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Die japanischen *Phloeosinus*-Arten (*Coleoptera*, *Ipidae*) und ihre Frasspflanzen

Von

Yoshinao NIJIMA

(新島善直)

Mit 1. Tafel

Ueber die japanischen *Phloeosinus* hören wir zuerst von F. CHAPUIS 1874 der zwei Arten aus der M. G. LEWISCHEN Sammlung beschrieb. 1894 wurden von den neu hinzu gekommen Käfern derselben Sammlung durch W. BLANDFORD 5 weitere Spezien festgestellt, eine weitere neue Art aus Formosa wird 1939 von H. EGGERS veröffentlicht. Aus Japan wären also 8 *Phloeosinus*-Arten bekannt gegeben. Ich glaubte zuerst, dass die von mir in Formosa gesammelten Exemplare der Beschreibung nach mit der EGGERSCHEN Formosanart gleich seien. Bei der Vergleichung mit dem Typus, der mir von Herrn M. CHUJO in liebenswürdigerweise für kurze Zeit überlassen wurde stellten sich Unterschiede heraus; daraufhin werde ich sie als eine neue Art bezeichnen. Die Frasspflanzen, so wie das forstliche Verhältnis fanden von den obigen Forschern keine Beachtung; einige japanische Forstleute zeigten hierfür Interesse und geben darüber Auskunft. Von den 8 beschriebenen Arten fehlen mir 2. Die Käfer der übrigen 6 Arten sammelte ich in den verschiedenen Teilen Japans, bestimmte grösstenteils ihre Frasspflanzen und untersuchte zahlreiche Frassstücke. Im Walde beobachtete ich oft die Käfer und ihre Lebensweise, damit möglichst das genaue forstliche Verhältnis festgestellt werden konnte. In dieser Arbeit werde ich kurz darüber Bericht erstatten.

1. *Phloeosinus perlatus* CHAPUIS

CHAPUIS: Scol. Jap., p. 198 (1875); BLANDFORD: Trans. Ent. Soc. Lond., p. 71 (1894); NIJIMA: Journ. Sapporo Agric. Coll., 2, p. 124 (1905); T. YASUMBA: Teishitsu Rinyakyoku Ringyo Shiken Hokoku, 1, pp. 30-34 (1925); MURAYAMA: Journ. Soc. Trop. Agric., p. 505 (1934); ibid., Tenthredo, 1, p. 125 (1936).

Fundort: Hokkaido (Misomai gesamm. von NIJIMA), Honshu (Chuzenji, Nowada, Kobe gesamm. von LEWIS; Aomori, Kiso, Kiyosumi, Tokyo gesamm. von NIJIMA), Shikoku (gesamm. von MURAYAMA), Formosa (gesamm. von MU-

RAYAMA), Korea, Soul (gesamm. von MURAYAMA).

Frasspflanze: *Thujopsis dolabrata* SIEB. et ZUCC., *Chamaecyparis obtusa* SIEB. et ZUCC., *Ch. pisifera* SIEB. et ZUCC., *Ch. formosanus* MATSUMURA, *Juniperus chinensis* L., *Cryptomeria japonica* DON.

Ich sammelte früher die Exemplare dieses Käfers in Misomai bei Sapporo und schrieb, dass für sie vielleicht *Taxus* als Frasspflanze in Hokkaido gelten könnte*): später fand ich in anderen verschiedenen Arbeiten diese Holzart als Frasspflanze angegeben. Lange Zeit hindurch untersuchte ich in verschiedenen Gegenden die *Taxus*-Bäume, aber niemals sah ich an ihnen den Käfer *Ph. perlatus*, fand auch trotz eifriger Nachforschung kein Fressbild von ihm. In Sapporo und Umgebung treffen wir viele *Chamaecyparis* an, auch *Thujopsis* ist nicht selten vorhanden; sie wurden von Mitteljapan eingeführt und vermutlich wurde gleichzeitig mit ihnen der Käfer eingeschleppt. *Taxus cuspidata* SIEB. et ZUCC. kann also als Frasspflanze des *Ph. perlatus* nicht in Betracht kommen. YASUMBA**) berichtet über den ungeheueren Schaden, der 1924 im *Chamaecyparis*-Wald bei Kiso, Chiba und Tokyo durch diese Art entstand; es waren grösstenteils junge 12–20-jährige Wälder in kleineren Gruppen von fünf bis zehn Bestände. Zuerst wurde an den Stämmen in ungefähr 1 m Höhe Harzauslauf entdeckt, der bis auf ca 3 m Höhe anstieg. Die Baumkronen wurden gelb und dürr.

Ueber den Ernährungsfrass dieser Art habe ich noch keine Beobachtung angestellt.

2. *Phloeosinus lewisi* CHAPUIS

CHAPUIS: Scol. Jap., p. 198 (1875); BLANDFORD: Trans. Ent. Soc. Lond., p. 73 (1894); NIIJIMA: Journ. Coll. Agric. Tohoku Imp. Univ., 3, p. 123 (1909); ibid., Trans. Sapporo Nat. Hist. Soc., 3, p. 6 (1910).

Fundort: Hokkaido (Sapporo, Oshima gesamm. von NIIJIMA), Honshu (Aomori gesamm. von NIIJIMA; Tokyo gesamm. von GALLOIS, YASUMBA; Chuzenji, Nowada, Kobe, Kashiwagi gesamm. von LEWIS; Kiso, Chiba gesamm. von YASUMBA); Shikoku (Ehime gesamm. von TOMIMOTO).

Frasspflanze: *Thujopsis dolabrata* SIEB. et ZUCC., *Chamaecyparis obtusa* SIEB. et ZUCC., *Cryptomeria japonica* DON., *Pinus densiflora* SIEB. et ZUCC.

Mittelgrosse durch Krankheit geschwächte halbdürre und auch frisch-gefallene Stämme sind unter der Rinde von Brutgängen dieser Art bedeckt. Im *Thujopsis*-Walde richtet der Jungkäfer durch seinen Ernährungsfrass genau solch enormen Schaden an wie *Myelophylus piniperda* bei den Kieferarten wo

*) Journ. Sapporo Agr. Coll., 2, p. 125 (1905).

**) Teishitsu Kinyakyoku Ringio Shiken Hokoku, 1, p. 30 (1925).

letzterer sehr gefürchtet wird. Im Staatswald Aomori konnte ich öfters beobachten, dass die von der Brutstätte aus geschwärmten Käfer an junge gesunde Triebe der *Thujopsis*-Bäume flogen und sich daselbst für ihre Ernährung einbohrten; die befallenen Haupt- und Nebentriebe verfärbten sich worauf sie allmählich absterben und der Baumzuwachs vernichtet wird. Diese Erscheinung tritt vorzugsweise Ende Juni bis Mitte Juli auf. Die Ein- und Ausfluglöcher sind nicht so genau zu erkennen wie bei den gefallen Kiefertrieben die durch *Myelophylus* entstanden; die Käfer des *Ph. lewisi* nagen nur die inneren saftigen Teile. Diese Schäden werden schon an jungen *Thujopsis* wahrgenommen. Bei 10 jährigen Pflanzungen die gerade mit ihrem starken Höhenzuwachs begonnen hatten bemerkte man öfters solche Erscheinungen; für die Forstwirtschaft bedeutet es ein grosser Verlust. Von dieser Art ist ausser *Thujopsis*, der durch Ernährungsfrass entstandene Schaden für die anderen Holzarten noch unbekannt.

3. *Phloeosinus rudis* BLANDFORD

BLANDFORD: Trans. Ent. Soc. Lond., p. 73 (1894); NIJIMA: Trans. Sapporo Nat. Hist. Soc., 3, p. 7 (1910).

Fundort: Honshu (Aomori, Ashio, Kiso gesamm. von NIJIMA; Tokyo gesamm. von GALLOIS).

Frasspflanze: *Thujopsis dolabrata* SIEB. et ZUCC., *Chamaecyparis obtusa* SIEB. et ZUCC.

GALLOIS fand den Käfer an einem Gartenzierbaum genannt *Kamakurahiba* (Spielart der *Chamaecyparis obtusa*). Das Frassbild *Ph. rudis* (Fig. 1) hat grosse Ähnlichkeit mit *Ph. perlatus*; man findet es unter dicken und weniger dicken Rinden kränkelder *Thujopsis* und *Chamaecyparis*. Die Brutstätte verlassenen Käfer richten durch ihren Ernährungsfrass bedeutenden Schaden für die Hostpflanzen an. In der Oberförsterei Nakazato bei Aomori konnte ich an einem *Thujopsis*-Wald eine durch diesen Käfer hervorgerufen grosse Karamität beobachten. Die Ernährung ist bei dieser Art nicht die gleiche wie die der *Ph. lewisi*; während die letztgenannte Art nur Triebe von Jungpflanzen beschädigt überfällt *Ph. rudis* grosse alte Bestände. Die geschwärmten noch nicht völlig ausgereiften Käfer machen sich an die Gipfel des *Thujopsis*-Baum zu schaffen; sie bohren sich in die dünnen Baumäste an der Stelle wo der Zweig ansetzt ein, und suchen da Nahrung. Es vertrocknen dadurch viele kleine Aeste; fast ebenso grossen Schaden richtet er an wie *Myelophylus pini-perda* am Kieferbaum, denn ihm genügen nicht nur zarte einjährige Aeste sondern auch an ältere verholzte Stämme macht er sich heran. Durch den Ernährungsfrass gelittene Bäume gehen nicht direkt ein, erhalten aber ein kränkliches Aussehen. In solchem Zustand befindliche Bäume werden von den

ausgereiften Käfern überfallen, für sie ist es der geeignete Zeitpunkt ihrer Fortpflanzung; sie bohren sich in die Rinde und überziehen den Stamm dicht mit Frassbildern. Durch beide von dem Käfer hervorgerufene Wirkungen gehen grosse alte *Thujopsis*-Bäume ein; er ist ein sehr gefürchteter Schädling für den *Thujopsis*-Wald.

4. *Phloeosinus seriatus* BLANDFORD

BLANDFORD: Trans. Ent. Soc. Lond., p. 72 (1844).

Fundort: Kyushû (Higo gesamm. von LEWIS u. NIJIMA).

Frasspflanze: *Cinnamomum Camphora* NEES. et EBERM.

Zwei Exemplare dieser Art wurden von LEWIS in Higo in Kyushû gesammelt und von BLANDFORD beschrieben. Das von mir untersuchte Material stammt ebenfalls aus der Stadt Kumamoto in derselben Provinz. Die Körperlänge des Käfers ist 2.8–3 mm etwas grösser wie die Originale BLANDFORDS. Das Frassbild befindet sich unter der Rinde der Kampferbäume *Cinnamomum Camphora*. Muttergänge (Fig. 2) welche ein oder doppelarmige Lotgänge sind greifen wenig tief in den Splint ein und sind 1–2 cm lang, 1.5–2 mm breit. Die Rammelkammer liegt mehr im Rindenteil und ist unter der Baumrinde auf dem Frassbild unsichtbar. Larvengänge gleich wie die Muttergänge tief in den Splint gehend, laufen zuerst dicht neben einander. Puppenwiegen sind vorwiegend in der Rinde. Der Ernährungsfrass der Jungkäfer (Fig. 3) beginnt direkt von der Fortpflanzungsstelle aus und zeigt unregelmässig gedrängte Gangbilder, wodurch die Gänge des Fortpflanzungsbildes gänzlich verlöschen. Wie gross der Schaden ist den *Ph. seriatus* bei Kampferbäumen anrichtet ist noch nicht festgestellt; nach den stark mitgenommenen Frassstücken zu urteilen, die durchschnittlich von jungen Baumteilen stammen, muss derselbe für das Pflanzenleben nicht unbedeutend sein.

5. *Phloeosinus minutus* BLANDFORD

BLANDFORD: Trans. Ent. Soc. Lond., p. 71 (1894).

Fundort: Hokkaido (Sapporo, Hakodate gesamm. von NIJIMA), Honshû (Aomori, Kiso gesamm. von NIJIMA; Tokyo gesamm. von GALLOIS), Kyushû (Ichiuchi gesamm. von LEWIS).

Frasspflanze: *Chamaecyparis obtusa* SIEB. et ZUCC., *Ch. pisifera* SIEB. et ZUCC., *Cryptomeria japonica* DON.

Es ist die kleinste japanische *Phloeosinus*-Art die zuerst in dem warmen Gebiet in Ichiuchi (Kyushû) von LEWIS gesammelt wurde; dieses einzige Exemplar hat BLANDFORD beschrieben. Später fand man sie in anderen Teilen wie auch in dem nördlich gelegenen Hokkaido; ich selbst besitze 27 von diesen

Käfern und verschiedene Frassstücke. Die Körperfarbe ist bei meinen Exemplaren dunkelrot bis schwarz; Körperlänge 1.6–1.8 mm,

Das Frassbild (Fig. 4) meistens an dünnen Stämmen vorkommend liegt unter der Rinde, man findet es auch oft in 2 oder 3 jährigen Aesten. Die Muttergänge, kleine Lotgänge werden 1 höchstens 2 cm lang und 1 mm breit. Fig. 3 zeigt normale Muttergänge dieser Art in der Rinde von *Ch. obtusa* aus Kiso; die am Ende der Muttergänge befindliche Rammelkammer, welche bei den meisten *Phloeosinus*-Arten vorhanden ist fehlt hier.

In der Oberförsterei Nakazato Präf. Aomori ernährte sich der zuerst geschwärmte Käfer dieser Art von jungen Aesten *Thujaopsis*; die Fortpflanzung geschieht hauptsächlich in dünnen Stämmen dieser Holzart, auch findet man sie in grünen Astteilen. Nur durch den Ernährungsfrass hervorgebrachter Schaden ist bei dieser Art nicht so bedeutend wie der welcher *Ph. lewisi* anrichtet, aber da die Fortpflanzung sich auch auf lebensfähige Baumteile erstreckt besteht hierin für den jungen *Thujaopsis*-Wald eine grosse Gefahr.

6. *Phloeosinus pertuberculatus* EGGERS

EGGERS: Arbeit. morph. taxan. Ent. Berlin-Dahlem, 6, p. 115 (1939).

Fundort: Formosa (Arisan-Berg gesamm. von CHUJO).

Frasspflanze ist nicht angegeben auch ist seit 1931 kein weiteres Exemplar gesammelt worden.

7. *Ploeosinus arisanus* n. sp.

Kopf schwarz, glänzend, dicht fein punktiert, gelblich kurz behaart. Beim ♂ vor dem Munde mit einer Grube in deren Mitte sich ein kurzer Längskiel befindet, beim ♀ ohne Grube, fast flach, mit bedeutend feinerem Längskiel. Augen gelblich.

Halsschild schwarz, fast so lang wie Basis breit, hinter dem Vorderrande leicht eingeschnürt; fein dicht punktiert, gelblich fein flachliegend behaart. Mittellinie auf der Scheibe angedeutet, auf der Mitte der Mittellinie punktiert erhöht und daselbst glänzend erscheinend.

Flügeldecken rötlichschwarz, wenig breiter als Halsschild und doppelt so lang wie die Breite, an der Basis schwach gerandet. Punktstreifen vertieft, glänzend, mit runden Punktreihen. Zwischenräume breit, dicht und sehr fein gerunzelt mit feinen Schuppenhärchen besetzt; 1. und 3. erhaben, 2. und 4. am Absturz verschmälert. 1., 3. und 5. Zwischenraum ungefähr von der Mitte der Flügeldecken bis zum Absturzende mit einreihig spitzigen Körnchen und aufgerichteten Haaren versehen; die Körnchen des ♂ sind stärker als die des ♀.

Mit *Ph. pertuberculatus* vergleichend ist *Ph. arisanus* bedeutend schmaler,

Zwischenräume der Flügeldecken ohne grobe dicht besetzte Höcker, Punktreihen weniger kräftig nach ausen gebogen, beim ♂ am Kopf ein Grübchen, das bei *Ph. pertuberculatus* fehlt. Die Körperfarbe zeigt Aehnlichkeit mit *Ph. perlatus* doch ist diese Art viel grösser.

Körperlänge: 3.2-3.4 mm.

Fundort: Formosa (Arisan-Berg gesamm. von NIJIMA).

Frasspflanze: *Chamaecyparis formosanus* MATSUMURA

1922 fand ich auf dem Arisan-Berg 2300 m überm Meeresspiegel an *Chamaecyparis formosanus* 3 Exemplar diese Käfers nebst Frassstücke. Muttergänge (Fig. 5) die doppelte Lotgänge bilden greifen tief in den Splint ein; Armlänge beträgt 1.5 bis 4 cm und ist 1.5 mm breit. Rammelkammer liegt mehr im Splint als ausserhalb desselben. Larvengänge laufen unter den Bastteilen her während Puppenwiegen wieder tief im Splint eingebettet sind. *Ch. formosanus* ist die grösste nur in Formosa heimisch japanische Holzart, in dicken wie in dünnen Stammteilen findet man die Frassbilder.

Zwei von BLANDFORD beschriebene Arten *Ph. pulchellus* und *dubius* sind mir nicht bekannt; sie wurden von LEWIS in Honshû, Wadatoge und Kurigahara (beide in der Präf. Nagano) gesammelt. Auf den Flügeldecken haben sie abwechselnd hell und dunkel gefärbte Zwischenräume. Von beiden Arten konnten die Frasspflanzen noch nicht ausfindig gemacht werden.

