

THE FLORA OF MOSSES ON MT. CHI I WITH SOME NEW ADDITIONS TO THE KOREAN FLORA

Won Shic Hong* & Hisatsugu Ando**

洪元植·安藤久次：未記録種을 포함한 智異山의 藓相

ABSTRACT

HONG, Won Shic & ANDO, Hisatsugu (Catholic Medical College, Seoul, Korea. & Hiroshima University, Hiroshima, Japan.) : The Flora of Mosses on Mt. Chi I with some new additions to the Korean flora. Kor. Jour. Bot. 4(2), 41—50. 1961.

1. This study was made on the flora of mosses on Mt. Chi I (127°26'—35' E. Long, 35°12'—25' N. Lat).
2. In the list of mosses of Mt. Chi I, 126 species, 6 varieties, and 1 form belonging to 79 genera are enumerated. Of these the following 14 taxa are new to the Korean flora.

(1) *Rhabdoweissia fugat* (Hedw.) B.S.G. (2) *Pohlia crudoides* (Sull. et Lesq.) Broth. var. *revolvens* (Card.) Ochi
(3) *Philonotis socia* Mitt. (4) *Ptychomitrium linearifolium* Rms. (5) *Ulota crispa* Brid. (6) *Neckera honoi*
Broth. (7) *Neckeropsis nitidula* (Mitt.) Fleisch. (8) *Entodon fauriei* Broth. et Par. (9) *Plagiothecium*
denticulatum (Hedw.) B.S.G. (10) *Hypnum hamulosum* B.S.G. (11) *H. sakuraii* var. *venustum* Ando.
(12) *H. tristoviride* var. *brevisetum* Ando. (13) *Gollania varians* (Mitt.) Broth. (14) *Pogonatum pygmaeum* Card

INTRODUCTION

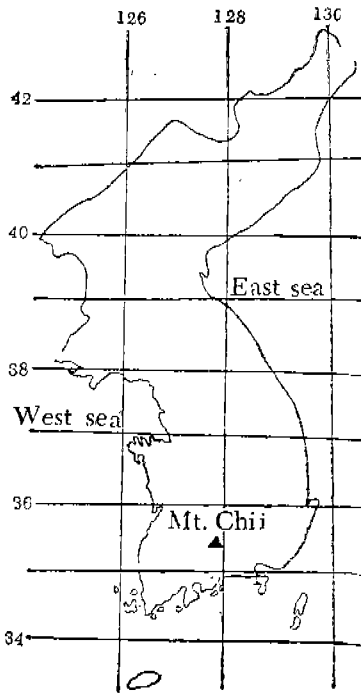
Mt. Chi I, which consists of a group of high mountains, is situated at the southern part of Korean peninsula, roughly at 127°26'—55' E. Long and 35°12'—25' N. Lat. Its highest peak, Chungwhang, is 1915 m. s. m., and the other main peaks, Bangzang, Sesuk, and Banniya are approximately 1800 m. s. m. The mountains are composed of granite porphyry, and the size of the feldspar in the porphyry is larger than that of feldspar produced in other areas. Mt. Chi I is noted for many ancient temples, beautiful ravines, and many alpine plants. The climate of Mt. Chi I is continental because it is removed far from the seaside, so the difference between the highest and lowest temperatures in summer is about 20—30°, F.

Generally in summer season, the temperature of mountain foot regions shows about 100°F, while in the mountain regions above the middle part it shows only about 70°. The plants on this mountain can largely be classified into two categories, the needle leaved trees and the deciduous broad-leaved trees. The needle leaved trees here form a *Pinus desiflora* or mountain foot zone. On the other hand, when discussed from the viewpoint of deciduous trees, they can largely be classified into (1) *Quercus serrata*—*Q. dentata* zone (Mountain foot—500m) (2) *Q. variabilis* zone (500—1000m), (3) *Q. mongolica* zone (1000—1400m), (4) *Betula* zone (1350m—summit). Today, however, the difference of plant zones is un conspicuous due to cutting of trees, and the forests below 1300m are generally second forests.

Some of the temple forests protected by monks below 1300m are magnificent. The main constituent plants of the temple forests are *Carpinus erosa*, *Quercus serrata*, *Abies julibrissin*, *Lespedeza intermedia*, *Callicarpa japonica* var. *typica*, *Abies holophylla*, *Zelkova serrata*, *Celtis japonica*, *Rhus javanica*, *Stephylea bumalda* var. *typica*, *Benzoin erythrocarpum*. The most vigorous plants in this zone are various kinds of *Carpinus* and *Quercus*. It is not uncommon that some trunks are as tall as 30m.

* Biological Institute, Premedical Course, Catholic Medical College, Seoul, Korea.

** Botanical Institute, Hiroshima University, Hiroshima, Japan.



Map showing the locality of Mt. Chi I.

area, shrubby groups of *Quercus mongolica* occurred here and there. *Betula* zone has developed on the most upper part of this mountain. The main constituent species of this zone is *Abies koreana*, and these trees form dense forests. Under the trees of *Abies koreana*, the layers of subtrees, shrub and herb have poorly developed.

