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THE COLLECTIONS OF THE RIJKSHERBARIUM

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1. INTRODUCTION

Herbals and herbaria for scientific purposes have been made from the 16th century. They were private property long before the time of the foundation of most institutional herbaria, in which they are now, as far as they are still intact, preserved. The oldest, when in book-form, are of course kept apart. Those mounted on loose sheets were treated in different ways and were subsequently incorporated and filed in the general herbarium, as for instance those of Van Royen at Leiden, Burman f. at Geneva, R. Brown at the British Museum and the Hooker and Bentham collections at Kew. In other instances they were kept apart and preserved as a separate unit, in view of the fact that they represented the authentic standard works of authorities, for example the herbaria of Jussieu, Lamarck, and Baillon at Paris, that of the DeCandolles at Geneva, and Willdenow at Berlin. For this purpose the Wallich collections at Kew were, in recent years, re-assembled as a separate unit.

Except for the Herbarium in Paris, which was founded as early as 1635, other university or national herbaria were founded much later, e.g. that of the British Museum (Natural History) in 1753 (harbouring several famous herbals from Sloane, Petiver, etc.), Copenhagen in 1759, of the University of Cambridge in 1761, Uppsala in 1785, Berlin in 1815, Geneva in 1817 (now comprising the combined herbaria of Delessert and Boissier, and the separate herbarium of the DeCandolles), Petersburg (now Leningrad) in 1823, the Rijksherbarium at Brussels in 1829, and the Herbarium at Kew as late as 1853.

The University at Leiden, in those days still called 'Leidsche Hoogeschool', had early collections of dried plants under the name of 'Herbarium Academicum Lugdunum', stored in a room of a Hortus building. It contained some of the old herbals as mentioned below (others coming to Leiden much later), and the Herb. van Royen, now incorporated in the general collection of the Rijksherbarium. The Van Royen herbarium, which contains many references to Hermann's herbarium (see p. 34), was seen by Linnaeus, and must be considered one of the treasures of the institute.

After the transfer of the Rijksherbarium (i.e. the State Herbarium) from Brussels to Leiden in 1830 (see further details on p. 30), it was officially decided to unite it with the Academy collections in 1832.

The '*Ontwerp Instructie*' *1832* for the director of the Rijksherbarium, in which this was stated, sets down that the institute has to be open to students of botany

* This essay could hardly have been written without the cooperation of botanists and technical staff in answering my numerous questions: I wish to express my sincere thanks to all of them.

under adequate supervision. The professor of botany and eventually students with a recommendation from the professor, could be admitted as long as no damage was done to the collection. The professor of botany could, in addition, borrow specimens for his own special studies for a specified time and against receipt. The incorporation of the early Herbarium of the 'Hoogeschool' was officially supposed to have materialized in 1838. In reality it was as late as 1871 before the last parcels were transferred from the Hortus, certainly partly due to the fact that Junghuhn and others stipulated that they did not want their collections placed under the supervision of Blume. As Blume died in 1862, it might be that large herbaria, as e.g. Herb. Reinwardt and his Herb. variorum botanicorum, and earlier Herb. Splitgerber, were temporarily stored in the Hortus building for reasons of space.

In 1872 the collections of the 'Botanische Vereeniging' (Dutch Botanical Society) were deposited in the Rijksherbarium (with an interruption from 1912 – 1925), nine years later than Miquel proposed in a letter to L. H. Buse, as the conservator was willing to supervise that collection at his home[20]. The exotics were presented, including also Cape plants.

In 1910 this example was followed by the 'Nederlandsche Mycologische Vereeniging' (Dutch Mycological Society) which presented its collection to the Rijksherbarium.

Besides by the uniting of several private and society-owned herbaria, institutional herbaria grow by acquisitions obtained by gifts (legacies a.o.), collections made by their staff and other government officials, exchange of specimens with other herbaria and owners of private collections, and purchase of private collections or sets offered for sale by naturalist explorers.

2. THE HOUSING OF THE RIJKSHERBARIUM

a. In Brussels (1829 – 1830)

By a Royal Decree of March 31, 1829, the foundation of a Herbarium in Brussels (at the time the capital of the Netherlands, which at that stage still included present-day Belgium) became a fact. From 1829 – 30 it was housed at 8 – 12, Rue de Namur (formerly Rue de Coudenberg)[1], under the direction of C. L. Blume.

The collections were made up of those made by Blume himself in Java and Noesa Kambangan, by the members of the 'Natuurkundige Commissie' (Natural Science Commission): Kuhl, Van Hasselt, Zipelius (unfortunately with separately kept labels), and other collectors in the Dutch East Indies.

In June 1830, the German physician Ph. F. von Siebold sent two cases with dried plants, seeds, and wood samples collected during his stay in Japan (in Dutch employ on the Japanese isle of Deshima), to Brussels.

Shortly afterwards, Blume went abroad, just before the outbreak of the revolt which resulted in the same year in the separation of the Southern Netherlands (i.e. Belgium). Von Siebold, fearing for the safety of his collections during riots, contacted Mr. van Ewyck, a high government official at the Hague, and got his authorization to move his collection from Brussels to Leiden. After consultation with Blume's assistant, Dr. J. B. Fischer, all collections of the Rijksherbarium together with Von Siebold's material were packed into cases and forwarded to Ghent, from where they were shipped to Leiden. Despite the interest which mutineers showed in the shipment, Von Siebold saw to it that the cargo was safely delivered at Leiden.[1]

b. In Leiden (1830-hodie)

Since October 1830 the Brussels collections had been deposited in a Hortus building (officially since 1832). In 1837 the rebuilding of the Museum van Oudheden was begun and in 1839 the herbarium collections were transferred to the ground floor of that Museum (Kabinet voor Pleisterbeelden), situated on the Rapenburg 33 (at present housing the Institute for Tropical Medicine).[23] Unfortunately no funds were available for the substitution of the covers of the collections and nothing could be done about internal reorganization.

During Blume's directorship of over thirty years, the space in the building (3 rooms) became much too tight, and not only that: the yearly reports recorded complaints of the humidity of the building, not to speak of leakages which became a lasting problem, especially from the 1850s onwards.

In 1864, Miquel received permission to use the first floor of the building on the Rapenburg.

Several plans for a new building in close vicinity to the Botanical Institute and the Hortus were made and discarded (nothing new under the sun). In 1903 a plan was made which finally resulted in the compound in the Nonnensteeg. Lotsy's plan of a more elaborate building with possibilities to expand, and with an attached experimental garden, all on the outskirts of Leiden, was discarded. The faculty of Leiden University was opposed to it, and Hugo de Vries, the world-famous and influential professor of Amsterdam University, had discussions with the Minister and members of Parliament, to prevent the acceptance of Lotsy's master plan. A not very elegant way to thwart a rival. Lotsy took the consequences and handed in his resignation in 1909.

In 1911–13 the transfer to the Nonnensteeg took place, a considerable improvement, but not for eternity. Under H. J. Lam the situation became once more chaotic, with the herbarium boxes crowding corridors and staircases.

At present, from the end of 1964 onwards, the Herbarium is housed in a renovated factory complex in the Schelpenkade, euphemistically called the 'Provisorium', with much more space, but not satisfactory with regard to full fire prevention safeguards. The final (?) solution is planned in the 'Leeuwenhoek', where, in the future, government budgetary means permitting, the beta institutes of Leiden University will be housed together on a plot situated in the western suburbs of the town. However, differences of opinion are once more being heard and speculations might be better left alone.

3. HERBARIUM POLICY

In 1830 the collections of the Rijksherbarium consisted of plants from the Dutch East Indies and Japan, two regions of the world which for years to come, would influence the study of the material. Once started with such a nucleus, formed thanks to the (rather late) Dutch interest in the scientific exploration of their colonies and settlements, it was a historically given opportunity to publish on those regions. Any botanist interested in those regions had, and has, to take the Leiden collections into account.

As regards the first director, Dr. C. L. Blume, a much disputed personality, a few remarks might be to the point. Whatever has been said to his discredit, one thing is certain, and that is that he was possibly the only botanist (and a devoted, not to say

inspired one) in his period who had *no* private herbarium and held himself entitled to stress the fact that all collections made at the government's expense were government property and that their only just place was in the Rijksherbarium. Nowadays, there is hardly a Herbarium anywhere of which the staff is permitted to have a private collection, but the idea was heresy to botanists of Blume's time. It was certainly the cause of much controversy, the more so as Blume was an autocratic solitaire, who was rather averse to admitting certain colleagues to the collections and even more to their borrowing material to use at their homes. The latter practice, which at that time was considered normal, has, of course, been almost abandoned today.

In 1862, after Blume's death, F. A. W. Miquel, professor at Utrecht, was appointed director without cost to the State. This implied that he could be only part-time at Leiden; it had to be two days weekly at least. As almost simultaneously the conservator, H. van Hall, was dismissed for obscure reasons after nine years' service (Miquel said he had no hand in it so let us give him the benefit of the doubt), the permanent higher-trained personnel of the Herbarium consisted in fact only of the assistant Smeets, a pharmacist who had been appointed under Blume.

Miquel was a very different person from Blume, with a different policy with regard to the management of the Herbarium. His relations with colleague botanists and the government were far more congenial than they were under Blume. Blume had been in charge for over thirty years, during which, especially in the latter years, he had been involved in confrontations and controversies with colleagues and the government. Miquel was only given nine years (†1871) and in that period he had lavishly distributed duplicates of the collections, even to the extent that precious little was left for his successor Suringar as materials for exchange. The original source of the many duplicates had dried up considerably after the foundation of the Herbarium Bogoriense (1844) by the diligent Curator of the Buitenzorg Botanic Gardens, J. E. Teysmann, much to the annoyance of Blume, who saw his monopoly threatened, and not unjustly so.

