



Title	札幌博物学会会報 第16巻 第3号 全1冊
Citation	札幌博物学会会報, 16(3)
Issue Date	1940-07-05
Doc URL	https://hdl.handle.net/2115/64274
Type	journal
File Information	TSNHS16_03.pdf



札幌博物學會報

第十六卷 第三號

TRANSACTIONS OF THE SAPPORO NATURAL HISTORY SOCIETY

FOUNDED IN 1891

VOL. XVI, PT. 3

PUBLISHED BY THE
SAPPORO NATURAL HISTORY SOCIETY
HOKKAIDO IMPERIAL UNIVERSITY, SAPPORO, JAPAN

JULY, 1940

NOTICES

All communications should be addressed to the Corresponding Secretary of the Sapporo Natural History Society in the Faculty of Agriculture, Hokkaido Imperial University, Sapporo, Japan.

Subscription price. Four Yen per year; foreign, \$ 2.00; current single numbers 2.50 Yen or \$ 1.25. The Transactions are issued twice a year.

Back numbers may be purchased at the following prices:—

		inland	foreign			inland	foreign
Vol. I.	Pt. 1.	¥ 3.50	\$ 1.75	Vol. XI.	Pt. 1.	2.50	\$ 1.25
Vol. I.	Pt. 2.	2.00	1.00	Vol. XI.	Pt. 2.	2.50	1.25
Vol. II.		3.50	1.75	Vol. XI.	Pt. 3.	2.50	1.25
Vol. III.		3.00	1.50	Vol. XI.	Pt. 4.	2.50	1.25
Vol. IV.	Pt. 1.	2.50	1.25	Vol. XII.	Pt. 1.	2.50	1.25
Vol. IV.	Pt. 2.	3.00	1.50	Vol. XII.	Pt. 2&3.	5.00	2.50
Vol. V.	Pt. 1.	2.00	1.00	Vol. XII.	Pt. 4.	2.50	1.25
Vol. V.	Pt. 2.	2.00	1.00	Vol. XIII.	Pt. 1.	2.50	1.25
Vol. V.	Pt. 3.	2.50	1.25	Vol. XIII.	Pt. 2.	2.00	1.00
Vol. VI.	Pt. 1.	2.00	1.00	Vol. XIII.	Pt. 3.	7.00	3.50
Vol. VI.	Pt. 2.	2.00	1.00	Vol. XIII.	Pt. 4.	2.00	1.00
Vol. VI.	Pt. 3.	2.50	1.25	Vol. XIV.	Pt. 1.	2.50	1.25
Vol. VII.	Pt. 1.	3.00	1.50	Vol. XIV.	Pt. 2.	2.50	1.25
Vol. VII.	Pt. 2.	3.00	1.50	Vol. XIV.	Pt. 3.	2.50	1.25
Vol. VIII.		3.00	1.50	Vol. XIV.	Pt. 4.	2.50	1.25
Vol. IX.	Pt. 1.	3.50	1.75	Vol. XV.	Pt. 1.	2.00	1.00
Vol. IX.	Pt. 2.	3.50	1.75	Vol. XV.	Pt. 2.	2.50	1.25
Vol. X.	Pt. 1.	¥ 3.50	1.75	Vol. XV.	Pt. 3.	2.50	1.25
Vol. X.	Pt. 2.	2.50	1.25	Vol. XV.	Pt. 4.	2.50	1.25

The entire set from Vol. I to Vol. XV Pt. 4 may be obtained at 108 Yen; foreign, \$ 54 (postage paid).

List of Plants of the Island of Okushiri* (II)

By

Misao TATEWAKI

(館 脇 操)

69. Pyrolaceae.

- 321. *Chimaphila japonica* MIQ. *Umegasasô*.
- 322. *Pyrola japonica* KLENZE *Ichiyakusô*.
- 323. *Pyrola renifolia* MAXIM. *Jinyô-ichiyakusô*.
- 324. *Pyrola subaphylla* MAXIM. *Hitotsuba-ichiyakusô*.

70. Monotropaceae.

- 325. *Monotropa hypopithys* L. var. *japonica* FR. ET SAV. *Shakujôsô*.
- 326. *Monotropastrum globosum* H. ANDERS. var. *pentapetalum* HONDA *Ginryôsô*.
- (326, b) *Monotropastrum globosum* H. ANDERS. var. *tripetalum* HONDA *Ko-ginryôsô*.

71. Rhodoraceae.

- 327. *Hugeria japonica* NAKAI *Akushiba*.
- 328. *Leucothoe Grayana* MAXIM. var. *glabra* TATEWAKI form. *lasiocarpa* TATEWAKI, com. nov.
Eubotryoides Grayana HARA var. *glabra* HARA, in Journ. Jap. Bot. XI. (1935), 628.
form. *lasiocarpa* HARA, l. c.
NOM. JAP. *Kemi-hiroha-hanahirinoki*.
- 329. *Menziesia pentandra* MAXIM. *Ko-yôrakutsutsuji*.
- 330. *Rhododendron Fauriae* FRANCH. var. *roseum* NAKAI form. *rufescens* HARA *Shirobana-shakunage*.
- 331. *Tripetaleia paniculata* SIEB. ET ZUCC. *Ho-tsutsuji*.
- 332. *Vaccinium Oldhami* MIQ. *Natsu-haze*.
- 333. *Vaccinium praestans* LAMB. *Iwa-tsutsuji*.
- 334. *Vaccinium Smallii* A. GRAY *Ôba-sunoki*.

*M. TATEWAKI: List of Plants of the Island of Okushiri (I), in Sapporo Nat. Hist. Soc., Vol. XVI, Pt. 2. (1940), 75-90.

72. Ardisiaceae.

335. *Bladhia japonica* THUNB. *Yabukôju*.

73. Primulaceae.

336. *Glaux maritima* L. var. *obtusifolia* FERNALD *Shiomatsuba*.
337. *Lysimachia vulgaris* L. subsp. *davurica* (LEDEB.) TATEWAKI, com. nov.
Lysimachia davurica LEDEB. in Mém. Acad. Sc. St. Pétersb. V. (1814),
523.
NOM. JAP. *Kusaredama*.
form. *latifolia* HARA, in Bot. Mag. Tokyo, L. (1936), 569. *Hiroha-kusaredama*.
338. *Trientalis europaea* L. var. *eurasiatica* R. KNUTH *Tsumatorisô*.

74. Symplocaceae.

339. *Palura paniculata* NAKAI var. *pilosa* NAKAI *Sawafutagi*.

75. Styracaceae.

340. *Styrax Obassia* STEB. ET ZUCC. *Hakuunboku*.

76. Oleaceae.

341. *Fraxinus borealis* NAKAI, Trees & Shrubs Jap. ed. I. (1922), 290, fig. 160, et II. (1927), 390, fig. 185.
NOM. JAP. *Ô-toneriko*.
HAB. R. Aonae (K. TOGASHI, IX. 7, 1935).
342. *Fraxinus japonica* BLUME, in sched. Herb. Leiden; KOCH, Dendr. II.-1. (1872), 237; NAKAI, Tr. & Shr. Jap. rev. ed. (1927), 398, fig. 190.
NOM. JAP. *Toneriko*.
HAB. Chatsu (M. TATEWAKI, V. 19, 1935; KINGO TOGASHI, IX. 21, 1935); R. Tsurikake (KINGO TOGASHI, IX. 17, 1935).
343. *Fraxinus Sieboldiana* BL. var. *serrata* NAKAI *Ao-damo*.
344. *Ligustrum Tschoninskii* DECNE. *Oku-ibota*.
(344, b) *Ligustrum Tschoninskii* DECNE. var. *glabrescens* KOIDZ. *Yezo-ibota*.

77. Gentianaceae.

345. *Tripterospermum japonicum* MAXIM. *Tsuru-rindô*.
346. *Gentiana Zollingeri* FAWCETT *Fude-rindô*.

78. Apochynaceae.

347. *Apochynum venetum* L. *Oshorosô*.

79. Asclepiadaceae.

348. *Cynanchum caudatum* MAXIM. *Ikema*.
 349. *Metaplexis japonica* MAXIM. *Gagaimo*.

80. Convolvulaceae.

350. *Calystegia Soldanella* ROEM. ET SCHUL. *Hama-hirugao*.

81. Cuscutaceae.

351. *Cuscuta japonica* CHOISY *Nenashi-kadzura*.

82. Polemoniaceae.

352. *Polemonium caeruleum* L. var. *yezoense* MIYABE ET KUDO *Yezo-hana-shinobu*.

83. Borraginaceae.

353. *Mertensia maritima* S. F. GRAY subsp. *asiatica* TAKEDA *Hama-benkei*.
 354. *Tournefortia sibirica* L. *Sunabikisô*.

84. Verbenaceae.

355. *Callicarpa japonica* THUNB. *Murasaki-shikibu*.
 (355, b) *Callicarpa japonica* THUNB. var. *laxurians* REHD. in SARG. Pl. Wils. III. (1916), 369.
 NOM. JAP. *Ô-murasakishikibu*.
 HAB. Tsurikake (B. YOSHIMURA, VII. 14, 1935).
 356. *Clerodendron trichotomum* THUNB. *Kusagi*.

85. Labiatae.

357. *Agastache rugosa* OK. var. *hypoleuca* KUDO *Kita-kawamidori*.
 358. *Ajuga yezoensis* MAXIM. form. *elngata* KUDO *Nagaba-nishikigoromo*.
 359. *Chelonopsis moschata* MIQ. *Jakosô*.
 360. *Clinopodium Fauriei* HARA var. *japonicum* HARA *Inutôbana*.
 361. *Clinopodium sachalinense* KOIDZ. *Miyama-tôbana*.
 362. *Elscholzia Patrini* GARCKE *Naginata-kôju*.
 363. *Glechoma hederacea* L. var. *grandis* KUDO *Kakidôshi*.
 364. *Lamium album* L. *Yezo-odorikosô*.
 365. *Lycopus coreanus* LÉVL. *Ko-shirone*.
 366. *Lycopus lucidus* TURCZ. *Shirone*.
 367. *Lycopus uniflorus* MICHX. *Yezo-shirone*.
 368. *Mentha sachalinensis* KUDO *Yezo-hakka*.

- 369. *Prunella vulgaris* L. *Miyama-utsubogusa*.
- 370. *Scutellaria strigillosa* HEMSL. *Namikisô*.
- 371. *Scutellaria ussuriensis* KUDO *Yezo-tatsunamisô*.
- 372. *Thymus Serpyrum* L. subsp. *japonicus* TATEWAKI, com. nov.
Thymus Serpyllum L. var. *ibukiense* KUDO, Enum. Labiat. Kuril. et Yezo.
 (1921), 40, t. II, fig. 26.
Thymus quinquecostatus CELAKOV. var. *japonicus* HARA, in Bot. Mag. Tokyo, LI. (1937), 144.
 NOM. JAP. *Ibuki-jakôsô*.

86. Solanaceae.

- 373. *Physalliastrum japonicum* HONDA *Iga-hôzuki*.
- 374. *Solanum japonense* NAKAI *Yama-horoshi*.
- 375. *Solanum megacarpum* KOIDZ. *Ô-marubano-horoshi*.
- 376. *Solanum nigrum* L. *Inu-hôzuki*.

87. Rhinantaceae.

- 377. *Linaria japonica* MIQ. *Unran*.
- 378. *Mimulus inflatus* NAKAI *Mizo-hôzuki*.
- 379. *Scrophularia Grayana* MAXIM. *Yezo-hinanousutsubo*.
- 380. *Verbascum Thapsus* L. (introduced) *Birôdo-môzuika*.
- 381. *Veronica serpyllifolia* L. *Tengu-kuwagata*.

88. Orobanchaceae.

- 382. *Phacellanthus tubriflorus* SIEB. ET ZUCC. *Kiyosumi-utsubo*.

89. Phrymaceae.

- 383. *Phryma Leptostachya* L. *Haedokusô*.
- (383, b) *Phryma Leptostachya* L. var. *oblongifolia* HONDA *Nagaba-haedokusô*.

90. Plantaginaceae.

- 384. *Plantago asiatica* L. *Ôbako*.
- 385. *Plantago camtschatica* CHAM. *Yezo-ôbako*.
- 386. *Plantago lanceolata* L. (introduced) *Hera-ôbako*.
- 387. *Plantago Togashii* MIYABE ET TATEWAKI *Iso-ôbako*.

91. Rubiaceae.

- 388. *Asperula odorata* L. *Kurumabasô*.
- 389. *Galium kamtschaticum* STELL. *Yezo-no-yotsubamugura*.

390. *Galium trifidum* L. var. *pacificum* WIEG. *Hosoba-no-yotsubamugura*.
 391. *Galium trifloriforme* KOMAR. *Kuruma-mugura*.
 392. *Galium verum* L. var. *trachycarpum* DC. *Yezo-kawaramatsuba*.
 393. *Mitchella repens* L. var. *undulata* MAKINO *Tsuru-aridôshi*.
 394. *Rubia jesoensis* MIYABE ET MIYAKE *Akane-mugura*.

92. Caprifoliaceae.

395. *Lonicera Glehni* FR. SCHM. *Yezo-hyôtanboku*.
 396. *Lonicera Morrowii* A. GRAY *Kingin-boku*.
 397. *Lonicera storophiophora* FRANCH. *Arage-hyôtanboku*.
 398. *Sambucus Buergeriana* BL. *Yezo-niwatoko*.
 399. *Viburnum dilatatum* THUNB. form. *hispidum* NAKAI *Arage-gamazumi*.
 400. *Viburnum furcatum* BL. *Mushikari*.
 401. *Viburnum Sargentii* KOEHNE *Kanboku*.
 (401, b) *Viburnum Sargentii* KOEHNE var. *calvescens* REHD. *Kenashi-kanboku*.
 402. *Viburnum Wrightii* MIQ. *Miyama-gamazumi*.
 403. *Weigela hortensis* C. A. MEY. *Tani-utsugi*.

93. Adoxaceae.

404. *Adoxa Moschatellina* L. *Renpukusô*.

94. Vallerianaceae.

405. *Patrinia gibbosa* MAXIM. *Maruba-kinreikwa*.
 406. *Patrinia villosa* JUSS. *Otokoyeshi*.
 407. *Valleriana officinalis* L. var. *latifolia* MIQ. *Kanokosô*.

95. Dipsaceae

- 408.* *Scabiosa comosa* FISCH. ex ROEM. ET SCHULT. Syst. Veget. III. (1818), 84; KITAGAWA. Fl. Mansh. (1939), 413.
 var. *japonica* (NAKAI) TATEWAKI, com. nov.
Scabiosa japonica MIQ. in Ann. Mus. Bot. Lugd.-Bat. III. (1867), 113.
Scabiosa Fischeri A. P. DC. var. *japonica* NAKAI, in Bot. Mag. Tokyo, XXIII. (1909), [163].
 NOM. JAP. *Matsumushisô*.

*(408) *Scabiosa comosa* FISCH. var. *longiseta* (HARA) TATEWAKI, com. nov.
Scabiosa japonica MIQ. form. *ulcina* TAKAEDA, Kôzanshokubutsu-dzui, (1933), no. 35, 8.
Scabiosa Fischeri A. P. DC. var. *longiseta* HARA, in Bot. Mag. Tokyo, LI. (1937), 894.
 NOM. JAP. *Miyama-matsumushisô*.

96. Cucurbitaceae.

409. *Gynostemma pentaphyllum* MAKINO *Amacha-zuru*.
 410. *Schizophragma brioniaefolius* MAXIM. *Miyama-nigauri*.
 411. *Trichosanthes quadricirra* MIQ. *Ki-karasuuri*.

97. Campanulaceae.

412. *Adenophora Thunbergiana* KUDO *Yezo-tsuriganeninjin*.
 (412, b) *Adenophora Thunbergiana* KUDO form. *hirsuta* KUDO *Shirage-shajin*.
 413. *Codonopsis ussuriensis* HEMSL. *Baasobu*.
 414. *Peracarpa circaeoides* H. FEER *Tani-gikyô*.

98. Compositae.

415. *Achillea Ptarmica* L. subsp. *macrocephala* HEIM. *Yezo-nokogirisô*.
 416. *Achillea sibirica* LEDEB. subsp. *japonica* HEIM. *Nokogirisô*.
 417. *Adenocaulon adhaerescens* MAXIM. *No-buki*.
 418. *Ainsliaea apiculata* SCHULZ *Kikko-haguma*.
 419. *Anaphalis margaritacea* BENTH. ET HOOK. f. subsp. *angustior* KITAMURA *Yamahahako*.
 (419, b) *Anaphalis margaritacea* BENTH. ET HOOK. f. subsp. *angustior* KITAMURA, var. *ramosa* TATEWAKI, com. nov.
Anaphalis margaritacea BENTH. ET HOOK. f. var. *ramosa* NAKAI, Veg. Mt. Apoi, (1930), 23, 70.
Anaphalis margaritacea BENTH. ET HOOK. f. subsp. *angustior* KITAMURA, form. *ramosa* HARA, in Bot. Mag. TOKYO, LII. (1938), 3.
 , NOM. JAP. *Edauchi-yamahahako*.
 420. *Artemisia gigantea* KITAMURA *Ô-yomogi*.
 421. *Artemisia Iwayomogi* KITAMURA *Kamui-yomogi*.
 422. *Artemisia japonica* THUNB. form. *resedifolia* TAKEDA *Hosoba-otokoyomogi*.
 423. *Artemisia Keiskei* MIQ. *Inu-yomogi*.
 424. *Artemisia littolicola* KITAMURA *Hama-otokoyomogi*.
 425. *Artemisia Stelleriana* BESS. *Shiro-yomogi*.
 426. *Aster Glehni* FR. SCHM. *Yezo-gomana*.
 427. *Aster scaber* THUNB. *Shirayama-giku*.
 428. *Cacalia hastata* L. subsp. *orientalis* KITAMURA *Ô-yobusumasô*.
 429. *Carpesium arbotanoides* L. *Yabutabako*.
 430. *Carpesium triste* MAXIM. *Miyama-yabutabako*.
 431. *Centopeda minima* OK. *Tokinsô*.
 432. *Cephalonoplos setosum* KITAMURA *Yezo-no-kitsuneazami*.
 433. *Chrysanthemum littorale* T. MAEKAWA *Yezo-no-sonaregiku*.

434. *Cirsium aomorense* NAKAI *Ô-noazami*.
 435. *Cirsium kamtschaticum* LEDEB. var. *boreale* (KITAMURA) TATEWAKI, com. nov.
Cirsium boreale KITAMURA, Cirs. Nov. Or.-As. (1931), 2.
 NOM. JAP. *Yezo-azami*.
 436. *Cirsium pendulum* A. GRAY *Taka-azami*.
 437. *Erigeron canadense* L. (introduced) *Hime-mukashiyomogi*.
 438. *Erigeron acre* L. var. *hirsutum* MIYABE ET MIYAKE *Yezo-mukashiyomogi*.
 439. *Eupatorium Glehni* FR. SCHM. *Yezo-kurumabahiyodoribana*.
 440. *Hieracium umbellata* L. var. *japonicum* HARA *Yanagi-tanpopo*.
 441. *Inula salicina* L. subsp. *Kitamurana* TATEWAKI, com. nov.
Inula involucrata MIQ. in Ann. Mus. Bot. Lugd.-Bat. II. (1866), 171, (non KALEN.).
Inula salicina L. var. *asiatica* KITAMURA, in Acta Phytotax. et Geobot. II. (1933), 44.
Inula Kitamurana TATEWAKI, in Bull. Res. Exp. For. Hok. Imp. Univ. X. (1935), [146].
 NOM. JAP. *Kasensô*.
 442. *Ixeris dentata* NAKAI *Nigana*.
 (442, b) *Ixeris dentata* NAKAI var. *amplifolia* KITAMURA *Ô-nigana*.
 443. *Ixeris stolonifera* A. GRAY *Iwa-nigana*.
 444. *Lactuca Raddeana* MAXIM. *Yama-nigana*.
 445. *Lactuca indica* L. *Aki-no-nogeshi*.
 446. *Leibnitzia Anandria* NAKAI *Senbon-yari*.
 447. *Saussurea Riederi* HERD. subsp. *yezoensis* KITAMURA, var. *elongata* KITAMURA *Yezo-tôhiren*.
 448. *Petasites japonicus* MIQ. subsp. *amplus* KITAMURA *Akita-buki*.
 449. *Picris hieracioides* L. subsp. *japonica* HANDEL-MAZ. *Kôzorina*.
 450. *Senecio cannabifolius* LESS. *Hangonsô*.
 451. *Senecio vulgaris* L. *Noboro-giku*.
 452. *Siegesbeckia pubescens* MAKINO *Menamomi*.
 453. *Solidago mirabilis* KITAMURA *Ô-akinokirinsô*.
 454. *Sonchus asper* HILL *Oni-nogeshi*.
 455. *Sonchus brachyotus* DC. *Hachijôna*.

99. Typhaceae.

456. *Typha latifolia* L. *Gama*.

100. Sparganiaceae.

457. *Sparganium glomeratum* LAESTD. *Tama-mikuri*.

101. Zosteraceae.

458. *Phyllospadix iwatensis* MAKINO *Sugamo*.
 459. *Zostera asiatica* MIKI *Amamo*.

102. Alismataceae.

460. *Alisma canaliculatum* A. BR. ET BOUC. *Hera-omodaka*.

103. Poaceae.

461. *Agrostis clavata* TRIN. *Yama-nukabo*.
 462. *Agrostis hyemalis* B. S. P. *Yezo-nukabo*.
 463. *Agrostis palustris* HUDS. *Konukagusa*.
 464. *Anthoxanthum odoratum* L. (introduced) *Harugaya*.
 465. *Alopecurus aequalis* SOBOL. *Suzume-no-teppô*.
 466. *Brachypodium sylvaticum* BEAUV. var. *villosum* LEJ. ET COURT. *Yezo-yamakamojigusa*.
 (466, b) *Brachypodium sylvaticum* BEAUV. var. *leiospica* HARA *Ke-yamakamojigusa*.
 467. *Bromus remotiflorus* OHWI *Kitsune-gaya*.
 468. *Calamagrostis Epigejos* ROTH var. *densiflora* LEDEB. *Hoso-yamaawa*.
 469. *Calamagrostis hakonensis* FR. ET SAV. *Hime-nogariyasu*.
 470. *Calamagrostis Langsdorfi* TRIN. *Iwa-nogariyasu*.
 471. *Calamagrostis sachalinensis* FR. SCHM. *Takane-gariyasu*.
 472. *Dactylis glomerata* L. (introduced) *Kamo-gaya*.
 473. *Diarrhena japonica* FR. ET SAV. *Tatsu-no-hige*.
 474. *Echinochloa colona* LINK *Wase-bie*.
 475. *Elymus dahuricus* TURCZ. *Hama-mugi*.
 476. *Eragrostis Niwahokori* HONDA *Niwahokori*.
 477. *Festuca ovina* L. *Ushi-no-ke-gusa*.
 478. *Festuca rubra* L. *Ô-ushinokegusa*.
 479. *Hierochloa odorata* P. BEAUV. subsp. *Bungeana* HARA, in Bot. Mag. Tokyo, LII. (1938), 234. pro syn. *Kôbô*.
 480. *Ischaemum antheophroides* MIQ. *Ke-kamonohashi*.
 (480, b) *Ischaemum antheophroides* MIQ. var. *subnudum* HONDA *Hime-kekamonohashi*.
 481. *Leymus arenarius* HOCHST. in Fl. XXXI. (1848), 118, in adnot. subsp. *mollis* TATEWAKI, com. nov.
Elymus mollis TRIN. in Spr. Neue Entd. II. (1821), 72; HONDA, Monogr. Poac. Jap. (1930), 20.

Leymus mollis HARA, in Bot. Mag. Tokyo, LII. (1938), 232, pro syn.
NOM. JAP. *Hama-ninniku*.

- 482. *Melica nutans* L. *Kome-gaya*.
- 483. *Millium effusum* L. *Ibuki-nukabo*.
- 484. *Miscanthus sinensis* ANDER. var. *purpurascens* RENDLE *Murasaki-susuki*.
- 485. *Phacelurus latifolius* OHWI *Aiashi*.
- 486. *Poa annua* L. *Suzume-no-katabira*.
- 487. *Poa nemoralis* L. *Tachi-ichigotsunagi*.
- 488. *Poa pratensis* L. (introduced). *Nagahagusa*.
- 489. *Poa radula* FR. ET SAV. *Chishima-ichigotsunagi*.
- 490. *Polypogon Hiegegaweri* STEUD. *Hige-gaeri*.
- 491. *Setaria lutescens* HUBBARD *Kin-enokoro*.
- 492. *Setaria pachystachys* FR. ET SAV. *Hama-enokoro*.
- 493. *Setaria viridis* BEAUV. *Enokorogusa*.

104. Bambusaceae.

- 494. *Sasa kurilensis* MAKINO ET SHIBATA *Chishima-zasa*.
- (494, b) *Sasa kurilensis* MAKINO ET SHIBATA var. *Uchidai* MAKINO *Hosoba-nemagari-dake*.
- 495. *Sasa paniculata* MAKINO ET SHIBATA var. *paniculata* NAKAI *Nemagari-zasa*.
- (495, b) *Sasa paniculata* MAKINO ET SHIBATA var. *ontakensis* NAKAI *Me-ku-maizasa*.
- 496. *Sasa Tatewakiana* MAKINO *Yezo-miyamazasa*.

105. Cyperaceae. (*Carex* det. by Dr. S. AKIYAMA)

- 497. *Carex blepharicarpa* FRANCH. *Shôjô-suge*.
- 498. *Carex conica* BOOTT *Hime-kansuge*.
- 499. *Carex foliosissima* FR. SCHM. *Oku-no-kansuge*.
- 500. *Carex forficula* FR. ET SAV. *Tanigawa-suge*.
- 501. *Carex Gmelini* HOOK. ET ARN. *Nemuro-suge*.
- 502. *Carex insanae* KOIDZ. *Hiroha-suge*.
- 503. *Carex japonica* THUNB. *Higokusa*.
- 504. *Carex kinpokusensis* AKIYAMA *Sado-kansuge*.
- 505. *Carex Kobomugi* OHWI *Kôbô-mugi*.
- 506. *Carex leucochloa* BUNGE *Awo-suge*.
- 507. *Carex Lyngbyei* HORNEM. *Yarame-suge*.
- 508. *Carex macrocephala* WILLD. *Yezo-no-kôbômugi*.
- 509. *Carex mollicula* BOOTT *Hime-shirasuge*.
- 510. *Carex Oederioides* TATEWAKI ET AKIYAMA *Hime-sawasuge*.

- 511. *Carex okushirensis* AKIYAMA *Okushiri-kansuge.*
- 512. *Carex podogyna* FRANCH. *Tanukiran.*
- 513. *Carex pumila* THUNB. *Kôbô-suge.*
- 514. *Carex rhynchophysa* C. A. MEY. *Ô-kasasuge.*
- 515. *Carex sachalinensis* FR. SCHM. *Gongen-suge.*
- 516. *Carex sadoensis* FRANCH. *Sado-suge.*
- 517. *Carex shimidzensis* FRANCH. *Azuma-naruko.*
- 518. *Carex tenuistachya* NAKAI *Matsumaye-suge.*
- 519. *Cyperus orthostachyus* FR. ET SAV. *Ko-ushikugu.*
- 520. *Fimbristylis subbispicata* NEES ET MEYEN *Yama-wi.*
- 521. *Heleocharis kamtschatica* KOMAR. *Kuro-hariwi.*
- 522. *Heleocharis mamillosa* LINDB. *Ô-numahariwi.*
- 523. *Heleocharis palustris* R. BR. *Numa-hariwi.*
- 524. *Heleocharis Wichurai* BÖCK. *Shikakuwi.*
- 525. *Scirpus Wichurai* BÖCK. *Yezo-aburagaya.*

106. Araceae.

- 526. *Acorus Calamus* L. *Shôbu.*
- 527. *Arisaema peninsulae* NAKAI *Yezo-tenmanshō.*
- 528. *Lysichitum camtschaticense* SCHOTT *Mizu-bashō.*
- 529. *Symplocarpus foetidus* NUTT. *Zazensō.*

107. Commelinaceae.

- 530. *Commelina communis* L. *Tsuyukusa.*

108. Juncaceae.

- 531. *Juncus balticus* WILLD. var. *Haenkei* BUCH. *Ô-inuwi.*
- 532. *Juncus compressus* JACQ. var. *gracillimus* BUCH. *Doro-wi.*
- 533. *Juncus decipiens* NAKAI *Wi.*
- (533, b) *Juncus decipiens* NAKAI var. *glacilis* NAKAI *Hime-wi.*
- (533, c) *Juncus decipiens* NAKAI var. *glomeratus* SATAKE *Tama-wi.*
- 534. *Juncus Fauriei* LÉVL. ET VNT. *Hira-wi.*
- 535. *Juncus Kramerii* FR. ET SAV. *Tachi-kôgaizekishō.*
- 536. *Juncus prismatocarpus* R. BR. var. *Leschenaultii* BUCH. subvar. *pluritubulosus* BUCH. *Kôgaizekishō.*
- (536, b) *Juncus prismatocarpus* R. BR. var. *Leschenaultii* BUCH. subvar. *unitubulosus* BUCH. *Hai-kôgaizekishō.*
- 537. *Luzula capitata* KOMAR. *Suzume-no-hiye.*
- 538. *Luzula plumosa* E. MEY. *Nukaboshisō.*

109. Liliaceae.

539. *Allium Schoenoprasum* L. var. *foliosum* REGEL. *Yezo-negi*.
 540. *Allium Victorialis* L. subsp. *platyphyllum* HULT. *Gyôja-ninniku*.
 541. *Asparagus schoberioides* KUNTH *Kijikakushi*.
 542. *Cardiocrinum cordatum* MAKINO subsp. *Glehni* (FR. SCHM.) TATEWAKI, comb. nov.
Lilium Glehni FR. SCHM. Fl. Sachal. (1868), 187.
 NOM. JAP. *Ô-ubayuri*.
 543. *Clintonia udensis* TRAUTV. ET MEY. *Tsubame-omoto*.
 544. *Disporum sessile* DON *Hôchakusô*.
 (544, b) *Disporum sessile* DON var. *macrophyllum* KOIDZ. *Ô-hôchakusô*.
 545. *Disporum smilacinum* A. GRAY *Chigo-yuri*.
 546. *Erythronium japonicum* J. DECNE. *Katakuri*.
 547. *Gagea lutea* KER-GAWL. *Kibana-no-amana*.
 548. *Hemerocallis Middendorffii* TRAUTV. ET MEY. *Yezo-kansô*.
 549. *Hosta rectifolia* NAKAI *Tachi-gibôshi*.
 550. *Lilium dauricum* KER-GAWL. *Yezo-sukashiyuri*.
 551. *Lilium medeoloides* A. GRAY *Kuruma-yuri*.
 552. *Lilium lancifolium* THUNB. (escaped?) *Oni-yuri*.
 553. *Majanthemum dilatatum* NELS. ET MACBR. *Maizurusô*.
 554. *Ophiopogon japonicus* KER-GAWL. *Ja-no-hige*.
 555. *Paris tetraphylla* A. GRAY *Tsukubanesô*.
 556. *Paris verticillata* M. BIED. var. *setchensis* HAN.-MAZ.
 557. *Polygonatum humile* FISCH. *Hime-izui*.
 558. *Polygonatum Maximowiczii* FR. SCHM. *Ô-amadokoro*.
 559. *Smilacina japonica* A. GRAY *Yukizasa*.
 560. *Streptopus amplexifolius* DC. var. *papillatus* OHWI *Ôba-takeshimaran*.
 561. *Tofieldia yezoensis* MIYABE ET KUDO, in Trans. Sapporo Nat. Hist. Soc. V. (1914), 73.
 var. *okushirensis* TATEWAKI, var. nov.
 A typo differt pedicellis brevioribus 1-3 mm longis.
 NOM. JAP. *Okushiri-zekishô*. (n. n.).
 HAB. The Upper Kamoishi (B. SONOKI, VIII. 10. 1935-type).
 562. *Smilax nipponica* MIQ. *Shiode*.
 563. *Trillium Smallii* MAXIM. *Yenreisô*.
 564. *Veratrum japonicum* LOESN. *Shurosô*.

