THAI FOREST BULL., BOT. 51(1): 17–23. 2023.
DOI https://doi.org/10.20531/tfb.2023.51.1.03

The plant collections of James Franklin Maxwell from Thailand

PETER C. VAN WELZEN[1]

ABSTRACT

James Franklin Maxwell ranks among the best collectors of Thai plants. His specimens are all high quality, rich in flowers and/or fruits and carefully prepared with many duplicates and mostly with labels that contain much information. The total number of collections can only be estimated but likely exceeds 32,000. An overview is provided of the evolution in the labels, from simple to the complex ones produced during Maxwell's third stay in Thailand, covering his work while at Prince of Songkhla University and Chiang Mai University. Problems with the labels are discussed, that are partly due to the use of a typewriter and carbon paper, partly caused by his phonetic way of dealing with the Thai language, and sometimes also by the high information content with regards to habitat/vegetation types and the colour patterns of the plants.

KEYWORDS: botanical collections, James Franklin Maxwell, Thai plants.

Accepted for publication: 14 November 2022. Published online: 8 February 2023

INTRODUCTION

James Franklin Maxwell (Figs. 1 & 2), often referred to as Maxwell or Max, was born in New York on 19 March 1945, as second of three sons. He passed away on 21 May 2015, after a life dedicated to plant collecting and botany, especially in Thailand. Obituaries were written by Brockelman (2015), Webb *et al.* (2016) and Elliott (2017).

Maxwell had an early interest in botany and took a B.Sc. in Botany at the Ohio State University in 1968. His first contact with Thailand was during his military service, where he was with the military police and stationed at Sattahip Naval Base (close to Pattaya), Chon Buri Province (SE Thailand). Here he started his first collections and fell in love with Thailand. After his return to the USA, he decided to go back to Thailand and worked there at various institutions (see below). There was an interruption from November 1976 to July 1984 when he obtained his M.Sc. in Botany at the National University of Singapore (then the University of Malaya; Wijedasa, 2017) and finished his Ph.D., but never defended it. After this disappointment he left the university and worked from 1980 till 1984 for the herbarium of the Singapore Botanic Gardens.

The collections of Maxwell are among the best ever made in Thailand being always rich in flowers and/or fruits, usually with multiple duplicates consisting of good material (often not fitting on one sheet in L) and dried with dedication; special collections in spirit (also the duplicates), and the labels are a fount of information. His labels were usually large and contained detailed information about the habitat and the morphology, especially the colours, of the plants. Wijedasa (2017) even mentioned that the label information was potentially suitable to serve as a description of new species. Many of Maxwell's colleagues and students started to use the same format. Quite likely they used forms (one of them was found among the material of L) to systematically scan all necessary data.

The amount and level of information changed in the course of time. In this article I demonstrate the evolution of Maxwell's labels and discuss various problems with them.

MATERIALS AND METHODS

The basis for this manuscript is the data in Naturalis Biodiversity Center (L), Leiden. The Netherlands. During the amalgamation of all Dutch

[1] Naturalis Biodiversity Center, Research Group Tropical Botany, P.O. Box 9517, 2300 RA Leiden, The Netherlands.

Email: peter.vanwelzen@naturalis.nl

Figure 1. Portrait of Maxwell while doing field work in Cambodia. Photo by Martin van de Bult, 2007.

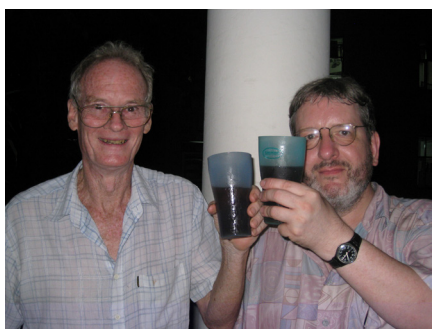


Figure 2. Maxwell and Hajo (Hans-Joachim) Esser (München Herbarium, Germany) raising their glasses in front of the CMU herbarium (2010). Photo: H.-J. Esser, 2010.

major herbaria and natural history museums most of the collections were digitised, some completely, photo and label data, others, e.g. of insects only a whole box was photographed. All herbarium sheets were photographed by Picturae (https://picturae.com/en/our-work/inspiring-projects/how-millions-of-specimens-became-accessible-for-researc). Subsequently, the label data were partly databased (collector, identification, country, collection locality information) and I finalised the digitisation of all label information on the Thai sheets. In total, c. 90,000 Thai herbarium sheets are present in Leiden and the Maxwell collections make up a third of these.

