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TWO NEW SPECIES OF SPHINGID-MOTHS

BY

SHÔNEN MATSUMURA

(With 2 Text Figures)

天蛾科の二新種

松村松年

1. *Oxyambulyx takamukui* n. sp. (Fig. 1)

♂. Primaries yellowish brown, with a light shade of purple; at the base with 2 and at the costa with 3 velvety fuscous spots; the medial line double, interrupted, fuscous, geniculated at the medial vein; the discocellulars black, geniculated, having a paler line in the middle; the postmedial line broad, olivaceous, defined by a black band internally; the space from this line to the bow-like marking at the margin pale yellowish, scattering fuscous spots and lines within it; at the inner side of the tornus with a large velvety black patch. Secondaries yellowish, with about 4 black irregular bands, those of the outer 2 being much narrower, zigzag, the discoidal spot reddish yellow; the posterior margin broadly black, internally defined by a velvety black



Fig. 1.

Oxyambulyx takamukui n. sp.

band. Body above dark brown, abdomen at the sides of the 3rd and 4th segments and at the middle of the 4th with each a fuscous spot; below yellowish.

Expanse—115 mm.

Hab.—Formosa; one male specimen was collected by the late T. TAKAMUKU at Horisha.

The nearest ally: *O. panopus* Wk.

2. *Macroglossum palauensis* n. sp. (Fig. 2)

♂. Primaries dark grey, at the base with about 4 obsolete fuscous bands; in the middle with 2 fuscous bands, that of the inner being somewhat incurved at the hind angle of cell; the apical mark broadly fuscous, intersected by the longitudinal veins. Secondaries velvety black, with an orange-yellow band somewhat constricted in the middle, not extending to the apex.

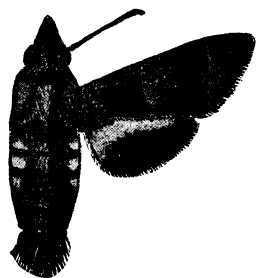


Fig. 2.

Macroglossum palauensis n. sp.

Expanse—52 mm.

Hab.—Palau; one male specimen was collected by Mr. S. UCHIYAMA.

摘 要

今回二種の天蛾を發見したれば爰に發表せん。その和名は下の如し。

- | | |
|--|-----------|
| 1. <i>Oxyamblyx takamukai</i> MATS. (n. sp.) | タカムクホソバズメ |
| 2. <i>Macroglossum palauensis</i> MATS. (n. sp.) | パラウホウジャク |

前者は印度産のパノープス (*O. panopus* Wk.) に、後者は沖縄産のイハサキホウジャク (*M. iwasakii* MATS.) に似る。

SPOROTRICHUM NARCISSI SP. N. PARASITIC ON NARCISSUS BULBS

BY

YOSHIHIKO TOCHINAI and SHOICHI SHIMADA

Sporotrichum Narcissi sp. n. による水仙の
一新病害に就きて

柄内吉彦 島田昌一

Introduction

In the spring of 1930 the senior author found a severe hindrance in the growth of *Narcissus pseud-Narcissus* L. in Tokio. At the end of April, while the plants growing near by were sound and in full bloom, the plants under consideration had grown only from 6.7 cm. to 3 cm. high above the ground bearing no flowers. They looked something like the plants newly shooted, and the tips of the leaves yellowed slightly. These diseased plants have been observed continuously by family members from their late shooting in the early spring up to the end of April. They have grown only about several cm. above the ground during the period of nearly a month.

Neighboring to the row of the diseased *Narcissus* a row of *Crocus* was planted. The *Crocus* also showed a very sickly growth remaining one or two cm. high above the ground without bearing any flowers, and the leaves were found almost in a damping-off state. They were dugged up and examined on May 2nd.

The bulbs of the *Narcissus* were severely attacked by a fungus which produced dark green colored acervuli abundantly on the surface of the bulbs.

Those of the *Crocus* were also affected by apparently the same fungus, and the substance of the bulbs was already decayed out, leaving only the outer scales intact. The specimens were brought to the laboratory where the further investigations have been done.

Diagnosis

The leaves were so severely hindered in their growth as to be only several cm. high above the ground at the end of April, when the normal individuals have bloomed already. However, no lesions or other striking outward symptoms, except the dwarf growth and a slight yellowing at the tips of the leaves, were observed. But remarkable indications of a fungus disease appeared on the bulbs. An abundance of small cushion-shaped and dark green colored acervuli were found scattered all over the surface of the bulbs. Young mycelial cushions were snow-white in color at first, and then became green turning deeper by degrees to dark green by the formation of conidia.

In cases of the severely affected bulbs the apical and basal parts decayed more or less. In such cases the hindrance in the growth of the shoots was quite remarkable and the leaves remained 4 or 3 cm. in height.

Sections of the diseased bulbs revealed that the decay advanced lengthwisely along the scales and not across them, but in cases of the severely affected bulbs the decay advanced deeply into the substance of the scales at the upper and basal parts.

In insignificant cases of the disease the affected plants seem to grow almost alike to the healthy one in size, but they bear no flowers in general. The leaves of such plants are somewhat slender compared with those of the healthy ones, looking rather weak and feeble in appearance.

The Causal Fungi

Two kinds of fungi belonging to the genus *Sporotrichum* were found by microscopical tests of the acervuli produced on the surface of the diseased bulbs. They were isolated by the diluting method in apricot juice agar medium. On the artificial culture medium two different kinds of *Sporotrichum* were clearly

distinguishable from each other.

One of them is apparently identical with *Sporotrichum radicum* ZIMMERMANN. A. ZIMMERMANN (1902), who had reported on the fungi observed on some tropical cultural plants, described this fungus as a new species. His description of the fungus is cited in full as follows:

"*Sporotrichum radicum* sp. n.: Auf abgestorbenen Wurzeln erst weisse, apäter spangrüne Polster bildend, die aus hyalinen, bis $4\ \mu$ dicken Hyphen bestehen. An diesen entstehen die niederliegenden Conidienträger teils seitenständig, teils endständig; diese tragen auf flaschenförmigen Sterigmen eine Conidie. Conidien oval, grün, $4-3\ \mu$ lang, $2.5-2\ \mu$ breit. Bilden sich auf versiedentartigen abgestorbenen Wurzeln, die einige Zeit in feuchter Luft bewahrt waren."

The details of the description of *Sporotrichum radicum* above cited are almost identical with one of the fungi found on the bulbs of *Narcissus* and *Crocus*.

The mycelial masses produced on the surface of the bulbs consist of loosely gathering conidiophores in small cushion-like forms which are white in color at first, becoming pale yellowish green or buff color by the formation of conidia. Conidiophores are hyaline, branched, and $5.5-4.5\ \mu$ wide. Sterigmata, characteristic to the genus *Sporotrichum*, are produced laterally on the conidiophores or terminally on the branches of the conidiophores, and are short flask-shaped, and $9.5-4.5 \times 5.0-3.3\ \mu$, most frequently $5.5 \times 3.5\ \mu$. Conidia are produced on the attenuated end of the flask-shaped sterigmata, and are mostly oval or ellipsoidal, pale yellowish green or almost colorless, and $4.5-2.5 \times 3.0-1.8\ \mu$ in size.

In the ZIMMERMANN's description it is understood that *Sporotrichum radicum* is a saprophyte and develops only on dead roots of various kinds of plants. The fungus in question, however, being a facultative parasite can infect living *Narcissus* bulbs through wounds. Setting aside this slight difference in the parasitic behavior of the present fungus and the ZIMMERMANN's species and considering the striking morphological likeness observed between them, the authors should like to consider that the fungus in question is identical with *Sporotrichum radicum* ZIMMERM. The occurrence of this species in Japan has not been reported up to the present time.

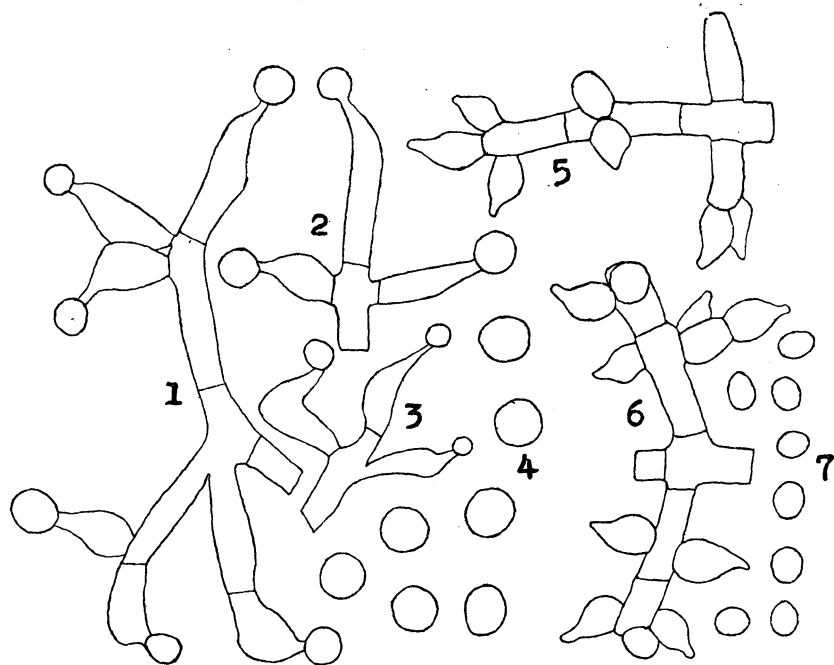


Fig. 1.

Figures 1-4. *Sporotrichum Narcissi* sp. n. ($\times 1520$)

- 1. A conidiophore bearing sterigmata and conidia.
- 2 & 3. Sterigmata producing conidia.
- 4. Conidia.

Figures 5-7. *Sporotrichum radiculolum* ZIMMERMANN. ($\times 1520$)

- 5 & 6. Conidiophores bearing sterigmata.
- 7. Conidia.

Another species of *Sporotrichum* found parasitic on the bulbs of *Narcissus* and *Crocus* is obviously different from *Sporotrichum radiculolum* ZIMMERM. in several important morphological characters and in the parasitic behavior. Furthermore the present fungus could not be identified with any other described species of *Sporotrichum*. For these reasons the authors should like to treat this fungus as a new species, giving the following name and description:

***Sporotrichum Narcissi* TOCHINAI et SHIMADA, sp. n.**

The mycelial cushions formed on the surface of the substrata consist of loosely gathered conidiophores, white in color at first, turning dark green later

by the formation of conidia. Conidiophores hyaline, variously branched, 4.5–2.0 μ wide. Sterigmata produced laterally on the conidiophores or at the ends of short branches of the conidiophores, oblong, straight or curved, attenuated, or acute, 15.0–5.0 $\times$ 4.0–2.0 μ , most frequently 10 $\times$ 3.0–2.5 μ . Conidia produced directly on the tips of the conidiophores or on the sterigmata, almost spherical but sometimes slightly ovoid or ellipsoid in shape, green in color, 5.0–3.3 $\times$ 4.5–3.0 μ .

Parasitic on the bulbs of *Narcissus pseudo-Narcissus* L., (collected in Tokio by TOCHINAI), on the bulbs of *Crocus* (collected in Tokio by TOCHINAI), and on the bulbs of *Lilium* (collected in Sapporo by Y. HOMMA).

Sporotrichum Narcissi can quite easily be distinguished from *Sporotrichum radicum*. At first sight by the naked eyes the mycelial cushions formed by loosely gathering conidiophores bearing abundant conidia are dark green in color in the former, but light cress green or pale olive buff in the latter. Remarkable differences in the character of the sterigmata are observed between them. Short flask-shaped sterigmata are formed laterally on the branched conidiophores in abundance in *Sporotrichum radicum*, while the sterigmata of *Sporotrichum Narcissi* are generally somewhat twice longer and more irregular in shape than those of the former species and do not develop so well as in the case of the former species, especially in old cultures they are no longer found at all. The conidia of *Sporotrichum Narcissi* are larger in size and darker in color than those of *Sporotrichum radicum*.

Pathogenicities and Cultural Characters of the Fungi

The bulbs of *Narcissus pseudo-Narcissus* L. attacked by the fungi, which were collected by one of the authors in Tokio, had their leaves been cut off after the flowering season of the preceding year, and left over winter in the garden soil. Other rows of the *Narcissus* neighboring to the affected row having bloomed profusely without any sign of the disease had been left as usual without cutting the leaves. Other conditions being quite similar it is reasonable to assume that the cutting of the leaves gave an occasion for the outbreak of the disease. The dead cells of the unhealed cut surface of the leaves and

mucilaginous substances oozing out of the wounds might promote the wound infection of the facultative parasites.

The infective power of the fungi was tested with a series of infection experiments.

The apparently healthy bulbs of the *Narcissus* were sterilized with 10/100 aqueous solution of corrosive sublimate and their leaves were cut off with a pair of sterilized scissors. The bulbs were put in the sterilized moist vessels and inoculated with the fungi in the following ways. (1) The leaves were cut off close to the bulbs and the conidia of the fungi were inoculated to the wounds. (2) Similar wounds were burned with a gas flame and inoculated with the conidia of the fungi. (3) The bulbs were given cross incision wounds by sterilized knives and the conidia of the fungi were inoculated in the wounds. (4) The bulbs were given cross incision wounds with red heated knives and the conidia of the fungi were inoculated in the wounds.

In all cases of the present inoculation experiments the infection occurred more or less. The most vigorous infection took place in the 2nd series of the experiments, and the 1st series came next. No difference in the vigour of the infection appeared between *Sporotrichum Narcissi* and *Sporotrichum radicum* in the cases of the 2nd series, but in the 1st series the former grew more vigorously than the latter. In the 3rd series the infection and the mycelial growth of *Sporotrichum radicum* were slightly recognized, while *Sporotrichum Narcissi* grew on the wounds more vigorously. The infections in the 4th series occurred somewhat better than those in the preceding cases, and *Sporotrichum Narcissi* produced typically colored mycelial cushions.

It is to be inferred from the results of the inoculation experiments that both fungi can attack the *Narcissus* bulbs at least through wounds, and the parasitic behavior of *Sporotrichum Narcissi* is stronger than that of *Sporotrichum radicum*.

Both fungi grew readily on the following culture media at room temperature ranging from 28° to 15° C.: apricot juice agar, onion decoction agar, *Narcissus* bulb decoction agar, Koji decoction agar, steamed *Narcissus* bulb, and steamed rice.

In the cultures of *Sporotrichum Narcissi* white aerial mycelium grew rapidly

over the surface of the media, and within several days after inoculation the small mycelial cushions were produced abundantly. They were white in color at first, turning to deep green color later by the formation of the conidia. The colors of the mycelial cushions varied a little according to the difference of the culture media, for instance dusky olive green on apricot juice agar and dark green on Koji decoction agar. Characteristic sterigmata were formed in fresh cultures conspicuously, but they have on longer been found in old cultures in which the conidia were produced directly on the branched conidiophores.

Vegetative mycelium becomes often swollen terminally or intercalarly, thus producing gemmae which are sphaerical to short ellipsoidal in shape and $12-7.5\ \mu$ in size. The gemmae germinate readily without distinct resting.

In the cultures of *Sporotrichum radicicolum* the vegetative mycelium crept on the surface of and in the media, and aerial mycelium was hardly observed in general. The mycelial cushions were white in color at first and turned light cress green color on apricot juice agar and to pale olive buff color or tilleul buff color on the other kinds of media examined. Sterigmata were produced abundantly on variously branched conidiophores even in old cultures.

Further investigations on the physiology of the fungi and the prevention measures will be published in other days.

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摘 要

昭和五年五月初旬、東京に於て一列のラツパズイセン (*Narcissus pseudo-Narcissus* L.) が顯著なる生長障害に陥り、健全なるものゝ満開時期に、草丈やうやく 6.7-3 cm. に止まり、全然花をつけず、葉端少しく黄化せるを認め、鱗莖を堀り出して驗するに其の表面に、夥しく緑色の菌叢を着生して、之を縦斷すれば腐蝕、鱗片に沿ひて縦に進行し、侵害部の褐變せるを見たり。

病植物鱗莖上に現れたる菌叢の檢鏡、分離、培養及び接種試験の結果、病原菌は *Sporotrichum* 屬の二種の菌なる事を知れり。其の一は植物の枯死せる根に死物寄生的に着生する *Sporotrichum radicum* ZIMMERM. にして、本邦に於ては未だ本菌に関する報告の發表せられたものあるを聞かず、他の一は全く未記載の種類なる事を認め、之に對して *Sporotrichum Narcissi* TOCHINAI et SHIMADA なる學名を附し、記載を與へたり。

兩者ともに傷痕寄生菌にして、前者は A. ZIMMERMANN によりて死物寄生菌として記載されたるものなれども、著者等の接種試験に於ては、水仙鱗莖の傷部に接種をおこして生活ある組織にも侵入し、之を侵害する点余等の新種に似たり。然れども後者即ち、著者等の種類は ZIMMERMANN の種類に比して、病原性一層強盛なるを見たり。

Sporotrichum Narcissi sp. n. と *Sporotrichum radicum* とは菌叢の色が、前者は濃青緑色、後者は淡黄緑色乃至軟皮色、分生胞子が前者は大にして緑色、後者は小にして無色乃至微緑色、小柄 (sterigmata) が前者は不整長フラスコ形にして大、後者は整短フラスコ形にして小なる点等に於て、容易に明かに區別する事を得可し。

前記東京に於て發見せる被害水仙は、その列に限り前年の花期後に葉を剪除し、其のまゝ花壇の土中に越冬せしめたるものにして、剪葉による傷部の死細胞組織及び其の部分に漏出せる粘液質物は、半死物寄生菌たる兩菌の接種を助長せるものと推測せらる。

兩菌はラツパズイセンの外、前記被害水仙に隣接して植栽されたるサフランの鱗莖を犯して之を枯死に陥らしめ、尙又、七月札幌に於て著者等の菌が、百合の地下部を犯して之を枯死に瀕せしめたるを見出したり。

本菌の生理及び豫防驅除に關する詳細の研究は、後日發表する處ある可し。

北海道帝國大學農學部植物學教室に於て

ON CELL ABNORMALITIES DURING THE SPERMATOGENESIS

I. Giant Spermatocyte and Cell-Degeneration in a Stone fly, *Acroneuria jözoensis* Okamoto

BY

HIDEGOROH ITOH

(With 4 Text Figures and 1 Plate)

精蟲發生に見られる細胞異常

I. ミツモンカハゲラに於ける巨大精母細胞と生殖細胞の退化現象

伊藤秀五郎

I. Giant Spermatocyte

In my spermatogenetical study on a species of the stone fly, *Acroneuria jözoensis* OKAMOTO, abnormal giant cells were noted in the heterotypic mitosis. Fig. 1 shows a case of multiple chromosome groups of this species. The normal chromosomes of the animal in the first maturation division are known to be thirteen in number (Fig. 4). However, there are about twenty-six chromosomes in the present case. Abnormalities of this type have been reported by a number of authors from other materials. HENKING (1891), PAULMIER (1899), GROSS (1904) also found such instances. WILSON (1906) reported in *Anasa tristis* a number of oogonial cells containing forty-four chromosomes, instead of the normal number of twenty-two. He suggested that the presence of this multiple chromosome groups was due to the fact that, "all the chromosomes divided once without the occurrence of cytoplasmic division." * RANDOLPH (1906) found in the earwig, *Anisolabis maritima*, occasional giant nuclei with double the number of the normal chromosomes. METZ (1916) observed in the *Diptera*, mainly in *Sarcophaga* and

* WILSON (1906)

Funcellia, "certain cases of multiple chromosome numbers (tetraploid, or higher multiple). In these cases corresponding chromosomes were associated in prophase in aggregations of four, eight, etc., instead of being arranged in pairs".* GOLDSMITH (1919) also reported that multiple chromosome groups occur in the first spermatocyte division in the tiger beetle.

According to JUNKER (1923), in *Perla marginata*, a number of tetraploid chromosome groups are found in spermatogonia and in the second maturation division, but not in the first spermatocyte mitosis. He found giant spermatozoon also in his material.

