

Hiroshi HARA*: **Critical notes on some type specimens of
East-Asiatic plants in foreign herbaria (3)**

原 寛*: 欧米にある東亞植物基準標本の検討 (3)

10) **Phaseolus radiatus L. and the Mung bean.** The Mung bean (green gram) is a common and important crop in south-eastern Asia, especially in China, but its scientific name has been confused for many years. Several different names have been used for it by different authors in recent papers. In the summer of 1954 I was fortunately able to examine nearly all authentic material representing these species. Hence, I wish to present here my interpretation of those names, aiming to fix the scientific name of the Mung bean.

The application of the name, *Phaseolus radiatus* Linnaeus in 1753, is the first important question to be settled. *P. radiatus* had been used for the Mung bean by Prain (1897) and others, until Piper and Morse in 1914 mentioned that that species is not the Mung bean. They considered *P. radiatus* L. and *P. sublobatus* Roxb. as the same in accordance with the opinion of the botanists at Kew, and used *P. aureus* Roxb. (1832) for the Mung bean.

Linnaeus in Kongl. Sv. Vet. Akad. Handl. 3: 202, t. 7, f. 2 (1742) described a plant which was grown at Uppsala from seeds obtained from Canton, China, and gave a detailed description and a figure of the whole plant bearing flowers and a young pod. He considered that the plant was the same as that illustrated by Dillenius in Hortus Elthamensis 315, t. 235, f. 304 (1732), and Linnaeus supplied a latin diagnosis on page 206 as 'Phaseolus caule erecto tereti, floribus capitatis, leguminibus cylindraceutis horizontalibus.' When he published *Phaseolus radiatus* in his Species Plantarum in 1753, he apparently based it on his previous publication citing exactly the same phrase as that of 1742, although he took the specific epithet *radiatus* from Dillenius' phrase 'Phaseolus zeylanicus, siliquis radiatim digestis.' The specimen No. 899.8, preserved now in the Linnaean Herbarium of the Linnean Society of London, agrees perfectly with his figure of 1742, and it can be regarded as the holotype of *Phaseolus radiatus* Linnaeus. It is a flowering plant, and has a weak but erect (not twining) and glabrescent stem, oblong entire and acute leaflets, and ovaries densely covered with brownish stiff hairs. These characters are also well illustrated in his figure of 1742. As compared with the common form of the

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Mung bean, it has a little more slender and glabrous stem and narrower leaflets, but taking into consideration the fact that it was grown at Uppsala, the plant may be interpreted as a less robust individual of the Mung bean which is very common in Canton.

According to Piper and Morse, this Linnaean specimen was identified with *P. sublobatus* Roxburgh by the Kew botanists. *P. sublobatus* Roxb. is rather an obscure name and Wallich (1831-32) misapplied it to different plants, as pointed out by Baker in Hooker's Flora of British India. Roxburgh's type specimen is not extant at Kew nor is it in the British Museum. However, his unpublished coloured plate is now preserved at Kew. This plate shows a long twining stem and often sublobate leaflets, and its stem as well as its petioles and peduncles are densely furnished with long patent hairs. This plant seems to be the same as the one which was named by Heyne as *Phaseolus trinervius*, and by Dalzel as *P. setulosus*. It has slender pods attaining 6 cm long and 4 mm wide with somewhat long brown appressed hairs, and small dark brown seeds minutely wrinkled on the surface attaining 3 mm in length and 2 mm in width. This plant is very closely allied to the Mung bean in cultivation, and might be a wild prototype of the Mung bean, as suggested by Prain in 1897. However, it is clear that the Linnaean type of *P. radiatus* much better matches the Mung bean than *P. sublobatus*, as shown by the characters above mentioned. Dillenius' plant, with which Linnaeus identified his *P. radiatus*, is also generally considered as a form of the Mung bean with dark-spotted seeds.