NUMBER, NUMBERING AND ORIGIN OF COLLECTIONS

Wijedasa (2017: fig. 1) estimated the number of collections made by Maxwell made since 1974, based on the last entries per year in Maxwell's notebooks, to be 31,142. Presumably, these are all vascular plants. In L there are 29,619 collections with the earliest dating from 1968. In addition, there are special separate series for bryophytes (collection numbers starting with B-) and fungi (starting with F-). Mosses and fungi are mainly not digitised in L, thus it is unknown how many collections there are in L (or worldwide) as these collections were possibly not in his normal notebooks. Furthermore, Maxwell sometimes collected for special projects and all these collections were numbered separately, always starting with 1. There are also collections in L where Maxwell is the second or third collector. Thus, the total number of collections is likely to be substantially higher than 31,142. Most collections were made in the 1980s and 1990s (Wijedasa, 2017: fig. 1). Wijedasa (2017) also shows how many new species Maxwell described in various years. Therefore, the present work will not refer to that aspect of Maxwell's career as a botanist.

Maxwell's collections generally have a specialized numbering system. He started to use it in his BK period (see below). The numbers consist of the last two digits of the year (thus 2000 is 00) followed by a dash and a sequential number. As a result, the numbering started every year with 1. A number of botanists have subsequently adopted this system in various forms.

The number of collections made per country is shown in Fig. 3. The collections in the Netherlands and China were made during visits to those countries. In the Netherlands Maxwell collected during the symposium trip of the first Flora Malesiana Symposium, collecting all rare plants shown to him. The unknown origin concerns cultivars, mainly collected in Thailand, but of which the origin is unknown. The Malaysian and Singapore collections originated from the period that Maxwell stayed in Singapore (1976–1984). Many Laotian collections were made on the small islands in the Mekong River that forms the border with Thailand. However, the majority were made in Thailand, 20 times as many as in Laos.

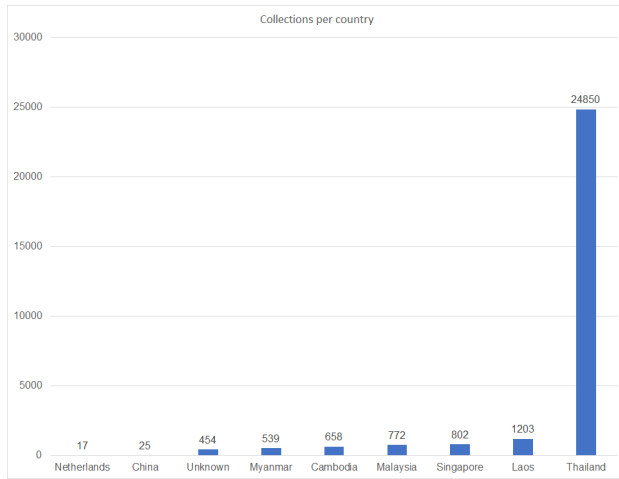
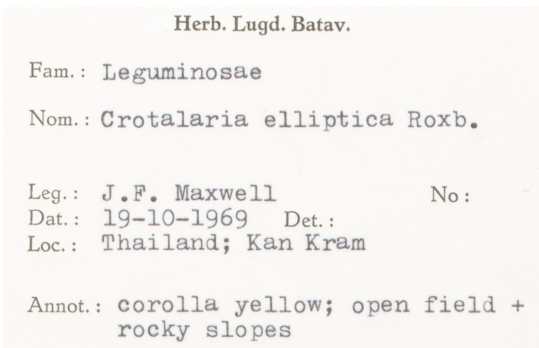


Figure 3. Numbers of Maxwell collections, held in L, per country. Unknown are cultivated specimens, mainly collected in Thailand, of which the precise origin is unknown.