In 1914, T. Nakai, famous Korean flora reseacher, published "The survey report on plant of Mt. Chi I". In this publication, Nakai reported 470 species of plants, out of which 19 species and 7 varieties were recorded as new ones. In this publication, he also reported the following 4 species of moss, *Hypnum schreberi*, *Rhacomitrium conescens* var. *ericoides*, *Rhytidium rugosum*, and *Leptodontium nakai*. Of the above 4 species, the latter was a new one in the science. Later in 1939, K. Uno & H. Takahashi visited the mountain and collected some bryophytes, and these collected specimens were identified by Dr. Sakurai.

In 1940, the results of these studies were published on the Botanical Magazine, Tokyo, 54: 29--32 under the title of "The List of Mosses in Mt. Chiisan". In this paper, they reported 57 species, out of which 2 species (*Taylovia coreana*, *Pseudoleskea coreana*) were described as new ones.

The senior author visited this mountain two times each summer of 1959 and 1960, and collected many packets of bryophytes. An intensive collection was made especially above 1000 m. s. m., where natural vegetation is fortunately well preserved. The following enumeration is based mainly on his collections. A complete set of specimens is deposited in the herbarium of the Catholic Medical college, Korea, and the duplication in the herbarium of Hiroshima University, Japan, and we wish to exprss our deep appreciations to Dr. A. Noguchi of Kumamoto University for the identification of some species.

ENUMERATION OF SPECIES

In enumerating the substrata and species associated, the numbers in brackets indicate frequency of occurrence. The numbers in the latter brackets indicate the number of speciemens in the Herbarium of Catholic Medical college.

The species preceded by an asterisk are those which have never been reported from Korea before.

Sphagnaceae

The zone of *Quercus variabilis* has dense forests of broad leaved trees in Mt. Chii. The main constituent species of this zone are as follows: *Acer mono*, *Carpinus tschonoskii*, *Cornus controversa*, *C. brachypoda*. *Quercus mongolica* zone connects the *Carpinus erosa* zone and *Betula* zone. The plants form pure forest communities here and there. The pure communities are generally constituted by old aged trees and the typical constituent species of shrub layer under such tree layers is *Lespedeza intermedia*. Especially a *Carpinus erosa*-*Lespedeza intermedia* association is well developed in the middle part of this mountain along the route from Machunn to the summit. The mixed species of the constituent plants in the *Quercus mongolica* zone are as follows: *Dendroenthamia japonica*, *Maackia amurensis*, *Acer pseudo-sieboldianum*, *Rubus crataegifolius*, *Aralia elata*, *Philadelphus schrenckii*, *Magnolia verecunda*, *Salix koriyana*, *Sambucus williamsii*, *Weigela florida*, *Corylus sieboldiana*, *Sorbus commixta*. And as the altitude increases, *Pinus koraiensis*, *Abies koreana*, *A. nephrolepis*, *Betula ermanii*, *Tilia taquetii* occurred. When fire occurs in the needle leaved forests such as those of *Abies koreana*, the forests are said to be changed into the forests of *Quercus mongolica* after long succession, but when the period of succession is short, they remain a grassland zone only. Such a grassland zone has developed widely on Sesuck peak, but in this

Sphagnum squarrosum Crome was collected at or above 1500m.s.m., (*Quercus mongolica* zone) on damp soil near a stream in the Sesukpyong. This species was formerly collected by Dr. Nakai only on Mt. Ro. in North Korea. This is the first collection in the South Korea (2108).

Fissidentaceae

Fissidens gymnogynus Besch. was gathered 2 times between 1700 and 1800m.s.m., on humus covered rocks (2. granit porphyry), occurring with *Hylocomiopsis ovicarpa* (11860, 11861).

Ditrichaceae

Ditrichum pallidum (Hedw.) Hampe occurred once on dry soil in *Quercus mongolica* zone (11863).

Ceratodon purpureus (Hedw.) Brid. was collected 3 times between 1600 and 1900m.s.m., on rocks (2) with *Bryum argentum* and on humus soil (1) (2071, 2086, 2145).

Dicranaceae

Dicranella heteromalla (Hedw.) Schimp. was gathered once from on a rock at 1600m.s.m., (11976).

Campylophs fuscoviridis (Card.) Dix. et Ther. Uno & Takahashi.

Dicranodontium denudatum, (Brid.) E.G. Britton was found twice between 1600 and 1800m.s.m., on the trunk of *Abies koreana* and on rocks (2090, 2146).

Brothera leana (Sull.) C. Muell. was gathered once near the summit. In another mountain this species grows on the lower place (11866).

※*Rhabdoweissia fugax* (Hedw.) B.S.G. A single specimen was collected on an wet rock at 1900m.s.m. (2098).

Oncophorus wahlenbergii Brid. was gathered 2 times between 1500 and 1800m.s.m., from on rocks (2) in sunny places (2094, 11881).

Dicranum flagellare Hedw. was found once on log at 1200m.s.m., (2123).

D. fragiliforme Card. was also found once on a rock at 600m.s.m., accompanied by *Leucobryum glaucum*, *Porella setigera* and *Hypnum plumaeforme* (2064).

D. mayrii Broth. was collected twice between 1500 and 1700m.s.m., on rocks (2), occurring with *Hylocomiopsis ovicarpa* (2136, 2141).