110. Dioscoreaceae.

565. *Dioscorea Batatas* DECNE. form. *elongatum* HARA *Nagaimo*.

111. Iridaceae.

566. *Iris ensata* THUNB. var. *spontanea* NAKAI *No-hanashôbu*.
 567. *Iris Nertinskia* LODD. *Ayame*.
 568. *Iris setosa* PALL. *Hiwogi-ayame*.

112. Orchidaceae.

569. *Calanthe discolor* LINDL. *Ebine*.
 570. *Calanthe nipponica* MAKINO *Kinsei-ran*.
 571. *Calanthe reflexa* MAXIM. var. *okushirensis* (MIYABE ET TATEWAKI) TATEWAKI, com. nov.
Calanthe okushirensis MIYABE ET TATEWAKI, in Trans. Sapporo Nat. Hist. Soc. XIV. (1936), 190, fig. 11.
 NOM. JAP. *Okushiri-ebine*.
 572. *Calanthe megaphora* FR. ET SAV. *Yezo-ebine*.
 573. *Cephalanthera longibracteata* BL. *Sasaba-ginran*.
 574. *Cremastra variabilis* NAKAI *Saihai-ran*.
 575. *Cymbidium virescens* LINDL. *Hokuro*.
 576. *Cypripedium debile* REICHB. f. *Ko-atsumori*.
 577. *Ephippianthus Schmidtii* REICHB. f. *Ko-ichiyôran*.
 578. *Epipactis longifolia* BL. *Kaki-ran*.
 579. *Epipactis papillosa* FR. ET SAV. *Yezo-suzuran*.
 580. *Galeola septentrionalis* REICHB. f. *Tsuchi-akebi*.
 581. *Gastrodia elata* BL. *Oni-no-yagara*.
 582. *Goodyera Maximowicziana* MAKINO *Akebono-shusuran*.
 583. *Goodyera pendula* MAXIM. var. *brachyphylla* F. MAEKAWA *Hiroha-tsurishusuran*.
 584. *Goodyera Schlenchtendaliana* REICHB. f. *Miyama-uzura*.
 585. *Gymnadenia camtschatica* MIYABE ET KUDO *Nobine-chidori*.
 (585, b) *Gymnadenia camtschatica* MIYABE ET KUDO form. *albiflora* TATEWAKI *Shirobana-nobinechidori*.
 586. *Liparis auriculata* BL. *Gibôshiran*.
 587. *Liparis Makinoana* SCHLTR. *Suzumushisô*.
 588. *Myrmechis japonica* ROLFE *Aridôshi-ran*.
 589. *Oreorchis patens* LINDL. *Kokei-ran*.
 590. *Platanthera Florenti* FRANCH. ET SAV. *Jinbaisô*.
 591. *Platanthera japonica* LINDL. *Tsuresagisô*.
 592. *Platanthera sachalinensis* FR. SCHM. *Ô-yamasagisô*.
 595. *Spiranthes amoena* SPR. *Mojizuri*.

Über eine neue Diplopodengattung aus Japan

Von

Yosioki TAKAKUWA

(高桑良興)

Mit 5 Textfiguren

VERHOEFF unterscheidet Familie *Paraiulidae* in zwei Gruppe, (Mitteilungen über Höhlen- und Karstforschung. 1935.) nämlich.

- a) Hüften am 2. Beinpaar des ♂ ein Coxosternum bildend, zugleich sehr gross usw., das Telopodit 3-4-gliedrig, die Klaue verkümmert
..... I. subfam. *Paraiulinae*.

Mein Tier gehört dieser Familie nicht, da es keine solche Gestalt besitzt.

- b) Hüften am 2. Beinpaar des ♂ oft zu einem Syncoxit verwachsen, aber weder mit dem Sternit verwachsen noch erweitert usw., das Telopodit normal, also fünfgliedrig, die Klaue deutlich ausgebildet.

Mein Tier gehört genau zu dieser Gruppe. VERHOEFF unterscheidet ferner diese Gruppe in zwei Subfamilien, 2. Subfam. *Scleroprotopinae*, und 3. Subfam. *Kopidoiulinae*. Jedoch bei diesem Tiere ist das 7. Bein des ♂ wesentlich normal, nie so umgewandelt, wie bei *Scleroprotopinae*, und die Flagella der vorderen Gonopoden gut entwickelt, überdies Tarsus am 1. Beinpaar des ♂ an der Basis nie stark eingeschnürt, so dass es kaum den *Kopidoiulinae* an gehören kann. Daher, wenn wir diese in Subfamilien unterscheiden, so müssen wie den VERHOEFFSchen 3 Subfamilien noch hinzufügen 4. n. Subfam. *Ansiulinae*.

Ansiulinae n. Subfam.

1. Beinpaar umgewandelt, verstärkt, Tarsus an der Basis nicht eingeschnürt. Hüften am 2. Beinpaar des ♂ getrennt, nicht mit Sternit verwachsen, Penis weit über sie hinausragend, Telopodit normal, also fünfgliedrig, die Klaue deutlich ausgebildet. 7. Beinpaar des ♂ im wesentlichen normal, nie so umgewandelt wie bei *Scleroprotopinae*. Die Gonopoden nicht auffallend schlank, die Flagella der vorderen gut entwickelt.

Ansiulus n. g.

1. Beinpaar des ♂ umgewandelt, sehr stark, Coxite stossen in Mediane zusammen, jedoch nicht völlig verwachsen, Telopodit 4-gliedrig. Das Telopodit am 7. Beinpaar des ♂ verkürzt, 4-gliedrig, fast immer ein wenig verstärkt, doch beinförmig, Krallen fast immer winzig. Die Flagella der vorderen Gonopoden mässig lang, einfach, nicht gegabelt. Hintere Gonopoden in zwei Aeste geteilt, mit sehr verkleinerten Telopoditen.

Ansiulus matumotoi n. sp.

Körperlänge bis 30 mm., mit ♀ 56, 60, 65, ♂ 51, 56, 60 Rumpfringen. Bräunlichschwarz, marmoriert, ein breiter Saum am Hinterrande der Metazoniten gelblichbraun, Beine und Ventralseite gelblichbraun. Zwischen Pro- und Metazonite mit eine ringartige Einschnürung. Backen des ♂ ohne Vorsprung. Labrum mit 3 kräftigen Zähnen. Mandibel mit 2 gut entwickelten Zahnstücken, und 6 Lamellen. Promentum bis zum Centrankörper durchlaufend, also die Zungenplatten ganz trennend. Sternite von 5. Segment mit den Tergiten verwachsen. Die Poren der Wehrdrüsen klein, schwer sichtbar, hinter der Stelle, wo die Naht fast verschwunden ist. Feine undichte Metazonitfurchen



Fig. 1

1. Bein des ♂ × 80

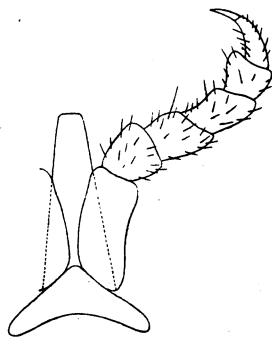


Fig. 2

2. Bein des ♂ × 50

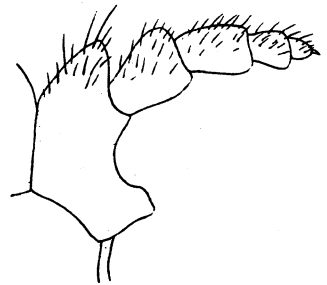


Fig. 3

7. Bein des ♂ × 80

an den Seiten deutlich erscheinend, auch einige feine Querfurche auf Prozonite. Rumpf nackt, auf dem Metazonite mit reichlichen, dichten, schwer erkennbaren winzigen Spitzen. Am sehr verdickten, umgewandelten 1. Beinpaar des ♂ stossen die Coxite in Mediane zusammen, jedoch nicht völlig verwachsen. Das 4-gliedrige, nach innen gebogene Telopodit besteht aus einem kurzen Präfemur

und Femur, einem ein wenig langen Tibiopostfemur und einem gleichlangen ovalen Tarsus, ohne Klaue. 2. Beinpaar des ♂ normal, aber um etwa $\frac{1}{3}$ kürzer als das dritte, Hüften fast gleichbreit bleibend, nur 2 mal so lang wie breit, getrennt, also nicht zu einem Sycoxit verwachsen, das Telopodit fünfgliedrig, die Klaue deutlich ausgebildet. Penis über sie hinausragend. Das Telopodit



Fig. 4
Vorderer Gonopod $\times 80$

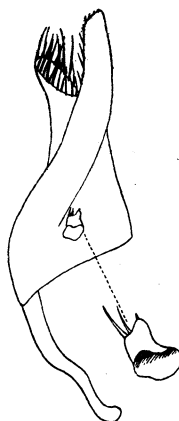


Fig. 5
Hinterer Gonopod $\times 80$

am 7. Beinpaar des ♂ 4-gliedrig, verkürzt, $\frac{1}{2}$ – $\frac{2}{3}$ so lang wie 6., auf unterer Seite reichlich lang beborstet, fast immer ein wenig verstärkt, doch bein förmig, die Krallen fast immer winzig. Die Coxit stossen in Mediane zusammen, Telopodit 4-gliedrig. Die langen, grossen Coxitfortsätze der vorderen Gonopoden ganz nackt, bieten nichts Besondere. Die kurzen, länglich eiförmigen Telopodite an ihren Enden lang beborstet. Die Flagella ziemlich lang, einfach, reichlich beborstet am Ende. An der hinteren Gonopoden Coxit sehr lang vorragend, in zwei Aeste geteilt, ein stumpfer Ast mit einigen Borsten, ein kürzer Ast mit Besatze von reichlich Borsten am Ende. Telopodit sehr klein, eingliedrig, nahe der Basis eingelenkt, mit 2 krallenförmigen Borsten.

Fundort: Ansyu (安州) (Korea).

曩に VERHOEFF は倍足類中の *Paraiulinae* を 3 の亞科に分けたが、予は之れに *Ansiulinae* なる新亞科を加へ、本文の動物を新屬新種として之れに含ましめんとするのである。この動物は朝鮮平安南道安州に於て得たもので、體長 30 mm 位で體節は 60 個ばかりの一見黒い圓筒狀のヤスデである。我國處々の石灰洞に産する *Scleroprotopus* [リュウガヤスデ屬 (新稱)] に似て、第 1 歩肢は大に變形してをるが (Fig. 1)、第 7 歩肢は *S.* 屬の如く大なる變形をせず、尙歩肢狀態を成してをる (Fig. 3)。(*S.* 屬につきては最近の動物學彙報に掲げらるゝ筈)。

Fungi of the Bonin Islands. V.

By

Seiya ITO and Sanshi IMAI

(伊藤誠哉・今井三子)

1. *Polyporus nitidulus* BERK. et CURT.

Proceed. Amer. Acad. IV, 122, 1860—SACC. Syll. Fung. VI, 112, 1888.

Pileus imbricated multiplex, laterally connate, sessile, dimidiate or reniform, fleshy-corky, hard and rigid when dry, convex or applanate, $2-4 \times 1.2-2.5 \times 0.4-0.8$ cm., surface cinnamon-buff, with darker coloured zones, concentrically furrowed, subglabrous, radially rugulose, not even, margin acute, thin and inflexed when dry, entire or undulate; context light-buff, thin, about 1-2 mm. thick at the base; tubes brownish when dry, 2-4 mm. long at the base, slender; mouth minute, angular, regular, even or slightly uneven, 5-7 per mm. when dry, edge thin, brownish when dry; spores globose, subglobose or ovate, smooth, hayline, 6×5 or 5μ in diam.; cystidia none.

Hab. On dead wood. Chichishima: Ôgimura—Renjudadi (Nov. 9, 1936); Fukurozawamura—Kobikidani (Nov. 15, 1936).

Distr. Endemic.

Jap. name. *Fukirotake* (n. n.).

2. *Polyporus Hinoi* S. ITO et IMAI, sp. nov.

Pileo saepe imbricato, usque ad $6 \times 10 \times 2.5$ cm. lato, fulvo vel subatro, velutino vel substrigoso-velutino, glabrescente, scabroso, azonato vel zonato, margine crasso obtuso, carne 5-10 mm. crassa, badia, durescente; tubulo 5-15 mm. longo, concolore, substratoso; poris angularibus unaequalibusque, circ. 4 per mm., concoloribus, dein nigrescentibus, disepimente sublaceratescentibus; sporis ellipsoideis, fulvis, laevibus, circa $4 \times 3 \mu$; cystidiis copiosis, dacryoideis vel ventricosis, fulvis.

Hab. On dead wood in woods. Chichishima: Ôgimura—Renjudani (Nov. 9, 1936).

Distr. Endemic.

Jap. name. *Kaneo-take* (n. n.)

3. *Polyporus Rhipidium* BERK.form. ***pusillus*** (LÉV.) S. ITO et IMAI, comb. nov.*Gloeoporus pusillus* LÉV. Ann. Sci. Nat. 3 sér. II, 195, 1844—SACC. Syll. Fung. VI, 404, 1888.? *Favolus Rhipidium* f. *minor* P. HENN. in ENGLER Bot. Jahrb. XVIII, Beibl. 44, 32, 1894, nom. nud.*Polyporus diminutus* MASS. Journ. Bot. XXXIV, 153, pl. 357, f. 17-18, 1896—SACC. Syll. Fung. XIV, 171, 1899.*Polyporus pusillus* LLOYD, Myc. Writ. IV, Letter 61, 6, 1916; Ibid. VII, 1238, 1924.*Polyporus Rhipidium* BERK. var. *pusillus* KOBAYASI, Bull. Biogeogr. Soc. Japan, VII, 3, pl. 2, 1937.

Hab. On dead logs or branches of various trees. Chichishima: Ôgimura—Renjudani (Nov. 7, 9, 1936); Takedabokujô (Nov. 5, 1936); Asahiyama (Nov. 12, 1936). Hahashima: Okimura—Kuwanokiyama (Nov. 18, 1936).

Distr. Widely distributed in tropics.

Jap. name. *Hinano-utiwa* (KOBAYASI).**4. *Polyporus Schimae* S. ITO et IMAI, sp. nov.**

Pileo imbricato, 1.5-4 × 1-3 × 0.3-0.7 cm., sessili, applanato, dimidiato, margine laevi vel undulato, badio vel atro-brunneo, zonis atro-brunneis sulcatis zonato, velutino vel substrigoso-velutino, margine subacuto subtus velutino steriliq, carne castaneo-brunnea, 3-4 mm. crassa, submolli; tubulis 2-3 mm. longis, "tawny-olive", dissepimente concoloribus; poris angularis, atro-brunneis, 4-5 per mm., acie dentatis vel laceratis; sporis flavidulis, ellipsoideis vel subovatis, laevibus, copiosis, 4-5 × 2.5-3 μ; cystidiis nullis.

Hab. On dead branches of *Schima boninensis* NAKAI (*Munin-himetsubaki*). Chichishima: Ôgimura—Renjudani (Feb. 26, 1937, M. OKABE).

Distr. Endemic.

Jap. name. *Himetsubaki-take* (n. n.).**5. *Polystictus flabelliformis* (KL.) FR.**

Nov. Symb. Myc. Fasc. I, 58, 1851—SACC. Syll. Fung. VI, 216, 1888—LLOYD, Syn. Polyst. 55, f. 344-345, 1910; Syn. Stipit. Polyp. 143, 1911.

Polyporus flabelliformis KL. Linnaea, VIII, 483, 1833—FR. Epicr. Myc. 444, 1838.

Hab. On wood of various trees. Chichishima: Ôgimura—Renjudani (Nov. 9, 1936). Hahashima: (Oct. 1935, M. OKABE); Okimura—Kuwanokiyama (Nov. 18, 1936); Kitamura—Sekimonzan (Nov. 20, 1936).

Distr. Common in tropics.

Jap. name. *Uchiwa-take*.**6. *Polystictus grammocephalus* (BERK.) S. ITO et IMAI, comb. nov.***Polyporus grammocephalus* Berk. in HOOK. London Journ. Bot. I, 148, 1842—FR. Nov. Symb.

Myc. Fasc. I, 36, 1851—SACC. Syll. Fung. VI, 92, 1888—THEIS. Ann. Myc. IX, 156, 1911—LLOYD, Syn. Stipit. Polyp. 136, f. 437, 1912—CLELAND, Journ. Proceed. Royal Soc. N. S. Wales, LI, 482, 1918—RICK, Broteria, IV, 184, 1935.

Hab. On dead wood. Chichishima: Ômura (Oct. 1936, M. OKABE); Furazawamura—Kobikidani (Nov. 15, 1936). Hahashima: Okimura—Kuwano-kiyama (Nov. 18, 1936); Kitamura—Sekimonzan (Nov. 20, 1936).

Distr. Widely distributed in tropical regions.

Jap. name. *Nettai-hauchiwa-take*. (n. n.)

7. *Polystictus ochrotinctus* (BERK. et CURT.) SACC.

Syll. Fung. VI, 225, 1888.

Polyporus ochrotinctus BERK. et CURT. Proceed. Amer. Acad. IV, 122, 1860.

Pileus gregarious or subcaespitose or subimbricated, 2–6 × 2–5 cm. broad, with a lateral stipe, orbicular, dimidiate, subreniform or flabelliform, entire or often lobed on the margin, surface variable in colour: cream-buff with cinnamon-buff or clay or mikado-brown coloured concentric zones on the paler specimens, but on darker specimens hazel or russet or mars-brown colour and usually with narrow concentric furrows, entirely glabrous, shining, thin, 1–3 mm. thick next the stipe, context white, suberous-fleshy; tubes 1–1.5 mm. long, darker; pores white, whitish or brownish, round, small, rather even, 5–6 per a mm.; stipe lateral, 5–10 mm. long, 2.5–6 mm. thick, concolorous, entirely glabrous, shining; spores not seen.

Hab. On wood of various trees. Chichishima: Ômura (1936, M. OKABE); Hahashima: Okimura—Kuwano-kiyama (Nov. 18, 1936).

Distr. Probably in tropical and subtropical regions.

Jap. name. *Bisketto-take* (YASUDA).

8. *Polystictus sanguineus* [L.] FR.

Nov. Symb. Myc. Fasc. I, 59, 1851—SACC. Syll. Fung. VI, 229, 1888—OVERH. Ann. Mo. Bot. Gard. I, 115, 1914—LOWE, Bull. N. Y. State Coll. Forest, VI, 55, 1934.

Boletus sanguineus L. Sp. Pl. ed. 2, 1646, 1762.

Polyporus sanguineus G. MEYER, Pl. Esseg. 304, 1918.

Polyporus sanguineus FR. Syst. Myc. I, 371, 1821; Epicr. Myc. 444, 1838.

Pycnoporus sanguineus MURRILL, Bull. Torrey Bot. Club, XXXI, 421, 1904; North Amer. Fl. IX, 71, 1907.

Hab. On trunks of *Pandanus boninensis* WARB. (*Takonoki*). Chichishima: Ômura (Nov. 7, 1936, M. OKABE). Hahashima: Okimura (Nov. 18, 1936).

On tree trunks. Chichishima: Asahiyama (Nov. 12, 1936).

Distr. Common in tropics.

Jap. name. *Hirotake*.

9. *Polystictus vinosus* (BERK.) SACC.

Syll. Fung. VI, 273, 1888—BOSE, Journ. Dept. Sci. Calcutta Univ. XI, 5, pl. 2, f. 5, 1934.

Polystictus vinosus BERK. Ann. Mag. Nat. Hist. 2 ser. IX, 195, 1852—LLOYD, Syn. Apus Polyp. 342, f. 679, 1915.

Nigroporus vinosus MURRILL, Bull. Torrey Bot. Club, XXXII, 361, 1905; North Amer. Fl. IX, 85, 1908.

Hab. On dead wood. Chichishima: Takeda-bokujô (Nov. 5, 1936). Hahashima: Kitamura—Sekimonzan (Nov. 20, 1936).

Distr. Rather common in tropical and subtropical regions, and Japan proper.

Jap. name. *Budôtake*.

10. *Hexagona papyraceo-resupinata* S. ITO et IMAI, sp. nov.

Resupinata, 1-25 × 1-10 mm., primo orbicularis dein longitudinaliter expansa, tenuissima, papyracea, 0.5 mm. vel infra crassa, "pale-pinkish-buff" vel "pinkish-buff", margine angustissimo sterili saepe deflexo albo dein concolore; poris angularibus, integris, 0.25-0.75 mm. diam., dissepimentis tenuibus, albo-marginatis; sporis ignotis.

Hab. On fallen dead branches. Chichishima: Fukurozawamura—Kobikidani (Nov. 15, 1936).

Distr. Endemic.

Jap. name. *Kinu-furui-take*.

11. *Hexagona tenuis* (HOOK.) FR.

Epicr. Myc. 498, 1838—LLOYD, Syn. Hexagona, 23, f. 303, 304, 306, 1910—BIJL, South Afr. Journ. XVIII, 290, 1920.

Boletus reticulatus HOOK. in KUNTH, Syn. Pl. I, 9, 1822, teste FR.

Boletus tenuis HOOK. Ibid. I, 10, 1822.

Polyporus bivalvis PERS. apud GAUD. Voy. Freyc. Bot. 168, 1826, teste MURRILL.

Polyporus polygrammus MONT. Ann. Sci. Nat. 2 sér. VIII, 365, 1837.

Hexagona orbiculata FR. Fung. Guin, f. 9, 1837, teste MURRILL.

Hexagona cervino-plumbea JUNGH. Crypt. Javae, 61, pl. 15, f. 32, 1838, teste MURRILL.

Hexagona polygramma FR. Epicr. Myc. 497, 1838—LLOYD, Syn. Hexagona, 25, f. 308, 1910.

Hexagona cingulata LÉV. Ann. Sci. Nat. 3 sér. II, 200, 1844.

Hexagona similis BERK. in HOOK. London Journ. Bot. V, 4, 1846.

Hexagona Thwaitesii BERK. Proceed. Amer. Acad. IV, 122, 1860.

Hexagona favoloides PK. Bull. Torrey Bot. Club, X, 73, 1883.

Hexagona tenuis var. *subtenuis* BERK. in CKE. Grevillea XIX, 103, 1891.

Favolus tenuis MURRILL, Bull. Torrey Bot. Club, XXXII, 100, 1905; North Amer. Fl. IX, 83, 1908.

Hab. On dead wood of various trees. Chichishima: Takeda-bokujô (Nov. 5, 1936); Asahiyama (Nov. 12, 1936); Ômura (April 14, 1936, M. OKABE; Nov. 14, 1936); Ôgimura—Renjudani (Nov. 7, 1936). Hahashima: Okimura—

Kuwanokiyama (Nov. 18, 1936).

Distr. Tropical regions.

Jap. name. *Furuitake*.

12. *Laschia pezizaeformis* BERK. et CURT.

Proceed. Amer. Acad. IV, 123, 1860—SACC. Syll. Fung. VI, 406, 1888—KOBAYASI, Bull. Biogeogr. Soc. Japan, VII, 2, pl. 1, f. 1-2, 1937.

Hab. On dead petioles and rachis of *Livistona boninensis* NAKAI (*Ogasawara-biro*) and *Alsophila Mertensiana* KUNZE (*Maruhashi*). Chichishima: Asahi-yama (Nov. 12, 1936); Fukurozawamura—Kobikidani (Nov. 15, 1936). Hahashima: Okimura (Nov. 19, 1936).

Distr. Bonin Islands, Venezuela.

Jap. name. *Enashi-rassi-take* (KOBAYASI).

13. *Lenzites saepiaria* [WULF.] FR.

Epier. Myc. 407, 1838; Hymen. Eur. 494, 1874—BERK. Outl. Brit. Fung. 228, 1860—GILL. Hymen. Fr. 376, 1874—KARST. Myc. Fenn. III, 239, 1876—WINT. Die Pilze, I, 491, 1884—SACC. Syll. Fung. V, 639, 1887—MASS. Brit. Fung. Fl. II, 305, 1892—OVERH. Ann. Mo. Bot. Gard. I, 149, 1914—REA, Brit. Basid. 613, 1922—BOSE, Journ. Dept. Sci. IX, 40, pl. 4, f. 10, 1928—SHOPE, Ann. Mo. Bot. Gard. XVIII, 391, pl. 37, f. 1-2, 1931—WULF, Univ. Iowa Stud. XIV, 28, f. 28, 1931—LOWE, Bull. N. Y. State Coll. Forest, VI, 108, 1934.

Agaricus hirsutus SCHAEFF. Fung. Bavar. IV, Ind. 33, Pl. 76, 1774.

Agaricus saepiarius WULF. in JACQ. Coll. Bot. I, 347, 1786.

Agaricus boletiformis SOW. Engl. Fung. pl. 418, 1803.

Daedalea sepiaria FR. Obs. Myc. I, 105, 1915; Syst. Myc. I, 333, 1821.

Lenzites rhabarbarina BERK. et CURT. Ann. Mag. Nat. Hist. 2 ser. XII, 428, 1858, teste MURRILL.

Gloeophyllum saepiarium KARST. Bidr. Kanned. Finl. Nat. Folk, XXXVII, 79, 1882—SCHROET. Pilze Schles. I, 494, 1888.

Sasia hirsuta MURRILL, Journ. Myc. IX, 88, 1903; Bull. Torrey Bot. Club, XXX, 603, 1904.

Gloeophyllum hirsutum MURRILL, Ibid. IX, 94, 1903; North Amer. Fl. IX, 130, 1908.

Lenzites hirsuta SACC. Fl. Ital. Crypt., Hymen. 509, 1915.

Hab. On wood of *Pinus luchuensis* MAYR. (*Liukiu-matsu*). Chichishima: Sakaeura (Nov. 5, 1936).

Distr. Cosmopolitan.

Jap. name. *Ki-kaigaratake*.

14. *Fomes rimosus* BERK.

apud CKE. Grevillea, XIV, 18, 1885; Handb. Austr. Fungi, 131, 1892—SACC. Syll. Fung. VI, 181, 1889—OVERH. Ann. Mo. Bot. Gard. I, 133, 1914; Technical Bull. Penn. State Coll. School Agr. No. 316, p. 13, 1935—NEUMAN, Polyp. Wisc. 82, 1914—LLOYD, Syn. Fomes, 248, 1915—CIEL. & CHEEL, Journ. Proceed. Royal Soc. N. S. Wales, LI, 515, 1918—WOLF, Univ. Iowa Stud. XIV, 40, f. 93, 1931—LOWE, Bull. N. Y. State Coll. Forest, VI, 122, 1934.

Polyporus rimosus BERK. in HOOK. London Journ. Bot. IV, 54, 1845—FR. Nov. Sym. Myc. 50, 1851.

Pyropolyporus Robiniae MURRILL, Bull. Torrey Bot. Club, XXX, 114, 1903; North Amer. Fl. IX, 105, 1908.

Hab. On dead tree trunks of *Morus boninensis* KOIDZ. (*Ogasawara-guwa*). Hahashima: Okimura—Kuwanyakima (Nov. 18, 1936); Kitamura—Sekimonzan (Nov. 20, 1936). Chichishima: Takeda-bokujō (Nov. 5, 1936).

Distr. Australia, North America, South America, Bonin Islands, Samoa, New Caledonia, Ceylon, India, South Africa.

Jap. name. *Ô-meshimakobu* (n. n.).

15. *Fomes Terminaliae* S. ITO et IMAI, sp. nov.

Pileo dimidiato, sessili, applanato, tenui, subumbilicato, $2-12 \times 1-6 \times 0.4-1.5$ cm., subvelutino-tomentoso, zonato, sulcato, demum subglabrescente encrustatoque, margine "tawny", basi obscuriore, margine crassiusculo obtusoque, sterili; carne "ochraceous-tawny" vel "tawny", dura, lignosa, homogenea, 3-5 mm. crassa; tubulo usque ad 1 cm. longo, concolori; poris circularibus, regularibus, minutis, 4-5 per mm., subconcoloribus; sporis oblongis, hyalinis, laevibus, $5-6 \times 3-4 \mu$; cystidiis tenuibus, acuminatis, fulvis.

Hab. On dead or living wood of *Terminalia catappa* L. (*Momo-tamana*). Chichishima: Ômura (Nov. 3, 16, 1936). of *Calyophyllum Inophyllum* L. (*Teriha-boku*). Chichishima: Ômura (Nov. 3, 1936). of *Psychotria homalosperma* A. GRAY (*Ogasawara-bochôji*). Chichishima: Takeda-bokujō (Jan. 15, 1937, M. OKABE).

Distr. Endemic.

Jap. name. *Nagami-no-shima-saru-no-koshikake* (n. n.).

16. *Fomes ulmarius* [Sow.] GILL.

Hymen. Fr. 683, cum icone, 1874—SACC. Syll. Fung. VI, 166, 1888; Fl. Ital. Crypt., Hymen. 997, 1916—MASS. Brit. Fung. Fl. I, 218, 1892—LLOYD, Syn. Fomes, 228, 1915—REA, Brit. Basid. 595, 1922.

Boletus ulmarius Sow. Engl. Fung. pl. 88, 1797.

Polyporus ulmarius FR. Syst. Myc. I, 365, 1821; Epicr. Myc. 469, 1838; Hymen. Eur. 562, 1874—BERK. Outl. Brit. Fung. 246, pl. 16, f. 5, 1860.

Placodes ulmarius QUÉL. Ench. Fung. 172, 1886.

Hab. On tree trunks of *Casuarina equisetifolia* FROST. (*Meriken-matsu*). Chichishima: Ômura (April 14, 1936, M. OKABE). On wood. Asahiya (Nov. 12, 1936).

Distr. Europe, North America, India, Japan.

Jap. name. *Ô-shiro-sarunokoshikake*.

17. *Ganoderma applanatum* (PERS. ex FR.) PAT.

Bull. Soc. Myc. Fr. V. 67, 1889—REA, Brit. Basid. 597, 1922—BOURD. et GALZ.

Hymen. Fr. I, 611, 1927—SHOPE, Ann. Mo. Bot. Gard. XVIII, 374, 1931—BRES. Icon. Myc. XXI, pl. 1012, 1932.

Boletus lipsiensis BATSCH, Elench. Fung. 183, pl. 25, f. 130, a, b, 1786.

Boletus applanatus PERS. Obs. Myc. II, 2, 1799.

Boletus formentarius β *applanatus* PERS. Syn. Fung. 536, 1801.

Polyporus applanatus WALLR. Fl. Crypt. Germ. IV, 591, 1833—FR. Epicr. Myc. 465, 1838; Hymen. Eur. 557, 1874.

Polyporus megaloma LÉV. Ann. Sci. Nat. 3 sér. V, 128, 1846.

