ADDITIONS AND CORRECTIONS TO THE INDO-NEPALESE FLORA

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ABSTRACT

This paper records one new species and one new variety from Saurashtra, two new varieties from East Nepal contributed by the author jointly with M. L. Banerji, and several notes on Bombay Orchids contributed by the author with Z. Kapadia.

Of the new taxa of plants listed below, two have been collected personally by the author in Saurashtra ; the others have come to light in the course of studies done by research students under his guidance. The plants of East Nepal have been collected by Shri M. L. Banerji during his long term of botanical exploration in that country ; the orchids have been collected by the author and Shri Z. Kapadia, who has been working on the Orchids of Bombay for several years. Both M. L. Banerji and Z. Kapadia have been helped in their work through the kindness of the administrators of the Sir Dorabji Tata Trust, and wish me to put this on record in these pages as a token of their gratitude.

Tephrosia jamnagarensis Santapau, spec. nov. (Text-fig. 1).

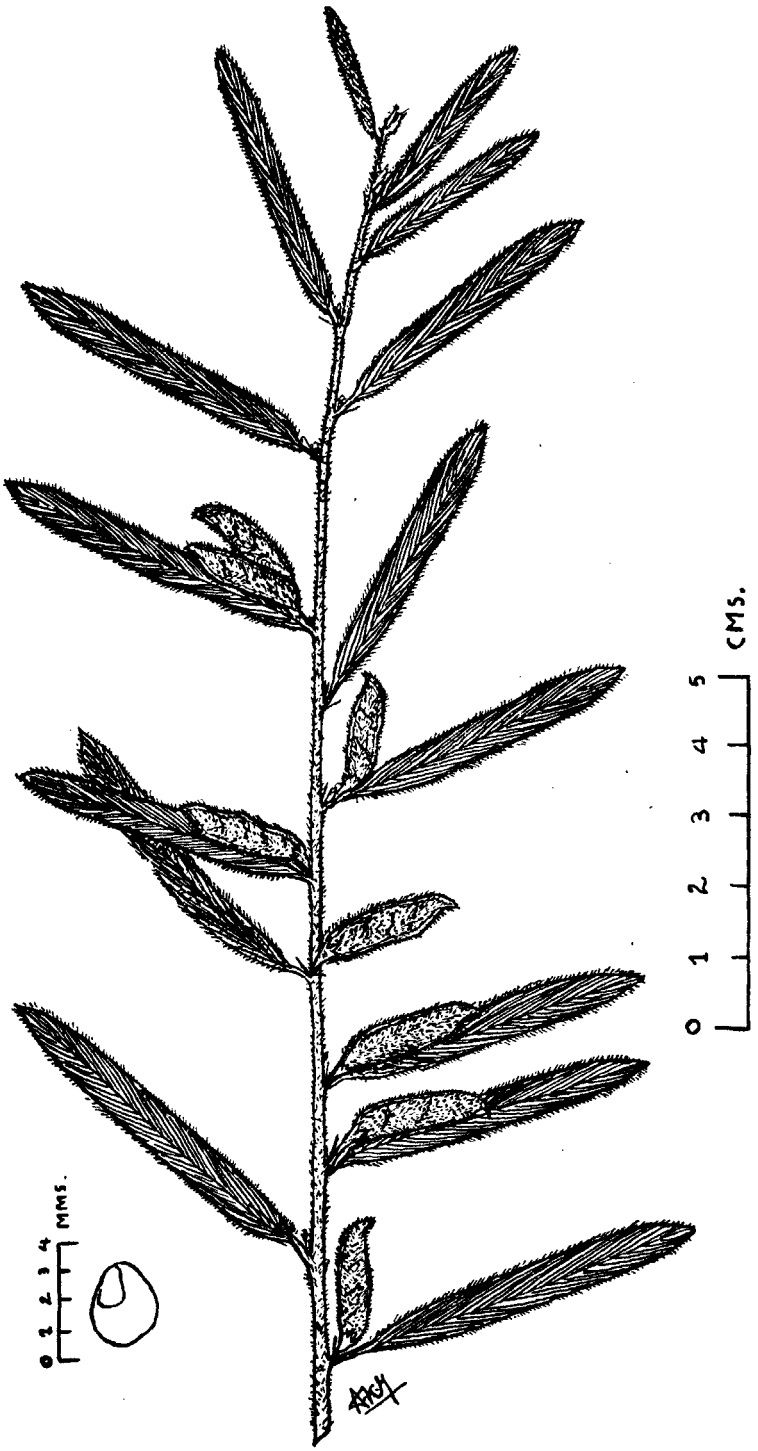
Accedit ad *Tephrosiam strigosam* Sant. & Mahesh. (*T. tenuem* Wall.) habitu generali, a qua tamen differt charactere foliorum, magnitudine et forma leguminum et brevitate pedunculorum.