Zusammenfassung

Die bis jetzt beschriebene Frasspflanzen der japanischen *Phloeosinus* sind fast durchweg Nadelhölzer wie *Thujopsis*, *Chamaecyparis*, *Junipers* und *Cryptomeria*; nur eine einzige Art erscheint am Laubholz *Cinnamomum*. Die genannten Nadel- und Laubhölzer enthalten sämtlich ätherisch aromatische Oele, dass man annehmen könnte solche ölige Stoffe seien für die Ernährung der *Phloeosinus* notwendig. Da die Frasspflanzen der *Phloeosinus* alle geschätzte japanische Waldbäume sind ist *Phloeosinus* forstlich schädlich; aber das Schadenverhältnis ist verschieden. Grosse Karamität für den Wald bilden die durch *Ph. perlatus* und *minutus* entstandenen Brutgänge, wogegen *Ph. lewisi* und *seriatus* durch ihren Ernährungsfrass schädigen. Eine noch genauere Untersuchung zwischen Käferart und Frasspflanze für das forstliche Verhältniss ist eine grosse Notwendigkeit.

日本産ヒバノキクヒムシ属の種及び其寄生植物

本文に於て日本に於けるヒバノキクヒムシ属 *Phloeosinus* の既知の種類中著者の見る能はざり

し二種を除きたる者に就き檢知せる要點を記し寄主植物及び分布等を明かにせり。但しタイワンキクヒムシに就ては中條道夫氏の厚意により其模式標本を見るを得たるは氏に感謝する處なるが寄主を明かにするを得ざりき。尙ほ別に一種を新種として記載せり。次に各種の要點を表記すべし。

1. 翅鞘の列間部は色澤一樣ならずして交互に濃淡をなす (BLANDFORD による。標本著者未知)

Ph. pulchellus BL. 及び *dubius* BL.

翅鞘の列間部は一樣の色澤を有す (2)

2. 翅鞘赤褐色を帶ぶ (3)

翅鞘黒色をなす (4)

3. 翅鞘赤色より暗褐。列間部には小顆粒列を有し黄褐色の短毛あり。雄の第一及び第三の列間部の顆粒は著しからず。第二列間部は翅端に於て狹細して窪む。體長: 2.5 mm. 分布: 北海道、本州、四國、臺灣、朝鮮。寄主: ヒバ、ヒノキ、サワラ、ベニヒ、ビヤクシン、スギ。

ヒバノキクヒムシ *Ph. perlatus* CHAP.

翅鞘暗褐、列間部には稍や皺狀細小なる顆粒を密布す。短鱗狀毛を有す。第一、第三の列間部は少しく脹起し、第二、第四は窪みて先端は巾狹し。第一、第三及び第五の列間部には列狀の顆粒ありて中央より翅端に及ぶ。雄に於て殊に著し。體長: 3.2-3.4 mm. 分布: 臺灣。寄主: ベニヒ。

(新種) アリサンキクヒムシ *Ph. arisanus* NIJ.

4. 翅鞘の列間部に著しき顆粒を密布し一列の棘狀瘤起あり。其中央最も強大に先端に稍や弱小なり。第二列間部には之を缺き翅端に狹窄す。點列線及び列間部は列間の中央に於て外方に彎曲す。體長: 3.5 mm. 分布: 臺灣。

タイワンキクヒムシ *Ph. pertuberculatus* EGG.

翅鞘の列間部に著しき顆粒なし (5)

5. 前顔部口部の上方に縦隆線を存す。翅鞘の列間部に高低なく一樣にして光澤を有し不規則なる列狀に刺毛と小顆粒を具ふ。奇數の列間部の先端に近く小數の強き突起を存す。形狀甚だ小。體長: 1.6-1.8 mm. 寄主: ヒバ、ヒノキ。分布: 北海道、本州、九州。

ヒバノヒメキクヒムシ *Ph. minutus* BL.

前顔部口部の上方に縦隆線を存せず (6)

6. 翅鞘上に鱗毛を有せず。列間部は中央まで顆粒を有し中央より先端に僅かに強刺毛具ふ。其第二、第四は先端部の前に一、二の瘤起を存す。雄は第一に五個、第三に七個の強瘤起を具ふ。體長: 2.7-3 mm. 分布: 本州。寄主: ヒバ、ヒノキ。

ヒノキノキクヒムシ *Ph. rudis* BL.

翅鞘の列間部に鱗毛及び刺毛を一樣に存し又不規則なる列狀に小顆粒を具ふ。體小形なり。體長: 1.8-2.3 mm. 分布: 北海道、四國、本州。寄主: ヒバ、ヒノキ、スギ、アカマツ。

ヒバノコキクヒムシ *Ph. lewisi* CHAP.

顔面兩眼の間に僅かに縦隆線を認め得べし。列間部に微小なる顆粒を存し黄褐色の鱗毛あり。第二の列間部は先端に近く少しく窪み雄は雌より稍や著し。列間部の先端に於て交互に刺毛列を缺く。體長: 2.8-3 mm. 分布: 九州。寄主: クス。

クスノキクヒムシ *Ph. seriatus* BL.

Erklärung der Tafel

1. Frassbild von *Phloeosinus rudis* BL. in *Thujopsis dolabrata* SIEB. et ZUCC.
2. Frassbild (Fortpflanzungsgänge) von *Phloeosinus seriatus* BL. in *Cinnamomum Camphora* NEES. et EBERM.
3. " (Ernährungsfrass) " " " " " "
4. Frassbild von *Phloeosinus minutus* BL. in *Thujopsis dolabrata* SIEB. et ZUCC.
5. Frassbild von *Phloeosinus arisanus* NIJ. in *Chamaecyparis formosanus* MATSUM.

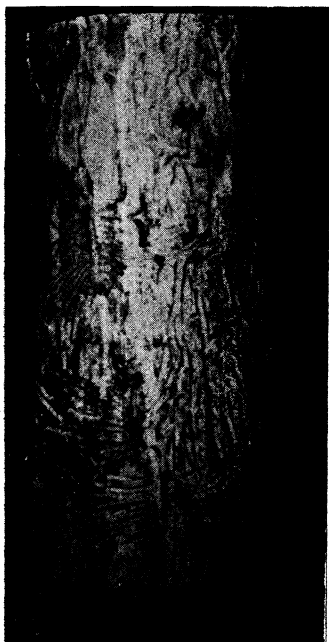
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1



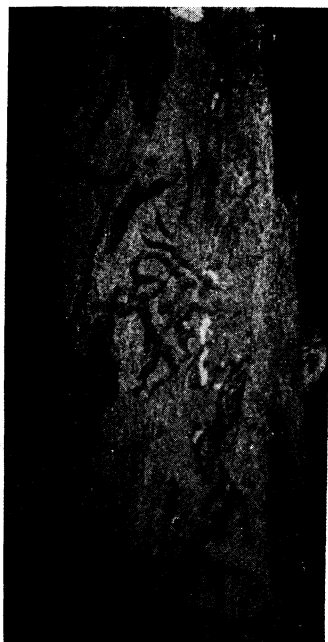
5



2



3



4

Materials for a Rust-flora of Manchoukuo, II

By

Naohide HIRATSUKA

(平塚直秀)

1. *Uredinopsis hirosakiensis* KAMEI et HIRATSUKA, f. in KAMEI in Transact. Sapporo Nat. Hist. Soc. XII, p. 164, 1932.

Hab. On *Thelypteris palustris* SCHOTT. var. *pubescens* FERNALD (*Hime-shida*). Prov. Botankô: Tônei (Tônei-ken) (Aug., 1940, M. IRIE, *m-no.* 375). New to Manchoukuo!

2. *Uredinopsis Kameiana* FAULL in Contrib. Arnold Arboretum, Harvard Univ. XI, p. 82 & pl. IV, figs. 20 (a-d), 1938.

Hab. On *Pteridium aquilinum*. KÜHN var. *japonicum* NAKAI (*Warabi*). Prov. Kantô: Kaizanton (Waryû-ken) (July 5, 1939, HIRATSUKA, f., *m-no.* 374). New to Manchoukuo!

3. *Thekopsora guttata* (SCHRÖT.) SYDOW, Monogr. Ured. III, p. 467, 1915.

Hab. On *Galium dahuricum* TURCZ. (*Ôba-no-yaemugura*). Prov. Peian: Korangawa-jyôriu (Tetsurei-ken) (July 31, 1940, HIRATSUKA, f., *m-no.* 351).

4. *Melampsora Magnusiana* G. WAGNER in Oesterr. Bot. Zeitschr. XLVI, p. 273, 1896.

Hab. On *Populus Davidiana* DODE (*Chôsen-yamanarashi*). Prov. Kitsurin: Domonrei (Kyûdai-ken) (July 22, 1940, HIRATSUKA, f., *m-no.* 437). Prov. Peian: Korangawa-jyôriu (Tetsurei-ken) (July 31, 1940, HIRATSUKA, f., *m-no.* 438). New to Manchoukuo!

5. *Coleosporium cimicifugatum* THÜMEN in Bull. Soc. Imp. Nat. Moscou, LIII, p. 222, 1878.

Hab. On *Cimicifuga dahurica* MAXIM. (*Fubuki-shôma*). Prov. Hôten: Tokuriji (Fuku-ken) (Oct. 6, 1929, H. TAKASUGI, *m-no.* 311).

6. *Coleosporium Clematidis* BARCLAY in Jour. Asiatic Soc. Bengal,

Trans. Sapporo Nat. Hist. Soc., Vol. XVII, Pt. 2, 1942.

LIX, pt. 2, p. 89 & pl. VI, figs. 3 & 5, 1890.

Hab. On *Clematis hexapetala* PALL. (*Hosoba-shiro-kusabotan*). Prov. Kitsu-
tsurin: Jyôgetsutan near Shinkyô (June 21, 1940, T. WADA, *m-no.* 376).

7. *Phragmidium Potentillae* (PERS.) KARSTEN, Myc. Fenn, IV, p. 49, 1878.

Syn. *Phragmidium Potentillae* subsp. *Phragmidium supinum* TRANZSCHEL, Consp. Ured. URSS, p. 231, 1939.

Hab. On *Potentilla discolor* BUNGE (*Tsuchiguri*). Prov. Hôten: Tokuriji (Sept. 16, 1931, H. TAKASUGI, *m-nos.* 14 & 417); Prov. Kantô: Kaizanton (Waryû-ken) (July 19, 1940, HIRATSUKA, f., *m-no.* 416).

On *Potentilla multifida* L. var. *angustifolia* LEHM. (*Tô-kawarasaiko*). Prov. Peian: Kokuzan (Kokuzan-ken) (Aug. 4, 1940, HIRATSUKA, f., *m-nos.* 309 & 310).

On *Potentilla paradoxa* NUTT. (*Potentilla supina* L. var. *paradoxa* WOLF) (*O-kijimushiro*). Prov. Kitsu-
tsurin: Domon-rei (Kyûdai-ken) (July 22, 1940, HIRATSUKA, f., *m-no.* 425); Kôshurei (Kwaitoku-ken) (Aug. 28, 1938, ABE, *m-no.* 21). Prov. Hinkô: Harbin (July 29, 1940, HIRATSUKA, f., *m-no.* 430). Prov. Peian: Mizuho-mura (Suiryô-ken) (Aug. 15, 1938, M. IRIE, *m-no.* 23); Kokuzan (Kokuzan-ken) (Aug. 4, 1940, HIRATSUKA, f., *m-nos.* 418 & 420); Taian (Kokuzan-ken) (Aug. 5, 1940, HIRATSUKA, f., *m-no.* 427); Korangawajyôriu (Tetsurei-ken) (July 31, 1940, HIRATSUKA, f., *m-no.* 421). Prov. Kantô: Meigetsukô (Enkichi-ken) (July 21, 1940, HIRATSUKA, f., *m-no.* 422); Kaizanton (Waryû-ken) (July 18, 1940, HIRATSUKA, f., *m-nos.* 423 & 424). Prov. Botankô: Kairin (Neian-ken) (Aug. 8, 1940, HIRATSUKA, f., *m-no.* 428); Neian (Neian-ken) (Aug. 9, 1940, HIRATSUKA, f., *m-no.* 429); Botankô-shi (Aug. 10, 1940, HIRATSUKA, f., *m-no.* 426).

8. *Gymnosporangium Haraeum* SYDOW in Ann. Myc. X, p. 405, 1912.

Hab. On *Pirus serotina* REHD. (*Nashi*) (*cultivated*). Prov. Hôten: Yûgakujiyô (July 5, 1934, H. TAKASUGI, *m-no.* 11).

9. *Uromyces Fabae* (PERS.) DE BARY in Ann. Sci. Nat. 4. Sér. XX, p. 72, 1763.

Hab. On *Vicia Cracca* L. (*Kusa-fuji*). Prov. Botankô: Odôkashi (Neian-ken) (Aug. 8, 1940, HIRATSUKA, f., *m-no.* 403).

10. *Uromyces Haraeanus* SYDOW in Ann. Myc. X, p. 405, 1912.

Hab. On *Scirpus radicans* SCHKUHR (*Kenashi-aburagaya*). Prov. Botankô: Botankô-shi (Aug. 10, 1940, HIRATSUKA, f., m-no. 319). New to Manchoukuo!

11. *Uromyces Limonii* (DC.) LÉVEILLÉ in Dict. d. Hist. Nat. Art. Ured. p. 19, 1840.

Hab. On *Statice aurea* L. (*Kibana-hamasaji*). Prov. Kôanhoku: Ganjurumyô (Sept. 5, 1937, M. TATEWAKI, m-no. 388).

12. *Uromyces Setariae-italicae* YOSHINO in Bot. Mag. Tokyo, XX, p. 247, 1907.

Hab. On *Setaria viridis* BEAUV. (*Enokoro-gusa*). Prov. Hôten: Yûgakujiyô (Gaihei-ken) (Sept. 19, 1929, H. TAKASUGI, m-no. 290).

13. *Puccinia Absinthii* (HEDW. f.) DE CANDOLLE, Fl. franç. VI, p. 56, 1815.

Hab. On *Artemisia sacrorum* LEDEB. subsp. *manshurica* KITAMURA (*Urajiro-hime-iwayomogi*). Kwantôshû: Mt. Oshôzan near Kinshû (July 14) 1940, HIRATSUKA, f., m-no. 365). Prov. Hôten: Tokuriji (Fuku-ken) (Oct. 4, 1929, Y. AKAISHI, m-no. 366).

14. *Puccinia calumnata* SYDOW in Ann. Myc. XI, p. 102, 1913.

Hab. On *Pleuropteropteris divaricatum* NAKAI (*Shiberiya-iwatade*). Prov. Hôten: Tokuriji (Fuku-ken) (Oct. 4, 1929, H. TAKASUGI, m-no. 354). New to Manchoukuo!

15. *Puccinia Cicutae* LASCH in KLOTZSCH, Herb. Viv. Myc. no. 787, 1845.

Hab. On *Cicuta virosa* L. (*Dokuzeri*). Prov. Peian: Seirô (Tetsurei-ken) (Aug. 1, 1940, HIRATSUKA, f., m-no. 308). New to Manchoukuo!

16. *Puccinia Festucae* PLOWRIGHT in Gard. Chron. (III), VIII, p. 42 & 139, 1890.

Hab. On *Festuca extremiorientalis* OHWI (*Oni-toboshigara*). Prov. Peian: Korangawa-jyôriu (Tetsurei-ken) (July 31, 1940, HIRATSUKA, f., m-no. 337). New to Manchoukuo!

17. *Puccinia glumarum* (SCHMIDT) ERIKSSON et HENNING in Zeitschr. f. Pflanzenkr. IV, p. 197, 1894.

Hab. On *Critesion jubatum* NEVSKI (*Mugikusa*). Prov. Botankô: Kairin (Neian-ken) (Aug. 8, 1940, HIRATSUKA, f., m-no. 341).

18. *Puccinia nitidula* TRANZSCHEL in TRANZSCHEL et SEREBRIAN., Myc. Ross. nos. 158 & 159, 1911.

Hab. On *Pleuropteropyrum divaricatum* NAKAI (*Shiberiya-iwatade*). Prov. Kôanhoku: Sanka-chihô (Sept. 7, 1937, M. TATEWAKI, *m-no.* 353). New to Manchoukuo!

19. *Puccinia Poae-sudeticae* (WEST.) JØRSTAD in Mag. Naturv. LXX, p. 325, 1932.

Hab. On *Poa pratensis* L. (*Nagaba-gusa*). Prov. Botankô: Odôkashi (Neian-ken) (Aug. 8, 1940, HIRATSUKA, f., *m-nos.* 338~340).

20. *Puccinia Polygoni-amphibii* PERSOON, Syn. Fung. p. 227, 1801.

Hab. On *Persicaria lapathifolia* GRAY (*Sanae-tade*, *Shiro-inutade*). Prov. Botankô: Kairin (Neian-ken) (Aug. 8, 1940, HIRATSUKA, f., *m-no.* 357). Prov. Peian: Kokuzan (Kokuzan-ken) (Aug. 4, 1940, HIRATSUKA, f., *m-nos.* 359, 362 & 363); Taian (Kokuzan-ken) (Aug. 5, 1940, HIRATSUKA, f., *m-no.* 358); Mizuho-mura (Suiryô-ken) (Aug. 20, 1938, M. IRIE, *m-no.* 361). Prov. Hinkô: Harbin (Aug. 7, 1938, M. IRIE, *m-no.* 360).

