Iheya Isl. (March 26, 1957, M. T., no. Oki-1123).

Distrib. in the Ryukyus: Okinawa Isls.

14. *Uromyces galii* Dietel in Ann. Myc. V, p. 71, 1907. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 703, 1935; Ured. Kiushu. p. 47, 1952; Uredinolog. Stud. p. 293, 1955; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 21, 1954; S. Ito, Jour. Coll. Agric. Hokkaido Imp. Univ. XI, p. 217, 1922; Myc. Fl. Jap. II, no. 3, p. 117, fig. 136, 1950).

Hab. in the Ryukyus. III. on *Galium spurium* L. var. *echinospermum* Hyek. (*Yae-mugura*). Okinawa Isl.: Mawashi (Naha-shi) (April 30, 1953, M. Nagayama, no. 838; May 3, 1953, H. f., no. 839); Shuri (Naha-shi) (May 2, 1953, H. f., no. 837).

Distrib. in the Ryukyus: Okinawa Isls.

15. *Uromyces hyperici* Curtis in Geol. Nat. Hist. Survey N. Carol. III, p. 123, 1867. (Hiratsuka, f., Jour. Jap. Bot. XII, p. 266, 1936; XIII, p. 739, 1937; Ured. Formosa. p. 39, 1943; Ured. Kiushu. p. 48, 1952; Uredinolog. Stud. p. 294, 1955; S. Ito, Myc. Fl. Jap. II, no. 3, p. 114, fig. 133, 1950).

Syn. *Uromyces hyperici-frondosi* Arthur in Bull. Minnesota Acad. Nat. Soc. II, no. 2, p. 15, 1883. (Hiratsuka, f., Jour. Jap. Bot. X, p. 129, 1934; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 157, 1933; Sawada, Descript. Cat. Formosan Fung. VII, p. 45, 1942).

Hab. in the Ryukyus. III. on *Hypericum japonicum* Thunb. (*Hime-otogiri*). Yakushima Isl.: Anbo—Haro (Aug. 6, 1957, S. S. & M. T., no. Yaku-196). Amami-oshima Isl.: Mt. Yuwan (Dec. 18, 1955, S. Sa.).

Distrib. in the Ryukyus: Satsunan Isls., Amami Isls.

16. *Uromyces itoanus* Hiratsuka, f. apud Hiratsuka, f. & Tobinaga in Ann. Phytopath. Soc. Japan. IV, p. 161, 1935. (Hiratsuka, f., Jour. Jap. Bot. XIII, p. 738, 1937; Ured. Kiushu. p. 48, 1952; Uredinolog. Stud. p. 295, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIX, p. 520, 1935; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 21, 1954; Hiratsuka, f., Shimabukuro & Niuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 28, 1955; no. 4, p. 162, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 50, 1955; S. Ito, Myc. Fl. Jap. II, no. 3, p. 95, fig. 111, 1950).

Syn. *Uromyces lespedezae-procumbentis* (non Curtis) (Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 157, 1933, p.p.; Sawada, Descript. Cat. Formosan Fung. IV, p. 40, 1928).

Hab. in the Ryukyus. II, III. on *Kummerowia striata* Schindl. (*Microlespedeza striata* Mak.) (*Yahazuso*). Tanegashima Isl.: Nishinootemote-machi (Aug. 13, 1957, S. S. & M. T., nos. Tane-133 & 134); Furuta (Aug. 14, 1957, S. S. & M. T., no. Tane-89). Yakushima Isl.: Miyanoura (Oct. 16, 1949, S. K., no. 2348). Takeshima Isl. (Aug. 6, 1956, Y. N., no. Mishima-67). Tokunoshima Isl.: Isen-mura (Sept. 16, 1954,

Y. N., no. 1851). Okinawa Isl.: Nago-machi (May 8, 1953, H. f. & S. S., no. 934).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Okinawa Isls.

17. *Uromyces leptodermus* P. et H. Sydow ex P. & H. Sydow & Butler in Ann. Myc. IV, p. 430, 1906. (Hiratsuka, f., Uredinolog. Stud. p. 295, 1955; T. Hiratsuka, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 5, p. 34, 1958; S. Ito, Myc. Fl. Jap. II, no. 3, p. 73, 1950).