Polyporus leucophaeus MONT. Syll. Crypt. 157, 1856.

Fomes applanatus GILL. Hymen. Fr. 686, 1874—SACC. Syll. Fung. VI, 176, 1888—LLOYD, Syn. Fomes, 263, 1915.

Fomes leucophaeus CKE. Grevillea, XIV, 18, 1885—LLOYD, Syn. Fomes, 264, 1915.

Fomes megaloma CKE. Ibid. 18, 1885.

Placodes applanatus QUÉL. Ench. Fung. 171, 1886.

Elfvigia applanata KARST. Finl. Basidsv. 334, 1889.

Phaeoporus applanatus SCHROET. Pilze Schles. I, 490, 1889.

Ganoderma leucophaeum PAT. Bull. Soc. Myc. Fr. V, 73, 1889.

Elfvigia lipsiensis MURRILL, Bull. Torrey Bot. Club, XXX, 297, 1903.

Elfvigia megaloma MURRILL, Ibid. XXX, 300, 1903.

Ganoderma lipsiensis ATKINS. Ann. Myc. VI, 189, 1908.

Hab. On tree trunks of *Celtis boninensis* KOIDZ. (*Munin-enoki*). Hahashima: Okimura—Kuwanokiyama (Nov. 18, 1936).

On tree trunks of *Schima boninensis* NAKAI (*Munin-himetsubaki*). Chichishima: Takeda-bokujō (Nov. 5, 1936). Otōtoshima (July 31, 1936, M. OKABE).

On tree trunks of *Sideroxylon ferrugineum* HOOK. et ARN. (*Kurotetsu*). Hahashima: Okimura—Kuwanokiyama (Nov. 18, 1936); Kitamura—Sekimonzan (Nov. 20, 1936).

On tree trunks of various kinds. Chichishima: Ômura (Nov. 3, 1936); Asahiya (Nov. 12, 1936). Hahashima: Okimura—Kuwanokiyama (Nov. 18, 1936).

Distr. Almost cosmopolitan.

Jap. name. *Kofukitake*.

18. *Ganoderma Boninense* PAT.

Bull. Soc. Myc. Fr. V, 72, 1889.

Ganoderma lucidum var. *Boninense* Pat. Bull. Soc. Myc. Fr. V, 72, 1889, ut syn.

Fomes lucidum f. *boninensis* SACC. Syll. Fung. VI, 157, 1889.

Hab. On trunks of *Livistona chinensis* R. BR. (*Birô*). Chichishima: Ômura (Sept. 1936, M. OKABE). Otōtoshima (July 31, 1936, M. OKABE).

On tree trunks. Chichishima: Takeda-bokujō (Nov. 5, 1936).

Distr. Bonin Islands, Micronesia, Japan (Kiushu).

Jap. name. *Shima-mannentake*.

19. *Trametes Mulleri* BERK.

Journ. Linn. Soc., Bot. X, 320, 1869—SACC. Syll. Fung. VI, 339, 1888.

Hab. On dead wood. Chichishima: Ôgimura—Renjudani (Nov. 7, 9, 1936); Asahiyama (Nov. 12, 1936); Fukurozawamura—Kobikidani (Nov. 15, 1936).

Distr. Cuba, Australia, Philippine Islands, Bonin Islands, Brazil.

Jap. name. *Kawarake-take* (YASUDA).

20. *Helicium coralloides* (SCOP. ex FR.) S. F. GRAY

Nat. Arr. Brit. Pl. I, 652, 1821.

Hydnum coralloides SCOP. Fl. Carn. ed. 2, II, 472, 1772—Sow. Engl. Fungi, III, pl. 252, 1803.

Hydnum crispum SCOP. Ibid. II, 473, 1772.

Hydnum ramosum BULL. Champ. Fr. pl. 390, 1791.

Hydnum coralloides FR. Syst. Myc. I, 408, 1821; Epicr. Myc. 511, 1838; Hymen. Eur. 607, 1874—BERK. Outl. Brit. Fung. 259, 1860—GILL. Hymen. Fr. 724, 1874—KARST. Myc. Fenn. III, 292, 1876—SACC. Syll. Fung. VI, 446, 1888—SCHROET. Pilze Schles. I, 455, 1888—MASS. Brit. Fung. Fl. I, 156, 1892—ATKINS. Mushrooms, ed. 2, 196, f. 195, 1903—ROLLAND, Atlas Champ. 87, f. 221, 1910—REA, Brit. Basid. 636, 1922.

Friesites coralloides KARST. Medd. Soc. Faun. Fl. Fenn. V. 27, 1879.

Dryodon coralloides QUÉL. in KARST. Hattsv. II, 92, 1882; QUÉL. Ench. Fung. 192, 1886—BOURD. & GALZ. Bull. Soc. Myc. Fr. XXX, 277, 1914; Hymen. Fr. I, 442, 1927—CEJR, Monogr. Hydn. Tchec. 92, 1928.

Hab. On wood. Chichishima: Ômura (M. OKABE).

Distr. Cosmopolitan.

Jap. name. *Sango-haritake*.

21. *Boninohydnum* S. ITO et IMAI, gen. nov.

Lignicolum. Pileus sessilis, applanatus, imbricatus, carnosus-lentus; aculei subulati, basi discreti. Basidia 4-sterigmatica; sporae in cumulo olivaceae, ellipsoideae, laeves; cystidia nulla.

Typus: *Boninohydnum Pini* S. ITO et IMAI.

Etym. Bonin + Hydnum.

The present genus is closely related to *Steccherium* S. F. GRAY sensu MILLER, *Creolophus* KARST., *Climacodon* KARST. etc. But it is distinguished from these genera by the coloured spores and by lacking cystidia.

21. bis *Boninohydnum Pini* S. ITO et IMAI, sp. nov.

Imbricatum. Pileo circa 6 × 3 cm. lato, applanato, dimidiato, sessili, resente carnosus, sicco lento, albo vel flavidulo; velutino-flocculoso; carne grisea; aculeis circa 6 mm. longis, 0.5 mm. crassis, subulatis, basi discretis, subconfertis vel subdistantibus, primo "waxy-yellow", dein "old-gold", sicco brunescens;

cystidiis nullis; basidiis 4-sterigmaticis; sporis in cumulo "Saccardo's olive", oblongis vel ellipsoideis, laevibus, sub microscopio flavidulis, circa $5 \times 2.5 \mu$.

Hab. On trunks of *Pinus luchuensis* MAYR. (*Liukiu-matsu*). Chichishima: Ômura (Nov. 14, 1936).

Distr. Endemic.

Jap. name. *Ogasawara-hari-hiratake* (n. n.).

22. *Mucronella pacifica* Y. KOBAYASI

Bot. Mag. (Tokyo), LIII, 160, f. 4, pl. 2, f. below, 1939.

Hab. On dead wood in shady woods. Hahashima: Okimura—Kuwanoki-yama (Nov. 18, 1936).

Distr. Endemic.

Jap. name. *Hanabi-take* (KOBAYASI).

23. *Stereofomes palmicola* S. ITO et IMAI, sp. nov.

Effusa, usque ad 10 mm. lata. Hymenio glabro, laeve vel leviter undulato, "cream-buff" vel "pinkish-buff", margine obtuso glabroque; carne "sayal-brown" vel "verona-brown", usque ad 1 cm. vel ultra crassa, multistratosa, coriaceo-ligna. Sporis ignotis.

Hab. On stumps of *Livistona chinensis* R. BR. (*Biro*). (Feb. 21, 1937, M. OKABE).

Distr. Endemic.

Jap. name. *Birô-man-nen-urokotake* (n. n.)

24. *Stereum obliquum* MONT. et BERK.

in BERK. in HOOK. London Journ. Bot. III, 334, 1844—SACC. Syll. Fung. VI, 558, 1888—MASS. Journ. Linn. Soc., Bot. XXVII, 170, 1860—LLOYD, Syn. Stipit. Stereum, 39, f. 562, 1913.

Hab. On dead twigs or branches. Chichishima: Fukurozawamura—Kobikidani (Nov. 15, 1936).

Distr. Brazil, Java, Philippine Islands, New Zealand, Bonin Islands.

Jap. name. *Shita-uroko-take* (n. n.)

25. *Stereum obliquulum* S. ITO et IMAI, sp. nov.

Fructificatio vulgo pleuropodia, per raro excentrica mesopodiave, gregaria. Pileo spathulato, petaloideo vel subobovato vel elongato, 5–10 mm. longo, 3–8 mm. lato, margine pleno vel undulato raro lobato, superficie sub lente villosulo, nitente, centro "mikado-brown" vel "sayal-brown" margine pallidiore, concentrice annulato, inferne pallidiore subpruinoso; carne tenuissima, margine papyracea; stipite 2–10 mm. longo, 0.5–1 mm. crasso, subconcolori, villis ochraceis velutino.

Sporis ignotis.

Hab. On dead wood. Hahashima: Okimura—Kuwanokiyama (Nov. 18, 1936).

Distr. Endemic.

Jap. name. *Shita-uroko-modoki* (n. n.).

26. *Stereum surinamense* LÉV.

Ann. Sci. Nat. 3 sér. II, 209, 1844—SACC. Syll. Fung. VI, 556, 1888—MASS. Journ. Linn. Soc., Bot. XXVII, 161, 1890—LLOYD, Syn. Stipit. Stereum, 26, f. 544, 1913—BURT, Ann. Mo. Bot. Gard. VII, 91, pl. 2, f. 4, 1920.

Stereum fulvo-nitens BERK. Ann. Mag. Nat. Hist. 2 ser. IX, 198, 1852—SACC. Syll. Fung. VI, 556, 1888—MASS. Journ. Linn. Soc., Bot. XXVII, 162, 1890.

Hab. On dead twigs. Chichishima: Ôgimura—Renjudani (Nov. 9, 1936).

Distr. Surinam, West Indies, Honduras, Dutch Guiana, Samoa, Africa, Brazil, Australia, India, Ceylon, San Domingo, Philippine Islands, Bonin Islands.

Jap. name. *Sakazuki-urokotake* (n. n.).

27. *Hymenochaete attenuata* LÉV.

Ann. Sci. Nat. 3 sér. V, 152, 1846—CKE. Grevillea, VIII, 146, 1879—SACC. Syll. Fung. VI, 591, 1888—MASS. Journ. Linn. Soc., Bot. XXVII, 98, 1890.

Stereum attenuatum LÉV. Ann. Sci. Nat. 3 sér. II, 212, 1844.

Hab. On dead wood. Chichishima: Takeda-bokujô (Nov. 5, 1936).

Distr. Java, Philippine, Australia, Malay, Japan (Honshu, Bonin Islands).

Jap. name. *Hime-ô-urokodake* (T. ITO), *Hime-urokotake* (YASUDA).

28. *Hymenochaete fomitoporioides* S. ITO et IMAI, sp. nov.

Fructificato dura, lignosa, resupinata. Hymenio glabro, laevi, "cinnamom-brown" vel "russet", margine crasso determinatoque, carne usque ad 1 mm. crassa, strato intermedio nulla, setigera; setis in parte omnino ornatis, leviter eminentis, acuminatis, $37-50 \times 7-10 \mu$; paraphysibus coloratis circa 2μ crassis apice pinnatididis; sporis ignotis.

Hab. On the bark of frondose wood. Chichishima: Asahiyama (Nov. 12, 1936).

Distr. Endemic.

Jap. name. *Tobi-iro-ô-urokotake* (n. n.)

29. *Hymenochaete palmicola* S. ITO et IMAI, sp. nov.

Fructificatio resupinata, late effusa, adnata, tenuissima. Hymenio "sudan-brown", "amber-brown" vel "argus-brown", demum minute rimuloso, margine

tenuiori pallidioresque; carne (60-) 100-160 (-240) μ crassa, strato intermedio nulla, strato setigero densa opaca; setis abundantibus, confertis, acuminatis, membrano crasso, 40-55 $\times$ 6-7 μ , eminentis usque ad 30 μ longis, parte omnino strati setigeri ornatis; sporis hyalinis, laevibus, ellipsoideis, 4-5 $\times$ 2-2.5 μ .

Hab. On fallen dead palm bracts. Chichishima: Asahiyama (Nov. 12, 1936).

Distr. Endemic.

Jap. name. *Yashi-no-ô-urokotake* (n. n.).

30. *Hymenochaete pertenuis* S. ITO et IMAI, sp. nov.

Fructificatio resupinata, effusa, adnata, per tenuis. Hymenio "cinnamon-brown", "Prout's brown", "russet" vel "mars-brown", sub lente velutino, margine determinato; carne 50-75 μ crassa, strato intermedio nulla, strato setigero densa et opaca; setis abundantibus et confertis, 35-65 $\times$ 7-10 μ , usque ad semilongis eminentis, acuminatis, apice vulgo flexuosis; sporis oblongis vel subellipsoideis, laevibus, hyalinis, 5 $\times$ 2.5 μ .

Hab. On dead twigs of frondose wood. Chichishima: Asahiyama (Nov. 12, 1936).

Distr. Endemic.

Jap. name. *Kami-ô-urokotake* (n. n.).

31. *Hymenochaete rubiginosa* [DICKS.] LÉV.

Ann. Sci. Nat. 3 sér. V, 151, 1846—BERK. Outl. Brit. Fung. 271, 1860—CKE. Grevillea, VIII, 145, 1880—SACC. Syll. Fung. VI, 589, 1888—MASS. Journ. Linn. Soc., Bot. XXVII, 97, 1890; Brit. Fung. Fl. I, 115, 1892—BROWN, Mycologia, VII, 1, pl. 149-151, 1915—BURT, Ann. Mo. Bot. Gard. V, 332, f. 11, pl. 17, f. 14, 1918—REA, Brit. Basid. 667, 1922—BOURD. et GALZ. Hymen. Fr. I, 390, 1927—PILAT, Hedwigia, LXX, 117, 1930.

Helvella rubiginosa DICKS. Fasc. Pl. Crypt. Brit. I, 20, 1785.

Auricularia ferruginea BULL. Champ. Fr. pl. 378, 1791—Sow. Engl. Fungi, pl. 26, 1797.

Thelephora rubiginosa SCHRAD. Spic. Fl. Germ. 185, 1794—PERS. Syn. Fung. 567, 1801; Myc. Eur. I, 120, 1822.

Thelephora rubiginosa FR. Syst. Myc. I, 436, 1821.

Stereum rubiginosum FR. Epicr. Myc. 550, 1838; Hymen. Eur. 641, 1874—SCHROET. Pilze Schles. I, 428, 1888.

Stereum ferrugineum FR. Epicr. Myc. 550, 1838; Hymen. Eur. 640, 1874.

Hymenochaete ferrugineum MASS. Journ. Linn. Soc., Bot. XXVII, 103, 1890.

Hab. On dead logs and stumps. Chichishima: Takeda-bokujô (Nov. 5, 1936); Asahiyama (Nov. 12, 1936). Hahashima: Kitamura—Sekimonzan (Nov. 20, 1936).

Distr. Europe, North and Central America, Porto Rico, Africa, Australia, Tasmania, India, Japan (Honshu, Shikoku, Kiushu, Loochu, Bonin).

Jap. name. *Yebi-ô-urokodake* (T. Ito), *Yebi-urokotake* (YASUDA).

32. *Gloeocystidium boninensis* S. ITO et IMAI, sp. nov.

Fructificatio resupinata, late effusa, usque ad 10×5 cm. lata, adnata, crassiuscula, ceraceo-carnosula, sicco fragilesceus. Hymenio albida, sicco "cinnamon-buff" vel "cinnamon", inaequali, demum rimoso; carne $450-700 \mu$ crassa, albida, paraphysibus erectis agglutinatis et basidiis atque gloeocystidiis composita; gloeocystidiis numerissimis, flexuosis, clavato-subcylindricis vel attenuato-cylindricis, flavidulis, $7-10 \mu$ crassis; sporis hyalinis, ellipsoideis vel suboblongis, copiosis, $8-10 \times 4-6 \mu$.

Hab. On decayed wood of frondose trees. Chichishima: Asahiyama (Nov. 12, 1936).

Distr. Endemic.

Jap. name. *Ogasawara-nikawa-urokotake* (n. n.).

33. *Peniophora phyllophila* MASS.

Journ. Linn. Soc., Bot. XXV, 150, 1889—SACC. Syll. Fung. IX, 239, 1891—REA, Brit. Basid. 697, 1922—BURT, Ann. Mo. Bot. Gard. XII, 241, 1925.

Hab. On bark of dead frondose trees. Chichishima: Asahiyama (Nov. 12, 1936).

Distr. Europe, North & Central America, Bonin Islands.

Jap. name. *Usu-ki-kawatake* (n. n.).

34. *Cyphella Cyathea* S. ITO et IMAI, sp. nov.

Fructificatio gregaria, 0.5–1 mm. lata, cupulata, sessilis, tenuis, membranacea, toto flavidula. Hymenio interiore, leviter pallidiore, plano; exteriore glabro, sed sub lente subfurfuraceo; basidiis clavato-cylindræis, 2–4-sporiferis; sporis ventricosus-ellipsoideis, laevibus, hyalinis, $7.5-10 \times 5-6 \mu$; paraphysibus biformibus: clavato-cylindræis et attenuato-clavatis.

Hab. On *Cyathea boninsimensis* COPELAND (*Hego*). Chichishima: Ôgimura—Renjudani (Nov. 9, 1936).

Distr. Endemic.

Jap. name. *Hego-no-fûrin-take* (n. n.).

35. *Corticium boninense* S. ITO et IMAI, sp. nov.

Fructificatio effusa, per tenuis, submembranacea, adnata, non-separabilis. Hymenio albido, sicco cremescente; carne $85-150 \mu$ crassa, gloeocystidiis nulla; sporis subovoideis vel late ellipsoideis, hyalinis, laevibus, $5-7.5 \times 3-5 \mu$.

Hab. On fallen dead twigs of frondose wood. Chichishima: Ôgimura—Renjudani (Nov. 5, 1936).

Distr. Endemic.

Jap. name. *Ogasawara-kami-kôyakutake* (n. n.).

36. *Corticium Cyatheae* S. ITO et IMAI, sp. nov.

Fructificatio irregulare effusa, adnata, per tenuis. Hymenio furfuraceo, albo albidove; carne usque $30\ \mu$ crassa; texto subhymenio fere nullo; gloeocystidiis nullis; basidiis clavatis, 4-sporiferis, sterigmatis circa $8\ \mu$ longis; sporis elliptico-cylindricis, laevibus, hyalinis, $8-12 \times 2.5-3\ \mu$.

Hab. On petiole of *Cyathea boninsimensis* COPEL. (*Hego*). Chichishima: Ôgimura—Renjudani (Nov. 9, 1936). Hahashima: Okimura—Kuwanokiyama (Nov. 18, 1936).

Distr. Endemic.

Jap. name. *Hego-no-kôyakutake*.

37. *Lloydella Okabei* S. ITO et IMAI, sp. nov.

Fructificatio coriaceo-papyracea, tenuis, lenta, resupinata, late effusa. Hymenio plano vel non-plano, "buffy-brown" vel "olive-brown", pruinoso, demum leviter rimuloso; carne $150-550\ \mu$ crassa, stratis hymenii seneci zonata, organis administris coloratis nulla; cystidiis abundantibus, longe conicis vel subfusiformibus, $25-40 \times 6-10\ \mu$, membrano crasso leviter brunneolo laeve vel asperulo, supero crasse încrusto; sporis hyalinis, laevibus, ellipsoideis, $7-8 \times 5\ \mu$.

Hab. On wood of *Ochrosia Nakaiana* KOIDZ. (*Yarôdo*). Chichishima: Ôgimura—Renjudani (Feb. 26, 1937, M. OKABE).

Distr. Endemic.

Jap. name. *Okabe-ke-urokotake* (n. n.)

37.^{bis} *Lloydella japonica* (YASUDA) S. ITO et IMAI, comb. nov.

Stereum japonicum YASUDA, Bot. Mag. (Tokyo), XXXIII, (189), 1919; Ibid. XXXVII, 60, cum fig. 1923.

Fructification 6.5–15 cm. broad, coriaceous-papery, thin, pliant, resupinate and widely effused and closely adnate, somewhat separable; in the herbarium hymenium cream-buff, paler (light buff) on the margin, tinged with tawny or russet on the center, even or uneven, $500-800\ \mu$ or more thick, non-zonate, composed of about $5\ \mu$ thick, yellowish and thick walled hyphae and hyaline thin walled hyphae; cystidia abundant, usually immersed in or under the hymenial layer, subfusiform or subclavate, thick walled, brownish or yellowish, smooth or rough, heavily and coarsely incrustated on the peripheral above half; spores hyaline, smooth, subglobose, about $6 \times 5\ \mu$.

Hab. On dead twigs of frondose wood. Bonin Islands (Sept. 20, 1915,

K. KAWATE).

Distr. Endemic.

Jap. name. *Yamato-urokotake* (YASUDA).

38. *Calocera furcata* FR.

Epicr. Myc. 581, 1838; Hymen. Eur. 680, 1874—KARST. Myc. Fenn. III, 344, 1876—SACC. Syll. Fung. VI, 733, 1888—SCHROET. Pilze Schles. I, 401, 1888.

Clavaria mucida (non PERS.) HORN. Fl. Dan. XXII, t. 1305, f. 1, 1806.

Clavaria (*Calocera*) *furcata* FR. Syst. Myc. I, 486, 1821.

Calocera mucida SACC. Fl. Ital. Crypt., Hymen. 1221, 1916.

Calocera cornea f. *furcata* NEUHOFF, Ark. f. Bot. XXVIII, 37, 1936.

Hab. On decaying coniferous wood. Chichishima: Ômura—Kiyose (Nov. 1937, M. OKABE).

Distr. Europe, North America, Japan.

Jap. name. *Aoki-tsunofunoritake* (n. n.).

39. *Tremella boninensis* S. ITO et IMAI, sp. nov.

Tremella samoensis LLOYD var. *boninensis* Y. KOBAYASI, Sci. Rep. Tokyo Bunrika Daig. Sect. B, IV, 10, f. 6-7, pl. 1, f. B-D, 1939.

Hab. On dead trunks of *Bladhia Sieboldii* NAKAI (*Mokutachibana*). Chichishima: Ôgimura—Renjudani (Nov. 5, 9, 1936). Hahashima: Okimura—Kuwanokiyama (Nov. 18, 1936); Kitamura—Sekimonzan (Nov. 20, 1936).

Distr. Endemic.

Jap. name. *Ogasawara-kin-hanabira-take* (KOBAYASI).

40. *Heterochaete Ogasawarasimensis* S. ITO et IMAI, sp. nov.

Fructificatio resupinata, tenuis, membranacea, arcte adnata, late effusa, interdum margine reflexa, usque ad 3 cm. in diam., vel 1 × 4 cm. lata. Hymenio sicco, subavellaneo vel griseo-stramineo, subundulato, setuloso vel granuloso, margine substramineo, laeve, sub lente flocculoso fimbriatoque; setulis rigidis, crassis, subcylindricis, apice obtusis vel subcapitatis, flavo-brunneis, 150-180 × 40-60 μ ; cystidiis acuminatis vel subaculeatis, hyalinis, 35-50 × 7.5-10 μ ; basidiis ellipsoideis vel suboblongis, cruciatim partitis, hyalinis, circa 15 × 10 μ ; sporis oblongis vel subcylindricis, uno latere depresso, 12.5-15 × 5 μ .

Hab. On branches or trunks of *Elaeagnus rotundata* NAKAI (*Marubana-washirogumi*). Chichishima: Ôgimura—Renjudani (Nov. 7, 1936; Jan. 24, 1937, M. OKABE).

Distr. Endemic.

Jap. name. *Nikawa-urokotake-modoki* (n. n.).

41. *Hirneola polytricha* (MONT.) FR.

in WAHLB. Fungi Natal. 26, 1848; Nov. Symb. Myc. Fasc. I, 101, 1851—SACC. Syll. Fung. VI, 766, 1888.

Exidia purpurascens JUNGH. Praem. in Fl. Crypt. Javae Ins. I, 25, f. 23, 1838.

Exidia polytricha MONT in BÉLANGER, Voy. Indes-Orient. II, 154, 1846.

Auricularia polytricha SACC. Michelia, I, 12, 1877—LLOYD, Myc. Notes, 55, p. 783, 1918.

Hab. On dead wood of various trees. Chichishima: Ôgimura—Renjudani (Nov. 9, 1936); Ômura (Nov. 5, 1936); Asahiyama (Nov. 12, 1936); Fukurozawamura—Kobikidani (Nov. 15, 1936). Hahashima: Okimura—Kuwanoki-yama (Nov. 18, 1936); Kitamura—Sekimonzan (Nov. 20, 1936).

Distr. Common in tropical and subtropical regions.

Jap. name. *Arage-kikurage*.

42. *Trichocoma paradoxa* JUNGH.

Praem. in Fl. Crypt. Javae Ins. I, 9, pl. 2, f. 7, 1838—MONT. Ann. Sci. Nat., Bot. 2 sér. XVI, 308, 1841—MASS. Trans. Roy. Soc. London, B. CLXXVIII, 308, pl. 25, f. 9–16, 1888—ED. FISCH. Hedwigia, XXIX, 161–171, pl. 3, f. 1–9, 1890; in ENGLER & PR. Nat. Pflanzenf. I, 1, 311, 1897—SACC. Syll. Fung. X, 82, 1892—C. W. DODGE, Ann. Myc. XXVII, 151, 1929.

Trichoskytale paradoxa CORDA, Anleit. Stud. Myc. 196–197, 1842.

Trichocoma laevispora MASS. Trans. Roy. Soc. London, B. CLXXVIII, 308–309, 1887—SACC. Syll. Fung. X, 83, 1892—ED. FISCH. in ENGLER & PR. Nat. Pflanzenf. I, 1, 311, 1897.

Hab. On dead wood. Chichishima: Fukurozawamura—Kobikidani (Jan. 25, 1937, M. OKABE).

Distr. Java, Borneo, India, Ceylon, New Zealand, North and South America, Porto Rico, Japan (Honshu, Shikoku, Hachijō, Bonin).

Jap. name. *Mayuhaki-take* (YASUDA).

43. *Xylaria globosa* (SPRENG. ex FR.) S. ITO et IMAI, comb. nov.

Sphaeria globosa SPRENG. ex FR. Syst. Myc. II, 331, 1823.

Sphaeria anisopleura MONT. Ann. Sci. Nat. 2 sér. XIII, 348, 1840.

Hypoxylen globosum SPRENG. in MONT. Ibid. XIII, 350, 1840.

Xylaria anisopleura MONT. Syll. Crypt. 204, 1856—SACC. Syll. Fung. I, 323, 1882—LLOYD, Myc. Writ. IV, Letter 61, p. 7, 1916; Ibid. V, Xylaria Notes 2, p. 24, f. 1338–1339, 1918; Ibid. VI, 896, f. 1571, 1919; Ibid. VII, 1251, f. 2700, 1924—J. H. MILLER, Monogr. Univ. Puerto Rico, B. no. 2, 213, 1934.

Kretzschmaria rugosa EARLE, Bull. N. Y. Bot. Gard. III, 311, 1905.

Hab. On dead wood. Chichishima: Asahiyama (Nov. 12, 1936). Hahashima: Kitamura—Sekimonzan (Nov. 20, 1936).

Distr. South America, Puerto Rico, Micronesia, Philippine, Ceylon, India, Japan (Honshu, Bonin), Australia, Africa, Europe.

Jap. name. *Himetsukushitake*.

44. *Xylaria apiculata* CKE.

Grevillea, VIII, 66, 1879—SACC. Syll. Fung. I, 334, 1882—LLOYD, Myc. Writ. V, 676, f. 1003-1006, 1917; *Xylaria* Notes, p. 20, f. 1331, 1334, 1918; Myc. Writ. VI, 970, 1920; Ibid. VII, 1119, f. 2129, 1922.

Hab. On dead wood. Chichishima: Ôgimura—Suzaki (Nov. 7, 1936).

Distr. New Zealand, Brazil, Porto Rico, Ceylon, Bonin Islands.

Jap. name. *Fudetake*.

45. *Xylaria arbuscula* SACC.

Michelia, I, 249, 1878; Syll. Fung. I, 337, 1882—TRAV. Fl. Ital. Crypt., Pyrenom. 29, 1906—LLOYD, Myc. Writ. V, *Xylaria* Notes, 21, f. 1332, 1918—J. H. MILLER, Monogr. Univ. Puerto Rico, B, no. 2, 215, 1934.

Hab. On dead wood. Hahashima: Okimura—Kuwanokiyama (Nov. 18, 1936).

Distr. Europe, North and South America, Bermuda, Bahamas, Bonin Islands.

Jap. name. *Edauchi-kurosaiwai-take* (n. n.).

46. *Xylaria fusca* LLOYD

Myc. Writ. V, Myc. Notes, 54, p. 770, f. 1155-1156, 1918.

Hab. On dead wood. Chichishima: Ôgimura—Renjudani (Nov. 5, 1936).

Distr. North America, Japan (Bonin Islands, ? Kiushu).

Jap. name. *Ko-hamakitake* (n. n.)

47. *Daldinia Eschscholzii* (EHRENB.) REHM,

Ann. Myc. II, 175, 1904—CHILD, Ann. Mo. Bot. Gard. XIX, 458, pl. 26, f. 5, pl. 27, f. 5, pl. 28, f. 5, pl. 29, f. 3, 5, 6, 8, pl. 31, f. 1, pl. 33, f. 3, 1932.

Sphaeria Eschscholzii EHRENB. Fung. Cham. 89, pl. 18, f. 8, 1820.

? *Hypoxylon stratosum* SACC. Syll. Fung. IX, 544, 1891.

Daldinia vernicosa f. *microspora* STARBÄCK, Svensk Vet. Akad. Handl. 3, XXVII⁹, 6, 1901, sensu THEISSEN.

Daldinia corrugata PAT. et MARIOT, Bull. Soc. Myc. Fr. XXII, 120, 1906, teste CHILD.

Daldinia concentrica var. *microspora* THEISSEN, Ann. Myc. VII, 3, 1909, teste CHILD.

Daldinia argentinensis f. *sessilis* SPEG. Anal. Mus. Nac. Buenos Aires 3, XII, 345, 1909, p. p. teste CHILD.

Daldinia luzonensis REHM, Philipp. Journ. Sci. VIII, 260, 1913, teste CHILD.

? *Daldinia stratosa* SACC. Syll. Fung. XXII, 327, 1913.

Hab. On dead wood. Chichishima: Ôgimura—Renjudani (March 27, 1937, M. OKABE).

Distr. North and South America, West Indies, Central Europe, Africa, Madagascar, Reunion Islands, Mauritius Islands, Syria, India, Malay, China, Philippine Islands, Java, Bonin Islands, Guam, Australia, Samoa, Tahiti.

Jap. name. *Chakobu-modoki* (n. n.).

48. *Hypoxylon atromaculosum* S. ITO et IMAI, sp. nov.

Stromate effuso, tenuissimo, 2-10 × 4-15 mm. lato, atro; ascis cylindricis, longe stipitatis; ascosporis ellipsoideis vel naviculatis, 10-15 × 5-6 μ .

Hab. On bark of dead tree trunks of frondose wood. Chichishima: Ômura—Kiyose (Nov. 14, 1936).

Distr. Endemic.

Jap. name. *Kuro-kobuazatake* (n. n.).

49. *Hypoxylon atropurpureum* FR.