D. scoparium Hedw. A single specimen was collected on a rock at 1650m.s.m., associated with *Frullania moniliata* *Lejeunea compacta*, *Hylocomium splendens* (2056).

Leucobryaceae

Leucobryum glaucum (Hedw.) Schimp. was found once on a xeroic rock at 700m.s.m., (2080).

Pottiaceae

Weissia controversa Hedw. was gathered once from on a humus covered rock at 480m.s.m. (11864).

Leptodontium nakaii Okam. In 1914 Nakai reported through "The Survey Report on Plant of Mt. Chi I." this species as new in the science.

Didymodon recurvirostris (Hedw.) Jenn. Uno & Takahashi.

Grimmiaceae

Grimmia alpestris Schleich. Uno & Takahashi.

G. pilifera P. Beauv. was gathered 4 times between 700m and the summit, on rocks (4). (11872, 11876, 11879, 11881).

Rhacomitrium anomodontoides Card. occurred once on a rokt at 1300m.s.m. (11965).

Rh. canescen (Hedw.) Brid. also ocured once on a rokt at 1300m.s.m., ocuring with *Plagiochila ovalifolia* (11877). var. *ericoides* (Web.) B.S.G. was gathered 6 times between 800 and 1900m.s.m., on humus-covered rock (5) and logs (1), occurring with *Boulaya mittenii* (1), *Haplohymenium triste* (1), *Frullania moniliata* (1), *Oncophorus wahlenbergii* (1), *Grimmia pilifera* (1), *Brachythecium flagellare* (1), *Bazzania* sp, (1), *Entodon* sp, (1) (2097, 11866, 11867, 11868, 11871, 11880).

R. lanuginosum (Hedw.) Brid. occurred only once on a wet rock at 1450m.s.m. (11870).

Funariaceae

Funaria hygrometrica Hedw. occurred only once on soil at 900m. s. m., with *Ceratodon purpureus* (2058).

Splachaceae

Tayloria coreana Sokurai. In 1940 Uno & Takahashi reported this species as new in the flora world.

Bryaceae

Pohlia campotrachela (Ren. et Card.) Broth. (det. Ochi) occurred only once on a humus-covered rock at 1450m. s. m., with *Bazzania tricrenata* (2102).

P. crudoides (Sull. et Lesq.) Broth. var. *revolvens* (Card.) Ochi occurred once on a rock at the summit. According to Andrews (1935), it is said that *P. crudoides* is of far north at least in Europe and North America and very rare in these areas. But in Korea, it occurs even in the deciduous forest zone as in Japan (2092).

Bryum argenteum Hedw. occurred only once on a wet rock near a stream below *Quercus mongolica* shrub at 1500m. s. m. (2118).

B. pseudo-alpinum Ren. et Card. (det. Ochi) was gathered 4 times between 1700 and 1500m. s. m., from on wet rocks (3), soil among rock (1) (2072, 2076, 11888, 11892).

B. roseum (Hedw.) B. S. G. occurred twice on humus-covered rocks between 1700 and 1900m. s. m., occurring with *Hylocomiopsis ovicarpa* (1), *Fissidens gymnogynus* (1), *Mnium affine* (1) (11889, 11890).

B. tortifolium Funck occurred once on a rock at 400m. s. m. with *Philonotis falcata* (2078).

B. torquescens B. S. G. Uno & Takahashi.

Mniaceae

Mnium affine Bland. occurred only once on a humus-covered rock at 1900m. s. m., with *Bryum roseum*. (11890).

M. cuspidatum Hedw. was gathered 4 times between 400m and 1700m. s. m., from on a rock (1), wet rocks (2), and sandy soil (1). *Anomodon integerrimus* (2), *Hypnum tristoviride* (1), *Leucodon coreensis* (1), *Brachythecium flagellare* (1), and several others occurred with it (2124, 11900, 11901, 11902).

M. flagellare Sull. occurred twice between 1600 and 1800m. s. m., on a humus covered rock and a log with *Hylocomiopsis ovicarpa* (1), *Pleurozium schreberi* (1) (2096, 2150).

M. immarginatum (Lindb.) Broth. was found 2 times between 600 and 1200m. s. m., on wet rock (2) (1984, 2002).

M. laevinerve Card. was gathered 7 times between 600 and 1650m. s. m., from on wet rocks (3), humus-covered rocks (4), *Jamesoniella autumnalis* (2), *Blepharostoma trichophyllum* (1), *Plagiochila firma* ssp. *rhizophora* (1), *P. satoi* (1), *Porella vernicosa* (1). *Bazzania tricrenata* (1), *Scapania undulata* (1), *Hypnum tristoviride* (1) (1945, 2000, 2068, 2126, 11894, 11896, 11899).

M. longirostre Brid. occurred once on a rock at 1680m. s. m., with *Okamuraea hakoniensis* (1), *Thuidium glaucinum* (1) (2087).

M. maximowiczii Lindb. occurred twice between 600m and 1450m. s. m., on wet rocks (2) below scrub with *Thuidium toyamae* (2), *Leucobryum glaucum* (1), *Anomodon rugelii* (1), *Hylocomiopsis ovicarpa* (1), *Hypnum plumaeforme* (1), *Metzgeria pubescens* (1) (2063, 2104).