Subsequent directors, Suringar, and later Goethart, had, for this reason, to spend more money on buying collections.

This problem of shortage of exchange material persisted throughout the thirties of this century. Lam successfully initiated expeditions to the tropics by botanists on his staff, which since that time, and especially after the fifties, has become a routine activity. An auxiliary purpose was to familiarize specialists with their groups in the field.

Presented acquisitions come chiefly from private donations by Netherlands botanists who want a safe deposit for their collections of the Netherlands and Europe, duplicates from Herbarium Bogoriense, according to the agreement made between Teysmann and Miquel, and furthermore, from individual persons or institutions who want their material pre-identified, largely from the tropics. This service is an important source of acquisitions, chiefly from the forest services, at Bangkok, Kepong, Kuching, Sandakan in Malaysia, and Lae in Papua New Guinea, while there is a regular exchange with Manila. A great attraction for all of them is the presence in Leiden of its specialists who gain through the years expert knowledge of an increasing number of families.

Also missionaries, anthropologists, phytochemists and many amateur collectors like to have the names of their plants identified and know that the Leiden staff is willing to provide them within a reasonable time, which has a most stimulating effect.

4. CONTENTS AND ACQUISITIONS

In this chapter a survey is made of the growth of the collections in which only the main items can be specified. The existing sources do not permit me to compile such a meticulous specification as was done formerly by Urban for the Berlin Herbarium. During the war years an effort was made by Mr. Sinia to list the names of collectors of plants in the Rijksherbarium, based on the odd scanning of the collections, but this is not suitable for publication.

I have arranged the main acquisitions chronologically, under the various directorates, but I have made an exception for old herbals and old herbaria which are of outstanding interest and are mostly kept separately.

a. Old Herbals, Herbaria etc. [2–9, 24–25]

Most of these collections, certainly the herbaria on loose sheets, will have been kept in the Hortus Academicus room. With the older herbals it was a different story. Rauwolf's herbal, being books, was originally in the University Library, but later given on permanent loan to the Rijksherbarium. The Herb. Simon d'Oignies was transferred from the Koninklijke Bibliotheek (Royal Library at the Hague) in 1868 at the request of Miquel, and the Herbarium of David de Gorter came to Leiden in 1922 as a permanent loan (later presented) from the 'Museum der Vereeniging tot Beoefening van Overijsselsch Regt en Geschiedenis te Zwolle'. The more important ones are:

Herb. Rauwolf[2], made by Leonhart Rauwolf, doctor at Augsburg, Germany; it is one of the oldest scientific herbals from the 16th century. It consists of specimens collected by himself during travels in Italy and Switzerland, the south of France and from the Mediterranean and Near East (Tripolis, Lebanon, Euphrates, etc.). It is in reasonable condition, although partly damaged and with some pages missing, presumably cut out by unscrupulous botanists. It consists of four books, three quarto and one folio. It formed part of the legacy of I. Vossius and was bought in London in 1689. It had been presented to Vossius by Queen Christina of Sweden, whom he tutored. It is supposed to have been part of the war-booty which the Swedes took from the Germans during the 30-year war. It formed the base of Gronovius' 'Flora orientalis' (Lugd. Bat. 1755), while towards the end of the 19th century Ludovic Legré studied the contents for his paper on the knowledge of the botany of the Provence in the 16th century.

Herb. En Tibi, another folio volume, is, judging from the used nomenclature also from the 16th century. It formed part of Vossius collections too. It contains a.o. boreal and Mediterranean plants and is possibly of Italian origin. A card index of its contents is in the Rijksherbarium; c. 433 nos.

Herb. Breyne[4], made by the merchant Jacob Breyne, at Danzig, 1659; it consists of three volumes. Its value lies mainly in the accurately mentioned Prussian localities in two of them. They are, however, in a bad state. It is not known how it came to Leiden.

Herb. Boccone[2], in book-form, contains plants from Sicily, Malta, etc. (1674). It belongs to Boccone's book, 'Icones et descriptiones rariorum plantarum Siciliae, Melitae, Galliae et Italiae.' Proofs of the plates are included.

In the old archives of the Rijksherbarium I found a list comprising several items of the *Herb. Hieronymous van Beverningh*, including Cape plants from P. Hermann, Italian plants coll. 1664 by D. van Meeuwen (pres. 1676), *Herb. D. Boccone* in Sicilia

(!), Java plants from Cleyer (1676), ten Rhyne Cape plants, and J. Breyne specimens. As the list is in an old cover stamped 'Acad. Lugd.', it seems that his herbarium came to Leiden; Van Beverningh was a Curator of the 'Hoogeschool' who died in 1690. With the exception of Boccone's herbarium the other plants are probably dispersed through the general collection of the Rijksherbarium.

Herb. Hermann[5], from Ceylon, collected 1672 – 79, by P. Hermann, consists of two volumes in book-form, in very good condition. It is not the only herbarium in existence, as another one is in the British Museum (Natural History) in London, and a folio volume containing 92 plants of the Cape and Ceylon is in the 'Forschungsbibliothek' at Gotha, D.D.R.[24] The one used by J. Burman for his 'Thesaurus zeylanicus' had originally been sent to J. Commelin in Amsterdam. After Burman's death it came into the possession of Benj. Delessert, who bequeathed his herbaria to Geneva and his library to the 'Institut de France' in Paris. Hermann's herbarium, being bound in a folio volume, was regarded as a book and given to the 'Institut'.[25] Linnaeus based his 'Flora Zeylanica' on the British Museum material, but some of the species are not represented there and a number of species in this book and in his 'Species plantarum' have been taken from Burman's descriptions and drawings.

Herb. van Royen[2], made by Professor Adriaan van Royen of Leiden (1732 – 54), is, contrary to the old herbals, not kept apart. It is inserted in the general collection of the Rijksherbarium. It has labels clearly giving its origin, and contains many references to Hermann's herbarium. Some *algae* and many *bryophytes* are included in it. It was seen by Linnaeus (types!). It contains Thunberg specimens (belonging to his 'Flora Japonica').

So-called *Herb. Boerhaave.*[2] This is of uncertain origin; opinions differ. It is considered as having possibly been made in the Hortus Academicus after 1740.

In the old archives of the Rijksherbarium the name Meerburg was found on lists together with Van Royen plants. *N. Meerburgh* was a well-known Curator of the Hortus Academicus in D. van Royen's time (nephew and successor of A. van Royen). He was in possession of a herbarium.[3] Sheets with the name Meerburgh are occasionally found in the Rijksherbarium collections.

Herb. de Gorter[6], was after careful study, identified with certainty as having been made by Prof. David de Gorter in the 18th century. It contains 1346 specimens, partly without localities, partly from plants cultivated in gardens, Russian and Siberian plants collected by himself, but also by others, e.g. Lerche, Gerber, specimens from Persia, Italy, etc. Plants from the Netherlands of importance for Dutch floristics number only 33, and are extensively discussed by Van Ooststroom. The latter supposes that a herbarium of exclusively Dutch plants will have been in existence.

Herb. Simon d'Oignies[2] was acquired by the government in 1868, (see p. 33), but is dated 1780; it consists of 5 volumes. It is typical of its time, the dried material, as in the Gorter herbarium, being adorned with pictured flower-pots, bows and suchlike, giving the specimens a more romantic look.

Joseph Gaertner's Carpologica[7] contains a number of types (as well as the set with Herb. Banks in the British Mus. Nat. Hist.) and must date from the Hortus Academicus Herbarium. The fruits and seeds had been collected by himself during his European travels, but also by other collectors, e.g. ex Hort. Lugd. Bat. He was a friend of David van Royen, who was in possession of a carpological cabinet also. Gaertner's collection was used for his famous book 'De Fructibus et Seminibus

Plantarum', the 3rd and last volume published by his son. The material, mostly in glass tubes is badly labelled; it is not certain that it was ever a complete collection, the main set being at Tübingen.

The oldest known plant collection of Surinam, bound in a volume resembling those of Hermann's, and certainly made before 1695, erroneously marked on its back: Herb: Viv: Promont. Bonae Spei Vol: 1, was also in Leiden.[8] It was given to Herb. Utrecht by Lam who considered it a more appropriate place, as the Utrecht Institute specialized in the flora of the West Indies.

There are several other herbaria, mostly in book-form and partly of uncertain origin, including a '*Museum Cryptogamicum*' (3 vols. of Musci and Lichens).

There are also several 19th century Japanese collections, some bundled and with a label that they were made by Von Siebold's pupils (coll. 1823–30), others in book-form, some folded accordion-wise, *Herb. bot. Kaizo* in 4 vols, and *Herb. Ito Keiske* (see p. 41), most of them in poor condition.[9] Occasionally Miquel referred to them.

It is mostly very time-consuming work, even for a botanist with a historical interest, and an eye for graphology and methods, such as Van Ooststroom, to ascertain the origin and former owner[s].

b. Directorate of C. L. Blume (1829–1862)

Blume was an eminent and prolific author of botanical works[26], but the directorship implied more than that. One of the first tasks of the Rijksherbarium (as stipulated in the Instructions 1832), was to have a catalogue of the collections made. This is certainly not a clerical task for a non-botanist. It implies identifications as to the family, genera, and species. The required yearly reports[10] to the Minister of Interior Affairs were evidently appended by lists to show the progress of the work with the request to return them as soon as possible.

This time-consuming work on the catalogue, i.e. on the identification and the arranging of the collections, was done in succession by J. Pierot (1831–40), J. H. Molkenboer (1840–46, partly with the assistance of C. Kerbert, co-author of his 'Catalogus Florae Leidensis', and of Schultes Jr.), and for nine years (1853–1862) by H. van Hall. It was also Blume who, in these years, started to publish a descriptive, commented catalogue of the Rijksherbarium collections in his work 'Museum Botanicum Lugduno-Batavum' (started in 1849).