Herba vel suffrutex erectus vel suberectus, annuus (?), vix ramosus. *Caulis* pilis albidis, adpressis ornatus. *Folia* simplicia, 3–5.8 cm. longa, 4–7 mm lata, linearia, in pagina superiore glabra vel subglabra, pilis nonnullis sericeis, patentibus longisque ornata, in inferiore pagina dense pilosa pilis argenteis adpressisque, apice subobtuso, distincte apiculato, basi acuta ; nervi laterales ca. 25–30, inter se paralleli, margine integro, duplici nervo a basi ad apicem decurrente prope marginem, distincti in pagina superiore, pilis operti sed distincti etiam in inferiore. *Petioli* 2–3 mm. longi, valde pilosi ; stipulae subulatae, 3–4 mm. longae, pilosae. *Flores* singuli vel bini ad omnes fere axillas foliorum ; pedunculi aeque longi ac petioli, vel hisce breviores, dense pilosi. *Calyx* dense pilosus, 2–3 mm. longus, plus minusve ad mediam partem divisus, dentibus subulatis, filiformibus, pilosis, subaequalibus. *Corolla* non visa. *Legumen* complanatum, ca. 20×5 mm., dense pilosum pilis griseis, patentibus, obliquum ad utrumque apicem, apiculatum ; semina 5–6, reniformia, haud nitentia, brunnea.

Typus lectus inter gramina fructificans ad locum Rozi prope urbem Jamnagar, in provincia Saurashtra, die 16 octobris anni 1945 et positus in *Blatter Herbario*, in urbe Bombay sub numero *Santapau 7522*.

In many respects this plant is similar to *T. strigosa* Sant. & Mahesh. which in our floras goes under the name of *T. tenuis* Wall., from which it differs mainly in the type of leaves, the size and form of the legumes and the brevity of the peduncles.

Erect to suberect herb or undershrub, annual (?), sparsely branched. *Stems* simple or nearly so, covered with whitish adpressed hairs. *Leaves* simple, 3–5.8×0.4–0.7 cm., linear, glabrous above or subglabrous with a few silky spreading hairs, densely hairy with silvery adpressed hairs beneath, sub-obtuse and clearly apiculate at the apex, the base acute ; lateral nerves 25–30 pairs,



TEXT-FIG. 1. *Tephrosia jamnagarensis* Santapau.

parallel among themselves ; margins entire, with a nerve running from near the base to the apex very close to the margins ; the nerves are clear on the upper surface, covered with hairs but nearly equally distinct on the lower surface. *Petioles* 2–3 mm. long, very hairy ; stipules subulate 3–4 mm. long, very hairy. *Flowers* single or in pairs at practically all the axils of the leaves ; peduncles about as long as or slightly shorter than the petioles, densely hairy. *Calyx* very hairy, 2–3 mm. long, the teeth subulate, filiform, hairy, subequal. *Corolla* not seen. *Legume* or pod compressed, about 20×5 mm., densely hairy with greyish, patent hairs, oblique at both ends, apiculate ; seeds 5–6, reniform, dull or mat, brownish.

The type of this new species was collected at Rozi near Jamnagar in Saurashtra among grasses, on the 16 October 1945 and has been deposited in the Blatter Herbarium, Bombay, under the number *Santapau 7522*.

This is a very distinct species ; the underside of the leaves is clearly silvery or densely argenteo-canescent, much more so than any of the specimens of *T. strigosa* from Saurashtra ; the peduncles are fairly stout, not filiform as in the other species, and generally shorter than the petioles. The legumes are about twice as broad and much more hairy than in *T. strigosa*, the seeds not separated by any internal partition. Rozi is the port of the city of Jamnagar ; the plant has been named *jamnagarensis* in token of gratitude for the constant help and encouragement of H. H. the Jam Saheb of Nawanagar, under whose auspices the botanical exploration of Saurashtra was started in 1945.

Indigofera articulata Gouan var. ***monosperma*** Santapau, var. nov. (Text-fig. 2).