Thus I conclude that the name *Phaseolus radiatus* Linnaeus should be applied to the Mung bean, in the same manner as Prain and others have already interpreted it, and that *P. sublobatus* is its wild variety.

As the Indian name for the green gram (the Mung Bean) is Mung, the name *Phaseolus Mungo* was used for it by Savi (1822), Roxburgh (1832), Wight and Arnott (1834), Baker (1876), and others. But as Prain (1897) previously pointed out, the detailed original description of *P. Mungo* Linnaeus in 1767 which was also based on the plant grown at Uppsala, agrees much better with Tikari than Mung, although in this case no Linnaean specimen of *P. Mungo* is extant in his herbarium. Tikari (*P. Mungo* L.), including Urd, is separable from Mung (*P. radiatus* L.) in having shorter thicker ascending 5-8-seeded pods covered with very long hairs, slightly larger smooth seeds with an elevated concave hilum.

Phaseolus hirtus Retzius (1783) seems to be a kind of the Mung bean, as suggested by Savi (1822), Roxburgh (1832), and Wight and Arnott (1834), although

as compared with the common form of the Mung bean, the type specimen of *P. hirtus* has dense long patent hairs on stems and petioles, and its young ovaries are densely covered with longer whitish rigid hairs. I have grown from seeds in Tokyo the plant described by Nakai (1949) under the name *P. hirtus* by his courtesy, but it was Tikari (*P. Mungo* L.) and not Mung.

Phaseolus aureus Roxburgh is also the same species as the Mung bean. Its stems are erect and are densely covered with thin light brownish patent hairs 2–2.8 mm long. Its pods attain to 6 cm long and 4 mm thick, and are covered with brown hairs about 1.5 mm long.

Phaseolus chlorospermus Tenore and *P. viridissimus* Tenore have generally been considered as the Mung bean. However, the specimen of *P. chlorospermus* Tenore at Kew from Herb. Gay labeled as ‘Colitur in H. R. Neapoli, Tenore Majo 1830’ has long twining stems, short thick pods with long hairs, and quite smooth seeds, and it agrees with Tikari, and is not Mung. Also the description of *P. viridissimus* Tenore in Cat. Piante. Orto. Bot. Napoli 1845, p. 90 suggests that it is Urd rather than Mung, although the specimen (Tenore 1847) under that name at Kew seems to be Mung.

The Mung bean widely cultivated in south-eastern Asia is variable especially in habit, pubescence, and size and colour of seeds. The commonest form in cultivation has olive-green seeds, but several other forms can be named as follows:

***Phaseolus radiatus* L.** [in Kongl. Sv. Vet. Akad. Handl. **3**: 202, t. 7, f. 2 (1742), Hort. Upsal. 213 (1748)] Sp. Pl. ed. 1, **2**: 725 (1753)—Prain in Journ. Asia. Soc. Bengal. **66** (2): 422 (1897), var. *typica* Prain—Harms in Notizbl. **7**: 107 (1917)—Crevost et Lemarié, Cat. Prod. Indochin. **1**: 97, t. 13 (1917)—Heyne, Nutt. Pl. Ned. Ind. ed. 2, **2**: 836 (1927)—Honda in Siebold Kenkyu 555 (1938).

P. hirtus Retzius, Obs. Bot. **3**: 38 (1783)—Hara in Sigenkagaku-Kenkyūsho-Ihō **10**: 10, figs. (1946).

P. aureus Roxburgh, Hort. Beng. 55 (1814), nom. nud.; Fl. Ind. ed. 2, **3**: 297 (1832)—Piper et Morse in Bull. U. S. Dep. Agr. no. **119**: 16, figs. (1914)—Merrill, Inter. Rumph. Herb. Amboin. 283 (1917); in Trans. Amer. Philos. Soc. n. s. **24** (2): 213 (1935)—Alston in Trimen, Handb. Fl. Ceylon **6**: 81 (1931)—Ditmar in Bull. App. Bot. Pl. Breed. **23** (5): 384 (1931)—Burkill, Dict. Econ. Prod. Malay Pen. **2**: 1706 (1935)—Bailey, Man. Cult. Pl. ed. rev. 575 (1949).

