

REPORT ON A VISIT TO THE HERBARIUM OF THE ROYAL BOTANIC
GARDENS, KEW, DECEMBER, 1952 - OCTOBER, 1954, AND ON MY
RETURN THROUGH THE UNITED STATES, NOVEMBER - DECEMBER, 1955

1. PERIOD IN ENGLAND:

Work at the Kew Herbarium was commenced early in December 1952. Apart from short visits to the Botanical Garden at Edinburgh, during the Easter Meeting of the British Ecological Society in 1953, to the John Innes Horticultural Institution at Bayfordbury for the sessions of the Summer School in 1953, to the Lindley Herbarium in Cambridge and to the International Botanical Congress in July 1954, my time was spent at Kew or at the British Museum (Natural History), South Kensington. I also visited the Botanic Gardens and Herbarium in Copenhagen while on leave in Denmark during August 1953.

The volume of work which is required on Australian plants in the collections at Kew is so great that it was deemed to have the highest priority during my period overseas and visits to other institutions could only be brief. I had hoped to visit herbaria in Holland, Germany and Sweden in May, 1954, but health reasons prevented this and no suitable opportunity occurred during the remainder of the year.

a. Herbarium of the Division of Plant Industry, C.S.I.R.O.

The material in the above herbarium is of comparatively recent origin and type specimens are consequently very scarce. In order to increase the value of our material and to facilitate work after my return to Canberra a large consignment of specimens was taken overseas. About 3000 sheets of these were checked and had their determinations authenticated against types at Kew. These are now in the process of being reincorporated in the Canberra collections.

b. Botanical Manuscripts left by Robert Brown:

During 1950-52 arrangements were made, through A.S.L.O. in London for the microfilming of all the Brown Manuscripts at the British Museum (Natural History) in so far as they concerned botanical notes and descriptions. The largest of these has been referred to as the "Prodromus" but actually it consisted of a large collection of loose pages bearing handwritten descriptions of plants many of which were prepared during Brown's voyage with Matthew Flinders and his visit to Australia 1801-5. On arrival in London I found that these had been filmed on 22 reels of microfilm, the necessary special arrangements to have the work done by the Photographic Section, Australia House having been made by Mr. Cummins in consultation with the Trustees of the British Museum and the Librarian at the Natural History Museum. In so large a film consultation or even location of a particular description was almost impossible and consequently a complete list of the Australian items was prepared. Copies of this list were presented to the libraries of the Botany Department of the British Museum (Natural History) and the Herbarium at Kew. The list consists of 309pp. of foolscap, the final typing having been carried out at A.S.L.O. through the kind cooperation of the Officer-in-Charge.

Unfortunately it was not possible to prepare sufficient copies of the list to distribute to all Australian

herbaria but it is hoped that duplicates can be made locally.

The original negative included some non-Australian material and, with the information obtained during the preparation of the index, this was removed by cutting. From this reduced negative a series of positives were prepared, at a correspondingly reduced cost, on behalf of the following: W.A. State Herbarium, Perth; Botanic Gardens, Adelaide; Mitchell Library, Sydney; Botanic Museum & Herbarium, Brisbane and the Forests Department, Lae, New Guinea. The negative and an original positive covering all the papers are held by the Division of Plant Industry at Canberra.

Since many of the cut strips of negative carried descriptions of South African plants they were offered to the Director of the National Museum, Pretoria, Dr. Dyer, while he was in England during September, 1953. The strips have been forwarded for editing at Pretoria and the remnants will be returned to C.S.I.R.O.

Many of the localities given by Brown with his descriptions are based on field names or symbols used during Flinder's survey. Enquiry at the Admiralty resulted in the finding of the original charts on which these are marked and it is hoped that these can be published in the near future. As well as this a considerable amount of data concerning the life and work of Robert Brown was collected and awaits organisation in a form suitable for publication.

c. Photographing of Type Specimens:

Kew is famous for the large collection of classical botanical material, many of the original specimens on which the names of Australian plants are based being represented. As well as these there are sheets annotated by Bentham during his preparation of the "Flora Australiensis". Consultation of these important specimens is highly desirable and often essential for research into Australian plants. Consequently, although photographs do not provide all the information needed, arrangements were made during 1953 for the micro-filming of a large number of specimens. Owing to the cost involved in large negatives and the greater amount of labour necessary it was judged impracticable to carry out large scale work other than with 35mm. film. While the final result lacks the sharpness of quarter or half-plate negatives the results should prove of considerable value.