EVOLUTION OF MAXWELL'S LABELS

Maxwell made his first collections during his stay in Sattahip, in 1968 and 1969. Fig. 4 shows an example. These collections are all without collection numbers (s.n. = sine numero). The data for the labels were notes scribbled with pencil that came with the dried plants and a secretary at L typed the labels (therefore the headings read Herb.(arium) Lugd. (unum) Batav.(orum), the Latin name for L). The text was not always legible and consequently the labels have errors and sometimes words are missing. There are 158 specimens dating from this period in Leiden, but as these were the first contacts with Maxwell it is unknown how many collections he made. The information content was minimal, comprising a date, locality and brief notes on habitat and colours.


Herb. Lugd. Batav.

Fam.: Leguminosae

Nom.: Crotalaria elliptica Roxb.

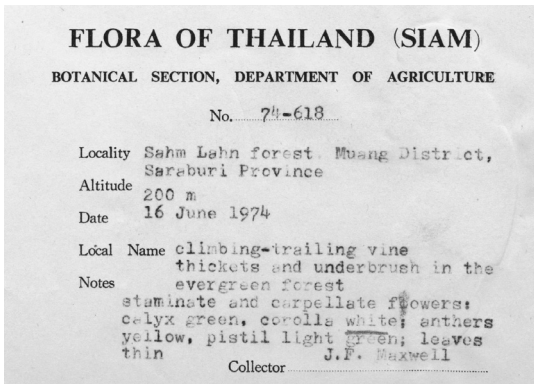
Leg.: J.F. Maxwell No:
Dat.: 19-10-1969 Det.:
Loc.: Thailand; Kan Kram

Annot.: corolla yellow; open field + rocky slopes

Figure 4. Example of Maxwell's labels. The first labels produced from Maxwell's scribbled notes with the dried plants that arrived in L, the collections made when Maxwell was in Sattahip (1968 and 1969). The labels are L labels (carrying the Latin name of L in abbreviated form). The label content is minimal and all have no collection number.

From 1970–1975, Maxwell worked in the Bangkok Herbarium (BK), Department of Agriculture. It is the oldest herbarium in Thailand, which was then still in an open building with a veranda. Here Maxwell started his numbering system and the labels already contained much more information, such as altitude, more information about the locality (district and province) and longer descriptions of habitat, habit and colours of the plants. The sequence of the latter two is what I call the 'Kerr sequence' (Fig. 5), comprising habit followed by habitat and then morphology. In general labels separate information about habitat from those of habit and morphology.

In 1976, Maxwell worked for the Food and Agriculture Organisation (FAO) Regional Office in Bangkok. The labels made in this period (Fig. 6A) contain the same information as those made in BK (subdistricts are added), and, very exceptionally, they contain coordinates. However, when the labels are compared, the different localities have the same coordinates. For example, Figs. 6A and B show labels that have the same coordinates for different localities in two subdistricts of Sisaket Province. These coordinates are also rather generalised. It seems likely that Maxwell did not care for coordinates as they are lacking in all other labels.



FLORA OF THAILAND (SIAM)

BOTANICAL SECTION, DEPARTMENT OF AGRICULTURE

No. 74-618

Locality Sahm Lahn forest Muang District, Saraburi Province

Altitude 200 m

Date 16 June 1974

Local Name climbing-trailing vine

Notes thickets and underbrush in the evergreen forest
staminate and carpellate flowers: calyx green, corolla white; anthers yellow, pistil light green; leaves thin

Collector J.F. Maxwell

Figure 5. Label from Maxwell's BK period (1970 – 1975). They already comprise the typical numbering system and in comparison to the label from Fig. 4, also more information is present on altitude, collecting area, habitat and plant colours and morphology.

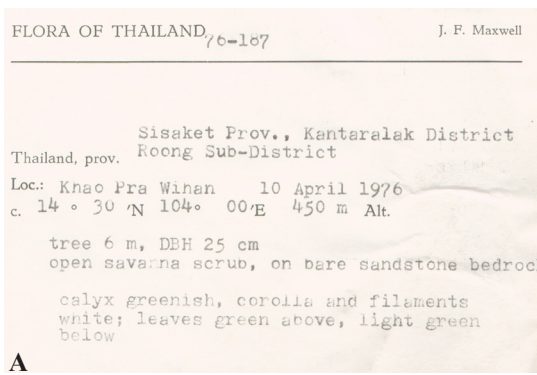
This was followed by Maxwell's time in Singapore, where he produced comparable labels, but without coordinates. In August 1984 Maxwell returned to Thailand and start working in Prince of Songkhla University in Hat Yai until June 1987. Here he started to use the familiar large-sized labels full of information (Fig. 7), though the information content was not as great as in the later periods when he worked (partly voluntarily) at Chiang Mai University, in the CMU and CMUB herbaria. These Chiang Mai labels, though large, were often too small for all the information he wanted to include (Fig. 8), such that additional data were added at the top, sides and bottom (written upside down) of the label. In addition, local names were often added (Fig. 8).