P. Mungo L. sensu Savi in Nuov. Giorn. Letter. **3**: 308, fig. 1 (1822)—Wallich, Cat. no. 5589 (1831–32), p. p.—Roxburgh, Fl. Ind. **3**: 292 (1832)—Wight et Arnott,

Prodr. Fl. Ind. Or. **1**: 245 (1834)—Baker in Hooker, Fl. Brit. Ind. **2**: 203 (1876)—Gagnepain in Fl. Gén. Ind.-Chin. **2**: 231 (1916).

Azuki *typica* Miura, Pl. Manch. & E. Mongol. **2**: 310 (1926).

Phaseolus demissus Kitagawa in Journ. Jap. Bot. **19**: 108 (1943).

P. viridissimus Tenore sensu Nakai in Bull. Sci. Mus. Tokyo **27**: 43 (1949).

Azuki radiata (L.) Ohwi, Fl. Jap. 691 (1953); in Bull. Sci. Mus. Tokyo **33**: 7 (1953).

Rudua aurea (Roxb.) F. Maekawa in Jap. Journ. Bot. **15**: 114 (1955).

f. **aureus** (Roxb.) Hara, comb. nov.

P. aureus Roxburgh, sensu strict. *P. radiatus* var. *aurea* (Roxb.) Prain, l. c. 422 (1897), excl. syn. *P. Atsuki* Sieb. *P. hirtus* f. *aureus* (Roxb.) Hara, l. c. 12 (1946).

P. viridissimus var. *aurea* (Prain) Nakai, l. c. 44 (1949).

f. **atro-maculatus** (Hara) Hara, comb. nov.

P. hirtus f. *atro-maculatus* Hara, l. c. 12 (1946).

f. **nigrescens** (Hara) Hara, comb. nov.

P. hirtus f. *nigrescens* Hara, l. c. 12 (1946).

f. **compressus** (Hara) Hara, comb. nov.

P. hirtus f. *compressus* Hara, l. c. 12 (1946).

var. **setulosus** (Dalz.) Hara, comb. nov.

P. sublobatus Roxburgh, Hort. Beng. 54 (1814), nom. nud.; Fl. Ind. ed. 2, **3**: 288 (1832).

P. trinervius Heyne in Wallich, Cat. no. 5603 (1831-32)—Wight et Arnott, Prodr. Fl. Ind. Or. **1**: 245 (1834).

P. setulosus Dalzell in Journ. Bot. & Kew Misc. **2**: 33 (1850).

P. sublobatus var. *setulosa* (Dalz.) Prain in Journ. Asia. Soc. Bengal **66**: 423 (1897).

P. radiatus L. sensu Piper et Morse in Bull. U. S. Dep. Agr. no. **119**: 17 (1914)—Merrill, Inter. Rumph. Herb. Amboin. 283 (1917)—Alston in Trimen, Handb. Fl. Ceylon **6**: 82 (1931)—Santapau in Rec. Bot. Surv. India **16** (1): 79 (1953).

11) **Nasturtium? tenue** Miquel. Miquel's plant had long been considered as a species of *Eutrema* or *Wasabia* called 'Yuri-wasabi' in Japanese. In 1930 Koidzumi, after examining the type, identified it as a species of *Cardamine* then known as *C. Tanakae* Fr. & Sav. and published for it the new combination, *C. tenuis* (Miq.) Koidzumi. But unfortunately his identification was a mistake, and the type (Siebold) of *Nasturtium? tenuis* Miq. at Leiden consists of 2 flowering plants of 'Yuriwasabi.' Thus the correct names for both plants should be as follows:

Wasabia tenuis (Miq.) Matsumura, Ind. Pl. Jap. **2** (2): 161 (1912).