Van Hall was appointed 'Conservator' instead of 'Assistant'. It was Van Hall who changed the paper (covers) of the collections and put carpologica in cardboard boxes. It is clear that at least two catalogues were in the making, one of indigenous plants, and another one for the general collection. In 1839 Blume stated that he wanted to give priority to the care of the collections over the promotion of large acquisitions; in that year he got Dfl. 700 for shelves and other necessary material, while the arrangement received more attention.

Under his reign it remained a constant worry that the salaries of the employees were too low when compared with those of the 'Rijksmuseum van Natuurlijke Historie'. Especially the assistants of the Conservator, mostly working students, were underpaid, with the result that the personnel was changing all the time. In 1856 Smeets was appointed and he continued to work under Miquel.

In *1850* another *Instruction*[18] was issued, containing some new features. It stated that in the case of duplicates of material, Dutch botanists and institutions had to be given priority. In this way e.g. the Military Academy at Breda was sent a collection of plants, as well as several other schools: a rather strange policy. Besides, it was

stated that the Director was obliged to give loans to botanists, in Blume's opinion, often to the detriment of the plant collections; this was in contradistinction to the Rijksmuseum of Natural History, where this was *not* done. This was an irritation to him, especially as the borrowed material was very often not returned within the stipulated time.

In this way the responsibility of the director was undermined and little could be done when Von Siebold took off to Japan again without returning his loans.

Probably the new Instruction had been instigated by complaints from Miquel, De Vriese, Von Siebold, and others who wanted to borrow material from Leiden, requests met only reluctantly by Blume.

According to the Instruction the work on the Catalogue had to proceed. Furthermore, it prescribed that *no unicates* were to be removed from the collection and only duplicates were to be used for exchange; this regulation was hardly one to which Blume would object. Finally, it was stipulated that the director had to refrain from publishing discoveries made by still living persons, unless with their consent. This latter regulation was probably induced by former accusations that Blume had made use of annotations, mostly extensive field-notes, made by collectors such as Kuhl and Van Hasselt, without acknowledging their names as his source. It should be commented, however, that it is common practice among taxonomists, up till the present day, to make use of any data or field notes made by collectors. The original value of a systematic revision can not be compared with that of field-notes, valuable and often indispensable in themselves as they may be.

Though Blume seemed tight-fisted when it came to making use of the collections under his care, in his reports he stressed the importance of work done on them as a means of coming into possession of authentic specimens with incalculable value for science. At the same time he realized that it was an impossibility to demand publications on loans within a specified time.

Blume was constantly on the barricades, defending his institute, stressing again and again that collections made by government officials with government money ought to come to Leiden. As already mentioned before, the foundation of the Herbarium Bogoriense was a thorn in his side, just as was the fact that great quantities of plants were given to private persons, often including specimens not present in the Rijksherbarium. He declared again and again that both Junghuhn's and Hasskarl's collections must be considered the legal property of the Rijksherbarium, that plant collections from the tropics must be forwarded regularly and that it was detrimental to let them accumulate for too long. It is ironic but true that his own attitude made people reluctant to have their collections under his care, especially so as he was certainly essentially right.

Although most collections denied to Blume later came to the Rijksherbarium, an exception is the one of Diepenhorst in Sibolga (N.W. Sumatra) and some others from that island, of which Teysmann forwarded only a duplicate set to Miquel, whose herbarium became the core of that at Utrecht. This material formed the basis of the 'Flora of Sumatra', in the Supplement of his 'Flora Indiae Batavae'.

One of the features of Blume's management were his efforts to interest pharmacists destined for the colonies in the tropical flora. They evidently had to work for some months in the Herbarium and Blume took great pains over their tutoring, hoping, as he said, to see one day the fruits of the seeds he sowed. In the end his attempts were unsuccessful, as from most of these nothing more was ever heard. He

had an idea that a similar compulsory stage in the Herbarium might also be useful for military surgeons, but to my knowledge this idea never came off.

On the other hand he had good relations with some pharmacists, such as Th. D. Vrijdag Zijnen who often visited the Herbarium, donated material and was the author of many publications. Also K. W. van Gorkom worked for some time on *Cinchona* of which Leiden had acquired considerable material, *viz.* dried plants from Peru, the *collection Weddell* (the basis of his book 'Histoire naturelle des Quinquinas', 1849), all specimens with original handwritten labels, thanks to a visit to Paris and personal contact with Weddell. Besides authentic bark specimens from Vrijdag Zijnen, v. Bergen and Poeppig are still partly at Leiden, but they are in a bad state through inadequate labelling.

In 1842, after a small acquisition of plants from Central America (Caracas), collected by Consul *J. G. van Lansberge*, Blume started a campaign, writing to several consuls abroad to interest them in making collections. He seems to have met with meagre success, but at least a small collection of orchids followed, made by *Van der Linden* in Central America.

In later years Blume had a plan to interest missionaries, for which he asked government support in vain. Meanwhile Miquel had already started a training course in the Mission-House at Utrecht with special emphasis on the collecting and storage of herbarium specimens. Later, the famous botanist Ferdinand von Mueller of Melbourne succeeded in acquiring many plants collected by missionaries in SE. New Guinea (Papua), even before English administration, and under very unfavourable conditions there. Why it was never a success in those years in Holland I cannot explain.

In the Blume period collections increased considerably. For the *Dutch East Indies* the more important ones are those of *Spanoghe* in Timor (basis of his 'Prodromus florae timorensis', 1841), *Korthals* (Borneo, etc., described in his 'Kruidkunde' etc.), *Forsten* (mainly Celebes, plants described by Blume and Miquel), other collections from the '*Natuurkundige Commissie*', and a large number of Java plants from Blume's friend, *F. A. C. Waitz*, a former colleague.

From the *West Indies* important acquisitions were: *R. Schomburgk* from British Guiana, Surinam plants from *J. Eyken Sluijters*, duplicates from *Herb. Molkenboer*, *Reinwardt* and *Miquel*, and the *Herb. Splitgerber* (about 1846 stored in the Hortus Academicus building).

From *Japan* the collection of *Von Siebold* is of the utmost importance (basis of Siebold & Zuccarini 'Flora Japonica'), followed by those of *H. Bürger* (Von Siebold's successor in Deshima), and *Textor* (purch. of 4450 specim.), on which Miquel based many new species.

It cannot be said that Blume did not try to establish relations with foreign botanists and herbaria. As hardly any correspondence of Blume is known to be extant, it is easy to underestimate his activities in that direction. The annual reports,[10] as far as they have become available, give a fairly good insight into the acquisitions of those years.

Several reports are still missing, but by piecing things together, an overall picture can be obtained. He carefully built up the collections under his care, trying especially to get authentic specimens.

An important *Sieber* set, containing filices, cryptogams, Agrostotheca, Cape plants, Flora Mauretania, Trinidad etc. is in the Rijksherbarium, where extensive

plant lists are in the old archives. It was almost certainly acquired (bought) in Blume's time, or even before that, as Sieber stopped collecting before 1830.

In 1846, thanks to Blume, the *Herb. Schultes*, consisting of 10,000 identified plant species, most of them the basis of Römer & Schultes' 'Systema vegetabilium' (1817 – 30), was acquired. This important acquisition contained plants from Europe, Mongolia (coll. Chesney), S. Africa (coll. Ecklon and Zeyher), Brazil (Martius), California, S. America (coll. by H. Cuming and his son-in-law, Bridges), Australia (coll. Sieber, Büning), and many German cryptogams. It contains isotypes and possibly even holotypes. It was the redemption of an old promise dating from the foundation of the Herbarium at Brussels. J. A. Schultes himself had died and the son was negotiating with the Russian government on the sale when he was reminded by Blume of his father's promise. In return Schultes Jr. was temporarily appointed to the Rijksherbarium, waiting to be sent out as a surgeon or naturalist to the Dutch colonies. Evidently he proved to be a very unstable person and was dismissed after some time.

In the Blume period three other important herbaria were acquired, viz. those of *Persoon* (Europe; many important types of fungi and duplicates of bryophytes) in exchange for an annuity of 500 Taler paid by the Dutch government from 1825 till his death (1836), and presented by King Willem II to the Rijksherbarium; the *original herbarium of Dozy & Molkenboer* (the basis of 'Musci frondosi inediti archipelagi indici' and other publications), the authentic specimens of which were regularly consulted by C. M. van der Sande Lacoste; thirdly the *Herb. Splitgerber* (mainly from Italy and Surinam). Of the purchase of the latter Blume only heard secondhand, as it was originally meant for use by the Academy. Its incorporation into the Rijksherbarium took until 1871. Two catalogues in book-form (1836 and 1842) belong to it. *Herb. Reinwardt* (incl. German plants from Herb. Reichenbach, Hoppe and Schultz) was also bequeathed to Leiden.

Duplicates were exchanged with Paris (including several authentic specimens of orchids acquired from SE. Asia, Bourbon and Madagascar, Senegal (coll. Leprieur), New Zealand and New Holland (= Australia)), Berlin (Brazil, ? Sellow dupl.), Geneva, Breslau (from Herb. Göppert and Henschel), Herb. Hooker, Herb. Lindley (orchids), Herb. A. von Bunge (China, Altai), Petersburg (= Leningrad, N. & W. Asia, Caucasus and Siberia), Christiania (Scandinavia), Prof. Kickx at Ghent, Stockholm (Sweden), N. American plants (through Asa Gray at Harvard, Cambridge, U.S.A.), Brussels (Mexico, Centr. America), Dr. Bueck at Hamburg (Ecklon and Drège plants from the Cape), Louvain (S. America), Galeotti (Mexican ferns), Wendland (American palms). Duplicates of the 'Plantae Preissianae' (Australia; coll. 1830 – 41), described by J. G. C. Lehmann at Hamburg, might have been acquired in this period. The author's collection and types are in Stockholm. Promises of duplicates were made by R. Brown and Presl.