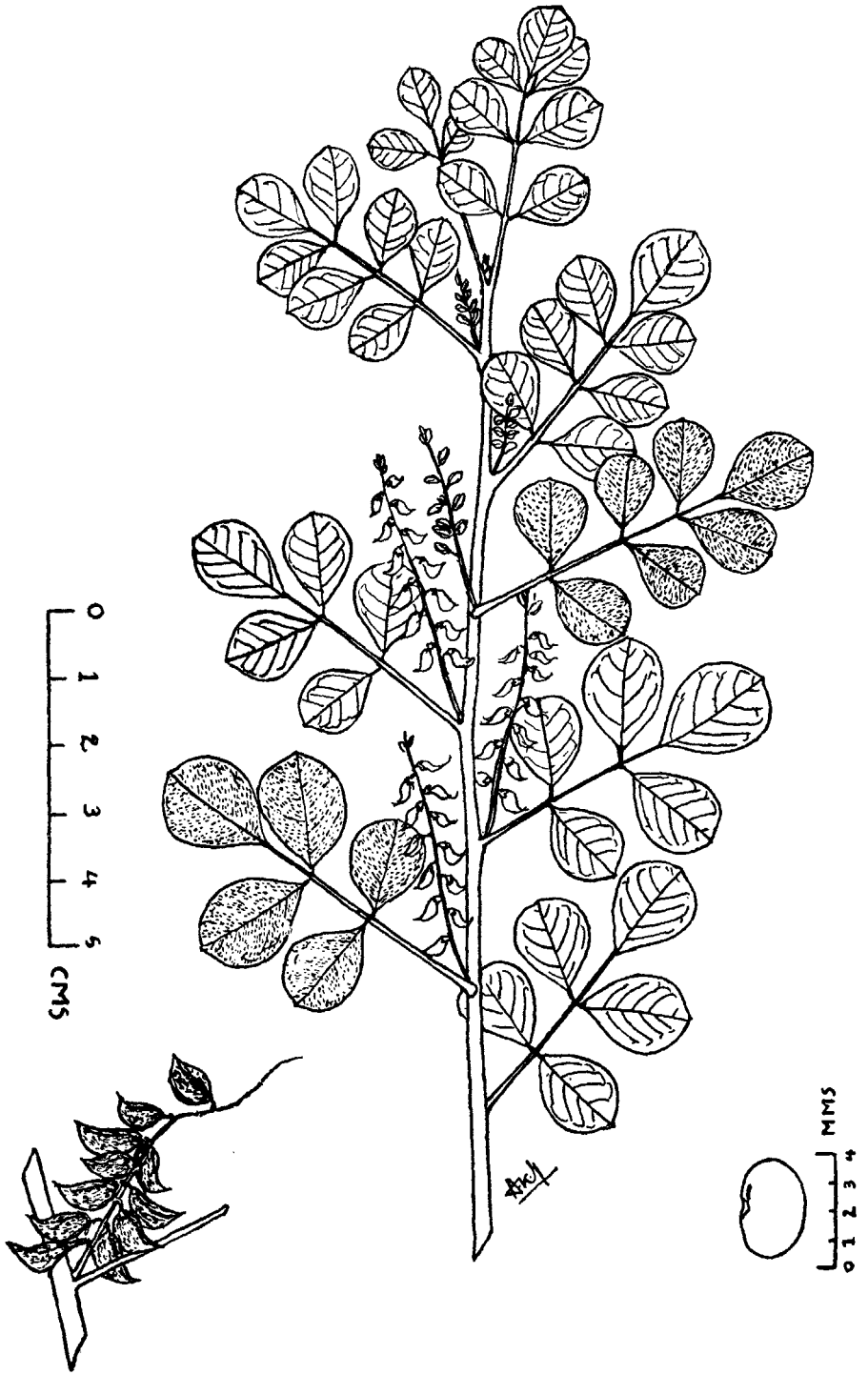
Accedit ad varietatem typicam, a qua tamen differt primo intuitu leguminibus monospermis, raro dispermis, numquam vero polyspermis.