The photography was carried out by officers of the Photographic Section, Australia House with the aid of a fixed ~~Recodak~~ camera. It was therefore necessary to remove the specimens from Kew and special permission to do so, contrary to normal custom, was obtained from the Director of the Royal Botanic Gardens by Mr. Cummins, A.S.L.O. Under this arrangement approximately 3000 photographs were taken of about 2750 herbarium sheets, more than one exposure being necessary where paper labels obscured the specimen.

The specimens were transported to the Photographic Section, filmed and returned to Kew on the same day. About 200 sheets were dealt with on each occasion, the specimens having been checked at Kew previously. Early in 1953 the work was interrupted by the transfer of the Photographic Section to new quarters on two occasions but the writer would like to express her appreciation of the great help and cooperation given her by the officers of the Photographic Section.

The plants so filmed were selected from the Leguminosae, especially Acacia, Compositae, Myrtaceae and

Proteaceae. They represent only a sample of the mass of material at Kew which could profitably be photographed in this manner. The 35 mm. negatives are later printed as enlargements about foolsize size. Those having large leaves, flowers or other conspicuous features proved the most successful, fine leaf plants were often not so clearly in focus owing to optical effects due to shadows unavoidable with the type of Recodak camera employed.

The negative films and the prints will be held at the herbarium, Division of Plant Industry, Canberra but the latter will be available on loan to any State herbaria interested or to specialists working on specific research in Taxonomy. Catalogues of the prints will be distributed to the State Herbaria later.

The proportion of type specimens still remaining unphotographed is large and since they would be of great value to Australian botanists it is sincerely hoped that any Australian botanist seconded to Kew in the near future will be able to continue the work. This will require some arrangement between State and Commonwealth authorities.

d. Personal Research:

Apart from the many bibliographical details which required checking during the above selection of type specimens and the time spent on authentication of Canberra material special attention was to study of specimens of Acacia collected in the Northern Territory by officers of the Land Research and Regional Survey. Monographic studies of Australian species of Psoralea (Leguminosae) and Helichrysum sect. Ozothamnus (Compositae) were prepared and will be presented for publication as soon as possible.

A rough draft of a Flora of the Australian Capital Territory having been prepared prior to departure for England the opportunity was taken, while at Kew, to revise the section dealing with the Gramineae and to check many details concerning other families.

Brief notes were published in the Kew Bulletin issued by the Royal Botanic Gardens. These were: "A Note on Thryptomene Endl." in K.B. 4 (1953) 485-6, and "The genus Uldinia J.M. Black" in K.B.3 (1954) 451-2.

e. Liaison Work:

A considerable number of queries from Australian Botanists were dealt with during the two years. These covered the checking of specimens in a wide range of families and genera and also the location of bibliographical material from literature not generally available in Australia. In a number of cases arrangements were made to have items, too long to type or copy by hand, microfilmed by an officer at A.S.L.O.

The latter facility was readily available to me as an officer of C.S.I.R.O. It is hoped that it can be made as convenient for any State officer who may be seconded to Kew.

f. International Botanical Congress in Paris July 1954:

I attended this Congress as one of the Australian delegates. A separate report has already been forwarded.

g. Other matters:

The opportunity was taken to have a number of papers of botanical importance microfilmed at A.S.L.O. The film strips are now in Canberra. Certain books likely to be of value to the Canberra library were purchased.

The British Museum (Natural History) having recently obtained a set of the Alex Morrison plants, most of which are from Western Australia, assistance was given in the checking of their identifications.

It was interesting to see the plants from Monte Bello and from the Woomera Rocket Range collected by an officer from England during visits associated with the research on atomic explosions. It is greatly to be regretted that no Australian scientist collected botanical material from the areas involved in the experiments either before or after the explosions. The existing material is being studied at the British Museum and at Kew and will doubtless be discussed in some future publication.

h. Acknowledgements:

Every assistance was given by the members of the staff at Kew and the writer owes much to them all. It is also right to acknowledge all the help given by the staff of the Australian Scientific Liaison Office and to express appreciation of the cooperation afforded.

The writer feels that the period at Kew has provided a stimulus in her research which will last many years and greatly values the opportunity which was provided by the visit overseas.

2. RETURN THROUGH THE UNITED STATES OF AMERICA:

The return trip lasted two months and it was possible to visit the following institutions, listed consecutively below, and to consult botanists on their respective staffs.

New York: The New York Botanical Garden has a very large herbarium but the present interests of the staff are mainly concerned with plants of North and South America. Discussions were held with Dr. Keck, now the Curator of the Herbarium but formerly active in research on Californian plants. A short visit was also paid to the Brooklyn Botanic Garden where Dr. George Avery is Director. The work of this latter institution is mainly in horticulture and in instructional classes for the gardening public.