Blume was much in favour of this exchange of duplicates, but often stressed the shortage of assistants who are certainly conditional for a responsible attendance to selection, sorting, and ticketing of duplicates for distribution.

Other collections were bought or presented, including 300 plants from Brazil (*coll. G.S. Barao de Campanema*), plants from Tripoli (*coll. Consul Jhr. Cliffordt Kocq van Breugel*), Egypt plants (from *N. Bové*, and *Dr. Husson*), from Italy (*coll. Mrs. Macpherson*), Central America (*coll. Van Lansberge and Van der Linden*), authentic American orchids from *Prof. Reichenbach*, and a purchase of 2,677 species and 1,201 indigenous plants from the '*Esslinger Reiseverein*'.

This society was established at Esslingen near Stuttgart, and employed collectors whose plant collections were to be divided under the subscribers. It flourished under E. G. Steudel and Ch. F. Hochstetter, and was handed over to R. F. Hohenacker in 1842. The latter had in mind to have plants collected in that part of India where Rheede's Hortus malabaricus had been illustrated. He did not succeed in finding somebody willing and able to collect in the vicinity of Cochin, but he succeeded in interesting F. Metz[22], missionary at Mangalore, and later in the Nilgiri Hills, both regions with a very different climate (and flora) from Cochin.

Wallich duplicates from India were presented by the English East India Company and Blume asked for a privileged position when plants were distributed, with a view to the importance of the specimens for Leiden.

New relations were made with Uppsala (Prof. Fries), Montpellier (Martins), Nancy (D. A. Godron), and G. Bentham in London. As regards Holland itself, relations with Prof. J. C. van Hall (father of the Leiden conservator) were good, and the latter presented plants to Leiden.

Visitors to the Rijksherbarium included H. F. Link (Berlin), E. Boissier (Geneva), E. Mayer (Carlsruhe), Colbach (Stuttgart), and Wendland (Hannover).

Plant collections were studied by R. B. van den Bosch (*Hymenophyllaceae*), Alph. DeCandolle (e.g. *Piper*), Decaisne, Reichenbach, J. C. van Hall, W. H. de Vriese (*Ficus*), Miquel (for his Flora Indiae Batavae), Von Siebold (Japanese collections),Molkenboer & Dozy and Van der Sande Lacoste (Bryologica javanica), J. Müller Arg. (*Euphorbiaceae*), and many others.

The reason that the Blume era has relatively been very extensively treated, is because of the fact that W. A. Goddijn, when writing his contributions to the centenary of the Rijksherbarium[11], did not have at his disposal the written reports of the early period. What I learned from those confirmed the opinion that Blume must be considered as the founder of the General Herbarium. Furthermore, it has become very clear that he worked very hard indeed to extend and enrich it and that he had to perform this task under adverse conditions, both with regard to housing and especially, lack of personnel.

c. Directorate of F. A. W. Miquel (1862–1871)

F. A. W. Miquel's appointment as Blume's successor came off in 1862. He retained his position as professor at the University of Utrecht (at that time still Hoogeschool). His work at Leiden was only part-time, which, in combination with the dismissal of H. van Hall as conservator (see p. 32), left only Smeets, a pharmacist, in permanent charge.

In his first annual report Miquel gave a short outline of the situation. There were three rooms available:

1. for the Herbarium proper, i.e. the arranged and identified collections,
2. for the provisional storage of material still to be identified and inserted (then 25,000 species) in the arranged collection, and
3. for the duplicates for distribution and exchange, mostly from the Dutch East Indies.

The latter had, before distribution, to be compared with specimens already inserted in the arranged collection. In how far this was done, and how expertly done, remains to be seen, as only Smeets will have been responsible for it.

It was done at such a rate that in 1863, 11,860 duplicates were ready for distribution and in about 1868 most of the available duplicates had been distri-

buted. It is not surprising that in this way much damage was done, e.g. original labels of Blume may be found in Paris, while they are missing here. In this way the Paris specimens are sometimes erroneously taken as holotypes, while these are in fact in Leiden. To make it worse, at that time the material was mostly not yet mounted on paper, but simply put in covers. Too much handling could therefore easily cause damage.

In 1862 the plants were stored in portfolios, viz. 600 with phanerogams, 200 small ones with cryptogams. Besides there were fruits and other material in spirit, and wood samples. The collection was *not* used for academic tuition.

In 1864 a list of the Filices in the Rijksherbarium was finished, mainly consisting of species of the herbaria of Junghuhn, Splitgerber, and Reinwardt.

Miquel was well aware that unnamed dried plants had no scientific value. To gain this they had to be revised by specialists who were invited by him to do this work. He himself planned to work up the remaining families. They were to be published in the 'Annales Musei Botanici Lugd.-Bat.' (1863 – 70). He made no attempts to make the Rijksherbarium a centre for systematic botany. The families were sent to the specialists, all too often at their homes, and without proper control of unmounted material. Among the co-operating botanists, partly suggested by DeCandolle, may be mentioned Mettenius for the ferns, Schott for the *Araceae*, Caspary for the *Nymphaeaceae*, Radlkofer for the *Sapindaceae*, Hooker for *Nepenthes*, and Andersen for *Gramineae*. Herbarium visitors were Baillon, Kanitz, a.o.

Contact with Kew was extended, newly made with Basel, Calcutta, Dorpat, Greifswald, Palermo, Vienna, Tübingen and Strassburg. The old relations from Blume's time were continued.

As to the collections, it was stated in 1866 that all were systematically arranged and new labels were attached to the bundles; in 1867 the Japanese collections were all identified and the catalogue was finished (Miquel 'Catalogus Musei Botanici Lugduno-Batavi. Pars prima. Flora japonica', 1870).

In 1868 he made three divisions in the Rijksherbarium, respectively for the Dutch East Indies, Japan, and a General Herbarium for his 'Annales'.

Van der Sande Lacoste was found willing to arrange the cryptogamic collections. He was an eminent bryologist whose work covered the tropics also, author of 'Synopsis Hepaticarum Javanicarum' and one of the authors of 'Bryologica Javanica'.

Miquel's generous policy with regard to the distribution of duplicates certainly had a good effect with regard to acquisitions in exchange.

From the *Dutch East Indies*, as was to be expected, hardly any collections were sent to Holland. It would take some years for friendly relations with Herbarium Bogoriense to bear fruit. *Herb. de Vriese* was bought (at least part of it; Hooker duplicates were considered government property. Badly labelled!), and probably in Miquel's time also several cryptogams and a series of *Zollinger 2nd stay in Java* with detailed labels (other Zollinger plants were acquired later with the Herb. Ned. Bot. Ver.). *Junghuhn*'s plants (revised by Miquel & de Vriese in 'Plantae Junghuhnianae') were incorporated too. A few small collections of cryptogams were sent by *Semmelink* (Flores), and *Von Rosenberg* (Celebes).

From the *West Indies* some duplicates were presented by *Prof. Meisner* (Basel) but the important acquisition was the *collection Kappler* from Surinam, evidently partly (or also) made with (by) F. W. R. Hostmann. It was acquired by the Government.[10]

The *H. H. Ch. Focke* duplicates from his 'Plantae Surinamenses & Guyanenses' (1835–50) possibly came to Leiden through Miquel, as the originals are at Utrecht. Dozy & Molkenboer inserted his Musci in their 'Prodomus florae bryologicae Surinamensis', both from Miquel's herbarium and from the 'Leidsche Hoogeschool' collections.

Very important plants enriched the collections from *Japan*, certainly thanks to Miquel's interest in that flora and his many publications on it. Asa Gray sent duplicates from *Perry's Expedition*, collected by J. Morrow, Williams, Small, and Wright. From Kew 1,200 duplicates from *Oldham's collection* were received, and from Petersburg *Maximowicz' duplicates* (author of 'Plantarum novarum Japoniae'). Besides most of Von Siebold's plants were returned (Miquel finished the last volume of the 'Flora Japonica').[21] A collection made by '*Ito Keiske*' was acquired too. When looking for possible information on this collector, I came to the conclusion that he must be the same as Keis(u)ké Ito,[12] one of the pupils of Von Siebold. It probably came into the possession of the Rijksherbarium together with the Von Siebold collections. According to H. Hara there are no herbarium specimens of his in Japan. Papers published by Ito can be found in Merrill and Walker[13]. Miquel used his name many times in epithets of newly described Japanese plant species as 'keiskei' and also named a genus Keiskea after him, probably being ignorant of the fact that Keis(u)ke was his Christian name, and Ito his family name. This herbarium is kept separate.

Among other acquisitions mention must be made of important cryptogams presented by *Buse* and *Van der Sande Lacoste* (authentics of 'Bryologia Javanica'). In later years, under Suringar, their total collections came to the Rijksherbarium.

For *Europe: Willkomm* duplicates from Spain, Lapland and Scandinavian plants acquired from Stockholm and Uppsala, *Herb. Kickxia belgica*; plants belonging to his 'Flora Siciliae' were sent by the author, *Prof. Agost. Todaro* at Palermo.

For *Africa*: coll. *Gust. Mann* from the Niger, *Keulemans* from Guinea (Ilha do Principe), *Pollen & Van Dam* 110 plants from Madagascar[14], *G. Schweinfurth* from the Sudan (base material for his 'Beitr. z. Fl. Aethiopiens'), *Burchell dupl.* from S. Africa (from Kew).