DISCUSSION

From the labels and the quality of the material it is obvious that Maxwell was a highly motivated collector and botanist. The material is not only rich in flowers, fruits and leaves, but is also dried with an eye for detail. Many details are visible on the specimens. His identifications were generally spot-on, and he likely had a database/card system with localities where types were collected as many collections have 'Topotype' written at the top of the label (Fig. 9), indicating that they were collected in more-or-less the same locality as the original type.

When going on a collecting trip, the series often started with collecting while waiting for transport (e.g., Chiang Mai University) and on arrival (e.g, the locality headquarters area). Often it seemed that he stayed in a monastery for the night as day series regularly ended at a temple. Likely, Maxwell collected everything he saw flowering and/or fruiting as his collections contain many cultivated specimens, sometimes from his own garden. These labels (Fig. 10) contain the text 'Cultivated & Introduced' at the top and under Common Name: 'native to' (followed by the area).

When time allowed, Maxwell would often, seemingly quickly, collect in a nearby favourite spot. When in Sattahip this was Thung Prong, when in Bangkok he mainly collected in Saraburi Province, in Hat Yai on Khao Ko Hong and in Chiang Mai on Doi Suthep. Several times this resulted in a publication describing the flora of that area (Maxwell, 1974: Sattahip; Maxwell & Elliott, 2001: Doi Suthep; Maxwell, 2006: Ko Hong Hill).



FLORA OF THAILAND 76-167 J. F. Maxwell

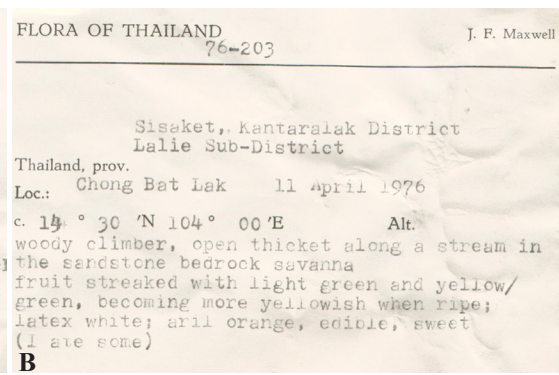
Sisaket Prov., Kantaralak District
Thailand, prov. Roong Sub-District

Loc.: Khao Pra Winan 10 April 1976
c. 14 ° 30 'N 104° 00'E 450 m Alt.

tree 6 m, DBH 25 cm
open savanna scrub, on bare sandstone bedrock

calyx greenish, corolla and filaments white; leaves green above, light green below

A

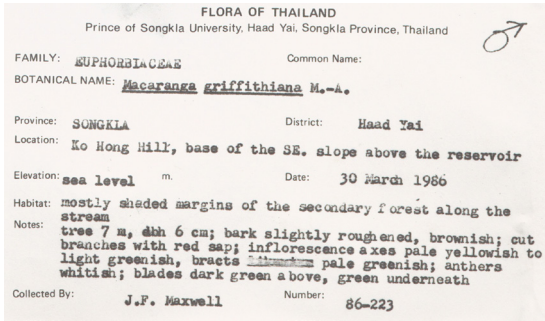


FLORA OF THAILAND 76-203 J. F. Maxwell

Sisaket, Kantaralak District
Lalie Sub-District
Thailand, prov.
Loc.: Chong Bat Lak 11 April 1976
c. 14 ° 30 'N 104° 00'E Alt.
woody climber, open thicket along a stream in the sandstone bedrock savanna
fruit streaked with light green and yellow/green, becoming more yellowish when ripe; latex white; aril orange, edible, sweet (I ate some)

B

Figure 6. Two labels from the year when working for the Food and Agriculture Organisation's Regional Office in Bangkok (1976). These are equal in information content as those of Fig. 5, but the labels from this period are the only ones with general coordinates, similar for often various collecting localities (e.g. compare Fig. 6A and B).