Summa Veg. Scand. 384, 1849—SACC. Syll. Fung. I, 375, 1882—ELLIS & EVERH. North Amer. Pyrenom. 647, 1892—TRAV. Fl. Ital. Crypt., Pyrenom. 54, 1906.

Sphaeria atropurpurea FR. Syst. Myc. II, 340, 1823.

Hab. On bark of dead wood. Chichishima: Asahiyama (Nov. 12, 1936).

Distr. Europe, North America, Java, Philippine Islands, Bonin Islands.

Jap. name. *Shikon-kobuazatake* (n. n.).

50. *Hypoxylon deustum* (HOFFM. ex FR.) GREV.

Scot. Crypt. Fl. VI, pl. 324, f. 2, 1828.

Sphaeria maxima HALL. Hist. Stirp. Helv. III, 122, 1768.

Sphaeria deusta HOFFM. Veg. Crypt. I, 3, pl. 1, f. 2, 1787.

Hypoxylon ustulatum BULL. Champ. Fr. 176, pl. 487, f. 1, 1791—J. H. MILLER, Trans. Brit. Myc. Soc. XV, 143, pl. 6, f. 1, pl. 7, f. 6, 1930.

Sphaeria versipellis TODE, Fung. Meckl. Sel. Fasc. II, 55, pl. 17, f. 129, 1791.

Sphaeria deusta FR. Syst. Myc. II, 345, 1823.

Hypoxylon ustulatum FR. Summa. Veg. Scand. 383, 1849.

Ustulina vulgaris TUL. Sel. Fung. Carp. II, 23, pl. 3, f. 1-6, 1863—SACC. Syll. Fung. I, 351, 1882.

Ustulina maxima SCHROET. Pilze Schles. II, 465, 1897.

Ustulina deusta PETR. Ann. Myc. XIX, 279, 1921.

Hab. On bark of dead frondose wood. Hahashima: Okimura—Kuwanoki-yama (Nov. 18, 1936); Kitamura—Sekimonzan (Nov. 20, 1936).

Distr. Europe, North America, Cuba, Guyana, Venezuela, Ceylon, Bonin Islands.

Jap. name. *Ômi-kobutake*.

51. *Hypoxylon effusum* NITSCHKE

Pyrenom. Germ. 48, 1867—SACC. Syll. Fung. I, 379, 1882—ELLIS & EVERH. North Amer. Pyrenom. 651, 1892—TRAV. Fl. Ital. Crypt., Pyrenom. 50, 1906—THEISS. Ann. Myc. VII, 156, 1909—J. H. MILLER, Mycologia, XX, 319, 1928—RICK, Broteria, Bot., XXV, 23, 1931.

Hob. On bark of dead frondose wood. Chichishima: Ôgimura—Renjūdani (Nov. 9, 1936).

Distr. Europe, North and South America, Philippine Islands, Bonin Islands.
Jap. name. *Ita-kobutake* (YASUDA).

52. *Hypoxylon fusconigrum* S. ITO et IMAI, sp. nov.

Stromate late effuso, usque ad 5 × 4 cm. lato, tenui, juvenile "warm-sepia" dein nigrescente, minute papillato; ascis cylindricis, p. sp. 60–70 × 6–8 μ ; ascosporis ellipsoideis vel naviculatis, inaequilateralibus, opacis, 8–10 × 3–4 μ .

Hab. On bark of tree trunks of frondose wood. Chichishima: Takeda-bokujō (Nov. 5, 1936).

Distr. Endemic.

Jap. name. *Cha-kobuazatake* (n. n.).

53. *Hypoxylon macroannulatum* S. ITO et IMAI, sp. nov.

Stromate hemisphaerico-tuberculiformi vel irregulariter effuso, vel convexo-hemisphaerico, 1–3 cm. lato, nigro, superficie asperulato; peritheciis subglobosis, monostichis, magnis, circa 1 mm. in diam., circa papillato-ostiolato annulato-truncatis; ascis cylindricis, p. sp. 70–80 × 5.5–7 μ ; ascosporis ellipsoideis vel naviculatis, inaequilateralibus, opacis, 9–12.5 × 4–5.5 μ .

Hab. On bark of dead tree trunks of *Machilus Kobu* MAXIM. (*Yamagusu*). Chichishima: Ôgimura—Sakaehama (Nov. 5, 1936).

Distr. Endemic.

Jap. name. *Ô-kuro-kobuazatake* (n. n.).

54. *Hypoxylon rubiginosum* [PERS.] FR.

Summa Veg. Scand. 384, 1849—CKE. Handb. Brit. Fung. II, 796, 1871—KARST. Myc. Fenn. II, 40, 1873—QUÉL. Champ. Jura Vosg. III, in Mém. Soc. D'Emul. Month. 2 sér. V, 492, 1875—SACC. Syll. Fung. I, 376, 1882—ELLIS & EVERH. North Amer. Pyrenom. 645, 1892—TRAV. Fl. Ital. Crypt., Pyrenom. 46, 1906—J. H. MILLER, Trans. Brit. Myc. Soc. XV, 144, 1930—RICK, Broteria, Bot., XXV, 29, 1931.

Sphaeria rubiginosa PERS. Syn. Fung. II, 1801.

Sphaeria perforata SCHW. Syn. Fung. Carol. n. 45, 1822.

Sphaeria rubiginosa FR. Syst. Myc. II, 340, 1823.

Sphaeria fuscopurpurea SCHW. Journ. Acad. Nat. Sci. Phila. V, 16, 1825.

Sphaeria decorticata SCHW. Trans. Amer. Phil. Soc. N. S. IV, 191, 1832.

Sphaeria Catalpae SCHW. Ibid. p. 193, 1832.

Hypoxylon perforatum FR. Summa Veg. Scand. 384, 1849.

Hypoxylon luridum NITS. Pyrenom. Germ. 31, 1867.

Hypoxylon purpureum NITS. Ibid. 37, 1867.

Diatrype cercidicoma BERK. et CURT. in PK. 25 Ann. Rep. N. Y. State Mus. 101, 1873.

Hypoxylon crocopleum BERK. et CURT. Grevillea, IV, 50, 1875.

Hypoxylon florideum BERK. et CURT. Ibid. 50, 1875.

Hypoxylon decorticans BERK. Ibid. 50, 1875.

Hypoxyton suborbiculare PK. 30 Ann. Rep. N. Y. State Mus. 63, 1878.

Anthostoma cercidicolum SACC. Syll. Fung. I, 306, 1882.

Hypoxyton Catalpae SACC. Ibid. 392, 1882.

Hypoxyton piceum ELLIS, Amer. Nat. XVII, 194, 1883.

Hypoxyton subchlorinum ELLIS et CAL. Journ. Myc. IV, 86, 1888.

Hypoxyton subluteum ELLIS et. EVERH. North. Amer. Pyrenom. 648, 1892.

Nummularia lateritia ELLIS et EVERH. Phil. Acad. 1893, p. 144.

Hypoxyton lianicolum REHM, Ascom. Philipp. IV, in Leaf. Philipp. Bot. VI, 1944, 1913.

Hab. On bark of dead frondose wood. Chichishima: Ôgimura—Renjudani (Nov. 9, 1936).

Distr. Europe, North and South America, West Indies, Java, Ceylon, Philippine, Bonin Islands, Japan, North Africa.

Jap. name. *Aka-kobuazatake* (n. n.).

55. *Apiocrea chrysosperma* (TUL.) SYD.

Ann. Myc. XVIII, 187, 1920—PETCH, Trans. Brit. Myc. Soc. XXI, 275, f. 15, 1938.

Reticularia chrysosperma BULL. Champ. Fr. pl. 476, f. 4, 1791.

Mucor chrysospermus BULL. Ibid. pl. 564, f. 1, 1791.

Uredo mycophila PERS. Obs. Myc. I, 16, 1796.

Sepedonium chrysospermum FR. Syst. Myc. III, 438, 1829.

Hypomyces chrysospermus TUL. Ann. Sci. Nat. 4 sér. XIII, 16, 1860; Sel. Fung. Carp. III, 51, pl. 8, f. 1-13, 1865; PLOWER. Monogr. Brit. Hypomyces, 4, pl. 146, 1879—SACC. Syll. Fung. II, 467, 1883—SEEVER, Mycologia, II, 76, pl. 21, f. 16, 1910; North Amer. Fl. III, 43, 1910.

Hypomyces boletinus PECK, 75 Bull. N. Y. State Mus. 15, 1904.

Hab. On *Boletus bovinus* FR. (*Awatake*). Chichishima: Takeda-bokujô (Nov. 5, 1936).

Distr. Cosmopolitan.

Jap. name. *Awatake-yadori* (n. n.).

56. *Chromocreopsis microasca* S. ITO et IMAI, sp. nov.

Stromate gregario, pulvinato effusoque, 0.5-3 cm. lato, carnosus vel subcarnosus, siccus "dark-olive-buff" vel "buffy-brown", leviter asperulatus; peritheciis cucurbitiformibus, membrano cellulis "olive-brown" colorato, 190-230 μ in diam.; ascis clavatis, 6-8-sporis, 12-15 $\times$ 3-5 μ ; ascosporis subglobosis, late oblongis vel globosis, 2.5-3 $\times$ 2-2.5 μ vel 2.5 μ in diam., laevibus, membrano olivaceo.

Hab. On dead wood. Chichishima: Ôgimura—Renjudani (Nov. 9, 1936).

Distr. Endemic.

Jap. name. *Ô-oriibu-botantake* (n. n.).

Materials for a Rust-flora of Kiushu

By

Naohide HIRATSUKA

(平塚直秀)

1. *Uredinopsis daisenensis* HIRATSUKA, f. in Mem. Tottori Agric. Coll. IV, p. 69, 1936.

On *Athyrium Vidalii* NAKAI (*Yama-inuwarabi*). Prov. Buzen: Mt. Hikosan (Oct. 9, 1939, HIRATSUKA, f.). New to Kiushu!

2. *Milesina chikugoensis* HIRATSUKA, f. nov. spec.

Soris uredosporiferis hypophyllis, sparsis vel laxe aggregatis, minutis, rotundatis, 0.1–0.27 mm diam., flavo-brunneis, epidermide diu tectis, tandem poro centrali apertis; peridio hemisphaerico, firmo, ex cellulis minutissimis, irregulariter polygonalibus, 6–15 μ diam.; uredosporis hyalinis, oblongis, oblongo-fusiformibus, fusiformibus vel clavatis, minutissime verruculosus, 27–62 $\times$ 10–18 μ ; episporio 1–1.5 μ crasso (usque 4 μ ad apicem). Teleutosporis ignotis.

Hab. On *Cyrtomium Fortunei* J. SM. (*Polystichum Fortunei* NAKAI) (*Yabusotetsu*). Prov. Chikugo: Miike-yama near Miike-machi (Jan. 14, 1936, E. TOBINAGA, type!).

Although the writer has not yet seen any example of the teleutospore-stage of this fungus, he treats it provisionally as a species of *Milesina* because of the characters of its uredostage. The present species is easily distinguished from *Milesina Faulliana* HIRATSUKA, f. et UEMURA on the same host plant by the shape and size of the uredospores as well as the essential characters of the uredosori.

3. *Milesina Diplazii* HIRATSUKA, f. in Bot. Mag. Tokyo, XLVIII, p. 44 & text-fig. 5, 1934.

On *Diplazium squamigerum* CHRIST. (*Kiyotaki-shida*). Prov. Buzen: Mt. Hikosan (Oct. 9 & 10, 1939, HIRATSUKA, f.). New to Kiushu!

4. *Milesina miikensis* HIRATSUKA, f. nov. spec.

Soris uredosporiferis hypophyllis, subepidermalibus, maculis discoloris brun-

neolis insidentibus, sparsis vel laxe aggregatis, rotundatis, minutis, 0.1-0.24 mm diam., epidermide tectis, atro-brunneis; peridiis ex cellulis irregulariter polygonalibus composito cinctis; cellulis peridiis minutis, 4-15 μ diam., parietibus tenuibus, levibus; uredosporis hyalinis, ellipsoideis, obovatis vel oblongis, fere levibus vel minutissime verrucosis, 24-38 $\times$ 12-20 μ ; episporio tenui, 1 μ vel minus crasso. Teleutosporis ignotis.

Hab. On *Phymatopsis hastata* KITAGAWA (*Polypodium hastatum* THUNB.) (*Mitsudô-uraboshi*). Prov. Chikugo: Miike-machi (Jan. 14, 1936, E. TOBINAGA, type!).

Although the writer has not yet found its teleutostage, he think it better to treat this fungus as a species of *Milesina* on account of the essential characters of the uredostage. This species is related to *Milesina Polypodii-superficialis* HIRATSUKA, f., from which it differs by the size of the spores and the characters of their episporium.

5. ***Melampsoridium Hiratsukanum*** ITO in HIRATSUKA, f. in Jour. Facul. Agric. Hokkaido Imp. Univ. XXI, p. 9, 1927.

On *Alnus tinctoria* SARG. var. *obtusiloba* CALL. (*Alnus hirsuta* TURCZ. var. *sibirica* C. K. SCHN.) (*Yama-hannoki*). Prov. Bungo: Mt. Kujiyû (Oct. 18, 1939, HIRATSUKA, f.). Prov. Ôsumi: Ônami-ike (Kirishima Mts.) (Oct. 25, 1939, HIRATSUKA, f.); Shinyu Hot Spring (Kirishima Mts.) (Oct. 25, 1939, HIRATSUKA, f.). New to Kiushu!

6. ***Melampsorella Caryophyllacearum*** SCHRÖTER in Hedwigia, XIII, p. 85, 1874.

On *Abies firma* SIEB. et ZUCC. (*Momi*). Prov. Ôsumi: Kirishima Hot Spring (Kirishima Mts.) (Oct. 25, 1939, HIRATSUKA, f.).

7. ***Pucciniastrum Circaeae*** (THÜM.) SPEGAZZINI, Dec. Myc. Ital. no. 65, 1879.

On *Circaea mollis* SIEB. et ZUCC. (*Midzutamasô*). Prov. Chikuzen: Sasaguri-machi (Sept. 27, 1939, Y. MAKI); Mt. Kosho-zan (Oct. 8, 1939, Y. MAKI). New to Kiushu!

8. ***Pucciniastrum Corni*** DIETEL in ENGL. Bot. Jahrb. XXXIV, p. 587, 1905.

On *Cynoxylon japonica* NAKAI (*Cornus Kousa* BUERG.) (*Yamabôshi*). Prov. Ôsumi: Mt. Karakuni-dake (Oct. 24, 1939, HIRATSUKA, f.). New to Kiushu!

9. ***Pucciniastrum Coryli*** KOMAROV in JACZEWSKI, KOMAROV & TRANZSCHER, Fungi Rossiae exsicc. no. 275, 1899.

On *Corylus Sieboldiana* BLUME (*Corylus rostrata* var. *Sieboldiana* MAXIM.) (*Tsuno-hashibami*). Prov. Bungo: Mt. Kuju (Oct. 18, 1939, HIRATSUKA, f.). New to Kiushu!

10. *Pucciniastrum Kusanoi* DIETEL in ENGL. Bot. Jahrb. XXXII, p. 629, 1903.

On *Clethra barbinervis* SIEB. et ZUCC. (*Ryôbu*). Prov. Buzen: Mt. Hikosan (Oct. 9, 1939, HIRATSUKA, f.; Nov. 5, 1939, T. KATSUKI). Prov. Bungo: Mt. Katamukiyama (Oct. 21, 1939, HIRATSUKA, f.); Mt. Yubu-dake (Oct. 14, 1939, HIRATSUKA, f.); Mt. Kyju (Oct. 18, 1939, HIRATSUKA, f.). Prov. Ôsumi: Ônami-ike (Kirishima Mts.) (Oct. 25, 1939, HIRATSUKA, f.); Mt. Karakuni-dake (Kirishima Mts.) (Oct. 24, 1939, HIRATSUKA, f.). New to Kiushu!

11. *Pucciniastrum Miyabeaenum* HIRATSUKA in Bot. Mag. Tokyo, XII, p. 33, 1898.

On *Viburnum furcatum* BLUME (*Mushikari*). Prov. Buzen: Mt. Hikosan (Nov. 5, 1939, T. KATSUKI; Oct. 9 & 11, 1939, HIRATSUKA, f.). New to Kiushu!

12. *Thekopsora Asteridis* TRANZSCHEL in HIRATSUKA, f. in Mem. Tottori Agric. Coll. IV, p. 328, 1936.

On *Heteropappus hispidus* LESS. (*Sunaji-nogiku*). Prov. Bungo: Mt. Yubu-dake (Oct. 14, 1939, HIRATSUKA, f.). The present species is new to Kiushu and *Heteropappus hispidus* is a new host plant for this species.

13. *Thekopsora Myrtillina* KARSTEN, Myc. Fenn. IV, p. 59, 1879.

On *Lyonia Neziki* NAKAI et HARA (*Xolisma elliptica* NAKAI) (*Nejiki*). Prov. Bungo: Mt. Yubu-dake (Oct. 14, 1939, HIRATSUKA, f.); Mt. Kuju (Oct. 18, 1939, HIRATSUKA, f.); Kuju-kôgen (Oct. 17, 1939, HIRATSUKA, f.). Prov. Ôsumi: Kirishima Hot Spring (Kirishima Mts.) (Oct. 25, 1939, HIRATSUKA, f.); Ônami-ike (Kirishima Mts.) (Oct. 25, 1939, HIRATSUKA, f.). New to Kiushu!

14. *Melampsora Euphorbiae-dulcis* OTTH in Berner Mitteil. (1868), p. 70, 1868.

On *Euphorbia pekinensis* RUPR. var. *Onoei* MAK. (*Takatôdai*). Prov. Bungo: Mt. Yubu-dake (Oct. 14, 1939, HIRATSUKA, f.). New to Kiushu!

15. *Melampsora Kusanoi* DIETEL in ENGL. Bot. Jahrb. XXXVII, p. 104, 1905.

On *Hypericum Ascyron* L. (*Tomoeshô*). Prov. Bungo: Mt. Yubu-dake (Oct.

14. 1939, HIRATSUKA, f.). New to Kiushu!

16. *Phakopsora Meliosmae* KUSANO in Bot. Mag. Tokyo, XVIII, p. 148 & text-fig., 1904.

On *Meliosma tenuis* MAXIM. (*Miyama-hahaso*). Prov. Buzen: Mt. Hikosan (Oct. 9, 1939, HIRATSUKA, f.). *Meliosma tenuis* is a new host plant for the present species.

17. *Phakopsora Nishidana* ITO in ITO & HOMMA in Transact. Sapporo Nat. Hist. Soc. XV, p. 117, 1938.

On *Ficus erecta* THUNB. (*Inu-biwa*). Prov. Buzen: Yabakei-mura (Oct. 13, 1939, HIRATSUKA, f.). Prov. Hiuga: Miyazaki-shi (Oct. 22, 1939, HIRATSUKA, f.). Prov. Satsuma: Kagoshima-shi (Oct. 27, 1939, HIRATSUKA, f.).

18. *Phakopsora Pachyrhizi* SYDOW in Ann. Myc. XII, p. 108, 1914.

On *Pueraria Thunbergiana* BENTH. (*Kuzu*). Prov. Chikuzen: Nishidani-mura (Kiku-gun) (Nov. 21, 1937, T. KATSUKI). Prov. Bungo: Kujuû-kôgen (Oct. 19, 1939, HIRATSUKA, f.). Prov. Higo: Ariake-mura (Nov. 30, 1935, E. TOBINAGA); Kenboku-mura (Dec. 15, 1935, E. TOBINAGA); Shimoda-mura (Amakusa) (Dec. 22, 1939, HIRATSUKA, f.). Prov. Satsuma: Mt. Kaimon-dake (Oct. 28, 1939, HIRATSUKA, f.).

19. *Chrysomyxa Rhododendri* DE BARY in Bot. Zeitg. XXXVII, p. 809 & pl. X, figs. 1-6, 1879.

On *Rhododendron kiusianum* MAK. (*Miyama-kirishima*). Prov. Hizen: Mt. Unzen-dake (July 24, 1937, Y. MAKI). Prov. Ôsumi: Shinyu Hot Spring (Kirishima Mts.) (Oct. 25, 1939, HIRATSUKA, f.); Mt. Karakuni-dake (Kirishima Mts.) (Oct. 24, 1939, HIRATSUKA, f.); Ônami-ike (Kirishima Mts.) (Oct. 24, 1939, HIRATSUKA, f.). *Rhododendron kiusianum* is a new host plant for the present species.

20. *Coleosporium Microrhamni* DIETEL in Ann. Myc. IV, p. 308, 1906.

On *Rhamnella franguloides* WEBERB. (*Nekonochichi*). Prov. Satsuma: Mt. Kaimon-dake (Oct. 28, 1939, HIRATSUKA, f.). New to Kiushu!

21. *Coleosporium Phellodendri* KOMAROV in JACZEWSKI, KOMAROV & TRANZSCHER, Fung. Ross. exs. no. 274, 1899.

On *Phellodendron Lavalleyi* DODE (*Kihada*). Prov. Bungo: Mt. Katamukiyama (Oct. 21, 1939, HIRATSUKA, f.). New to Kiushu!

22. *Kuehneola Callicarpae* SYDOW in SYDOW & PETRAK in Ann. Myc. XXVI, p. 420, 1928.

On *Callicarpa mollis* SIEB. et ZUCC. (*Yabu-murasaki*). Prov. Hiuga: Miyazaki-shi (Oct. 22, 1939, HIRATSUKA, f.). New to Kiushu!

23. *Kuehneola Uredines* (LINK) ARTHUR in Résult. Sci. Congr. Internat. Bot. Vienne (1905), p. 342, 1906.

On *Rubus* sp. (*cultivated*). Prov. Hiuga: Miyazaki-shi (Oct. 22, 1939, HIRATSUKA, f.). New to Kiushu!

24. *Blastospora Itoana* TOGASHI et ONUMA in Bot. Mag. Tokyo, XLV, p. 6 & text-figs. 1 & 3, 1931.

On *Smilax Oldhami* MIQ. (*Tachi-shiode*). Prov. Bungo: Mt Yubu-dake (Oct. 14, 1939, HIRATSUKA, f.). New to Kiushu!

25. *Blastospora Smilacis* DIETEL in Ann. Myc. VI, p. 223 & text-fig., 1908.

On *Smilax Sieboldi* MIQ. (*Yamagashû*). Prov. Bungo: Taketa-machi (Oct. 20, 1939, HIRATSUKA, f.). New to Kiushu!

26. *Triphragmium Ulmariae* (SCHUM.) LINK, Sp. Pl. II, p. 84, 1825.

On *Filipendula multijuga* MAXIM. (*Shimotsukesô*). Prov. Bungo: Mt. Kujiyû (Oct. 18, 1939, HIRATSUKA, f.). New to Kiushu!

27. *Pileolaria Toxicodendri* (BERK. et RAV.) ARTHUR in N. Amer. Fl. VII, p. 147, 1907.

On *Rhus ambigua* LAVALL. (*Tsuta-urushi*). Prov. Buzen: Mt. Hikosan (Oct. 9, 1939, HIRATSUKA, f.). Prov. Bungo: Mt. Katamuki-yama (Oct. 21, 1939, HIRATSUKA, f.); Kujiyû-kôgen (Oct. 17, 1939, HIRATSUKA, f.). Prov. Ôsumi: Shinyu Hot Spring (Kirishima Mts.) (Oct. 25, 1939, HIRATSUKA, f.). New to Kiushu!

28. *Hamasporea Rubi-Sieboldii* (KAWAGOE) DIETEL in Ann. Myc. XX, p. 293, 1922.

On *Rubus Sieboldi* BLUME (*Hôroku-ichigo*). Prov. Higo: Shimoda-mura (Amakusa) (Dec. 22, 1939, HIRATSUKA, f.).

29. *Uromyces Holwayi* LAGERHEIM in Hedwigia, XXVIII, p. 108, 1889.

On *Lilium pseudotigrinum* CARR. (*Ko-oniyuri*). Prov. Hizen: Karatsu-shi

(May 22, 1937, Y. MAKI). New to Kiushu!

30. *Uromyces Orobi* LÉVEILLÉ in Ann. Sci. Nat. 3. Sér. VIII, p. 371 & 376, 1874.

On *Vicia unijuga* A. BRAUN (*Nantenhagi*). Prov. Bungo: Mt. Yubu-dake (Oct. 14, 1939, HIRATSUKA, f.). New to Kiushu!

31. *Uromyces Wedeliae* HENNINGS in Hedwigia, XLIII, p. 150, 1904.

On *Wedelia prostrata* HEMSL. (*Hamaguruma*). Prov. Higo: Tomioka-machi (Amakusa) (Dec. 21, 1939, HIRATSUKA, f.). New to Kiushu!

32. *Puccinia angustata* PECK in Bull. Buffalo Soc. Nat. Sci. I, p. 67, 1873.

On *Scirpus Wichurii* BOECK. var. *concolor* OHWI (*Scirpus Cyperinus* var. *concolor* MAK.) (*Aburagaya*). Prov. Bungo: Hakusan-mura (Oct. 20, 1939, HIRATSUKA, f.). New to Kiushu!

33. *Puccinia Belamacandae* DIETEL in Ann. Myc. V, p. 71, 1907.

On *Belamacanda chinensis* LEMAN. (*Hiôgi*) (*cultivated*). Prov. Bungo: Taketa-machi (Oct. 20, 1939, HIRATSUKA, f.). New to Kiushu!

34. *Puccinia Bupleuri* (OPIZ) RUDOLPHI in Linnaea, IV, p. 514, 1892.

On *Bupleurum falcatum* L. (*Mishima-saiko*). Prov. Buzen: Mt. Yubu-dake (Oct. 14, 1939, HIRATSUKA, f.). New to Kiushu!

35. *Puccinia Buxi* DE CANDOLLE, Fl. franç. VI, p. 60, 1815; GROVE, Brit. Rust Fungi, p. 208 & fig. 153; SACCARDO, Syll. Fung. VII, p. 688; SYDOW, Monogr. Ured. I, p. 453.

On *Buxus japonica* MÜLL.-ARG. (*Tsuge*). Prov. Chikuzen: Mt. Kosho-zan (Jan. 5, 1940, M. NOMIYAMA). The present species is new to the mycological flora of Japan, and *Buxus japonica* is a new host plant for the present species.

36. *Puccinia Caricis-japonicae* DIETEL in Ann. Myc. IV, p. 305, 1906.

On *Carex Doniana* SPRENG. (*Shira-suge*). Prov. Chikugo: Miike-machi (Feb. 11, 1936, E. TOBINAGA); Miike-yama near Miike-machi (June 12, 1935, E. TOBINAGA). Prov. Buzen: Mt. Hikosan (Oct. 10, 1939, HIRATSUKA, f.); Mt. Kawara-dake (Oct. 30, 1936, E. TOBINAGA). New to Kiushu!

37. *Puccinia Caricis-macrocephalae* DIETEL in Ann. Myc. VIII, p. 306, 1910.

On *Carex Kobomugi* OHWI (*Kôbô-mugi*). Prov. Buzen: Nakatsu-shi (Oct. 13, 1939, HIRATSUKA, f.). New to Kiushu!

38. *Puccinia Caricis-molliculae* SYDOW in Ann. Myc. XI, p. 105, 1913.

On *Carex mollicula* BOOTT. (*Hime-shirasuge*). Prov. Buzen: Mt. Hikosan (Nov. 1, 1935, E. TOBINAGA). New to Kiushu!

39. *Puccinia Elaeagni* YOSHINAGA in DIETEL in Ann. Myc. IV, p. 304, 1906.

On *Elaeagnus pungens* THUNB. (*Nawashiro-gumi*). Prov. Buzen: Yabakei-mura (Oct. 13, 1939, HIRATSUKA, f.). New to Kiushu!

40. *Puccinia Glyceriae* ITO in Jour. Coll. Agric. Tohoku Imp. Univ. III, p. 200 & pl. XI, fig. 2, 1909.

On *Glyceria tonglensis* CLARKE var. *honshuana* L. KELSO (*Dojyôtsunagi*). Prov. Bungo: Makiguchi-mura (Oct. 20, 1939, HIRATSUKA, f.).

41. *Puccinia hyalina* DIETEL in ENGL. Bot. Jahrb. XXXVII, p. 99, 1905.

On *Carex siderosticta* HANCE. (*Taganesô*). Prov. Bungo: Mt. Katamuki-yama (Oct. 21, 1939, HIRATSUKA, f.). New to Kiushu!

42. *Puccinia Juncelli* DIETEL in Ann. Myc. VIII, p. 306, 1910.

On *Juncellus serotinus* CLARKE (*Cyperus serotinus* ROTTB.) (*Midzu-gayatsuri*). Prov. Chikuzen: Kotake-machi (Oct. 24, 1935, E. TOBINAGA). New to Kiushu!

43. *Puccinia Kyllingiae-brevifoliae* MIURA in ITO & HOMMA in Transact. Sapporo Nat. Hist. Soc. XV, p. 128, 1938.

On *Kyllingia brevifolia* ROTTB. (*Hime-kugu*). Prov. Chikuzen: Miyata-machi (Oct. 27, 1936, E. TOBINAGA); Fukuoka-shi (Aug. 4, 1936, E. TOBINAGA); Shiganoshima-mura (Oct. 31, 1937, Y. MAKI). Prov. Chikugo: Ginsui-mura (Sept. 13 & Nov. 27, 1935, E. TOBINAGA); Miike-machi (July 5 & Aug. 1, 1935, E. TOBINAGA); Iwate-mura (Feb. 9, 1936, E. TOBINAGA). Prov. Higo: Fumoto-mura (Oct. 20, 1936, E. TOBINAGA). Prov. Hiuga: Miyazaki-shi (Oct. 22, 1939, HIRATSUKA, f.). Prov. Satsuma: Kagoshima-shi (Nov. 12, 1930, June 2, 1931 & July 22, 1935, K. IDE). New to Kiushu!

44. *Puccinia mandshurica* MIURA, Flora of Manchuria & East Mongolia, III, p. 308 & pl. IV, fig. G, 1928.

On *Carex siderosticta* HANCE. (*Taganesô*). Prov. Bungo: Mt. Yubu-dake (Oct. 14, 1939, HIRATSUKA, f.). New to Kiushu!

45. *Puccinia Miyakei* SYDOW in Ann. Myc. VII, p. 168, 1909.

Syn. *Puccinia Caricis-siderostictae* (non DIETEL) (HIRATSUKA, f. in Jour. Jap.

Bot. XIV, p. 35, 1938).

On *Carex siderosticta* HANCE. (*Taganesô*). Prov. Bungo: Mt. Yubu-dake (Oct. 15, 1939, HIRATSUKA, f.). Prov. Buzen: Mt. Hikosan (Nov. 1, 1936, E. TOBINAGA). New to Kiushu!

46. *Puccinia moriokaensis* ITO in Jour. Coll. Agric. Tohoku Imp. Univ. III, p. 224 & pl. XII, fig. 1, 1909.

On *Phragmites prostratus* MAKINO (*Tsuru-yoshi*). Prov. Chikuzen: Miyata-machi (Oct. 27, 1936, E. TOBINAGA). New to Kiushu!

47. *Puccinia Nolitangeris* CORDA, Icon. Fung. IV, p. 16 & pl. V, fig. 57, 1840.