In the present specimen tetraploid chromosome groups are found in heterotypic division. They are, however, very rare, occurring only in two individuals among about one hundred males. One of them contains only one giant sper-

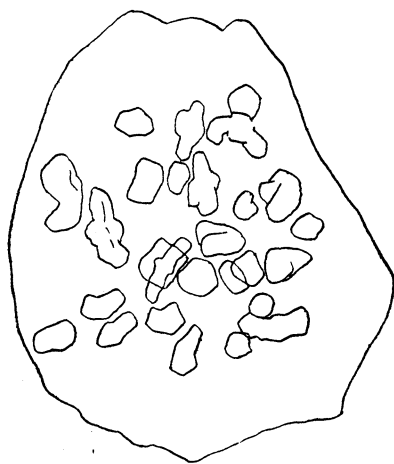


Fig 1

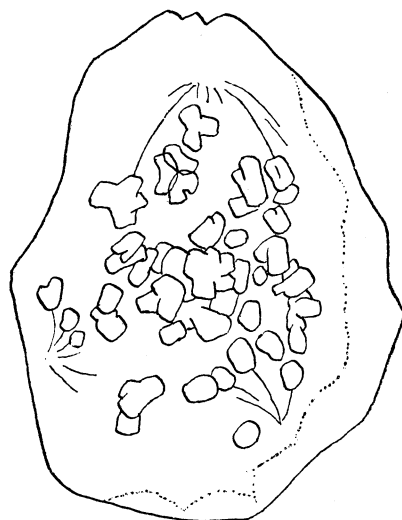


Fig 2

matocyte while the other has a few giant cells. Though it is impossible, naturally, to inquire into the fate of giant cells very closely, it is interesting to consider the fact in connection with the mutations of an animal etc. Fig. 2 shows the tripolar spindles of a giant spermatocyte which suffers from a slight plasmolysis. Fig. 3 indicates a clumped multiple chromosome group undergoing

* METZ (1916)

degeneration. In all giant spermatocytes in these preparations, whole metaphase chromosomes accomplished their tetrad formation, showing the characteristic tetrad forms.

A report on the abnormal giant cells in the grows-period of the first spermatocyte and giant spermatids, found in the present specimen, will be publish in order.

II. Cell-degeneration during the Spermatogenesis.

As JUNKER and NAKAHARA reported respectively in their spermatogenetical studies on Stoneflies, cell-degeneration takes place very frequently in the present species during the spermatogenesis. The phenomenon is found in all individuals without exception, though it differs more or less in degree.

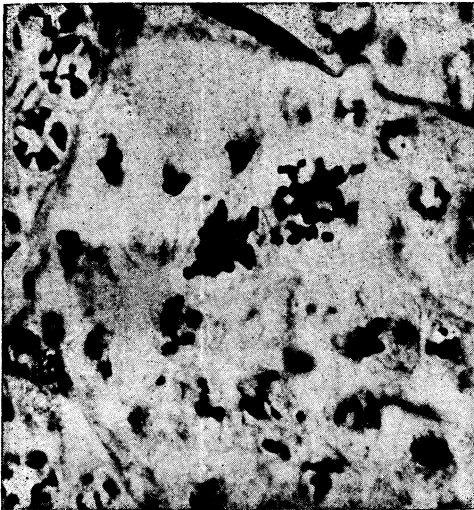


Fig. 3.

Microphotograph of two giant spermatocytes. One of them commences to degenerate showing the chromosomal clumpton.

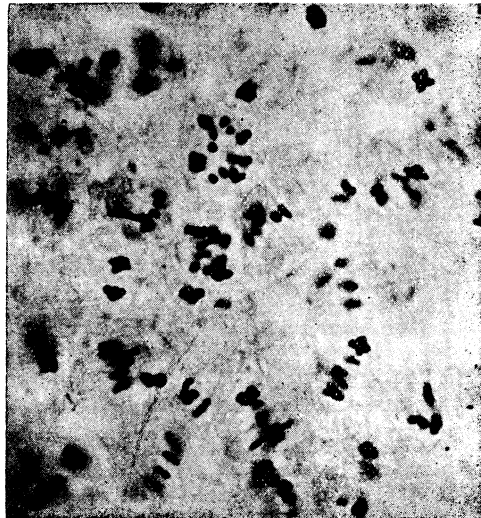


Fig. 4.

Microphotograph of metaphase chromosome groups in the normal heterotypic division.

Sometimes a cell degenerates singly, but usually all cells contained in one cyst degenerate simultaneously. The cell-degeneration is found in every stage from the primary spermatogonium to the spermatids. At first many small condensed chromatin masses connect with each other forming net-like work as the process advances. This net-like work has a strong staining capacity.

Then the spaces between the chromatin-nets are reduced by degrees hand in hand with the contraction of the nucleus. Finally the nucleus becomes homogeneous making a compact mass which is stained deep black or blood-red by iron-haematoxylin or safranin respectively. This compact chromatin sphere becomes smaller, until it completely disappears being resorbed.

The construction of the cytoplasm in the degenerating cells is also destroyed as the nuclear degeneration advances.

Though the cell-degeneration occurs mainly in the final spermatogonial telophase, it happens in every stages during the spermatogenesis. Namely, it sometimes takes place also in the growth period of the first spermatocyte, in the first and the second maturation division and in the spermioteleosis. In the meantime, it happens occasionally in the young spermatogonium.

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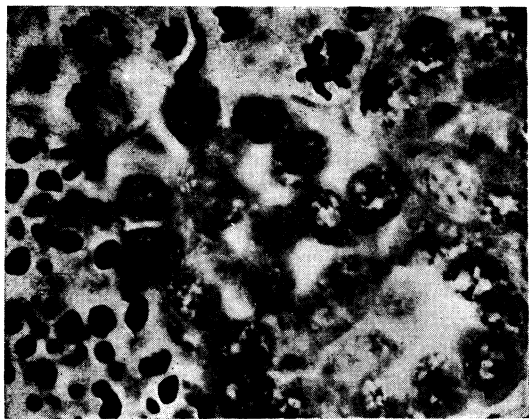


Fig. 1

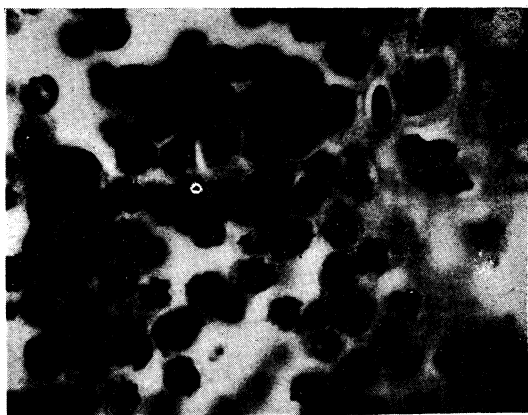


Fig. 2



Fig. 3

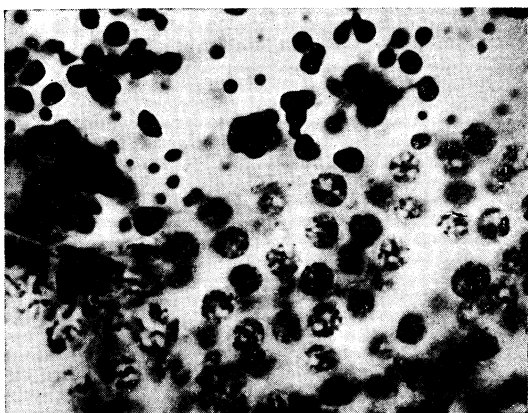


Fig. 4

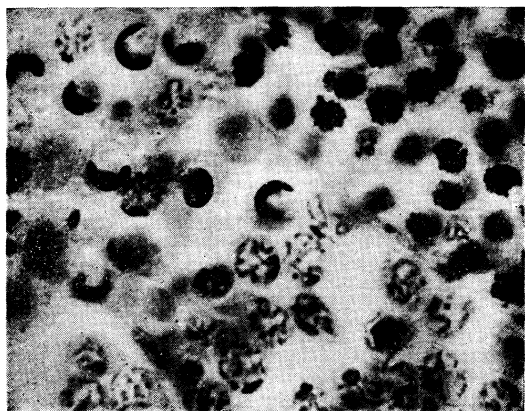


Fig. 5

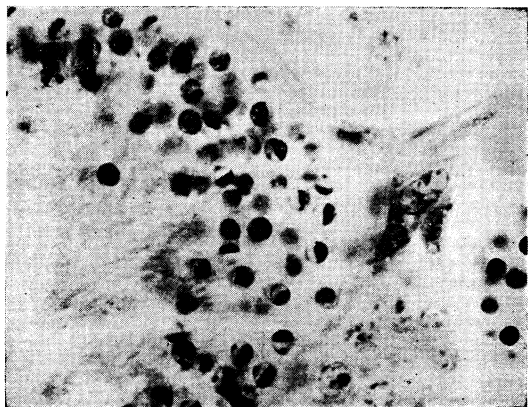


Fig. 6

Explanation of Plates

- Fig. 1. The cell-degeneration in the primary spermatogonium. Chromatin net-like works are found in the primary spermatogonium, at the middle part of the plate. At the left side of the plate, many compact masses of the degenerating nuclear substances of the secondary spermatogonium are seen.
- Fig. 2. The cell-degeneration in the secondary spermatogonium.
- Fig. 3. The cell-degeneration of a whole cyst of the primary spermatogonium, at the right side of the plate. The cell-degeneration of the primary spermatocyte in the growth period is found at the left side.
- Fig. 4. The cell-degeneration in the secondary spermatogonium, early stage of the process in the lower part, very advanced stage at the upper.
- Fig. 5. The cell-degeneration of the primary spermatocytes in the growth period.
- Fig. 6. Degenerating spermatids, early stage at the middle part of the plate, advanced stage at the right.

摘 要

横翅目カハゲラ科の一種、ミツモンカハゲラの精虫発生に見られる、生殖細胞の異常現象として著しいのは、巨大精細胞、細胞の退化である。

巨大精細胞は、私の検鏡した材料では、約百個体の中、二個体に於て見出された。第一次精母細胞の生長期、第一成熟分裂の分裂中期、及び精細胞の各時代に見出されたが、何れもその数は極めて少く、第一成熟分裂の分裂像に現れたものは、一つの場合は唯一個、他の一つの場合でも数個の細胞に過ぎない。他の時代のものに於ても同様にその数は甚だ少い、従てその起原と運命を追求することは出来なかつたが、第一分裂に現れた巨大精母細胞の有する染色体数は常数の十三個の二倍の二十六個である。但しその多くは染色体の凝集を引起して退化過程に入りつつあつて、ほぼ正確に染色体数を数へ得たものは唯一個であるから、かかる巨大精母細胞が常に四價の染色体群を有してゐるか否かは断定出来ない。

この種類では、雄性生殖細胞の退化は、何れの個体にも見出される現象で、而も第一次精原細胞から精細胞に至るまでの各時代のあらゆる時期に起るものである。多くの場合一つの cyst に含まれる總ての細胞の間に同時的に起るもので、ある個体では精巢の殆ど總体が、かかる異常現象を呈してゐる場合すら見出される。退化過程は最初核に起るが間もなく細胞質も破壊され、核質は凝集して染色度の極めて強い球体となり、遂には吸収されて消失して了ふ。この現象は他の種類でも同様に存在するから、一般にカハゲラ科に屬する昆虫に共通の現象と思はれる。

DIE CLERIDEN JAPANS (COL.)

VON

HIROMICHI KÔNO

(Mit 3 Figuren)

日本産郭公蟲科

河野廣道

In dieser Arbeit gebe ich neue Fundorte von einigen *Cleriden*-Arten und die Beschreibung von 3 neuen Arten.

Das Material, welches bei dieser Arbeit vorlag, stammt ganz aus der im Entomologischen Museum der Kaiserlichen Hokkaido Universität in Sapporo aufbewahrten Kollektion.

Hiermit möchte ich Herrn Prof. Dr. S. MATSUMURA, welcher mich bei dieser Arbeit in mancher Weise freundlich angeleitet hat, meinen innigsten Dank aussprechen.

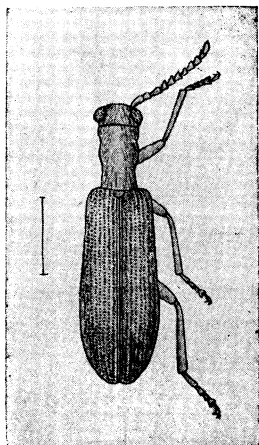


Fig. 1.

Tillus igarashii Kôno

Tillus igarashii n. sp.

♀. Körper gestreckt, spärlich mit langen Haaren bekleidet. Grundfarbe schwarz; Flügeldecken rotbraun; Behaarung braun.

Kopf glatt, fein und sparsam punktiert; Augen mässig grob granuliert, am Vorderrand etwas ausgeschnitten. Fühler vom 3ten Glied an gekämmt; das 2te Glied etwas kürzer als die Hälfte des ersten, das 3te stumpf gesägt, vom 4ten Glied an einfach gekämmt. Halsschild schmal, im basalen Viertel am schmalsten,

hinter dem Vorderrand querfurchig eingedrückt, an den Seiten quer gerunzelt; die Punktierung sehr fein, weitläufig; die Behaarung lang, abstehend. Schildchen quer. Flügeldecken viel breiter als das Halsschild, an den Seiten nach hinten zu allmählich verbreitert, an der Spitze einfach abgerundet; die Punktstreifen bis zum Absturz kräftig, an der Spitze der Decken unregelmässig punktiert; die Behaarung lang, abstehend. Unterseite mässig dicht punktiert und abstehend behaart. Schienen fast gerade.

Körperlänge: 11 mm.

Fundort: Hokkaido (Jozankei, 1 ♀, 3/X. 1928, K. IGARASHI).

***Thanasimus substriatus* GEBLER**

Nov. Mém. Mosc., II, p. 47 (1841).

Diese Art ist bisher nur aus Sibirien bekannt, sie ist aber auch in Korea und Hokkaido verbreitet.

Fundorte: Korea (Taijudong, 2 Ex., V. 1924, EFZEMOFF); Hokkaido (Jozankei, 5 Ex., VII. 1918, Dr. S. MATSUMURA, Berg Oakan, 1 Ex., H. KÔNO).

Sonstiger Fundort: Sibirien.

***Thanasimus karafutonis* n. sp.**

♂, ♀. Diese Art in der Körperform dem *T. substriatus* GEBLER sehr ähnlich, in folgendem davon aber verschieden:

1. Halsschild schwarz oder verdunkelt.
2. Flügeldecken an der Basis schmaler rot gefärbt.
3. Die hintere weisse Haarbebinde der Flügeldecken breiter.
4. Körper kleiner; 7–9,5 mm.

Fundort: Sachalin (Toyohara, 4 Ex., 29/VII. 1914, J. ADACHI u. S. ISSHIKI, Nairo, 6 Ex., 2/VIII. 1924, Y. MURASE, Konuma, 1 Ex., VII. 1927, Y. MIWA u. S. MINOWA).



Fig. 2.

Thanasimus karafutonis

KÔNO

***Pseudoclerops dealbatus* KRAATZ**

Deutsch. Ent. Zeitschr., XXIII, p. 128 (1879).

Die Art ist bisher nur aus Sibirien bekannt. Sie kommt aber auch in Korea vor.

Fundort: Korea (Séoul, 1 Ex., 1/V., E. GALLOIS, Jinsen, 1 Ex., VII. 1920, H. OKAMOTO).

S. F.: Sibirien.

Tenerus hilleri HAROLD

Deutsch. Ent. Zeitschr., XXI, p. 357 (1877).

Diese bisher nur aus Honshu und Formosa bekannte Art ist auch in Shikoku verbreitet.

Fundorte: Honshu (Hagi, nach HAROLD); Shikoku (Awa, 1 Ex., 30/VII. 1913, E. GALLOIS); Formosa (Koshun, 2 Ex., 7/VII. 1906, Dr. S. MATSUMURA).

Tenerus castaneus n. sp.

Diese Art ist durch die Färbung ausgezeichnet.

Färbung vorherrschend rotbraun; Oberseite kastanienbraun, Beine und die Spitze der Flügeldecken gelbbraun. Behaarung braun.

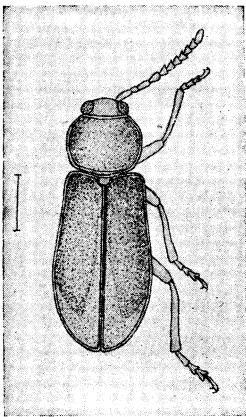


Fig. 3.

Tenerus castaneus

KÔNO

Kopf fein und spärlich punktiert, abstehend behaart; Stirn in der Mitte breit eingedrückt; Augen grob granuliert, abstechend schwarz behaart. Das 2te Fühlerglied klein, etwas länger als breit, das 3te gestreckt, fast so lang wie das erste, von dem 4ten Glied an kräftig gesägt. Halsschild viel breiter als lang, an den Seiten abgerundet, an der Basis scharf gerandet; die Punktierung fein und weitläufig; die Behaarung lang und abstechend. Schildchen dreieckig. Flügeldecken unregelmässig punktiert, ohne deutlichen Längskiel, an der Basis so breit wie das Halsschild, nach hinten zu allmählich verbreitert, an der Spitze gemeinschaftlich abgerundet, Schulterbeule kräftig; die Naht deutlich gerandet; die Behaarung abstechend. Unterseite ziemlich dicht punk-

tiert und abstechend behaart. Schienen gerade.

Körperlänge: 7 mm.

Fundort: Honshu (Chuzenji, 1 Ex., 29/VIII. 1915, E. GALLOIS).

***Corynetes coeruleus* GEER**

Mém. V, p. 163, t. 5, f. 13-14 (1775).

Diese kosmopolitische Art wurde von Herrn Dr. S. MATSUMURA in Formosa erbeutet.

Fundort: Japan (nach LEWIS); Formosa (Koshun, 1 Ex., 9/VII. 1906, Dr. S. MATSUMURA).