Nasturtium? tenue Miquel, Ann. Mus. Bot. Lugd.-Bat. **2**: 71 (1865).

Eutrema hederaefolia Franch. et Sav., Enum. Pl. Jap. **2**: 283 (1877).

Cardamine bracteata S. Moore in Journ. Bot. **16**: 130 (1878).

Wasabia hederaefolia (Fr. et Sav.) Matsumura in Bot. Mag. Tokyo **13**: 72 (1899).

Eutrema tenuis (Miq.) Makino in Bot. Mag. Tokyo **26**: 177 (1912).

Eutrema bracteata (Moore) Koidzumi, Fl. Symb. Or.-As. 24 (1930).

Wasabia bracteata (Moore) Hisauti in Journ. Jap. Bot. **12**: 447 (1936)—Ohwi, Fl. Jap. 573 (1953).

Cardamine Tanakae Franch. et Sav. ex Maxim. in Bull. Acad. Sci. St.-Petersb. **18**: 280 (1873)—Fr. et Sav., Enum. Pl. Jap. **1**: 36 (1873), non. nud.; **2**: 280 (1877).

C. chelidonioides S. Moore in Journ. Bot. **16**: 130 (1878)..

C. tenuis Koidzumi, Fl. Symb. Or. As. 13 (1930), excl. basonym—Ohwi, Fl. Jap. 570 (1953).

12) **Listera japonica** Blume. The type specimen (from Herb. Siebold) at Leiden consists of two flowering plants, and seems to me to be identical with *L. shikokiana* Makino as suggested by F. Maekawa. It has characteristic triangular acuminate leaves in the middle of stem, loose inflorescences with filiform pedicels 4–7 mm long, and very small roundish bracteoles. However, its flowers are badly withered, and it is difficult to know the exact shape of its labellum which is about 5 mm long, and may be deeply bilobed contrary to Blume's original description.

Listera japonica Blume, Coll. Orchid. Archip. Ind. et Japon 136, t. 38, f. 2; t. 48, f. E (1858)—Makino in Bot. Mag. Tokyo **7**: (63) & (66) (1893); **19**: 6 (1905)—Matsum., Ind. Pl. Jap. **2** (1): 253 (1905), excl. specim.—Schlechter, Orchid. Sino-Jap. Prodr. 141 (1919).

L. shikokiana Makino in Bot. Mag. Tokyo **7**: (64) & (68) (1893); **19**: 11, f. 5 (1905); **24**: 230, f. 17 (1910)—Matsum., l.c. (1905)—Schlechter, l.c. 143 (1919)—Masamune in Mem. Fac. Sci. & Agr. Taihoku Univ. **11** (4): 576 (1934), cum var. *albo-striata* Masam.—Fukuyama in Trans. Soc. Nat. Hist. Formos. **32**: 241 (1942); in Act. Phy. Geo. **14**: 123 (1952).

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10) ヤエナリ(緑豆) 本種については前に資源科学研究所彙報 No. 10: 8 (1946) に記したが、なお疑問の点があつたので昨夏これに関連のある基準標本を検討した。その結果リンネ標本室にある *Phaseolus radiatus* L. の基準標本は、キューの植物学者の意見とは異なり、ヤエナリであるとの見解に達した。

11) ユリワサビとマルバノコンロンソウ *Nasturtium? tenue* Miquel はながらくユリワサビと考えられてきたが、小泉博士(1930)は基準標本を見てこれをマルバノコンロンソウと同定され、両者の学名を改訂された。しかし Miquel の基準標本は明かに花期のユリワサビであつてマルバノコンロンソウではないので、この両種の学名はもと通りでよい。

12) オオフタバラン この種は多年疑問のものとされてきた。基準標本を見ると花はしなびてちじみ唇瓣の形は分り難いが、他の性質からヒメフタバランであると考える。この事は前川博士も予想され東大の標本に手記されている。