FLORA OF THAILAND
Prince of Songkla University, Haad Yai, Songkla Province, Thailand

FAMILY: EUPHORBIACEAE Common Name:

BOTANICAL NAME: Macaranga griffithiana M.-A.

Province: SONGKLA District: Haad Yai

Location: Ko Hong Hill, base of the SE. slope above the reservoir

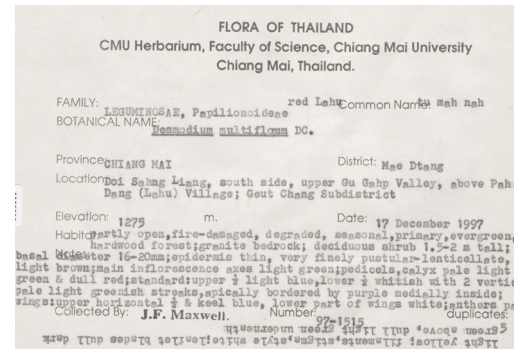
Elevation: sea level m. Date: 30 March 1986

Habitat: mostly shaded margins of the secondary forest along the stream

Notes: tree 7 m, dbh 6 cm; bark slightly roughened, brownish; cut branches with red sap; inflorescence axes pale yellowish to light greenish, bracts [illegible] pale greenish; anthers whitish; blades dark green above, green underneath

Collected By: J.F. Maxwell Number: 86-223

Figure 7. Label when working for the Prince of Songkhla University (1984–1987). These are the final large size. They contain much more information about collecting locality, habitat and morphology.


FLORA OF THAILAND
CMU Herbarium, Faculty of Science, Chiang Mai University
Chiang Mai, Thailand.

FAMILY: LEGUMINOSAE, Papilionoideae Common Name: red Lahu [illegible] mah nah

BOTANICAL NAME: Desmodium multiflorum DC.

Province: CHIANG MAI District: Mae Dtang

Location: Doi Salung Liang, south side, upper Gu Gahp Valley, above Pah Dang (Lahu) Village; Geut Chang Subdistrict

Elevation: 1275 m. Date: 17 December 1997

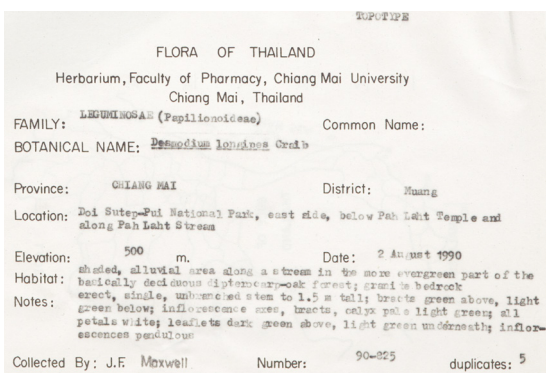
Habitat: partly open, fire-damaged, degraded, seasonal, primary, evergreen, hardwood forest; granite bedrock; deciduous shrub 1.5–2 m tall; basal diameter 16–20mm; epidermis thin, very finely pustular-lenticellate, light brown; main inflorescence axes light green; pedicels, calyx pale light green & dull red; standard: upper ½ light blue, lower ½ whitish with 2 vertical pale light greenish streaks, apically bordered by purple medially inside; wings: upper horizontal ½ & keel blue, lower part of wings white; anthers pale

Collected By: J.F. Maxwell. Number: 97-1515 duplicates: 5

Figure 8. Label from the period when working in Chiang Mai, 1987–2015. The space on the labels is often not enough for all information, hence the part upside down to accommodate for this problem. Present is also a phonetic vernacular name from the Red Lahu tribe.