On *Persicaria Sieboldi* OHKI (*Aki-no-unagitsukami*). Prov. Kitsurin: Tonkwa (Tonkwa-ken) (July 9, 1930, H. TAKASUGI, *m-no.* 356). Prov. Peian: Mizuho-mura (Suiryô-ken) (Aug. 15, 1938, M. IRIE, *m-no.* 355).

21. *Puccinia punctata* LINK in Ges. Nat. Freunde Berlin Mag. VII, p. 39, 1814.

Hab. On *Galium dahuricum* TURCZ. (*Ôba-yotsuba-mugura*). Prov. Peian: Kokuzan (Kokuzan-ken) (Aug. 4, 1940, HIRATSUKA, f., *m-no.* 349); Korangawa-jyôriu (Tetsurei-ken) (July 31, 1940, HIRATSUKA, f., *m-no.* 350). Prov. Botankô: Kairin (Neian-ken) (Aug. 8, 1940, HIRATSUKA, f., *m-no.* 352).

22. *Puccinia punctiformis* DIETEL et HOLWAY in DIETEL in Erythea, II, p. 128, 1894.

Hab. On *Rumex* sp. Prov. Botankô: Odôkashi (Neian-ken) (Aug. 8, 1940, HIRATSUKA, f., *m-no.* 364). Prov. Kitsurin: Tonkwa (Tonkwa-ken) (July 9, 1930, H. TAKASUGI, *m-no.* 438). New to Manchoukuo!

23. *Puccinia pygmaea* ERIKSSON, Fung. Paras. Scand. no. 449, 1895.

Syn. *Puccinia Ishikawai* ITO in Jour. Coll. Agric. Tohoku Imp. Univ. III, p. 210 & pl. XI, fig. 5, 1909. (MIURA in Fl. Manchuria & E. Mongolia, III, p. 290, 1928).

Hab. On *Calamagrostis Epigejos* ROTH. (*Yama-awa*). Prov. Peian: Kokuzan (Kokuzan-ken) (Aug. 4, 1940, HIRATSUKA, f., m-no. 431).

24. *Puccinia rubigo-vera* (DC.) WINTER in Pilze Deutschl. I, p. 217, 1881.

Hab. On *Elymus sibiricus* L. (*Yezo-mugi*). Prov. Peian: Kokuzan (Kokuzan-ken) (Aug. 4, 1940, HIRATSUKA, f., m-no. 342).

25. *Puccinia rufipes* DIETEL in ENGL. Bot. Jahrb. XXXII, p. 48, 1902.

Hab. On *Imperata cylindrica* BEAUV. var. *Koenigii* DURAND et SCHINZ (*Chigaya*). Kwantô-shû: Mt. Oshôzan near Kinshû (July 14, 1940, HIRATSUKA, f., m-no. 344). New to Manchoukuo!

26. *Puccinia sessilis* SCHNEIDER in Abhandl. Schles. Ges. Vaterl. Kult. XLVIII, p. 19, 1869.

Hab. On *Phalaris arundinacea* L. (*Kusayoshi*). Prov. Botankô: Kairin (Neian-ken) (Aug. 8, 1940, HIRATSUKA, f., m-no. 345).

27. *Puccinia Stipae-sibiricae* ITO in Jour. Coll. Agric. Tohoku Imp. Univ. III, p. 228 & pl. XII, fig. 5, 1909.

Hab. On *Stipa extremiorientalis* HARA (*Hane-gaya*). Prov. Hôten: Tokuriji (Fuku-ken) (Oct. 7, 1929, H. TAKASUGI, m-no. 343).

28. *Puccinia Tranzschelii* DIETEL in Hedwigia, XXX, p. 295 & pl. XXXV, fig. 5, 1891.

Hab. On *Cacalia hastata* L. (*Urage-yobusumasô*). Prov. Peian: Korangawajyôriu (Tetsurei-ken) (July 31, 1940, HIRATSUKA, f., m-nos. 433 & 434). New to Manchoukuo!

Phycological Observations V

By

Jun TOKIDA

(時 田 敏)

With 8 text-figures

Capsosiphon fulvescens (AG.) SETCHELL et GARDNER

Fig. 1.

Phycological Contributions, I, (1920), p. 280; Mar. Alg. Pacific Coast N. Amer., II, (1920), p. 234—HAMEL, Chloroph. franc., (1931-32), p. 72—TAYLOR, Mar. Alg. N.-E. Coast N. Amer., (1937), p. 69.

Syn. *Ulva fulvescens* AGARDH, Sp. Alg., (1821), p. 420.

Solenia fulvescens AGARDH, Syst. Alg., (1824), p. 186.

Ilea fulvescens J. AGARDH, Till Alg. Syst., III, (1883), p. 115, pl. 4, figs. 95-99—COLLINS, Green Alg. N. Amer., (1909), p. 206, fig. 71.

Ulva aureola AGARDH, Icon. Alg. Eur., (1835), pl. 29.

Enteromorpha aureola KÜTZING, Sp. Alg., (1849), p. 481; Tab. Phyc., VI, (1856), pl. 40, fig. 3—HAUCK, Meeresalg., (1885), p. 434, fig. 190—SETCHELL & GARDNER, Alg. N.-W. Amer., (1903), p. 214—DE TONI, Syll. Alg., I, (1889), p. 131.

Capsosiphon aureolum GOBI, Ber. Alg. Forsch. im Finn. Meer., (1879), p. 88—NEWTON, Handb. Brit. Seaweeds, (1931), p. 76, fig. 55 (*C. aureolus* GOBI).

Nom. Jap. *Kapusa-awonori* (n. n.).

Hab. Growing on poles and twigs in the upper littoral belt. Usu Bay, Prov. Iburi, Hokkaido (TOKIDA, Dec. 1937, Jan. 1941, April 1941).

Distrib. Hokkaido; Baltic Sea; Adriatic Sea; Scotland; France; South Indian Ocean (St. Paul Island); Atlantic Coast of N. America; ? Alaska (St. Michael).

The present alga has been found growing on poles and twigs planted in Usu Bay for supporting the nets for Porphyra-cultivation and also on the net itself. It grows always at and near the high water mark, being intermixed with *Ulothrix* and *Hormiscia*. The plant is beautiful green while fresh, but its green color is rarely changed into yellowish color in dried specimens. The size of the cells is described by most of the authors above cited to be 4-5 μ diam.

However, according to the description by TAYLOR (1937, p. 69) "cells 6.5–8.3 μ diam., occasionally cells long remaining undivided, reaching 18 μ diam." The measurement of the cells in our specimens is as follows: in monosiphonous parts of the frond, which measure from 26 μ to 30 μ in breadth, the cell cavity is 4–7 μ diam., up to 10 μ diam. and 18 μ long in abnormally enlarged cells, while in other parts of the frond it is 4–12 μ diam. and 5–22 μ long, up to 15 μ diam. and 42.5 μ long in abnormal cells long remaining undivided. The gelatinous wall of the cell, which is the leading characteristic of *Capsosiphon*, can be clearly observed by staining with methyl blue.

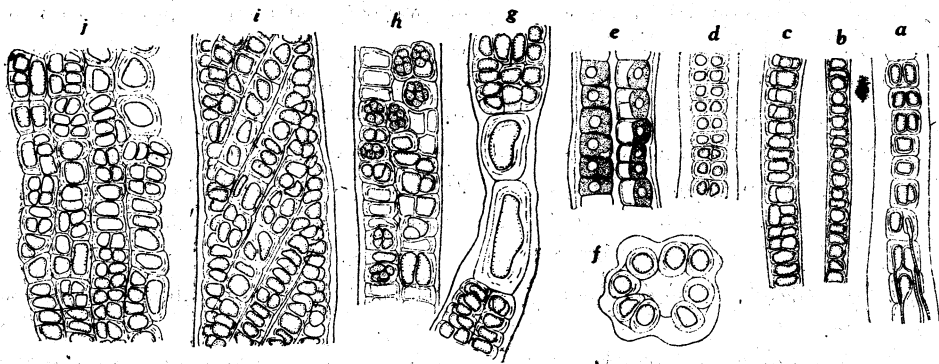


Fig. 1. *Capsosiphon fitzingeri* (AG.) SETCH. et GARDN. a-d, g, i. Surface view of various parts of fronds, showing the varieties of their breadth and of cell arrangement; j. Part of the surface of a frond, which is 182.5 μ in breadth; e. Showing the chloroplast and the pyrenoid; f. Cross section of a frond; h. Surface view of the fertile part of a frond, showing sporangia partly having been emptied. a-d, f-j $\times 350$; e $\times 550$.

Heterosaundersella gen. nov.

Frond epiphytic on other algae, dimorphic, partly prostrate consisting of a palisade layer of straight assimilating filaments over the surface of the host and a deeply penetrating loose tissue, partly erect, filamentous, consisting of a bunch of free central filaments surrounded by a quite loose inner tissue and cortical assimilating filaments; central filaments of the erect frond colorless, narrowed at the base, diversing from a point of the prostrate frond, each cell except the lowermost ones provided with secund branchlets which build up the peripheral tissue of the frond; growth subapical by means of the intercalary division of the subapical cells of the central filaments. Hairs abundant on both prostrate and erect fronds. Rhizoidal filaments arising from the inner cells absent. Plurilocular sporangia cylindrical, with uniseriate loculi, occupying the position of the

assimilating filaments on the prostrate frond. Unilocular sporangia ellipsoid to obovate, arising at the base of the cortical filaments of the erect frond.¹⁾

***Heterosaundersella Hattoriana* sp. nov.**

Figs. 2 & 3.

Syn. *Gobia simplex* (non SETCH. et GARDN.) TOKIDA, in Kenkyû-Syôroku, Hattori Hôkôkai, II, (1936), p. 250, no. 16.

Frond flaccid, epiphytic on *Heterochordaria abietina*; assimilating filaments of the prostrate frond arising from nearly the same level as those of the host, but projecting beyond them almost by their height; plurilocular sporangia linear, simple, rarely branched, with 4-12 uniseriate loculi, 4-7 μ broad, 20-50 μ long; erect frond cylindrical to compressed-cylindrical, simple, 0.4-1.2 mm. broad, up to 3 cm. long, gregarious; central filaments of the erect frond 4 μ diam. at the base, up to 30 μ diam. above; unilocular sporangia ellipsoid to obovate, 36-60 $\mu \times$ 14-30 μ ; assimilating filaments 2-6 cells long, with terminal cell obovate to nearly spherical, 21-40 $\mu \times$ 9-32 μ ; hairs abundant, 10-16 μ broad.²⁾

Nom. Jap. *Karafuto-modzuku* (n. n.).

Hab. Epiphytic on *Heterochordaria abietina*. Yôman, Saghalien (TOKIDA, Aug. 1935).

The present alga reminds us at a glance a young plant of *Saundersella simplex* (SAUNDERS) KYLIN, to which it is really related very closely in general constructions of the erect frond. However, a close examination of the plant reveals that it has several characteristics which hinder us from placing it in

1) *Heterosaundersella* gen. nov.—Frons in aliis algis epiphytica, dimorpha, trichosporangiifera prostrata, oosporangiifera erecta. Frons in formis prostratis e strato palisado filorum assimilantium erectorum supra superficiem hospitis et e contextu laxo inter cellulas hospitis profunde penetranti composita. Frons in formis erectis filiformis, e fasciculo filorum centralium ab contextu interiore laxissimo et filis assimilantibus periphericis circumdato composita; filis axis centralis hyalinis, ad basin attenuatis, a puncto frondis prostratae diversis, cellulis praeter infernis ramulis secundis ornatis, ramulis contextum periphericum frondis erectae constituentibus; crescentia subapicalis. Pili in frondibus erectis et prostratis numerosi. Rhizoides e cellulis interioribus emittentes nullae. Sporangia plurilocularia in fronde prostrata filiformia, uniseriatim locellata, locos filorum assimilantium occupantia. Sporangia unilocularia in fronde erecta ellipsoideo-obovata, ad basin filorum assimilantium evoluta.

2) *Heterosaundersella Hattoriana* TOKIDA, sp. nov.—Fronde flaccida, in thallo *Heterochordariae abietinae* epiphytica; filis assimilantibus frondis prostratae ab eodem aequo illis hospitis emittentibus, sed supra altitudinem eorundem projectis; sporangiis plurilocularibus linearibus, simplicibus, raro ramosis, locellis 4-12 secus unam seriem dispositis, 4-7 μ latis, 20-50 μ longis; fronde erecta cylindrico-compressa, simplici, gregaria, 0.4-1.2 mm. lata, usque ad 3 cm. longa; filis axis centralis frondis erectae ad basin 4 μ diam., superne usque ad 30 μ diam.; sporangiis unilocularibus ellipsoideo-obovatis, 36-60 $\mu \times$ 4-30 μ ; filis assimilantibus 2-6-cellularibus, cellulis terminalibus obovato-globosis, 12-40 $\mu \times$ 9-32 μ ; pilis numerosis, 10-16 μ latis.

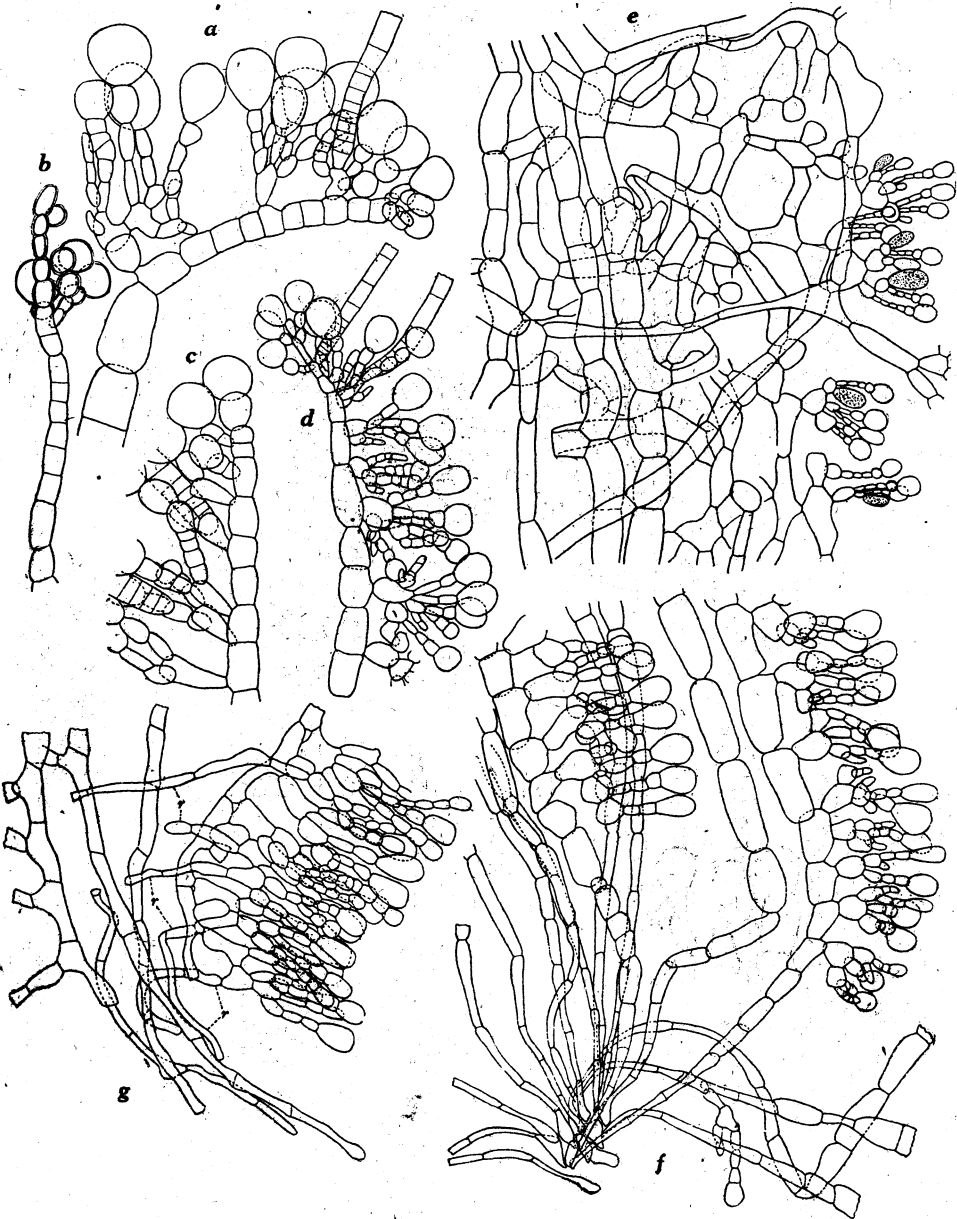


Fig. 2. a-f. *Heterosaundersella Hattoriana* TOKIDA. a-d. Apical portions of the central filaments; e. Longitudinal section through the middle part of the erect frond, showing the characteristic loose tissue, assimilating filaments and unilocular sporangia; f. Longitudinal section through the base of the erect frond, showing the character of the central filaments, three of which being beset with the assimilating filaments. a-c $\times 254$; d, f $\times 177$; e $\times 121$.

g. *Saundersella simplex* (SAUNDERS) KYLIN, Longitudinal section through the base of the frond, showing the rhizoidal filaments (r) arising from the inner cortical cells. $\times 177$.