For *other regions* the following were important: *Kotschy* from Asia Minor (main set in Vienna), *Vieillard & Planche* (Deplanche) from New Caledonia and New Zealand, and Mexican plants from Bourgeau (1865–66, *Palliser's Expedition*), presented by Paris; S. and Central American duplicates from Berlin, Basel, and Geneva (also fragments of DeCandolle); *Burchell* Brazil duplicates from Kew. *F. von Mueller* contributed Australian plant duplicates. Asian plants from *Hooker & Thomson, Griffith, R. Wight*, and *Falconer*, totalling 3,200 specimens, were received from Kew too.

Another item to be mentioned must be the *Compositae* presented by the specialist *K. H. Schultz (named Bipont)*.

Important duplicate Algae collections were added, e.g. from *Prof. Agardh* at Lund, *Characeae* from *Prof. Braun*, presented by F. von Mueller and Berlin, and by G. von Martens made by *E. von Martens* on the 'Preussische Expedition' (1859–62). The latter collection is the basis of the only botanical volume published on that expedition.

Miquel's private herbarium with its many types went to Utrecht.

W. L. de Sturler presented wood samples from the Dutch East Indies, which certainly formed the basis of his 'Catalogue descriptif' (1867), and belonged to an exhibition in Paris (no longer at Leiden).

d. Directorate of W. F. R. Suringar (1871 – 98)

After Miquel's death Suringar, then professor of botany in Leiden, was asked to take over the supervision, again without pay. He realized that it would be necessary to expand the collections considerably, not only the phanerogams which were certainly not representative for the whole world, but more especially with a view to the cryptogams.[11] Duplicates for exchange were, after Miquel's policy, in very limited supply, and purchases would be inevitable. As funds were not always available, he often paid the expenses privately, which brought him into conflict with the Government, as the director was not allowed to have a private herbarium. The question was solved by Suringar in making it over partly as a legacy on his death, and for another part it was refunded by the Government, albeit with considerable loss to Suringar. It specially concerned the famous lichen type *Herbarium Körber* (basis of 'Lichenes selecti germaniae'), and *Herb. W. D. J. Koch*, used for the latter's Synopsis on the German and Swiss flora. Evidently Suringar had partly retained his Algae collection which was bought by Mrs. Weber-van Bosse on his death.

In 1871 the last parcels of plants, viz. of the *Herb. Splitgerber*, the *Herb. Reinwardt* and the latter's *Herb. variorum botanicorum* (including a large collection of Teysmann plants), were transferred from the Hortus Academicus Herbarium to the Rijksherbarium. The following year, 1872, the *Herb. Ned. Bot. Vereeniging*, incl. several cryptogams, came to the Rijksherbarium (see p. 30)[20]. The Herb. indigenum from *C. A. J. A. Oudemans* in Amsterdam, author of a Flora of the Netherlands, was bought.

Already in 1874 Suringar reported the many shortcomings and deficiencies of the building and the desirability of having the Herbarium, Hortus, and Botanical Laboratory close to each other. His being in charge of the three institutions may partly have influenced this wish. It was not until after Suringar's death that this idea materialized.

It was Suringar's conviction that, although the Rijksherbarium had been placed officially under the supervision of the Curators of the University in 1876, an independent position had to be guaranteed, with a library of its own and two 'conservators' (not until 1881 was J. G. Boerlage appointed). More than his predecessors he saw the Rijksherbarium as an institution for international scientific research, the first attempt to make it a centre for systematic botany. On the other hand he wanted to use it also for academic tuition, contrary to Miquel (whose pupils were at Utrecht!).

In 1875 it was stipulated that it was not allowed to give out on loan already described plants when no duplicates were in hand.

Chr. Luerssen from Leipsic continued the work on ferns started by Mettenius; H. Graf zu Solms Laubach worked on the *Pandanaceae*, and DeCandolle in Geneva borrowed material as he did in former years. Material of camphor trees was loaned to Dr. P. Maisonneuve in Paris. K. J. Maximowicz, the specialist on the Japanese flora worked for some months in the Rijksherbarium in 1875. Other visitors were Caruel (Pisa), and Haynall (Pesth).

The acquisitions under Suringar have been extensively cited by Goddijn[11], and only the more important ones will be selected here. Mention must be made of the *Herb. Buse* (35,000 spec.)[15], *Herb. Van der Sande Lacoste*, *Herb. Hasskarl* (c. 20,000, mainly European, and his own Java collection), and the legacy of *P. W. Korthals* (notes, diary, and fragments of S. American and D.E.I. plants). Unfortunately it is hardly possible to join the latter's loose notes to his plant specimens. Through Korthals' waning interest in botany and his turning to philosophy, the care for his collections was not what it should have been. Duplicates were provided with printed labels without mentioning exact localities. In this way a so-called Sumatra plant might have been collected in Java, and also Borneo and Sumatra material is sometimes wrongly labelled.

Though sparingly, collections from the *Dutch East Indies* came in, viz. *Boerlage* (coll. W. Java 1888), dupl. Herb. Bog. from Timor and Borneo made by *Teysmann*, *Koorders dupl.* and a bought Java collection made by *J. C. Ploem*. Of importance were those from adjacent regions: 2,000 *Vidal specimens* from the Philippines (pres. by the Spanish Government), and *Kew and Calcutta duplicates* from the British part of Borneo and Malacca (Malay Peninsula). The purchase of a very complete set of *H. O. Forbes* plants, made in Sumatra, Java, Timor and Southeast New Guinea is a milestone. Dutch interest in the 19th century in the immense island of New Guinea was minimal. A few collections had been made on its outskirts by *Zipelius* (with the 'Natuurkundige Commissie'), by Teysmann (not in Leiden), and a few government officials, but it remained incidental. Botanists must have been aware of its considerable interest from a botanical view, but the impulse for Dutch exploration in the western half of the island (taken into possession long ago) did not come until the 20th century.

Collections from the *West Indies* were supplemented by *Suringar* (collected himself, incl. Algae), *Korthals* (not collected by him), with *Herb. Buse*, *Herb. Reinwardt*, and with a bought set of Flora Indiae occidentalis and Flora Americae tropicae (*coll. H. Fr. A. Eggers*).

Japanese plants were presented by the *Vrijdag Zijnen* heirs and Petersburg.

As regards *Europe*, many plants were received from other herbaria, including from Austria, Hungary, Russia, Denmark, and Sweden (nearly complete), and *Focke* (*Rubus*).

New were *arctic plants* collected by *Botteman* (Greenland) and duplicates from Greenland and Spitsbergen (phanerogams and Musci) presented by Stockholm; Berlin dupl. coll. *Chr. G. Ehrenberg* (Abyssinia, Arabia, etc.), with many cryptogams; plants from Djeddah (coll. *Consul Kruijt*).

Important bought acquisitions were: those of *Balansa* made in Paraguay and Cochinchina (from his widow), *Ross Herb. siculum*, Algerian plants from *Battandier & Trabut* (authors of 'Flore analytique et synoptique de l'Algérie et de la Tunisie'), *Pierre* from Cochinchina ('Flore forestière'), *Cardoso* from the Cape Verde Islands, *Schweinfurth* from Egypt, *Callier* Flora Silesica.

The *Cinchona* collections from the Exhibition in Vienna were handed over to Leiden. Apart from eventual herbarium material, they are no longer here.

Cryptogamic acquisitons, other than those included in the herbaria of Buse and Van der Sande Lacoste, were numerous, including mosses sent by *Schimper*, the *coll. Brébisson* (Algae), the already mentioned *coll. Körber* (lichens), *Wittrock & Norstedt* (Algae), *Herb. critt. Italiano*, *Rabenhorst and Thümen exsicc. mycol. et lichen.*, *Rabenhorst Fungi Europaei*, *Flora exsicc. Austr. Hung.* (3,600), and *Herb. Baenitz.*

It appears that more than ever collections were bought. Evidently Suringar succeeded in convincing the government of this necessity. His policy should be admired; he was the author of a critical flora of the Netherlands, and papers on Algae.

Late in the 19th century large collections were presented to Wageningen for the use of future forest officers.

e. Directorate of J. M. Janse, J. P. Lotsy and J. W. C. Goethart (1897 – 1931)

The beginning year of this era in the history of the Rijksherbarium is not arbitrarily chosen: it is the year that J. W. C. Goethart was appointed Conservator and the start of his long career in this institute, – from 1910 as Director – up to 1932. Prof. J. M. Janse was officially in charge from 1899 – 1906, but he made it clear very soon that his interests were in a different field of botany. In 1906 he was succeeded by Dr. J. P. Lotsy, an eminent botanist but more interested in experimental taxonomy than in herbaria; as already mentioned (p. 31) he left Leiden in 1909. So after all it was the stamp of Goethart's personality which determined herbarium policy.

From the outset Goethart was unhappy with the making of a catalogue. Through the stricter application of the then emerging International Rules of Nomenclature, many names and epithets changed and still more names had to give way to others by the progress of taxonomical revisions. He found that it was unjustified to devote so much time to keeping the catalogue up to date and he decided to abandon its maintenance. During the first World War he initiated the cutting up of the Index Kewensis alphabetically within the families. In this Index all names were marked which are present in the general collection. This methodology is applied until the present day; it necessitates checking all names of newly received material and all new identifications (very time-consuming for the technical personnel), before inserting material. It may become a bottle-neck in making collections available. After all the general herbarium is in itself an alphabetical catalogue of the file, through which the virtue of the marking of names in Index Kewensis becomes dubious.

