One hundred years of botany at Rhodes University

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The Botany Department of Rhodes University is located in the historic Schonland Building. An indigenous garden was created in its courtyard, mainly of species of the Eastern Cape province, and its growth in diversity and stature mirrors the changes in the department over the years. Professor Selmar Schonland, the founding father of botany at Rhodes, was also the curator/director of the Albany Museum. Under his leadership, systematics was firmly established as a discipline at Rhodes and research on the flora of the Eastern Cape begun, to be continued to this day. Under professors William Isaac (1949–1951) and Edgar Twyman (1951–1973), plant physiology became an important area of study, and future leaders in physiology at other universities obtained degrees under them. Phycology and aquatic ecology became notable disciplines with Mary Pocock's world-class work in the 1940s on freshwater and marine algae, which inspired others such as head of department Professor Stanley Seagrief (1958–1986) to develop these studies further. Mycology and microbiology were established as major subdisciplines under Noel Smith (1926–1948) and Twyman through to the 1960s, when the Department of Microbiology was established. Early studies in ecology owe their success to Tony Martin (1947–1956) and the link with the Grahamstown Botanical Research Station, when a sound base for plant ecology in the Eastern Cape was established. Coastal ecology became a major focus in the 1970s, when Roy Lubke and Ted Avis concentrated on dunes and the management of coastal regions. This led to the establishment of the Department of Environmental Science in the 1990s. The expertise of the botany staff in teaching and research in a variety of fields is reflected in the careers of its many students around the world.

Introduction

Pass through the main gate of the Schonland Building on the Rhodes campus and you are unmistakably at the entrance to a botany department garden of the Eastern Cape. The thicket species of the province dominate with giant tree euphorbias, aloes and cycads (all icons of our flora), which collectively make up the conspicuous species of the region's vegetation. Originally a garden of alien eucalypts, these have been replaced in time by the efforts of successive staff members, to produce the magnificent garden of today (Fig. 1).

The historic building was once the military hospital for the Drostdy garrison that served the remote outpost of Grahamstown in the nineteenth century. Later, in 1864, the Cape House of Assembly sat here for a single session. This solid stone structure, one of the few former military buildings that remain on the Rhodes campus, almost from the outset became the home of the Botany Department (Fig. 2).

Just as the garden has changed and matured over the years, in this account we will see how the Botany Department has evolved. Several sub-disciplines of botany have evolved and flourished and sometimes deviated from the core subject, while others have grown in diversity and stature.

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Fig. 1. A view of the Botany Department's garden in 2004.

Selmar Schonland: pioneer of botany at Rhodes

Professor Selmar Schonland (1860–1940), the founder of botany at Rhodes[1], was a German immigrant, who came to the Eastern Cape in 1889 as curator of the Albany Museum. The local flora fascinated him and he had the good fortune to meet Peter MacOwan, the rector and head of natural sciences at Gill College, Somerset East, some 100 km from Grahamstown, who was an ardent explorer and collector of plants. Schonland married MacOwan's daughter and in 1896 fathered Basil Schonland. Basil later became an internationally renowned physicist who pioneered lightning research and radar in South Africa at the University of the Witwatersrand. He was scientific adviser to Prime Minister Jan Smuts and later to Field Marshal Bernard Montgomery, was the founding president of the CSIR and knighted for his achievements[2]. In that respect he overshadows his famous father, but in Grahamstown it is Selmar Schonland who is remembered for his academic and institutional feats (Fig. 3).

In 1904 Schonland, as a member of the Rhodes Council, contributed to the founding of Rhodes University through the negotiation of an initial grant of £50 000 from the sale of De Beers shares, which made the establishment of the university possible.[3,4] In 1905 he gave up his seat on council and became the first professor of botany. Schonland was curator of the Albany Museum from 1889, and later was appointed director until 1910. He remained curator of the herbarium, which was part of the museum, until his retirement in 1926. From some of Schonland's early lecture notes,[5] it was obvious that in those days systematics

Fig. 2. The setting of the Botany Department in the 1980s, from a drawing by Michael Ginn.

of the entire plant kingdom was the major focus of botany. For many botanists of the day, knowledge of the plant kingdom from the minutest algae to the higher plants was their identifying mark. It is not surprising that Schonland, as a systematist, had many new species of plants named after him, such as *Rhus schonlandii* and *Aloe schonlandii.* He collected, described and re-classified many of the difficult groups in the region, such as the sedges, the Cyperaceae in 1922,[6] and the woody trees and shrubs of the genus *Rhus* in 1930.[7]

Schonland's path to Grahamstown had come via a doctorate at the University of Hamburg and an appointment at Oxford University (1886–1889), where, as the curator of the Fielding Herbarium, he became interested in the Crassulaceae. His appointment to the museum in Grahamstown gave him the opportunity to expand upon his interests and enlarge and develop the second largest herbarium in South Africa (founded by W.G. Atherstone in 1860). His father-in-law, Peter MacOwan, had been its honorary curator from 1862 to 1869 before moving to Somerset East. When MacOwen retired from his subsequent post as director of the Cape Town Botanical Garden and curator of the Cape Government Herbarium, he returned to Grahamstown and no doubt played a role in assisting Schonland in the development of the local herbarium. By the time Schonland retired, the Botany Department and Rhodes University had become an established centre of taxonomic research and learning in South Africa.