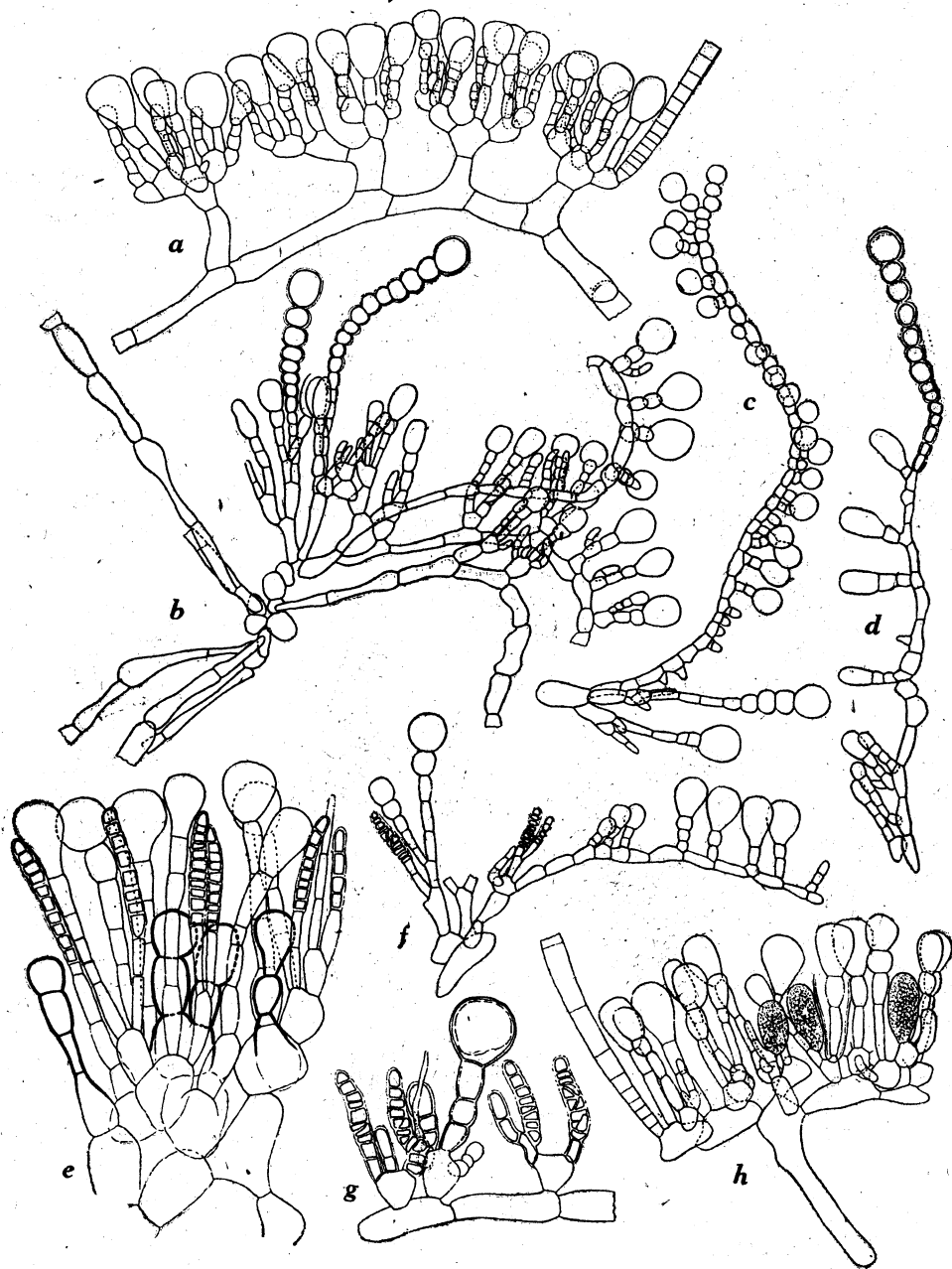


Fig. 3. *Heterosaundersella Hattoriana* TOKIDA. a. View of a central filament of the erect frond and four branchlets, showing assimilating filaments and a hair; b. Longitudinal section through the base of the erect frond, showing moniliform filaments; c, d. View of moniliform filaments from near the base of the erect frond; e. Section through the prostrate frond and the host perpendicular to their surface, showing plurilocular sporangia and assimilating filaments of the epiphyte and of the host, the latter being drawn with heavy outlines; f, g. Parts of filaments bearing plurilocular sporangia from near the base of the erect frond; h. View of a group of surface filaments of the erect frond, showing assimilating filaments, unilocular sporangia, and a hair. a-d, f, h $\times 230$; e, g $\times 460$.

Saundersella or in any other known genus. In the writer's opinion it represents a new genus under the "Chordaria-Gruppe" (KYLIN, Phaeophyceenordn. Chordariales, (1940), p. 39) of the family Chordariaceae.

The most striking characteristic of *Heterosaundersella Hattoriana* is the dimorphism of the frond. That the prostrate and the erect fronds above described belong to one and the same species is unmistakably known by the fact that the morphology of their assimilating filaments is identical with each other, and that the erect frond is always arising from the inner tissue of the prostrate frond. In addition to this, the uniseriate plurilocular sporangia are not lacking from the erect frond, being rarely found in the basal part of the frond. Deep colored moniliform filaments, which occur sparingly near the base of the erect frond, make their appearances also on the prostrate frond.

As compared with *Saundersella simplex* our species has smaller frond of more soft texture, thinner central filaments, and broader hairs of more abundance. In *S. simplex* the descending rhizoidal filaments are issued from the inner cells at the basal part of the frond (fig. 2 g). To lack entirely such rhizoidal filaments seems also to be one of the remarkable characters of our species (fig. 2 f).

The present alga was collected by the writer himself as mentioned above during his tour in Saghalien in the summer of 1935, which was carried out by the support of the fund granted by the Hattori Hôkôkai. He feels very glad to take this opportunity to acknowledge the indebtedness for the fund. The specific name of this interesting plant is given in honour of Mr. KINTARO HATTORI.

***Cladosiphon Okamuranus* sp. nov.**

Fig. 4.

Frond attached on rocks by a small disc, cylindrical, tubular, lubricous, tightly adhering to paper on drying, up to 23 cm. high, 1-1.5 mm. thick, moderately and alternately pinnate; medullary cells 16-96 μ diam., 1-12 times as long as the diameter; assimilating filaments 200-220 μ high, often curved in the upper portions, 12-20 cells long, lower cells cylindrical, 7-8 μ diam., 2-4 times as long as the diameter, upper cells swollen, 12 μ diam., nearly once as long as the diameter; hairs 10 μ thick, with basal sheaths; unilocular and plurilocular sporangia borne on one and the same individual; unilocular sporangia arising at the base of the assimilating filaments, elliptico-obovate, 50-60 μ long, 20-26 μ broad; plurilocular sporangia transformed from the upper seg-

ments of the assimilating filaments, seriate, at maturity with unilateral openings.³⁾

Syn. *Eudesme virescens* (non J. AG.) OKAMURA, Icon. Jap. Alg., I, 4, (1907), p. 78, pl. 17, figs. 11-15; Nippon Kaisōshi, (1936), p. 192, fig. 99.

Nom. Jap. *Okinawa-modzuku* (OKAMURA).

Hab. Growing on rocks. Toguti Harbor, Motobu Village, Kunigami-Gun., Ryūkyū (TOKIDA, June 21, 1938).

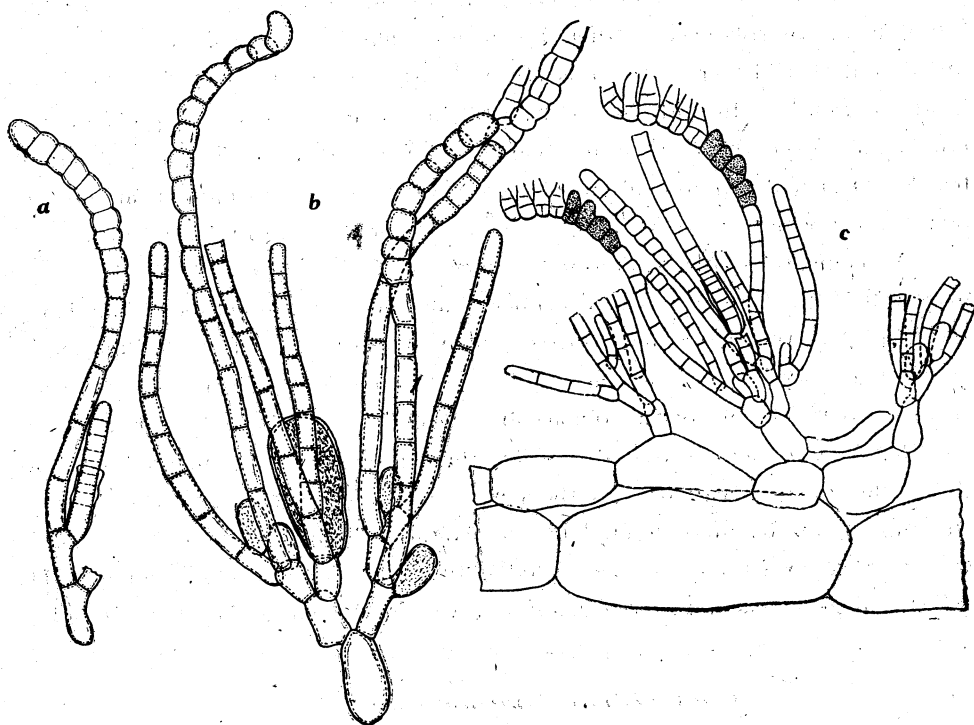


Fig. 4. *Cladosiphon Okamuranus* TOKIDA. a. Young hair arising on the basal segment of an assimilating filament; b. View of a group of assimilating filaments, showing unilocular and plurilocular sporangia; c. Part of longitudinal section of the frond showing superficial cells of the medulla, assimilating filaments, plurilocular sporangia, and a hair. a, b $\times 366$; c $\times 255$.

3) *Cladosiphon Okamuranus* TOKIDA, sp. nov.—Fronde in rupibus disco radicali parvo adfixa, cylindrica, tubulosa, lubrica, exsiccatione chartae arcte adhaerenti, usque ad 23 cm. alta, 1-1.5 mm. crassa, moderate et alterne pinnata; cellulis medullaribus 16-96 μ . crassis, diametro 1-12-plo longioribus; filis assimilantibus 200-220 μ . altis, superiore parte saepe curvatis, 12-20-cellularibus, cellulis inferioribus cylindricis, 7-8 μ . crassis, diametro 2-4-plo longioribus, superioribus inflatis, 12 μ . crassis, diametro subaequantibus; pilis 10 μ . crassis, vaginis basalibus ornatis; sporangiis utriusque formae in eodem individuo; sporangiis unilocularibus ad basin filorum assimilantium evolutis, elliptico-obovatis, 50-60 μ . longis, 20-26 μ . latis; sporangiis plurilocularibus e transformatione articularum superiorum filorum assimilantium ortis, seriatis, maturis cum aperturis unilateralibus.

Distrib. Endemic.

The present alga has been known among us under the name of *Eudesme virescens* (CARM.) J. AG. ever since OKAMURA referred his dried specimens collected at Kerama, a group of islets near Okinawa Island, Ryûkyû, to that species. In 1938 the writer was fortunate enough to collect several individuals of the same alga growing on rocks at the locality mentioned above. They were brought home partly being fixed and preserved in alcohol. After a careful observation on his well preserved specimens, the writer has come to a conclusion that the alga has nothing to do with *Eudesme virescens* J. AG. but belongs to the genus *Cladosiphon* in the definition lately given by KYLIN (1940, p. 26). So far as he has examined, it is not referable to any known species of *Cladosiphon*. So he proposes here a new name, *Cladosiphon Okamuranus*, in honour of the late Dr. K. OKAMURA.

In the shape of plurilocular sporangia, *Cladosiphon Okamuranus* comes near to *Cladosiphon zosteræ* (J. AG.) KYLIN (cf. KYLIN, 1907, fig. 20, under *Eudesme zosteræ* (J. AG.) KYLIN), from which it can easily be distinguished by the habit of frond. According to KYLIN (1940, p. 29) unilocular and plurilocular sporangia are borne in *C. zosteræ* generally on different individuals, while we find them in *C. Okamuranus* on one and the same individual as in the case of *C. occidentalis* KYLIN. The unilocular sporangia, which were not observed by OKAMURA, are sparingly found on the basal segments of the assimilating filaments. Hairs, which arise laterally on the basal segment of assimilating filaments, have a sheath at their bases as in the cases of many species of *Cladosiphon* (cf. KYLIN, (1940), p. 27-29, fig. 15).

***Chondrus filiformis* OKAMURA et SEGAWA**

in SEGAWA, On the marine algae of Susaki, Prov. Idzu, and its vicinity, (1935), p. 81, pl. 19, fig. 2, text-figs. 2-3.

In spite of the external resemblance to *Gigartina tenella*, the present alga was classified under *Chondrus* by OKAMURA and SEGAWA because of its inner vegetative structure being considered to be identical with that of the latter genus. Judging from the description and figures, the tetrasporangia of this alga are formed intercalary near the base of the anticlinal rows of the cortical cells. In this respect it agrees with the species of *Gigartina* but not with those of *Chondrus*. (Cf. KYLIN, Studien über die Entwicklungsgeschichte der Florideen, (1923), p. 22, fig. 12; Anatomie der Rhodophyceen. (1937), p. 166-167, fig. 124). Therefore I wrote to Mr. S. SEGAWA, the junior author of the species under consideration, asking his opinion on the subject. He kindly answered me that he

had already entertained an opinion that *Chondrus filiformis* is most probably nothing but tetrasporophyte of *Gigartina tenella*, although comparative morphology of the inner vegetative structure of the alga seemed still to require a further study.

***Antithamnion Miharai* sp. nov.**

Figs. 5 & 6.

Frond ca. 1.5 cm. high, sparingly branched, attaching to the substratum by means of rhizoidal filaments arising from the basal cells of lower branches and branchlets; main branches provided with two opposite (exceptionally 3 whorled) branchlets on each cell; lower segments of main axes $70-112\ \mu$ diam., 3-6 times as long as broad; branchlets simple, or rarely pectinate on the upper side, $14-30\ \mu$ diam. at the base, tapering toward the apices with a blunt apical cell $6-8\ \mu$ diam., cells 1.5-4 times as long as broad; glandular cells sparse; chromatophores numerous slender bands; tetrasporangia 1-3, seriate on the

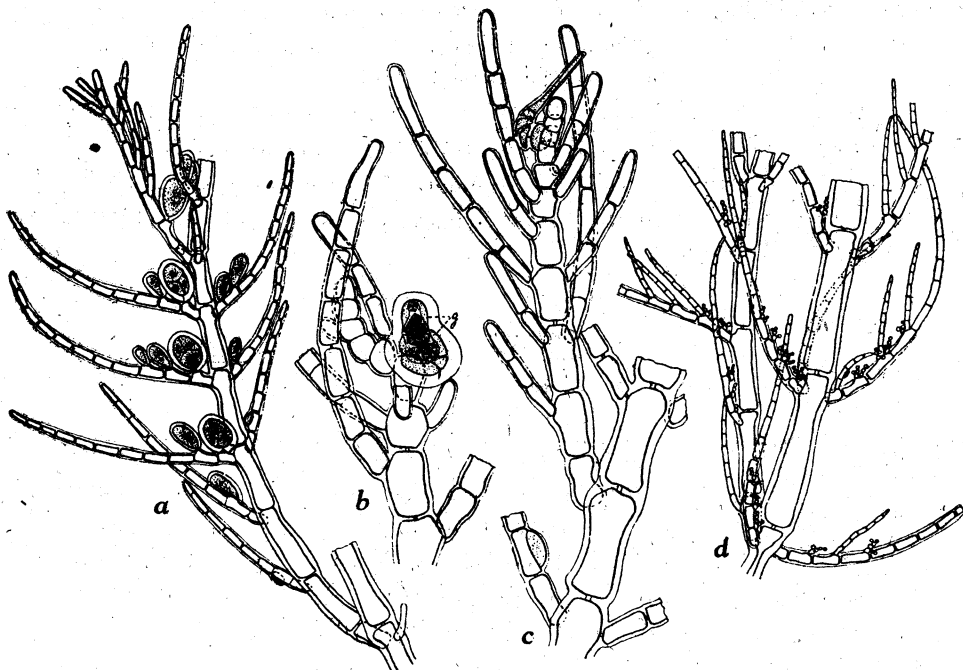


Fig. 5. *Antithamnion Miharai* TOKIDA. a. Branch with tetrasporangia ($\times 128$); b. Apical portion of a branch, showing the first gonimoblast cells (g) ($\times 367$); c. Branch with a carpogonial branch ($\times 367$); d. Portion of a male plant with spermatangia ($\times 100$).

upper side of the branchlets, sessile, $48-66 \mu \times 32-48 \mu$; tetraspores tetrahedral; spermatangia in small clusters secundate on the upper side of the lower cells of the branchlets; carpogonial branches 4-celled, supporting cell lateral on the subapical cell of branches.⁴⁾

Nom. Jap. *Hoso-gasane* (n. n.).