S. F.: Kosmopolit.

DIE GEOGRAPHISCHE VERBREITUNG DER IN JAPAN
VORKOMMENDEN *CLERIDEN*

Arten	Fundorte						Sonstige Fundorte
	Karafuto	Hokkaido	Honshu	Shikoku	Kyushu	Taiwan	
FAMILIE CLERIDAE							
Unterfamilie CLERINAE							
Tribus <i>TILLINI</i>							
1. <i>Cylidrus cyaneus</i> FABRICIUS						x	Madagascar, Afrika, Indien, Ozeanien
2. <i>Cladiscus obeliscus</i> LEWIS			x				
3. <i>C. sanguinicolis</i> SPINOLA			x	x			Indien, Andaman
4. <i>C. sauteri</i> SCHENKLING						x	
5. <i>C. terminalis</i> SCHENKLING						x	
6. <i>Tillus birmanicus</i> GORHAM						x	Birma, Assam, China
7. <i>T. igarashi</i> KÔNO		x					
8. <i>T. notatus</i> KLUG					x		Indien, China
9. <i>Gastrocentrum nitidum</i> SCHENKLING						x	Indien, Philippinen
10. <i>G. unicolor</i> WHITE						x	
11. <i>Spinoza coerulea</i> LEWIS			x				
12. <i>Callimerus bicoloripes</i> PIC						x	

Arten	Fundorte	Karafuto	Hokkaido	Honshu	Shikoku	Kyushu	Taiwan	Chosen	Sonstige Fundorte
13. <i>Callimerus nigromarginatus</i> KUWERT							x		Sumbawa
14. <i>C. frasinatus</i> LEWIS			x						
15. <i>C. duodecimpustulatus</i> SCHENKLING							x		
Tribus CLERINI									
16. <i>Opilo difficilis</i> SCHENKLING							x		
17. <i>O. formosanus</i> SCHENKLING							x		
18. <i>O. mollis</i> LINNÉ								x	Kosmopolit
a). f. <i>niponicus</i> LEWIS				x					
19. <i>Orthrius carinifrons</i> SCHENKLING				x			x		
20. <i>O. particularis</i> PIC								x	
21. <i>O. prolongatus</i> SCHENKLING							x		
22. <i>Xenorthrius umbratus</i> SCHENKLING							x		
a). f. <i>simplex</i> SCHENKLING							x		Honkong
23. <i>Thanasimus albomaculatus</i> LEWIS						x			
24. <i>T. formicarius</i> LINNÉ				?				?	Europa
25. <i>T. nigricollis</i> LEWIS				x					
26. <i>T. substriatus</i> GEBLER			x					x	Sibirien
27. <i>T. karafutonis</i> KÔNO		x							
28. <i>Pseudoclerops dealbatus</i> KRAATZ								x	Sibirien
29. <i>Stigmatium diversipes</i> SCHENKLING							x		
30. <i>S. pilosellum</i> GORHAM						x	x		
31. <i>Ommadius nigromaculatus</i> LEWIS						x	x		
32. <i>O. pectoralis</i> SCHENKLING							x		
33. <i>Dasycroclerus ceramboides</i> SCHENKLING							x		Ceylon
34. <i>Anthicoclerus anthicoides</i> WESTWOOD							x		Indien, Ceylon, Sumatra, Neu-Guinea
35. <i>Thaneroclerus aino</i> LEWIS			x						
36. <i>T. pictus</i> LEWIS				x					

Arten	Fundorte	Karafuto	Hokkaido	Honshu	Shikoku	Kyushu	Taiwan	Chosen	Sonstige Fundorte
37. <i>Lyctosoma parallelum</i> LEWIS						x			
38. <i>Neoclerus ornatulus</i> LEWIS			x			x			
39. <i>N. quinquemaculatus</i> GORHAM							x		Birma
40. <i>Trichodes irkutensis</i> LAXMANN		x						x	Galizien, Sibirien, Mongolei
41. <i>T. sinæ</i> CHEVROLAT								x	China
Unterfamilie CORYNETINAE									
Tribus <i>ENOPLIINI</i>									
42. <i>Allochotes dichroa</i> LEWIS				x			x		
43. <i>A. sauteri</i> SCHENKLING							x		
44. <i>A. violaceipennis</i> SCHENKLING							x		
45. <i>Tenerus castaneus</i> KÔNO			x						
46. <i>T. formosanus</i> SCHENKLING							x		
47. <i>T. higonius</i> LEWIS						x	x		
48. <i>T. hilleri</i> HAROLD			x	x		x			
49. <i>T. lewisi</i> LOHDE						x			
50. <i>T. maculicollis</i> LEWIS						x	x		
51. <i>T. signaticollis</i> CASTELNAU							x		Indien, Java
52. <i>Pelonium formosanum</i> SCHENKLING							x		
53. <i>P. lividipenne</i> SCHENKLING							x		
54. <i>P. mundum</i> SCHENKLING							x		
Tribus <i>CORYNETINI</i>									
55. <i>Tarsostenus univittatus</i> ROSSI						x			Kosmopolit
56. <i>Corynetes coeruleus</i> GEER			x			x	x		Kosmopolit
57. <i>Necrobia ruficollis</i> FABRICIUS			x				x		Kosmopolit
58. <i>N. rufipes</i> GEER			x	x		x	x		Kosmopolit
59. <i>N. violacea</i> LINNÉ		x	x	x		x			Kosmopolit
60. <i>Optiopaprus obesus</i> WESTWOOD						x			

摘 要

本文には日本産郭公蟲科の甲蟲數種（内二種は本邦領土内より未記録）の新産地を記し、三新種を記載した。

新種及び未記録種は次の如くである。

<i>Tillus igarashii</i> KÔNO (n. sp.)	イガラシカクコウ（新種）
<i>Thanasimus substriatus</i> GEBLER	アリモドキカクコウ（未記録種）
<i>T. karafutonis</i> KÔNO (n. sp.)	カラフトアリモドキカクコウ（新種）
<i>Pseudoclerops dealbatus</i> KRAATZ	ネアカカクコウ（未記録種）
<i>Tenerus castaneus</i> KÔNO (n. sp.)	クリイロカクコウ（新種）

尙、終りに本邦産郭公蟲科の昆蟲 60 種の分布表を附加した。

NOTES ON MILESINA VOGESIACA SYDOW ON
POLYSTICHUM BRAUNII FÉE AND ITS PERI-
DERMIAL STAGE ON THE NEEDLES OF ABIES
MAYRIANA MIYABE ET KUDO, A. FIRMA SIEB. ET
ZUCC. AND A. SACHALINENSIS MAST.

BY

SENJI KAMEI

(With 3 Text-figures)

ホソキノデに寄生する銹菌 *Milesina vogesiaca* SYDOW
とアヲトドマツ、モミ並にアカトドマツ
の針葉に生ずる其ペリダーミウム時代に就て

龜 井 專 次

Four out of the hitherto described seventeen species belonging to the genus *Milesina* parasitic on the fern-plant have been known to be genetically connected with the aecidiospores on *Abies*.

In 1916, KLEBAHN first proved experimentally the genetic relationship between the teleutospores of *Milesina Blechni* SYDOW on *Blechnum spicant* WITH. and the aecidiospores on *Abies pectinata* DC. and *A. cephalonica* LOUD. Since that time, these connections were also proved in *Milesina marginalis* FAULL et WATSON, *M. Kriegeriana* MAGN. and *M. polypodophila* (BELL) FAULL by FAULL, WATSON and MOSS (1926). In our country, only one species of the genus, *Milesina Scolopendrii* JAAP, was recorded by HIRATSUKA (1927), without any reference on its peridermial stage.

During the past few years the writer has been studying on the life-histories of many species of the Japanese fern-rust-fungi. The present paper was intended to report on the genetic relationship of one species of *Milesina* which was

newly identified of *Milesina vogesiaca* SYD. by the writer.

I. Identification of *Milesina* on *Polystichum Braunii* FÉE

In the vicinity of Sapporo, the writer often collected a rust-fungus on *Polystichum Braunii* FÉE (= *Aspidium Braunii* SPENNER). From the late summer to early winter, the uredosori of the fungus in question are produced abundantly on the under surface of the pinnae and sometimes even on the stipes. They are very minute, roundish and pale yellowish in colour, and the uredospores are formed in white filamentous or powdery masses. These sori are also seen on the overwintered fronds. The affected part is noticed first as a distinct yellowish speckle, and the spot extends gradually over the entire surface of the pinnae. The pseudoperidia of the uredosori are rather stout and the uredospores are oblong-ovoid, ovoid, ellipsoidal or sometimes angular in shape, and hyaline (Fig. 1). The epispore looks as smooth when the spores were mounted in water, but the very minute warts on the wall are observable clearly in a dry state. In our specimens, especially those collected at Mt. Moiwa in the early winter, the writer found many teleutospores inside the epidermal cells of both surfaces of the discoloured pinnae. The teleutospores are mostly divided into two to five cells by the vertical septation and rarely one-celled (Fig. 2). After the careful review of the literature, the writer noticed that the fungus in question is the species, apparently identical to *Milesina vogesiaca* SYDOW parasitic on the pinnae of *Aspidium lobatum* Sw. in Germany. In the original description, SYDOW (1915) wrote that the uredospores of this species are smooth and the description of the teleutospores is incomplete because he failed to observe the fully matured ones. However, it is very interesting to note that the specimen of *Milesina vogesiaca*, which was distributed by SYDOW as No. 2345 of Exsiccati Uredineen, has the uredospores with very minutely verrucose wall which is clearly observable in a dry state as in our fungus. By the discovery of the fact, any difference could not be noticed between the uredostages of both fungi as shown in the following table. Moreover, the close affinity of the host plants, *Aspidium lobatum* Sw. and *Polystichum* {*Braunii* FÉE (= *Aspidium Braunii* SPENNER), places a great stress on the identity of both fungi,

although the comparison of the teleutospores is not capable by the incomplete description of German species. Finally, the writer came to the conclusion that the present fungus on *Polystichum Braunii* FÉE is the same species to *Milesina vogesiaca* SYDOW.

Table 1. Comparison of the fungus in question to *Milesina vogesiaca* SYDOW

	<i>Milesina vogesiaca</i> of Germany	Fungus in question
Uredosori	0.1–0.15 mm.	0.1–0.25 mm.
Pseudoperidial cells of uredosori	10–14 × 11–20 μ .	7.5–15 × 11–20.5 μ .
Uredospores	Ellipsoidal, ovoid or oblong, often angular; 15–22 × 20–40, rarely 50 μ .	Oblong-ovoid, ovoid, ellipsoidal or sometimes angular; 15–22.5 × 20–41, rarely 48 μ .
Teleutospores	Many celled, developed in the epidermal cells	Mostly 2–5 celled, developed in the epidermal cells; 15–22 × 15–55.5 μ .
Host plant	<i>Aspidium lobatum</i> Sw.	<i>Polystichum Braunii</i> FÉE (= <i>Aspidium Braunii</i> SPENNER).

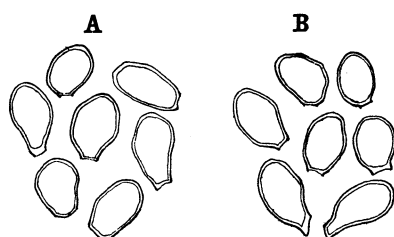


Fig. 1

Uredospores of *Milesina vogesiaca*
SYDOW ($\times 320$)

- A. on *Aspidium lobatum* Sw. (German specimen)
B. on *Polystichum Braunii* FÉE (Japanese specimen)

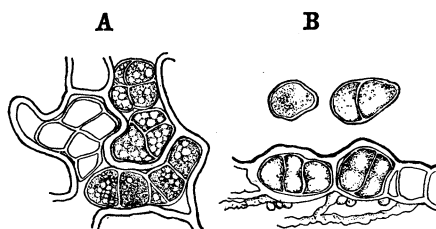


Fig. 2

Teleutospores of *Milesina vogesiaca*
SYDOW ($\times 320$)

- A. Upper view
B. Side view

II. Inoculation-experiments

A. *Experiments with the teleutospores.* As the inoculum, many, heavily affected pinnae of *Polystichum Braunii* FÉE were collected in the fall from a small valley about half way up of Mt. Moiwa near Sapporo and they were hanged on the shady outer wall of the laboratory, inclosing them in a cotton

bag. Just before the opening of fir-buds in the next spring several bits of the pinnae were taken out and placed in a Petri-dish which was beforehand lined with a moistened filter paper. Two or three days after, as soon as the basidia began to appear on the surface of the discoloured pinnae, the inoculation experiments were conducted. The basidia thus obtained are about $50 \times 7\mu$ in size and the basidiospores are about $8 \times 6\mu$. The inoculum was merely placed upon the needles of the potted fir-seedling which was sprayed thoroughly with water and covered with a bell glass. Two or three days after, the treated pot was transferred from the bell glass to a cool place and well watered every day. The inoculation-experiments were conducted repeatedly during five years, using some of three species of Japanese fir; *Abies Mayriana*, *A. firma* and *A. sachalinensis*, which were cultivated in the college nursery where any fear about the preinfection is sufficiently useless. The results of the experiments are shown in the following table.

Table 2. Results of the inoculation experiments with the sporidia of *Milesina vogesiaca* on *Polystichum Braunii* FÉE

Plants inoculated	Date of inoculation	Duration from inoculation to appearance of spermagonia (days)	Duration from inoculation to appearance of peridermia (days)	Remarks
<i>Abies Mayriana</i> IV ₄	May 21 1924	—	—	Experimented in a glass house
" " XIII ₄	June 4 "	20	28	"
" " XXII ₄	June 20 "	—	—	"
" " XVI ₅	June 6 1925	17	24	In outdoor
" " III ₆	June 7 1926	19	—	In a laboratory-room
" " XXI ₆	June 17 "	20	—	"
" " XXVI ₆	June 24 "	—	—	"
" " VIII ₈	May 30 1928	14	21	"
" " V ₉	June 4 1929	13	21	In outdoor
<i>A. sachalinensis</i> III ₅	June 7 1925	—	—	"
" " III ₆	June 6 1926	20	—	"

Plants inoculated	Date of inoculation	Duration from inoculation of appearance of spermagonia (days)	Duration from inoculation to appearance of peridermia (days)	Remarks
<i>A. sachalinensis</i> IV ₆	June 12 1926	—	—	In outdoor
<i>A. firma</i> III ₅	June 12 1925	—	—	"
" " I ₆	June 17 1926	14	27	In a laboratory-room

As shown in the above table, four seedlings of *Abies Mayriana* and one seedling of *Abies firma* were infected and produced both spermagonial and peridermal stages, while one of *Abies sachalinensis* and two of *Abies Mayriana* produced spermagonia only. An indication of the successful infection could be noticed in ten to fourteen days after inoculation by the production of the drops of honey-like juice from the spermagonia, scattered on the yellowish, discoloured spots of the needles. The peridermia appear usually at least three weeks after inoculation.

B. *Experiments with the aecidiospores.* To determine the return infection two experiments with the aecidiospores were conducted. In the first experiment, the inoculum was smeared directly on the under-surface of a pinna of a potted *Polystichum Braunii* FÉE with a sterile needle and the pot was covered with a bell glass. After a few days, the inoculated plant was transferred from the bell glass to a cool place. After seventeen days from the inoculation, several uredopustules were developed.

In the second experiment, the aecidiospores were transferred on a fresh pinna which was

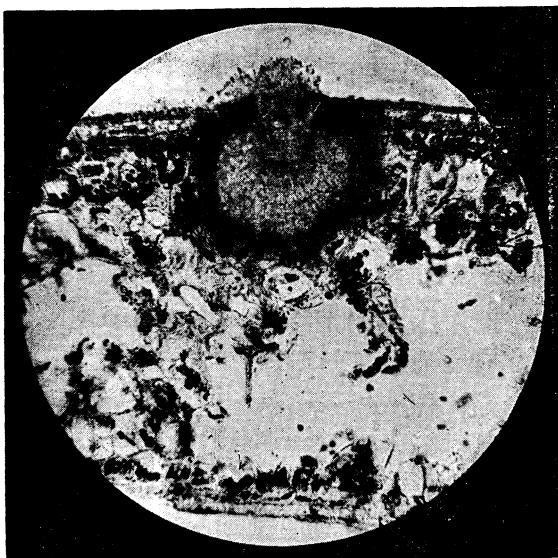


Fig. 3

Section of a spermagonium of *Milesina vogesiaca* SYDOW on the current year needle of *Abies firma*.
($\times 170$)

cut off from the host plant and laid on a moistened filter paper in a Petri-dish. After two weeks, the uredosori came out on the surface. Under the microscope, the writer proved that the uredospores gained in these experiments are the same to those collected in the field.

Table 3. Results of the inoculation experiments with the aecidiospores.

Inoculation material	Date of inoculation	Duration of appearance of uredosori (days)
Aecidiospores on <i>Abies Mayriana</i> XIII ₄	July 22 1924	17
" " on <i>Abies firma</i> I ₈	Aug. 27 1926	13

III. Description of the peridermial stage of *Milesina vogesiaca* SYDOW

Milesina vogesiaca SYDOW

Spermagonia amphigenous, mostly hypophyllous, inconspicuous, irregularly sparsed on yellowish discoloured spots, mostly on both sides of the midrib, at first honey-yellow, then reddish brown, subcuticular, immersed, in section depressed spherical to almost spherical, 122–177.5 μ in width, 111–163 μ in height; spermatophores simple, more or less straight, septate, obclavate; spermatia oblong, with rounded or truncate ends, smooth, hyaline, 5–7 $\times$ 1.5–2 μ .

Peridermia from a limited mycelium, hypophyllous, arranged in two rows, white, cylindrical, 0.25 mm. wide, 0.5 mm. high, ruptured at the apex, deeply seated; peridial wall colourless; cells mostly rhomboid or elongated hexagonal, overlapping, 14–22 $\times$ 26–33 μ , inner wall thick, coarsely verrucose, outer thin, smooth; aecidiospores globoid to ellipsoidal, 14–22.5 $\times$ 18–24 μ , mostly 18 $\times$ 21 μ , wall thin, 1.5–2.5 μ thick, verruculose, with hyaline contents, germ-pores inconspicuous.

On the current year needles of *Abies Mayriana* MIYABE et KUDO, *Abies firma* SIEB. et ZUCC. and *Abies sachalinensis* MAST. formed by the inoculation of the sporidia of *Milesina vogesiaca* SYDOW on *Polystichum Braunii* FÉE collected at Mt. Moiwa near Sapporo, Prov. Ishikari.

Finally, the writer wishes to express his sincere gratitude to Professor Emeritus Dr. K. MIYABE and Prof. S. ITO for their kind direction and to Prof. Y. TOCHINAI for his courtesy of reading the original draft of the manuscript. He is also indebted to Prof. Y. NIJIMA who has favoured him for the use of the seedlings cultivated in the college nursery.

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摘 要

羊齒植物に寄生する銹菌が其銹子腔時代をモミ屬の針葉に生じ、異株寄生生活をなす事は既に知らるゝ所なるも、ミレシナ屬に於ては KLEBAHN 氏が初めて *Milesina Blechni* SYDOW に就きて此關係を證明せる以來、今日迄只四種の菌につきて報告せられたるに止り、吾國に於ては未だ之れに關する何等の記事なし。

著者は北海道に自生するモミ屬の針葉に發生する、ペリターミウム並に之れが下草として生ぜる羊齒類に寄生する銹菌との關係に興味を感じ、之れが研究を爲しつゝある間に、ミレシナ屬の種類に就きて亦調査を爲し、聯か得る所ありたり。本報告は其一部にして *Milesina vogesiaca* SYDOW に關する種類鑑定、生活史並にペリターミウム時代の性質に於て、新たに知り得たる所を記述せるものなり。

札幌附近に産するホソキノデ (*Polystichum Braunii* FÉE) に發生する銹菌は、其夏孢子時代諸性質の酷似 (第一表参照) 並に寄主植物の近縁なることに由りて、獨逸 HOHNECK にて *Aspidium lobatum* SW. に寄生せる前記の種類と同一なりと決定せり。同菌に關し SYDOW 氏は其夏孢子の膜が恰かも、ウレテイノブシス屬の種類の如く平滑に見ゆること並に完全なる冬孢子を観察し得られざりしを報ぜり。本邦産ホソキノデの場合にありては、冬孢子は寄主植物の表皮細胞内によく發達し、其夏孢子の膜は乾ける儘に檢鏡する時には一面に極く微細なる疣狀突起を有せり。但し SYDOW 氏の配布せる標本集中の本菌に於ても同様な疣狀突起を有するを認め、益々彼我同一菌たるを確かめ得たり。次に冬孢子の發芽によりて生ずる小生子の接種試験を爲し、生活史の追究を試みたるにアサトドマツ、モミ、アカトドマツの一年目の針葉に各々ペリターミウム時代を生じ、又此試験に由りて得たる銹孢子を逆にホソキノデの羽片に接種するときは、野外に生ずるものと同一の夏孢子を生じたるが故に、茲に明かに本種の生活史を闡明することを得たり。尙ほ第一圖 A はホソキノデに生ぜる夏孢子、B は獨逸産標本の夏孢子、第二圖 A は冬孢子を寄主植物の表皮を透して上より見たる圖、B は其斷面圖、第三圖はモミ I_0 の一針葉に生ぜる一雄精器の斷面圖なりとす。

ON THE HABITS OF A WOLFSPIDER

BY

SABURO SAITO

(With three figures)

ウツキドクグモの習性に就いて

齋藤三郎

Lycosa T-insignita, thus far recorded from Japan proper, is also very common in Hokkaido. This is one of the hunting spiders belonging to *Lycosidae* of moderate size, measuring about 7-8 mm. in body length. The description of the spiders is as follows: The cephalothorax is light ashy-gray in colour; a blackish brown stripe on each side of it runs anteriorly to join before the eye; a wide blackish line borders the margin of the thorax; the median band which is narrower than the dark bands just referred to has an anterior termination of reddish brown colour at the cephalic portion. The abdomen has the same colouration as the cephalothorax and it is marked with a series of spots of light colour arranged in pairs on both sides of the median line (Fig. 1).

The spider appears in the field in early May of the year and runs about actively chasing its prey in sunny places. Last season I collected it even as early as the 8th of May, several days after the last snow-fall.

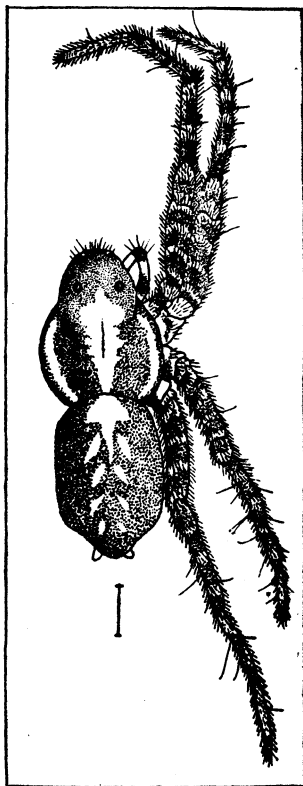


Fig. 1.