M. microphyllum Doz. et Molck. occurred 6 times between 400m and 1600m. s. m., on wet rocks (2), on damp soil often including gravel (2), and a rock (1), *Grimmia pilifera* (1), *Herpelineuron toccoae* (1), *Thuidium toyamae* (1), *Brachythecium flagellare* (1), *Porella vernicosa* (1), and few other hepatics as well as mosses occurred with it. (11893, 11895, 11906, 11907, 11909).

M. striatulum Mitt. was collected 5 times between 1300m and 1700m. s. m. The substrata are rocks (4) and damp soil (1), *Trichocoleopsis sacculata* (1), *Blepharostoma trichophyllum* (2), *Plagiochila ovalifolia* (1), *P. rhizophora* (1), *Jungermannia Inceolata* (1), *Bazzania ovifolia* (1), *Frullania moniliata* (1), *Radula* sp. (1), *Tritomaria exsecta* (1), *Mnium laevinerve* (1), *Drepanocladus uncinatus* (1), *Hylocomium splendens* (1), *Brachythecium flagellare* (1), (2151, 1956, 1999, 2139, 2156).

Bartramiaceae

Bartramia pomiformis Hedw. occurred twice from 1300 to 1400m. s. m., on rocks. (2128, 11911).

Philonotis falcata (Hook.) Mitt. occurred once on a rock at 400m. s. m., with *Bryum tortifolium* (2078).

Ph. fontana (Hedw.) Brid. was gathered twice between 1000m. and 1500m. s. m., from on wet rocks (2) with *Sphagnum squarrosum* (1), *Brachythecium rivulare* (1), *Polytrichum fromosum* (1), (2110, 2129).

Ph. socia Mitt. occurred only once on a wet rock at 780m. s. m. (2075).

Ptychomitriaceae

※*Ptychomitrium linearifolium* Rms. was found only once on a humus covered rock at 480m. s. m., (11914).

P. sinense (Mitt.) Jaeg. was gathered once from on a rock at 400m. s. m. (11915).

Orthotrichaceae

Ulota crispa Brid. occurred only once on a log (*Quercus mongolica*) at 1500m. s. m. (2120).

Macromitrium bathyodontium Card. occurred once on a trunk (about 3m high above the ground) of *Betula costata* at 1600m in the *Betula* zone (2142).

M. comatum Mitt. Uno & Takahashi.

M. gymnostomum Sull. et Lesq. occurred once on a rock at 600m. s. m. (2067).

M. prolongatum Mitt. was gathered once from on a rock at 1650m. s. m. (2151).

Climaciaceae

Climacium dendroides (Hedw.) Web. et Mohr was collected once at 1550m. s. m., with *Hylocomium splendens*, *Hylocomiopsis ovicarpa* (11917).

Pleuroziopsis ruthenica (Weinm.) Kindb. was found once on a rock at 1600m. s. m. (2149).

Hedwigiaceae

Hedwigia ciliata (Hedw.) P. Beauv. was collected 3 times between 780 and 1650m. s. m., on rocks (3), accompanied by *Frullania moniliata* (2), *Anomodon abbreviatus* (1), *Hylocomium splendens* (1) (2045, 11918, 11919).

Leucodontaceae

Leucodontella perdependens (Okam.) Nog. was collected 3 times between 1500m. 1700m. s. m., on trunks of *Abies koreana* (2) (2061, 11920, 11924).

Leucodon coreensis Card. A total of 13 specimens were obtained between 1200m and 1700m. s. m., on rocks (6), near the trunk bases of deciduous trees (6) and on log (1). The associated bryophytes on rocks are *Trichocoleopsis sacculata* (1), *Frullania moniliata* (4), *F. jackii* ssp. *japonica* (1), *Plagiochila semidecurvens* ssp. *grossidens* (1), *Haplomenium triste* (2); those on trees, *Frullania moniliata* (3), *Haplomenium longinerve* (2), *H. triste* (2), *Leucodontella perdependens* (1), (1961, 1977, 2001, 11921, 11922, 11923, 11926, 11029, 11930, 11938, 11932, 11933, 11934).

L. secundus (Har.) Mitt. Uno & Takahashi.

Macrosoporella dozyoides (Broth. et PaJ.) Nog. was found once on a humus-covered rock at 900m. s. m., in the *Quercus variabilis* zone (2057).

Meteoriaceae

Meteorium helminthochladulum (Card.) Broth. was found once on a rock at 600m. s. m. (2070).

Neckeraceae

Neckera coreana Card. Uno & Takahashi.

※*N. konoii* Broth. was found 7 times on rocks (5), on trees (2), between 1300m. and the summit (1915m. s. m.). It occurred unmingled or mingled with *Porella vernicosa* (2), *Frullania moniliata* (1), and *Miyabea fruticella* (1) (2059, 2073, 2101, 2113, 2119, 2140, 2144).