Hab. Growing on *Rhizomolgula* sp. (?) dredged at a depth of about 11-14 meters. Tomari Bay, Kunasiri Island of the southern Kuriles (TOKIDA, Aug. 1941).



Fig. 6. *Antithamnion Miharai* TOKIDA. a. Apical portion of a tetrasporophyte, showing growing tips. ($\times 128$); b. Lower portion of a tetrasporophyte ($\times 100$); c. Basal portion of a male plant, showing rhizoids. ($\times 100$).

4) *Antithamnion Miharai* TOKIDA, sp. nov.—Fronde ca. 1.5 cm. alta, sparse ramosa, rhizoidibus ab cellulis basalibus ramorum et ramulorum inferiorum emittentibus adfixa; cellulis ramorum principalium 2 pinnis oppositis (raro 3 pinnis verticillatis) ornatis; cellulis inferioribus rachidum principalium $70-112 \mu$ crassis, diametro 3-6-plo longioribus; pinnis simplicibus vel raro superiore latere pectinatis, cellulis diametro 1.5-4-plo longioribus compositis, ad basin $14-30 \mu$ crassis, sursum attenuatis, cellulis apicalibus obtusis $6-8 \mu$ crassis; cellulis glandulinis sparsis; chromatophoris numerosis, taeniatis; tetrasporangiis sessilibus, 1-3 seriatis in pinnis, $48-66 \mu$ crassis, $32-48 \mu$ altis; tetrasporis tetrahedralibus; spermatangiis in latere superiore cellularum inferiorum pinnarum in fasciculis minutis secundis; ramulis carpogonatis 4-cellularibus, cellulis sustentibus lateraliter in cellulis ramorum subapicalibus.

This species of *Antithamnion* resembles very closely *A. tenuissimum* GARDN. and *A. glanduliferum* KYLIN. It differs from the last mentioned species in having tetrahedral, instead of cruciate, tetraspores, in the paucity of glandular cells, and in the occasional presence of divided branchlets. From *A. tenuissimum* GARDN. it differs in the less sparseness of branching, in having more markedly tapered branchlets, in having shorter rhizoidal filaments wanting glandular cells, and in being somewhat larger in the thickness of the main axes as well as of the branchlets and in the size of the tetrasporangia. The branchlet opposite a main branch is sometimes reduced in size but not suppressed so much as those of *A. tenuissimum* GARDN. Quite rarely it happens to lack a branchlet opposite a main branch. The apical cells of the main branches are sometimes in advance of those of the branchlets but not so remarkably nor constantly as in the case of *A. tenuissimum* GARDN. From the two Kurile species of *Antithamnion* lately reported by Dr. M. NAGAI (Mar. Alg. Kurile Isls., II, (1941), p. 207, 209) *A. Miharai* can be distinguished rather easily. The specific name of this beautiful plant is given in honour of Mr. T. MIHARA of the Nemuro Branch of the Hokkaido Fishery Experiment Station, who has long been engaged in the research of the economical possibilities of seaweeds of the Kurile Islands.

***Antithamnion Gardneri* TOKIDA nom. nov.**

Syn. *Antithamnion tenuissimum* GARDNER, New Rhodophyceae from the Pacific coast of North America, IV, (1927), p. 377, pl. 77.

Binomial *Antithamnion tenuissimum* had been applied already by SCHIFFNER in 1915 to a species of Adriatic Sea before it was used by GARDNER in naming a Californian species. So the writer proposes here a new name *A. Gardneri*.

***Platythamnion intermedium* sp. nov.**

Figs. 7 & 8.

Frond ca. 2 cm. high, subdichotomously branched, with whorls of four branchlets; the two lateral branchlets in mature stages pectinate on the upper side with one or two simple or branched ramuli on each cell but no ramuli on the lower side; the two transversal branchlets more or less smaller than the lateral ones, irregularly pinnate; ultimate ramuli subulate, at the base 8–20 μ thick, at the apex 5 μ thick, with cells 1.5–3 times as long as broad; basal segments of the branchlets 20–34 μ thick; main branches up to 150–180 μ thick, with cells 1–3 times as long as broad; glandular cells numerous, up to 33 $\mu \times$ 40 μ ; chromatophores numerous, slender bands; tetrasporangia sessile or pedi-

cellate, on the branchlets and ramuli, $36-44 \mu \times 32-34 \mu$, cruciately divided; spermatangia in somewhat roundish clusters on branchlets and ramuli; carpogonal branches 4-celled, lateral on the basal cell of subapical branchlets.⁵⁾

Nom. Jap. *Hime-yotubagusa* (n. n.).

Hab. Growing on *Rhizomolgula* sp. (?) dredged at a depth of about 11-14 meters. Tomari Bay, Kunasiri Island of the southern Kuriles (TOKIDA, Aug. 1941).

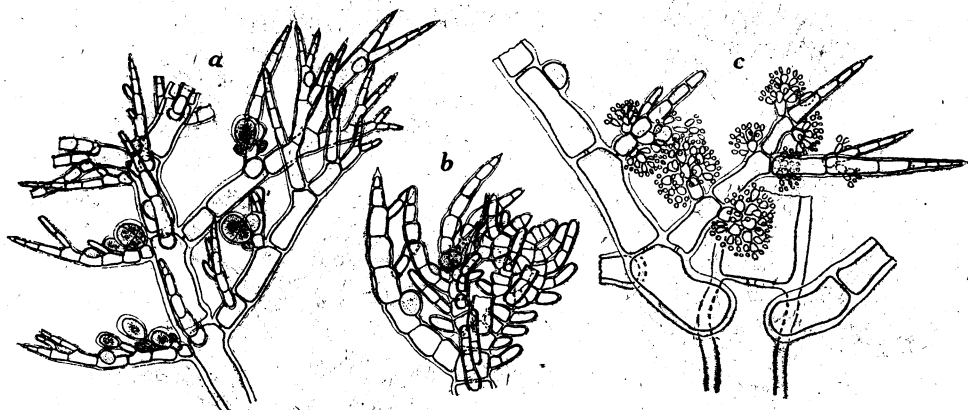


Fig. 7. *Platythamnion intermedium* TOKIDA. a. Branch with tetrasporangia ($\times 142$); b. Growing tip with a carpogonal branch ($\times 230$); c. Branch with spermatangia ($\times 230$).

This species of *Platythamnion* is very closely related to *P. yezoense* INAGAKI, from which it differs in being somewhat smaller in general dimensions, in having less diminished transversal branchlets, in having the rhizoids restricted at the frond base, and in having rather frequently pedicellate tetrasporangia. The transversal branchlets are usually smaller than the lateral ones, but not so markedly diminished in size as in most of *Platythamnion*. In this respect at

5) *Platythamnion intermedium* TOKIDA, sp. nov.—Fronde ca. 2 cm. alta, subdichotome ramosa, pinnis quaternis verticillata; pinnis lateralibus maturis superiore latere pectinatis, inferiore parte saepe binis ramulis ramosis, sed interiore latere nullis ramulis, ornatis; pinnis transversalibus lateralibus plus minus minoribus, irregulariter pinnatis; ramulis ultimis subulatis; cellulis diametro 1.5-3-plo longioribus, ad basin $8-20 \mu$ crassis, cellulis apicalibus 5μ crassis; cellulis basalibus pinnarum $20-34 \mu$ crassis; ramis principalibus usque ad $150-180 \mu$ crassis, cellulis diametro 1-3-plo longioribus; cellulis glandulinis numerosis, usque ad 33μ crassis, 40μ longis; chromatophoris numerosis, taeniatis; rhizoidibus e cellulis basalibus pinnarum inferiorum emittentibus, $12-32 \mu$ crassis; tetrasporangiis in pinnis et ramulis sessilibus vel pedicellatis, $32-34 \mu$ crassis, $36-44 \mu$ altis, cruciatim divis; spermatangiis in pinnis et ramulis fasciculo plus minus rotundato formantibus; ramulis carpogonatis 4-cellularibus, in cellulis basalibus pinnarum subapicalium lateralibus.

least it can not easily be decided whether the present alga should belong to which of the two allied genera, *Antithamnion* and *Platythamnion*. The growing tip, however, show quite well the characteristic of *Platythamnion*, that is to say, "the main branch begins to grow out earlier than the two (or three) branchlets



Fig. 8. *Platythamnion intermedium* TOKIDA. a. Apical portion of a plant, showing growing tip ($\times 142$); b. Middle portion of a plant ($\times 67$).

below it" (cf. KYLIN, Marine Red Algae in the vicinity of the Biological Station at Friday Harbor, Wash., (1925), p. 53). Adding to this, the subulate tip of the ultimate ramuli is of quite the same structure as in *Platythamnion yezoense*.

In this opportunity I wish to express my hearty thanks to Mr. SEITI IMAI of the Hokkaido Fishery Experiment Station and to the gentlemen on board the Tyatya-maru of the Nemuro Branch of the Station for their kindness in assisting me to make a collection of marine algae at Tomari Bay in August 1941.

October 20, 1941.

Fisheries Institute,
Faculty of Agriculture,
Hokkaido Imperial University, Sapporo.

摘 要

藻 類 観 察 V

本邦の海藻フロラに新たに加へらるべき次の5種を報告し1新属4新種に記載を與へた。

1. カブサアヲノリ (新種) *Capsosiphon fulvescens* (AG.) S. et G.

海苔養殖網の支柱の満潮線下並に網に着生。

産地: 有珠灣 (膽振)。

2. カラフトモヅク (新属、種) *Heterosaunderella Hattoriana* TOKIDA.

マツモに着生。

産地: 樺太用萬。

本種は服部報公會奨助による採集旅行中に得られた。種名は服部金太郎氏の御名前を記念して附けた。

3. オキナハモヅク (新種) *Cladosiphon Okamuranus* TOKIDA.

本種は岡村博士が *Eudesme virescens* に當ててをられたものであるが筆者が國頭郡本部村渡口港で採集した材料で再検討の結果 *Cladosiphon* 属の1新種とすべきものと考へた。

4. ホソガサネ (新種) *Antithamnion Miharai* TOKIDA.

ホヤの1種に着生。

産地: 國後島泊灣 (11-14 m. の海底からドレッツで採集)。

5. ヒメヨツバグサ (新種) *Platythamnion intermedium* TOKIDA.

前種と混生す。以上2種は北海道水産試験場の今井晴一君の御助力と根室支場の茶々丸乗組員諸君の御奨助によつて得られた。同支場長清野文二技師始め上記の諸君に對し感謝の意を表する。尙ほ前者の種名は同支場の三原健夫君の名を取つた。同君は數年來千島の海藻の利用に關する調査に従事されてゐる。

以上の外、*Chondrus filiformis* OKAM. et SEG. はスギノリの四分孢子體なること、及び *Antithamnion Gardneri* TOKIDA nom. nov. (Syn. *A. tenuissimum* GARDNER) に就て報じた。

New Species of Parasitic Fungi—III

By

Kogo TOGASHI

(富 樫 浩 吾)

With 5 Text-figures

11. *Cercospora Astilbes* TOGASHI sp. nov.

(Fig. 1)

Maculis primum minutis, sparsis, indefinitis, 0.5–1.0 mm. diametro, pallide stramineis, dein brunneis vel rufo-brunneis, confluentibus, interdum ad margines

foliorum irregularibus; caespitulis hypophyllis, laxe dispersis, inconspicuis, fusco-olivaceis; conidiophoris singulatim ab hyphis sterilibus ramosis, brunneis, repentibus oriundis, simplicibus, ad apicem parum geniculatis, olivaceo-brunneis, apice fere hyalinis, $15-40 \times 3-5 \mu$; conidiis obclavato-cylindraceutis, ad apicem leniter acutis, ad basim longe obconicis truncatisque, curvatis, raro rectis, pluriguttulatis, indistincte 1–4-septatis, hyalino-viridulis, $17-42 \times 2-4 \mu$.

Hab. on *Astilbe congesta* NAKAI (Torishashi-shoma). Pref. Iwate: Oshida (Sept. 9, 1934, K. TOGASHI—Type!).

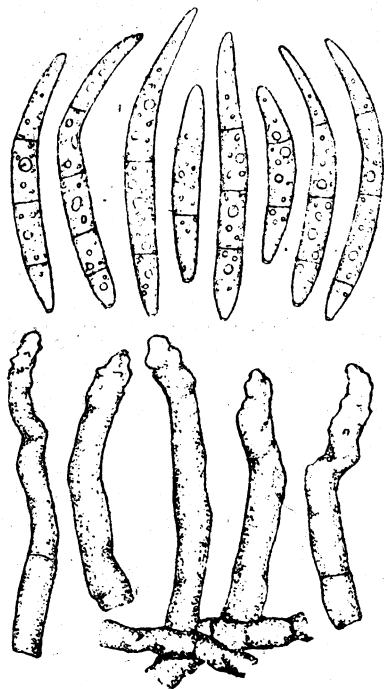


Fig. 1

Cercospora Astilbes TOGASHI.
Conidia and conidiophores ($\times 1200$).

12. *Cercospora Chloranthi*

TOGASHI et KATSUKI sp. nov.

(Fig. 2)

Maculis indefinitis, supra nonnihil pallide flavidis, infra mycelio nigrescente vel fusco-olivaceo tectis; caespitulis densi-

uscule effusum, plerumque nervuli foliorum plus minusve limitatis, dein coalescentibus, magnam folii partem obtegentibus; conidiophoris laxè fasciculatis in tenuissime stromatibus vel singularia in hyphis repentibus ortis, simplicibus vel

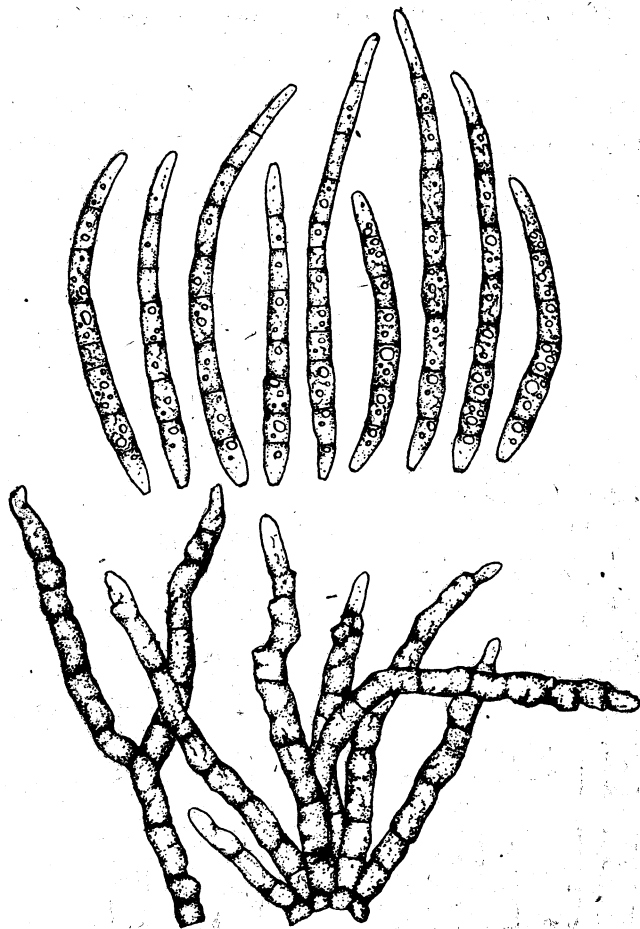


Fig. 2. *Cercospora Chloranthi* TOGASHI et KATSUKI.
Conidia and conidiophores ($\times 670$).

ramulosis, flexuosis, raro geniculatis, distincte multiseptatis, atrofuliginis, 30–136 μ , plerumque 60–90 μ longis, 3–6 μ latis; conidiis tereti-obclavatis saepe cylindraceis, varie curvatis, raro rectis, ad basim obconicis truncatisque, apice subacutis, 5–12-septatis, ad septa interdum constrictis, guttulatis, 30–120 $\times$ 3–6 μ .

Hab. on *Chloranthus serratus* ROEM. et SCH. (Futari-shizuka). Pref. Fukuoka: Mt. Ehiko (July 26, 1938, T. KATSUKI—Type!; Sept. 22, 1940, Y. MAKI and T. KATSUKI).

13. *Cercospora Dispori* TOGASHI et MAKI sp. nov.