On *Impatiens Textori* MIQ. (*Tsurifunesô*). Prov. Buzen: Mt. Hikosan (Oct. 31, 1936, E. TOBINAGA; Oct. 9 & 10, 1939, HIRATSUKA, f.). Prov. Bungo: Hakusan-mura (Oct. 20, 1939, HIRATSUKA, f.). Prov. Chikuzen: Mt. Koshozan (Oct. 8, 1939, Y. MAKI). New to Kiushu!

48. *Puccinia Polliniae-quadrinervis* DIETEL in Ann. Myc. VII, p. 355, 1909.

On *Eulalia quadrinervis* O. KUNTZE (*Pollinia quadrinervis* HACK.) (*Unnukemodoki*). Prov. Higo: Shikaki-mura (Amakusa) (Dec. 20, 1939, HIRATSUKA, f.). New to Kiushu!

49. *Puccinia rangiferina* ITO in Jour. Coll. Agric. Tohoku Imp. Univ. III, p. 194 & pl. X, fig. 12, 1909.

On *Calamagrostis arundinacea* ROTH. var. *sciuroides* HACK. (*Saitô-gaya*). Prov. Chikuzen: Sasaguri-machi (Nov. 22, 1936, Y. MAKI). New to Kiushu!

50. *Puccinia Saniculae* GREVILLE, Fl. Edinb. p. 431, 1824.

On *Sanicula chinensis* BUNGE (*Sanicula europaea* AUCT.) (*Uma-no-mitsuba*). Prov. Buzen: Mt. Hikosan (Oct. 9, 1939, HIRATSUKA, f.). Prov. Hizen: Mt. Unzen-dake (July 27, 1937, Y. MAKI). New to Kiushu!

51. *Puccinia Saxifragae* SCHLECHTENDAL, Fl. Berol. II, p. 135, 1824.

On *Saxifraga cortusaefolia* SIEB. et ZUCC. var. *typica* MAK. (*Daimonji-sô*). Prov. Buzen: Mt. Hikosan (Oct. 9, 1939, HIRATSUKA, f.). New to Kiushu!

52. *Puccinia Sonchi* ROBERGE in DESMAZIÈRES in Ann. Sci. Nat. 3. Sér. XI, p. 274, 1849.

On *Sonchus brachyotus* DC. (*Sonchus arvensis* var. *uliginosus* TRAUTV. et MEY.) (*Hachijyô-na*). Prov. Chikugo: Ômuta-shi (Sept. 24 & Nov. 17, 1935, E. TOBINAGA). New to Kiushu!

Hydrographical Observations and Plankton Studies of Some Brackish Water Lakes on the Okhotsk Sea Coast of Hokkaido in Winter

By

Yosine HADA

(羽田良禾)

With 11 text-figures

Introduction

There is a series of brackish water lakes lying on the Okhotsk Sea Coast of Kitami Province, Hokkaido. Among them the seven following lakes, Komuke, Sibunotunai, Saroma, Notoro, Abasiri, Mokoto and Tohutu, were studied by the writer in March, 1938 with monetary aid from the HATTORI Hokokai. Here, the writer's best thanks are tendered to the foundation and also to Mr. E. ASAHINA who helped him in field work.

Among these lakes, Lake Sibunotunai has never been surveyed. Limnological researches of some of these lakes have been published by members of the Hokkaido Fisheries Experimental Station as follows; Lake Komuke by TAKAYASU, IGARASI & SAWA in 1930 and by TAKAYASU in 1937; Lake Saroma by TAKAYASU, IGARASI & KONDO in 1934 and by KINOSITA & NAKASIMA in 1936 and 1938; Lake Notoro by TAKAYASU & KONDO in 1934; Lake Abasiri by TAKAYASU & TOBISIMA in 1930; Lake Tohutu by TAKAYASU, IGARASI & SAWA in 1930. YOSIMURA (1938) reported the hydrographical observations of Lakes Notoro and Abasiri while OKADA & KOBAYASHI (1936) and UENO (1937, 1938) reported their biological studies of Lake Abasiri. Lake Mokoto has been investigated several times; the chemical stratification has been recorded by YOSIMURA (1938), the plankton by UENO (1937, 1938) and the writer (1939), and the bottom fauna by UENO (1937, 1938) and KINOSITA & SIBUYA (1939).

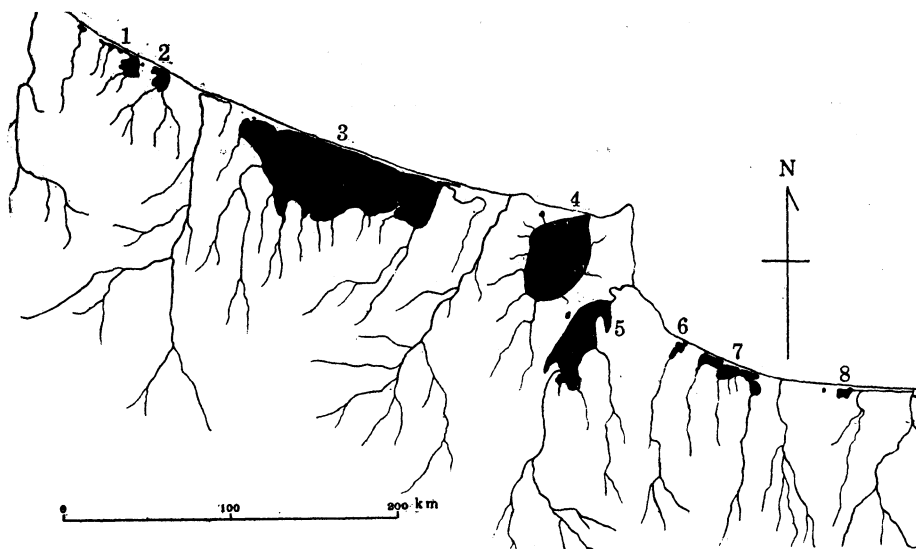


Fig. 1. Map of the Okhotsk Sea Coast of Kitmi Province where the following lakes are distributed:

1. Komuke; 2. Sibunotunai; 3. Saroma; 4. Notoro; 5. Abasiri; 6. Mokoto;
7. Tohutu; 8. Toturu.

General features of the lakes

1. Lake Komuke

The northernmost brackish water lake among those here considered, consists of a squarish main basin and an elongated branch part extending to the north-west along the sand bar. The area of the former is 4.2 km^2 and its greatest depth is 2.5 m. The latter part which has two dilated regions is 1.45 km long and 7 m deep at the deepest point. The deposits of the main basin are generally

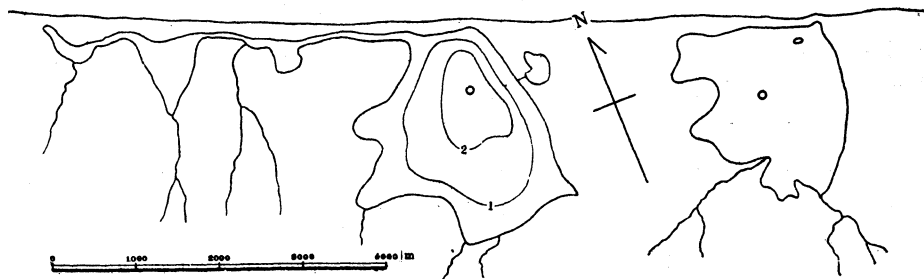


Fig. 2. Map of Lake Komuke and Sibunotunai.
(Depth in meter; point showing the position of the observation station.)

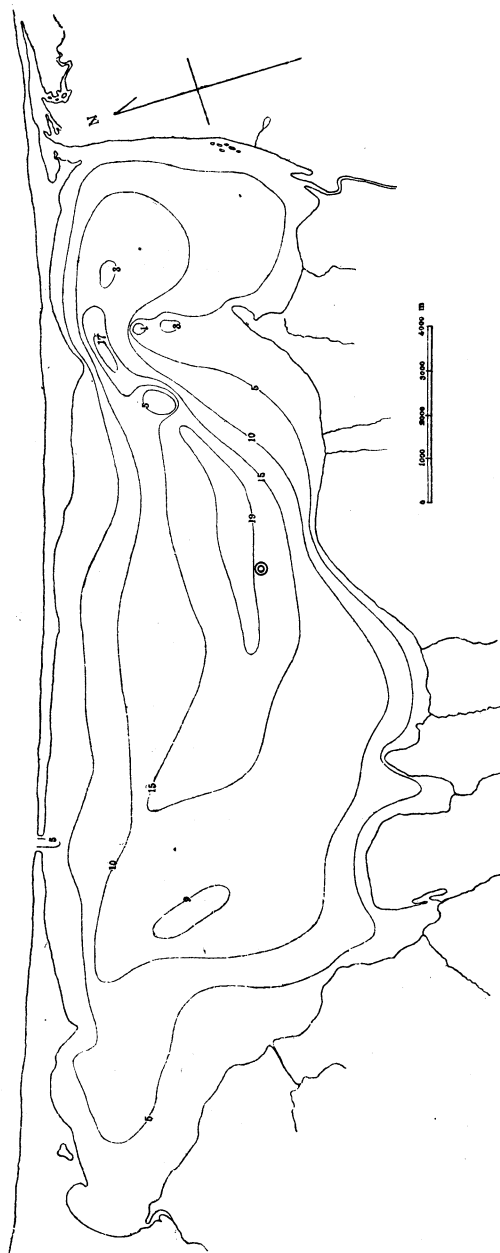


Fig. 3. Map of Lake Sarona.

composed of sand and mud. The lake has no marked influent river. The connection with the sea is usually closed during the winter and opens in spring at the north-eastern corner of the main basin.

2. Lake Sibunotunai

This lake dammed by a sand bank is a small triangular body of water occupying an area of 3 km². The maximum depth has not been recorded. This is sometimes connected with the Okhotsk Sea at the eastern corner where a small sandy islet stands.

3. Lake Saroma

Lake Saroma covering an area of 151.2 km² with a long axis of 25.2 km and a short one of 9.1 km, is the largest lake in Hokkaido, and is separated from the sea by a marked long bar. This lagoon had been regularly connected with the sea at the eastern corner until an artificial passage was made in 1929 in the middle portion of the bar in order to discharge the lake water and to make an entrance for fishing boats. Since then, the new passage has been widened and deepened by tidal currents, and finally the old channel has been closed. The bottom deposits are muddy in the central deep region of the maximum depth of 19.5 m, but in the shallow area they are composed of sand or muddy sand containing shells of the oyster, *Ostrea gigas*, which form shell-reefs near the old channel as in Lake Akkesi (INUKAI & NISIO, 1937). The Saromabetu is the longest river among those emptying into this lagoon.

4. Lake Notoro

Lake Notoro surrounded by terraces, is also a large oblong lagoon having a simple shore line of 31 km. Its long and short axes are 11.3 km and 7.1 km respectively, and its area is 59.3 km². In this basin a deep ditch with a maximum depth of 21.2 m extends along the eastern shore, while the central part is elevated (8 m in depth). The bottom is generally covered with sand and mud. This lake shows no marked inflow of fresh water, and the connection with the sea is usually blocked by a sand bank during the winter.

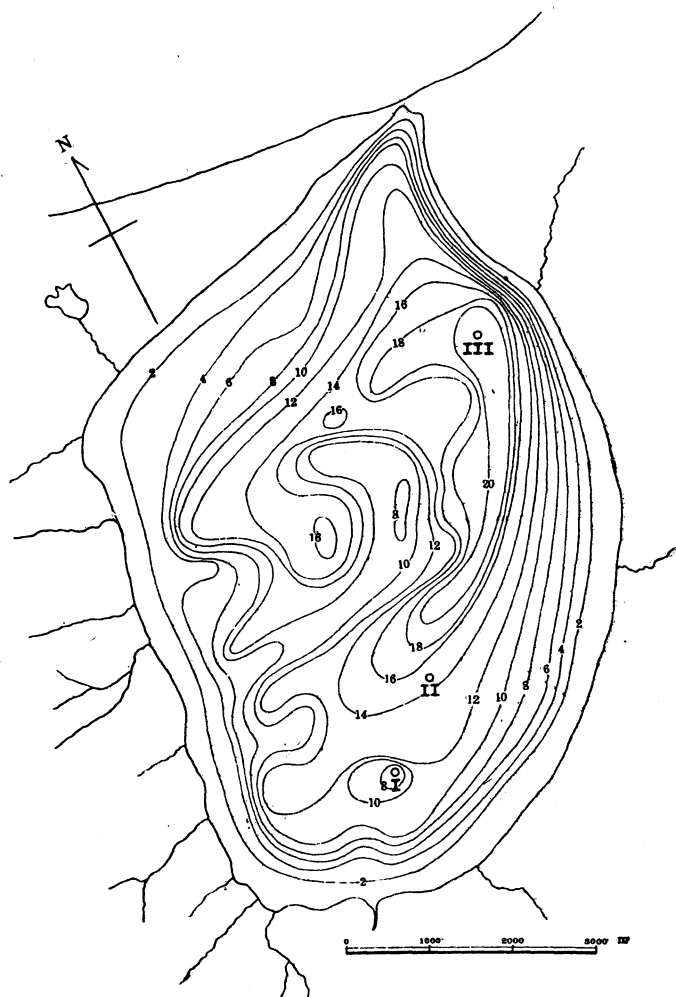


Fig. 4. Map. of Lake Notoro.

5. Lake Abasiri

Lake Abasiri covering an area of 34 km^2 , is regarded as a large inflated part of the River Abasiri, of which an affluent flows into the lake through a delta developed in the southern region of the lake, and a draining channel, 7.5 km long, connects the north-eastern end of the lake with Abasiri Harbour. The surface of the lake is 0.6 m higher than that of the sea. Having a large headland of Nakanosima besides the delta, the lake is more or less irregular

in form. The maximum depth is 17.6 m near the center. The bottom of the shallow area is covered with sand and mud, but the central deep region with black mud.

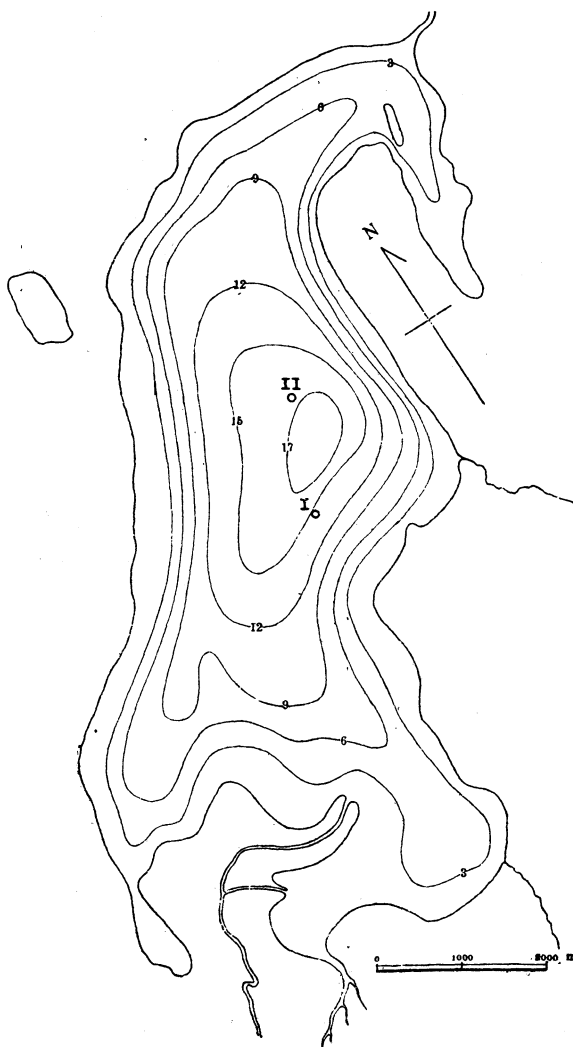


Fig. 5. Map of Abasiri.

6. Lake Mokoto

This is the smallest lake described in the present paper, being 2.3 km in length and 1.3 km² in area. This basin is probably formed by damming the estuarine depression of the River Mokoto with a sand bank. The maximum depth is 5.8 m. Bottom deposits deeper than 2 m are composed of black mud.

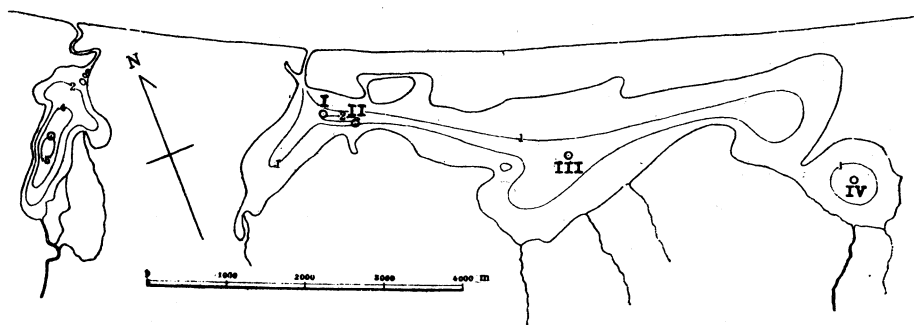


Fig. 6. Map of Lakes Mokoto and Tohutu.

7. Lake Tohutu

Lake Tohutu separated from the Okhotsk Sea by a long bar, is an elongate shallow lake an auxiliary fresh water basin. Its length is 7.7 km and the greatest width about 2 km. This lake occupies an area of 9.5 km². The maximum depth is 3 m. The bottom of the brackish water basin is generally covered with sand or muddy sand, while that of the fresh water basin is entirely mud. The outlet of this lake is temporarily closed with sand.

Hydrographical observation in winter

1. Lake Komuke

The observation of Lake Komuke was made at a single station of a depth of 2.5 m in the main basin on March 2, 1939. At that time the air temperature was -3.2°C . Collection of water samples and plankton materials was carried out through a hole made in the ice-cover, which was 58 cm in thickness. The colour of the water was No. 14 in Forel's scale as in summer (TAKAYASU, IGARASI & SAWA, 1930). Water temperature was -1°C on the surface and -9.3°C in the bottom layer of a depth of 2 m. Salinity, not

Table 1
Hydrographical observation of Lake Komuke (2/III, 1938)

Depth m	Water Temp. °C	pH	O ₂ cc/l	O ₂ %	Cl ‰	Salinity ‰
0	-1.0	7.3	3.43	38	12.43	22.47
1	-0.8	7.3	3.00	33	12.83	23.19
2	-0.3	7.3	3.23	36	13.08	23.64

greatly variable at all depths, was fairly lower than that of sea water. pH-values¹⁾ were 7.3, and dissolved oxygen decreased to $\frac{1}{4}$ – $\frac{1}{3}$ of the normal condition in all the layers.

When the observation was made, the connection with the sea was closed. During the period in which the lake is connected with sea, the lake water is nearly equal to sea water in salinity and pH-value²⁾, and is rich in oxygen in every layer (TAKAYASU, 1937).

2. Lake Sibunotunai

The observation of the Lake Sibunotunai was made in an air temperature of -4.8°C on the evening of the same day as that of Lake Komuke. The station at which the observation was made, was near the center of the lake, and only 1.6 m in depth. The thickness of the ice-cover was 48 cm there. Although the lake is very shallow, marked stratification was shown by the investigation. Water temperature considerably varied between the surface and bottom, being -0.4°C on the surface and 2.6°C at the bottom. Salinity was

Table 2
Hydrographical observation of Lake Sibunotunai (2/III, 1938)

Depth m	Water Temp. °C	pH	O ₂ cc/l	O ₂ %	Cl ‰	Salinity ‰
0.0	-0.4	6.9	5.96	60	3.89	7.05
1.0	1.3	7.3	0.11	1	11.00	19.89
1.4	2.6	7.3	0.00	0	11.27	20.37

1). Salt errors are not corrected.

2). pH above 8.2.

rather low, and abruptly increased to a depth of 1 m, but from this layer was not so changeable to the bottom. Deviation of pH was more or less small, while oxygen contents varied exceedingly: oxygen dissolved as much as 5.96 cc/l in surface water, was completely reduced to make an anaerobic layer on the bottom.

3. Lake Saroma

The winter observations of the lake were made by the Hokkaido Fisheries Experimental Station at six points in February, 1932 and at a station 6.5 m deep once every day from 1935 to 1937.

Table 3
Hydrographical observation of Lake Saroma (I/III, 1938)

Depth m	Water Temp. °C	pH	O ₂ cc/l	O ₂ %	Cl ‰	Salinity ‰
0.0	-1.5	8.25	8.42	98	17.92	32.33
1.0	-1.5	8.25	8.06	94	17.81	32.18
3.0	-1.5	8.25	8.08	95	17.84	32.23
5.0	-1.4	8.10	8.42	98	17.86	32.27
7.5	-1.4	8.10	7.86	92	17.86	32.27
10.0	-1.4	8.10	8.26	96	17.90	32.34
12.5	-0.9	8.10	7.70	92	18.00	32.52
15.0	-0.8	8.10	7.65	91	18.00	32.52

The writer's investigation was performed at a station of a depth of 17 m near the deepest region on March 1, 1938. During the observation the air temperature was -2.3°C . The ice-cover measured as thick as 47 cm at the station. The colour of the water corresponded to No. 5 of the Forel's scale, and the transparency¹⁾ observed through a hole in ice, was 6.5 m. Water temperatures below 0°C throughout the whole depth, were slightly higher in deeper strata than in upper layers. Salinity was somewhat higher in surface water cemented by ice, and lowest at a depth of 1 m, and then gradually increased to the bottom. pH-values were not generally as great as those of the other records²⁾ given by investigators of the above mentioned station. Oxygen was quite saturated in every layer.

1). Transparency indicating the visible depth of a Secchi's white disc.

2). pH, 8.35-8.50.

4. Lake Notoro

The writer visited Lake Notoro on March 7, 1838, and made observations at the three stations shown in fig. 4 in air temperatures of -1.3 – 0.8°C . Depths were 7.5 m, 14.5 m and 20.5 m respectively at Stats. I, II and III. Thickness of ice was more or less variable at each station, being 55 cm at Stat. I, 63 cm at Stat. II and 60 cm at Stat. III. The nearer the outlet a station was situated, the lower the water temperature of the surface fell, on the contrary the higher its salinity became. At Stat. III the surface temperature went down exactly

Table 4
Hydrographical observations of Lake Notoro (7/III, 1938)

Station	Depth m	Water Temp. $^{\circ}\text{C}$	pH	O ₂ cc/l	O ₂ %	Cl ‰	Salinity ‰
I	0	−0.8	8.00	8.28	93	13.38	24.18
	7	−0.8	7.90	6.96	78	13.80	24.94
II	0	−0.9	8.30	8.30	123	13.77	24.88
	1	−0.9	8.10	—	—	—	—
	2	−0.9	8.10	7.83	88	13.80	24.94
	3	−0.9	8.10	—	—	13.82	24.98
	4	−0.9	8.10	8.50	69	13.87	25.07
	6	−0.9	8.10	—	—	—	—
	8	−0.9	8.10	—	—	13.87	25.07
	10	−0.9	8.10	8.15	89	13.87	25.07
	12	−0.8	8.00	—	—	—	—
	14	−0.5	7.80	1.51	63	13.87	25.07
III	0	−1.3	8.10	8.11	90	19.32	25.16
	2	−1.1	8.10	8.10	90	13.87	25.07
	5	−1.1	8.00	7.85	88	13.83	24.99
	10	−1.1	8.00	8.10	89	13.83	24.99
	15	−0.9	7.95	7.75	87	13.83	24.99
	20	−0.6	7.90	2.91	31	13.87	25.07

to the theoretical freezing point at its salinity. During the winter the lake has no direct connection with the sea, so the salinity is lower than that of the summer and autumn while a short channel is open. At Stat. III it was slightly higher in the surface layer than in deeper ones as seen in Lake Saroma. The change of pH was generally small, but the pH-value of surface water at Stat. II was especially great. This is due to the abundance of a minute Dinoflagellata.

In consequence, oxygen was rather rich there. In winter a fairly good aeration in bottom strata was observed, but dissolved oxygen is quite free in bottom water in autumn according to TAKAYASU & KONDO (1934) and YOSIMURA (1938). The transparency was 3.1 m at Stat. II and 8.5 m at Stat. III. The difference between them is probably caused by the richness of the minute flagellate plankton at Stat. II.

5. Lake Abasiri

The writer's observations of Lake Abasiri were made on March 5, 1938 at the two stations of depths of 14.5 m and 16.3 m located in the central area. While the observations were made, air temperatures varied from 3.6°C to 4.5°C. The thickness of the ice was nearly equal (70 cm and 68 cm respectively at Stats. I and II), and the transparency was also quite the same (2.5 m) at both stations. Water temperature was very variable, being 0.5–4.3°C at Stat. I and

Table 5
Hydrographical observations of Lake Abasiri (5/III, 1938)

Station	Depth m	Water Temp. °C	pH	O ₂ cc/l	O ₂ %	Cl ‰	Salinity ‰
I	0	0.5	6.65	8.29	82	—	—
	1	0.8	6.65	—	—	—	—
	3	0.9	6.90	—	—	—	—
	5	1.1	6.90	—	—	—	—
	7	1.1	6.90	—	—	—	—
	10	1.2	6.90	8.62	86	—	—
	12	1.8	6.95	7.39	76	—	—
	13	2.9	7.15	4.50	48	—	—
	14	4.2	7.40	0.00	0	7.200	13.03
II	0	0.2	6.70	8.67	85	0.015	—
	1	0.4	6.70	8.60	85	0.020	—
	3	0.7	6.90	—	—	—	—
	5	1.1	6.90	9.16	92	0.300	—
	7	1.1	6.90	8.94	90	—	—
	10	1.2	6.90	8.67	87	0.580	—
	12	1.8	6.90	7.53	78	1.960	3.57
	13	2.8	7.15	4.26	47	5.290	9.58
	14	3.2	7.40	1.34	15	6.200	11.22
	15	5.0	7.50	0.00	0	8.030	14.52
	16	5.2	—	—	—	—	—

0.2–5.2°C at Stat. II, and a distinct thermocline was observed below a depth of 10 m at each station. Judging from the results obtained by YOSIMURA (1938) in summer and by the writer in winter, water temperature at the bottom of the central deep region seems to be fairly constant throughout the year as in Lake Harutori which is an oligohaline lake allied to this lake in chemical stratification (HADA, 1938). The content of salt in the surface water was as small as in fresh water, and gradually increased to the 10 m layer, then suddenly downward from this layer to the bottom. This layer thus forms a stratum roughly dividing the upper fresh and the lower brackish water masses. This boundary layer probably exists at the same depth all the year round. As the body of brackish water is very stable, the circulation caused by thermal phenomena as found in fresh water lakes, occurs only in the upper fresh water stratum. Saline water containing such a large amount of salts as in this study, was not found even in deeper strata at the time of the investigation made by the Hokkaido Fisheries Experimental Station in June, 1927 (TAKAYASU & TOBISIMA, 1930). It is probable that sea water afterwards invaded the lake through the River Abasiri at times of heavy storms, and stagnated in deep strata. The lake water was generally weakly acidic in the upper fresh water layers, while faintly alkaline in the lower brackish water ones. It is, however, more alkaline¹⁾ in summer or autumn due to abundance of algal plankton. Dissolved oxygen was entirely lacking below the metalimnion, and hydrogen sulphide appeared in place of the former (12.2 mg/l at a depth of 15 m).

6. Lake Mokoto

Lake Mokoto is a brackish water lake similar to Lake Abasiri in chemical condition, but the fresh water layer is much thinner: the layer is only a few centimeters thick on account of the frequent invasion of sea water at times of high tides. The observation was made near the deepest portion in an air temperature of -4.3°C on March 8, 1938. Ice, 55 cm in thickness at the station, covered the whole surface excepting the small area of the outlet. The transparency was 2 m. The thermal stratification was allied to that of fresh water lakes in rather high temperature. A slight thermocline was found at depths between 1 m and 2 m, but the salt contents of the lake water changed exceedingly in the layer above a depth of 1 m: a thin water layer near the surface was quite fresh, but the salinity at a depth of 1 m was as high as 26.3 ‰. The lake water was almost neutral in the fresh water layer, while weakly alkaline in the deeper brackish water stratum. Dissolved oxygen so rapidly decreased

1). The greatest pH-value of the surface water is 7.88 in the record of TAKAYASU & TOBISIMA (1930).

Table 6
Hydrographical observation of Lake Mokoto (8/III, 1938)

Depth m	Water Temp. °C	pH	O ₂ cc/l	O ₂ %	Cl ‰	Salinity ‰
0	0.2	7.10	8.99	88	0.28	—
1	0.4	7.45	3.45	40	14.56	26.31
2	2.0	7.45	1.25	16	16.63	30.05
3	2.1	7.45	1.34	17	16.73	30.23
4	2.8	7.50	0.58	8	16.82	30.39
5	3.0	7.50	0.00	0	16.87	30.48

in the upper strata, that it was entirely absent in the bottom water, and was replaced by hydrogen sulphide. The anaerobic layer of this lake seems to be seasonally variable in thickness, being about 2 m in the summer of 1936 after YOSIMURA's investigation (1938), but 1 m more or less in the present winter observation.

7. Lake Tohutu

When the survey of the lake was carried out on March 6, 1938, the short channel connecting it with the sea was open. Air temperature varied between 3.1–4.1°C during the observation at the four stations shown in fig 6. The ice-cover, 34, 52, 55 and 60 cm in thickness respectively at Stats. I, II, III and IV, was broken off near the channel. Among these stations the last was located

Table 7
Hydrographical observations of Lake Tohutu (7/III, 1938)

Station	Depth m	Water Temp. °C	pH	O ₂ cc/l	O ₂ %	Cl ‰	Salinity ‰
I	0.0	0.1	6.50	1.39	20	2.010	3.66
	0.5	0.3	6.70	1.70	17	1.970	3.59
II	0.0	0.4	6.40	2.71	25	1.000	1.84
	0.6	0.8	6.50	0.85	9	1.020	1.87
III	0.0	0.8	6.65	5.34	54	1.070	1.96
	0.6	1.2	6.90	0.92	10	6.720	12.16
IV	0.0	0.2	6.50	8.87	87	0.027	—
	0.8	0.2	6.50	8.73	85	0.028	—

in the auxiliary fresh water basin forming a large closed bay of the lake. It is clear that sea water does not come into the auxiliary basin from the fact that the chlorine contents of water at Stat. IV is as scarce as 27-28 mg/l. In the main basin water temperature on the surface gradually rose towards the eastern end. Salinity generally indicated small degrees, but was comparatively high only in the bottom water at Stat. III. This is probably owing to stagnation of sea water there. The lake water was weakly acidic in the main basin as well as in the auxiliary. The amount of oxygen dissolved in surface water gradually decreased towards the channel, so that the lake water was apparently in process of being discharged into the Okhotsk Sea when the writer's observation was made. At Stats. II and III oxygen in the layer lying just above the bottom was fairly scant showing the existence of stagnant water.

Plankton of the lakes in winter

1. Lakes Komuke

The plankton of the lake is very poor also in winter as in other seasons (TAKAYASU, IGARASI & SAWA, 1930). As zooplankton, *Sinocalanus tenellus* and *Ceratium tripos* only were found: the copepod was more abundant in surface water, and the dinoflagellate was restricted to the bottom.

Table 8

Quantitative study of the plankton of Lake Komuke in winter
(number per 10 liters of water)

Depth m	0	2
<i>Sinocalanus tenellus</i> (KIKUTI)	36	20
Nauplius	57	65
<i>Ceratium tripos</i> MÜLLER	0	5
Sum	93	90

2. Lake Sibunotunai

The zooplankton of this shallow lagoon is remarkably rare in winter: a few individuals of Copepoda, *Sinocalanus tenellus* and *Pseudodiaptomus japonicus* were examined in the writer's collection. The Copepoda were mainly obtained at a depth of 1 m where dissolved oxygen was almost lacking, but they were fewer in the surface layer containing sufficient oxygen. *P. japonicus* has not yet been reported from Hokkaido.

