

UNEXPECTED NEW FINDS ON TAIWAN

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Last August our collector, M. T. Kao, made two very unexpected finds.

On August 10, 1964 he was collecting in Nantou Hsien (County) between Tun-Yuan (屯原) and Yun Hai (雲海) on Mt. Nengkao (能高山) which is from 1600 to 3261 m. high. At about 2300 m he ran across a lot of *Polypodium Atkinsoni* C. Chr. This fern has never been reported from Taiwan so far as we know. It has previously been reported as abundant from Tibet and Sikkim in the high Himalayas (Ching 1933: 48). The type is from Sikkim.

We have no Himalayan specimens of this species in our herbarium with which to compare it but it fits the descriptions by Ching and Beddome (1892: 320) very closely.

Its venation is usually open in the lower part of the frond but forms areolae with included forking veinlets in the upper part of the frond (Pl. 1) Mr. Kao found this fern growing on a steep, damp, rocky cliff.

The other unexpected find was made by M. T. Kao on Aug. 29, 1964 in Ilan Hsien on Mt. Bon-Bon (Mt. Bon-Bon is the name used by the Tsal Tribe for this locality). Here Mr. Kao found two small plants of *Gymnopteris vestita* (Wall.) Underw. growing on exposed rocks along the roadside. Mt. Bon-Bon is from 650-850 m high. This fern has been previously collected in the high mountains of Northwest India and Nepal and from Yunnan, Szechwan, Kansu and Shensi in China, and to our knowledge has never been reported from Taiwan. The type is from India.

In the last issue of *Taiwania* we reported *Pityrogramma calomelanos* (L.) Link. (DeVol 1963: 95). Since it has recently been found in four counties in Taiwan and since it was never reported before, causes us to surmise that its spores may have reached Taiwan rather recently. This summer I found it again in Nantou Hsien, this time it was located beyond Wushe (霧社) at Luh Shan (鹿山) growing along a path cut in the mountain gorge leading to some hot springs. I am sure Japanese botanists must have often gone over these routes and since there are no specimens of this fern in our herbariums and no mention of this species in the enumerations published by S. Sasaki (1928) or G. Masamune (1936) (1954) it seems likely that the spores of this fern have reached Taiwan in the last twenty years. It is not abundant in any locality, but is widely distributed and grows very well. In no case has it been found near dwellings, and there is no evidence that it has been brought to Taiwan by man. Each collection of this fern has been made in wild terrain.

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P. calomelanos grows in the Philippines and elsewhere in S. E. Asia so its presence in Taiwan is not so much of a surprize as the other two ferns mentioned above.

Many ferns could easily have reached Taiwan from the Philippines and Islands to the South of us, as the annual typhoons come to us from the south and east, but just how plants from southwest China could have reached Taiwan is not so easy to explain. In any case we are finding that the geographical range of many ferns is much wider than previously known.

A collector from Hsinchu Hsien recently (December 1964) found *Spergula arvensia* L. (Caryophyllaceae) growing as a weed on a tea plantation and brought the plants to our Horticulture Department for identification. These plants were then turned over to Mr. C. C. Chuang, of our Botany Department for determination. So far as is known this plant has never been reported from Taiwan before. Edgeworth and Hooker (1875: 243) reported it from India, and Merrill (1923: 139) cited it from the Philippines. Ohwi (1956: 488) reported it from Hokkaido and Honshu in Japan, and Kitamura (1962: 262) also mentions it as a naturalized plant from Europe growing in Japan.

On January 1, 1965 C. C. Chuang and M. T. Kao made a visit to Pu-hsin in Taoyuan County and found *Spergula arvensis* growing on the Ping Cheng Tea Experiment Farm with *Lupinus luteus* L. which was being grown as a cover-crop. *Lupinus luteus* is not a native of Taiwan and it appears likely that this common weed was brought here with seeds of *Lupinus luteus*. The plants were in all stage of growth from seedlings to flowering and fruiting plants.

On January 1, 1965 C. C. Chuang and M. T. Kao found *Nymphoides coreana* (Lev.) Hare (Menyanthaceae) in Taoyuan Hsien floating on a pond. This species was first described by Leveille (1910: 284) from Korea and is now know from Japan, Okinawa and Mainland China. It has been collected on Taiwan before, but was previously misidentified as *N. cristatum*. Both species have small white flowers, the leaves of both are about the same size, but *N. cristatum* has "a ring of white hairs round the throat" (Clarke, 1885: 131) while *N. coreana* has white papillate hairs growing on the corolla lobes. Leveille thought that the petals were probably yellow ("petala flavida?") but as Kitamura (1961: 213) points out correctly they are white.

NEW RECORDS FOR TAIWAN IN 1964

Gymnogrammaceae

Gymnopteris vestita (Wall.) Underwood 1902: 627, Matthew 1911: 369 Ching 1930: 57 pl. 29.

Gymnogramma vestita Presl. Hooker, 1864, 5: 143 Hooker and Baker 1868: 379.

Syngamma vestita Moore. Beddome 1892: 386-387, fig. 223.

Neurogramme vestita (Wall.) Diels 1901: 199 Diels, 1902: 262.

Dist. India, Nepal, Mainland China, Taiwan.

Taiwan: Ilan Hsien: Mt. Bon-bon, *Kao* 5920.

Polypodiaceae

Polypodium Atkinsoni C. Chr. Christensen 1906: 511 Ching, 1933: 48.

Goniophlebium Hendersoni Beddome, 1892: 320.

Dist. Tibet, Sikkim, Taiwan.

Taiwan: Nantou Hsien: Mt. Nengkao (能高山), *Kao* 5719.

Caryophyllaceae

Spergula arvensis L.

Dist. Native of Europe, widely naturalized.

Taiwan: Taoyuan Hsien: Pu-hsin (埔心) *C. C. Chuang* 3121.

Menyanthaceae

Nymphoides coreana (Lev.) Hara 1937: 26, Kitamura 1961: 213 fig. 525, Ohwi. 1956. 959.

Limnanthemum coreanum Leveille 1910: 284-285.

Dist: Korea, Japan, Okinawa, Mainland China, Taiwan.

Taiwan: Taoyuan Hsien: Pu-hsin, *C. C. Chuang* 3131.

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Polypodium Atkinsoni C. Chr.