N. pennata Hedw. was found twice on decayed wood (2), between 800 and 1750m. s. m. (2074, 2097).

※*Neckeropsis nitidula* (Mitt.) Fleisch. was found once on a rock at 600m. s. m., in association with *Lejeuneo japonica*, *Thuidium toyamae* (2028).

Bissetia lingulata (Mitt.) Broth. was collected once on a rock at 1300m. s. m. (2138).

Homalia trichomanoides (Hedw.) B.S.G. was found twice between 1200 and 1400m. s. m., on rocks (2). *Porella vernicosa* (2), *Plagiochila ovalifolia* (1), *Oncophorus wahlenbergii* (1) occurred with it. (198, 11940).

Thamnium sandei Besch. var. *cymbifolium* Card. Uno & Takahashi.

Lembophyllaceae

Dolichomitriopsis civersiformis (Mitt.) Nog. was taken thrice between 1300 and 1650m. s. m., from on humus-capped rocks (2), on decayed wood (1), in shaded or semishaded places. *Lophocolea minor* (1) occurred with it (2004, 2127, 2153).

Fabroniaceae

Schwetscheopsis denticulata (Sull.) Broth. ssp. *japonica* was found once on decayed wood in a shaded place at 1700m. s. m., (11947).

S. robustulum (Broth.) Ando was found twice on rocks between 400 and 780m. s. m., accompanied by *Herpetineuron toccoeae* (1), *Homomallium japonicoadnatum* (1), *Mnium cuspidatum* (1), *Philonotis* sp. (1) (2081, 2084).

Leskeaceae

Pseudoleskea coreana Sak. In 1940, this species was reported as new one in the world by Uno & Takahashi. The author could not collect this species in spite of careful observation.

Pseudoleskeopsis orbiculata (Mitt.) Broth. Uno & Takahashi. (under *P. decurvata* Broth.)

Okamuraea brachydietyon (Card.) Nog. was taken once from on a humus-covered rock at 800m. s. m., with *Anomodon giraldii*, *Frullania moniliata* (2065).

O. hakoniensis (Mitt.) Broth. was gathered 2 times from on deciduous trunk (*Quercus variabilis*, and *Q. mongolica*) and on a rock between 800m and 1600m. s. m., accompanied by *Boulaya mittenii* (2), *Haplohymenium triste* (1) (2148, 11949, 11950).

var. *ussuriensis* (Broth.) Nog. was taken once from on decayed wood in the *Betula* zone at 1600m. s. m. (2130).

Thuidiaceae

Miyabea fruticella (Mitt.) Broth. was found twice on the trunk of *Abies koreana* between 1300 and 1500m. s. m., with *Boulaya mittenii* (1) and *Okamuraea hakoniensis* (1) (2116, 2137).

M. rotundifolia Card. Uno & Takahashi.

M. thuidioides Broth. Uno & Takahashi.

Haplohymenium longinerve (Broth.) Broth. was collected 3 times on humus-covered rocks between 1300 and 1850m in the *Betula* zone, accompanied by *Haplohymenium triste* (1), *Neckera koma* (1) (2099).

f. *piliferum* (Broth. et Yasuda) Nog. Uno & Takahashi. (under *H. piliferum* Broth. et Yasuda).

H. triste (Cesati) Kindb. was gathered 12 times between 780 and 1800m. s. m., from on tree trunks (4), stumps (2), soil on rocks (3), and on bare rocks (3). It occurred unmingled or mingled with *Brachiolejeunea sandvicensis* (1), *Haplohymenium longinerve* (1), *Leucodon coreensis* (1), *Okamuraea hakoniensis* (2), *Boulaya mittenii* (3), *Grimmia pilifera* (1), *Frullania moniliata* (1) (11979, 11963, 11996, 11998, 11973, 11969, 11953, 12008, 11968, 12022, 12007, 11999).

Anomodon abbreviatus Mitt. was found 3 times on exposed but wet boulders or cliffs of rocks and 2 times on decayed wood in shaded or semishaded places, between 1400 and 1650m. s. m., *Thuidium toyamae* (1), *Luecodon coreensis* (1), *Haplohymenium triste* (1), *Grimmia pilifera* (1), *Porella vernicosa* (1), occurred with it (11957, 11985, 1191, 12013).

A. giraldii C. Muell. Uno & Takahashi.

A. integerrimus Mitt. was found twice on a rock with *Grimmia pilifera* at 700m in the *Quercus variabilis* zone (2082, 11978).

A. rugelii (C. Muell.) Keissl. was gathered once from on a rock at 1700m. s. m. (11965).

Herpetineuron toccoeae (Sull. et Lesq.) Card. A total 6 specimens were gathered between 400 and 1600m. s. m.,

The substrata are decaying wood(1), rocks(4), semishaded rock(1), the associated bryophytes include *Plagiochila yokogurensis*(1), *Lejeunea japonica*(1), *Metzeria* sp.(1), *Oncephorus wahlenbergii*(1). (2022, 11956, 11961, 11989, 11989, 11997, 12003).

Boulaya mittenii (Broth.) Card. was found 5 times between 800 and near the summit area (1850m.s.m.). The substrata are rocks(2), decayed woods(2), and trunk of *Quercus mongolica*. The associates include *Frullania moniliata*(2), *Gollania* sp.(1), *Haplohymenium triste*(1), *Leucodon coreensis*(1), *Leucodontella perdependens*(1), *Okamuraea hakoniensis*(1), and so on. (2121, 11964, 11967, 12020, 12023).