All Maxwell's labels were typed on a typewriter, never on a computer. It is obvious that Maxwell was a very good typist as the texts contain comparatively few errors. However, it seems that all the labels for a specimen and its duplicates were typed at the same time, with carbon paper between the pages. This often resulted in complications. The letters became out of focus on the last pages, especially if there were many duplicates. Maxwell had to live very economically and often used carbon paper that was worn out, giving incomplete and indistinct labels. On the other hand, new carbon paper, especially the blue paper, produced completely blue labels due to pressure on the layers of label paper alternating with the carbon paper. Other problems arose with the carriage return of the typewriter such that only some of the labels moved to the next line, resulting in double-typed lines on some of the duplicate labels. Sometimes the carbon paper, seemingly cut up, was too short and parts of the text were missing. On the plus side, a notable feature was the frequent inclusion of small drawings showing the colour patterns on a corolla lip or standard (these were not databased except in the photo of the specimen).

Another unfortunate choice by Maxwell was to use his own interpretation of phonetic spelling when writing down the names of collecting localities. Maxwell did have some sort of transliteration scheme: aw / ow → ao, h → -h, g → k or kh, oo →u, dt → t (thus Gow Seng → Khao Seng). However, many names are difficult or impossible to interpret directly from the label. John Parnell (Trinity College, Dublin,


TOPOTYPE

FLORA OF THAILAND

Herbarium, Faculty of Pharmacy, Chiang Mai University
Chiang Mai, Thailand

FAMILY: LEGUMINOSAE (Papilionoideae) Common Name:

BOTANICAL NAME: Desmodium longipes Craib

Province: CHIANG MAI District: Muang

Location: Doi Sutep-Pui National Park, east side, below Pah Laht Temple and along Pah Laht Stream

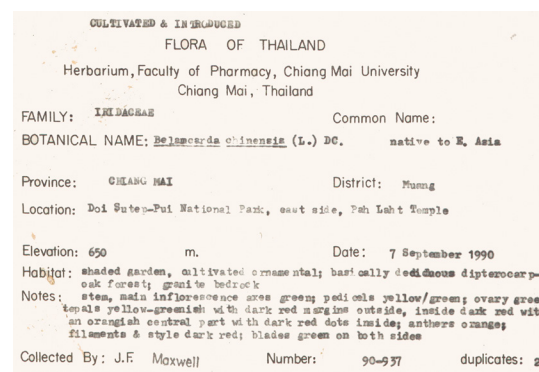
Elevation: 500 m. Date: 2 August 1990

Habitat: shaded, alluvial area along a stream in the more evergreen part of the basically deciduous dipterocarp-oak forest; granite bedrock

Notes: erect, single, unbranched stem to 1.5 m tall; bracts green above, light green below; inflorescence axes, bracts, calyx pale light green; all petals white; leaflets dark green above, light green underneath; inflorescences pendulous

Collected By: J.F. Maxwell Number: 90-825 duplicates: 5

Figure 9. One of the labels of a Topotype (see top of label), collected at more or less the same locality as the original type of the specimen, in this case *Desmodium longipes* Craib (Fabaceae).


CULTIVATED & INTRODUCED

FLORA OF THAILAND

Herbarium, Faculty of Pharmacy, Chiang Mai University
Chiang Mai, Thailand

FAMILY: IXIDACEAE Common Name:

BOTANICAL NAME: Belamcanda chinensis (L.) DC. native to E. Asia

Province: CHIANG MAI District: Muang

Location: Doi Sutep-Pui National Park, east side, Pah Laht Temple

Elevation: 650 m. Date: 7 September 1990

Habitat: shaded garden, cultivated ornamental; basically deciduous dipterocarp-oak forest; granite bedrock

Notes: stem, main inflorescence axes green; pedicels yellow/green; ovary green; tepals yellow-greenish with dark red margins outside, inside dark red with an orangish central part with dark red dots inside; anthers orange; filaments & style dark red; blades green on both sides

Collected By: J.F. Maxwell Number: 90-937 duplicates: 2

Figure 10. Label of a cultivated specimen, always showing Cultivated & Introduced at the top of the label, and below the Common Name: field the likely origin, in this case East Asia.

Ireland) resolved this problem with the help of Thai Ph.D. students. He pronounced the names in an American accent and the students were able to interpret them into a more formal transliteration of the Thai name. In this way almost all place names could be georeferenced. In fact, the same should be done with the vernacular names, because though they are on the labels they are not very useful in their present form.