The breeding seasons of the spider lasts from the end of June to the end of September. At this period we see the female carrying a round egg-sac (cocoon) of gray colour with their spinnerets. The copulation takes place mainly in



Fig. 2.

the evening. First, the male runs around the female, then comes near to the female and at another moment he quickly leaves the female. The motion is repeated several times until the female stops moving. The male still runs around the female for a while and finally catches hold of the female. At this time the injection of the sperm into the epigyna occurs by aid of the palpus (Fig. 2). The manner differs greatly from the copulation of the other spiders as it was already noted by T. H. SAVORY (1928).

The egg-sac which is made by the female for the egg-laying is spherical in shape consisting of two valves which are connected by a delicate suture. After depositing the eggs, the number of which varies from 30 to 60, the female carries the sac with her until the hatching of the young. After hatching, the young in turn attach to the body of the mother and are carried about for a considerable time.

I. ONO (1913) and H. NIWA (1928) also observed the same fact.

This species never digs tunnels in the ground for nests as many other species of Lycosidae do but it lives in the natural cracks in the field, making poor irregular nets at the entrance (Fig. 3).



Fig. 3.

Whatsoever, the web, as it seems, it would serve just to protect the nest.

Different from the common spiders, which shun the sun-light except some species of Misumeninae, this kind of spider catches its prey mostly in the

daytime. The prey consists of small animals of various kinds. Last July in my laboratory a male and female of this spider were raised in a glass-bottle. As prey, nine flies were given and observed. One fly was killed in the evening of the day of the experiment. Two days later two flies were caught in the evening. On the morning of the next day the fourth fly was eaten. In the afternoon of the same day two more flies were captured. In the following day three flies were found killed also in the afternoon. In the evening of the 7th day the male spider was killed by the female. From the above experiment I ascertained that most of the flies were killed in the daytime excepting two in the evening of the third day. However, the spider could not hunt the grouse locust, *Tettix japonicus*, the cricket or other kinds of spiders given as the prey in the experiment.

The active period of this spider is relatively longer than that of the other spiders. Therefore it is not infrequent that in Hokkaido we see the spider hunting prey in the field even at the end of October.

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摘 要

Lycosa T-insignita BOESENBERG et STRAND は廣く本邦に分布し、札幌近郊に最も普通なドクゲモの一種にして、五月上旬残雪中に活動を初め、他の蜘蛛殊に黄金蜘蛛科に於けると異り、日光を嫌はず、殆んど日中活動す。生殖は六月下旬より九月下旬に互り行はれ、交尾は雄の腮鬚によつて精液を雌の生殖門に注射す。卵囊は雌虫の紡績突起に附着されて運搬され、孵化するに及び、仔虫は暫時母虫の背に止り、行動を共にす。故に一名子守蜘蛛の名あり。ドクゲモ科の多くの者と異り、隧道を堀らざるも、秋季龜裂中に生活し、貧弱な不規則な網を張る。活動期間一般の蜘蛛に比して長く、北海道に於て十月末にも尙採集さる。

NOTES ON PLANTS OF THE WESTERN ALEUTIAN ISLANDS COLLECTED IN 1929 (I)

BY

MISAO TATEWAKI

西部アリウシアン群島植物雜記 (其一)

館 脇 操

Polypodiaceæ.

1. *Cystopteris fragilis* BERNH. in Schrad. Neu. Journ. Bot. I. 2. p. 26, (1806); MIYABE. Fl. Kuril. p. 274, (1890); MACOUN, List Pl. Pribilof Isl. p. 575, (1899); MACOUN & HOLM, Rep. Canad. Arc. Exp. V. Bot. p. 7, (1921); HULT. Fl. Kamtchat. I. p. 29, (1927); MIYABE & KUDO, Fl. Hokkaido & Saghal. I. p. 7, (1930).

Hab. On rocky cliffs: Nazan, Isl. Atka. (n. 14304; n. 14436; n. 14530); Constantine, Isl. Amchitka. (n. 14614); Chichagof, Isl. Attu. (n. 14801).

2. *Dryopteris oreopteris* MAXON, in Proc. U. S. Nat. Mus. XXIII. p. 336, (1901); C. Chr. Ind. Fil. p. 281, (1906).

var. *Fauriei* MIYABE et KUDO, in Trans. Sapporo Nat. Hist. Soc. VI. p. 119, (1916); KUDO, Fl. Isl. Paramushir, p. 59, (1922); HULT. Fl. Kamtchat. I. p. 34, (1927); MIYABE & KUDO, Fl. Hokkaido & Saghal. I. p. 11, (1930).

Hab. In herbaceous places: Chichagof, Isl. Attu. (n. 14733).

3. *Dryopteris dilatata* A. GRAY, Man. p. 631, (1848); KUDO, Fl. Isl. Paramushir, p. 59, (1922); MIYABE & KUDO, Fl. Hokkaido & Saghal. I. p. 17, (1930).

Dryopteris spinulosa KUNTZE, var. *dilatata* UNDERW.: MACOUN, List Pl. Pribilof Isl. p. 578, (1899).

[Transact. Sapporo Nat. Hist. Soc. Vol. XI, Pt. 3, 1930]

Hab. In herbaceous places or on lake-sides: Chichagof, Isl. Attu. (n. 14008); Nazan, Isl. Atka. (n. 14312); Constantine, Isl. Amchitka. (n. 14546).

4. *Dryopteris Linnaeana* C. CHR. Ind. Fil. p. 275, (1906); HULT. Fl. Kamtchat. I. p. 33, (1927); MIYABE & KUDO, Fl. Hokkaido & Saghal. I. p. 19, (1930).

Hab. In herbaceous places: Chichagof, Isl. Attu. (n. 14198; n. 14249); Nazan, Isl. Atka. (n. 14670); Constantine, Isl. Amchitka. (n. 14687).

5. *Dryopteris Phegopteris* C. CHR. Ind. Fil. p. 284, (1906); KUDO, Fl. Isl. Paramushir, p. 60, (1922); HULT. Fl. Kamtchat. I. p. 36, (1927), (var. *cruciata*); MIYABE & KUDO, Fl. Hokkaido & Saghal. I. p. 18, (1930).

Phegopteris polypodioides FÉE: MACOUN, List Pl. Pribilof Isl. p. 575, (1899).

Hab. In herbaceous places: Nazan, Isl. Atka. (n. 14371); Constantine, Isl. Amchitka. (n. 14682).

6. *Polystichum lonchitis* ROTH, in Röm. Mag. II. 1. p. 106, (1799); C. CHR. Ind. Fil. p. 584, (1906); HULT. Fl. Kamtchat. I. p. 39, (1927).

Hab. On rocky cliffs: Chichagof, Isl. Attu. (n. 14787).

7. *Athyrium filix-femina* ROTH, in Röm. Mag. II. 1. p. 106, (1799); Butters, in Rhodora, XIX. p. 197, (1917); KUDO, Fl. Isl. Paramushir, p. 60, (1922); HULT. Fl. Kamtchat. I. p. 40, (1927); MIYABE & KUDO, Fl. Hokkaido & Saghal. I. p. 28, (1930).

Hab. In herbaceous places: Chichagof, Isl. Attu. (n. 14082; 14124); Nazan, Isl. Atka, (n. 14369; n. 14459); Constantine, Isl. Amchitka. (n. 14542).

8. *Cryptogramme crispa* R. BR. in Frankl. Narr. Journ. p. 767, (1823); C. CHR. Ind. Fil. p. 187, (1906); MIYABE & KUDO, Fl. Hokkaido & Saghal. p. 36, (1930).

Hab. On rocky cliffs: Chichagof, Isl. Attu. (n. 14096; n. 14791).

9. *Polypodium vulgare* L. Sp. Pl. ed. 1. p. 32, (1753); BONG. Vég. Sitcha, p. 175, (1833); MIYABE, Fl. Kuril. p. 274, (1890); HULT. Fl. Kamtchat. I. p. 44; MIYABE & KUDO, Fl. Hokkaido & Saghal. p. 39, (1930).

var. *commune* MILDE, Fl. Eu. Atl. 18, (1867); Fernald, in Rhodora,

XXIV. p. 137, (1922).

Hab. On rocky cliffs: Chichagof, Isl. Attu. (n. 14155; n. 14782).

Equisetaceæ.

10. *Equisetum arvense* L. Sp. Pl. ed. 1. p. 1061, (1753); MIYABE, Fl. Kurile. p. 273, (1890); MACOUN, List Pl. Pribilof Isl. p. 575, (1899); YABE & YENDO, Pl. Isl. Shumushu, p. 173, (1904); OSTENFELD, Vas. Pl. Arc. N. Am. p. 31, (1910); MACOUN & HOLM, Rep. Canad. Arc. Exp. V. Bot. p. 7, (1921); KUDO, Fl. Isl. Paramushir, p. 60, (1922); HULT. Fl. Kamtchat. I. p. 50, (1927); MIYABE & KUDO, Fl. Hokkaido & Saghal. p. 45, (1930).

Hab. In wet places: Chichagof, Isl. Attu. (n. 14066); Nazan, Isl. Atka. (n. 14358; n. 14442); Constantine, Isl. Amchitka. (n. 14570; n. 14665).

11. *Equisetum variegatum* SCHLEICH. Cat. Pl. Helv. p. 27, (1807); MACOUN, List Pl. Pribilof Isl. p. 575, (1899); Ostenfeld, Vas. Pl. Arc. N. Am. p. 3, (1910); MACOUN & HOLM, Rep. Canad. Arc. Exp. V. Bot. p. 71, (1921); HULT. Fl. Kamtchat. I. p. 56, (1927); MIYABE & KUDO, Fl. Hokkaido & Saghal. p. 50, (1930).

Hab. Along streams or in bogs: Nazan, Isl. Atka. (n. 14306; n. 14441; n. 14492; n. 14528).

Lycopodiaceæ.

12. *Lycopodium Selago* L. Sp. Pl. ed. 1. p. 1102, (1753); MACOUN, List Pl. Pribilof Isl. p. 575, (1899); YABE & YENDO, Pl. Isl. Shumushu, p. 172, (1905); TAKEDA, in Tokyo Bot. Mag. XXIII. p. 203, (1909); MACOUN & HOLM, Rep. Canad. Arc. Exp. V. Bot. p. 7, (1921); HULT. Fl. Kamtchat. I. p. 61, (1927); MIYABE & KUDO, Fl. Hokkaido & Saghal. p. 51, (1930).

Hab. In heaths and bogs: Chichagof, Isl. Attu. (n. 14054; n. 14241; n. 14157; n. 14741); Nazan, Isl. Atka. (n. 14449); Constantine, Isl. Amchitka. (n. 14584).

13. *Lycopodium obscurum* L. Sp. Pl. ed. 1. p. 1102, (1753); TAKE-DA, in Tokyo Bot. Mag. XXIII. p. 211, (1909); HULT. Fl. Kamtchat. I. p. 61, (1927).

form. *juniperoideum* TAKEDA, l. c. p. 213; MIYABE & KUDO, Fl. Hokkaido & Saghal. p. 55, (1930).

Hab. In heaths: Chichagof, Isl. Attu. (n. 14262).

14. *Lycopodium annotinum* L. Sp. Pl. ed. 1. p. 1103, (1753); BONG. Vég. Sitcha, p. 174, (1833); MIYABE, Fl. Kuril. p. 272, (1890); MACOUN, List Pl. Pribilof Isl. p. 575, (1899); YABE & YENDO, Pl. Isl. Shumushu, p. 172, (1904); HULT. Fl. Kamtchat. I. p. 57, (1927).

var. *latifolium* TAKEDA, in Tokyo Bot. Mag. XXIII. p. 215, (1909); KUDO, Fl. Isl. Paramushir, p. 64, (1922); MIYABE & KUDO, Fl. Hokkaido & Saghal. p. 56, (1930).

Hab. In heaths: Chichagof, Isl. Attu. (n. 14235).

var. *pungens* DESV. Prodr. Fil. n. 36; MACOUN, Pl. Pribilof Isl. p. 575, (1899); TAKEDA, l. c. p. 217; MIYABE & KUDO, l. c. p. 57.

Hab. In heaths and bogs: Chichagof, Isl. Attu. (n. 14141; n. 14169); Nazan, Isl. Atka. (n. 14446); Constantine, Isl. Amchitka. (n. 14639; n. 14677).

15. *Lycopodium clavatum* L. Sp. Pl. ed. 1. p. 1101, (1753); MIYABE, Fl. Kuril. p. 272, (1899); YABE & YENDO, Pl. Isl. Shumushu, p. 172, (1904); TAKEDA, in Tokyo Bot. Mag. XXIII. p. 218, (1909); KUDO, Fl. Isl. Paramushir, p. 65, (1922); HULT. Fl. Kamtchat. I. p. 59, (1927).

var. *robustius* NAKAI, in Tokyo Bot. Mag. XXXIX. p. 197, (1927); MIYABE & KUDO, Fl. Hokkaido & Saghal. p. 58, (1930).

Hab. In herbaceous places and bogs: Chichagof, Isl. Attu. (n. 14046; n. 14100; n. 14819); Nazan, Isl. Atka. (n. 14503).

16. *Lycopodium sitchense* RUPR. Beitr. Pflanzenk. Russ. Reich. III. p. 30, (1845); TAKEDA, in Tokyo Bot. Mag. XXIII. p. 221, (1909); HULT. Fl. Kamtchat. I. p. 62, (1927); MIYABE & KUDO, Fl. Hokkaido & Saghal. p. 59, (1930).

Hab. In heaths and bogs: Chichagof, Isl. Attu. (n. 14003; n. 14259; n. 14772).

17. *Lycopodium alpinum* L. Sp. Pl. ed. 1. p. 1104, (1753); BONG. Vég. Sitcha, p. 175, (1833); MACOUN, List Pl. Pribilof Isl. p. 575, (1899); YABE

YENDO, Pl. Isl. Shumushu, p. 172, (1904); TAKEDA, in Tokyo Bot. Mag. XXIII. p. 22, (1909); KUDO, Fl. Isl. Paramushir, p. 64, (1922); HULT. Fl. Kamtchat. I. 56, (1927); MIYABE & KUDO, Fl. Hokkaido & Saghal. p. 61, (1930).

Hab. In heaths and bogs: Chichagof, Isl. Attu. (n. 14022; n. 14109; n. 14267; n. 14724); Nazan, Isl. Atka. (n. 14453); Constantine, Isl. Amchitka. (n. 14640).

Isoetaceæ.

18. *Isoetes lacustris* L. Sp. Pl. ed. 1. p. 1100, (1753); TAKEDA, in Tokyo Bot. Mag. XXIII. p. 239, (1909); PFEIFFER, Monogr. Isoetac. p. 186, (1922); MIYABE & KUDO, Fl. Hokkaido & Saghal. p. 66, (1930).

Hab. In ponds: Constantine, Isl. Amchitka. (n. 14544).

— [To be continued.] —

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摘 要

1929年の六月下旬より七月中旬にかけ、アリユウシアン群島、アツツ島、アムチトカ島、アトカ島に航するを得、約 800 の標本を得たり。著者はそのうちこゝに隠花植物十八種を抄録せり。以後機会ある毎に断片的に發表すべし。

本論を草するに當り、宮部博士の御指導並びに伊藤教授の御助言、及び行を共にし助力せられたる高橋喜久司氏に深厚なる謝意を表す。

ADDITIONAL LIST OF THE FUNGI COLLECTED IN THE ISLANDS OF RISHIRI AND REBUN, HOKKAIDO

BY

MUTSUO TERUI

利尻、禮文兩島に於ける菌類採集目錄補遺

照井陸奥生

In 1924, K. TOGASHI published a list entitled "Fungi Collected in the Islands of Rishiri and Rebun, Hokkaido" in the Japanese Journal of Botany Vol. II, No. 2, and he enumerated 139 species including 8 new species.

In the last summer, the writer spent a few days for the purpose of the collection of the fungi in the Islands of Rishiri and Rebun with Messrs. K. FUJITA, Y. TOKUNAGA and M. SAKAMOTO. In the excursion, we collected 35 species of the parasitic fungi which were unrecorded by TOGASHI in the above mentioned list.

Among them 1 species of *Puccinia* and 1 species of *Peronospora*, viz., *Puccinia sibirica* and *Peronospora Kochiae*, are new to Japan and 1 species of *Puccinia* which is parasitic on *Adenophora verticillata* seems to be new to science.

The present short paper was intended to supplement the TOGASHI's list by his sincere recommendation.

1. *Cladochytrium Krugerianum* (MAGN.) FISCH.

Hab. On leaves and petioles of *Cnidium ajanense* DRUDE (*Chishima-ninjin*)
Rebun-Island:—Momoïwa, July, 17, 1930.

2. *Albugo candida* (PERS.) KUNTZE

Hab. On leaves of *Arabis Stelleri* DC. var. *japonica* FR. SCHM. (*Hamahatazao*)

Rishiri-Island :—Otatomari, July, 14, 1930.

3. *Albugo Tragopogonis* (PERS.) S. F. GRAY

Hab. On leaves of *Senecio pseudo-Arnica* LESS. (*Yezo-oguruma*)

Rishiri-Island :—Otatomari, July, 14, 1930.

4. *Basidiophora entospora* ROZE et CORNU

Hab. On leaves of *Erigeron canadensis* PERS. (*Hime-mukashiyomogi*)

Rishiri-Island :—Otatomari, July, 14, 1930.

5. *Peronospora alta* FÜCK.

Hab. On leaves of *Plantago kamtschatica* LINK. (*Yezo-ōbako*)

Rishiri-Island :—Otatomari, July, 14, 1930.

6. *Peronospora Kochiae* GÄUM.

Hab. On leaves of *Kochia scoparia* SCHRAD. (*Hahaki-gusa*)

Rishiri-Island :—Oniwaki, July, 15, 1930.

7. *Plasmopara nivea* SCHROET.

Hab. On leaves of *Osmorhiza aristata* MAK. et YABE (*Yabu-ninjin*)

Rishiri-Island :—Otatomari, July, 14, 1930.

8. *Rhytisma salicinum* (PERS.) FR.

Hab. On leaves of *Salix Reinii* FRANCH. et SAV. (*Mine-yanagi*)

Rebun-Island :—Momoïwa, July, 17, 1930; Rishiri-Island :—Mt. Rishiri, July, 15, 1930.

9. *Cintractia Caricis* (PERS.) P. MAGN.

Hab. On inflorescences of *Carex blepharicarpa* FRANCH. (*Shōjō-suge*)

Rishiri-Island :—Mt. Rishiri, July, 15, 1930.

10. *Ustilago striaeformis* (WESTENDORP) NIESSL.

Hab. On leaves and stems of *Phleum pratense* L. (*Ô-awagaeri*)

Rishiri-Island :—Oatomari, July, 14, 1930.

11. *Chrysomyxa Ledi* DE BARY

Hab. On leaves of *Ledum palustre* L. var. *yessoense* NAKAI (*Yezo-isotsutsuji*)

Rishiri-Island :—Oatomari, July, 14, 1930.

12. *Pucciniastrum Potentillae* KOM.

Hab. On leaves of *Potentilla fragarioides* L. (*Kijimushiro*)

Rebun-Island :—Momoïwa, July, 16, 1930.

13. *Phragmidium Rubi-japonici* KASAI

Hab. On leaves of *Rubus pseudo-japonicus* KOIDZ. (*Hime-goyôichigo*)

Rishiri-Island :—Mt. Rishiri, July, 15, 1930.

14. *Puccinia Adenophorae-verticillatae* S. ITO et TERUI n. sp.