Thuidium bipinnatum Mitt. was found once on a rock at 800m.s.m., in the *Quercus variabilis* zone (2066).

T. glaucinum (Mitt.) Mitt. was gathered 3 times between 1300 and 1400m.s.m., from on trees(2), rock(1), with *Porella vernicosa* ssp. *fauriei*(2), *Plagiochila satoi*(1), *Lejeunea japonica*(1), *Trichocoleopsis sacculata*(1), *Hypnum plicatum*(1) (1971, 2009, 11396).

T. recognitum (Hedw.) Lindb. Uno & Takahashi.

T. viride Mitt. Uno & Takahashi.

T. viridiforme Card. was found once at 1500m.s.m., on a rock (2109).

T. toyamae Nog. A total of 8 specimens were gathered from on rocks between 600 and 1650m.s.m., It occurred unmingled or mingled with *Lejeunea japonica*(1), *Neckeropsis nitidula*(1), *Frullania moniliata*(1), *Atrichum undulatum*(1), *Herpetineuron toccoe*(2), *Mnium punctatum*(1), *Scapania* sp.(1), *Porella vernicosa*(1), *P. vernicosa* ssp. *fauriei*(1), *Hylocomium splendens*(1), *Hylocomiopsis ovicarpa*(1), and so on. (2028, 11980, 11972, 11995, 11962, 11958, 11981, 11987).

Hylocomiopsis ovicarpa (Besch.) Card. A total of 9 specimens were obtained between 1550 and 1750m.s.m., on rocks(8), on a tree trunk(1). It occurred with or without *Mnium laevinerve*(1), *M. punctatum*(1), *Plagiothecium* sp.(1), *Hylocomium splendens*(2), *Okamuraea hakoniensis*(1), *Plagiothecium* sp.(1) and so on. (11981, 11975, 11953, 11984, 11990, 11966, 12910, 12009, 12015).

Amblystegiaceae

Drepanocladus uncinatus (Hedw.) Warnst. A single specimen was obtained on a shaded rock at 1600m.s.m., associated with *Radula* sp., *Plagiochila rhizophora*, *Bazzania ovifolia*, *Blepharostoma trichophyllum*, *Frullania moniliata*, *Tritomaria exsecta*, *Mnium striatum*, *M. laevinerve*, *Brachythecium flagellare* (1951).

Hygrohypnum palustre (Hedw.) Loeske. Uno & Takahashi.

Brachytheciaceae

Homalothecium laevisetum S.Lac. Uno & Takahashi.

var. *latifolium* Card. was gathered only once from on a cliff of rocks 700m.s.m., in the *Quercus variabilis* zone. (2083).

Brachythecium buchanai (Hook.) Jaeg. was found once at 1550m.s.m., on a rock. (2134).

B. flagellare (Hedw.) Jenn. A total of 15 specimens were obtained between the foot of the mountain and an altitude of 1800m.s.m., on rocks(14), on a tree trunk(1). The associate bryophytes on rocks are *Thuidium toyamae*(2), *Hylocomium splendens*(1), *Hedwigia ciliata*(1), *Mnium cuspidatum*(1), *M. punctatum*(2), *M. laevinerve*(1), *M. striatum*(1), *Plagiochila rhizophora*(1), *Bazzania ovifolia*(1), *B. tricrenata*(2), *Tritomaria exsecta*(1), *Drepanocladus urciratus*(1), *Grimmia pilifera*(1), *Jamesoniella autumnalis*(1), (2062, 12026, 12032, 12029, 12028, 12046, 12044, 12040, 12039, 2103, 2111, 1951, 12037, 2051, 2036).

B. populeum (Hedw.) B.S.G. was found twice between 780 and 1400m.s.m., on humus-covered rocks(12031, 12041)

B. rivulare (Bruch) B.S.G. was found once on wet rock at 800m.s.m. (2129).

Eurhynchium riparioides (Hedw.) Rich. was also gathered two times between 400 and 100m.s.m., from on wet rocks near a stream below the deciduous forest. (12030, 12042).

Entodontaceae

Entodon compressus C. Muell. was collected once on a wet rock at 400m. s. m. (12052).

E. curvatirameum Card. Uno & Takahashi.

※*E. fauriei* Broth. et Par. A single specimen was made on a shaded wet rock at 1450m. s. m. (2095).

E. rubicundus (Mitt.) Jaeg. et Sauerb. was found twice 800 and 1850m. s. m., on rocks (12053, 12055).

E. scabridens Lindb. was taken twice between 1600 and 1700m. s. m., on decayed wood and on a rock accompanied with *Boulaya mittenii* (1), *Okamuraea hakoniensis* var. *ussuriensis* (1) (20260, 2131).

Pleurozium schreberi (Willd.) Mitt. was collected once at 1800m. s. m., with *Jamesoniella autumnalis* (2052).

Plagiotheciaceae

※*Plagiothecium denticulatum* (Hedw.) B. S. G. was gathered once from on the trunk of *Quercus mongolica* in the *Betula* zone, at 1550m. s. m., (2117).

