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Botany. — “*Contribution N^o. 1 to the knowledge of the Flora of Java.*” (Fourth continuation).¹⁾ By Dr. S. H. KOORDERS.

§ 7. *Plantae Junghuhnianae ineditae*. I. Notes on some javanese species of an as yet unpublished collection of Junghuhn's plants, in 's Rijks Herbarium at Leiden.

A few months ago, while searching in 's Rijks Herbarium at Leiden for some herbariumspecimens of JUNGHUHN's Javanese alpine plants, which were required by me, one of the officials of that institution found among the separately preserved collections of “*Indeterminata*” a fairly extensive collection made by JUNGHUHN. This collection had already undergone preliminary determination by me, in 1896 (during a short stay at Leiden), at the request of Dr. J. VALCKENIER SURINGAR, but for the rest remained wholly undetermined.

As I noticed in this collection a number of Javanese alpine plants, and as it seemed worth while to study the collection as a whole, I resolved to complete the determination, begun in 1896, and to publish the results. The latter, as far as an enumeration of the Javanese specimens is concerned, are ready for the press, but will be published separately; here I only append a few remarks on this collection of Junghuhn.

The whole collection consisted of fifteen large packets and fully 560 collecting numbers.

As is the case of very many old herbariumcollections, the labelling of a large number of these specimens left much to be desired. On the other hand some specimens were provided with detailed collecting labels, written by JUNGHUHN himself. With a few exceptions, all the specimens were quite undetermined (without determination of the genus and order). Most of the specimens were also without a collecting number on the label. In consultation with Dr. J. C. GOETHART, Keeper of 's Rijks Herbarium, it was accordingly decided to give running numbers to this whole collection of “*Plantae Junghuhnianae ineditae*”, these numbers being independent of the old numbers, extant in some cases, but not explained by any list or publication. Printed labels have also been added, running partly as follows: “*Plantae Junghuhnianae ineditae. In insula Java legit Dr. FR. JUNGHUHN anno 1838—1863 sub n....*” Except for the substitution of the word “Sumatra” for “Java”, the specimens from Sumatra in this collection have received a similar label.

¹⁾ Continued from these Proceedings p. 132.

I have not been able to ascertain, why this extensive collection of JUNGHUHN's plants has not been worked at during so many decades, and apparently was never in the hands of MIQUEL. I surmise, in the first place, that it was not received from JUNGHUHN either until the period 1855—1864, or until after his death, *i.e.* after 1864; the receipt of the collection is noted on the outside in an unknown handwriting as "from Bandong". In the second place I surmise that this unpublished collection was accidentally mislaid among the mass of material in 's Rijks Herbarium at Leiden, and was consequently not found again, when MIQUEL was Director of that Institution (1862—1871).

For had this collection been in the hands of one, with so good a knowledge of the East Indian flora as that possessed by MIQUEL, there can, in my opinion, be no doubt, that he would at once have discovered the 9 species mentioned below, which at the time were new to the flora of Java and were found by me undetermined in 1896. Nor would these 9 species have been omitted from the Javanese flora in the publication¹⁾ "*Plantae Junghuhnianae*" of 1854 or in the other publications of MIQUEL (e. g. *Flora Ind. Bat.*, *Ann. Mus. bot. Lugd. Bat.*, etc.).

As such I mention the following species:

Pl. Jungh. inedit. n. 368, 380, 381, 385 and 394 = *Turpinia parva* KOORD. et VALETON (first published in 1903) Pl. Jungh. inedit. n. 545 = *Ilex Hookeri* KING (has not yet been mentioned in the literature as occurring in Java), *Itea macrophylla* Wall. var. *minor* K. et V. (at the time not recorded in Java); Pl. Jungh. inedit. n. 207 = *Aglaiia heptandra* KOORD. et VALETON (first published in 1896);

¹⁾ The title of this publication is: *Plantae Junghuhnianae. Enumeratio plantarum quas in insulis Java et Sumatra detexit* FR. JUNGHUHN, *Leiden*, 1854. In the *Index Kewensis* it is often quoted as MIQUEL Pl. Jungh., although MIQUEL's name does not appear in the title. Most of the phanerogams in this publication were treated of by MIQUEL himself, some other families by others *i.a.* by BENTHAM (*Leguminosae*), MOLKENBOER (*Loranthaceae*), W. H. DE VRIESE (*Primulaceae*, *Dipterocarpaceae*, etc.), HASSKARL (*Commelynaceae*, *Amaranthaceae*), BUSE (*Graminae*), BURGERSDIJK (*Violaceae*), and A. J. DE BRUYN (*Polygonaceae*).