Syn. *Uromyces setariae-italicae* Yoshino in Bot. Mag. Tokyo. XX, p. 247, 1906. (Fujikuro, Transact. Nat. Hist. Soc. Formosa. no. 19, p. 3, 1914; Hiratsuka, f., Jour. Jap. Bot. XII, p. 266, 1935; XIII, p. 742, 1936; Bot. Mag. Tokyo. LIV, p. 162, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 24, 1941; Ured. Formosa. p. 42, 1943; Ured. Kiushu. p. 51, 1952; Uredinolog. Stud. p. 297, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 158, 1933; Bot. Mag. Tokyo. XLIX, p. 25, 1935; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 23, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 10, 1955; Hiratsuka, f., Shimabukuro & Niirō, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 29, 1955; no. 3, p. 11, 1956; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 50, 1955; Sawada, Descript. Cat. Formosan Fung. I, p. 361, 1919; S. Ito, Myc. Fl. Jap. II, no. 3, p. 73, fig. 80, 1950). *Uromyces eriochloae* P. et H. Sydow et Butler in Ann. Myc. V, p. 492, 1907. (Hiratsuka, f., Ured. Kiushu. p. 46, 1952; Uredinolog. Stud. p. 293, 1955; Hiratsuka, f. & Shimabukuro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 9, 1955; S. Ito, Myc. Fl. Jap. II, no. 3, p. 71, 1950).

Hab. in the Ryukyus. II. on *Eriochloa procera* C. E. Hubbard (*Nokibi*, *Murasaki-nokibi*). Minami-daito Isl. (July 31 & Aug. 3, 1958, M. T., no. Oki-1368 & 1369). Kita-daito Isl. (Aug. 6, 1958, M. T., no. Oki-1400). Miyako Isl. (May 28, 1958, S. Asato, no. Miya-158). Ishigaki Isl.: Ohama-machi (Aug. 8, 1954, M. T., no. 2100). Yonaguni Isl. (Aug. 5, 1955, M. T., no. 388). II. on *Eriochloa villosa* Kunth. var. *stenantha* Ohwi (*Hosomi-no-narukobie*). Iriomote Isl.: Otomi (Sept. 11, 1954, M. T., no. 2094). II. on *Setaria geniculata* (Lam.) Beauv. (*Kotsubu-kin-enokoro*). Okinawa Isl.: Takamine-mura (May 15, 1953, H. f. & S. S., no. 926); Mawashi (Naha-shi) (Jan. 22, 1940, H. f., no. 338); Yonabaru-machi (Jan. 20, 1940, H. f., no. 159); Kanegusukumura (Jan. 21, 1940, H. f., no. 316). II. on *Setaria italica* (L.) Beauv. (*Awa*) (*Cult.*). Suwanose Isl. (Aug. 4, 1955, S. S. & Y. N., no. 1837). Miyako Isl.: Taira-shi (June 16, 1954, S. S., no. 2104, no. Miya-44; May 14, 1952, M. Nagayama, no. 925). Ishigaki Isl.: Arakawa (June 23, 1957, S. Higashirachi, no. Yae-407). Kuroshima Isl. (March 23, 1957, S. Higashirachi, no. Yae-403). II. on *Setaria lutescens* Hubbard var. *longispica* Honda (*Nagabo-no-kin-enokoro*). Okinawa Isl.: Haneji-mura (Jan. 13, 1940, H. f., no. 202). II. on *Setaria verticillata* Beauv. var. *ambigua* Parl. (*Inu-enokoro*). Minami-daito Isl. (Aug. 3, 1958, M. T., no. Oki-1373). Kita-daito Isl. (Aug. 6, 1958, M. T., no. Oki-1403). II, III. on *Setaria viridis* Beauv. var. *genuina* Honda (*Enokoro-gusa*). Tanegashima Isl.: Nishinoomote-machi (Sept. 27, 1954, S. S., no. 1495). Amami-oshima Isl.: Tatsugo-mura (Aug. 25, 1954, Y. N., no. 1838). Okinawa Isl.: Miwa-mura (Oct. 31, 1955, M. T., no. Oki-1362). Ishigaki Isl.: Ohama-machi (Aug. 16, 1954, M. T., no. 2098). II. on *Setaria viridis* Beauv. var. *pachystachys* Mak. et Nem. (*Hama-enokoro*). Yakushima Isl.: Kurio (Aug. 3, 1954, S. Sa. & Y. H., no. 2340). Takarashima Isl. (Dec. 22, 1955, Y. N., no. Tokara-234). Okinawa Isl.: Nago-machi (April 19, 1940, Y. T., no. 477); Haneji-mura (Jan. 15, 1940, H. f., no. 285). Iheya Isl. (Sept. 21, 1955, Y. N., no. Oki-1128; June 8, 1956, S. S. & M. T., no. Oki-1131). Izena Isl. (Sept. 20, 1955, Y. N., nos. Oki-1193 & 1201). Minna Isl. (Motobu-machi) (Sept. 22, 1955, Y. N., no. Oki-1268).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls.,

Sakishima Is's.

18. *Uromyces lespedezae-procumbentis* (Schw.) Curtis in Geol. Survey N. Car. III, p. 123, 1867. (Hiratsuka, f., Jour. Jap. Bot. XI, p. 38 & 710, 1935; Transact. Tottori Soc. Agric. Sci. VII, p. 72, 1940; Ured. Formosa. p. 38, 1943; Ured. Kiushu. p. 48, 1952; Uredinolog. Stud. p. 295, 1955; Hiratsuka, f. & Hashioka, Transact. Tottori Soc. Agric. Sci. IV, p. 157, 1933, p.p.; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 21, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 9, 1955; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 28, 1955; no. 3, p. 10, 1956; no. 4, p. 162, 1957; Hiratsuka, f., Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 50, 1955; Hiratsuka, f. & Tobinaga, Ann. Phytopath. Soc. Japan. IV, p. 158, 1935; Sawada, Descript. Cat. Formosan Fung. IX, p. 29, 1944; S. Ito, Myc. Fl. Jap. II, no. 3, p. 96, fig. 112, 1950).