Technical care of the collections was Goethart's prime concern. Prof. Janse succeeded in attracting funds for this aim. The arranging (systematically as to families, alphabetically within these, and geographically for the species), after mounting all specimens (in 1908 1/6 of the collections were not yet mounted), and numbering of the, at that time, c. 1,500,000 counted specimens, was an immense job. Disinfection was intensified. Besides, the collections in liquid and the carpologica had to be attended to also. Extra space was needed and was temporarily provided in a private house and on the premises of Rapenburg 22. In 1912 the preliminary work was finished and the building in the Nonnensteeg was occupied as the new abode. It was a great improvement, but not ideally planned; space for the library had been forgotten, and legend has it that also a letter-box was omitted! The first item had to wait several years, the latter was more easily realized.

Goethart's second concern regarded the staff. He succeeded in attracting Hans (J. G.) Hallier, who worked in the Herbarium from 1909 – 22. Especially by his experience in the tropics, more specifically won during his stay at Bogor, and when accompanying the Nieuwenhuis Expedition to Borneo, this erudite scholar was a most valuable asset to the staff. After he left, research on the tropical flora fell dormant till 1933.

The appointment of Dr. W. J. Jongmans and the acquisition of botanical fossils

will be skipped here. Jongmans specialized in palaeobotany, and became an outstanding authority on the Carboniferous flora, in co-operation with the coal-mining authorities in the south of the Netherlands. In 1919 he accepted employment with the national Geological Survey centred at Heerlen; the fossil collections and the literature on palaeobotany were then also transferred to Heerlen. It may be worth mentioning that in 1910–11, for the first time, 30 extra reprints of his palaebotanical publications were ordered for use in exchange, a policy the library practises till the present day with regard to publications by staff members.

The acquisition of the collections of the *Mycological Society* (mostly material in spirit) (see p. 30), brought along the development of a mycological department (see Van Brummelen's paper in this volume). Conservator Van der Lek was in charge, soon succeeded by Cath. Cool (who from the outset had given all her energies to the collections, primarily without pay), and later by Lütjeharms (1929).

The authentics of *Rabenhorst* (over 5,000, Europe and extra-Europe), *Junghuhn*, *Zollinger*, *Von Thümen* ('Mycotheca universalis', 2,300), *Opiz*, *Kurz*, and others were rearranged.

European *Fungi* from *Jaap* (fasc. 1–34, nos 1–850) were added, and besides Fungi from *Roumegère* (from France, basis of 'Synops. Fl. Crypt.'), and *Sydow* (4,900, German and exotics; author of many publications) were bought; also *Saccardo* 'Mycotheca universali' (1,600) and *Ellis & Everhart* from N. America (3,600) were acquired. Various specialists made use of the better accessibility, such as Lloyd, J. H. Miller, and R. Heim.

Through a gaffe of Prof. Janse, who refused admittance to the Herbarium of the 'Botanische Vereniging' to Burck, this Herbarium was taken away from Leiden and transferred to Haarlem in 1912. It came back to Leiden in 1925.

More than ever before, families of plants were sent on loan for study and in this way type specimens in the Herbarium increased.

During World War I many activities came to a standstill. Acquisitions were few and it was an excellent opportunity to work through arrears which in most herbaria are an ever recurring situation.

In these thirty odd years the collections grew considerably. For the *Malesian* region the enormous amount of duplicates (2nd set) from *Herb. Bog.* leaps to the eye. The era of contestation was definitely past and the flow of material began. More activity in exploration of the natural treasures of the colonies (by the government and the Dutch Geographic Society) resulted in collections too, e.g. during *Van Daalen's Expedition* to Atjeh (coll. Pringgo Atmodjo) and by *J. W. R. Koch* in New Guinea (described by Valeton); several others followed, but mostly Bogor received the 1st set, Leiden the 2nd; a duplicate set of *Koorders* from Java was acquired. Thanks to E. D. Merrill's policy large sets of duplicates from the Philippines found their way to Leiden, augmented by the purchase of *Elmer* specimens. For Borneo *Hallier*'s collection, and for the Lesser Sunda Islands, that of the *Elbert Expedition* must be mentioned (plants at Frankfurt and Leiden); the results of both expeditions have been published by H. Hallier (types in Leiden).

Numerous *West Indian plants* were acquired, including *Boldingh duplicates* and the *coll. Curtiss*, the latter not represented in Utrecht. In general it is the latter Herbarium which has the important Surinam collections and type specimens.

For *Europe* the main acquisitions were: *Herb. Koch* (see p. 42), *Herb. Gravet*, and *Herb. D. Lako* (critical Herb. Indigenum).

For *Africa*: new additions from Tunesia (*Pitard*), and S. Africa (*Wilms*, *Miss*

Leendertsz, Goddijn & Lotsy originals, and a nearly complete collection of *Proteaceae*), 'Exsiccatae' from *Zenker* (Cameroons), and *Schlechter* (Austro-Africanae).

The *New Caledonia* and *Samoa* (*Herb. Baenitz*) collections were enriched, and those of *Central & S. America* with 'exsiccatae' from *Herb. Baenitz* (Chile), *Sintenis* (Portorico), *Heller* (Mexico and Portorico, California), *Fiebrig* (Paraguay), and last but not least with the 2nd set of *Ule* '*Plantae Bahiensis*' from Brazil (of utmost importance now as the Berlin master-set was destroyed during World War II). Bolivia plants from *Herzog* were partly revised by Hallier, and a set could be retained here.

As to special groups, large sets of *Kneucker's Carices* and *Gramineae* were bought.

The mycological department has been discussed above (p. 45), but the other cryptogamic collections increased also. Especially the Musci got many additions: *Fleischer* (Ind. Arch.), *Herzog* (Bolivia), *E. Bauer* (Europe), *Gravet* (Belgium, 3,000). Lack of funds was the reason that the collection Geheeb was lost to Leiden. To the lichens 'exsiccatae' from *Weg* and *Arnold* were added. The fern specialist Rosenstock revised the material from S. America.

In these three decades of the 20th century the growth of the Rijksherbarium was, for a great part, acquired by 'exsiccatae' (identified numbered collections), a tendency already apparent under Suringar. Professional collectors operate even in more recent times, but become, at least nowadays, rather scarce and they are mostly zoologically orientated. A life without our modern securities will attract only a few people. The more so as those who are interested in nature nowadays have more opportunity for a university education.

Many private herbaria still came on the market, while owners with private means could well afford to make donations.

f. Directorate of H. J. Lam, C. G. G. J. van Steenis, C. Kalkman (1933-hodie)

From 1933 on, to start with H. J. Lam, succeeded by C. G. G. J. van Steenis (1962 – 72) and C. Kalkman (1972-hodie), a considerable expansion took place. Notwithstanding the slump of the '30s, a selected staff of specialists grew, be it at first in modest positions with comparable pay.

As a professor of systematic botany, Lam tried to interest students in the tropical flora, up till then only done by Went and Pulle at Utrecht (Lam, Van Steenis and many others were educated there).

Lam himself had worked in the Dutch East Indies for many years, and had made expeditions to New Guinea and the Moluccas for Herbarium Bogoriense. Especially after 1950, with the incorporation of the Flora Malesiana staff, the appointment of more algologists, mycologists, and still later, specialists for the bryological collections and ferns, a morphologist, a wood anatomist, a palynologist, and a plantgeographer, it can be truly said that the Rijksherbarium became a full-grown modern institute with an adequate library and technical staff. Many Leiden theses resulted.

The favourable wind does, however, not blow forever and the present director, C. Kalkman has a difficult time to defend his budget. Vacancies are all too often not filled, with deplorable consequences.

Although a large part of the staff is working on the tropical (Malesian) flora, the Dutch flora has not been neglected by any means. In 1925 the Herbarium of the *Botanical Society* had returned to Leiden and was incorporated in the Dutch

collection of the Rijksherbarium in the '40s. Together they form a separate unit up to date. The exotics and cryptogams were inserted in the collections concerned.

In 1934 the Algae Herbarium (73,000 specimens) of the famous specialist *Mrs. Weber-van Bosse* was presented, including not only her own collections made along the Atlantic coast and during the cruise of the 'Siboga' in Malesian waters (4 vols of the Siboga Expedition are based on her material), but many others she had bought over the years.[17] In this way the collections *Hauck* '*Phycotheca universalis*' (fasc. 1–15, including most of his types), *Suringar*'s Algae collections (sold by his widow) with the renowned *Herb. Kützing* (the specimens often marked as 'authentics', now called types), in which several collectors are represented, and part of *Lenormand's herbarium*, all came to the Rijksherbarium. A number of 'Exsiccatae' collections were represented too. This acquisiton, the earlier Algae collections of the Rijksherbarium, and the appointment of Miss J. Th. Koster, initiated a department for the *Algae*, flourishing up to this day (see Prud'homme van Reine & Lokhorst's paper in this volume).

As to other cryptogamic collections, it may be mentioned that R. A. Maas Geesteranus during the war years started to build up a collection of dried Fungi (instead of in liquid), for which he developed the technique.

During World War II many activities came to a standstill but once more the staff (since 1934 joined by S. J. Van Ooststroom) had the opportunity to demolish the backlog, to overhaul the material in liquid, which was in a bad state and had partly to be thrown away, to be relabelled, etc. A catalogue was made of species in liquid and of carpologica. Besides it was thought necessary to evacuate the upper floor of the building, while type specimens as far as could be recovered were assembled and stored in the basement.[19] According to Lam the types numbered about 30,000 in 1945. One of the students (Mr. Sinia) prepared a list of the collections, alphabetically and geographically arranged.

After the war was over the traditional hospitality of the Rijksherbarium was kept up, and numerous botanists and amateur botanists worked with the collections, with benefit for both parties. A subsidiary effect is that privately owned collections of the now called 'honorary staff members' are in time mostly presented to the Rijksherbarium.