Teleutosori amphigenous, mostly hypophyllous, scattered, round, 1–2 mm. in diameter, sometimes confluent along the nerves of the leaf, covered for a

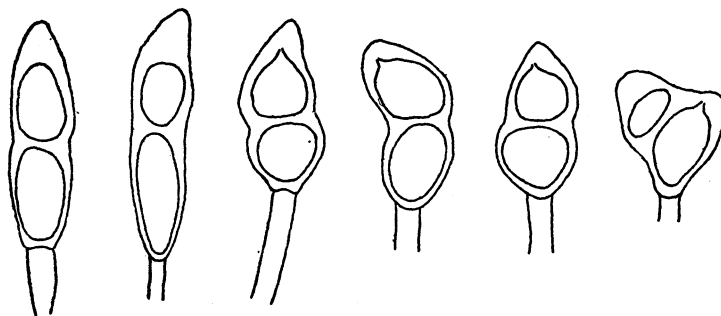


Fig. 1

Puccinia Adenophorae-verticillatae
S. ITO et TERUI
(× 580)

long time by the epidermis, then naked, surrounded by the torn epidermis, blackishbrown; teleutospores ellipsoidal, oblong or clavate, rounded or at-

tenuated at both ends, more or less constricted at the septum, apex thickened (8–10.5 μ), smooth, chestnut-brown, 26–58 $\times$ 13–26 μ , rarely 64 μ in length; pedicels hyaline, persistent, as long as the spores or shorter.

Hab. On leaves of *Adenophora verticillata* FISCH. var. *typica* REGEL (*Tsurigane-ninjin*)

Rebun-Island:—Momoïwa, July, 18, 1930.

Remarks. The present fungus is easily distinguishable from *Puccinia Campanulae* by its longer and wider teleutospores.

15. *Puccinia Adoxae* HEDW.

Hab. On leaves and petioles of *Adoxa Moschatellina* L. (*Rempukusô*)

Rishiri-Island:—Mt. Rishiri, July, 15, 1930.

16. *Puccinia Arenariae* (SCHUM.) WINT.

Hab. On leaves of *Moehringia lateriflora* FENZL. (*Ôyama-fusuma*)

Rebun-Island:—Momoïwa, July, 16, 1930.

17. *Puccinia Caricis* (SCHUM.) REB.

Hab. On leaves of *Carex scita* MAXIM. (*Mashike-suge*)

Rishiri-Island:—Mt. Rishiri, July, 15, 1930.

On leaves of *Urtica dioica* L. var. *platyphylla* WEBB. (*Ôba-irakusa*)
Rishiri-Island:—Mt. Rishiri, July, 15, 1930.

18. *Puccinia Circaeae* PERS.

Hab. On leaves of *Circaea alpina* L. (*Miyama-tamitade*)

Rebun-Island:—Momoïwa, July, 16, 1930.

19. *Puccinia Phragmitis* (SCHUM.) KOERN.

Hab. On leaves of *Rumex obtusifolius* L. (*Yezo-no-gishigishi*)

Rishiri-Island:—Oatomari, July, 14, 1930.

20. *Puccinia Poarum* NIELS.

Hab. On leaves of *Petasites japonicus* MIQ. var. *giganteus* MAK. (*Ô-buki*)

Rishiri-Island :—Oniwaki, July, 14, 1930.

21. *Puccinia punctata* LINK

Hab. On leaves and stems of *Galium verum* L. var. *typicum* MAXIM.
(*Kibana-no-kawara-matsuba*)

Rishiri-Island :—Oatomari, July, 14, 1930.

22. *Puccinia sessilis* SCHNEID.

Hab. On leaves of *Orchis aristata* FISCH. (*Hakusan-chidori*)

Rishiri-Island :—Mt. Rishiri, July, 15, 1930.

23. *Puccinia sibirica* TRANZSCH.

Hab. On leaves of *Polygonum polymorphum* LEDEB. var. *ajanense* REGEL
et TIL. f. *pilosum* TAKEDA (*Hosoba-ontade*)

Rebun-Island :—Momoïwa, July, 17, 1930.

Remarks. There is no record on the occurrence of this fungus in Japan and the character of this fungus is as follows:—

Uredosori hypophyllous, scattered, round, $1/4-1/2$ mm. in diameter, cinnamon-brown; uredospores globoid, subgloboid or ellipsoidal, $22-28 \times 18-24 \mu$, wall subhyaline, echinulate; teleutosori hypophyllous, scattered, round, $1/4-1/2$ mm. across, early naked, blackish-brown; teleutospores ellipsoidal, oblong or subgloboid, mostly rounded at both ends, not or slightly constricted at the septum, not thickened above, more or less verruculose, brown, $24-32 \times 18-22.5 \mu$, germ-pore of the upper cell at the apex or just above the septum, that of the lower just below the septum; pedicels hyaline, deciduous.

24. *Puccinia Sonchi* (ROB.) DESMAZ.

Hab. On leaves of *Sonchus arvensis* L. var. *uliginosus* TRAUTV. (*Hachijô-na*)

Rishiri-Island :—Oatomari, July, 14, 1930.

25. *Puccinia Taraxaci* PLOWR.

Hab. On leaves of *Taraxacum platycarpum* DEHLST. (*Tampopo*)

Rishiri-Island :—Oatomari, July, 14, 1930.

26. *Puccinia triticina* ERIKS.

Hab. On leaves of *Thalictrum minus* L. var. *elatum*. LECOY. (*Aki-karamatsu*)

Rishiri-Island :—Otatomari, July, 14, 1930.

27. *Pucciniostele Clarkiana* DIET.

Hab. On leaves and petioles of *Astilbe Thunbergii* MIQ. var. *congesta* BOISS. (*Toriashi-shôma*)

Rebun-Island :—Momoïwa, July, 17, 1930.

28. *Uromyces Hedysari-obscuri* (DC.) CAR. et PIC.

Hab. On leaves of *Hedysarum obscurum* L. var. *neglectum* TRAUTV. (*Chishima-genge*)

Rebun-Island :—Momoïwa, July, 16, 1930.

29. *Uromyces Muehlenbergiae* ITO

Hab. On leaves of *Muehlenbergia japonica* STEUD. (*Nezumi-gaya*)

Rishiri-Island :—Otatomari, July, 14, 1930.

30. *Uromyces Peracarpae* ITO et TOCHINAI

Hab. On leaves of *Peracarpa carnosae* HOOK. F. (*Tani-gikyô*)

Rishiri-Island :—Mt. Rishiri, July, 15, 1930.

31. *Uromyces Trifolii-repentis* (CAST.) LIRO

Hab. On leaves of *Trifolium repens* L. (*Shiro-tsumekusa*)

Rishiri-Island :—Otatomari, July, 14, 1930 ; Rebun-Island :—Momoïwa, July, 16, 1930.

32. *Uromyces Veratri* (DC.) SCHROET.

Hab. On leaves of *Veratrum album* L. var. *grandiflorum* MAXIM. (*Baikaishô*)

Rebun-Island :—Momoïwa, July, 16, 1930.

33. *Aecidium Periclymeni* SCHUM.

Hab. On leaves of *Salix arctica* PALL. (*Chishima-yanagi*)

Rishiri-Island:—Mt. Rishiri, July, 15, 1930.

34. *Exobasidium hemisphaericum* SHIRAI

Hab. On leaves of *Rhododendron chrysanthum* PALL (*Kibana-shakunage*)

Rishiri-Island:—Mt. Rishiri, July, 15, 1930.

35. *Phyllosticta Polygonati* BÄUMLER

Hab. On leaves of *Polygonatum humile* FISCH. (*Hime-amadokoro*)

Rebun-Island:—Momo-iwa, July, 16, 1930.

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摘 要

1924年 富樫浩吾氏 ハ利尻、禮文兩島ニ於ケル菌類採集目錄ヲ日本植物學報第二卷第二號ニ發表シ、139種ノ菌類ヲ報告セラレタリ。著者ハ今年夏當教室ノ藤田勝正、徳永義雄、坂本正幸ノ諸君ト同地ノ採集旅行ヲ試ミタルニ上記目錄ニハ未ダ記載セラレザル寄生菌類35種ヲ得タレバ、其ノ補遺トシテ此處ニ列舉セリ。

其ノ内 *Puccinia sibirica* 及ビ *Peronospora Kichia* ノ二種ハ未ダ本邦ニ産スル事ヲ報ゼラレザル種類ニシテ、ツリガネニンジン (*Adenophora verticillata* FISCH. var. *typica* REGEL) ニ寄生スル *Puccinia* 屬ノ一種ノ寄生菌ハ之ヲ新種ト認メ、次ノ學名ヲ與ヘタリ。

Puccinia Adenophoræ-verticillata S. ITO et TERUI

ON SOME EGG-ABNORMALITIES OF THE
SALAMANDER, *HYNOBIUS LICHENATUS*
BOUL. FROM MT. YEZO-FUJI IN HOKKAIDO

BY

KEN-ICHI MATSUHISA

蝦夷富士産エゾサンセウウオの卵の異常に就て

松 久 健 市

It is remarkable that the urodelan fauna of Hokkaido is represented by only one species of *Hynobius*, *Hynobius lichenatus*, BOUL., while in the main land of Japan, beyond the Tsugaru Strait, Kiushu and Shikoku included, there is developed a characteristic fauna of Urodela, several species of *Hynobiidae* together with *Onychodactylus*, *Diemictylus* and *Megalobatrachus* inhabiting those districts very abundantly. No continental representative, whatsoever, of the salamander, *Salmandrella keyserlingii* DYBOW. which is found among the fauna of Sakhalin extends beyond the narrow Soya Strait (STEJNEGER (1907), INUKAI (1927)). Nevertheless the main island of Hokkaido is not so small in area, measuring 30260 square miles ranging in lat. from $41^{\circ}24'$ N, to $45^{\circ}31'$ N and in long. from $139^{\circ}45'$ E to $145^{\circ}49'$ E. There are many mountains measuring more than 2000 metres above sea-level and lakes and swamps of all sorts help to make up the diversified landscape of the island.

In spite of the very complicated geographical features of Hokkaido, it is curious that the salamander so far found is always of one and the same species. Even in the lakes high up on the central mountainous part the same salamander was collected.*

* By Dr. INUKAI, 1926.

It was in 1924 when SASAKI reported on the neoteny of *Hynobius lichenatus*. According to him in the lake "Kuttar-ush" in Hokkaido, the salamander lays the egg in the larval stage without metamorphosis; this fact was known only among Axolotl. By raising the neotenuous salamander in aquarium he succeeded in obtaining the normal individual of the species. The fact is only remarkable inasmuch as the condition of the lake changes the general habits of the salamander as he so explained.

In 1927 it happened to the present author in collecting the salamander at the foot of Mt. Ezo-fuji in Hokkaido, that a cluster of eggs laid by the animal in the swamp was found completely devoid of pigment. As is well known, the egg of this salamander is, like that of the frog, generally blackish brown at the animal pole and yellowish gray at the vegetative pole (Fig. 1). So, it was that the albino egg-mass was actually glittering among

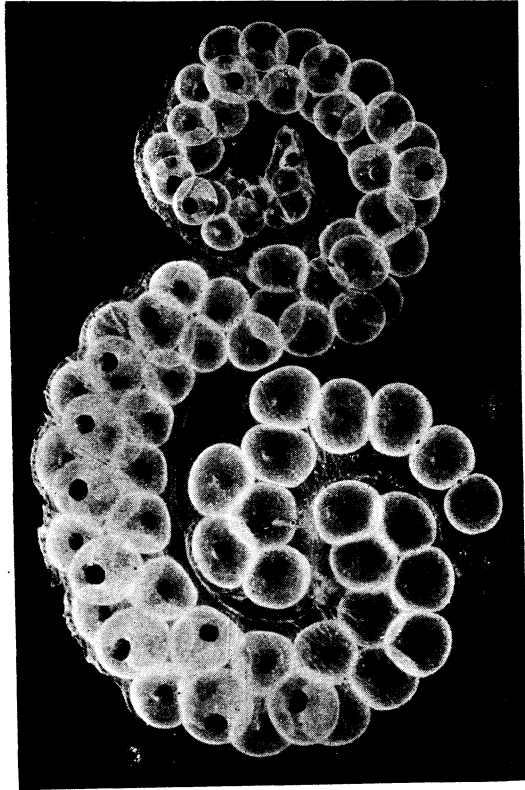


Fig. 1.

Normal egg from a swamp in the vicinity of Mt. Yezo-Fuji. About natural size.

the ordinary egg-masses in the water. It is very regrettable that the parent animal which lays such an egg has not yet been captured. Visiting there twice on the 18th of May, 1930, I could again collect albino eggs in the same swamp. The eggs were brought back to the laboratory and raised in the aquarium. No pigment developed in the early stage of the embryo (Figs. 2 and 3b). First in the embryo of 1.1 cm. body length the chromatophore appeared on the body surface. After this stage the larvae look only a little paler than the normal ones but are not albino at all.

Besides the albino eggs there were found a number of eggs which had

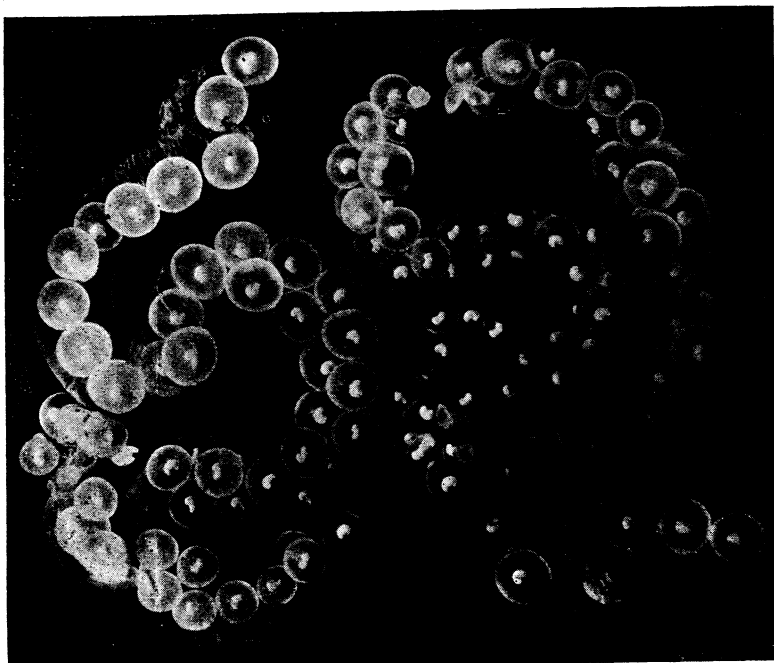


Fig. 2.

A partially developed albino egg spawned by one individual at the same swamp as in Fig. 1. About natural size.

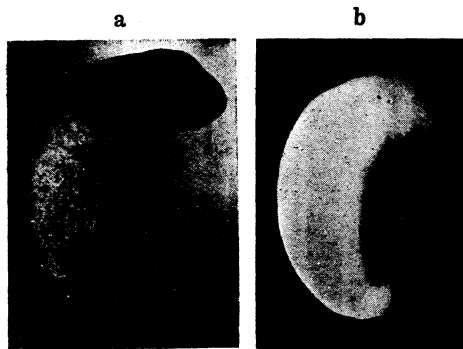


Fig. 3.

- a. Normal embryo of 0.54 cm. length, obtained from an egg in Fig. 1.
 - b. Albino embryo of c. 5 cm. length, developed from an egg in Fig. 2.
- About $\times 7$.

a coloration between the albino and the normal stage (Fig. 4). Of course the embryo developed from these eggs proved to be normal in appearance.

The salamander in the locality just mentioned is remarkable not only in producing albino eggs but also in having abnormal egg-capsules which contain more than two eggs instead of one. In general it occurs only sometimes that two eggs are found in one gelatinous capsule even among normal ones. However, the salamander of Mt.

Ezofuji-locality is remarkable in that in some egg-lobes most of the gelatinous capsules have a multiple number of eggs. In the first capsule are contained two eggs, in the second three eggs and in the third even four or more eggs all found in the same lobe (Fig. 4). Such an egg-lobe was collected in 1927 and 1930 from the same swamp in that locality.

The swamp of Ezofuji-vicinity is unique in producing albino eggs and a multiple number of eggs in an egg-capsule. No other place in Hokkaido has yet been found having the same sort. It has not yet determined whether any particular environmental factor which prevails in that locality influences the animal to give rise to such abnormalities, though it is true that there is annually a particularly heavy snowfall in this region in comparison with other parts of Hokkaido. However, it is worthy of note that the Ezofuji-locality is characteristic in producing much abnormalities together with the fact that the Kuttar-ush lake has the neotenic individual of the same species. Accordingly it is true at least that the general features of *Hynobius lichenatus* are changed by the geographical conditions which are quite multiform in Hokkaido.

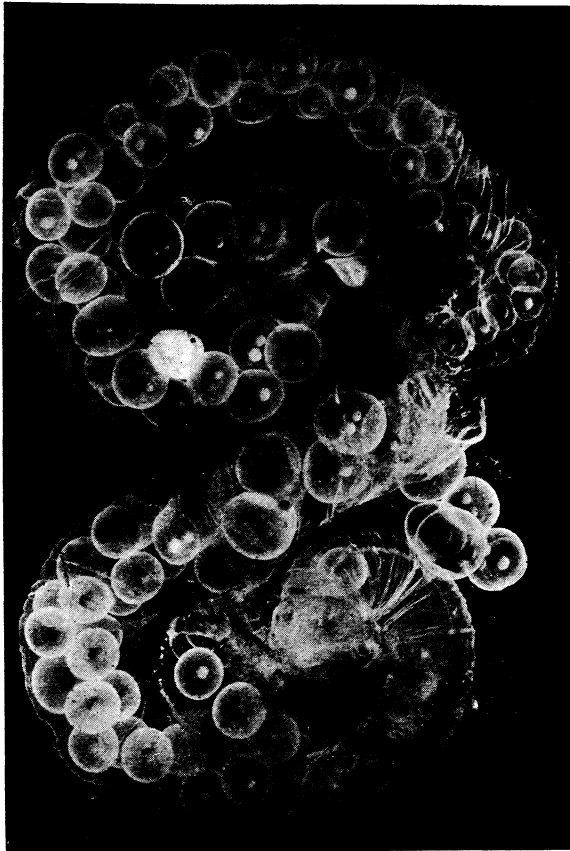


Fig. 4.

An egg lobe showing various colorations of eggs, and multiple number of eggs in one egg-capsule. About natural size. Note that there exists a pigmentless egg like that of Fig. 2 and normal eggs with pigment.

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摘 要

日本内地には *Onychodactylus*, *Diemictylus*, *Megalobatrachus* と共に *Hynobiidae* 科に屬する多種の有尾類の分布するにも拘はらず、北海道は 30260 平方哩の面積を占め山野湖沼に富むと雖も、是迄に見出されたものは僅に *Hynobius lichenatus* BOUL. エゾサンセウウオ一種に過ぎず。1924 年佐々木望博士がクツタラウシ湖に於て Axolotl に似たる幼生成熟をなす *Hynobius lichenatus* を見出せるは、湖水の状態が山椒魚の習性に變化を及ぼすものと云ふが故に興味ある事柄なり。1927 年著者は蝦夷富士山麓の一池沼に於て山椒魚の採集中、普通の黒褐色の卵の中に全く色素を欠く白色の卵の存在するを見出せり（第二圖）。1930 年再び同所に於てかかる白子の卵を採集せり。之を實驗室内の水槽に飼養する時、体長約 1.1 cm 以上に至れば次第に体表に色素の生ずるを認む。更に之が普通型との中間に位する種々の濃度の卵も存在せり（第四圖）。又第二の異常として認めたるはある卵房 (egg-lobe) はその卵囊 (egg-capsule) 中に二或は三、或は四以上の卵を含むもの甚だ多く存在する事なり（第四圖）。同地方には多量の積雪ありきは云へ、特にかかる異常を與ふる外界の因子は尙明かならず。然乍ら是はクツタラウシ湖にては幼生成熟をなす事と共に特記するに値すべき事實にして或ばエゾサンセウウオの一般的性質は種々の地理的條件により著しく變化する事を示すものならん。

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NOTES ON THE ERYSIPHACEAE OF MANCHURIA

BY

YASU HOMMA

滿洲産ウドンコ菌科に就て

本 間 ヤ ス

In 1928, M. MIURA published the "*Flora of Manchuria and East Mongolia*, part III,"¹⁾ in which 19 species of *Erysiphaceae* collected in Manchuria were enumerated. In the course of the taxonomic study on the Japanese Erysiphaceae, the writer examined also the Manchurian specimens which are preserved in the Herbarium of the Faculty of Agriculture, Hokkaido Imperial University, and recognized 19 species belonging to 6 genera. Among them two species of *Uncinula* seemed to be new to science and 3 species to have better their names be changed.