Suffrutex erectus, plus minusve albidus pilis minutissimis adpressis, caulibus atque ramis subteretibus vel angularibus. *Folia* 7–10 cm. longa, stipulis minutis persistentibus ; foliola 7–9 numero in singulis foliis, opposita, obovata vel suborbicularia, rotundata vel paulo emarginata ad apicem, acuta vel cuneata ad basin, petiolulis 2 mm. longis, glabra supra, plus minusve dense hispidula pilis albidis adpressis infra, omnia subaequalia, vel foliolum terminale paulo largius caeteris. *Flores* axillares, racemosi, usque 50 in singulis racemis, deflexi, ebracteati ; racemi foliis breviores. *Pedunculi* 1–1.5 mm. longi floriferi, paulo longiores sub fructu, dense pilosi pilis argenteis adpressis ; *calyx* brevis, 1–1.5 mm. longus, tubo et dentibus plus minusve aequilongis. *Corolla* calyce 3-plo longior ; vexillum dense pilosum extra, caeterae corollae partes glabrae, rubrae vel rubrescentes. *Legumen* ut plurimum monospermum, rarissime dispermum, divaricatum vel deflexum, primo pilis albidis densis ornatum, tandem subglabrum. *Semina* reniformia, olivaceo-lutea, nitentia ; cum vero bina semina adsunt, reniformia sunt sed truncata ad latera contigua.

Typus lectus a me in loco Dwarka, ad partes septentrionales Saurashtra regionis ad oras maritimas, die 16 octobris anni 1953, et positus in Blatter Herbario sub numero *Santapau* 16771 ; isotypus, *Santapau* 16784, lectus eodem die ac loco, positus etiam in Blatter Herbario ; paratypus florifer, *Santapau* 14625, lectus ad Rajkot in Saurashtra, positus est in eodem herbario.

Indigofera articulata Gouan var. *monosperma* var. nov.

Very similar to the typical variety, from which it differs at once by the pods, which are 1-seeded, very rarely 2-seeded. An erect *undershrub*, more or less greyish with minute adpressed hairs, the stems and branches subterete or angular. *Leaves* 7–10 cm. long, the stipules minute and persistent. *Leaflets* 7–9, opposite, obovate or suborbicular, rounded or slightly emarginate at the apex, acute or cuneate at the base (the petiolules up to 2 mm. long), glabrous above, more or less hairy with white adpressed hairs beneath, all the leaflets subequal, or at times



TEXT-FIG. 2. *Indigofera articulata* var. *monosperma* Sant.

the terminal one slightly larger. *Flowers* axillary, racemose, up to 50 in a single raceme, deflexed, ebracteate; the racemes shorter than the leaves. *Peduncles* 1–1.5 mm. long when in flower, slightly longer in fruit, densely hairy with adpressed white hairs. *Calyx* short, 1–1.5 mm. long, the tube and teeth about equal in length. The *corolla* about three times as long as the calyx; standard densely hairy on the back, all the other parts of the corolla glabrous and red or reddish. *Pod* generally one-seeded, very rarely 2-seeded on the same plant, at first densely hairy with white adpressed hairs, at length glabrous or nearly so, divaricate or deflexed. *Seeds* reniform, olive green, shining; when there are two seeds, the adjacent sides are truncate.

The type of this variety was collected at Dwarka near the sea shore on the 16th of October 1953 and is kept in Blatter Herbarium. This is a very common shrub found all over Saurashtra. As a rule it grows erect, but occasionally, particularly near the sea or when subjected to damage, it may grow more or less prostrate, forming thin cushions. The branches of this plant are sometimes used, in the districts where it is common, as 'tooth brushes' in place of the more usual *Babul* or *Nim* trees, which are rare in the same districts. In our Botanical Survey of Saurashtra, this plant has been seen in most of the drier districts of the province, roughly all along that part of Saurashtra that lies north of Rajkot. The plant has given us much trouble, for it has been a difficult one for identification. It is distinctly a new form not previously recorded in our floras.

Ranunculus hirtellus Royle var. ***minor*** Sant. & Banerji, var. nov.

Ranunculo hirtello Royle similis multis in notis, sed varietas nova a typica specie differt praesertim magnitudine multo minore, cum tota planta vix 4–6 cm. attingat; petioli varietatis ad apicem dense pilosi. Typus varietatis lectus ad Popkegola in Nepalia orientali ad 3360 m altit. a M. L. Banerji die 20 maii anni 1953, et positus in herbario Banerji sub numero *Banerji 798*.

This is a clear variety, at once distinguished from the typical plant on account of its highly reduced size, which usually does not go beyond 4–6 cm. In the Eastern Himalayas this plant seems to be widely distributed, for we have seen numerous specimens in the herbaria of Calcutta and Dehra Dun showing the typical reduction and other characters of this new variety.

Androsace crofiii Watt var. ***scaposa*** Sant. & Banerji, var. nov.