In conjunction with shortage of space, both at Utrecht and Leiden, and the consequence that new buildings would be needed, Lam developed during the war the idea of a fusion of all herbaria in the Netherlands into a large central herbarium, not necessarily situated in Leiden. In a special session of the concerned staffs at Utrecht in November 1947, under the authority of the Botanical Society, this idea was extensively discussed. The concept of establishing a separate Central Herbarium, independent of the universities, was rejected for several reasons. The agreement was perpetuated that Utrecht would focus its work and extension of collections on the New World and Leiden on the Old World. Later Wageningen came to specialize in the flora of Africa. This policy has proved successful.

The Rijksherbarium intensified and extended its connections with botanical institutes especially in the Old World. Air-traffic greatly facilitated these contacts. In later decennia several foreign taxonomists co-operated in the Flora Malesiana project; Leiden staff members reciprocated by participating in the Flora of Thailand and Ceylon projects, by collecting and publication.

Expeditions made by staff members in the Old World considerably enlarged the Rijksherbarium collections, and formed a new source of duplicates for exchange. In

the first place, however, it was the intention to fill in some gaps in the knowledge of certain under-collected areas of the Malesian and adjacent regions. From the former German part of New Guinea (Kaiser Wilhelmsland, the NE. part) practically nothing had been distributed by the Berlin centre, and during World War II all those collections (with many type specimens) were destroyed. Although these are irreplaceable, it is of importance to match new collections with the described species and make 'topotypes' as far as possible. Other important collections such as those of Warburg, the Sarasins, and Schlechter are nearly non-existent in Leiden, the latter two even in most herbaria.

Preliminary identifications of incoming collections were mostly performed by C. G. G. J. van Steenis and R. C. Bakhuizen van den Brink Jr., with considerable help from F. H. Hildebrand during several years for sterile material of trees from the Forest Services, for which he had expert knowledge from his long experience in the Forest Experiment Station at Bogor (Java) as assistant to F. H. Endert.

It is, in fact, the only way to make newly collected material available to specialists, and to safeguard them against casualties by distribution of duplicates, a policy employed by Merrill in the Philippines, which has proved so important for Philippine botany. Besides it encourages amateur collectors who are anxious to know the names of their plants.

In this span of over forty years, numerous collections found their way to Leiden and only the more important ones, *excluding* those made by staff members, will be mentioned here.

The Algae collection Weber-Van Bosse has already been recorded. Another collection of outstanding importance is the *Herb. Oudemans* (Fungi) which was in Groningen and is now on permanent loan to Leiden; it belongs to his 'Catalogue raisonnée', and came here at the instigation of Van Steenis through the intermediary of Prof. Chr. van den Hoek.

W. M. Docters van Leeuwen and his wife, *Mrs. J. Docters van Leeuwen-Reynvaan* presented their collections of European and tropical galls (dry and in liquid).

I will further only mention the names of *Agsteribbe* (bryophytes), *Henrard*, *Jansen & Wachter*, *Van Ooststroom*, *Van Soest*, *Kloos*, *De Leeuw*, *Kern & Reichgelt*, *Wagenaar Hummelinck* (Algae), *Groenhart* (lichens), *Donk* (Fungi), *De Joncheere* (Filices), *Broeksmit* (Myxomycetes), *Huijsman* (Fungi), *Boom* (mostly cultivated plants), to give a fractional idea of the important acquisitions. In addition several series of exsiccatae were bought.

Exchange of duplicates is going on all the time, though be it that some herbaria have more or less passed into oblivion, while others have come to the fore, such as Ann Arbor, the Arnold Arboretum (Brass and Kajewski specimens), Manila (Philippines), Washington U.S. Herbarium, Canberra and Lae (East New Guinea), Sandakan (N. Borneo, now Sabah), Kuching (Sarawak) and Brunei, Kepong and Kuala Lumpur (Malaysia), and from 1952 – 1962 the Forestry Herbarium at Hollandia and subsequently Manokwari (W. New Guinea).

Of course Bogor remained of paramount importance for duplicates, and since the old controversy, Blume versus Teysmann was forgotten, it was the rule that Leiden was provided with the first duplicate, although unicates were kept at Bogor. To speed up the shipment to Leiden, Wieringa, head of the technical department of the Rijksherbarium, was stationed for 6 years at Bogor in the 1950s.

For phanerogams I will mention the purchase of *Herb. D'Alleizette* (20,000, many from the French colonies), *Seidel* (Namibia), *Carr* New Guinea plants

(5,533), *Clemens* Br. N. Borneo (3,128) and New Guinea (1,000) plants. Besides acquisitions from Morocco (*P. A. W. J. & J. J. F. E. de Wilde*), Flores (*Father E. Schmutz*, 3, 842; *Father J. A. J. Verheyen*, 4,660), Thailand (*Kostermans* 2nd set 388 specimens, and *Bloembergen*, *> 1,000)*. The already mentioned *Brass* and *Kajewski* plants from New Guinea and the Solomon Islands, D'Entrecasteaux Isl. and Louisiades of which good sets are here as the preliminary identifications were made at Leiden.

In 1959 an important collection (2,117 nos) was made by students in Turkey (mostly coll. by *Hennipman* and *W. J. J. O. de Wilde*), and bought by the Rijksherbarium.

Through Dr. Sleumer's work, after his retirement, on American tropical plant families, and thanks to his connections in South America, numerous duplicates found their way to the Leiden Herbarium, notably those collected by *O. Zöllner* in Central (and partly N.) Chile (1968–75), by *G. Hatschbach* from Parana (SE. Brazil; mostly identified by specialists; 1968 onwards), and by *Father Reitz* and *R. Klein* from Santa Catarina (SE. Brazil).

The new departments had to build up collections too.

Wood anatomy now possesses c. 14,000 samples, partly duplicates from sister-institutes (Utrecht, Kew, Oxford, Sandakan, Canberra, Flora of Malaya Series (Kepong)). Though staff members of the Rijksherbarium contributed to it, as did Malesian orientated institutes, the collection is of a cosmopolitan character.

As to old collections (of historical value only) I may mention here Japanese samples, painted with leaves, brought home by Von Siebold; in 1969 they were transferred from the Botanical Laboratory to the Rijksherbarium. Other old wood samples, presented in the 19th century, have gone missing or may have been presented to the Colonial Museum at Haarlem (now 'Tropenmuseum' in Amsterdam).

Microscopical preparations, anatomical and morphological slides, and palynological preparations all form part of the collections now.

Very useful for the identification of handwritings on old herbarium labels, in many cases important for the establishment of collector and the place of origin of the specimens, is a collection of facsimiles brought together by the efforts of Miss J. Th. Koster.

5. SURVEY OF THE PRESENT STATE

The collections amount to approximately 2,500,000 specimens from all over the world. For phanerogams it will hold true that there is a tendency for the flora of the Netherlands (and Europe), and the Malesian region to rank first as work is mostly done on those regions. For the cryptogams things are rather different. The collections are from all over the world also, but it is mostly monographic work on families or genera which is done here.

As regards the phanerogams, the families are arranged according to De la Torre & Harms, while genera, species and varieties are placed alphabetically within the families. In addition, they are regionally marked by coloured labels on the covers, viz. 10. Eurasia, 20. SE. Asia & Malesia, 30. Australasia & Pacific, 40. Africa, 50. N. America, 60. Central & S. America, 90 OH. Cultivated & unlocalized. This system has the advantage that all material of a certain taxon lies together. Within the

Malesian region (as defined by Flora Malesiana), all the covers of every species are arranged and geographically marked from west to east: Continental Asia, Malaya, Sumatra, Java, Borneo, Philippines, Celebes, Lesser Sunda Islands, Moluccas, New Guinea. In this way it is possible to get a quick insight into the geographical distribution.

On the sheets it is recorded whether a palynological sample has been made of that particular specimen, and whether a pertaining wood sample, carpologicum, or material in spirit, are present.

As regards synonymy, since about twenty-five years ago, name changes, following the progress of taxonomy, are kept up to date, transferring specimens if necessary and putting a blank reference sheet in place of the abandoned name.

The names are given according to Index Kewensis, and if later monographs exist according to those. The latter system is, however, not yet conscientiously followed; it would take up far too much of the staff's time while the main issue is the possiblity of finding a specimen either under the new or the old name.

Type specimens (holo-, iso-, etc.) are inserted in the collection (in Washington, New York, etc. they are separately kept). In principal they are marked as such, i.e. as far as occasionally found, and in each case in recently revised groups. A specific search to mark all types in this enormous collection would take up far too much time at the cost of creative work.

The only lists kept up to date are those of a number of large collections from Malesia, either of personal collections (e.g. L. J. Brass, C. E. Carr, etc.) and specified institutional series (Lae, Kepong, Kuching, etc.). An inventory of all such lists has been made by Van Steenis (1972)[16]; they have proved very useful.

As to the cryptogam collections, these are, for the greater part, alphabetically arranged. Genera and species delimitation is far less stabilized than with phanerogams, and in this way it is more practical. Jülich (the mycologist) started with a systematical sequence in part of the collection of Fungi, but stopped doing so. Mosses and liverworts are kept apart.

Disinfection was and is a problem through the years, although methods and facilities have improved.

The Rijksherbarium is not of the same scope as Kew, and although intended as a General Herbarium, every region of the globe is not equally well represented. As the work is mainly concentrated on specific regions, the main policy is to get those as complete as possible. It remains a pity that the collections of e.g. Horsfield, Warburg, and for the larger part, Teysmann, are not in the Rijksherbarium, but specimens are sent on loan all over the world, be it sometimes with the exception of type specimens.