Boston: The famous collections of the Arnold Arboretum are now stored with those of the equally well known collections at the Gray Herbarium in a fine new building at Harvard University, Cambridge. The old Arnold Arboretum building now houses only horticultural collections and most of the staff have been transferred. The Gray Herbarium possesses duplicates of a number of Robert Brown types collected in New South Wales by Caley and also a set of Sieber specimens.

Discussions on the work of the herbarium, the possible exchange of material with Canberra and on other botanical matters were held with Dr. Howard (Director, Arnold Arboretum); Dr. Reed Rollins (Director, Gray Herbarium) and Dr. Lilian Perry, who has carried out much research on Malaysian and New Guinea plants.

Dr. I.M. Johnston, to whom seeds of Australian alpine plants had been forwarded in 1952 for trial under the Boston climatic conditions reported that so far none had proved really hardy.

Washington: During two weeks at the Smithsonian Institution, working with Mrs. Agnes Chase, well known for her publications on American Gramineae, descriptive notes were prepared on several hundred species of Paspalum. Particular attention was paid to South American representatives since some from this area have been introduced into Australia for pasture trials.

Some folders of Australian grasses were sorted out for Mrs. Chase in order to clarify recent changes in their arrangement.

Consultations were also held with Dr. E. Walker by whom I was asked to act on the subcommittee on bibliography of the Pacific Basin, under the Standing Committee on Botany of the Pacific Science Association and also with Dr. R. Fosberg well known for his studies of Pacific botany. Regrets were expressed by the latter that Australian representation in botany had been so inadequate at the Manilla Pacific Science Congress.

St. Louis: Discussions were held with Dr. Edgar Anderson concerning his methods for the study of introgressive hybridization and current work being done by his students was observed. One of these is planning a study of the origins of cultivated rice varieties.

The herbarium at St. Louis, under the curatorship of Dr. Woodson, is extensive and proved to be unexpectedly rich in Australian material. It includes a number of Sieber duplicates, a set of Preiss specimens and some material collected by Amalia Dietrich. Unfortunately the latter appeared to be all non-type.

Berkeley: At the herbarium of the University of California at Berkeley discussions were held with Dr. Lincoln Constance who has recently worked out the Australian species of Oreomyrrhis (Umbelliferae).

At Berkeley and also at Davis where the school of Agriculture is situated there were opportunities to discuss research with Dr. Ledyard Stebbins and to see something of his work on Secale (Rye) and Dactylis (Cocksfoot). In each of these genera he is trying to breed forms suitable for dry pasture areas in California. Officers in C.S.I.R.O. are already in touch with Dr. Stebbins and it is certain that the results of his work will be of the greatest interest to agriculturalists in Australia. One of Stebbins students, Dr. De Wet from Pretoria, South Africa, recently carried out research on certain species of Danthonia. So far as the Australian species were concerned only a few were dealt with and these were published under nomenclature now shown to be inaccurate.

A visit was also paid to the Californian Academy of Sciences in San Francisco. Both the associated gardens and the herbarium are well provided with the Australian species now cultivated in California and, as at Berkeley and elsewhere, there was a request for further Australian material on an exchange basis.

Stanford University: A day at Stanford permitted visits to the herbarium where the current Flora of California

is being prepared and to the Carnegie Laboratory where Dr. Heisey is developing an apparatus for measuring whole metabolic rates in varieties of plants. He expects to employ Lemna as an experimental plant.

Los Angeles: Consultations were held with members of the staff of the Botany Department and Herbarium particularly in reference to research into the nature of speciation in Californian plants. The Australian plants being grown in the University garden were also of interest.

There was also an opportunity to visit the Santa Ana Botanical Garden at Pomona where special attention is being paid to the use of Californian plants for horticultural purposes. Members of the staff include Grant (research on Gilia) and Lenz (breeding work on Iris, Heuchera and Fragaria).

Honolulu: Several days were spent on the Island of Oahu on which Honolulu is situated but, it being the Christmas recess, many of the local botanists were away and few consultations were possible. A visit was paid to the Bishop Museum and to its herbarium under Miss M. Neal and there were opportunities to observe some of the local flora and also to visit the Botany Department of the University.

CONCLUSION:

While most of the visits to American institutions were restricted to a few days many useful contacts were made and some idea of current research gained. These will undoubtedly be of considerable value to my future work and the opportunity to make them was much appreciated.

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