Table 9
Quantitative study of the plankton of Lake Sibunotunai in winter

Depth m	0	1
<i>Pseudodiaptomus japonicus</i> KIKUTI	5	5
<i>Sinocalanus tenellus</i> (KIKUTI)	0	7
Sum	5	12

3. Lake Saroma

The winter zooplankton of the large lagoon consisted of two species of Copepoda, six forms of Tintinnoinea and one Dinoflagellata as follows; *Calanus finmarchius*, *Oithona similis*, *Tintinnopsis lohmanni*, *T. brevicollis*, *T. bütschlii*, *T. scyphiiformis*, *T. kofoidi*, *Parafavella denticulata* and *Peridinium* sp. The Copepoda were the most predominant group being distributed in all the strata, but the Tintinnoinea except *T. brevicollis* and *P. denticulata*, were rarely found in bottom water. The Dinoflagellata were also scantily obtained in deep layers. They are all immigrants from the Okhotsk Sea. Phytoplankton in winter was markedly meagre as compared with that in summer (TAKAYASU, IGARASI & KONDO, 1934).

Table 10
Quantitative study of the plankton of Lake Saroma in winter

Depth m	0	5	10	15
<i>Calanus finmarchius</i> (GUNNER)	35	26	7	13
<i>Oithona similis</i> CLAUS	12	20	19	81
Nauplius of the Copepoda	29	38	25	144
<i>Tintinnopsis lohmanni</i> LAACKMANN	0	0	0	5
<i>Tintinnopsis brevicollis</i> HADA	27	19	18	86
<i>Tintinnopsis bütschlii</i> DADAY	0	0	0	3
<i>Tintinnopsis scyphiiformis</i> HADA	0	0	0	2
<i>Tintinnopsis kofoidi</i> HADA	0	0	0	6
<i>Parafavella denticulata</i> (EHRENBERG)	2	0	0	2
<i>Peridinium</i> sp.	0	10	9	2
Sum	105	113	78	344

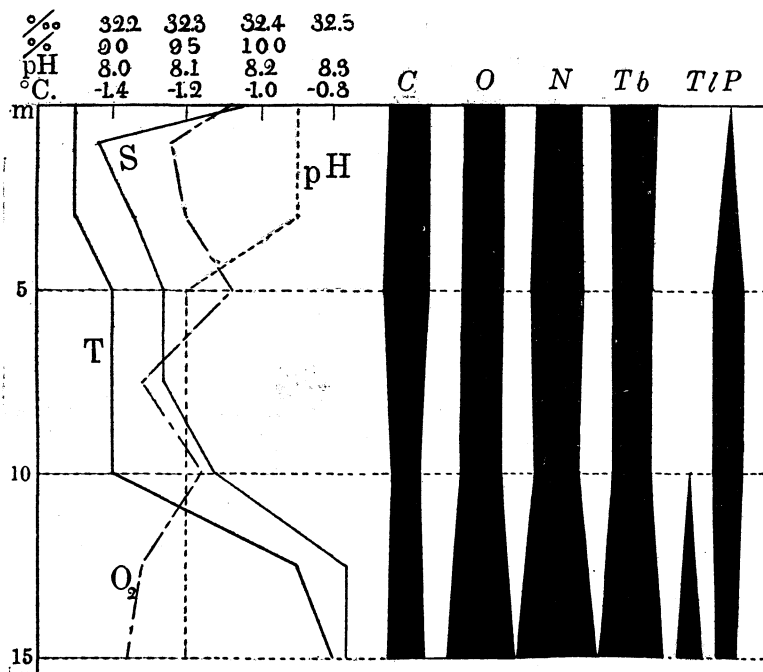


Fig. 7. Vertical distribution of the winter plankton of Lake Saroma.

C. *Calanus finmarchius*; O. *Oithona similis*;
 N. nauplius of the Copepoda; Tb. *Tintinnopsis brevicollis*;
 Tl. *Tintinnopsis lohmanni*; P. *Peridinium* sp.

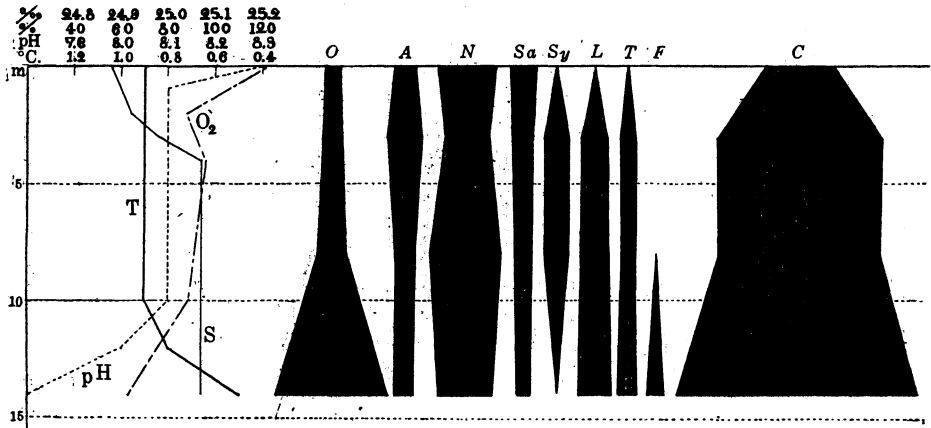
4. Lake Notoro

Plankton collection in the lake was made at Stats. II and III. The winter plankton of the lake was richer than that of Lake Saroma. It is probably due to the fact that the lake has no connection with the sea during the winter. The Copepoda, *Oithona similis*, was rather abundant in the bottom layer at both stations, especially at Stat. II, but *Acartia clausi* showed a constant vertical distribution, and their nauplius larvae were very numerous every layer throughout. *Sagitta tumida* was sometimes found from upper strata, and Actinotrocha larvae which are common in summer plankton of the sea, were rarely detected from the layer of a depth of 8 m at Stat. II. It is interesting that these animals occurred in the closed brackish water basin in winter. From median strata of Stat. II was taken a marine Rotatoria belonging to the genus *Synchaeta*. Seven species of Tintinninea, *Leprotintinnus pellucidus*, *Tintinnopsis karajacensis* var. *tenuis*, *T. lohmanni*, *T. büschlii*, *T. kofoidi*, *Favella taraikaensis* and Para-

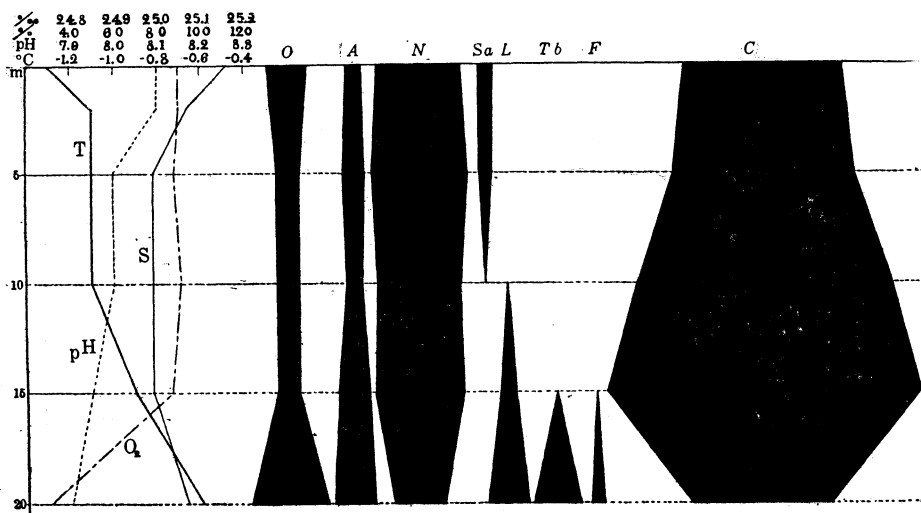
Table 11
Quantitative studies of the plankton of Lake Notord in winter

Station	II				III				
Depth m	0	3	8	14	0	5	10	15	30
<i>Oithona similis</i> CLAUS	6	7	28	1672	85	20	26	13	704
<i>Acartia clausi</i> GESCHUET	11	48	9	7	7	19	7	46	97
Nauplius of the Copepoda	228	88	844	192	835	1305	921	988	326
<i>Sagitta tumida</i> TOKIOKA	20	9	7	2	5	3	c	0	0
Actinotrocha larva	0	0	2	0	0	0	0	0	0
<i>Synchaeta</i> sp.	0	18	19	0	0	0	0	0	0
<i>Leprotintinnus pellucidus</i> (CLEVE)	0	19	29	38	0	0	0	5	98
<i>Tintinnopsis karajacensis</i> var. <i>tenuis</i> HADA	0	c	c	0	0	c	c	0	3
<i>Tintinnopsis lohmanni</i> LAACKMANN	0	0	0	0	3	0	c	0	5
<i>Tintinnopsis büschlii</i> CADAY	0	0	0	0	2	0	0	0	0
<i>Tintinnopsis kofoidi</i> HADA	0	5	3	10	0	0	0	0	134
<i>Favella taraikaensis</i> HADA	0	0	0	5	0	0	0	0	2
<i>Parafavella denticulata</i> (EHRENBERG)	0	0	0	0	0	0	0	0	2
<i>Ceratium fusus</i> (EHRENBERG)	345	5298	8774	15456	5876	9024	24500	45504	3609
Sum	610	5492	9715	17382	6813	10371	25444	46557	4980

favella denticulata, were examined. Most of then were frequently in deeper parts than near the surface.



(Fig. 8 a. At Stat. II)



(Fig. 8b. At Stat. III)

Fig. 8. Vertical distribution of the winter plankton of Lake Notoro.

- O.* *Oithona similis*; *A.* *Acartia clausi*;
N. nauplius of the Copepoda; *Sa.* *Sagitta similis*;
Sn. *Synchaeta* sp.; *L.* *Leptotintinnus pellucidus*;
T. *Tintinnopsis kofoidi*; *F.* *Favella tarakaensis*;
C. *Ceratium fusus*.

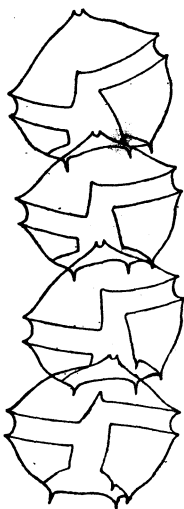


Fig. 9.
Goniaulax catenata
 (LEVANDER) $\times 750$

The Dinoflagellata were the most characteristic group in the winter plankton of the lake: two forms have been studied from the present material. At Stat. II *Goniaulax catenata*, 28–29 μ wide and 25–26 μ high, forming chains was exceedingly abundant in the upper layer and gave brown colour there, but gradually decreased towards the bottom. The species was very rare in plankton from surface water of Stat. III, and such coloured water as Stat. II was not found at Stat. I. It seems that in winter this minute organism is only prolific under the ice-cover in a limited area of the lake. The other flagellate, *Ceratium fusus*, common in brackish water was also very rich at Stats. II and III. At Stat. II it increased from the surface to the bottom contrary to the former, but at Stat. III it was most numerous in 15 m layer, and then abruptly decreased to the bottom. Hence, these dinoflagellates obviously show irregularity of the horizontal

distribution. In this lake diatoms were rather frequently found in comparison with the other lakes reported in this paper.

5. Lake Abasiri

The body of water of the lake is divided by a metalimnion into a upper fresh water layer and a lower brackish water one. Therefore, the plankton consists of fresh and brackish water elements. In the writer's investigation plankton organisms were taken only from the fresh water layer, while no animal could be collected from the anaerobic stratum containing hydrogen sulphide, although zooplankton composed principally of Ciliata is usually secured from such anaerobic water as in the next lake, Mokoto and in Lake Harutori (HADA, 1938).

Such Rotatoria as *Keratella cochlearis*, *Kellicotia longispina*, *Synchaeta pectinata*, *S. oblonga* and *Polyarthra trigla*, from the most predominant group in the winter plankton of the lake. Among these species the first two were rarely found in the material taken from the 10 m layer, but the others frequently

Table 12
Quantitative study of the plankton of Lake Abasiri in winter
(number per 10 liters of water at Stat. II)

Depth m	9	5	10	15
<i>Sinocalanus tenellus</i> (KIKUTI)	0	5	11	0
<i>Limnocalanus genivis</i> KOKUBO	0	0	2	0
<i>Keratella cochlearis</i> (GOSSE)	0	0	9	0
<i>Kellicotia longispina</i> (KELLICOT)	0	0	3	0
<i>Synchaeta</i> spp.	632	170	264	0
<i>Polyarthra trigla</i> (EHRENBERG)	392	48	96	0
<i>Tintinnopsis cratera</i> (LEIDY)	5	17	5	0
Sum	1029	240	390	0

occurred in all strata above that. The two forms of Copepoda, *Sinocalanus tenellus* and *Limnocalanus genivis*, were sometimes found in more or less deep strata. A single fresh water tintinnoid, *Tintinnopsis cratera*, was distributed scarcely in all the fresh water layer. As summer or autumnal plankton, several other forms were reported from the lake as follows; *Eudiaptomus pachypoditus* (KIKUTI, 1936), *Diaphanosoma brachyurum*, *Ceriodaphnia pulchella* and *Bosmina longirostris* (UÉNO, 1933).

The phytoplankton in winter was very poor: only one diatom and a blue-

green alga were secured, but in other seasons the phytoplankton is very abundant, and "water-bloom" was formed by *Aphanizomenon flos-aquae* (TAKAYASU & TOBISIMA, 1930).

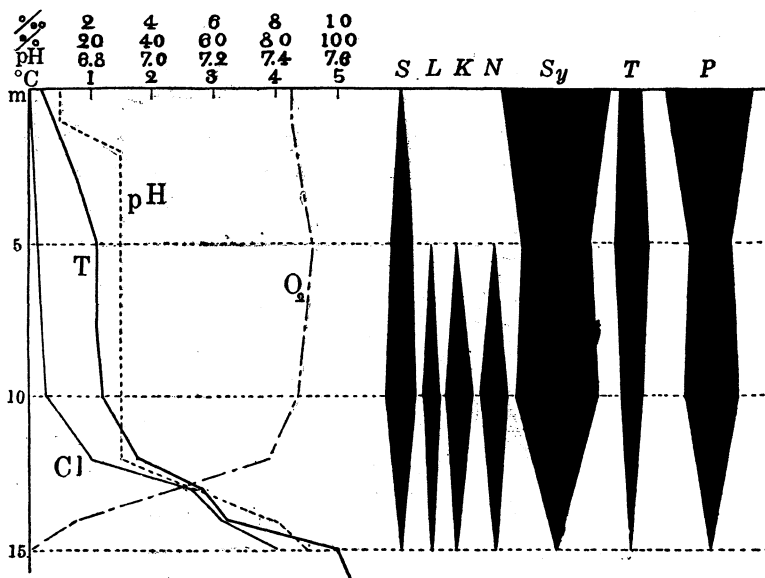


Fig. 10. Vertical distribution of the winter plankton of Lake Abasiri.

S. *Sinocalanus tenellus*; L. *Linnocaea genus*;
 K. *Keratella cochlearis*; N. *Notholca longispina*;
 Sy. *Synchaeta* spp.; P. *Polyarthra trigla*;
 T. *Tininnopsis cratera*.

6. Lake Mokoto

The plankton of Lake Mokoto has been characteristic because of violent multiplication of greenish *Noctiluca* as numerous as 450,000 per 10 liters of lake water in median strata in summer (UENO, 1937, 1938). According to the writer's winter collection, *Noctiluca* could be barely found in fresh water on the surface, but it abruptly increased at a depth of 1 m and was most abundant at a depth of 3 m, then it again gradually decreased to the bottom. The vertical distribution of *Noctiluca scintillans* exactly agrees with the chemical stratification of this lake: only a small number of *Noctiluca* were secured from the quite fresh surface water, and the protozoon gradually decreased towards the bottom water containing hydrogen sulphide from the 3 m layer where it was most abundant. The green coloration of *Noctiluca* is due to the occurrence of many

Table 13
Quantitative study of the plankton of Lake Mokoto in winter
(number per 10 liters of water)

Depth m	0	1	2	3	4	5
<i>Oithona similis</i> CLAUS	0	107	1952	1328	1152	202
<i>Sinocalanus tenellus</i> (KIKUTI)	0	0	1	1	6	0
Naulius of the Copepoda	0	11	12	9	4	0
Polychaeta larva	0	10	44	15	21	0
<i>Synchaeta vorax</i> ROUSSELET	0	61	28	0	0	0
<i>Noctiluca scintillans</i> (MACARTNEY)	2	1072	796	18400	5088	1938
<i>Ceratium fusus</i> (EHRENBERG)	536	64	24	0	0	0
Sum	538	1325	2857	19753	6271	2140

minute green flagellates belonging to *Chlamydomonas* in this body fluid. The green algae swim actively and multiply there, and sometimes escape from the *Noctiluca* body through an oral part into open water. *Noctiluca* can easily catch and digest them with its plasma. In this lake, therefore, *Noctiluca* very actively reproduces on account of such a rich food supply in addition to the favorable environmental condition.

In the winter plankton of this lake were found the following zooplankters; *Sinocalanus tenellus*, *Oithona similis*, *Polychaeta* larvae, *Brachionus angularis*, *Synchaeta vorax*, *Prorodon teres*, *Tintinnopsis undella*, *T. kofoidi*, *Helicostomella fusiformis*, *Favella taraikaensis*, *Euplotes elegans*, *Ceratium fusus*, *Peridinium* sp. and *Dinophysis* sp. In the summer plankton *Keratella cruciformis* var. *eichwaldi* and *T. kofoidi* var. *limnetica* have been also detected. In the winter plankton the Copepoda, Polychaeta larvae and the Tintinninea were maximum in number at a depth of 2 m, the Rotatoria at a depth of 1 m and the Ciliata exclusive of the Tintinninea in anaerobic water. The richness of *C. fusus* in the surface layer is probably to the fact that this dinoflagellate aggregates below an ice-cover as *Goniaulax catenata* in Lake Notoro. Diatoms were also more or less rich in the winter plankton of the lake.

As the fresh water layer was wholly occupi-

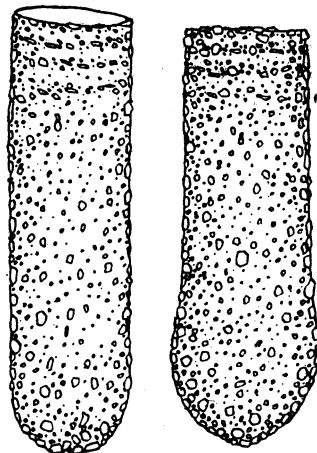


Fig. 11.
Tintinnopsis undella. MEUNIER
× 700

ed by ice, no number of fresh water plankton was found from Lake Mokoto. From deep water containing hydrogen sulphide were taken a copepod, *O. similis*, and four Ciliata, *P. teres*, *T. kofoidi*, *H. fusiformis* and *E. elegans*. Therefore, this anaerobic layer seems to have no marked influence upon some plankters, being not at all thick, and containing a small amount of hydrogen sulphide.

7. Lake Tohutu

The winter plankton of the lake is the most meagre among the brackish water lakes reported in the present paper. As zooplankton from the main brackish water basin were found only two specimens of Ostracoda in 10 liters of water taken from the bottom of Stat. II and seven individuals of Rotatoria in the same amount of surface water at Stat. III. From Stat. IV in the auxiliary fresh water basin 24 specimens of *Synchaeta* and 16 individuals of *Rotaria* were obtained from each 10 liters of surface and bottom water respectively. It is obvious that organisms of this basin mainly consist of fresh water elements: some Testacea and Heliozoa were collected from the bottom besides the fresh water plankton.

The poorness of plankton in the lake is chiefly owing to its shallowness and the marked variation of chemical condition according to times and places.

GENERAL REMARKS

1. Observation

Invasion of sea water in winter: Among the seven lakes here reported, Lakes Abasiri and Mokoto are connected with the sea by rivers and Lake Saroma by an artificial passage. These lakes usually discharge lake water into the Okhotsk Sea even in winter, but the other lakes have no connection with the sea, being interrupted by sand drifts which close their outlets during the winter. Among the lakes having connection with the sea in winter, Lake Saroma is always invaded by a great amount of sea water, but Lakes Abasiri and Mokoto very rarely only at heavy storms and sometimes at high tides respectively. When the writer's study was made, Lake Tohutu had an outlet. The lake seems to be usually invaded by a small amount of sea water.

Surface water temperature: Surface water temperatures of brackish waters usually register lower than 0°C, but never go down below the freezing points at each salinity as shown in table 14. It is possible, therefore, roughly to guess the salinity from the surface temperature in winter.

Table 14
Surface water temperature in brackish water lakes in winter

Lake	Saroma	Notoro			Komuke	Sibunotunai	Tohutu		
Station		III	II	I			I	II	III
Salinity of surface water ‰	32.38	25.16	24.88	24.18	22.47	7.05	3.66	1.84	1.96
Surface water temperature °C	-1.50	-1.30	-0.90	-0.80	-1.00	-0.40	0.10	0.40	0.80
Freezing point of surface water °C	-1.76	-1.34	-1.30	-1.21	-1.21	-0.38	-0.20	-0.10	-0.11

Stratification: In brackish water lakes thermal phenomena so strongly depend upon chemical conditions, especially mainly upon salinity of the sea water stagnated in lakes, that the circulation caused by water temperature is scarcely observable. The chemical stratification is changed by invasion of sea water. In Lake Saroma which always exchanges lake and sea water, therefore, no marked stagnation occurs throughout the year in spite of its great depth, but in Lake Notoro which is also deep the stagnation appears to be due to the slight invasion of sea water. In cases where small amounts of sea water flow into lakes, the deep brackish water lakes as Abasiri and Mokoto exhibit a stable stagnation all the year round, and oxygen in the bottom strata is completely removed to form a body of anaerobic water where hydrogen sulphide is produced by the action of sulphur bacteria. In shallow lakes an obvious stratification is also formed under ice as observed in Lake Sibunotunai, if sea water does not enter into the lakes during the winter. When the ice-cover disappears, this stratification will be destroyed even by a breath of wind.

Applying to these brackish water lakes the classification of fresh water lakes based upon thermal conditions as YOSIMURA (1938) attempted, Lake Abasiri and Mokoto are included in the first order of temperature Lakes Saroma and Notoro in the second, and Lakes Komuke, Sibunotunai and Tohutu in the third.

Salinity: According to the classification of brackish waters regarding salinity, Lakes Saroma, Notoro and Komuke belonging to the polyhaline type of salinities over 19 ‰, and Lake Mokoto to the moderate type of this group. Lake Tohutu is of the mesohaline lakes ranging from 2 ‰ to 20 ‰ in salinity, and Lake Abasiri generally exhibits the character of the oligohaline lakes having low salinities of 1-2 ‰. Lake Sibunotunai should probably be comprised in the polyhaline type in consequence of the high salinity while it is connected with the sea.

In the writer's observation of Lake Saroma and Notoro, the salinities of surface water were more or less higher than those of the layer just below the ice-cover. The fact seems to be due to the increase of salt contents in the surface water from the formation of an ice-cover.

2. Plankton

Sea and brackish water plankton was collected from these lakes except Lake Abasiri. Winter plankton of large polyhaline lake is wholly composed of marine inhabitants, but some brackish water elements are added to those in small lakes of the same type. The winter plankton of these deep lakes principally consists of three groups of zooplankton: Copepoda, Tintinnoinea and Dinoflagellata, excepting Lake Abasiri in which the Rotatoria is predominant. Being composed of a single group of the Copepoda, plankton of shallow lakes in winter is usually simple and poor as in Lakes Komuke and Sibunotunai.

It is clear that winter plankton of brackish waters is qualitatively and quantitatively inferior to that of the summer. In Lake Mokoto the difference between them is very considerable; for example, *Oithona similis* and its larvae were counted by UENO (1938) as many as 14,200 per 10 liters of water and *Noctiluca scintillans* 449,400 in the summer plankton of 1936, but in the writer's collection in the winter of 1938 the number of the former per 10 liters of water is 1,964 and that of the latter 18,490.

Influence of chemical conditions upon plankton: In winter, plankton is more or less rich in brackish water having such a body of stagnant water as Lakes Notoro and Mokoto have. The fact is probably due to the accumulation of nutriments in lake water. In brackish waters salinity has the most remarkable effect upon plankton, and then oxygen and hydrogen sulphide are effective. As hydrogen sulphide always exists in a deep anaerobic layer, lack of oxygen is usually concomitant with production of hydrogen sulphide which adversely affects plankton: the evident example was shown in the vertical distribution of the plankton of Lake Abasiri. When the amount of hydrogen sulphide in anaerobic water is small or the layer containing it is thin, some organisms live there without any injury as well as in aerobic water, for example, in Lake Mokoto. In brackish waters some Ciliata are adapted to an anaerobic life by means of symbiosis with thiobacteria (KAHL, 1927; LIEBMANN, 1938). Such Ciliata can reproduce also in water containing a large amount of hydrogen sulphide as found in Lake Harutori (HADA, 1938).

Copepoda: The Copepoda are usually commonest in the winter plankton of the brackish water lakes in Kitami Province, being found in each lake surveyed

by the writer except Lake Tohutu. Six species in all have been examined. Of them three are marine forms, two brackish inhabitants and one a fresh water dweller. The brackish water form, *Sinocalanus tenellus*, frequently occurred in brackish water ranging from 0.5 ‰ to 30.4 ‰ in salinity, and the marine species, *Oithona similis*, in saline water between salinities of 24.9-32.5 ‰. In winter plankton of brackish waters nauplii of the Copepoda were generally more numerous than their adults as in Lakes Saroma, Notoro and Sibunotunai, but very rare in Lake Mokoto, and were not secured in Lakes Komuke and Abasiri. They seem to be more effected than their adults by the presence of hydrogen sulphide. It is also known from the present study that the Copepoda are usually abundant in deep strata during winter in large and deep lakes, such as Saroma and Notoro.

Rotatoria: The Rotatoria are not generally important constituents in winter plankton of brackish waters. Five fresh and a single brackish water species have been secured in this study. Brackish water forms belonging to *Synchaeta* were usually found from the median strata of the polyhaline lakes as Lakes Notoro and Mokoto.

Ciliata: The Ciliata found in this collection mainly belong to the Tintinninea excepting *Prorodon teres* and *Euplotes elegans* from Lake Mokoto. Among eleven forms of Tintinninea, *Tintinnopsis cratera* is a fresh water dweller and *T. kofoidi* var. *limnetica* a brackish water inhabitant. These were not found from any shallow lake and more frequently occurred in the bottom strata than in the upper layers of the large and deep lakes of Saroma and Notoro.

From the anaerobic layer of Lake Mokoto containing hydrogen sulphide, the following four species of Ciliata were detected; *P. teres*, *T. kofoidi*, *Helicostomella fusiformis* and *E. elegans*. However, they are by no means true anaerobic organisms.

Flagellata: Six species of Dinoflagellata have been studied in brackish waters. All of them are common in sea waters. It is noteworthy that some marine dinoflagellates as *Goniaulax catenata* in Lake Notoro and *Ceratium fusus* in Lake Mokoto, vigorously multiply under the ice-cover. For these flagellates low temperature and weak penetration of light seem to be very favorable. It is interesting that special propagation and coloration of *Noctiluca* in Lake Mokoto are due to the presence of a commensal, *Chlamydomonas*, in its body fluid.

Production of winter plankton: The production of winter plankton is the most excellent in Lake Notoro, next in Lake Mokoto, then in Lakes Abasiri, Saroma, Komuke and Sibunotunai. Lake Tohutu shows the most inferior among them. Judging from the plankton productivity, Lakes Notoro, Abasiri

and Mokoto having all stable chemical stratification throughout the year, distinctly belong to the eutrophic type of brackish waters, but Lake Saroma exhibiting no obvious stratification in winter, is of mesotrophic type. In shallow lakes seasonal variation in plankton productivity is usually so marked, that it is difficult to determine the type of brackish waters only from studies of winter plankton.

3. Fishery in winter

Among the seven lakes recorded in the present paper, fishing in winter is carried out in the following three lakes; from Lake Notoro flatfishes are taken during the winter with a net fixed on the bottom, in Lake Abasiri *Hypomesus olidus* is collected by means of a drag-net under ice, and from Lake Mokoto *Corbicula sadoensis* is obtained with a sieve at the small ice-free area near the outlet.

It is an important and interesting fact that these lakes are all eutrophic in type of brackish waters as just above mentioned.

SUMMARY

1. Hydrographical observations and plankton collections were made at the beginning of March, 1938 in the seven brackish water lakes on the coast of the Okhotsk Sea in Kitami Province, Hokkaido.

2. There is no direct connection with the sea in Lake Notoro, Komuke and Sibunotunai during the winter. At present, Lake Saroma is usually invaded by sea water, Lake Mokoto occasionally at high tides and Lake Abasiri seldom at times of heavy storms.

3. The surface of these lake was entirely covered with a thick ice-cover, when observations were made. The temperatures of surface water generally approached the freezing points at each salinity.

4. Lakes Saroma, Notoro, Komuke and Mokoto are of the polyhaline type of brackish water lakes, Lake Tohutu is mesohaline and Lake Abasiri oligohaline.

5. In winter marked stratification is observed in the deep lakes excepting Lake Saroma. Among the shallow lakes it is also present under the ice-cover in Lake Sibunotunai.

6. Lakes Abasiri and Mokoto exhibit permanent stagnation in the deep layer where dissolved oxygen disappears and hydrogen sulphide occurs. The position of the metalimnion of these lakes is almost unchangeable throughout the year, and the seasonal variation of bottom temperature is very small.

7. Members of plankton of the polyhaline lakes are wholly marine dwellers, but in oligohaline waters fresh water organisms are as superior as brackish water inhabitants in the mesohaline lakes.

8. The winter plankton of these lakes mainly consists of the three groups: Copepoda, Tintinnoinea and Dinoflagellata.

9. The marked influence of chemical conditions upon the vertical distribution of plankton was observed in the plankton of Lake Abasiri: not any zooplankton was secured from the anaerobic layer below the metalimnion, but in Lake Mokoto several forms of zooplankton were collected from such oxygen-lacking water containing hydrogen sulphide.

10. Six species of Copepoda have been examined in this study. Among them *Pseudodiaptomus japonicus* is reported from Hokkaido for the first time. It is also known that *Sinocalanus tenellus* occurs in brackish water of wide range of salinity (0-30.3 ‰), and in winter *Oithona similis* tends to increase in number towards the bottom in the deep polyhaline lakes.

11. Eleven forms of Tintinnoinea have been found in collections of winter plankton taken from the deep lakes. Most of them were usually obtained from deeper strata.

12. Six marine species of Dinoflagellata have been detected in this investigation. *Goniaulax catenata* forming chains was exceedingly rich in the surface layer of Lake Notoro just below the ice-cover. *Noctiluca scintillans*, very abundant in Lake Mokoto is greenish due to a minute flagellate commensal, *Chlamydomonas*, swimming in the body fluid of *Noctiluca*.

13. According to winter plankton productivity, these brackish water lakes can be ordered as follows; Notoro > Mokoto > Abasiri > Saroma > Komuke > Sibunotunai > Tohutu.