1. *Sphaerotheca Humuli* (DC.) BURR.

Hab. On *Sanguisorba officinalis* L. (*Waremoko*), Dairen (Sept. 14, 1914, KENJI MIYABE; Oct. 1, 1914, K. KONDO; July, 19, 1916, K. KONDO).

2. *Sphaerotheca fuliginea* (SCHLECHT.) POLLACCI

Hab. On *Bidens parviflora* WILLD. (*Hosobano-sendangusa*), Yugakujo (Sept. 17, 1929, H. TAKASUGI).—On *Bidens tripartita* L. (*Taukogi*), Ryojun (Oct. 31, 1914, K. KONDO).—On *Cirsium arvense* SCOP. var. *setosum* Ledeb. (*Yezono-kitsuneazami*), Dairen (Oct. 17, 1914, K. KONDO).—On *Coreopsis Drummondii* TORR. et GRAY. (*Kinkei-giku*), Dairen (Oct. 30, 1914, K. KONDO).—On *Impatiens*

1) Publication of South Manch. Railw. Comp. XXVII, 1928. (In Japanese).

[Transact. Sapporo Nat. Hist. Soc., Vol. XI, Pt. 3, 1930]

Balsamina L. (*Hosenkwa*), Dairen (Sept. 9, 1913, R. SUZUKI; Oct. 11, 1914, K. KONDO), Yugakujo (Sept. 7, 1925, M. MIURA), Harupin (Sept. 1926, K. HARA).—On *Phaseolus radiatus* L. var. *aurea* FR. et SAV. (*Azuki*), Yugakujo (Sept. 19, 1929, H. TAKASUGI).—On *Taraxacum officinale* WEB. (*Tampopo*), Dairen (Oct. 18, 1914, K. KONDO), Ryojun (Oct. 31, 1914, K. KONDO).—On *Xanthium Strumarium* L. (*Onamomi*), Yugakujo (Aug. 27, 1914, KENJI MIYABE), Koshurei (July, 20, 1917, KENJI MIYABE).

* 3. *Erysiphe Pisi* DC.

Hab. On *Aeschynomene indica* L. (*Kusanemu*), Yugakujo (Aug. 29, 1929, H. TAKASUGI).—On *Lespedeza juncea* PERS. var. *sericea* MAXIM. (*Medohagi*), Ryojun (Oct. 31, 1914, K. KONDO).—On *Lespedeza tomentosa* SIEB. (*Inuhagi*), Dairen (Sept. 25, 1918, M. MIURA).—On *Melilotus suaveolens* LEDEB. (*Ebirahagi*) Hoten, Hokuryo (Sept. 1915, K. KONDO), Koshurei (Aug. 2, 1916, KENJI MIYABE; Sept. 29, 1917, KENJI MIYABE; Sept. 7, 1918, M. MIURA).—On *Gueldenstedtia multiflora* BUNGE (*Inu-geenge*), Koshurei (June, 2, 1918, M. MIURA).—On *Pisum sativum* L. (*Endo*), Koshurei (July, 24, 1916, KENJI MIYABE; Aug. 1, 1916, KENJI MIYABE & Y. AKAISHI; Sept. 1, 1916, KENJI MIYABE).—On *Robinia pseudoacacia* L. (*Harienju*). Tetsurei (Sept. 14, 1916, KENJI MIYABE).

4. *Erysiphe Polygoni* DC.

Microsphaera Polygoni SAWADA

Hab. On *Clematis heracleifolia* DC. var. *Davidiana* FRANCH. (*Manshu-ohkusabotan*), Tokuriji (Oct. 6, 1929, H. TAKASUGI).—On *Clematis mandshulica* MAXIM. (*Tachisenninso*), Kirin, Shohakusan (Aug. 16, 1918, M. MIURA).—On *Elsholtzia cristata* WILLD. (*Naginatakoju*), Ho-ohsan (Sept. 30, 1918, M. MIURA).—On *Elsholtzia cristata* WILLD. var. *saxatilis* KOMAR. (*Hosoba-naginatakoju*), Tokuriji (Oct. 6, 1929, H. TAKASUGI).—On *Polygonum aviculare* L. (*Michiyanagi*), Seiho (Sept. 30, 1923, K. KONDO).—On *Statice bicolor* BUNGE (*Togoso*), Dairen (Sept. 5, 1915, K. KONDO).

* The asterisk denotes the species of fungus which was newly added to the list of the Manchurian Erysiphaceae.

*5. *Erysiphe Aquilegiae* DC.

Hab. On *Paeonia obovata* MAXIM. var. *japonica* MAK. (*Yamashakuyaku*), Jijisan (Sept. 15, 1920, K. KONDO).

6. *Erysiphe cichoracearum* DC.

Hab. On *Arabis pendula* L. (*Yezohatazao*). Kirin, Shohakusan (Aug. 16, 1918, M. MIURA).—On *Artemisia laciniata* WILLD. var. *latifolia* MAXIM. (*Hiroha-kikuyomogi*), Kirin, Shohakusan (Aug. 16, 1918, M. MIURA).—On *Artemisia vulgaris* L. (*Yomogi*), Kirin, Shohakusan (Aug. 16, 1918, M. MIURA).—On *Eritrichum pectinatum* DC. (*Tachimiyama-murasaki*), Koshurei (June, 24, 1918, M. MIURA).—On *Inula britannica* L. (*Yezo-oguruma*), Dairen, Nanzan (Oct. 21, 1914, K. KONDO).—On *Inula salicina* L. (*Kasenso*), Dairen, Nanzan (Oct. 21, 1914, K. KONDO).—On *Plantago major* L. var. *asiatica* DECNE (*Ohbako*), Dairen (Oct. 30, 1914, K. KONDO).—On *Scorzonera albicaulis* BUNGE (*Yanagibaramonjin*), Dairen (July, 14, 1916, K. KONDO), Yugakujo (Oct. 11, 1929, H. TAKASUGI).—On *Sonchus uliginosus* BIEB. (*Hachijona*), Dairen (Oct. 4, 1914, K. KONDO).

7. *Microsphaera Alni* WINT.

Hab. On *Rhamnus dahurica* PALL. var. *nipponica* MAK. (*Kurotsubara*), Jijisan (Sept. 15, 1920, K. KONDO), Hoten, Hokuryo (Sept. 24, 1918, M. MIURA). Koshurei (Sept. 13, 1921, M. MIURA).

*8. *Microsphaera quercina* (SCHWEIN.) BURR.

Hab. On *Quercus crispula* BLUME (*Mizunara*), Jijisan (Sept. 15, 1920, K. KONDO).—On *Quercus mongorica* FISCH. (*Mongorinara*), Ho-ohsan (Oct. 5, 1904, T. NISHIDA; Sept. 29, 1918, M. MIURA), Bujun (Aug. 23, 1914, KENJI MIYABE).

*9. *Microsphaera Bäumléri* P. MAGN.

Hab. On *Vicia Cracca* L. (*Kusafuji*), Ho-ohsan (Oct. 5, 1904, T. NISHIDA), Ryojun (July, 30, 1917, KENJI MIYABE), Dairen (Sept. 25, 1918, M. MIURA).

*10. *Sawadaea Tulasnei* (FUCK.) HOMMA

Uncinula Tulasnei FUCK.

Sawadaea Aceris (DC.) MIYABE

Hab. On *Acer Lobelii* TEN. var. *platanoides* MIYABE (*Manshu-itaya*), Dairen (Oct. 10, 1914, K. KONDO), Yugakujo (Sept. 27, 1919, M. MIURA; Sept. 4, 1929, H. TAKASUGI).

11. *Uncinula Kenjiana* HOMMA, n. sp.

Uncinula clandestina MIURA (not Schroeter), Fl. Manch. East Mong. Pt. III, p. 128, 1928.

Amphigenous, mostly epiphyllous, mycelium evanescent, at first forming a thin effused film; perithecia gregarious, depressed-globose, $84-61.2\ \mu$ in diameter; cells distinct, $19.2-20.4 \times 14.4-16\ \mu$ in width; appendages 7-15 in number,

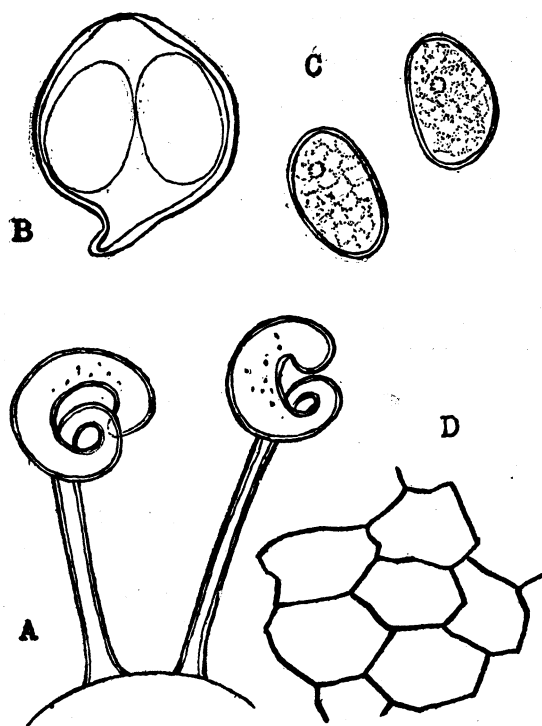


Fig. 1.

Uncinula Kenjiana n. sp. On *Ulmus pumila* L.

- A. Appendages of the perithecium ($\times 550$).
 B. Ascus ($\times 550$). C. Ascospores ($\times 550$).
 D. Outer view of perithecial wall. ($\times 550$).

simple, smooth, straight, $70-136\ \mu$ long, aseptate, hyaline, thin walled from the base to the apex, the uncinuate part of the appendages are abruptly enlarged, the width of this part reaching to about 2 times of the other part of the appendages, and are coiled twice toward the outer from the inner; asci 3-5, globose, with or without stalk, $44-57.6 \times 33.6-44.4\ \mu$; spores always 2, large, ellipsoidal, $28-31.2 \times 16.8-21.6\ \mu$.

Hab. On *Ulmus pumila* L. (*Nonire*), Koshurei (Sept. 25, 1917, KENJI MIYABE; Sept. 9, 1918, M. MIURA; Sept. 25, 1926, H. TAKASUGI; Oct. 1, 1929, H. TAKASUGI).

From 4 species of *Uncinula* parasitic on the species of *Ulmus*, *U. clandestina*, *U. Clintonii*, *U.*

Bivonae and *U. macrospora*, the present fungus differs clearly in many characters, especially in the peculiar manner of the uncination of its appendages as shown in the accompanying figure.

12. *Uncinula Salmoni* SYD.

Hab. On *Fraxinus rhynchophylla* HANCE (*Manshu-toneriko*), Seiryuzan (Oct. 2, 1920, M. MIURA; Sept. 4, 1929, H. TAKASUGI).—On *Fraxinus mandshurica* RUPR. (*Yachidamo*), Royarei (Sept. 7, 1915, H. MISUMI).

13. *Uncinula Salicis* (DC.) WINT.

Hab. On *Salix daphnoides* VILL. (*Yezo-Yanagi*), Dairen (Oct. 6, 1919, M. MIURA).—On *Salix cinerea*, L. (*Hai-iro-yanagi*), Chorinshi (Sept. 12, 1915, H. MISUMI).

14. *Uncinula mandshurica* MIURA

Hab. On *Populus laurifolia* LEDEB. (*Teriha-doro*), Yugakujo (Oct. 8, 1929, H. TAKASUGI).

**15. *Uncinula Salici-gracilistylae* HOMMA
n. sp.**

Hypophyllous, mycelium persistent; perithecia gregarious, globose, 112–154 μ in diameter; cells obscure, 11.2–12 $\times$ 9.6–10.8 μ ; appendages numerous (about 56–87 in number), simple, 100.8–140 μ in length, aseptate, hyaline, thin walled throughout, having to several swollen parts, the apex of the appendages circinate or falcate; asci 6–8, ellipsoidal or ovate, short stalked,

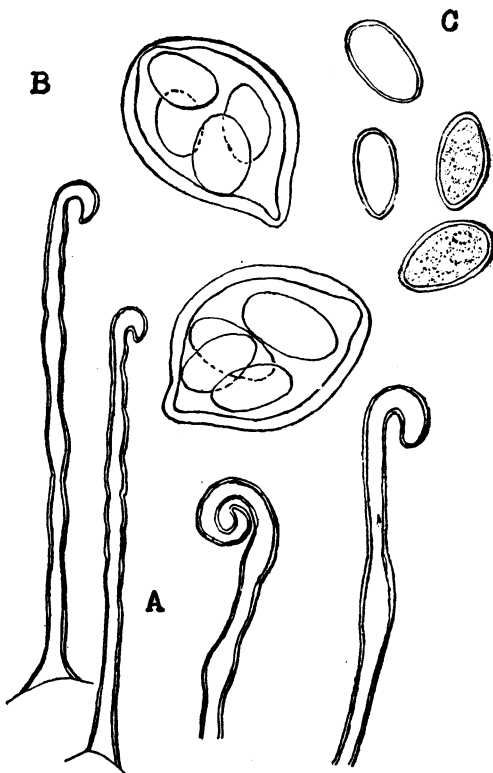


Fig. 2.

Uncinula Salici-gracilistylae n. sp.

On *Salix gracilistyla* MIQ.

A. Appendages ($\times 550$). B. Asci ($\times 550$).
C. Ascospores ($\times 550$).

46.8-54 × 31.2-34.8 μ ; spores 4-5 (rarely 3), elongata ellipsoidal, 19.2-24 × 10.4-12 μ .

Hab. On leaves of *Salix gracilistyla* MIQ. (*Neko-yanagi*), Royarei (Sept. 7, 1915, H. MISUMI).

The present species is related to *U. Salicis*, but it differs evidently from the latter species by the characteristic appendages which have several swollen parts, as well as by the formation of the perithecia on the undersurface while those of *U. Salicis* parasitic on *Salix gracilistyla* are always epiphyllous.

* 16. *Uncinula Miyabei* (SALM.) SACC. et SYD.

Hab. On *Alnus japonica* SIEB. et ZUCC. (*Hannoki*), Yugakujo (Sept. 23, 1929, H. TAKASUGI).

17. *Phyllactinia corylea* (PERS.) KARST.

Hab. On *Ailanthus glandulosa* DESF. (*Shinju*), Dairen (Sept. 29, 1916, K. KONDO; Oct. 4, 1914, K. KONDO).—On *Carpinus cordata* BLUME (*Sawashiba*), Choyozan (Sept. 1915, H. MISUMI).

* 18. *Phyllactinia moricola* (P. HENN.) HOMMA

Phyll. suffulta (RED.) SACC. var. *moricola* P. HENN.

Hab. On *Morus bombycis* KOIDZ. (*Yamaguwa*), Hankadai (Oct. 9, 1904, T. NISHIDA), Yugakujo (Oct. 11, 1929, H. TAKASUGI).

* 19. *Phyllactinia Fraxini* (DC.) HOMMA

Hab. On *Betula daphurica* PALL. (*Ko-onoore*), Yugakujo (Oct. 1, 1929, H. TAKASUGI).—On *Populus Simoni* CARR. (*Teriha-doro*), Koshurei (Aug. 25, 1920, M. MIURA).

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タヌキモの捕蟲作用に就いて

羽 田 良 禾

THE FEEDING HABITS OF UTRICULARIA

BY

YOSHINE HADA

(With five text-figures)

從來タヌキモ (*Utricularia*) の捕蟲作用に關しては、M. TREAT (1875). C. DARWIN (1875). M. BÜSGEN (1888). P. von LEUTZELBURG (1910). A. N. ADOWA (1924). E. BRUMPT (1925), M. LANGERON (1925). R. W. HEGNER (1926). M. J. STUTZER (1926) 等の人々に依る植物學、動物學、生物化學、細菌學等の各方面の研究報告がある。

實驗には主として札幌市近くの幌向泥炭地より採集した、コタヌキモ (*Utricularia intermedia* HAYNE) を用ひ、時にヒメタヌキモ (*Utricularia minor* L.) をも併用した。元來、タヌキモは沼地又は水田地に生ずるため、野生のものでは空の捕蟲囊 (Utricle or bladder) を得ることは甚だ困難である。故に實驗には清水中に培養して、新しく生じた捕蟲囊を用ひた。其の構造を觀察するには生の儘で、Neutral Red. Methylene Blue. Aniline Red 等の色素で生体染色をなすか、無水精酒、又はカルノア (Carnoy) 氏液で固定し、ヘマトキシリンで染色した。本稿を草するにあたり、御懇切なる御指導を賜つた小熊博士に深く感謝の意を表するものである。

捕 蟲 囊 の 構 造

捕蟲囊は葉の變形したもので、兩側から壓縮せられた略ぼ卵形の囊である。一方に大きな口 (Entrance) があつて、之れを殆んど無色透明な半圓形の瓣 (Valve) を以て塞いでゐる。口縁 (Collar) には數本の長い剛毛 (Bristle)

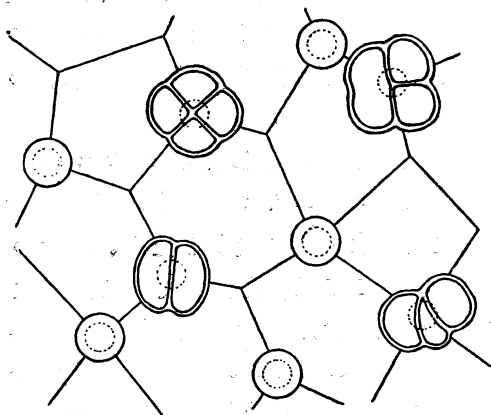
があつて、特に一對は長大で分枝してゐる。

囊 壁

囊壁 (Wall) は口縁部を除くと、内外二層の扁平な細胞の層から成つてゐる。外層は多角形の細胞からなり、其の會合點に種々異つた Glandular Hair (第二圖) がある。但し、其の大部分は柄を合せて二個の細胞から成るものである。内層は外層と等しい多角形の大きい細胞と、其の會合點に在る小さい細胞 (Angular Cell) から成つてゐる。其の Angular Cell 上には Quadrifid Process (第三圖 a. b.) がある。

口 縁 部

此の部の細胞層は縁に近づくに従つて層を増し、細胞は細くなり遂に辨に接する最外部では小さい細胞から成る層に終つてゐる。其の上を無色透明な膜が覆ひ、之で辨に



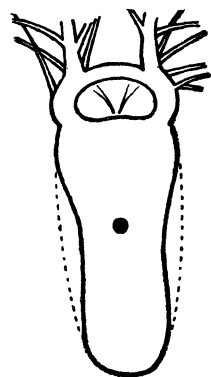
第 二 圖

捕蟲囊の外細胞層上の各種の Glandular Hair を示す圖 ×300

密着してゐる。外面には二種の Glandular Hair があつて、第五圖 a の如き形のもので、外縁より少々遠ざかつた位置にあり、b が近くにある。内面には Quadrifid Process の代りに Bifid process (第三圖) c が密生してゐる。

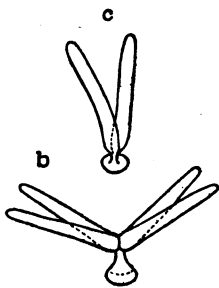
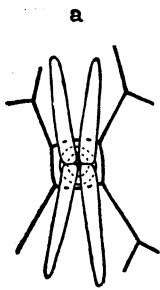
辨