Varietas haec accedit ad typicam varietatem aspectu generali, ab ea tamen differt praesertim longitudine pedunculorum, quae est petiolis duplo saltem, saepe triplo vel ultra longior. Flores purpurascentes. Typus varietatis lectus a M. L. Banerji in itinere a Those ad Bhittri in Nepalia orientali ad altit. 2750 m die 8 mensis maii anni 1952, et positus in Herbario Blatteri in urbe Bombay sub numero *Banerji 686*; paratypus, *Banerji 256*, lectus ad eodem in itinere a Patala ad Phaplu in Nepalia orientali, ad 2710 m altit. et positus in herbario Banerji in Meerut, in India.

This new variety is quite distinct from the typical plant at first sight, mainly on account of the length of the floral scapes; in the typical plant they are just about as long as the leaves or slightly longer or at times shorter; in the new variety the scapes are at least twice, often thrice as long as the leaves, or even longer.

Zeuxine gracilis (Breda) Bl. Fl. Jav. N.S. 56, t. 18, f. 2, & t. 23 D, 1858; J. J. Smith, Fl. Buitenz. 6 : 110, 1905 & f. 78, 1908; Holttum, Rev. Fl. Malay, 1 : 134, f. 22, 1953.

Psychechilos gracile Breda, Gen. Sp. Orch. t. 9, 1827.
Monochilus affine Lindl. Gen. Sp. Orch. 487, 1898.

Zeuxine affinis Hook. f. Fl. Brit. India 6 : 108, 1890 ; King et Pantling in Ann. Roy. Bot. Gard. Calcutta 8 : 290, t. 387, 1898.

Zeuxine blatteri Fischer in Kew Bull. 1928 : 76, 1928.

The plant or plants listed under these various names have never been mentioned for Bombay previously ; they are given here as new records for North Kanara, which until the Reorganisation of States formed part of Bombay State.

We have not seen the types of these various plants ; but a careful examination of the descriptions inclines us to accept these names as synonyms, belonging to one and the same species. The descriptions fit our plants from North Kanara.

Fisher has distinguished his *Z. blatteri* from *Z. affinis* Hook. f. by its broader leaves, its narrow petiole, its glabrous sheaths and by the lip, which is saccate, fleshy, ecalcarate, the lobes of the limb being orbicular, glabrous and distant. Examination of the description and icones of *Z. affinis* shows that the leaf sheaths are not pubescent, the lip not calcarate ; in our own specimens the lobes of the limb are rather variable, from oblong, oblong-orbicular to subcuneate, and are glabrous.

In the literature we find that the combination *Z. affinis* is attributed to Bentham in Benth. & Hook. Gen. Plant. 3 : 600, 1883. Bentham, however, did not make the actual combination in the sense of Art. 32 of the 1956 edition of the International Code of Botanical Nomenclature ; the combination must be credited to Bentham ex Hooker f. in Fl. Brit. India, loc. cit., or simply to Hooker f.

J. J. Smith, l.c., mentions that *Z. gracilis* Blume is similar to the Indian *Z. affinis ;* but the words of R. Holttum, l.c., deserve attention : "Whether the Malayan plants are quite identical with *Z. gracilis* from Java, or with *Z. affinis* from India, is not certain. There is much variation in this group of Zeuxines, and the exact limitation of species is not certain without more careful observation of living plants."

We have gathered abundant living materials of this plant in North Kanara, and after careful examination we have come to the conclusion that the three species, *Z. blatteri* Fischer, *Z. gracilis* Blume, and *Z. affinis* Hook. f. are identical ; and in consequence the earliest name for the group is to be adopted, in this case *Z. gracilis* (Breda) Blume.

There are some notable variations in the colour of the lip, as noted by different authors. Smith describes the lip as pale flesh-coloured at the base, becoming whitish or pale yellowish upwards ; Holttum gives the lip of his plants to be yellowish at the base, with a white blade ; King and Pantling describe the lip as yellow, the blade is also coloured yellow in their plate ; Fischer states that the sac of the lip is orange, the limb white. Our own observations in the field are as follows : Sepals greenish with paler white or whitish apices ; petals greenish, but paler within and at the apices, occasionally pale pink ; the sac of the lip orange to orange red, the limb white or pale yellowish ; in specimens which have been preserved in formaline solution the sac of the lip has been noted to change to pale yellow ; the anther is pink.

Epipogium R. Br. Prodr. 330, 1810.