In the catalogue of the University library at Leiden, this publication *Plantae Jungh. Enumeratio plant. etc.* (1854) is stated to have appeared in 1851—1855.

In the only copy in 's Rijks Herbarium I found the year 1854 given as the date of publication. This bound copy ends with p. 552, where as the copy of the Royal Academy of Sciences at Amsterdam is slightly more complete, ending with p. 570. The publication seems to have been stopped prematurely, the less incomplete copy of the Royal Academy of Sciences ends on p. 570 *in the middle of a word* and is therefore evidently no more rounded off than the copy I found at Leiden. The date of publication is given on the title page of the latter copy as 1853.

Pl. Jungh. ined. n. 91 et 103 = *Mallotus campanulatus* J. J. SMITH (first published in 1907 in *Icones Bogoriensis*); Pl. Jungh. ined. n. 113 = *Ostodes macrophylla* BENTH. et HOOK (not recorded for Java even at the present time); Pl. Jungh. ined. n. 462 = *Elaeocarpus Griffithii* A. GRAY (not known for Java at that time); Pl. Jghn. ined. n. 438 = *Saurauja dasyantha* DE VRIESE (even now not mentioned for Java in the literature); Pl. Jghn. ined. n. 256 = *Eugenia cuprea* KOORD. et VALETON published in 1900); Pl. Jghn. ined. n. 426 = *Symplocos Junghuhnii* (published for the first time below).

The specific description is as follows:

Symplocos Junghuhnii KOORD., nova spec. — Arbor ramulis glabris. Folia tenuiter coriacea, supra glaberrima, subtus praeter costam laxe appresse pilosam glabra; 12—15 cm. longa et 4—5 cm. lata, subintegra v. valde indistincte serrulata, basi angustata, apice sensim vel abrupte acute acuminata; nervis secundariis plerumque impressis, petiolo 1—1½ cm. longo. Racemi simplices axillares et terminales villosi petiolo 4—5-plo longiores; bractee ovato-acutae extus basi puberulae calycem aequantes; pedicelli calyce paullo breviores, calycis tubus extus villosus, lobi rotundati glabri marginibus ciliatis, corolla calyce duplo longior utrinque glabra stamina ultra 100 satis distincte pentadelphae; filamenta filiformia glaberrima; ovarium 3-loculare glabrum, stylus glaber; fructus ignotus.

West-Java (Preanger). — Pl. Jungh. ined. n. 426 in Herb. I. B.

The foliage of this species greatly resembles that of *Symplo. Henschelii* BRAND [in Engler Monogr. Symploc. Pflanzenw. IV. 242. (1901) 89], but the floral structure is different, as is evident from the above diagnosis.

In the system of the Symplocaceae of BRAND l.c. this species will have to be placed in the subgenus *Hopea* (L. f.) CLARKE, and in the section *Bobua* (DC.) BRAND., and probably in the subsection *Palura* (Buch.-Hamilt.) BENT, et HOOK., immediately near to *Symplocos ribes* JUNGH. et DE VRIESE [in DE VRIESE, Pl. nov. Ind. bat. (1845) 11; BRAND l.c. 39.] Through the extra-ordinarily large number (100) of stamens *Symplocos Junghuhnii* seems to me to differ from *S. ribes*, and from the other more or less closely related Javanese species, *S. aluminosa* BLUME BRAND l.c., *S. odoratissima* (BL.) CHOISY and *S. sessilifolia* (BL.) GÜRKE.

S. polyandra, BRAND. l.c. 36 of the Philippines, which is also related and also has about 100 stamens, is distinguished from the Javanese plant since it has panicles instead of simple racemes.