(Fig. 3)

Maculis primum ellipticis suborbicularibus, rufo-brunneis, dein brunneolos vel fusco-brunneis, confluentibus, interdum totum folium occupantibus; caespitulis

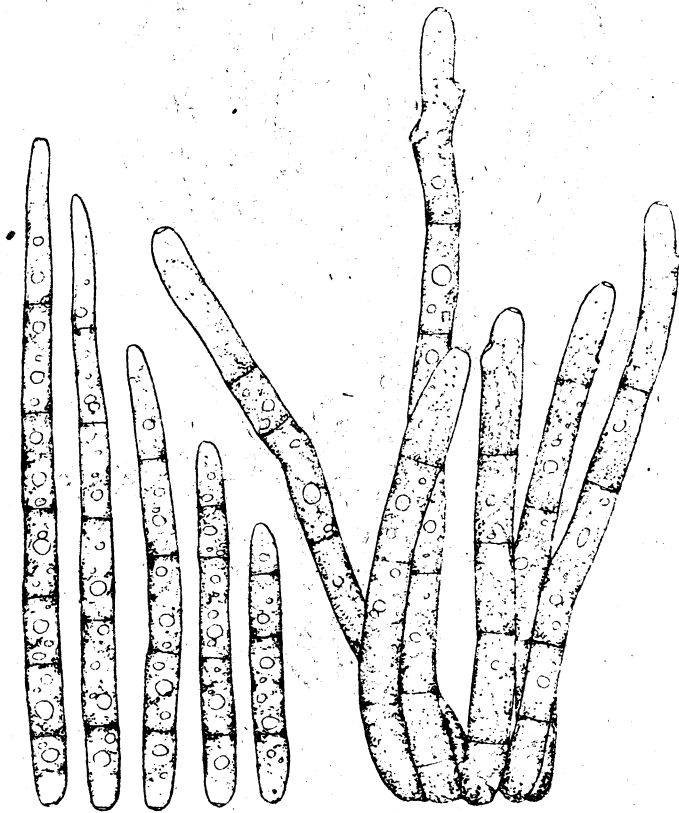


Fig. 3. *Cercospora Dispori* TOGASHI et MAKI.
Conidia and conidiophores ($\times 950$).

amphigenis, sed autem saepe epiphyllis, dispersis, minutissime punctiformibus; stromatis atro-brunneis, 20–40 μ crassis; conidiophoris confertis fasciculatim, —

simplicibus, olivaceo-brunneolos, apicem versus pallidioris, erectis vel leviter flexuosis, saepe parce geniculatis, 4-10-septatis, 10-60 μ , raro usque 175 μ longis, 4-7 μ latis; conidiis acicularibus vel clavato-cylindraceis, rectis vel parum curvatis, ad basim truncatis vel subtruncatis, apicem versus sensum attenuatis, multi-guttulatis, 4-9-septatis, fere hyalinis, 25-140 μ , usque 170 μ longis, 3-6 μ latis.

Hab. on *Disporum smilacinum* A. GRAY var. *ramosum* NAKAI (Edauchi-chigoyuri). Pref. Fukuoka: Mt. Ehiko (Sept. 22, 1940, Y. MAKI and T. KATSUKI—Type!).

14. *Cercospora ehikomontana* TOGASHI et KATSUKI sp. nov.

Caespitulis semper hypophyllis, in epiphyllis decolorationes indistinctas irregulares, laxae effusae, olivaceae; conidiophoris ab hyphis sterilibus repentibus oriundis, non fasciculatis, dilute olivaceo-brunneis, curvatis, tortuosis vel geniculatis, septatis, plerumque 10-60 $\times$ 2.0-3.5 μ ; conidiis cylindraceo-obclavatis vel cylindraceis, indistincte multiseptatis, rectis vel plus minusve curvatis, dilutissime olivaceis, ad basim subtruncatis, apicem versus sensim attenuatis, plerumque 25-80 $\times$ 2-3 μ .

Hab. on *Mercurialis leiocarpa* SIEB. et Zucc. (Yama-ai). Pref. Fukuoka: Mt. Ehiko (Sept. 22, 1940, Y. MAKI and T. KATSUKI—Type!).

15. *Cercospora Gymnemae* TOGASHI et ONUMA sp. nov.

Maculis amphigenis, minutis, sparsis, orbiculari-angulosis vel angulosis, irregularibus, 1-3 mm. diametro, ochraceis vel brunneis, confluentibus; caespitulis hypophyllis, paucis in quaque macula, griseo-olivaceis; conidiophoris singulis e hyphis repentibus oriundis, dilute olivaceo-brunneolis, rectis vel tortuosis, non geniculatis, simplicibus, 10-60 $\times$ 4-6 μ ; conidiis cylindraceo-obclavatis vel cylindraceis, curvatis, raro rectis, ad basim attenuato-truncatis, apicem obtusis, 1-5-septatis, saepe ad septa constrictis, granulosis, ex hyalino chlorinis, 15-60 μ , usque 85 μ longis, 4-6 μ latis.

Hab. on *Gymnema affine* DECNE. (Horai-aokazura). Formosa: Shinsha (June, 1931, F. ONUMA—Type!).

16. *Cercospora Kerriae* TOGASHI sp. nov.

(Fig. 4)

Maculis amphigenis, rotundatis vel oblongis, superne brunneis, inferne griseo-brunneis, rubro fusco cinctis, definitis, interne griseo arescentibus, 1-8 mm.

diametro, concentrice expansis et magnis, non vel vix confluentibus; caespitulis hypophyllis, perexiguis et oculo nudo non visibilibus; conidiophoris simplicibus, rectis vel leniter flexuosis, apice obtuso-attenuatis, dilute olivaceis, brevis, 32-45

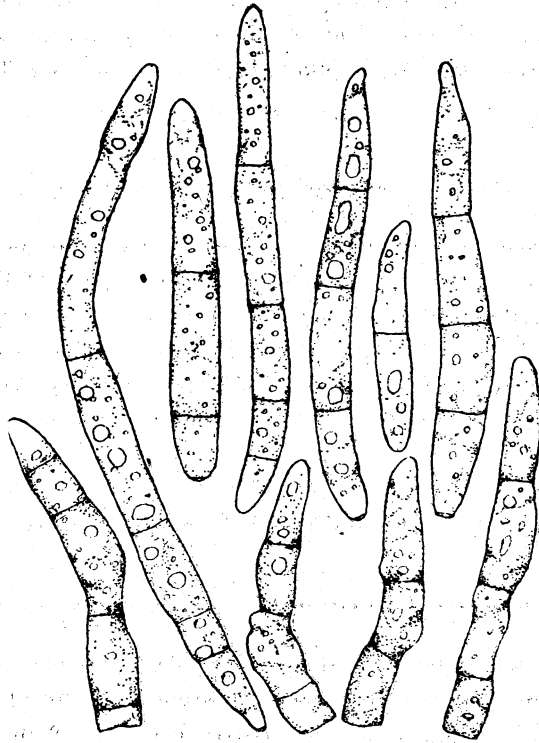


Fig. 4. *Cercospora Kerriae* TOGASHI,
Conidia and conidiophores ($\times 1200$).

$\times 4-8 \mu$, 2-4-septatis; conidiis acrogenis irregularibus, cylindraceis, elongato-obclavatis, superne vel inferne attenuatis, utrimque obtusis, rectis vel curvatis, 28-74 μ , usque 85 μ longis, 4-6 μ latis, 2-8-septatis, hyalinis.

Hab. on *Kerria japonica* DC. var. *typica* MAKINO (Yamabuki), Pref. Iwate: Morioka (Sept. 2, 1934, K. TOGASHI—Type!).

17. *Cercospora Ligustici* TOGASHI sp. nov.

(Fig. 5)

Maculis amphigenis, atro-brunneis vel fusco-brunneis, venulis limitatis, an-

gulosis, supra parum elevatis, immarginatis, primum 1-5 mm. crassis, demum confluentibus; caespitulis hypophyllis, griseolis, stromatis fusco-brunneis, 15-30 μ diametro; conidiophoris dense fasciculatis, valide geniculatis, flexuosis, continuis, pallide olivaceis, brevis, 10-55 $\times$ 4-7 μ ; conidiis cylindraceis, utrimque attenuatis, elongato-fusiformibus, obclavatis, erectis vel parum curvatis, basi subtruncatis, apice obtusis, 1-4-septatis, hyalinis, 15-65 $\times$ 4-7 μ .

Hab. on *Ligusticum Hultenii* FERNALD (Maruba-toki). Prov. Ishikari: Oshoro (June 29, 1920, K. TOGASHI—Type!).

18. *Cercospora Naitoi*

TOGASHI sp. nov.

Cercospora Mate NAITO (non SPEGAZZINI) in Mem. Coll. Agric. Kyoto Imp. Univ., No. 47:49, 1940.

Maculis amphigenis, sparsis; rotundatis vel irregularibus, plerumque 2-6 mm., usque 10 mm. diametro, supra fusco-rubro-brunneis, infra griseo-brunneis, immarginatis, sed utrimque plus minusve linearibus elevatis; caespitulis epiphyllis, raro amphigenis; stromatis globosis, atro-brunneis, 15-40 μ crassis; conidiophoris dense fasciculatis, pallide fuligineis, brevis, plerumque 5-30 μ , raro usque 52 μ longis, 2-5 μ latis, non-geniculatis, simplicibus, saepe undulatis, non vel pauca septatis; conidiis cylindraceo-obclavatis vel linearibus, leniter curvatis vel rectis, indistincte 0-5-septatis, basi subtruncatis vel truncatis, apice subacutis, dilute olivaceis vel subhyalinis, plerumque 30-60 μ , usque 80 μ longis, 2.5-5.0 μ latis.

Hab. on *Ilex Oldhami* MIQ. (Naname-noki). Kyoto (Sept. 20, 1924, T. NOJIMA—Type!). Pref. Kyoto: Kaiinji-mura (Dec. 3, 1935, N. NAITO); Mukomachi (Oct. 10, 1935, N. NAITO).

This work was done in helpful suggestion and advice of Prof. Dr. CHARLES CHUPP, Cornell University, Ithaca, to whom the author expresses his extreme gratitude.

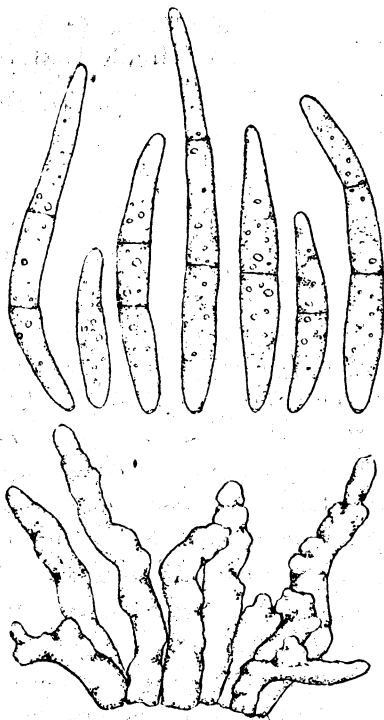


Fig. 5.

Cercospora Ligustici TOGASHI.
Conidia and conidiophores ($\times 1200$).

A Check List of the Fresh Water Fishes of Saghalien Island

By

Shin-ichi SATO

(佐藤 信一)

The following list of fresh water fishes of Saghalien, was compiled from the published literature available in Japan and Soviet Russia, with the addition of a few species newly recorded by the writer. For each species treated, the scientific name as used by the original author is given, together with the year of publication and the page of his paper. The locality where the species was obtained is given as usual, but in case of unexact locality only the word "Saghalien" is used. The precise description of the species new to the fauna will be given in near future, as the thorough study of fishes of this area is going on.

The author wishes to express here his particular obligation to Dr. T. INUKAI, Hokkaido Imperial University, under whose suggestion this work has been done, and he is also indebted to Mr. S. NOJIMA for his kindness in giving the advantage to use his library.

Family **Petromyzontidae**

I *Lampetra japonica* (MARTENS)

1a **Lampetra japonica japonica* (MARTENS)

1b *Lampetra japonica kessleri* (ANIKIN)

Lampetra fluviatilis japonica: BERG, 1923, p. 25 (ex-parte).

Lampetra japonica kessleri: BERG, 1931, p. 102. Saghalien: BERG, 1932, p. 33. Saghalien: HOLLY, 1933, p. 27. Saghalien (from BERG).

1) Contribution No. 165 from the Zoological Institute, Faculty of Science, Hokkaido Imperial University, Sapporo.

*) Single young specimen, measuring 192 mm in total length, and two ammocoetus were collected from Tarandomari River (X, 1939).

2 ***Lampetra reissneri*** (DYBOWSKI)

Lampetra mitsukurii: TANAKA, 1908, p. 235. South Saghalien; Tretiya padj.

Lampetra reissneri: BERG, 1932, p. 33. Saghalien.

3 ***Lampetra* sp.**

Lampetra sp.: TARANETZ, 1937b, p. 10. North Saghalien; Tym River, Alexandrovsk River.

Family **Acipenseridae**4 ***Huso dauricus*** SOLDATOV & LINDBERG

Huso dauricus: SOLDATOV & LINDBERG, 1930, p. 30. Tatar strait; fishing ground of Saghalien.

5 ***Acipenser medirostris*** AYRES

Acipenser mikadoi: SCHMIDT, 1904, p. 284. South Saghalien; mouth of Lytoga River.

Acipenser medirostris: SOLDATOV & LINDBERG, 1930, p. 32. Saghalien (specimen from SCHMIDT): BERG, 1932, p. 63. South Saghalien (from SCHMIDT): TARANETZ, 1937b, p. 58. Saghalien: BERG, 1932, p. 63. South Saghalien (from SCHMIDT).

Family **Salmonidae**6 ***Oncorhynchus keta*** (WALBAUM)

Oncorhynchus lagocepharus: NIKOLSKY, 1889, p. 299. Saghalien.

Oncorhynchus keta: SCHMIDT, 1904, p. 276. South Saghalien; Poronai River: SOLDATOV & LINDBERG, 1930, p. 53, fig. 8. North Saghalien; Saghalien Bay, Tym River: BERG, 1932, p. 111, Fig. 110. North Saghalien; Tym River.

7 ***Oncorhynchus gorbuscha*** (WALBAUM)

Oncorhynchus proteus: NIKOLSKY, 1889, p. 301. North Saghalien; Tym River.

Oncorhynchus gorbuscha: SCHMIDT, 1904, p. 270. South Saghalien; Lytoga River, Aniwa Bay, Terpenja Bucht: TANAKA, 1908, p. 237. South Saghalien; Chipesani, Lake Busse: BERG, 1932, p. 117. Saghalien: TARANETZ, 1937b, p. 11. North Saghalien; Tym River, Poronai River, Agnevo River, Kitowski River.

8 *Oncorhynchus nerka* (WALBAUM)

Oncorhynchus nerka: TARANETZ, 1937a, p. 63. Saghalien.

9 *Oncorhynchus kisutsch* (WALBAUM)

Oncorhynchus kisutsch: TARANETZ, 1937b, p. 17. North Saghalien; Tym River.

10 *Oncorhynchus masou* (BREVOORT)

?*Salmo perri* (non BREVOORT): TANAKA, 1908, p. 238. South Saghalien; Vladimirofka, Tretiya padj, Lake Chipesani.

Oncorhynchus milktschitsch: TANAKA, 1908, p. 237. South Saghalien; Lake Chipesani, Lososei Bay.

Oncorhynchus masou: BERG, 1932, p. 128. Saghalien: TARANETZ, 1937a, p. 63. Saghalien: TARANETZ, 1937b, p. 11. North Saghalien; Tym River, Poronai River, Alexandrovsk River, Agnevo River, Kitowski River.

11 *Salvelinus malma* (WALBAUM)

Salvelinus malma: TANAKA, 1908, p. 237. South Saghalien; Lake Chipesani, Vladimirofka, Troitskoe, Susuya River, Tretiya padj, Lake Busse, Lososei Bay.

Salvelinus alpinus malma: BERG, 1909, p. 33. South Saghalien (specimen from TANAKA '08): BERG, 1923, p. 62. South Saghalien (specimen from TANAKA, ex-parte; excl. *S. kundscha*).

Salvelinus malma: OSHIMA, 1938, p. 1494. South Saghalien; Taran-domari River.

11a *Salvelinus malma isp curiles* (PALLAS)

Salvelinus malma morpha curiles: BERG, 1932, p. 193. Saghalien.

Salvelinus malma isp curiles: TARANETZ, 1937b, p. 14. North Saghalien; Tym River, Poronai River, Alexandrovsk River, Agnevo River, Kitowski River.

11b *Salvelinus malma krascheninnikovi* TARANETZ

Salvelinus malma krascheninnikovi: TARANETZ, 1937b, p. 13. North Saghalien; Tym River, Alexandrovsk River, Agnevo River, Kitowski River.

12 *Salvelinus leucomaenis* (PALLAS)

Salvelinus leucomaenis: NIKOLSKY, 1889, p. 298. Saghalien; Dujika, Poronai, Susui.

Salvelinus kundscha: SCHMIDT, 1904, p. 625. South Saghalien; Lytoga River, Maoka, Aniwa Bay.

Salvelinus leucomaenis: BERG, 1906, p. 398. Saghalien: BERG, 1932, p. 184. Saghalien (name only); TARANETZ, 1937b, p. 35, 37. North Saghalien; Tym River, Kitowski River, Niivo, Dagi, Chaivo, Pitun: OSHIMA, 1938, p. 1494. South Saghalien; Tarandomari River.

13 *Hucho perryi* (BREVOORT)

Hucho orientalis: NIKOLSKY, 1889, p. 303. Saghalien.

Hucho blackistoni: SCHMIDT, 1904, p. 268. South Saghalien; Lytoga River, Lake Vavauto (Aniwa Bay): TANAKA, 1908, p. 238. South Saghalien; mouth of Susuya River: TARANETZ, 1937a, p. 65. North Saghalien; Tym River: TARANETZ, 1937b, p. 14. North Saghalien; Tym River: BERG, 1932, p. 178. Saghalien (collected by A. M. DERJAVIN).