Taxonomy and systematics

Plant exploration was a major feature of the nineteenth century in the Cape and southern Africa in general. Many of the specimens were sent abroad to institutions like the Royal Botanic Gardens at Kew, and to Paris and Berlin. With the establishment of the Albany Museum Herbarium, there was now a well-kept collection on which taxonomic studies and revisions could be based. Although the university had an early beginning in systematics, there were few notable taxonomists who studied under Schonland and promoted the discipline in southern Africa. Three women nevertheless made large contributions to the Botany Department, to systematics and to the study of the ecology of the region during this period. Systematics thus became an important discipline and remains so today.

Lilian Britten (1886–1952) was one of Schonland's early students of botany at Rhodes and gained distinction in this subject in the final honours examination for the B.Sc. degree.[1] Thus qualified, she taught at various schools for some years before continuing her botanical studies overseas. In 1918 she returned to Rhodes University College as a lecturer in botany; after a lifetime's career, she retired in 1941 as senior lecturer.

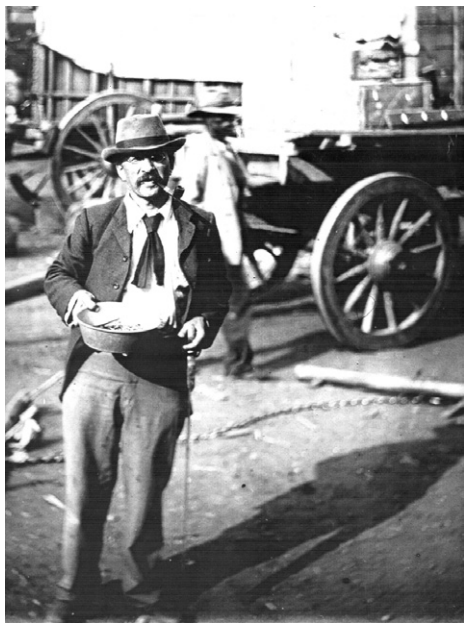

Fig. 3. Professor Selmar Schonland at the wagon, on a collecting trip in Botswana.

Britten was an avid collector, with over 7000 specimens to her credit; her knowledge of the local flora was such that no less a person than Rudolf Marloth credited her with being the botanist who knew more about the Eastern Cape flora than anyone else in South Africa. Besides lecturing, she focused her research on the genus *Streptocarpus*, a study that was not completed, although she left a body of work for later researchers to draw on.

She was one of the founders of the Old Rhodian Union and for the first 30 years of its existence was honorary secretary. During this time she took great care to build up a complete card index of all past students and was meticulous in keeping contact with them. In 1932 the Nature Reserve Society was formed to protect the flora of Mountain Drive. Together with Lady Annye Graham (president), Beatrice E. Rennie, Professor J.V.L. Rennie, D.V. Kannemeyer and others, she was a founder member and for many years served as its honorary secretary. In 1945 the responsibility for this area was ceded to the Department of Agriculture and the care of the reserve was entrusted to the Grahamstown Botanical Station at the Albany Museum Herbarium.[8]

Although it had always been Selmar Schonland's intention

that the Albany Museum Herbarium should serve as the herbarium for the Botany Department, by 1942 things were not working out so well in practice as the Albany Herbarium was a research herbarium that was not treated well by the students. Lilian Britten with Eily Gledhill and Mary Pocock were instrumental in starting an herbarium of student gatherings at the Botany Department— a collection which had grown to over 40 000 sheets by the time it was amalgamated with the Albany Museum collection in 1993.

Britten was remembered by Marjorie McKerron as a modest and gentle woman of great generosity, who was also a spirited fighter for what she believed to be right and one of South Africa's early suffragettes, who did much to secure the franchise for women.[9]

Eily Gledhill (née Archibald) (b. 1914) was born in Port Elizabeth and came to Rhodes University as a student on leaving school. Here she attained her M.Sc. and continued her training at London University, where she completed her Ph.D. She joined the Division of Chemistry of the Department of Agriculture upon her return, much later, in 1941; she subsequently joined the staff of the Botany Department as a lecturer.[1]

She continued her research for the Chemical Services company while lecturing and worked on a project relating soil survey results to plant distribution, until she resigned from that body in 1955.[10] During the early 1950s, she was engaged in trace element research on citrus and pineapples for the department.[11]

She collected widely in the Eastern Cape and assembled more than 9000 specimens. Her herbarium labels carry the cryptic signature E_2A_2, that translates to the initials of her maiden name of E.E.A. Archibald. She worked on a botanical survey of the Alexandria district, a taxonomic revision of *Albuca* and published a revision of *Dioscorea* for the Eastern Cape. Of great value to students of botany is her book, *The Eastern Cape Veld Flowers,* which was published in 1969.