P. silvaticum (Brid.) B. S. G. was taken once from on a boulder at 1600m. s. m., with *Metzgeria pubescens*, *Entodon* sp., (2132).

Sematophyllaceae

Brotherella yokohamae (Broth.) Broth. was found 3 times on the trunks of *Quercus mongolica* (2) and on shaded decayed wood (1) between 1500 and 1700m. s. m., (12056, 12057, 12058).

Hypnaceae

Homomallium japonicoadnatum (Broth.) Broth. was gathered once from on a rock at 400m. s. m. (2031).

※*Hypnum hamulosum* B. S. G. was gathered only once from on a rock at 1700m. s. m. (2100).

H. oldhamii (Mitt.) Jaeg. also was collected only once on a rock at 1500m. s. m., with *Plagiochila satoi* (1944).

H. plicatulum (Lindb.) Jaeg. was found twice on a shaded rock and wet rock between 1400 and 1600m. s. m., *Plagiochila satoi*, *Bazzania tricrenata*, *Thuidium glaucinum* occurred with it each once (1955, 1971).

H. plumaeforme Wils. was collected 3 times between 600 and 800m. s. m., on rock with *Lejeunea japonica* (1), *Frullania moniliata* (1), *Jamesoniella autumnalis* (1), *Tortella* sp., (1) (2029, 12064, 12072).

※*H. sakuraii* (Sak.) Ando var. *venustum* Ando was taken once on a wet rock near a stream at 1100m. s. m. (2122).

※*H. tristoviride* (Broth.) Par. var. *brevisetum* Ando was gathered 5 times from rocks (4), and decayed wood (1) between 1400 and 1700m. s. m., (2125, 2152, 120067, 12068, 12075).

Taxiphyllum taxirameum (Mitt.) Fl. was collected once on soil at 480m. s. m. (12066).

Rhytidiaceae

Rhytidium rugosum (Hedw.) Kindb. Nakai.

※*Gollania varians* (Mitt.) Broth. was found 4 times on wet rocks near a spring between 1400 and 1500m. s. m., accompanied by *Hylocomium splendens*, *Bazzania tricrenata* (1948, 2112, 2115, 2121).

Hylocomiaceae

Hylocomium brevirostre (Beauv.) B. S. G. was taken once from on a rock at 1650m. s. m., with *Rhacomitrium anomodontoides* (2155).

H. pyrenaicum (Spr.) Lindb. was gathered 3 times between 1500 and 1700m. s. m., from on rocks (2), and sandy soil on rock (1), accompanied by *Hylocomiopsis ovicarpa*, *Porella vernicosa*, *Thuidium glaucinum*, *Anomodon rugelii* each once. (2091, 2114, 2089).

H. splendens (Hedw.) B. S. G. A total of 10 specimens were gathered between 1200 and 1700m. s. m., from on rocks only, associated with *Gollania varians* (2), *Metzgeria pubescens* (1), *Frullania moniliata* (3), *Thuidium toyamae* (2), *Hedwigia ciliata* (1), *Grimmia pilifera* (1), *Brachythecium flagellare* (1) and so on. (12080, 12081, 12088, 12087, 1205, 12085, 12083, 2045, 12078).

H. umbratum Ehrh. Uno & Takahashi.

Diphysciaceae

Theriotia lorifolia Card. Uno & Takahashi.

Polytrichaceae

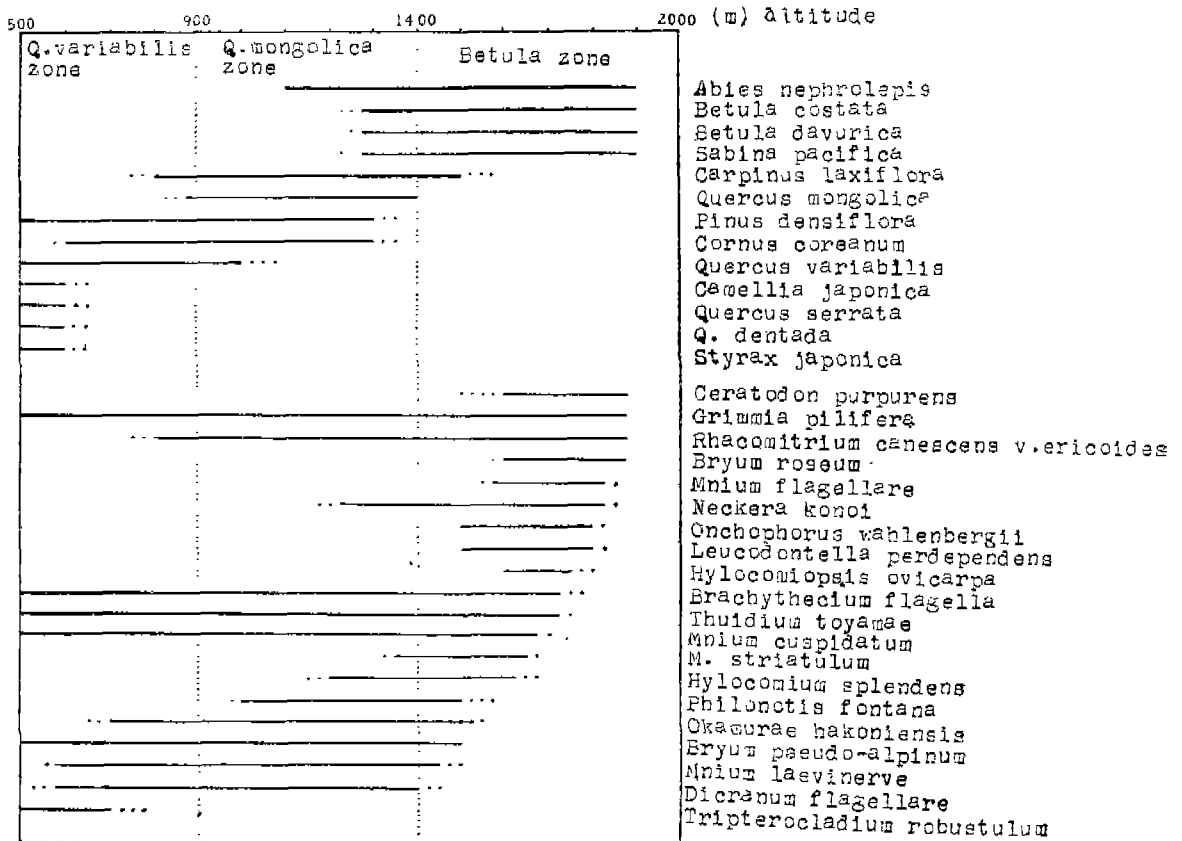
Pogonatum inflexum (Lindb.) Par. was found twice on moist soil (2), between 400 and 800m.s.m., associated only once with *Dicranella heteromalla* (12096, 12098).