14. Fishing in winter is carried on only in the three eutrophic brackish water lakes.

LITERATURE

- HADA, Y. 1937. The Fauna of Akkeshi Bay. IV. The pelagic Ciliata.—Journ. Fac. Sci., Hokkaido Imp. Univ., Ser. VI, Zool., Vol. 5.
- 1938. Characteristics of Lake Harutori. Living organisms of Lake Harutori (in Japanese).—Kagaku, Vol. 8.
- 1939a. On the Plankton of Lake Mokoto, especially on *Noctiluca* (in Japanese).—Shokubutu oyobi Dobutu, Vol. 7.
- 1939b. Fresh Water Tintinnoinea in Japan.—Trans. Sapporo Nat. Hist. Soc., Vol. 16.
- 1939c. Some Rotatoria from Sea and Brackish Water (in Japanese with English résumé).—Zool. Mag., Vol. 51.
- HORASAWA, I. 1934. Notes on *Diaptomus Okadai* sp. nov.—Annot. Zool. Jap., Vol. 14.

- INUKAI, T. & S. NISHIO, 1937. A Limnological Study of Akkeshi Lake with Special Reference to the Propagation of the Oyster.—Journ. Fac. Agric., Hokkaido Imp. Univ., Vol. 40.
- KAHL, A. 1928. Die Infusorien (Ciliata) der Oldesloer Salzwasserstellen.—Arch. Hydrob., Bd. 19.
- 1933. Ciliata libera et ectocommensalia.—Tierw. Nord- n. Osts., Lief. 23, T. II.
- KIKUCHI, K. 1923. Freshwater Calanoids of Middle and Southwestern Japan.—Mem. Coll. Sci., Kyoto Imp. Univ., Ser. B, Vol. 4.
- 1936. Fresh-water and Brackish-water Calanoid Copepods of Japan with Notes on their Geographical Distribution.—Bull. Biogeog. Soc. Japan, Vol. 6, No. 29.
- KINOSITA, T. & Y. NAKASIMA, 1936. On the Relation of the Occurrence of *Noctiluca* and Water Temperature and Specific Gravity in Lake Saroma, Hokkaido (in Japanese).—Yoshokukaisi, Vol. 6.
- 1938. Hydrographic Studies on Saroma-Lake, Hokkaido (in Japanese with English résumé).—Jap. Journ. Limn., Vol. 8.
- KINOSITA, T. & S. SIBUYA, 1939. Breeding Season of *Corbicula* in Lake Mokoto (in Japanese).—Hokkaido Suisan Sikenzyo Zigyo Zyunpo, No. 417.
- LEBOUR, M. V. 1925. The Dinoflagellates of Northern Seas.—Mar. Biol. Ass. Unit. King.
- LIEBMANN, H. 1938. Biologie und Chemismus der Bleilochsperre.—Arch. Hydrob., Bd. 33.
- MORI, T. 1937. The Pelagic Copepoda from the Neighbouring Waters of Japan.
- OKADA, Y. & K. Koba, 1936. Limnological Observations in Hokkaido (in Japanese).—Shokubutu oyobi Dobutu, Vol. 4.
- TAKAYASU, T. 1937. On the Lakes of Hokkaido (in Japanese).—Hokkaido Kagaku Kyokai, Vol. 12.
- TAKAYASU, S., H. IGARASI & K. SAWA, 1930a. Survey of Lake Tohutu (in Japanese).—Suisan Chosa Hokoku, Hokkaido Fish. Exp. Stat., Vol. 21.
- 1930b. Survey of Lake Komuke (in Japanese).—ditto Vol. 22.
- TAKAYASU, S., H. IGARASI & K. KONDO, 1934. Survey of Lake Saroma (in Japanese).—ditto Vol. 34.
- TAKAYASU, S. & K. KONDO, 1934. Limnological Researches. III. Lake Notoro (in Japanese).—ditto Vol. 36.
- TAKAYASU, S. & K. TOBISIMA, 1930. Survey of Lake Abasiri (in Japanese).—ditto Vol. 22.
- TOKIOKA, T. 1939. A New Brackish-water Chatognath—Arnot. Zool. Japan., Vol. 18.
- UENO, M. 1933. The Freshwater Brachiopoda of Japan. II. Cladocera of Hokkaido.—Mem. Boll. Sci. Kyoto Imp. Univ., Ser. B, Vol. 8.
- 1937a. Limnological Reconnaissance of Mokoto-numa, Hokkaido (in Japanese).—Shokubutu oyobi Dobutu, Vol. 5.
- 1937b. Bottom Fauna of Lake Abasiri, Hokkaido (in Japanese).—ditto.
- 1938a. Bottom Fauna of Lake Abasiri and the Neighbouring Waters in Hokkaido.—Trans. Sapporo Nat. Hist. Soc., Vol. 15.
- 1938b. Stratification of *Noctiluca* in a Brackish Water Lake of Hokkaido, Japan.—Proc. Imp. Acad. Tokyo, Vol. 14.
- YOSHIMURA, S. 1938. Dissolved Oxygen of the Lake Waters of Japan.—Sci. Reps. Tokyo Bunrika Daigaku, Ser. C, No. 8.

(KIKUCHI=KIKUTI and YOSHIMURA=YOSIMURA; SAWA renamed as KONDO.)

Beitraege zur Systematik der Tribus Tylocomnini Japans (Hym. Ichn. Tryphoninae)

Von

Toichi UCHIDA

(内田 登一)

Die vorliegende Tribus Tylocomnini wurde zuerst von ASHMEAD¹⁾ im Jahre 1900 aufgestellt. Sie bildet zwar ein Mittelglied zwischen der Metopiini und der Exochini, man kann sie aber von den ersteren durch den Bau des Gesichts und von der letzteren mit Ausnahme des *Drepanoctonus*²⁾ durch die Form der Areola im Vorderflügel sowie auch die Bildung des 1. Abdominal-segments leicht unterscheiden.

Früher behandelte ich diese Tribus als eine von der Unterfamilie Metopiinae, die von HEINRICH aufgestellt worden war; wie ich schon erwähnte, ist sie aber zu der Unterfamilie Tryphoninae zu stellen. Unter der Subfamilie Tryphoninae ist Tylocomnini eine kleine Tribus, und meines Wissens wird sie innerhalb der ganzen Welt vertreten durch die nachstehenden 6 Gattungen: *Acerataspis* UCHIDA, *Pseudometopius* DAVIS, *Tylocomnus* HOLMGREN, *Catocentrus* WALSH, *Thibetoides* DAVIS und *Lethades* DAVIS. Darunter kommt nur eine Gattung *Tylocomnus* in der eigentlichen paläarktischen Fauna (Europa und Sibirien) vor, *Acerataspis* verbreitet sich von der mandschurischen Subregion (Südteil von Japan) bis zur orientalischen Region (Formosa), und die übrigen 4 Gattungen sind in dem nearktischen Gebiet (Nordamerika) aufgefunden worden.

Ausser den oben angegebenen Gattungen gibt es noch 2 neue in der mandschurischen Subregion (Zentral- und Süd-japan), der Tylocomnini angehörend. Eine „*Tylocomnoides*“ schliesst sich eng an die nearktische Gattung *Pseudometopius* an, und auch die andere „*Odontotylocomnus*“ steht den vorhergehenden beiden nahe, jedoch die charakteristischen Kennzeichen sind sehr deutlich.

1): Proc. U. S. Nat. Mus., XXII, p. 81 (1900).

2): Eine aus Europa bekannt gewordene Gattung *Drepanoctonus* PFANKUCH (Deutsch. Ent. Zeitschr., p. 688, 1911) gehört zur Exochini nach SCHMIEDEKNECHT. Die Bildung des 1. Abdominal-segments ist jedoch fast gleich wie die der Tylocomnini sowie auch der Metopiini.

Bestimmungstabelle der in Japan vorkommenden Gattungen.

- I Kopf hinter den Augen geradlinig verengt. Gesicht schwach gewölbt, länger als breit, die Oberkante des Gesichts in der Mitte zwischen den Fühlern kielartig verlängert; Clypeus vom Gesicht nicht abgetrennt, beiderseits ohne Seitengrube, am Vorderrand breit abgerundet; Labrum ganz versteckt. Fühler fadenförmig, nicht dick, etwas länger als der Körper. Augen innen nur wenig ausgerandet. Schildchen deutlich quer, seitwärts gerandet, am Ende beiderseits stark vorstehend wie beim *Metopius*; Basalgrube des Schildchens tief, vor dieser Basalgrube mit schmaler und tiefer Querspalte. Zwischen der Mesopleura und dem Mesosternum breit und tief gefurcht. Beine nicht besonders verdickt; alle Trochanter mit nur einem Glied; Klauen gekämmt. Hinterleib keulenförmig, das letzte Segment gross, am Ende zugerundet, der 2. und 3. Tergit an der Basis beiderseits mit kurzer Grube *Acerataspis* UCHIDA
- Kopf hinter den Augen rundlich verengt; Scheitel ziemlich aufgetrieben. Gesicht nicht aufgetrieben, breiter als lang; Clypeus mit deutlichen Seitenrübchen; Labrum vorragend. Fühler mässig dick, kürzer als der Körper. Augen innen tief ausgerandet. Schildchen flach, ganz gerandet, am Ende ohne Hinterecke, die Querspalte vor der Basalgrube des Schildchens fehlend, die Basalgrube schmal. Zwischengrube zwischen der Mesopleura und dem Mesosternum kurz, nur vorn angedeutet. Beine dick, besonders die 4 vorderen; Trochanter zweigliedrig. Hinterleib mit parallelen Seiten, an der Basis aber ein wenig verschmälert, der letzte Tergit von normaler Form 2
- 2 Gesicht quer, flach, die Oberkante des Gesichts in der Mitte höckerartig aufgetrieben und zwischen den Fühlern vorstehend. Fühler dick, etwas kürzer als der Körper. Area superomedia angedeutet, Costula kräftig. Die 3 Basaltergiten mit 2 parallelen Kielen. Hinterleib mit 8 klar sichtbaren Tergiten, am Ende nicht besonders behaart *Tylocommoides* gen. nov.
- Gesicht quer, oben unterhalb der Fühler mit 2 grossen dreieckigen Fortsätzen. Fühler mehr dick und etwas länger als die halbe Länge des Körpers. Propodeum in der Mitte mit 2 Längskielen, Area nicht angedeutet, Costula fehlt ganz. Hinterleib mit 6 Tergiten, vom 4. an dicht gold behaart, nur der 1. mit 2 parallelen Kielen, die an der Beugungsstelle deutlich ansteigen *Odontotylocommus* gen. nov.

Gattung *Acerataspis* UCHIDA*Cerataspis* UCHIDA (non GRAY, 1844), Trans. Sapporo Nat. Hist. Soc., XIII, p. 275 (1934).*Acerataspis* UCHIDA, Ins. Mats., IX, p. 23 (1934).

Diese Gattung nimmt die Mitte ein zwischen der *Metopiini* und der *Tylocomnini*. Mit der ersteren stimmt sie vornehmlich in der Bildung des Schildchens und in der Form der Antennen überein, mit der letzteren durch den Bau des Gesichts, die mit 2 Sporen versehenen Schienen und auch die Gestalt der 3 Basaltergiten. Wegen der Form des Gesichts und der 3 Basaltergiten stelle ich sie zu der letztgenannten Tribus Tylocomnini. Innerhalb unseres zoogeographischen Gebietes ist die Gattung durch die folgenden 2 Arten vertreten; von diesen kommt eine *A. clavata* in der mandschurischen Subregion vor und die andere *A. formosana* in der orientalischen Fauna.

Bestimmungstabelle der Arten.

Körper fast schwarz. Gelb sind: Gesicht oben zwei Drittel, Schaft unten, Vorderbeine vorn, der 4. Tergit mit Ausnahme der Basis, der 5. nur am Endrand und die Bauchseite des Hinterleibs. Fühler unten rötlichbraun. Area superomedia klein, die Hinterleiste nach hinten gebogen, Costula weit hinter der Mitte. Der 2. und 3. Tergit quer. Flügel leicht dunkel getrübt *clavata* (UCHIDA)

Gesicht und Schaft grösstenteils gelb. Fühler fast schwarz. Beine, Tegulae, ein Makel unter den Flügeln, Schildchen, der 1.-4. Tergit, der 5. am Endrand und die Unterseite des Hinterleibs bräunlichgelb. Flügel gelblich. Area superomedia gross, hexagonal, Costula in der Mitte mündend *formosana* CUSHMAN

Acerataspis clavata (UCHIDA)*Cerataspis clavata* UCHIDA, Trans. Sapporo Nat. Hist. Soc., XIII, p. 277, ♀ ♂, Fig. 1-4 (1934).*Acerataspis clavata* UCHIDA, Ins. Mats., IX, p. 23 (1934).**Fundorte:** Honsyû (Hiroshima, Kyôto), Sikoku (Kôti), Kyûsyû (Hukuoka).**Japanischer Name:** *Kombo-maruhimebati*.*Acerataspis formosana* CUSHMAN*Acerataspis formosana* CUSHMAN, Arb. morph. taxon. Ent., IV, p. 291, ♀ ♂ (1937).**Fundort:** Formosa (Suisyaryo, Baibara).**J. N.:** *Taiwan-kombo-maruhimebati*.

Gattung *Tylocomnoides* gen. nov.

Körper ziemlich dicht weisslich behaart, mit grober Skulptur. Kopf quer, hinter den Augen schwach rundlich verengt; Scheitel aufgetrieben; Stirn beiderseits und Fühlergruben nur wenig eingedrückt; Gesicht deutlich quer, flach, die Oberkante in der Mitte zwischen den Fühlern höckerartig vortretend; Clypeus vom Gesicht nicht abgetrennt, mit deutlichen Seitengrübchen, am Vorderrand fast gerade; Augen neben den Fühlern breit und tief ausgerandet, die inneren Seiten nach unten verschmälert; Labrum kurz vorragend; Wangen kurz; Mandibeln mit ungleichen Endzähnen. Fühler mässig dick, an der Spitze etwas verdünnt, kürzer als die Körperlänge. Parapsidenfurchen ganz fehlend. Schildchen gross, von oben gesehen fast rund, flach, gerandet, hinten abfallend. Zwischen der Mesopleura und dem Mesosternum breit gefurcht, insbesondere vorn deutlich. Propodeum kurz, hinten schräg abfallend; Area basalis und petiolaris deutlich angedeutet, aber die Grenzenleiste der beiden schwach, Costula stark, in der Mitte der Area superomedia mündend. Luftlöcher rundlich oval. Beine dick, besonders die vorderen; Schienenendsporen länger als die Hälfte des Metatarsus; Klauen zerstreut gekämmt. Flügel mit grosser rhombischer Areola wie beim *Metopius*; Endabschnitt des Radius doppelt gebogen; Nervulus leicht hinter der Gabel; Nervus parallelus unter der Mitte der Brachialzelle entstehend; Nervellus schwach antefurcal, unter der Mitte gebrochen. Hinterleib länger als Kopf und Thorax zusammen, mit 8 deutlichen Tergiten, die durch ziemlich tiefe Einschnitte von einander getrennt sind. Das 1. Segment vor der Mitte stark bucklig gewölbt wie beim *Metopius*; 4 Basaltergiten grob runzelig punktiert, mit 2 parallelen Kielen, aber die Rückenkielen auf dem 4. undeutlich; das letzte Segment mit 2 kurzen, behaarten Fortsätzen. Bohrer ganz versteckt.

Genotypus: *Tylocomnoides egawai* UCHIDA.

Die Gattung steht der nearktischen Gattung *Pseudometopius* DAVIS³⁾ sehr nahe, vor allem unterscheidet sich aber von ihr durch das die Parapsidenfurchen ganz entbehrende Mesonotum sowie auch das gefelderte und fein runzelig punktierte Propodeum. Von der paläarktischen Gattung *Tylocommus* HOLMGREN⁴⁾ weicht sie durch die innen deutlich ausgerandeten Augen und das seitlich gerandete Schildchen ab.

Tylocomnoides egawai sp. nov.

♀: Die Behaarung des Kopfes etwas dichter als die des Thorax und des

3): Trans. Am. Ent. Soc., XXIV, p. 202 (1897).

4): Oefvers. Svensk. Vet.-Akad. Förh., XXX, p. 76 (1873).

Hinterleibs; Kopf dicht fein punktiert; Stirn runzelig; Gesicht zerstreut fein punktiert; Wangen fein längsrissig; der untere Mandibelzahn kleiner als der obere; die Basalglieder der beiden Palpen etwas verdickt. Schaft oval; Fühler mit 47 Geisselgliedern, von denen das 1. länger als breit ist. Mesonotum und Brustseite dicht punktiert; das Schildchen grob und tief punktiert, matt, aber die Seiten glänzend und grob punktiert. Das 1. Hinterleibssegment länger als breit, die übrigen quer; die 4 Basalsegmente auffallend grob und dicht runzelig punktiert, vom 5. an fein punktiert. Die Vorder- und Mittelschienen und ihre Tarsen deutlich verdickt, die hintersten nicht so dick, ihr Metatarsus etwas kürzer als die 4 übrigen Glieder zusammen. Flügel bräunlich getrübt; Stigma und Nerven schwarzbraun.

Schwarz. Gelb sind: Gesicht und Clypeus beiderseits in breiter Ausdehnung, Labrum, Mandibeln mit Ausnahme der rotbraun gefärbten Spitze, Vorderschienen vorn, Mittelschienen vorn an der Basis und die hintersten an der Basis zwei Drittel. Vorder- und Mitteltarsen bräunlich. Körperlänge: 14 mm. Fühlerlänge: 10 mm. Flügellänge: 10 mm. Hinterleiblänge: 8 mm.

Fundort: Honsyû. **Holotypus:** ♀, Hirosima, am 26. Mai, 1935, ges. von K. EGAWA. Der Holotypus befindet sich im entomologischen Institut der kaiserlichen Hokkaido Universität zu Sapporo, Japan.

J. N.: *Egawa-kombo-marulimebati*.

Gattung *Odontotylocommus* gen. nov.

Die merkwürdige Gattung unterscheidet sich von den anderen der Tylocomninen durch die Gestalt des Gesichts und das gold behaarte Hinterleibsende.

Scheitel stark aufgetrieben. Kopf hinter den Augen etwas rundlich verschmälert. Augen neben den Fühlern breit und tief ausgerandet. Gesicht quer, flach, unterhalb der Fühler mit 2 grossen, dreieckigen Fortsätzen; Clypeus vom Gesicht nicht geschieden, am Vorderrande breit und schwach abgebuchtet. Labrum vorragend; Wangen kurz. Fühler kräftig, fadenförmig, fast von Körperlänge. Thorax gedrungen; Parapsidenfurchen ganz fehlend. Schildchen gross, von oben gesehen rund, seitwärts deutlich gerandet. Propodeum kurz, in der Mitte mit starken Kielen, die sich nach vorn etwas verbreiten, am Ende beiderseits mit undeutlichen Seitenzähnen; Area oder Leiste ganz fehlend. Luftlöcher rundlich oval. Beine dick, besonders die 4 vorderen. Klauen zerstreut gekämmt. Hinterleib etwas länger als Kopf und Thorax zusammen; das 1. Segment vor der Mitte auffallend gewölbt, mit 2 starken parallelen Rückenkielen, die nach hinten undeutlich werden; die 3 Basalergiten grob, dicht und stark runzelig punktiert, die übrigen dicht und fein, aber die Punktierung

der letzteren infolge der dichten gold Behaarung unsichtbar. Flügel mit grosser, rhombischer Areola wie bei der vorhergehenden Gattung; Radius gebogen; Nervellus unter der Mitte gebrochen; Nervulus postfurcal. Bohrer ganz versteckt.

Genotypus: *Odontotylocornus pilosus* UCHIDA.

***Odontotylocornus pilosus* sp. nov.**

♀: Kopf dicht und lang behaart; Stirn und Schläfen dicht punktiert; Antennen mit 41 Geisselgliedern, an der Basis verdünnt. Fühlergruben breit und tief. Gesicht und Clypeus spärlich punktiert. Mandibeln mit 2 Zähnen, der obere Zahn grösser als der untere. Die 3 Basalglieder der Maxillarpalpen verdickt, von denen das 2. am längsten ist. Thorax durchaus dicht grob punktiert; die Punktierung des Schildchens mehr grob und stark. Propodeum dicht unregelmässig gerunzelt, aber beiderseits grob punktiert; Zwischenraum zwischen den beiden Längskielen quer gerunzelt. Der hintere Metatarsus fast so lang wie das Klauenglied, die übrigen Tarsenglieder deutlich kurz, die Schenkel und Schienen mässig dick, aber die Tarsen sehr schlank, die Schienenendsporen deutlich kurz.

Schwarz. Gesicht am Oberrand, Labrum, Mandibeln an der Basis, Vorder-schienen vorn und an der Basis, die mittleren nur an der Basis in schmäler Ausdehnung und die hintersten mit Ausnahme der Spitze rein gelb. Fühler unten und Tarsen mehr oder weniger braun. Tegulen und eine Längsleiste an der Flügelwurzel rötlichbraun. Stigma im Vorderflügel dunkelbraun; Nerven schwärzlich. Körperlänge: 13 mm. Fühlerlänge: 6 mm. Flügellänge: 9 mm. Hinterleiblänge: 7,5 mm.

Fundort: Honsyû. Holotypus: ♀, Yokohama, am 17. Juli, 1929, ges. von A. IRODA. Der Holotypus befindet sich im entomologischen Institut der kaiserlichen Hokkaido Universität zu Sapporo, Japan.

J. N.: *Kinke-kombo-maruhimebati*.

Contributions to the Flora of Northern Japan XIII

By

KINGO MIYABE and MISAO TATEWAKI

(宮部金吾・館脇操)

With 2 Text-figures and 1 Plate

216. *Spergularia leiosperma* FR. SCHM. Fl. Sachal. ed. russ. (1874), 143.

Lepigonum leiospermum KINDB. Monogr. Lepig. in Nova Acta Acad. Upsal. (1863), 23.

Spergula leiosperma FR. SCHM. Fl. Sachal. (1868), 131.

Spergularia leiosperma NYM. Consp. (1878), 122.

Spergularia canina δ . *leiosperma* HARTM. Skand. Fl. ed. II, (1879), 248.

Spergularia salina δ . *leiosperma* GUERKE in RICHTER-GUERKE, Pl. Eur. II. (1899), 196.

Spergularia salina b. *typica* a. *leiosperma* GRAEBN. in ASCHERS. u. GRAEBN. Syn. Mitteleur. Fl. V. (1919), 835.

NOM. JAP. *Kanchi-ushio-tsumekusa*.

HAB. *N. Saghalien*. Distr. Pronge-Baikal: Pronge Bay and Pohmeri (Y. KUDO & B. ISHIDA, 1923). Distr. Alexandrowsk: Wjachtu (P. v. GLEHN, 1860).

DISTRIB. The northern-most region of Saghalien and North Europe.

Remarks. The plant is restricted to the marine strand of the northern-most region of Saghalien. FR. SCHMIDT identified the specimens collected by GLEHN at Wjachtu, near the MAMIYA Strait with *Lepigonum leiospermum* KINDBERG, which he transferred to the genus *Spergula* apparently by error. In his Russian edition of Flora Sachalinensis, he corrected it by placing it in the proper genus *Spergularia*.

Our plant has a perfectly smooth seed of ovate-lenticular shape, and with a broad hemihyaline marginal wing, as shown in the ac-

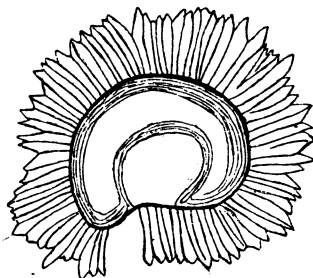


Fig. 1

Seed of *Spergularia leiosperma*
FR. SCHM. ($\times 25$)

companying figure; while the seed of *Spergularia salina* PRESL var. *asiatica* HARA is obovate-pyriform in shape, echinulate and generally apterous. When winged, the wing is narrow and incomplete in development and brownish in colour.

Although we have no European specimens of *Lepigonum leiosperma* KINDB. at hand to compare with those of ours, we here follow the view of FR. SCHMIDT in considering our plant to be identical with the European species.

217. *Viola Harae* MIYABE ET TATEWAKI, sp. nov.

Viola sachalinensis BOISS. var. *alpina* HARA, in Bot. Mag. Tokyo, L. (1936), 303.

Viola mutsuensis BECKER var. ? NAKAI, Veg. Apoi, (1930), 61.

Planta humilior 4-5 cm alta. Rhizoma horizontaliter repens crassum 2-4 mm latum. Folia radicalia cordata glaberrima crassa subtus punctulata purpurascentia ca. 2 cm longa et lata apice obtusa vel acutiuscula margine crenulato-serrulata petiolata; petioli 1-3 cm longi glaberrimi purpurascentes ventre sulcati; stipulae oblongo-lanceolatae pallide purpurascentes vel brunnescentes 7-8 mm longae 1.5-2 mm latae fimbriato-laciniatae. Folia caulina petiolata, petiolis 1-1.8 cm longis; stipulae oblongo-lanceolatae vel lanceolatae 4-6 mm longae 1.5-2 mm latae pallide purpurascentes; laminae foliorum radicalium conformes et minores. Pedunculi in axillis foliorum solitarii apice in flores incurvati. Bractee subulatae

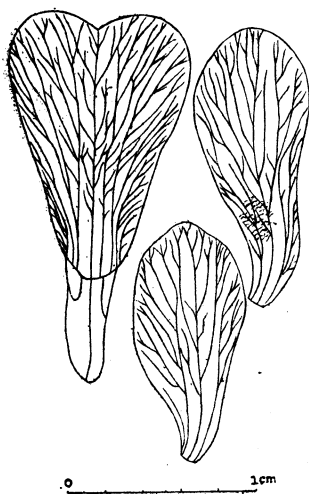


Fig. 2

Petals of *Viola Harae*
MIYABE ET TATEWAKI

vel lineari-lanceolatae 2-3 mm longae binae e flore ca. 5-10 mm distantes. Sepala purpurascentia vel viridia basi purpurascentia margine integra et membranacea; infima 2 lanceolata 6-7 mm longa 2 mm lata appendiculata, appendicibus quadratis ad 2 mm longis basi emarginatis vel leviter crenulato-dentatis; mediana 2 lineali-lanceolata ca. 6 mm longa 1.5 mm lata appendiculata, appendicibus brevibus obtusis; supremum 1 lanceolatum 5 mm longum brevissime appendiculatum. Petala colore "Mauve" basi alba 2 cm lata 1.5-1.7 cm longa; superiora 2 oblongo-obovata 1.2-1.3 cm longa 6-7 mm lata; lateralia 2 fauce albo-barbata elliptico-oblancheolata 1.5 cm longa 6 mm lata; infimum 1 obovato-cuneatum apice emarginatum 1.2-1.4 cm longum 7-9 mm latum, calcare 4-6 mm longo obtuso pallide viridi vel albo. Antherae aurantiacae. Ovarium glabrum

ca. 2 mm longum ca. 1 mm latum. Stylus tubulosus apice in stigma papillosum leviter incurvatus.

NOM. JAP. *Apoi-tachitsubo-sumire*.

HAB. *Yezo*. Prov. Hidaka: Mt. Apoi (M. TATEWAKI, V. 21, 1927; V. 29, 1927—type in Herb. Fac. Agr. Hokkaido Imp. Univ.; VII. 22, 1927); Mt. Orokunnenupuri (C. SUZAKI, VI. 1, 1914). Prov. Ishikari: Mt. Yubari (H. YANAGISAWA & A. HAMANA, VIII. 6, 1912; S. NISHIDA, VIII. 7-9, 1913; NISHIDA, fil. VIII. 9, 1931; J. OHWI, VIII. 9, 1931). Prov. Teshio: Kamiji (M. TATEWAKI, V. 18, 1933); the upper Nupukanai, Toikambetsu (M. TATEWAKI, VI. 4, 1928); the upper Nupuromapporo, Toikambetsu (M. TATEWAKI, VI. 14, 1928). Prov. Kitami: R. Kikusui, Mt. Shirikoma (M. TATEWAKI, VII. 12, 1931).

Remarks. The present species is closely related to *Viola sachalinensis* Boiss. But it differs from the latter by the smaller size of plants, the purplish under surface of the thicker leaves, the darker flowers and the emarginate apex of the lower petal. The distribution of this plant is restricted to the serpentine districts situated in the back-bone of the main island of Hokkaido.

218. *Epigaea asiatica* MAXIM. in Mém. Biol. VI. (1867), 204, et VIII. (1872), 610; FR. ET SAV. Enum. Pl. Jap. I. (1875), 283, et II. (1876), 426; Boiss. in Bull. Herb. Boiss. V. (1897), 912; C. K. SCHNEID. Handb. Laubholz. II. (1912), 535; MATSUM. Ind. Pl. Jap. II.-2. (1912), 454; KOMATSU, in MATSUM. Icon. Koishikav. I. (1912), 55, *pl.* 28; NAKAI, Tr. & Shr. Jap. ed. 1, I. (1922), 125, *fig.* 71, et rev. ed. I. (1927), *fig.* 83; YAMAMOTO & TSUKAMOTO, Fl. Hakodate, (1932), 101.

Parapyrola trichocarpa MIQ. in Ann. Mus. Bot. Lugd. Bat. III. (1867), 191, et Prol. Fl. Jap. (1867), 355, 365.

Parapyrola japonica MIQ. in Prol. Fl. Jap. (1867), 368, (errore calami).

NOM. JAP. *Iwa-nashi*.

HAB. *Yezo*. Prov. Oshima: Shiriuchi (K. MIYABE & Y. TOKUBUCHI, VII. 17, 1890); Kikonai (S. NINOUE, III. 14, 1906). Prov. Teshio: Mt. Tengu (I. YAMAMOTO, VIII. 2, 1935); Mt. Ofuyu (I. YAMAMOTO, VIII. 4, 1935); Mt. Kunbetsu (I. YAMAMOTO, VIII. 10, 1935).

Remarks. The distribution of the present species in Hokkaido has been regarded to be restricted only to the south-western part of the Province of Oshima for a long time, but unexpectedly MR. IWAHISA YAMAMOTO found the plant in 1935 in the Mts. Tengu, Ofuyu and Kunbetsu in the Province of Teshio. The discovery is of great interest from the point of distribution, as the plant is not found in the intervening provinces of Shiribeshi and Ishikari. We

have found a remarkable variability in the character of the pubescence of the style. They may be regarded as a local variation, not worthy of the recognition of the rank of either form or variety. The pubescence of the style of the specimens in our Herbarium is variable from sparsely puberulent to more or less thickly hirtellous as shown in the following table.

Specimens	Style
Mt. Tengu, Prov. Teshio (I. YAMAMOTO, 1935)	erect, smooth for its greater part, puberulent toward the base.
Shiriuchi, Prov. Oshima (K. MIYABE & Y. TOKUBUCHI, 1890)	erect, straight, densely hirsute, smooth near the apex.
Hakkoda, Prov. Mutsu (K. KINASHI, 1907)	erect, smooth only near the stigma, the rest more or less densely puberulent.
Otokichi-mura, Koshi-gun, Prov. Echigo (T. ARAI, 1896)	erect, smooth toward the tip for about a third of its whole length, the rest more or less thickly hirtellous.
Mt. Togakushi, Prov. Shinano (S. MATSUDA, 1893)	erect, slightly curved at the base, smooth from the middle upward, puberulent toward the base.