In 1856 MIQUEL evidently resolved to bring out a second part of the publication, which appeared in 1854 (*Plantae Jungh. Enum. pl.*). This follows for instance from his quoting in the Flora Ind. Bat. II (1856) p. 1053: "Pl. Jungh. I. p. 84". My publication on the Pl. Jungh. ined. might therefore perhaps have been called "Pl. Jungh. II". Since, however the only part, which appeared in 1854, was not specially designated as part N^o. I, I have now, for the sake of clearness, not called my present publication also "*Plantae Jungh.*", but "*Plantae Junghuhnianae ineditae*".

I found this latter designation for the first time in MIQUEL Fl. Ind. Bat. I. 2. (1859) p. 356. An authentic herbariumspecimen of *Flueggea serrata* MIQ., collected by JUNGHUHN in the higher mountain regions of Java, and found by me in the University Herbarium at Utrecht, is published there for the first time and is quoted by MIQUEL l. c. as *Pl. Jungh. inedit.*

The authentic herbarium-labels, preserved at Leiden, which refer to the species treated of in the above-mentioned publication (*Pl. Jungh. Enum. pl.*, 1854) bear numbers, which correspond with that publication of 1854 and are sometimes also quoted in the later publications as *Pl. Jungh. n.* 1, 2, 3, etc. In order to avoid any possible confusion with these numbers, I have quoted below the specimens in the collection now described by me, as follows: *Pl. Jungh. ined. n.* 1, 2, etc.

The number of exclusively alpine Javanese species met with in the above collection, is not large. Nevertheless I found several more or less characteristic Javanese alpine species represented, sometimes by a profusion of specimens. As such the following may be mentioned among others: *Urtica grandidentata* MIQ., *Thalictrum javanicum* BL., *Myrica javanica* BL., *Euphorbia Rothiana* SPRENG., *Viola serpens* WALL., *Leptospermum javanicum* BL., *Clethra canescens* REINW., *Leucopogon javanicus* (JUNGH.) DE VRIESE, *Lysimachia ramosa* WALL. var. *typica* KNUTH., *Primula imperialis* JUNGH., *Buddleia asiatica* LOUR., *Vaccinium Teijsmanni* MIQ., *Vaccinium varingaefolium* MIQ., *Rhododendron retusum* BENN., *Lonicera oxylepis* MIQ., etc.

With some specimens of the collection, now described by me, I found labels, on which, presumably about half a century ago, was written in the hand-writing of the late Professor W. H. DE VRIESE: "*legit Junghuhn, herb. de Vriese*". It seems therefore, that before 's Rijks Herbarium at Leiden acquired this collection of Junghuhn whether by purchase or by donation, it belonged wholly or partly to that herbarium.

The determination of the above-mentioned JUNGHUHN's collection,

was chiefly carried out by me at Leiden, with the aid of the material for comparison in 's Rijks Herbarium, and for a few rare species with the help of the collections of the University Herbarium at Utrecht.

Leiden, Juni 23^d 1908.

Chemistry. — “*The dynamic conception of a reversible chemical reaction.*” By Prof. A. SMITS and J. P. WIBAUT. (Communicated by Prof. A. F. HOLLEMAN.)

It is generally known that our kinetic views lead to the assumption, that with every reversible reaction we meet with two reactions, which proceed in opposite directions.

The following consideration, however, seemed to show that a direct proof for this dynamic conception could not be given.

Our power of observation only enables us to observe differences; so if we observe something of a conversion, this is the consequence of this that the velocity of one reaction is greater than that of another, and we get an impression as if only one reaction takes place, which proceeds with a velocity equal to the difference of the velocities of the two reactions.

As we shall see, this reasoning, which is perfectly correct for conversions in *homogeneous* systems, does, however, not hold good in all respects in a single case for a conversion in a *heterogeneous* system in consequence of particular circumstances.

The above arguments, however, seemed so convincing that up to now the following *indirect* proof has been considered the only one possible.

The already indicated conception of a reversible reaction leads to a simple relation between the constants of equilibrium and the two constants of reaction, which runs: $K = \frac{k_1}{k_2}$. This relation, now, supplied a means to test the kinetic conception of a reversible conversion, and it is known that experiment has shown for the few cases which have as yet been investigated, that this relation is really satisfied.

Yet it seemed very desirable to prove the correctness of our dynamic conception of a reversible reaction by a *direct* way.

The conversion by means of which we have reached our purpose is this