※*P. pygmaeum* Card. was found only once on soil at 780m.s.m. (2085).

P. urnigerum (Hedw.) P. Beauv. was collected 4 times between 1800 and 1900m.s.m., from on rocks accompanied by *Rhacomitrium canescens* var. *ericoides* (2), *Brachythecium flagellare* (2), *Grimmia pilifera* (2), and several others. (12090, 12091, 12092, 12099).

Polytrichum commune Hedw. Uno & Takahashi.

P. formosum Hedw. was found 3 times between 1200 and 1600m.s.m., on rocks (2), and on soil covering boulder (12093, 12095, 12097).



Vertical distribution of main trees and mosses on Mt. Chil.

摘 要

1959年과 1960年の 2회에 걸친 智異山 登山時 採集한 蘚苔類는 約 1000包에 達했는데 그中 蘚類만을 따로 整理하면 126種, 6變種, 1品種, 79屬에 達했으며 (既發表分 一部 包含) 그中 다음의 11種, 3變種은 韓國未記錄種이다.

- (1) *Rhabdoweissia fugax* (Hedw.) B.S.G. (2) *Pohlia crudoides* (Sull. ed Lesq.) Broth. var. *revolvens* (Card.) Ochi
- (3) *Philonotis socia* Mitt. (4) *Ptychomitrium linearifolium* Rms. (5) *Ulota crispa* Brid.
- (6) *Neckera konoi* Broth. (7) *Neckeropsis nitidula* (Mitt.) Fleisch. (8) *Eontodon sauriei* Broth. et Par.
- (9) *Plagiothecium denticulatum* (Hedw.) B.S.G. (10) *Hypnum hamulosum* B.S.G. (10) *H. sakuroii* var.

- venustum* Ando. (12) *H. tristoviride* var. *brevisetum* Ando. (13) *Gollania varians* (Mitt.) Broth.
 (14) *Pogonatum pygmaeum* Card.

REFERENCES

- 1) W.S.Hong & H. Ando: 1959. An enumeration of Mosses recorded from Korea, with some new additions to the Korean flora. Theses. Catholic Med. Coll. 3: 371—395.
- 2) Hong W.S.: 1960. The Bryophytes on Mt. Soyo, with some new addition to the Korean Flora. Kor. Jour. Bot. 3(1). 26—31.
- 3) _____: 1960. The Flora of Bryophytes on Mt. Kwanak with some new additions to the Korean Flora. Kor. Jour. Bot. 3(2). 19—26.
- 4) W.S.Hong & H.H.Kim: 1960 A List of bryophytes of Mt. Sulak, Korea. Hikobia 2: 99—108.
- 5) W.S.Hong & H.H.Kim: 1961. Bryophytes of the Experimental Forests of Kwangnung, Korea. Hikobia 2: 244—252.
- 6) Horikawa. Y: 1955. Distributional Studies of Bryophyta in Japan and the adjacent regions. Hiroshima.
- 7) Kashimura. I: 1939. General enumeration of Mosses form Korea 1. Journ. Chosen Nat. Hist. Soc. 26: 7—19.
- 8) _____: 1941. ditto 11. 1.c. 30: 60—71.
- 9) Nakai, T: 1914. The Survey report on Plant of Mt. Chi I. Seoul.
- 10) Uno.K. & H. Takahashi: 1940. The List of Mosses in Mt. Chiisan. Bot. Mag. Tokyo. 54: 29—32.