Clavis specierum et varietatum Cortusae Boreali-Japonicae.

- 1 { Folia reniformia $\frac{1}{3}$ – $\frac{1}{4}$ lobata. Calyx brevior, dentibus sinum corollae non attingentibus 2
- 1 { Folia rotundata ad $\frac{1}{2}$ lobata. Calyx longior, dentibus crebre sinum corollae attingentibus 3
- 2 { Lobi calycis anguste lanceolati 4 mm longi. Bractae angustiores oblongo-lanceolatae. Sinus corollae rotundati *Cortusa jozana*
- 2 { Lobi calycis lanceolati 3 mm longi. Bractae latiores ovatae. Sinus corollae acuti vel obtusi *Cortusa sibirica*, var. *insularis*
- 3 { Petioli sparse pilosi. Folia subtus secus venas pilosa. Corollae minores 8–10 mm longae. Lobi calycis breviores *Cortusa sachalinensis*
- 3 { Petioli dense pilosi. Folia subtus dense pilosa, pilis longis et adpressis. Corollae majores 12–14 mm longae. Lobi calycis longiores sinibus corollae crebre superantibus 4
- 4 { Lobi foliorum crebre inciso-tridentati, dentibus 3–5 denticulatis. Pedicelli inaequales elongati *Cortusa sachalinensis*, var. *yezoensis*
- 4 { Lobi foliorum crebre tridentati, dentibus 1–2 denticulatis vel apiculato-denticulatis. Inflorescentia congesta *Cortusa sachalinensis*, var. *congesta*

219. *Cortusa jozana* MIYABE ET TATEWAKI, sp. nov.

Caulis 34 cm altus praeter infra medium crispulo-pilosus folia superans. Folia basalia petiolata, petiolis dense crispulo-pilosis in sicco 9-11 cm longis, tenera orbiculato-reniformia 6-9 cm longa 8.5-9.5 cm lata basi late cordata ad $\frac{1}{3}$ - $\frac{1}{4}$ -incisa 9-11-13-lobata, lobis ovatis vel oblongo-ovatis 3-lobulatis vel duplicato-dentatis, dentibus principalibus magnis deltoideis margine paucidenticulatis apice apiculato-acutis, ceteris deltoideo-dentatis apice apiculato-acutis, supra sparse pilosiuscula infra supra nervos pilosa, margine ciliata. Bractee lineari-lanceolatae inaequales paucae laciniatae. Inflorescentia 7-flora, pedicellis puberulis et glandulosis bracteis longioribus. Calyx 7 cm longus glandulosus campanulatus ultra $\frac{1}{2}$ fissus, lobis angusti-lanceolatis 4 mm longis apice acuminatis sinum corollae non attigentibus, sinibus rotundatis. Corollae rubro-violaceae campanulatae ca. 1.3 cm longae ca. 1.5 cm latae ad $\frac{1}{3}$ lobatae, lobis ovatis 5 mm longis 3-4 mm latis, sinibus rotundatis. Stamina 7-8 mm longa, antheris lanceolatis 5-6 mm longis, filamentis membranaceis. Stylus filiformis exsertus.

NOM. JAP. *Yezo-no-sakurasomodoki*. (n. n.)

HAB. *Yezo*. Prov. Ishikari: Mt. Tengu near Jōzankei (H. OHTANI, VI. 15, 1930—type in Herb. Fac. Agr. Hokkaido Imp Univ.).

Remarks. The present species is related to *Cortusa sibirica* ANDRZ., but it differs from the latter by the broader leaves, the longer and narrower calyxlobes and the rounded sinus of the calyx in the flowering time.

220. *Cortusa sachalinensis* A. Los. in Fl. Syst. Pl. Vas. III. (1936), 248, pl. 2, fig. 8, pl. 4, fig. 8.

Cortusa Matthioli FR. SCHM. Fl. Sachal. (1868), 159; Ito, Icon. Pl. Jap. I.-5. (1913), t. 18; MIYABE & MIYAKE, Fl. Saghal. (1915), 319; KUDO, Contr. Fl. N. Saghal. (1923), 52, et Rep. Veg. N. Saghal. (1924), 202; MAKINO & NEMOTO, Fl. Jap. ed. 2, (1931), 904, p. p., (non L.).

NOM. JAP. *Karafuto-sakurasomodoki*. (n. n.).

HAB. *N. Saghalien*. Pilewo (K. MIYABE & T. MIYAGI, 1906); Y. KUDO & M. TATEWAKI, 1922).

S. Saghalien. Distr. Shikka: Sokorai (K. MIYABE & T. MIYAGI, 1906); R. Chirikoro (M. KAWASHIMA, 1935); Mt. Kawashima (S. SUGAWARA, 1935; M. TATEWAKI & Y. TAKAHASHI, 1936); Naruko (S. SUGAWARA, 1935); Ennai (M. TATEWAKI & Y. TAKAHASHI, 1936); Kumasakagoe, R. Ennai (M. TATEWAKI & Y. TAKAHASHI, 1936); Gakeyama, Asase (M. TATEWAKI & Y. TAKAHASHI, 1936); R. Perengai (M. TATEWAKI & Y. TAKAHASHI, 1936); the upper Rukutama (B. YOSHIMURA & M. HARA, 1937). Distr. Motodomari: Chikaporonai (T. MIYAKE, 1907); Ishiyama, Kashipo (N. HIRATSUKA, 1928; H.

ABUMIYA, G. TAKEE & Y. HOSHINO, 1932); Mt. Tosso (N. HIRATSUKA, S. IWADARE & M. NAGAI, 1927). Distr. Toyohara: Takinosawa (T. MIYAKE, 1906); Oomagari (T. MIYAKE, 1909); Mt. Susuya (T. MIYAKE, 1907); Hôshin-sando (S. SUGAWARA, 1925). Distr. Mauka: Oosaka (T. MIYAKE, 1906); Mauka (T. MIYAKE, 1907). Distr. Honto: S. Nayashi (T. MIYAKE, 1907). Distr. Oodomari: Mt. Oyakochi (T. MIYAKE, 1908); Minabetsu (T. MIYAKE, 1908); Mt. Omanbetsu (T. MIYAKE, 1908).

var. *congesta* MIYABE ET TATEWAKI, var. nov.

A typo differt, inflorescentibus congestis, petiolis densissime pilosis, foliis subtus dense pilosis, pilis longis et adpressis.

NOM. JAP. *Rebun-sakurasômodoki*. (n. n.).

HAB. *Yezo*. Isl. Rebun: Momoiwa (M. TATEWAKI, V. 28, 1933); Kabuka (M. TATEWAKI, VII. 12, 1920; V. 26, 1933); Uyennai (M. TATEWAKI, n. 18777, VI. 1, 1933—type in Herb. Fac. Agr. Hokkaido Imp. Univ.; VII. 20, 1933); Funadomari (S. DOMON, VI. 1933). Isl. Rishiri: Senpôji, Mt. Rishiri (M. TATEWAKI, V. 28, 1934).

var. *yezoensis* MIYABE ET TATEWAKI, var. nov.

A typo differt, floribus majoribus, sinibus corollae rotundatis vel obtusis, lobis: calycibus longioribus, petiolis dense pilosis, foliis subtus dense pilosis, pilis longis et adpressis.

NOM. JAP. *Sakurasômodoki*.

HAB. *Yezo*. Prov. Ishikari: Mt. Teine (H. YANAGISAWA, VII. 29, 1915; M. TATEWAKI, VI. 22, 1920—type in Herb. Fac. Agr. Hokkaido Imp. Univ.); Rubeshibe, Kamikawa-gun (K. MANNO, V. 22, 1940).

DISTRIB. *sp.* Saghalien; *var.* *Yezo*.

221. *Cortusa sibirica* ANDRZ. Beibl. I. in Flora, (1834), 22; BORBAS, in Oesterr. Bot. Zeitschr. (1889), 140, p. p.; FREYN, ibid. (1896), 53; A. LOS, in Fl. Syst. Pl. Vas. III. (1936), 245, *pl.* 2, *fig.* 7, *pl.* 4, *fig.* 7.

var. *insularis* MIYABE ET TATEWAKI, var. nov.

Cortusa insularis MIYABE ET TATEWAKI, mss.

A typo differt, foliis reniformibus ad 12 cm latis basi late cordatis ad $\frac{1}{3}$ incis, lobis corollae ovatis.

NOM. JAP. *Todôjima-sakurasômodoki*. (n. n.).

HAB. *S. Saghalien*. Isl. Kaibatô: Shimizutani (T. MIYAKE, VII. 23, 1906); NAKADOMARI (T. MIYAKE, VII. 23, 1906); Mt. Dainan (U. KIMOTO, G. TAKEE and H. MURAYAMA, VII. 28, 1931).

222. *Primula farinosa* L. Sp. Pl. ed. 1, (1753), 143; HERD. Pl. Radd.

Monopet. (1872), no. 77; LEDEB. Fl. Ross. III. (1847-49), 13; PAX u. KNUTH, in ENGL. Pfl.-reich. IV.-237. (1905), 82; E. BUSCH, in Fl. Sib. Or. IV. (1926), 39; KOMAR. Fl. Pen. Kamtschat. III. (1930), 22; HULT. Fl. Kamtschat. IV. (1930), 51; KOMAR. & KOLB.-ALIS. Key Pl. Far East. Reg. USSR. II. (1932), 847.

var. *xanthophylla* TRAUTV. ET MEY. Fl. Ochot. (1856), 66; E. BUSCH, l. c. 42.

Primula farinosa L. var. *luteo-farinosa* REGEL, in Acta Hort. Petrop. III. (1875), 141.

Primula farinosa L. subsp. *eufarinosa* PAX, var. *genuina* PAX, l. c. 83, p.p.

Primula farinosa L. subsp. *xanthophylla* KITAGAWA, Fl. Mansh. (1939), 352.

NOM. JAP. *Siberia-yukiwarisô*.

HAB. *N. Kuriles*. Isl. Shumushu (K. YENDO, VIII. 1903, spec. in Herb. Tokyo Sc. Mus.).

DISTRIB. *sp.* *N. Kuriles*, Kamtschatka, *N. Manchuria*, *Siberia*, *N. Persia*, *Turkestan* and *Europe*.

Remarks. The plant is new to Japan. While examining the specimens preserved in the Herbarium of Tokyo Science Museum, the junior author found the present plant among the collection of the late Dr. K. YENDO in the Island of Shumushu in 1903. The plant has been found in Kamtschatka, and it is most natural to expect the extension of its distribution area to the most north-eastern island of the Kurile Archipelago.

223. *Primula Hisauchi* MIYABE ET TATEWAKI, *sp. nov.*

Perennis. Folia radicalia 6 longe petiolata; petioli graciles 3-7 cm longi villosi; laminae late rotundatae vel rotundato-reniformes 2-4 cm longae 2-4.5 cm latae basi profunde cordatae 7-9-lobatae, lobis grosse tridentatis, dentibus apice apiculatis saepe 3-1-denticulatis ciliatis, membranaceae primo villosae demum subglabrescentes supra ad nervos sparse pilosae subtus ad nervos villosae. Scapus 6.5 cm altus tenuiter villosus triflorus. Bractae lineari-subulatae 4-6 mm longae 1 mm latae parce ciliolatae. Pedicelli ca. 1.3 cm longi parce villosi, pilis glandulosis immixtis. Calyces post anthesin campanulati 6-8 mm longi glabri ultra medium 5-fidi; tubi 2-3 mm longi; lobi lanceolati 4-5 mm longi ca. 1.5 mm lati apice acuminati et callosi. Styli graciles 6-7 mm longi, stigmatibus capitato.

NOM. JAP. *Kiyosato-kozakura*. (n. n.).

HAB. *Honshu*. Prov. Kai: Kiyosato (K. HISAUCHI, VI. 14, 1936—type in Herb. Tokyo Sc. Mus.).

Remarks. The present species is closely related to *Primula kitadakensis* HARA, from which it differs in having the apiculate apex of the denticulation and

more shallowly lobed blades of the broader leaves and also the acuminate calyx-lobes with collose tips.

224. *Primula Matsumurae* PETIT. in Bull. Herb. Boiss. VII. (1907), 528; MATSUM. Ind. Pl. Jap. II. (1912), 481; TATEWAKI, Pl. Isl. Rebun, (1934), 14, *pl. III*, fig. 7, 8.

NOM. JAP. *Rebun-kozakura*.

HAB. *Yezo*. Isl. Rebun: Momoiwa (M. TATEWAKI, V. 28, 1933; M. TATEWAKI, T. NARITA & C. CHO, VII. 12, 1933); Motochi (S. HOSHINO, VI. 1909; M. TATEWAKI, T. NARITA & C. CHO, VII. 11, 1933); Kabukai (M. TATEWAKI, V. 26, 1933); Uyennai (M. TATEWAKI, V. 31, 1933; VII. 19, 1933); Sukoton (M. TATEWAKI, T. NARITA & C. CHO, VII. 24, 1933). Prov. Teshio: Mashike (S. HORI, VIII. 3, 1887).

S. Kuriles. Isl. Etorofu: between Porosu and Toro (S. YOKOYAMA, 1893); Rubetsu (B. YOSHIMURA, VIII, 1, 1939).

form. *albiflora* TATEWAKI, form. nov.

Flores albi.

NOM. JAP. *Shirobana-rebunkozakura*.

HAB. *Yezo*. Isl. Rebun: Funadomari (M. TATEWAKI, n. 18714, V. 30, 1933).

DISTRIB. *sp.* North-western *Yezo* and *S. Kuriles*.

Remarks. The species under consideration is related to *Primula modesta* BISSET ET MOORE and *Primula fistulosa* TURKEW. It is distinguished from the former by the obscurely sinuato-crenulate margin of the leaves, the fistulate scapes with luxuriant inflorescence and the rounded apex of the calyx-lobes; while it is distinguished from the latter by the narrower bracts with long-acuminate apex, the shallower lobes of calyx with often rounded apex and the longer capsules.

225. *Primula modesta* BISSET ET MOORE, in Journ. Bot. XVI. (1878), 134; TAKEDA, in Notes Roy. Bot. Gard. Edinbg. VIII. (1913), 88, *pl. XVIII*.

Primula farinosa L. subsp. *modesta* PAX, in ENGL. Pfl.-reich. IV.-237. (1905), 85.

var. *shikoku-montana* MIYABE ET TATEWAKI, var. nov.

Folia distincte petiolata, subtus sulfureo-farinosa, rhombeo-spathulata, 4-8 cm longa, 1-1.5 cm lata, grosse serrata vel subduplicato-serrata, in petiolum anguste alatum vel exalatum attenuata. Scapus 14 cm altus, 7-florus, bracteis lineari-subulatis. Pedicelli tenues 1.5-2.5 cm longi. Calyx campanulatus. Capsula calycem subaequans vel superans.

NOM. JAP. *Ishizuchi-kozakura*. (n. n.).

HAB. *Shukoku*. Prov. Iyo: Mt. Ishizuchi (T. MAKINO, VIII. 1885—type in Herb. Tokyo Sc. Mus.).

Remarks. The plant under consideration is closely related to *Primula modesta* and *Primula Fauriei*. It is distinguished from the former by the shape of the leaves, and from the latter by the distinct serration and non-revolute margin of the leaves.

226. *Cypripedium japonicum* THUNB.: MIYABE & KUDO, Fl. Hok. & Saghal. III. (1932), 355.

NOM. JAP. *Kumagaisô*, *Hoteisô*.

HAB. *Yezo*. Prov. Ishikari: Mt. Moiwa (T. INOUE, VII. 2, 1939).

Remarks. Mt. Moiwa is the most northern limit of the distribution of the present species. It occurs at Shiraoi in the Province of Iburi and is said to grow also in Mt. Maruyama, Shioya in the Province of Siribeshi.

227. *Sasa laminata* TATEWAKI ET TOMOOKA, sp. nov.

Culmus crebre simplex vel interdum semel ramosus 60–80 cm altus 4 mm in diametro retrorso-puberulus; nodi subglobosi dense pubescentes 6 mm lati, infla nodus glauco-farinosus retrorso-velutinus. Vaginae culmi margine ciliolatae praesertim inferiores dense puberulae. Vaginae foliorum pubescentes. Setae orales subnullae. Folia persistentia in apice culmi (5–)6–7 apice acuminata basi cuneata 25 cm longa 5.5 cm lata; infima minora oblongo-ovata vel ovata; cetera oblonga vel ovato-oblonga vel lanceolato-oblonga 23 cm longa 7.5 cm lata apice acuminata vel longe acuminata basi rotundata; supra glabra infra glaucescentia supra venas et venulos molliter pubescentia margine spinulosa interdum adulta marginata, nervis utrinque 11–13, petiolis alatos supra puberulis 5–6 mm longis 2–2.5 mm latis. Ligula brevissima truncata 1 mm alta. Scapi in parte culmi inferiora laterales culmo aequilongi vel leviter superantes foliosi, internodis praesertim inferioribus retrorso-puberulis, nodis leviter incrassatis dense pubescentibus, infra nodus retrorso-puberulus. Vaginae scapi minute retrorso-puberulae margine ciliatae; inferiores quam internodia breviores. Folia scapi minora 9–18 cm longa 2.2–4.5 cm longa lanceolata vel oblongo-lanceolata, supra viridia glabrescentia infra glaucina pubescentia. Panicula angustata 17 cm longa 3 cm lata; axis et ramuli patente hirsuti. Spiculae 2–4-florae basi 2-bracteatae, bracteis inaequalibus extus adpresse pubescentibus margine ciliatis. Gluma exterior 10–13 mm longa dense pubescens margine ciliata.

NOM. JAP. *Yobito-sasa*. (n. n.).

HAB. *Yezo*. Prov. Kitami: Yobito (M. TATEWAKI & H. TOMOOKA, IV. 28, 1940).

Remarks. The present species is related to *Sasa Yasokichii* TATEWAKI ET TOMOOKA, but it differs from the latter by the thicker and broader leaves, the simple culms and the subglobose nodes.

228. *Sasa Yasokichii* TATEWAKI ET TOMOOKA, sp. nov.

Culmus saepe 2-4 ramosus 30-80 cm altus retrorso-puberulus ad nodum leviter incrassatus, infra nodus glauco-farinosus dense retrorso-ciliolati-puberulus. Vaginae culmi margine ciliolatae praesertim inferiores primo longe et patente denseque hirsuto-puberulae quam internodia breviores, sed superiores saepe glabrescentes longiores quam internodia. Setae orales subnullae, sed interdum persistentes rigidae scabrae. Folia persistentia in apice rami 5-6 chartaceo-membranacea 20-25 cm longa 4-7 cm lata; suprema angustiora lanceolata; infima saepe minora ovato-lanceolata; cetera oblongo-lanceolata; supra primo pilosella demum glabrescentia infra glaucescentia supra venas et venulos hirtella margine spinulosa, nervis utrinque 9-11, apice acuminata vel acuta, petiolis alatis supra puberulis 5-8 cm longis. Ligula depresso-semiorbicularis ciliolata 1-2 mm alta dorso puberula. Scapi in parte culmi inferiora laterales culmo aequilongi vel leviter superantes saepe foliosi, internodiis retrorso-puberulis, nodis dense puberulis, vaginis inter nervos retrorso-ciliolati-puberulis. Interdum setae orales patentes scabrae. Folia scapi minora 5-12 cm longa 2-3 cm lata oblongo-lanceolata vel ovato-lanceolata; infima ovata interdum 4 cm longa 1 cm lata; supra viridia infra glaucina hirtella margine spinulosa-hispidula. Panícula angustata 17 cm longa 4 cm lata; axis et ramuli patente hirsuti. Spiculae 2-4-florae basi 2-bracteatae, bracteis inequalibus extus hirsutis. Flores basi articulati et barbati. Rachilla dense hirsuta. Gluma exterior ca. 1 cm longa puberula margine ciliata. Gluma interior ca. 8 mm longa dense pubescens margine ciliata.

NOM. JAP. *Notoro-zasa*. (n. n.).

HAB. *Yezo*. Prov. Kitami: Notoro National Forest (M. TATEWAKI, H. TOMOOKA & YASOKICHI KINOSHITA, IV. 27. 1940).

Remarks. The present species is related to *Sasa megarophylla* MAKINO and *Sasa oseana* MAKINO. It differs from the former by the thinner and narrower blades and slightly pilose upper surface of the leaves, and also by the narrower inflorescence and foliate scapes; while it differs from the latter by the puberulent culms, the slightly pilose upper surface of the leaves, the pubescent outer glumes and the densely pubescent inner glumes. This plant is named after Mr. YASOKICHI KINOSHITA who is an expert alpinist of the Shiretoko Peninsula and the enthusiastic worker on the forest and forest problem in the Province of Kitami.

摘 要

北日本植物資料十三

216. **カンチウシホツメクサ** 北緯太産ウシホツメクサ中異品あり。其の種子を検するに全々平滑にしてその形状第一圖の如し。

217. **アボイタチツボスミレ(新種)** 本種はアイヌタチツボスミレに似たるも、全株矮小、花色濃く、最下の花弁凹頭、葉は厚く屢々裏面紫色を呈し、アイヌタチツボスミレの變種とするよりも著者等は別種と考察す。北海道本島の春稜をなす蛇紋岩地帯に特有なる種類にして種名は原寛氏を記念せり。

218. **イハナシ** 本種は從來渡島を北限とせるも、山本岩龜氏之を天塩國岩毛山塊に採集す。これ本種の北限なり。

219—221. 北日本産サクラサウモドキ屬 北日本産サクラサウモドキ屬は今日迄一種と考へられたりしも之を精檢して3種2變種となせり。而して分類すべき種類の特徴は葉の裂刻度、萼の形状、花冠裂片の凹所の形状等にあり。又變種の特徴は有毛度、花序の形状、花冠の大小等に依れり。北海道本島にはエゾノサクラサウモドキ(新種)、サクラサウモドキ(新變種)、離島利尻、禮文にはレブンサクラサウモドキ(新變種)、樺太にはカラフトサクラサウモドキ、その離島海馬島にはトドジマサクラサウモドキあり。

222. **シベリヤユキワリサウ** 日本植物に新追加。遠藤博士占守島植物採集品中に見出せるものにして、千島列島に於ても他の地點に之を知られず。

223. **キヨサトコザクラ(新種)** キタダケコザクラに近きも、葉は廣くその裂片は深く、萼裂片の形状を異にし、恐らく花數も多き新種なり。甲斐國清里にて久内清孝氏採集し、種名は同氏を記念す。

224. **レブンコザクラ** 從來レブンコザクラは文献上の他その所在明ならざりし種類なりしも今般多數の標本に依り之を再檢討せり。本種はユキワリサウに近きも葉縁の鋸齒を異にし、又多數花を有する太き花莖、花時に於ける萼片が圓頭を呈して幅廣き事等に依り區別せらるべし。北海道に於ては禮文に最も多く、樺捉にもその産あり。シロバナレブンコザクラは其の白色品種なり。

225. **イシツチコザクラ** ユキワリサウとは葉形を異にし、ユキワリコザクラとは葉縁外捲せず且明なる鋸齒を有することにより分ち得べきユキワリサウの變種にして、四國石鎚山の産なり。

226. **クマガヒサウ** 本種は從來北海道に於ては渡島に其の産を知らるゝのみなりしが、更に石狩國藻岩山、膽振國白老等に採集され、又後志國塩谷附近にも其の産を開く。藻岩山は恐らく本種の北限なるべく、分布區域は石狩凹地帯以南となれり。

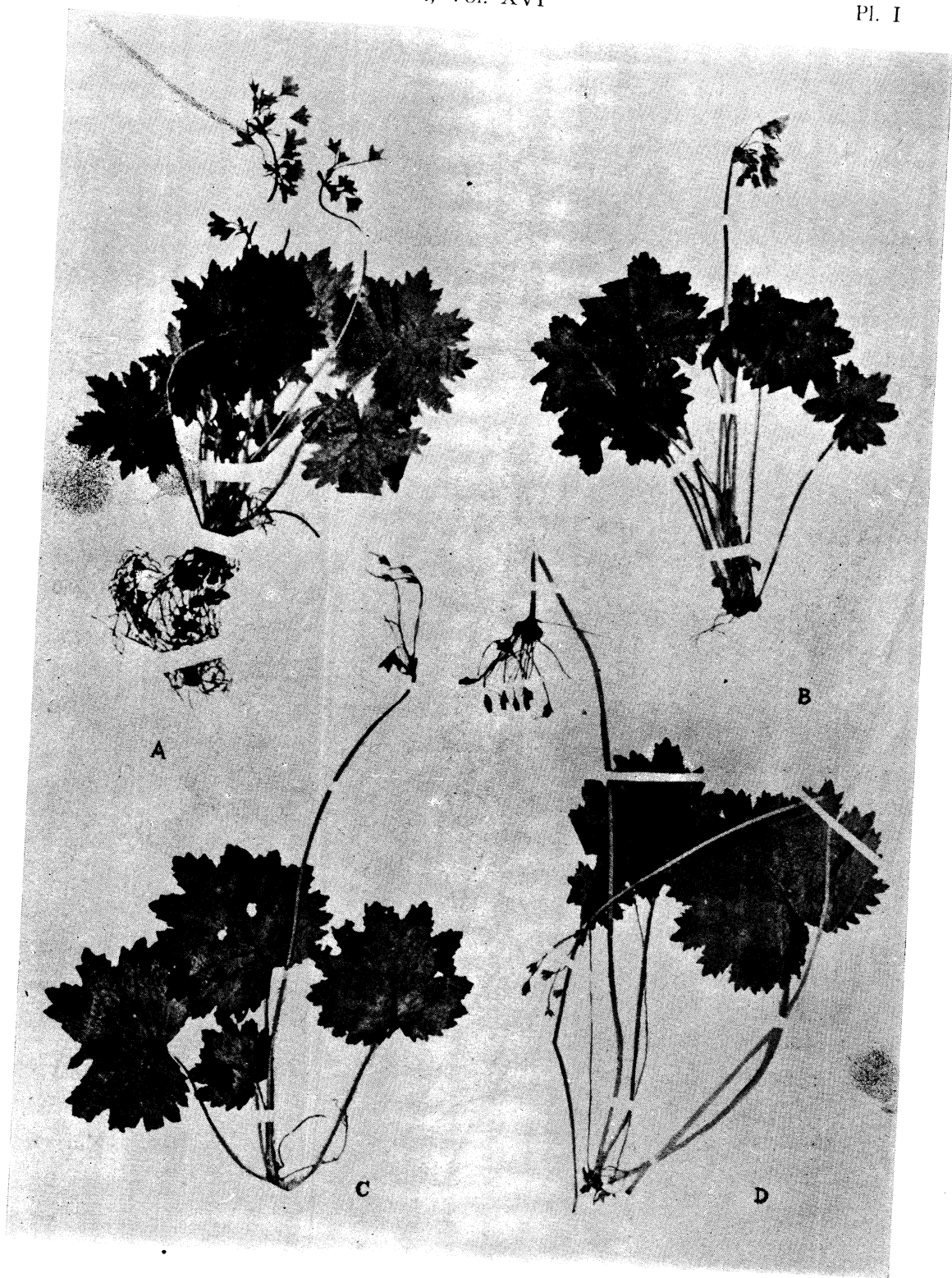
227. **ヨヒトザサ(呼人笹)(新種)** 本種は一見クマイザサに近きも全く異なり、寧ろフトロザサに近き新種なり。されど後者より葉が厚く廣く、稈は殆ど分岐せず、稈の節高き事により分つことを得べし。北見國呼人所在網走營林區署苗圃附近の産なり。

228. ノトロザサ(能取笹)(新種) 本種はオホバザサ及びオゼザサに似たるも、之と異なる新種なり。前者とは葉片薄く狭く、葉面に僅かに微毛を有し、花序狭く花莖有葉なることに依り分ち得べく、後者とは程に微毛を有すること、葉面に僅かに微毛を有し、苞穎の有毛度等に依り分つことを得べし。北見國能取湖畔能取國有林の産にして、種名は木下彌三吉氏を記念す。

〔後記〕 サクラサウ属研究に関しては標本研究に便を與へられし東京科學博物館佐竹義輔博士及び奥山春季氏に深厚なる謝意を表す。

Explanation of Plate

- A. *Cortusa sachalinensis*, var. *jezoensis* MIYABE ET TATEWAKI.
- B. *Cortusa sachalinensis*, var. *congesta* MIYABE ET TATEWAKI.
- C. *Cortusa josana* MIYABE ET TATEWAKI.
- D. *Cortusa sibirica*, var. *insularis* MIYABE ET TATEWAKI.



注 意

本會に對する總ての書信は北海道帝國大學
農學部内札幌博物學會に宛て發送せらるべし。

札幌博物學會報原稿規定

1. 原稿ノ切期日、四月末日及十月末日
2. 原稿は印刷紙數15頁以内たるべき事
3. 歐文は「タイプライテング」のこゝ
4. 論文には歐文及び和文の題目を記せられ度し
5. 著者の姓名は歐文、和文共に全体を記入せられ度し
6. 歐文には和文、和文には歐文の摘要を附すること
7. 圖版代は著者支辨のこゝ
8. 編輯の都合により掲載不能のことあるべし
9. 別刷參拾部を會より寄贈す
10. 原稿には左記の記號によりて活字型を定められ度し

キ ャ ッ プ	(CAP)	=====
スモールキャップ	(SMALL CAP)	=====
イ タ リ ッ ク	(<i>Italic</i>)	=====
ヘ ビ ー タ イ プ	(Heavy type)	=====
ヘビーイタリック	(<i>Heavy Italic</i>)	=====
ゲ ス ペ ル ト	(Gesperrrt)	-----

人名はスモールキャップ。學名はイタリック。

昭和十五年七月一日印刷

昭和十五年七月五日發行

札幌市北五條西十五丁目三番地

編輯兼 犬 飼 哲 夫
發行者

札幌市北一條西七丁目二番地

印刷者 小 原 久 平

札幌市北一條西七丁目二番地

印刷所 小 原 歐 文 印 刷 所

札幌市北海道帝國大學農學部内

發行所 札 幌 博 物 學 會

振替口座(小樽九一二三番)

CONTENTS

TATEWAKI, M.—List of Plants of the Island of Okushiri. II.	105
TAKAKUWA, Y.—Über eine neue Diplopodengattung aus Japan.....	117
ITO, S. and IMAI, S.—Fungi of the Bonin Islands. V.	120
HIRATSUKA, N.—Materials for a Rust-flora of KIUSHU.	139
HADA, Y.—Hydrographical Observations and Plankton Studies of Some Brackish Water Lakes on the Okhotsk Sea Coast of Hokkaido in Winter.	147
UCHIDA, T.—Beitraege zur Systematik der Tribus <i>Tylocommini</i> Japans (<i>Hym. Ichn. Tryphoninae</i>).....	175
MRYABE, K. and TATEWAKI, M.—Contributions to the Flora of Northern Japan XIII.	181

目 次

館 脇 操—奥尻島植物目録(二)
高 桑 良 興—日本産倍足類の一新屬に就て
伊藤誠哉・今井三子—小笠原群島の菌類(五)
平 塚 直 秀—九州銹菌誌資料
羽 田 良 禾—冬季に於ける北海道オホツク海沿岸の瀛水湖沼の調査とプランクトン研究
内 田 登 ——日本産 <i>Tylocommini</i> 族の分類學的研究
宮部金吾・館 脇 操—北日本植物誌料(十三)