辨は其の形が略ぼ半圓形で、下部の約三分の一の周縁は口縁から分離してゐる。辨も又二層の扁平な細胞層から成つてゐる。外層は細長い不規則な周縁の細胞から成つてゐて



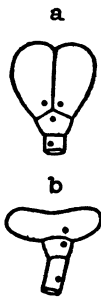
第一圖

捕蟲囊の前面圖×12
點線は膨張時の大い
さ 中央の黒點は囊
柄の附着點を示す



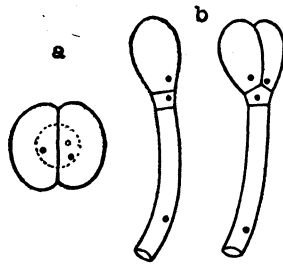
第三圖

a. b. Quadrifid Process $\times 150$
c. Bifid Process $\times 150$



第四圖

a. b. 辨上の Glandular
Hair $\times 300$



第五圖

a. b. 口縁外表面の
Glandular Hair $\times 450$

捕 蟲 囊 の 作 用

動物が捕蟲囊に依つて捕へられるは、R. W. HEGNER も認めてゐる様に、捕蟲囊の刺戟感應に依る膨脹のため、水が辨を排して囊中に流入する時、動物も共に攫込まれるのである。従來捕蟲囊の刺戟に感應する機能に就いては明かにされてゐないので、之れを確めんとして倍率三十倍の兩眼解剖顯微鏡下で、辨の各部分を針の先端を以て刺戟して見ると、C. DARWIN に依つて、大きな動物が捕蟲囊に入らんとするを防ぐものと考へられた辨上の二對の剛毛が、實は刺戟を感受する役目をなすものであることを確かめることが出來た。

捕蟲囊を *Cyclops* sp. マルミジンコ [*Chydorus sphaericus* (O. F. MÜLLER)] 及びユスリカ (*Chironomus*) の幼虫等の入れてある器に投入して觀察すると、此等の小動物は休憩場所を求めて集り來るもので、口縁の剛毛にはより多く集るものである。斯る事實より考察すると、此等の剛毛は動物を誘つて憩はしめる役目をなすものゝ如くに見受けらる。初め葉莖及び剛毛上に居た動物も、次第に囊壁上に移動して、囊壁上进行するうちに、何時しか口縁に至り、恰も口縁から辨の表面を舐めんぞするが如き姿勢をとり、辨上の剛毛に觸れて、捕蟲囊に刺戟を興へる。其の結果捕蟲囊は膨脹し、動物は辨を排して水と共に囊中に流れ込み、遂に虜となるものである。斯の如き動物の行動を見ると、恰も餌を求めて彷徨する様に見受られる。故に捕蟲囊の表面、口縁及び辨上の Glandular Hair は、其れ自身動物を誘ふものであるか、或は誘ふ物質を分泌するものと思はる。口縁及び辨上により多くの Glandular Hair の存在することも期る推察を裏書するものと考えらる。特に

水中を游泳することの少ないユスリカの幼虫に就いて見ると、植物を幼虫の居る器に移した後十二時間経過して之を調べて見ると、殆んど全部の幼虫は捕蟲囊に居た。之に依つて考へると、幼虫は隠れ場所を求めて捕蟲囊中に入るか、或は何らかの物質に依つて誘はれて虜となつたものか何れかと思はる。然るに捕蟲囊の長さは、或る時は捕蟲の長さの約三分の二位のもので、辛じて入り得る程度のものである。故に動物の隠遁する性質に依つて植物体の虜となるものと考へるよりも誘導せられて、其の結果植物の餌となるものと考へる方が當を得たものと思はる。

上記の如く、辨上の剛毛に動物の觸れるまでは、動物自身の運動に依るものであるが、其後の變化は全く植物の刺戟感應作用に依るものである。即ち、一度動物が辨上の剛毛に觸れ、植物が戟刺を感受するや否や、急速に捕蟲囊が膨脹し、同時に辨の下部は内方に向つて開き、約 15% の水量が増加して、即ち辨は閉ず。此等の變化は瞬間的に起るもので、只捕蟲囊の膨脹に依つて囊中の水壓に變化の起つたことを知り得る耳である。捕蟲囊の膨脹に依つて起る水の流入する力は、變化が瞬間的であるため、慮外に大きなものである。辨の閉じた後捕蟲囊は徐々に水を外部に出して收縮し十五分乃至二十五分で原形に復するものである。即ち、捕蟲囊の正常の形は壓縮せられた形で、一度刺戟を感受するや、上の如き變化が瞬間的に起つて、捕蟲作用をなすものである。故に C. DARWIN K. GAEBEL 等の意見の如く、動物自身で自動的に捕蟲囊の辨を排して囊中に入るものではなくて、M. BÜSGEN, R. W. HEGNER 等の考への如く、植物体の刺戟感應作用に依つて動物が植物の虜となるものである。期る事實は野生のタヌキモを取つて調べて見ると、藻、塵埃及び砂泥の如く運動しない物でも、捕蟲囊中にあることから容易に考へらるることである。

捕食せらる動物に就いて

種類

水棲動物で捕蟲囊に入り得る大いさのものは、殆んど凡て捕蟲囊に依つて捕えらるるものである。動物以外にも、各種の淡水藻、枯死した植物の破片及び砂泥等の捕蟲囊に入れるを見ることがある。

普通野生のタヌキモの捕蟲囊中に見出さるる主なる動物は、次の如きものである。

Protozoa. Infusoria, Amoebina, Euflagellata, Dinoflagellata.

Trochelminthes. Rotifera.

Nemathelminthes. Nematoda.

Arthropoda. Copepoda, Cladocera, Acarina (Hydroacarina) Insect Larvae.

大 い さ

Copepoda では捕蟲囊と殆んど同長のものまで捕へらる。Nematoda の如く、細長い動物は捕蟲囊の約三倍に及ぶものも捕蟲囊中に捕へられてゐることがある。形が小さくて、活動力の弱い動物で、其の動物自身で辨上の剛毛を刺戟して、捕蟲囊に膨脹せしめる力のないものでも、他のより強大な動物或は何かの原因で植物が刺戟を感受した場合、水と共に捕蟲囊中に入るものである。コタヌキモでは、小形の輪蟲例へば、ハオリワムシ (*Euchlanis dilatata* Ehrenberg) フタヲワムシ [*Diurella tigris* (O. F. MÜLLER)] の如きものでは捕蟲囊に刺戟を與へる能力がない。

數 及 び 量

捕蟲囊には選擇の機能はなく、全く刺戟に感應して機械的な働で動物を捕へるがため、最大限度の量としては、捕蟲囊に入り得るだけのものを捕へ得る理である。實際に、水田中のタヌキモの捕蟲囊を調べて見ると、動物と共に泥を收縮し得ない程多量に吸込んで居るものがある。

次にヒメタヌキモの捕蟲囊を、マルミジンコの 100 匹中に約 5000 匹居る水中に投入して、一晝夜經過した後の捕蟲囊中のマルミジンコの數に就いて一例を示す。

葉莖に附着した儘のもの		柄の根元より切り離したもの	
捕蟲囊の長さ(耗)	マルミジンコの數	捕蟲囊の長さ(耗)	マルミジンコの數
2.5	21	2.8	2
2.2	12	2.5	9
2.1	12	2.2	5
2.0	15	2.1	8
2.0	11	1.9	6

致 死 時 間 及 び 其 の 原 因

致死時間には動物の種類、形狀、大小及び植物体の生理的作用の如何に

依つて差異がある。例へば、コタヌキモの捕蟲囊の長さ 3.5 耗乃至 2.5 耗のものをとつて實驗すると、Cyclops sp. の体長 0.8 耗から 1.5 耗までのでは、刺戟を與へた場合、動物が動かなくなつた時刻を以て致死時刻とすると、致死時間は十分間乃至二十五分間である。然しながら、其の間に一度捕蟲囊に刺戟を與へて膨脹させた場合の致死時間は約四十分間である。ハオリワムシの如き動物になると、三日間位も捕蟲囊中を遊び廻つてゐることがある。更に、 20μ 以下の原生動物では捕蟲囊の辨を通つて自由に出入し、囊中で増殖さへするものである。

動物が捕蟲囊中で生命を失ふ原因に就て考ふるに、大体三つの場合がある。(一) 餓死する場合。(二) 植物の分泌する有毒物質に依る場合。(三) 捕蟲囊壁の收縮に依つて起る機械的の壓縮作用に依る場合。(一)の場合は別として、(二)の場合を考ふるに、R. W. HEGNER の *Utricularia vulgaris* var. *americana* GRAY に就いての實驗の結果を見ると、原生動物のうちで Paramecia, Stentor 等は捕蟲囊中で死ぬばかりでなく、Paramecia の如きは囊中より取出した液の中でも死ぬものであるが、Euglena は捕蟲囊中で長く生命を保ち剩へ、増殖さへもなすものである。斯る事實から、動物に有害な物質を植物が分泌することを認め得ると同時に、動物の種類に依つて有害物質に對する抵抗力に差異あることも知ることが出来る。一般に抵抗力の少ない下等動物は主として斯る分泌物に依つて生命を斷つもので、Copepoda, Cradocera, Acarina 等の如く活動力の強大な動物では、(三)の場合に依つて死ぬものと思はる。其の理由としては、もし動物が捕蟲囊に入つた直後から絶間なく捕蟲囊に刺戟を與へ、常に膨脹した状態で動物が囊中で動き得る様にすれば、長く生命を保つて居るものである。多くの場合、(二)と(三)の作用は同時に働くもので、動物が囊壁の内面に接觸することに依つて植物が刺戟を感受し、或る物質を分泌して、機械的の壓縮作用と化學的物質の有害作用と相俟つて動物を死に至らしめるものと思はる。

捕へられた動物の死後の變化

Cyclops sp. マルミジンコ及びユスリカの幼虫の三種の動物の入つてゐる捕蟲囊を外部から觀察すると、殆んどすべての場合、觸角、肢脚、尾端等は C. DARWIN の報告の如くに体軀から離脱するものではなくて、長く体軀に其の儘附着してゐるものである。動物体の外部骨骼は軟弱となり、僅かの機械

的衝撃に依つて容易に破壊されるものではあるが、一般に長く原形を保つてゐるものである。囊壁を通して動物体内の變化を明瞭に觀察する事は困難であるが、大体先づ動物体は黄褐色の顆粒狀物質に依つて滿され、漸時顆粒の大なるものが現れてくる。其れと同時に、其の數及び量を減じ、遂に僅かの塵埃様の物質を外部骨骼内に残す耳で殆んど透明になるものである。

動物体の消化器管中に Bacteria を見る様に、捕蟲囊中に虜となつた動物を取出して顯微鏡下で觀ると、必ず多數の Bacteria を見るものである。M. J. STUTZER は此等の Bacteria は *Utricularia vulgaris* では、主に *Bacterium coli* の Group に屬するものであると報告してゐる。動物の入つてゐない捕蟲囊を見ると、Bacteria の數は極めて小數であるが、動物が捕蟲囊に入つた後十二時間以上経過したものでは、動物の体内に充満してゐる顆粒狀物質の間を Bacteria を以て隈なく滿してゐる。顆粒狀物質の數、並びに量を減少するに従つて動物体の空間を充すべく Bacteria の數は益々増加し、時に体外に溢れ出る程になる。此等の Bacteria は M. J. STUTZER も認めてゐる様に、植物体に依つて分泌される酵素の作用と相俟つて、捕蟲囊が動物体を消化するを助けるものである。

斯くの如く、捕へられた動物の体内に多數の Bacteria を生ずるために、普通の場合、之れを捕食する小形の滴蟲が捕蟲囊中に現れてくる。其の數は Bacteria の數と共に増加するものである。

動物体が顆粒狀物質に變化するは、動物の死後十時間内外である。顆粒狀物質は恰も油又は脂肪粒の如くに見へ、其の大きさには色々あつて、初めは一樣な大いさであるが、次第に形の大きいものを生じ、最後には種々の大いさの粒を混じてくるものである。色は普通灰褐色、又は黄褐色であるが *Cyclops* sp. では眼點の分解に依つて赤色の色素を混ずるがため、美麗な赤より黄に至る種々な色調の色が現れる。マルミジンコ及びユスリカの幼虫でも、眼の有る附近は概して黒味勝となるものである。此顆粒狀物質の消滅は *Cyclops* sp. 及びユスリカの幼虫では、捕蟲囊に捕へられた後十三日乃至十五日マルミジンコでは十日乃至十二日位である。元來此の顆粒狀物質は動物体を構成してゐる蛋白質、脂肪等が植物の分泌する酵素の働によつて分解して生じたもので更に植物自身の分泌する酵素、並びに Bacteria の働に依つて可溶性物質に化し、Quadrifid 又は Bifid Process に依つて吸収され、植物体の營養物質として他に運ばれるものならん。タヌキモの捕蟲囊が動物体を分解する酵素を分泌するすることは誰しも認める所で、P. von Leutzelburg は捕蟲囊

の抽出液より、アルカリ性の溶液中で働く酵素の存在を證明し、A. N. ADOWA は捕蟲囊の食鹽抽出液より α -Protease を検出してゐる。

以上記述したるが如き経過に依つて、タヌキモは動物体から營養物を攝して生活現象を営んである。

摘 要

- (一) 動物はタヌキモの分泌物質に依つて誘導せらる。
- (二) タヌキモは捕蟲囊の辨上に在る二對の剛毛に依つて、動物から刺激を感受する。
- (三) 捕蟲囊中に動物の入るは、動物自身で辨を排して入るものではなくて、植物体の刺激感應作用に依るものである。
- (四) 動物体の捕蟲囊中で生命を失ふは、主として、植物体の機械的の壓縮作用に依るものである。
- (五) 捕蟲囊中に於ける動物の致死時間は、捕蟲囊及び動物体の相互的大いさの如何に依るものである。
- (六) 捕蟲囊中で動物体は植物に依つて分泌さるる酵素に依る分解の外に、Bacteria 依つて分解作用を助ける。
- (七) 捕蟲囊に依る分解物質は Qudrifid Process 又は Bifid Process に依つて吸収せらる。

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ABSTRACT

The Feeding Habits of *Utricularia*

Material: In the present work, *Utricularia intermedia* HAYNE and *Utricularia minor* L., obtained from a peat-bog near the city Sapporo, have been employed, and the food-organisms supplied for the experiments were consisted in *Cyclops* sp., *Chydorus sphaericus* MÜLLER, *Euchlanis dilatata* EHRENBERG and larvae of *Chironomus*. Results:

1. Animals are probably attracted by the secretion from several kinds of glandular hairs existing on the outer surface of the bladder and the valve of *Utricularia*.
 2. The organ of the bladder of *Utricularia*, by which stimuli from food-animals are received, consists in double pairs of bristles projecting out of the surface of the valve. They erect themselves nearly at right angles to the latter. And they are so transparent that animals can hardly recognize them.
 3. As soon as the bristles on the valve receive any stimulus, the bladder expands suddenly, the valve opens inwards and consequently there arises water current to rush into the bladder. It is this current of water that forces the animal to be captured. Then the valve closes and the organism becomes unable to escape from the bladder. Meanwhile the bladder discharges about 15% of the water contained and recovers its original compressed form. We find, therefore, that the animal does not enter the bladder by their own will but are carried quite passively by the water current.
 4. The animal captured by *Utricularia* are killed chiefly by the mechanical power of compression of the bladder, and the smaller the organism the longer time is required until their death.
 5. The animals captured by the bladder of *Utricularia* are decomposed not only by the enzyme secreted by the plant, but also by the action of bacteria which increase rapidly after the death of animals.
 6. The decomposed matter of the animal is absorbed by the bifid or quadrifid processes, found on the inner surface of the bladder.
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蝦夷富士西北及東南兩側に於ける
植物景觀の差異に就きて

山 本 岩 龜

ON THE DIFFERENCE IN THE VEGETATION
OF THE NORTH-WESTERN AND SOUTH-EASTERN
SLOPES OF THE YEZO-FUJI MOUNTAIN

BY

IWAHISA YAMAMOTO

西北・東南兩側に於ける植物景觀の差異

一、森林帶に於ける差異

蝦夷富士の森林帶は西北側（俱知安、狩太側）と東南側（眞狩、喜茂別、東俱知安側）とに於いて次の如き差異を認め得べし。

1、西北側に於いては針葉樹林（アヲトド、エゾマツ、アカエゾマツ）の優勢なる發達を見ること。其下限は海拔 200 米より上限界 1300 米の間に跨る。

2、東南側に於いては針葉樹林を全く欠き落葉、潤葉樹林の發達を見ること。海拔約 400 米より 1000 米の間を占む。

而して兩側の境界は頂上より東北に向つて延びたる尾根（俱知安町東三號線附近に至るもの）及び南微西（眞狩別登山口附近）に至る尾根をもつて明かに劃らる。

二、ハヒマツ分布の狀態

ハヒマツの分布は頂上附近に於て最も密にして、脊梁部を通じて帶狀をなし、更にこれは尾根通り下降せり。下るに従ひて次第に落葉灌木及びササの挿入に逢ひ、島嶼狀に隔離せらる。

西北側に於いては焼跡の面積によりても知らるゝ如く、其總面積並びに分布密度、東南側に比して頗る大にして旺盛なる發達を來せり。

尙また西北側に於いては900米（小富士圓錐丘上にあるもの最も低く森林帶中にあり）附近まで低下すれども、東南側に於いては1200米以下に下ることなし。

三、草本分布に於ける差異

1、山麓に於ける草本植物景觀の差異

西北側は河流、湖沼、谷地に富むをもつて到る處ヨシ、カサスゲ、オニシモツケ、ハンゴンサウの如き大草本エゾノリウキンクワ、ミヅバセヲ、ミヅトクサ、ヤナギトラノヲ、エゾノカハヂサの如き好濕性の植物群落をなし、エゾノミヅタデ、ヒロハエビモ、ヲヒルムシロの如き水生植物に富めり。

然るに東南側は廣き凝灰岩の臺地をなし、ス、キの大草原隨所に現出し、ヲトコヨモギ、オホイタドリ、ヲトコヘシ、ニガナ、アキノキリンサウ、エゾニガクサ、ヒメハギ等全く陽性の植物群落を見る。

2、山頂に於ける草本植物景觀の差異

山頂に於ける草本帶はハヒマツ帶中に島嶼狀に配置せらる。而して西北側を占むる御花畑、星ヶ池の二爆裂火口、藥草ヶ原及び各放射谷に發達せる植物の景觀は、東南側に位する大中小各噴火口並びに放射谷に於けるものとは全く其趣を異にせり。

西北側なる御花畑、星ヶ池並びに藥草ヶ原にはチシマフウロ、オヤマリンダウ、クルマユリ、キバナシヤクナゲ、ミヤマキンバウゲ、ミツバワウレンの如きものを初め、イハイテフ、エゾホソキの如く中性若くは濕性植物の群落を見るべく、殊に其の放射谷（例へば比羅夫登山口に於ける胸突八丁）にはヨブスマサウ、オニシモツケ、ヤマブキシヨウマ、マルバヒレアザミ、ミミカウモリ、オホカサモチ、カラマツサウの如き大草本密生し其下に、アラシグサ、サンカエフ、クロクモサウ、ギヤウジヤニンク、シラネアフヒ、ミヤマタニタデ、タニギキヤウ、オホバタケシマランの如き陰性又は好濕性の植物を生ぜり。

之れに反して東南側各噴火口にはメアカンキンバイ、キクバクワガタ、イハブクロ、ミヤマタネツケバナ、タカネスミレ、ホソバオンタデ、ウラジロタデの如き乾生植物に富み、又放射谷は淺くして（例へば東根知安に向ふ空澤）ノガリヤス及びササ兩屬の群落を主とし、イソツツジ、

エゾクワンザウ、マルバヒレアザミ、オホバスノキ等極めて貧弱なる發達をなせるに止まる。

四、概 括

以上を概観するに西北側は針葉樹林の發達及び優勢なるハヒマツの分布を見、草本植物に於いては山麓、山頂共に好濕性植物の群落認められ東南側に於いては全く針葉樹林を欠き、ハヒマツの分布疎にして草本は陽性群落の形相を帶びたり。

兩側差異の原因に就きての考察

一、氣候的條件に就きて

平 均 氣 溫 (攝氏)

月次 觀測所	1	2	3	4	5	6	7	8	9	10	11	12	平均
俱 知 安	-7.6	-7.7	-4.1	2.5	9.4	13.8	18.3	19.9	14.0	7.5	1.2	-5.3	5.2
眞 狩	-6.3	-3.8	-0.3	5.0	11.6	16.7	21.8	22.4	18.2	11.6	3.4	-3.4	8.1

降 水 量 (糎)