Also Malayan, Indian and Indo-Chinese collections from the former century are sparingly represented, due to the fact that during the last quarter of the 19th century Leiden took no active part in Malesian botany. There is, however, a rather good representation of a set made by King's collector.

Expeditions by staff members will collect under one collecting number several duplicate specimens, and in this way provide exchange material. This exchange is executed in a rather liberal way, along the lines of Merrill who called this 'free exchange', that is, herbaria forward duplicates as far as these are available, without taking too much into account a precise counter-exchange. The chief aim is that they be deposited in centres where they will be useful for the progress of systematic botany.

Herbaria and forest institutes in Malaya, Borneo, New Guinea, and Indonesia, when sending numbered duplicate specimens, will have their collections provisionally named by which they benefit.

Series of exsiccatae are made at Leiden too, at the present a series of Zeeland (SW. Netherlands) Algae.

As already said elsewhere, visits of foreign botanists are fruitful for identification of provisionally named specimens, and for personal contact.

To judge the importance of Leiden collections, we have to think only of the Fungi of Persoon, the Algae of Weber-van Bosse, Ule plants from Brazil, and the numerous Malesian authentic collections which taxonomic botanists cannot do without.

Retrospect. When I look back at this attempt at writing the history of the collections, I cannot help feeling that outsiders might easily say: Well, another instance of Parkinson's Law. The growth of the Rijksherbarium over the last 150 years has been enormous, not only as to the materials, but also with respect to its staff. The scope of the work done has been greatly enlarged. But fortunately Parkinson's Law does apply mostly to bureaucracy and not to scientific work.

The knowledge of our planet, and more specifically nature, forms the basis for judging the human possibilities. The plant world is an essential part for the survival of man and all related sciences such as genetics, physiology, organic chemistry, phytochemistry etc. will have to work with identified plants, ensuring that the effort to understand nature in this way does not remain in a void.

6. SOURCES

(1) cf. M. J. van Steenis-Kruseman. 1962. Blumea 11: 505–508.
(2) cf. J. P. Lotsy. 1907. 'Catalogus Gesch. Tentoonst. v. Nat. en Geneesk. Leiden 1907' p. 24–30.
(3) cf. H. Veendorp & L. G. M. Baas Becking. 1938. 'Hortus Acad. Lugd. 1587–1937' p. 131.
(4) cf. S. J. van Ooststroom. 1942. 'Gedenkboek Valckenier Suringar' p. 208–217, 1 pl.
(5) cf. ditto in 1937. Blumea Suppl. 1: 193–209, 2 fig.
(6) cf. ditto in 1941. Ned. Kruidk. Arch. 51: 252–274, 3 pl.
(7) cf. H. Hallier. 1918. Rec. Trav. Bot. Néerl. 15: 27–122.
cf. Fr. Stafleu. 1969. Act. Bot. Neerl. 18: 216–223.
(8) cf. Van Ooststroom. 1939. Rec. Trav. Bot. Néerl. 36: 526–534, 1 pl.
(9) cf. typed list by Van Ooststroom in Rijksherbarium: 'Oude schatten in het Rijksherbarium' (Old treasures etc.).
(10) Although several old handwritten director's reports of the Rijksherbarium, extant in the Rijksarchief in The Hague, are now in the Herbarium Library (xerox copies), thanks to the diligence of A. den Ouden), several years are still missing, viz. those of 1829–35, 1838, 1841, 1843–45, 1847–49, 1851–52, 1876–95, 1900–02, 1918–26, 1928–29, 1932–33.
(11) cf. 1931. Meded. Rijksherb. Leiden nos. 62a–62b: 46 pp.
(12) More information on this collector can be found in C. A. Backer's Verklarend Woordenboek (1936) under Itoa Hemsl.
(13) In 1938. 'A Bibliography of Eastern Asiatic Botany' 1: 210–211.
(14) Fr. H. Pollen and D. C. van Dam, Dutch zoologist-explorers in Madagascar from March 1878-Jan. 1880. The zoological results were published by H. Schlegel and Pollen.
(15) cf. 1937. Ann. Bryol. 10: 157.
(16) cf. C. G. G. J. van Steenis. 1972. 'Reaping the harvest. Retrieval of names and identifications by means of Identification and Collection lists of Malesian plants.' Fl. Mal. Bull. 26: 2020–2037.
(17) cf. J. Th. Koster. 1936. Blumea 2: 229–234; 1948. Dodonaea 15: 54–68; 1969. Taxon 18: 549–559.
(18) cf. 1851. Flora N.R. 9: 109–112.
(19) cf. 1945. Blumea 5: 426–436.

(20) cf. W. H. Wachter. 1945. Ned. Kruidk. Arch. 55: 12–116, several photogr. It is an elaborate survey of the weal and woe of the society and its herbarium, library, periodicals, etc.
(21) An Index of Japanese plant names by Von Siebold is in the Library of the Rijksherbarium. The Latin equivalents are added.
(22) cf. R. F. Hohenacker. 1849. Flora 32: 556–560. List of exsiccatae some names validated in footnotes.
Hohenacker asked F. A. W. Miquel to name the Metz plants. Several are worked up in his Analecta botanica indica.
(23) The housing of museum collections at Leiden have had a chequered history, often difficult to trace. Mr. Leverland of the Municipal Archives (Gemeente Archief) told me that the concerned building (purchased by the Government in 1829) housed the 'Kabinet voor Pleisterbeelden' and the 'Prentenkabinet' from 1835–1865, besides a 'Physisch Kabinet' and 'Landbouwhuishoudkundige Instrumenten' up to 1850.
(24) cf. S. Rauschert. 1970. Hercynia 7: 301–324.
(25) cf. A. Lourteig. 1966. Taxon 15: 23–33.
(26) cf. C. G. G. J. van Steenis in the present jubilee volume, p. 60.

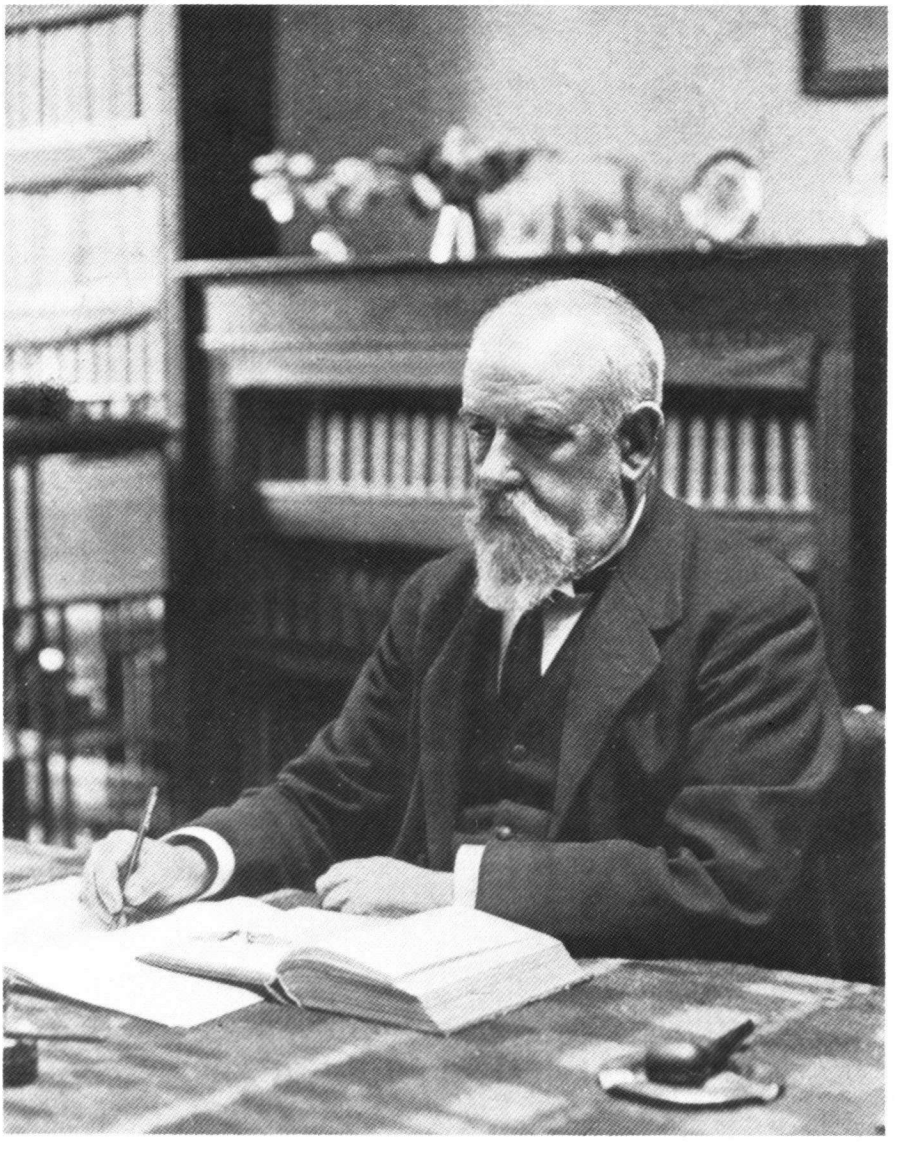
INDEX

This index serves to enable checking which collections are mentioned in this chapter and what is their main geographical provenance. To facilitate consultation three subdivisions are made: 1. Names of owners of private herbaria (incl. societies), distributors of 'exsiccata' series, expeditions, and collectors; 2. Geographical provenance; 3. Plant groups, families or genera, being part of the collections.

Names of collectors, collections, societies, etc.

Provenance of the collections

Names of plant taxa



J. P. Lotsy (1867 – 1931)
Director 1906 – 1909
Reproduced from Genetica 13 (1931)