Maxwell worked the longest period in Chiang Mai and there it is apparent from the labels that he got more and more interested in the vegetation, trying to discriminate various types. The presence of bamboo was generally regarded as a sign of secondary vegetation. As the labels became more detailed, the information about habitat could be too detailed for use in a flora project such as Flora of Thailand. An example is the label of *Maxwell 95-417* (*Carex speciosa* Kunth, Cyperaceae): 'in more mixed evergreen + deciduous hardwood forest with bamboo in deciduous dipterocarp-oak + pine forest'. The first part is the most important for this Cyperaceae as the plant was directly influenced by it and is thus of more of interest for the Flora of Thailand. Maxwell's interest in vegetation types resulted in the publication of an article with a division of vegetation types (Maxwell, 2004).

The notes on the plants are precise, especially in the way the colour schemes were noted, and this was done in the sequence of plant descriptions. The only deviation is that the leaves are mentioned last. There are two reasons I can think of to explain this. The colours of the leaves are usually of little interest and can easily be left out if there is too much text for the other plant parts. More likely, Maxwell may have followed the sequence of the very first descriptions of plants, in which the leaves were, indeed, treated last. Maxwell would sometimes deviate from the formal sequence such that if several organs had the same colour, everything with the same colour was mentioned together. This sometimes resulted in complex sentences if parts of organs had different colours comparable to those of other (parts of) organs.

Finally, Maxwell's astute observations revealed to me a phenomenon I was previously unaware of: hyperparasitism. It is present on the labels of various collections of *Viscum* L. (Santalaceae), a half-parasite, parasitising another half-parasite, either *Viscum* or Loranthaceae. Both half-parasites are always mentioned, as well as the host tree.

In conclusion, Maxwell's collections are, almost certainly, among the best that have been made in Thailand; nearly all are of consistently high quality. The collections were widely distributed. Besides the large numbers of herbarium specimens in L discussed here, Wijedasa (2017) draws attention to the large numbers of specimens in PSU, CMU and CMUB. A, CAS & K also contain significant quantities of material (https://kiki.huh.harvard.edu/databases/botanist_search.php?mode=details&id=17766) and smaller numbers will undoubtedly be found elsewhere (for herbarium abbreviations see: Index Herbariorum, http://sweetgum.nybg.org/science/ih/). Maxwell was a difficult and controversial person but his observations and identifications, together with his knowledge of the Thai flora and vegetation, were undoubtedly extremely good and his specimens are a fitting and long lasting legacy.

ACKNOWLEDGEMENTS

This article was originally a presentation during the 18th Flora of Thailand Symposium in Singapore. I like to thank John Parnell for motivating me to write this article. I also like to thank Martin van de Bult, Rachun Pooma, Pramote Triboun, and Lahiru Wijedasa for photos and/or discussion. The reviewers and editor are thanked for their input and improvements.

REFERENCES

Brockelman, W. (2015). Obituary—James Franklin Maxwell, 1945–2015. Cambodian Journal of Natural Hististory 2015: 121–123.

Elliott, S. (2017). Obituary James Franklin Maxwell 1945–2015 — an extraordinary botanist. Natural History Bulletin of the Siam Society 62(1): 7–14.

Jacobs, M. (1962). Reliquiae Kerrianae. Blumea 11: 427–493.

Maxwell, J.F. (1974). Vascular flora of the Sattahip area. Thai Forest Bulletin (Botany) 8: 49–87.

_____. (2004). A synopsis of the vegetation of Thailand. The Natural History Journal of Chulalongkorn University 4: 19–29.

Maxwell, J.F. (2006). Vascular flora of Ko Hong Hill, Songkla Province, Thailand. Thai Studies in Biodiversity 6: 1–472.

Maxwell, J.F. & Elliott, S. (2001). Vegetation and vascular flora of Doi Sutep-Pui National Park, northern Thailand. Thai Studies in Biodiversity 5: 1–205.

Webb, E.L., Wijedasa, L., Theilade, I., Merklinger, F., van de Bult, M., Steinmetz, R. & Brockelmann, W.Y. (2016). James F. Maxwell: Classic Field Botanist, Inimitable Character. Biotropica 48(1): 132–133.

Wijedasa, S. (2017). J.F. Maxwell's contribution to botanical specimen collection and the taxonomy of Melastomataceae. Natural History Bulletin of the Siam Society 62(1): 35–41.