月次 觀測所	1	2	3	4	5	6	7	8	9	10	11	12	年
俱 知 安	145.4	152.7	84.6	85.3	89.2	89.9	94.2	91.4	134.6	137.6	202.2	234.3	1538.4
眞 狩	135.70	63.30	67.88	50.80	69.44	43.28	80.42	69.68	89.88	82.44	105.98	133.74	990.54

平 均 濕 度 (最乾ヲ〇トシ最濕ヲ100トシ百分率ヲ以テ示ス)

月次 觀測所	1	2	3	4	5	6	7	8	9	10	11	12	年
俱 知 安	87.4	89.4	85.3	80.6	76.1	80.6	82.9	84.5	83.4	81.0	80.9	84.7	83.1
壽 都	76.5	75.9	72.8	73.0	76.7	84.5	86.5	85.0	79.1	73.7	72.3	74.4	77.5

- 備考 1. 以上諸表ノウチ俱知安ニ於ケルモノハ明治三十八年リ同四十四年ニ至ル七ケ年ノ平均、眞狩ノモノハ大正八年ヨリ同二十年ニ至ル五ケ年ノ平均ナリ。
2. 眞狩ノ觀測ニ於イテハ濕度ヲ欠クヲ以テ最も近キ壽都ノモノヲ參考トシテ掲ゲタリ。

兩側に於ける氣溫、降水量、濕度を比較するに全く異なりたるものあるを認むべく、此の差異こそ地形、地質的差異と相俟ちて兩測に於ける植物景觀に差異を與へたる重要な一原因なりと考察せらる。

あらゆる氣候的條件は綜合的に影響を與ふるものなるは勿論なれども、

特に降水量の多少は兩側山麓、山頂の草本植物の景觀に氣溫、降水量、濕度は森林帶の形成並びにハヒマツの分布に影響せるものなりと考へらる。

兩側に於ける降水量は表に示せる如く、西北側に於いては年 1538.4 耗にして東南側は 990.5 耗なり。

この相違は西北側山腹に深き放射谷を造り、山麓に多數の河流を生じ、谷地を形成せしめ、山麓及び山頂に陰性、好濕性の植物の群落を發達せしめ東南側に淺くして水流なき放射谷を現出せしめて陽性、乾性の植物群落を見るに至らしめたる主要原因なりと推定す。更に、氣溫は西北側に於いて年平均 5.2° にして東南側は年平均 8.1° なり。即ち西北側は本多博士（改正日本森林植物帶論 III, 222 頁）の所謂平均氣溫 6° 以下の地に相當し、寒帶林の形成に適せるを示すものにして針葉樹林の發達を旺盛ならしめ、且つハヒマツ林の低下を來せる主要なる一原因なりと考察す。

濕度に就きては東南側の記録を欠けるを遺憾とするも、西北側に於ては冬季の濕度夏季に比して大なるを見るべし。本道に於て斯の如き型式に従ふものは唯、旭川あるのみにして他は總べて之に反せり。東南側も亦後者の型に屬すべきものなるを推定するに難からず。即ちこの現象は、冬季針葉樹の蒸散量に相關して生存上有利なるべく、これ西北側に於ける優勢なる針葉樹林の發達の一條件なりと推定せらる。

二、地質的條件に就きて

蝦夷富士は標式的のコーニエデにして、噴火に當りてはその噴出物を四方に略ぼ均等に流出せしめしものの如きも、西北側に於いて幾分多量の噴出物を見るは、この方面に御花畑、星ヶ池の二大爆裂火口並びに半月湖爆裂火口丸山火山群を有し活動の盛んなりしが爲めに外ならず、殊に噴出物中熔岩の流出は西北側に於て特に著しく、下ソスケ臺地より比羅夫附近を経て狩太に亘れる大熔岩流はこれを證明す。

これに反して東南側は泥流に富み、その山麓に押出されたるものは無數の小圓錐丘として現存せり。

熔岩の吸水性並びに保濕性が針葉樹の生育に關係あるものなることは、早田博士（富士植物帶論 13 頁）の既に述べられしところにして、西北側に於ける針葉樹林が熔岩流の分布に沿ふて消長せるの狀態は明かに之を證明す。

以上述べたる兩側の地質的相違は西北側に後志、渡島地方に於て稀に見るの一大針葉樹林を發達せしめたる一主要條件なりと認めらる。

三、東南側に針葉樹を欠ける原因としての山火に就て

東南側に針葉樹を欠ける原因として山火を想像し得ざるにあらざるも、全く其證跡なく且つ、この方面にある後別岳（1107米）昆布岳（1045米）等に針葉樹林を欠けるを見れば、かくの如き條件は首肯し難し。

結 論

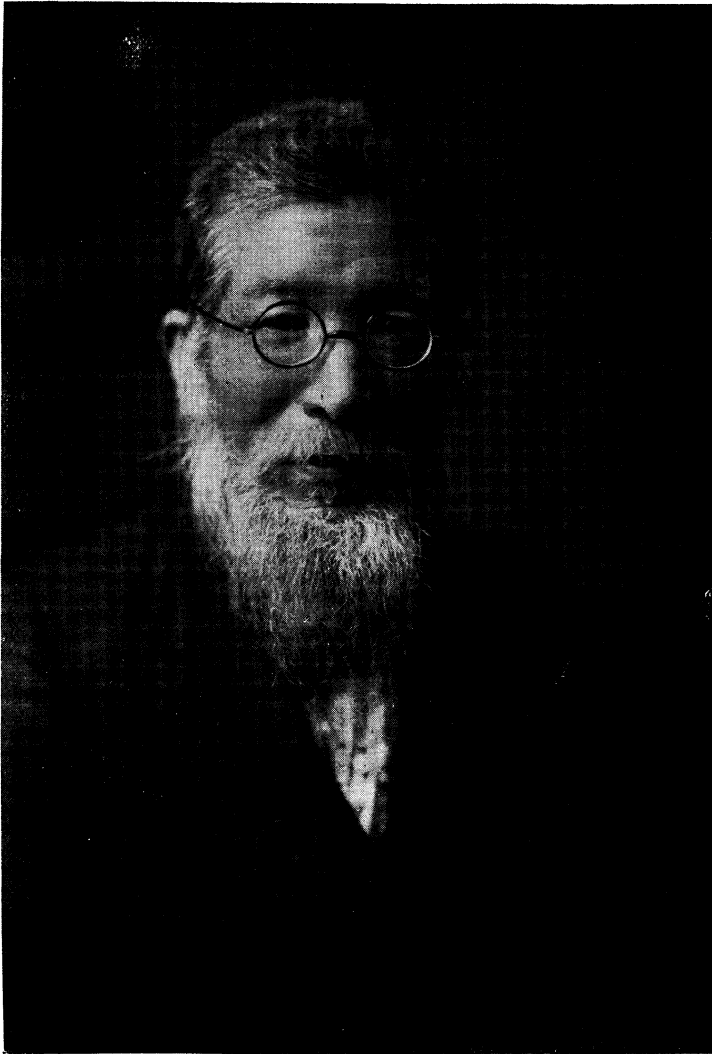
蝦夷富士の西北、東南兩側に於ける森林帯の差異、ハヒマツ分布上の差異並びに山麓、山頂に於ける草本植物景觀の差異は、兩側に於ける降水量、氣溫、濕度等の氣候的差異及び噴火によりて生じたる地質的差異に基くものなりと考察す。

ABSTRACT

The difference in the vegetation in the forest zones, and in the distribution of *Pinus pumila* Regel on the North-western and South-eastern slopes of Mt. Yezo-Fuji and also the difference in the herbaceous plant communities on the summit and foot of the mountain are considered to have been induced by those climatic differences such as in precipitation, atmospheric temperature and moisture on each slope, and partly to be ascribed to the geological features due to the eruption of this volcano.

故 河 野 常 吉 氏 小 傳

本會々員にして且つ、會報の創刊當時より編輯兼發行者たりし、河野常吉氏、病を以て昭和五年九月三日長逝せらる。會員一同誠に哀惜の情に堪へざるところなり。



[Transact. Sapporo Nat. Hist. Soc., Vol. XI, Pt. 3, 1930]

氏は文久二年十一月二十二日、長野縣東筑摩郡島内村に生る。幼にして父君通重氏の薫陶を受け、和漢の學を修め、明治七年高橋白山翁の塾に入り明治十年長野縣教員檢定試験を受けて合格せるも、同年尋いで松本師範學校に入り、在學一年有半にして、明治十二年四月卒業、直ちに福島學校長として赴任せり。時に十六歳。蓋し長野縣師範學校創立以來今日に到る最も若き卒業生ならん。福島學校に在勤すること二年、能く十餘名の教員を統率し、優良の成績を擧ぐ。十四年上京して慶應義塾に入り、英學を修むること二年其後或は秋田の小真木鑛山に入りて分析主任と爲り、或は郷里に歸りて農蠶に従ひ、或は信陽月報の客員と爲りて編輯に従事し、又志士と交りて民權の擴張に奔走せり。明治二十一年六月長野縣廳に奉職し、物産陳列場長兼同縣一等測候所長心得に任せらる。二十二年十二月淺間山大噴火に際しては、單身登山し詳細の調査を遂げて學界に貢獻する所甚だ多かりき。明治二十三年十月再び上京して中央氣象臺に入り、又翌年大日本教育新聞の客員となりて健筆を揮ふ。

氏は人情に厚く、資性英敏にして剛直恬淡、好んで萬卷の書を読み博覽強記、政治、經濟、歴史、地理、考古學、教育、農業、氣象、鑛物、統計等ゆくとして佳ならざるはなし。殊に政治を嗜みしが、其高邁廉直の氣質は到底世俗に容れられざるを悟り、遂に洋行せんと企てしも故ありて果さず、明治二十七年八月北海道に赴き、北海道廳囑託となる。而して氏は國家の爲め北海道を研究せんとし、拓殖に關する事務を執る傍、餘暇を以て諸般の材料を蒐集し、數年ならずして嶄然頭角を現はし、北海道の生字引と稱せらるゝに至る。又樺太を研究して、その必ず日本領たらざるべからざるを説き、「嗚呼樺太島」を著す。大正四年北海道史編纂主任を命ぜられ、大正七年浩漭なる北海道史第一卷、同附録地圖、並びに年表等三卷を著し、第二卷も脱稿せるも、近代の史實に到りては、長官等は氏の直筆を憚り種々干涉する所ありしかば氏は長官等の一時の政略の爲に永久に遺す可き史實を曲ぐることを能はずと、頑として一步も譲らず辭表を呈出すること再度、大正十三年遂に辭職す。學界の爲め實に惜しみても餘りありと言ふべし。其間大正十年北海道史蹟名勝天然記念物調査會委員を囑託せられ、又大正十二年北海道山岳會相談役に推薦せらる。大正十三年小樽市小樽圖書館長を囑託せられ、同年より大正十五年迄小樽市史編纂主任となり、編纂に従事す。大正十五年國產振興博覽會參與に推薦せられ、同年九月室蘭市史編纂主任を囑託せらる。尙、啓明會の補助に依り北海道遺跡遺物及びアイヌ民族史、アイヌ風俗等に關して研

究執筆中なりき。

又氏は北海道の歴史、地理に精通し、独自の識見を有し、且つ考古學上北海道の貝塚、立石、環狀石籬、^{メンヒル ストーン・サークル}チャシ等の發見研究多く、本道の石器、土器の蒐集につとめ、之を札幌博物館に寄附せしもの無數なり。

尙、氏は明治三十八年札幌博物學會會報創刊號發刊當時より編輯員として誠意活躍せられ、「非コロボツクル論」「チャシ即ち蝦夷の砦」「アイヌの古代風俗に就て」其他貴重なる論文數篇を寄せられ、本會の爲に盡力せられしこと少なからず。本會月次會或は大會に於て独自の蘊蓄を傾け講演をせられしも數度なりき。

氏は明治二十九年一月九日同郷川船かつゑと婚し、二男四女を擧ぐ。長男は不幸にして夭折せるも、次男廣道氏は北海道帝國大學農學部生物學科を卒業し、目下同農學部昆蟲學教室に奉職し居り、長女久子女史は東京女子高等師範學校を卒業し、目下札幌藤高等女學校の教諭たり。又次女は北大教授犬飼哲男博士夫人たり。

氏は昭和四年春頃より稍々胃腸を病み療養に努めしも、昭和五年四月頃より病勢加はり、或は大學病院に入院加養し、或は自宅に於て家族一同の手厚き看護を受けし効もなく、昭和五年九月三日午後十時二十分遂に永眠せらる。享年六十九。遺骸は同月五日自宅に於て告別式舉行の後、山鼻墓地に埋葬せらる。

氏の該博深淵なる知識の百分の一も世に残さるゝことなくして、其死と共に葬られしは學界の爲、惜しみても餘りあり。

氏の著述は之を積めば氏の身長は越ゆと言はるも、其一部を列擧すれば次の如し。

著 書 (道廳出版物中には共同執筆せるものあり)

第二拓地殖民要録 (明治三十九年)

道治一般 (明治四十四年)

北海道舊土人 (明治四十五年)

北海道殖民狀況報文 日高國 (明治三十二年) 十勝國 (明治三十四年)

根室國 (明治三十一年) 釧路國 (明治三十三年)

北見國 (明治三十八年)

北海道拓殖要覽 (明治三十六年)

北海道拓殖成績概要 (明治四十三年)

改訂北海道拓殖の進歩 (明治四十五年)

- 北海百人一首 (明治三十九年)
 函館區史 (明治四十四年)
 北海道名勝誌 (明治四十四年)
 明治九年及び十四年御巡幸の記
 道勢概況
 移住者成績調査 第一編 (明治三十九年) 第二編 (明治四十一年)
 北海道史 (大正七年)
 北海道史附圖 (大正七年)
 北海道史附錄 (年表其他) (大正七年)
 北海道鑛泉史 (大正二年)
 榎本開拓中判官の書簡 (大正十五年九月)
 大雪山及石狩川上流探検開發史 (大正十五年八月)
 北海道史蹟名勝天然記念物調査報告書 (大正十三年)
 奉迎記事 (明治四十五年六月)
 北海道道路史 (大正十四年六月)
 北千島調査報文 (明治三十四年)
 國產振興博覽會北海道歴史館陳列品解説 (大正十五年)
 明治二十二年 長野測候所氣象年報 (明治二十六年)
 明治二十三年 長野測候所氣象年報 (明治二十六年)
 明治二十四年 御嶽氣象觀測所報告書 (明治二十五年)
 信濃川洪水調査書

論文、論說其他

- チヤシ即ち蝦夷の砦 (札、博、第一卷第一號、明治三十八年)
 非コロボツクル論 (札、博、第二卷、明治四十一年)
 コロボツクル説の誤謬を論ず (歴史地理、第十二卷、明治四十一年十一月)
 アイヌの副葬品 (東、人類、第二十九卷第二號、大正三年二月)
 蝦夷の刀劍 (考古學雜誌、第四卷第五號、大正三年一月)
 アイヌ自製の衣服 (北、人類、第一號、大正八年三月)
 アイヌ古代風俗の研究に就て (札、博、第六卷第一號、大正四年十二月)
 北海道先史時代の遺跡遺物並に人種 (北海道教育雜誌、明治三十二年)
 日本のストーン、サークル (歴史地理、第三十二卷第一號、大正七年七月)
 ストーン、サークル (殖民公報、第百四號、大正七年九月)
 千島の人類學的視察 (明治三十三年七月)
 臺灣の土器に就て (考古學雜誌、第十五卷第十號、大正十四年十月)
 北海道の史跡 (小樽新聞 大正二年九月)
 北海道鑛業史 (北海道鑛業會會報、第一年一第二年)
 北海道鑛業沿革
 北海道の石油

札幌附近に於ける生物及び地理の變遷

北海道の津浪に就て (札幌、博、第四卷第二號、大正二年四月)

北海道の古來の大津浪 (道民、第三卷、第十號、大正七年十月)

有珠岳の噴火 (札幌、博、第五卷第二號、大正三年六月)

大有珠岳生成に就て田中館理學士に正す (地學雜誌、第三百五十八號、大正七年十月)

地理小話 (札幌、博、第四卷第一號、明治四十五年)

奇異なる自然現象 (北海道教育雜誌、明治三十五年)

北海道の鶴 (北海道教育雜誌、第七十五號、明治三十二年)

國後樺捉の建標に關する斷案 (札幌、博、第四卷第一號、大正六年)

國後樺捉の建標に關する餘説 (歴史地理、第十九卷第六號、明治四十五年六月)

婦女禁制の神威岬 (歴史地理、第二十五卷第六號、大正四年六月)

本道山火の來歴に就いて (北海道林業會報、第十一卷第七號、大正二年)

寛政以前本道の移入樹木 (北海道林業會報、第十二卷第九號、大正三年)

文化年間栽植せる函館山の杉林に就て (北、林、第十卷第一號、大正元年)

昔時本道木材輸出の狀況 (北、林、第十卷第七號、大正元年)

江差檜山の沿革 (御料林、第二十七號、昭和五年八月)

北海道の檜山 (北、林、第十三卷第十一號、大正四年)

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北海道農業の沿革 (北、農、第三卷第三號、明治三十六年十一月)

本道米作の沿革 (殖民公報、大正五年)

北海道の二毛作に就て (北、農、第二卷第十八號、明治三十五年)

北海道牛の沿革

本道開拓と寒暖 (道民、第五卷第二號、大正九年二月)

開拓史話 (道民、第四卷、大正八年四月一九月)

北海道年代記 (道民、第三卷第八號、大正七年八月)

北海道開拓史 (道民、第三卷第八號、大正七年八月)

開拓史の三判官 (殖民公報、大正九年一十年)

開拓史に於ける雄大堅實なる計畫 (昭和五年一月)

北海道の富豪 (北、學、第一號、明治四十一年十二月)

雄大なる北海道本府の經營 (あけぼの第一號、大正十三年一月)

北海道金融の沿革 (大正四年一月)

北海道殖産方針の樹立に就て (北海報知、第一卷第一號、大正四年三月)

北千島探見 (北海道教育雜誌、第九十一號)

松前城 (殖民公報、第四號、明治三十四年九月)

安東氏と松前氏 (北海道教育雜誌、第七十五號、明治三十二年)

本邦種痘の鼻祖中川五郎次の事跡 (北海醫報、第六十四號、大正十四年七月)

蝦夷島に於ける花山院忠長 (中央史壇、第十一卷第六號、大正十四年十二月)

安永以前松前藩と露人との關係 (史學雜誌、第二十七卷第六號)

赤蝦夷風説考の著者工藤平助 (史學雜誌、第二卷第五號)

- 飛驒屋久兵衛の傳 (北、林、第十三卷第二號一五號、大正四年)
北海道と露西亞 (明治三十七年一月)
札幌神社の由來 (明治四十二年九月)
淺間山火口踏査紀行 (地學雜誌、第二集第十四卷、明治二十三年二月)
淺間山大噴出の記 (信濃殖産協會雜誌、第十二號、明治二十三年十二月)
信濃州氣候論 (信濃殖産協會雜誌、第一號、明治二十二年十二月)
本年一月七日信州強震取調報告 (地學雜誌、第二集第十三卷、明治二十三年一月)
一月七日信州強震報告補遺 (地學雜誌、第二集第十五卷、明治二十三年)
歴史總記 (日本地理大系、北海道樺太篇、昭和五年二月)
鳴 呼 樺 太 島
博物年表
北邊雄圖偉蹟
北千島雜記
遺跡遺物の保存に就て
幕府の老中海陸軍總裁 松前崇廣
館城址
北海道の今昔 (J. O. I. K. 昭和三年七月より同四年二月に至る講演)
本道に於ける江州商人 (明治三十六年一月)
北海道重要事物起原 (小樽新聞、明治三十六年一月)
北海道教育上の缺點 (北海之教育、264, 266, 267, 268, 大正四年)
近江商人と越後商人 (北海パツク創刊號、昭和二年五月)
鎖業に就ての注意 (信濃殖産協會雜誌、第十二號、明治二十三年十二月)
明治二十三年信州氣豪と蠶業との關係 (信濃殖産協會雜誌、第十四號、明治二十四年一月)
占守の越年
北海道政治史
大雪山? 旭岳? (北海タイムス、昭和二年十二月)
長野氣象月報 (明治二十二年)
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注 意

本會に對する總ての書信は北海道帝國大學
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