Family **Coregonidae**14 *Coregonus ussuriensis* BERG

Coregonus ussuriensis: SOLDATOV & LINDBERG, 1930, p. 56. North Saghalien; Baikal Bay: BERG, 1932, p. 220. North Saghalien; Baikal Bay: TARANETZ, 1937a, p. 67. Saghalien: MIYADI & ISHII, 1938a, p. 57. South Saghalien; Lake Raitisi.

Family **Osmeridae**15 *Osmerus dentex* STEINDACHNER

Osmerus dentex: SCHMIDT, 1904, p. 278. South Saghalien; Korsakow: TANAKA, 1908, p. 238. South Saghalien; Susuya River, Pervaya Padj, Lososei Bay.

Osmerus eperlanus dentex: TARANETZ, 1937b, p. 14, 37. North Saghalien; Tym River, Alexandrovsk River.

16 *Hypomesus olidus* (PALLAS)

Mesopus olidus: SCHMIDT, 1904, p. 281. South Saghalien; Korsakow,

Protoja Arakuli (Aniwa Bay): TANAKA, 1908, p. 238. South Saghalien; Lake Chipesani, Susuya River, Pervaya Padj.

Hypomesus olidus: TARANETZ, 1937b, p. 17, 37. North Saghalien; Tym River, Alexandrovsk River.

16a *Hypomesus olidus bergi* TARANETZ

Hypomesus olidus bergi: TARANETZ, 1935, p. 85. North Saghalien; Tym River: TARANETZ, 1937b, p. 15. North Saghalien; Tym River.

17 **Hypomesus japonicus* (BREVOORT)

Family **Salangidae**

18 *Salangichthys microdon* (BREEKRR)

Salanx microdon: SCHMIDT, 1904, p. 283. North Saghalien; Alexandrovsk: TANAKA, 1908, p. 239. South Saghalien.

Salangichthys microdon: SOLDATOV & LINDBERG, 1930, p. 61. North Saghalien; Baikal Bay: TARANETZ, 1937a, p. 69. Saghalien.

Family **Cyprinidae**

19 *Leuciscus hakuensis hakuensis* (GÜNTHER)

Leuciscus hakuensis: TANAKA, 1908, p. 236. South Saghalien; Susuya River, Lososei Bay. Chipesani.

Tribolodon Hakuensis hakuensis: OKADA & IKEDA, 1938, p. 149. Saghalien (name only): IKEDA, 1938, p. 189. Saghalien (name only).

20 *Leuciscus hakuensis ezoe* OKADA & IKEDA

Tribolodon hakuensis ezoe: IKEDA, 1938, p. 189. Saghalien (name only).

21 *Leuciscus taczanowskii* STEINDACHNER

Leuciscus adele: SCHMIDT, 1904, p. 252. South Saghalien; Lytoga River, Korsakow.

Leuciscus taczanowskii: SCHMIDT, 1904, p. 256. South Saghalien; Korsakow.

Tribolodon taczanowskii: OKADA & IKEDA, 1938, p. 149. Saghalien (name only): IKEDA, 1938, p. 189. Saghalien (name only).

*Many specimens, measuring 154-110 mm in total length, were collected from Rakuma. (22, VIII, 1935).

22 ***Leuciscus brandti*** (DYBOWSKI)

Leuciscus sachalinensis: NIKOLSKY, 1889, p. 296. North Saghalien; Alexandrovsk.

Leuciscus brandti: BERG, 1932, p. 351. South Saghalien; Korsakovskii, Tunnaicha Bay. North Saghalien; Alexandrovsk: TARANETZ, 1937b, p. 17, 37. North Saghalien; Alexandrovsk River, Agnevo River, Tym River.

23 ***Leuciscus waleckii*** (DYBOWSKI)

Idus waleckii: BERG, 1905, p. 142, 148. North Saghalien (from BERG '09): BERG, 1909, p. 117. North Saghalien; Tym River.

Leuciscus waleckii: SOLDATOV & LINDBERG, 1930, p. 72. Saghalien; Tatar Strait: BERG, 1932, p. 351. North Saghalien; Tym River, Poronai River.

Leuciscus waleckii waleckii: TARANETZ, 1937a, p. 74. Saghalien.

Leuciscus waleckii: ISHII & MIYADI, 1939, p. 581. South Saghalien; Lake Taraika.

24 ***Phoxinus percnurus sachalinensis*** BERG

Leuciscus jouyi: TANAKA, 1908, p. 236. South Saghalien; Vladimirofka, Troitskoe, Susuya River.

Phoxinus percnurus sachalinensis: BERG, 1932, p. 358. South Saghalien; Arakuli River: TARANETZ, 1937b, p. 18, 48. North Saghalien; Tym River, Poronai River, Osoi River.

24a ***Phoxinus percnurus mantschuricus*** BERG

Phoxinus percnurus mantschuricus: TARANETZ, 1937, p. 75. Saghalien.

25 ***Rhodeus sericeus*** (PALLAS)

Rhodeus sericeus: BERG, 1932, p. 524. North Saghalien; Tym River (collected by A. M. DERJAVIN): TARANETZ, 1937b, p. 26. North Saghalien; Tym River.

26 ***Cyprinus carpio*** (L.)

Cyprinus carpio: SOLDATOV & LINDBERG, 1930, p. 76. North Saghalien; Saghalien Bay, Saghalien Strait.

27 ***Carassius auratus gibelio*** (BLOCH)

Carassius auratus gibelio: TARANETZ, 1937b, p. 19, 32. North Saghalien; Tym River, Poronai River.

Family **Gasterosteidae**28 ***Gasterosteus aculeatus* L.**

Gasterosteus cataphractus: SCHMIDT, 1904, p. 211. South Saghalien; Korsakovskii, Maoka, Taraika. North Saghalien; Tym River.

Gasterosteus aculeatus: TANAKA, 1908, p. 239. South Saghalien; Susuya River, Lososei Bay: IKEDA, 1934, p. 142. South Saghalien; Sisuka, Sakaehama, Odomari, Maoka: TARANETZ, 1937b, p. 29, 34. North Saghalien; Tym River, Osoi River.

29 ***Pungitius pungitius* (L.)**

Gasterosteus pungitius: NIKOLSKY, 1889, p. 292. Saghalien; Tym River, Sisuka.

Pygosteus pungitius: BERG, 1907b, p. 451. Saghalien; Tym River, Poronai River.

Pungitius pungitius: IKEDA, 1934, p. 147. South Saghalien; Sisuka, Motodomari, Sakaehama, Toyohara, Maoka, Odomari: TARANETZ, 1937b, p. 29, 34. North Saghalien; Tym River, Osoi River.

30 ***Pungitius tymensis* (NIKOLSKY)**

Gasterosteus tymensis: NIKOLSKY, 1889, p. 293. North Saghalien; Tym River.

Pungitius tymensis: BERG, 1907, p. 452. North Saghalien; Tym River (Specimen from NIKOLSKY '89).

Pygosteus tymensis: TANAKA, 1908, p. 239. South Saghalien; Chipesani.

Pungitius tymensis: IKEDA, 1934, p. 149. South Saghalien; Motodomari, Konuma, Sakaehama: TARANETZ, 1937a, p. 29. North Saghalien; Tym River: TARANETZ, 1937b, p. 84. Saghalien.

31 ***Pungitius sinensis* (GUICHENOT)**

Pungitius sinensis: IKEDA, 1934, p. 150. South Saghalien; Chipesani, Sisuka, Sakaehama.

Pungitius pungitius sinensis: TARANETZ, 1937b, p. 29, 34, 37. North Saghalien; Tym River, Alexandrovsk River, Osoi River.

Family **Cobitidae**32 ***Misgurnus anguillicaudatus* (CANTOR)**

Misgurnus fossilis anguillicaudatus: TARANETZ, 1937b, p. 26. North Saghalien; Poronai River.

33 *Barbatula toni oreas* (JORDAN & FOWLER)

Nemacheilus barbatulus toni: BERG, 1905, p. 66. (from BERG '09) Saghalien.

Orthrias oreas: TANAKA, 1908, p. 236. South Saghalien; Chipesani, Vladimirofka, Troitskoe.

Nemachilus barbatula toni: BERG, 1909, p. 165. South Saghalien; Arakuli River (Aniwa Bay): TARANETZ, 1937a, p. 81. Saghalien: TARANETZ, 1937b, p. 27, 34, 37. North Saghalien; Tym River, Agnevo River, Osoi River.

34 *Cobitis taenia* L.

Cobitis taenia: TARANETZ, 1937a, p. 81. Saghalien: TARANETZ, 1937b, p. 27. North Saghalien; Tym River.

Family **Esocidae**35 *Esox reicherti* DYBOWSKI

Esox reicherti: SASAKI, 1924, p. 51. South Saghalien; Lake Taraika: TARANETZ, 1937a, p. 83. Saghalien: TARANETZ, 1937b, p. 27. North Saghalien; Tym River.

Family **Mugilidae**36 *Mugil cephalus* L.

Mugil cephalus: TARANETZ, 1937a, p. 85. Saghalien; Japan sea north to Alexandrovsk.

Family **Cottidae**37 *Mesocottus haitej* (DYBOWSKI)

Mesocottus haitej: TARANETZ, 1937a, p. 111. Saghalien.

38 **Cottus nozawae* SNYDER39 *Cottus amblystomopsis* SCHMIDT

Cottus amblystomopsis: SCHMIDT, 1904, p. 89. South Saghalien; Lytoga River: GRATZIANOW, 1907, p. 659. Saghalien (from SCHMIDT):

*Single specimen, measuring 111 mm in total length, was collected by Mr. K. YAMAHIRA from Tokonpo River. (15, VII. 1940).

JORDAN, TANAKA & SNYDER, 1913, p. 265. Saghalien (from SCHMIDT): BERG, 1923, p. 405. Saghalien: TARANETZ, 1937b, p. 37. North Saghalien; Alexandrovsk River, Kitowski River.

40 ***Myoxocephalus plathycephalus* (PALLAS)**

Porocottus ijimai: TANAKA, 1908, p. 244. South Saghalien; Mouth of Susuya River, off Chipesani.

Megarocottus plathycephalus: SOLDATOV & LINDBERG, 1930, p. 228. North Saghalien; Baikal Bay.

Myoxocephalus platycephalus: TARANETZ, 1937b, p. 28. North Saghalien; Tym River.

Family **Gobiidae**

41 ***Chaenogobius annularis annularis* (GILL)**

Chaenogobius annularis annularis: TOMIYAMA, 1936, p. 90. Saghalien.

Chloea castanea: TARANETZ, 1937a, p. 150. South Saghalien.

42 ***Chaenogobius annularis urotaenia* (HILGENDORF)**

Chloea aino: SCHMIDT, 1904, p. 207. South Saghalien; Arakuli River (Chipesani), Lake Tonnai.

Chaenogobius macrognathus: TANAKA, 1808, p. 251. South Saghalien; Chipesani, Lososei Bay.

Gymnogobius macrognathus: BERG, 1923, p. 391. South Saghalien (from SCHMIDT).

Chaenogobius annularis urotaenia: TOMIYAMA, 1936, p. 91. South Saghalien.

Gymnogobius macrognathus: TARANETZ, 1937b, p. 28. North Saghalien; Tym River.

Gymnogobius annularis urotaenia: MIYADI, 1940, p. 83, Fig. 112. South Saghalien; Lake Raitisi.

43 ***Glossogobius giurii brunneus* (TEM. & SCHL.)**

Glossogobius brunneus: TANAKA, 1908, p. 251. South Saghalien; Lake Chipesani.

Family **Pleuronectidae**

44 ***Platichthys stellatus* (PALLAS)**

Platichthys stellatus: TANAKA, 1908, p. 254. South Saghalien; Mouth

of Susuya River, Nayoro: TARANETZ, 1937b, p. 30, 34. North Saghalien; Tym River: SOLDATOV & LINDBERG, 1930, p. 409. North Saghalien; Baikal Bay.

Family Gadidae

45 *Lota lota* (L.)

Lota lota lota: TARANETZ, 1937a, p. 169. Saghalien.

Lota lota: TARANETZ, 1937b, p. 30. North Saghalien; Tym River: MIYADI & ISHII, 1939b, p. 1067. South Saghalien; Horonai River.

Several species of Salmonidae introduced are omitted in the above list.

Salmo irideus (GIBBONS)

South Saghalien; Tarandomari, introduced from Chitose, Hokkaido.

Salvelinus fontinalis (MITCHILL)

South Saghalien; Ichani, introduced from Kawakami, Hokkaido.

Zoological Institute, Faculty of Science,
Hokkaido Imperial University,
Sapporo, Nippon

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***Porrocaecum azarasi* n. sp. (Nematoda)**
from the Japanese Seal

By

Satyû YAMAGUTI and Shirô ARIMA

(山口左伸・有馬四郎)

(Laboratory of Parasitology, Kyoto Imperial University)

With 1 Text-figure

Two gravid and two immature females and four mature males of this worm were collected by Prof. INUKAI in the stomach of *Histiophoca fasciata* (ZIMM.) GILL from Saghalien, and two additional females from another kind of the seal caught in Kuroshima were submitted to the senior author for examination through the courtesy of Mr. K. ASANUMA of the Akkeshi Marine Biological Station, Hokkaido Imperial University. They were found to represent a new species of the genus *Porrocaecum*, for which the name *Porrocaecum azarasi* is proposed. The specific name is the Japanese name for the host.

Description

Female. Body tapering anteriorly in esophageal region, $72-114 \times 1.5-2.2$ mm (two examples 45 mm and 53 mm long respectively are still immature). Head 0.4-5.6 mm in diameter. Cuticle very finely striated transversely. Nerve ring and cervical papillae 0.5-0.95 mm and 0.6-1.2 mm respectively from anterior extremity. Excretory pore between bases of two subventral lips. Lips divided by lateral constriction into a two-lobed anterior portion bearing a dentigerous ridge along its anterior inner margin and a swollen base with two papillae, of which one is single and the other double in the subventral lips, but both are double in the dorsal lip. The single papilla of the subventral lip lies anterodorsal to the double one, but the two double papillae of the dorsal lip are exactly symmetrical. Esophagus muscular, 3.5-5.9 mm long, narrowest at nerve ring, whence it gradually widens posteriorly to attain a maximum diameter of 0.4-0.55 mm, and then narrows a little to be continued into a small, muscular, bulbous swelling, whose lumen widens abruptly at the posterior end. Glandular ventriculus 1.2-3.0 mm long by 0.3-0.42 mm broad, only slightly narrower

anteriorly. Intestinal cecum digitiform, 1.3–2.42 mm long, 0.3–0.55 mm broad at base, reaching to a point 3.6–6.5 mm from head end. Tail conical, 0.25–0.39 mm long, with a papilliform or button-shaped projection at its dorsoterminal depression. The latter may be covered with minute, granular, apparently spiniform structures. Vulva 29–38 mm from anterior extremity, dividing body length in ratio of 1:1.35–1.6. Vagina 3.8–4.5 mm long by 0.15–0.21 mm wide in the specimens 72–87 mm long, provided with a layer of circular muscle decreasing gradually in thickness toward the unpaired uterus, from which it is not sharply marked off. Unpaired uterus 12–16 mm long in the specimens mentioned above, tapering anteriorly but uniformly wide posteriorly. Paired uteri parallel to each other at their distal portion which is distended with eggs and 8–14 mm long in the examples referred to.

In a specimen 87 mm long the anterior ovary, arising near the bifurcation of the uterus, forms five longitudinal loops in the vulvar region and its vicinity, the middle loop reaching as far forward as 15 mm in front of the vulva, while the posterior ovary, originating a little behind the vulva, describes behind the distended paired uteri several longitudinal loops, of which two extend forward to the unpaired uterus and one reaches to a point 8 mm from the tail end. Eggs subglobular, $45-59 \times 39-51 \mu$; contained ovum in morula stage.

Male. Body tapering anteriorly, $45-80 \times 1.0-1.5$ mm; posterior extremity rolled up ventrally. Cuticle inflated on each side of cloacal aperture and vicinity, but not forming distinct alae, which were observed in *Porrocaecum decipiens* KRABBE. Head 0.26–0.46 mm broad. Lips 0.1–0.24 mm long. Nerve ring and cervical papillae 0.6–0.8 mm and 0.75–1.1 mm respectively from head end. Esophagus $2.2-4.3 \times 0.26-0.53$ mm. Ventriculus $1.0-2.3 \times 0.2-0.44$ mm. Intestinal cecum 1.0–2.1 mm long, reaching to a point 2.7–4.7 mm from head end. Tail 0.2–0.38 mm long, conical, curved ventrally, with a terminal knob usually covered with rudimentary spines. Spicules equal or subequal, 1.1–2.43 mm long, hollow, provided at its tip with a notched wing, slightly expanded at proximal end. On the anterior border of the cloacal aperture is a papilliform cuticular protuberance at the middle, and on the posterior border are three arcuate transverse ridges, each of which is armed with a row of pointed or truncated teeth. There are on each side 100–130 anal papillae; these are placed in a regular row from immediately behind the cloacal aperture to a short distance in front of it (for about 20 papillae), but their arrangement becomes more irregular and confused on passing forwards, though regular again most anteriorly. The anterior most papilla lies 7–24 mm from the tip of the tail. The somewhat larger papilla lying on a level with the posterior end of the posterior dentigerous ridge mentioned above has a double ending. If this papilla be

regarded as the first postanal, there should be 6 pairs of postanals altogether. The second and fifth postanals are in line with the adanals, but the third and fourth lie a little outside of this line and the smallest sixth is exactly lateral, in position and presents a minute depression of the cuticle at its tip.