This generic name was originally spelled by Gmelin as *Epipogum* (Fl. Sibir. 1 : 11, t. 2, f. 2, 1747) ; Index Kewensis has taken up the spelling of Gmelin. In the literature we find the following orthographic variants of the same name : *Epipogium, Epipogon, Epipogion.* In his Sp. Pl. 945, 1753, Linne reduced the plant to the genus *Satyrium,* under the name *Satyrium epipogium* ; R. Brown in 1810 revived the generic name *Epipogium,* possibly on account of the Linnean epithet. Gmelin's name is invalid as being pre-linnean i.e., of 1747 ; hence the name must be credited to R. Brown, 1810, and his spelling is the valid one.

Epipogium roseum (D. Don) Lindl. in Journ. Linn. Soc. 1 : 177, 1857 ; Holttum, Rev. Fl. Malay 1 : 106, 1953.

Limodorum roseum D. Don, Prodr. Fl. Nep. 30, Febr. 1825.

Galera nutans Blume, Bijdr. 416, f. 3, Dec. 1825.

Epipogum nutans Reichb. f. in Bonpland. 5 : 36, 1857 ; Hook. f. Fl. Brit. India 6 : 124, 1890 ; King et Pantling in Ann. Roy. Bot. Gard. Calcutta 8 : 253, 1898 ; Fischer, Fl. Pres. Madras 1460, 1928 ; Blatter et McCann in Journ. Bombay nat. Hist. Soc. 35 : 729, 1931.

Podanthera pallida Wight, Icon. t. 1759, 1852.

In our Indian floras this plant is commonly listed under the name of *E. nutans* Reichb. f.; however, as pointed out in Flora Males. (in I, 4(5): clxxi) the publication of Blume's book dates from June 1 to Dec. 7, probably from the first week of December, 1825, whilst D. Don's *Prodromus* dates from February 1, 1825 ; Don's name, therefore, has priority over Blume's, and the only correct name for the plant is the one adopted here.

Nervilia discolor (Blume) Schlechter in Bot. Jahrb. 45 : 403, 1911 ; Holttum, Rev. Fl. Malay 1 : 105, f. 16e, 1953.

Cordyla discolor Blume, Bijdr. 417, 1825.

Pogonia discolor Blume, Mus. Bot. Ludg.-Bat. 1 : 52, 1849, et Fl. Jav. 128, t 57, 1858 ; Smith, Fl. Buitenz. 6 : 54, 1905 & f. 33, 1908.

Pogonia biflora Wight, Icon. t. 1758, 1852 ; Hooker f. Fl. Brit. India 6 : 119, 1890.

Nervilia biflora (Wt.) Schlechter in Bot. Jahrb. 45 : 403, 1911 ; Fischer in Fl. Madras 1459, 1928 ; Blatter et McCann in Journ. Bombay nat. Hist. Soc. 35 : 726, 1931.

Blatter and McCann mention that *Bell 6066* and duplicates have been compared by C. E. C. Fischer with the type of *Pogonia biflora* Wt. in Kew Herb.; one of these duplicates is available in Blatter Herbarium, Bombay, and our specimens have been matched with it.

One result of our examination is that the two species *N. biflora* Schl. and *N. discolor* Schl. must be considered identical. There is but one point of difference, which is in the colour of the median band on the lip ; in *discolor* the band is said to be yellow, in *biflora* it is white or pale rose. The basic structure is identical, in spite of this slight variation in the colour.

The species is a very variable one, in respect of the general coloration of the leaves and flowers. When the plant grows in dense undergrowth under very reduced light intensity, the leaves are deep purple to nearly black in colour, and the covering hairs are purple and very stiff. As the monsoon comes near its end and the light and temperature of the forest goes up, the leaves turn brownish, often rusty brown. We found this plant in very large numbers in the undergrowth of the forest in the Dangs, and collected herbarium specimens and in addition a number of tubers for cultivation under controlled conditions. All our plants obtained from such tubers, which had been grown in an open part of the garden in Bombay, gave pure green leaves with pale green hairs. Further the same plant was collected from Bhimashankar, Poona Dist., in scrub forest ; these plants showed pure green leaves. It seems, therefore, that the intense purple colour of the plant is connected with deficient light. From our observations we are inclined to believe that the variation in colour of the flowers is also intimately connected with the intensity of the light at the spots in which the plant has been growing ; this is why the slight difference of colour mentioned above seems to us of little importance.