Syn. *Puccinia lespedezae-procumbentis* Schweinitz in Schr. Nat. Ges. Leipzig. I, p. 73, 1922.

Hab. in the Ryukyus. II. on *Lespedeza bicolor* Turcz. var. *japonica* Nakai (*Hagi*). Kuroshima Isl. (July 25, 1956, S. S. & Y. N., no. Mishima-87). II, III. on *Lespedeza cuneata* G. Don. (*Medo-hagi*). Tanegashima Isl. (Aug. 13, 1957, S. S. & M. T., no. Tane-74; July 27, 1956, S. S. & Y. N., nos. Mishima-2, 26 & 82). Takarashima Isl. (Aug. 13, 1955, S. S. & Y. N., no. Tokara-190; Dec. 22, 1955, Y. N., no. Tokara-225). Amami-oshima Isl.: Kasari-mura (Dec. 24, 1953, Y. N., no. 1209); Mt. Yuwan-dake (Jan. 1, 1954, Y. N., no. 1848). Kikaishima Isl.: Kikai-machi (Aug. 28, 1954, Y. N., no. 1849). Tokunoshima Isl.: Mt. Inokawa-dake (Sept. 16, 1954, Y. N., no. 1850). Okinawa Isls.: Kanegusuku-mura (Jan. 21, 1940, H. f., no. 308); Mt. Taniu-dake (June 12, 1953, H. f. & S. S., no. 931); Haneji-mura (Nov. 14, 1953; S. S., no. 1196). Iejima Isl. (May 23, 1954, S. S., no. Oki-1051). Kumejima Isl.: Gushikawa-mura (Feb. 15, 1957, S. S. & M. T., no. Oki-1336); Nakazato-mura (Feb. 17, 1957, S. S. & M. T., no. Oki-1312). Miyako Isl.: Taira-shi (Dec. 28, 1954, S. S., no. 2106). II, III. on *Lespedeza cyrtobotrya* Miq. (*Marube-hagi*). Tanegashima Isl.: Nishinoomote-machi (Aug. 13, 1957, S. S. & M. T., nos. Tane-92 & 106). Yakushima Isl.: Onoaida (Aug. 3, 1954, S. Sa. & Y. H., no. 1429); Onoaida—Kurio (Aug. 7, 1957, S. S. & M. T., no. Yaku-78). II. on *Lespedeza homoloba* Nakai (*Tsukushi-hagi*). Yakushima Isl.: Anbo—Haro (Aug. 6, 1957, S. S. & M. T., no. Yaku-112). II, III. on *Lespedeza pilosa* Sieb. et Zucc. (*Neko-hagi*). Tanegashima Isl.: Nishinoomote-machi (Sept. 27, 1954, S. S., no. 1430). Kuroshima Isl. (July 25, 1956, S. S. & Y. N., no. Mishima-100).

Distrib. in the Ryukyus: Satsunan Isls., Tokara Isls., Amami Isls., Okinawa Isls., Sakishima Isls.

19. *Uromyces linearis* Berkeley et Broome in Jour. Linn. Soc. XIV, p. 92, 1875. (Fujikuro, Transact. Nat. Hist. So. Formosa. no. 19, p. 3, 1914; Hiratsuka, f., Jour. Jap. Bot. X, p. 470, 1934; XIII, p. 741, 1937; Bot. Mag. Tokyo. LIV, p. 161, 1940; Transact. Sapporo Nat. Hist. Soc. XVII, p. 24, pl. II, fig. 1, 1941; Ured. Formosa. p. 42, 1943; Ured. Kiushu. p. 50, 1952; Uredinolog. Stud. p. 296, 1955; Hiratsuka, f. & Hashioka, Bot. Mag. Tokyo. XLIV, p. 19, 1935; Hiratsuka, f. & Shimabukuro, Ured. Ryukyu Isls. p. 22, 1954; Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 9, 1955; Hiratsuka, f., Shimabukuro & Niiro, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 28, 1955; Hiratsuka, f. Shimabukuro & Sato, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 2, p. 50, 1955; T. Hiratsuka, Sci. Bull. Agric. & Home Econ. Div. Univ. Ryukyus. no. 5, p. 32, 1958; Sawada, Descript. Cat. Formosan Fung. IV, p. 40, 1928; IX, p. 30, 1943; S. Ito, Myc. Fl. Jap. II, no. 3, p. 73, fig. 79, 1950).