Habitat. Stomach of *Histiophoca fasciata* (ZIMM.) GILL.

Locality. Saghalien.

Specimens. Entire specimens (3 mature males and 1 immature female) preserved in lactophenol and deposited in YAMAGUTI Helminthological Collection, others dissected.

This species differs from the most closely related *Porrocaecum decipiens* (KRABBE, 1878) in the absence of definite caudal alae, in the number and arrangement of the anal papillae.

Literature

BAYLIS, H. A. Some ascarids in the British Museum (Natural History) Parasit., 8 (3), 1916, 365-368.

Explanation of Illustrations

Fig. 1-5. *Porrocaecum azarasi* n. sp.

Fig. 1. Head of female, end-on view.

Fig. 2. Anterior extremity of female, dorsal view.

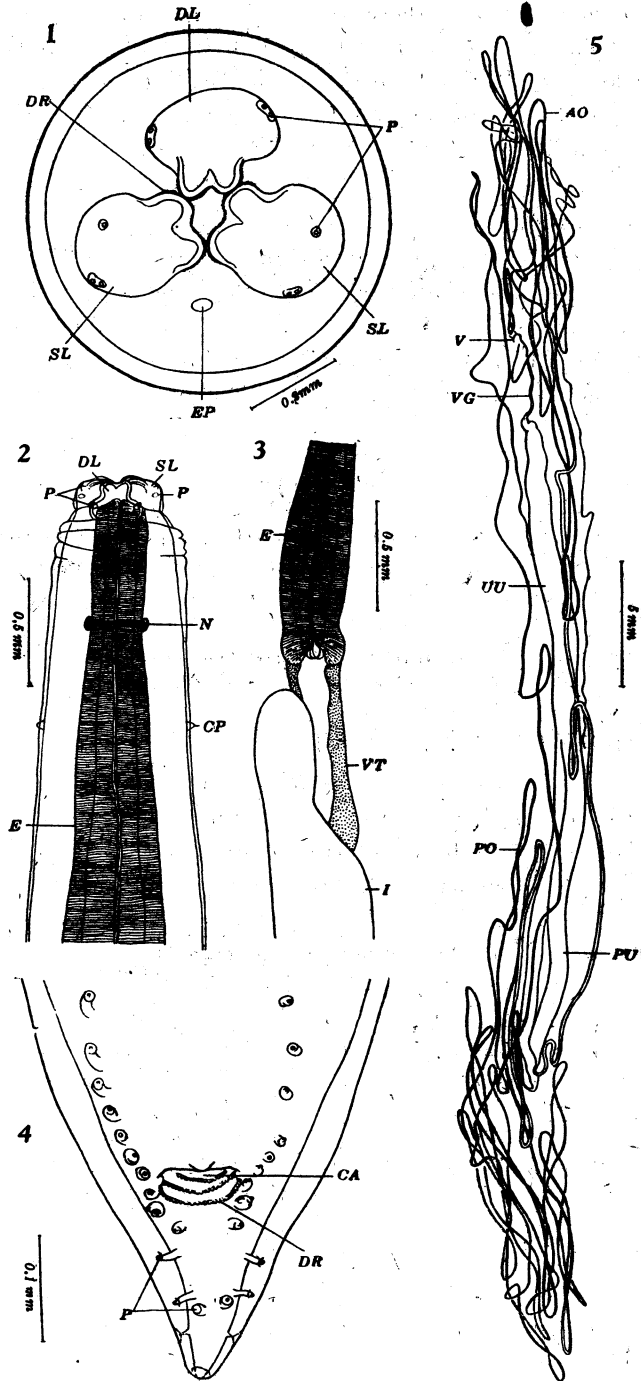
Fig. 3. Esophagus, ventriculus and intestine, lateral view.

Fig. 4. Posterior extremity of male, ventral view. Spicules not shown.

Fig. 5. Female genitalia, lateral view.

Abbreviations used in Figures

AO	anterior ovary	N	nerve ring
CA	cloacal aperture	P	papilla
CP	cervical papilla	PO	posterior ovary
DL	dorsal lip	PU	posterior uterus
DR	dentigerous ridge	SL	subventral lip
E	esophagus	UU	unpaired uterus
EP	excretory pore	V	vulva
I	intestine	VG	vagina



Two New Species of Fish Trematodes from Hokkaido

By

Satyû YAMAGUTI and Hiroshi MATUMURA

(山口左伸・松村 宏)

(Laboratory of Parasitology, Kyoto Imperial University)

With 3 Text-figures

The material, on which the present description is based, was obtained by the junior author in Hokkaido. For this district FUJITA reported two new species of the genus *Crepidostomum*, which have not yet been found in any other parts of Japan. One of the species here described is a third Japanese representative of this genus, and the other represents the largest gall-bladder trematode ever known from fishes.

Crepidostomum chaenogobii n. sp.

Habitat: Small intestine of *Chaenogobius annularis urotaenia* HILGENDORF.

Locality: Sapporo.

Material: Two mature examples, fixed in acetic sublimate under cover glass pressure, stained with hematoxylin and mounted in balsam.

Body approximately cylindrical, 1.425–1.65 mm in length, 0.26–0.3 mm in breadth at level of acetabulum; anterior extremity truncate, 0.31–0.338 mm broad at level of dorsolateral head papillae; neck region somewhat narrowed; posterior extremity bluntly rounded. Cuticle smooth. Subcuticular circular and longitudinal muscle fibers moderately developed in forebody. Eye-spots not observed. Oral sucker shield-shaped in ventral view, 0.23–0.25 mm long, 0.22–0.25 mm broad at level of anterolateral corner, with a small, transversely elongated, ventral aperture near its posterior end. Each anterior corner projects prominently on the ventral side between the outer and the inner pair of the dorsal papillae in the form of a small, conical, solely muscular papilla. The four dorsal papillae, over which extends a membranous fold continuous with the body, are large and bluntly rounded at the tip; the outer are plump and 57–72 μ broad and project 30–60 μ further outward than the lateral margin of the oral sucker, while the inner are rounded, 80–90 μ in diameter and project only 10–20 μ beyond the

anterior margin of the sucker. Pharynx $75-80 \times 60 \mu$. Esophagus 0.12 mm long in the type, provided with well developed longitudinal muscle fibers, bifurcating a little in front of acetabulum. Ceca terminating about midway between posterior testis and posterior extremity. Acetabulum $0.15-0.18$ mm in diameter, situated at about junction of anterior with middle third of body.

Testes globular to oval, $0.16-0.21 \times 0.1-0.2$ mm, tandem, separated one from

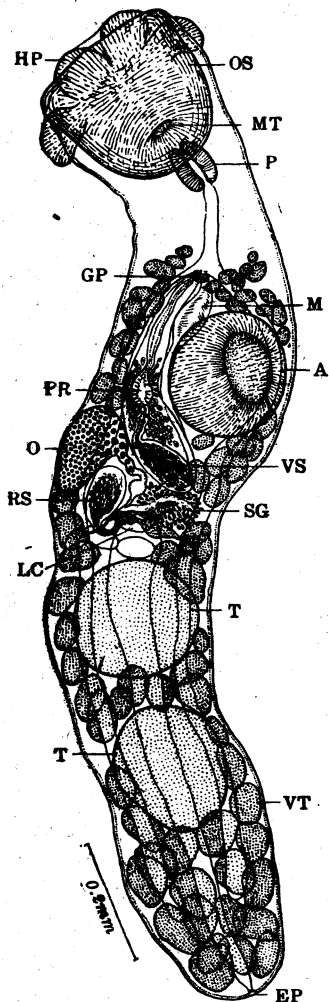


Fig. 1

Crepidostomum chaenogobii,
ventral view.

the other by a narrow band of vitellaria; the anterior median or slightly sinistral, the posterior median, with its posterior end one-sixth to one-seventh of body length from posterior extremity. Cirrus pouch elongate club-shaped, $0.33-0.39 \times 0.07-0.085$ mm, curved posteriorly toward the left and reaching to level of ovary. Vesicula seminalis elongated saccular proximally and filling up base of cirrus pouch, looped or not at its tubular distal portion, sharply constricted at its junction with pars prostatica. Pars prostatica well differentiated, $30-33 \mu$ in diameter at somewhat enlarged proximal part, whence it tapers gradually toward the ductus ejaculatorius. Prostate cells well developed, surrounding pars prostatica and distal portion of vesicula seminalis. Ductus ejaculatorius straight, 0.15×0.027 mm in the type, lined with very thick (up to 6μ in the type) cuticle. Genital pore immediately behind intestinal bifurcation.

Ovary subglobular, $0.1-0.15 \times 0.1-0.11$ mm, pressed against right side of body behind acetabulum and dorsal to cecum, giving rise to germiduct at its medial end. Receptaculum seminis oval, $90-105 \times 65-80 \mu$ immediately posterior or posteromedial to ovary. The duct originating from the posterior end of the receptaculum seminis turns forwards and gives off the LAURER's canal before uniting with the germiduct. LAURER's canal opening outside dorsal to shell gland, which lies immediately behind the posterior end of the cirrus pouch. Uterus forming a few coils ventrally between

anterior testis and acetabulum, containing 2-4 eggs only. Metraterm elliptical or cylindrical, 25-45 μ in diameter, shorter than ductus ejaculatorius (0.12 mm long in the type), densely covered inside with cuticular hairs, extending along left side of cirrus pouch from dorsal side of acetabulum to genital pore. Eggs elliptical, thick-shelled, 60-84 $\times$ 45 μ ; contained ovum not segmented. Vitelline follicles very large except for those in forebody, extending along ceca on all sides except the medial from posterior end of esophagus to posterior extremity though interrupted by ovary, intruding into median field between two testes and behind posterior testis; vitelline reservoir between shell gland and anterior end of excretory vesicle.

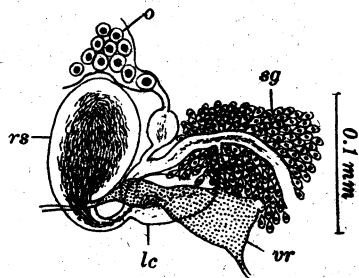


Fig. 2
Ovarian complex of
Crepidostomum chaenogobii,
ventral view.

Excretory vesicle tubular, wide, extending in middorsal field from its dorso-terminal pore to vitelline reservoir, markedly swollen anteriorly in the paratype.

This species differs from the most closely related *Crepidostomum ambloplitis* HOPKINS, 1931, in the characters of the oral sucker and its papillae, the position of the ovary, the size of the eggs, etc. In the American species the ventral oral papillae are larger than the dorsal and extend laterally beyond the sides of the sucker, while in the present species the ventral papillae, formed by prolongation of the anterolateral corners of the sucker, are markedly smaller than the dorsal papillae, and the opening of the oral sucker is unusually small and distinctly wider than long.

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Fellodistomum sebastodis n. sp.

Habitat: Gall bladder of *Sebastodes itinis* JORDAN et STARKS.

Locality: Otaru, Hokkaido.

Material: Four mature specimens mounted in balsam and a series of transverse sections.

Body fusiform when extended, rather pyriform when contracted, 6–10 mm in length, 3–5 mm in maximum breadth at middle, blunt-pointed or rounded at extremities, Cuticle very thick, rough, unarmed. Subcuticular longitudinal muscle bundles laminate, at right angles to cuticle in transverse sections. Subcuticular cells forming small compact masses partly intruding into space between longitudinal muscle laminae and reaching to cuticle. Parenchyma fibrous, reticulate. Oral sucker terminal or subterminal, $0.6-0.9 \times 0.65-1.0$ mm, strongly muscular, containing abundant cellular element among radial muscle fibers. No prepharynx. Pharynx subglobular, $0.25-0.4 \times 0.3-0.5$ mm. Esophagus $0.2-0.5$ mm long, surrounded by numerous accompanying cells. Ceca simple, running dorsomedial to testes and terminating at about middle of posterior third of body. Acetabulum $1.2-1.3 \times 1.4$ mm, situated at junction of anterior with middle third of body or slightly further behind.

Testes subglobular, usually longer than broad, $0.37-1.4 \times 0.3-1.0$ mm, situated in equatorial zone one on each side of body behind acetabulum, not always at same level. Vasa efferentia opening separately into vesicula seminalis at its posterior end, Cirrus pouch bulbous, 0.7×0.6 mm in the type, with thin muscular wall, containing vesicula seminalis, prostatic complex and ductus ejaculatorius, situated in pre-acetabular area with its dorsally directed posterior end overlapping acetabulum or a little in front of it. Vesicula seminalis constricted into two portions; proximal portion rounded, 0.21×0.188 mm in the type, occupying posterior end of cirrus pouch; distal portion cylindrical, 0.3×0.065 mm in the type, surrounded by strongly developed prostatic cells. Pars prostatica short, but well differentiated, 0.12 mm in diameter in the type. Ductus ejaculatorius short, lined with thick cuticle. Cirrus papilliform, projecting into genital atrium. The latter opens to the outside in the median line or only slightly to the left of it, 2.5 mm from the anterior extremity and 0.75 mm in front of the acetabulum in the type.

Ovary 0.85×0.65 mm and consisting of about 20, rounded follicles $0.15-0.2$ mm in diameter in the type, situated posterodorsal to acetabulum usually a little to the right of median line. No receptaculum seminis. LAURER's canal has not been detected. Shell gland compact, rounded, 0.45 mm in diameter and lying posteromedial to ovary in the type. Uterine coils filling up entire post-

testicular area, containing abundant yolk granules and abortive eggs besides normal ones. Metraterm short, running dorsoventrally on the left of cirrus pouch; opening into genital atrium alongside cirrus, lined with thick cuticle like genital atrium and ductus ejaculatorius. Eggs elliptical, thick-shelled, embryonated, with papilliform thickening at antipercular pole, exceedingly variable

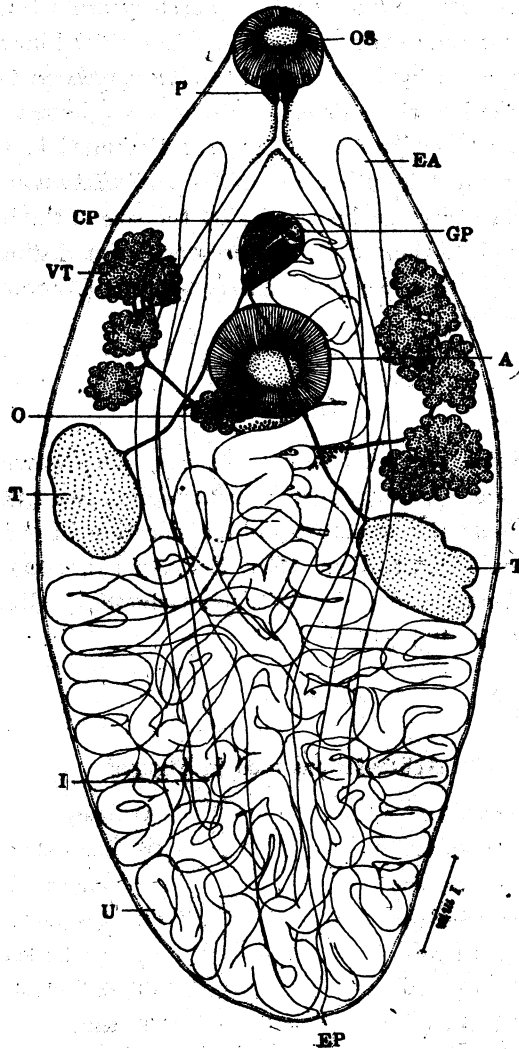


Fig. 3

Fellodistomum sebastodis, ventral view.

in size, $30-85 \times 24-48 \mu$. Vitelline follicles massed together in form of mulberries or grape-like bunches, which are arranged one behind another in the extracecal fields, 4-5 on each side, from the level of the cirrus pouch to near the testes. Right vitelline duct passing posteroventral to ovary. Vitelline reservoir immediately ventral to shell gland.

Excretory vesicle Y-shaped, bifurcating just behind testicular level, distinctly constricted at its dorsoterminal opening. Excretory arms running forward just inside of vitellaria and terminating at level of intestinal bifurcation.

The present species may be assigned to *Steringophorus* ODHNER, 1915, but differs from any of the known members of the genus [*furciger* (OLSS.), *profundus* MANTER, *magnus* MANTER, *divergens* (RUD.) of PALOMBI] in the extent of the vitellaria. In this respect it rather resembles *Fellodistomum agnotum* NICOLL, 1909, but is distinguished from this species by the size of the body, the posterior extent of the ceca and of the uterus, the presence of a distinct esophagus, etc. It seems very probable that the genus *Steringophorus* ODHNER is identical with *Fellodistomum* STAFFORD.

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Abbreviations used in Figures

A acetabulum	O ovary
CP cirrus pouch	OS oral sucker
EA excretory arm	P pharynx
EP excretory pore	PR pars prostatica
GP genital pore	RS receptaculum seminis
HP head papilla	SG shell gland
I intestine	T testis
LC LAURER's canal	U uterus
M metraterm	VS vesicula seminalis
MT mouth	VT vitellarium

注 意

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