She was one of the founders of the Rhodes University Herbarium (RUH). In 1966 she was appointed a research associate of the university, a position she held for some years.

Amy Jacot Guillarmod (née Hean) (1911–1992) did not become a student at Rhodes until her 66th year in 1977. She then enrolled for a first-year course in geography and succeeded in coming first in her class. She had recently been widowed and this was her version of therapy after the loss of her husband — work, work and more work.

Born at Hillcrest in Natal on 23 May, a birthday she shared with Carl Linnaeus, the father of modern taxonomy (she celebrated this date annually with her colleagues and students), she matriculated at Durban Girls' High School and spent her undergraduate years at the University of St Andrews in Edinburgh, Scotland, reading first for an M.A. in history and English and then obtaining her B.Sc. in botany and zoology. Upon her return to South Africa, she taught briefly in Durban before taking up an appointment as a plant pathologist in the Division of Botany and Plant Pathology of the Department of Agriculture in Pretoria.[1] Her early publications during this period were on virus diseases of tobacco and other crops. Here she met her husband, Charlot; in 1940, family circumstances required them to move to Lesotho. This was an opportunity to study the little-known flora of that region and many of her 10 241 specimens were collected there. In 1956/57 she served as lecturer and head of the Botany Department at the University College of Basutoland in Roma. In 1958, the family moved to Grahamstown, where she took up a post of lecturer in the Botany Department at Rhodes. For the next 15 years until her retirement as senior lecturer in 1973, she built up a reputation as an enthusiastic and much-loved teacher and researcher, whose breadth of knowledge and interest spanned all things botanical, from fungi and algae to flowering plants. During this time she was the curator of the Rhodes University Herbarium, where she established sound herbarium practice and used the collection as a springboard for training young taxonomists. The Mary E. Woolley Fellowship for overseas study, awarded to her in 1962/63, enabled her to return to her alma mater and in 1967 she completed her D.Sc. in botany for her thesis on the flora of Lesotho.[12]

After her retirement she took up a position with the CSIR at the Institute of Fresh Water Studies at Rhodes and from 1981 to 1987 she also served on the staff of the Albany Museum Herbarium as research assistant in a part-time capacity. From 1987 to 1990, she curated the M.A. Pocock Collection of Marine Algae at the museum. She remained a research associate of Rhodes until the time of her death. Her 198 recorded publications range in topic from the flora of Lesotho through research papers on wetlands, bogs, aquatic plants and cycads, to popular articles on conservation and weeds. Apart from work in Lesotho, she also collected widely in the Port St Johns area of Transkei, in Albany, Bathurst and the Victoria East district (taking her students to the Hogsback year after year for field study) and in the George and Knysna areas in the southern Cape.[13]

The growth of the herbaria

The founding of the Albany Museum Herbarium in 1860 makes this the second oldest working collection in South Africa and with 200 000 specimens it is today the fourth largest of its kind in the country. It serves the Rhodes Botany Department as a teaching and research collection. It also caters to the wider public — farmers, weed eradication firms and any persons requiring botanical information — as it did in the past when it operated as an outstation for the Division of Botany of the Department of Agriculture.

The collection of plant specimens has always been an important aspect of the undergraduate degree at Rhodes, where an herbarium was established in 1942 under the direction of Lilian Britten. By the 1960s, this had grown to 15 000 specimens, which, although mainly South African in character, included important collections from Namibia and Zimbabwe, from where many of the Rhodes students came.

The Albany Museum Herbarium had grown significantly under Schonland, from 1000 specimens when he arrived to some 62 000 when he retired. The statement in Codd and Gunn,[1] that the herbarium had grown to 100 000 specimens under Schonland, is incorrect, as the herbarium records of this time show. In 1993, it was decided to amalgamate the Albany Museum Herbarium (GRA) and the Rhodes Herbarium (RUH) and honour the founder of botany in Grahamstown by naming the joint institution the Selmar Schonland Herbarium. At this time there were some 40 000 specimens in the Rhodes Herbarium and, together with the Amy Jacot Guillarmod collection, the Selmar Schonland Herbarium houses almost 200 000 specimens. As the specimens are essentially part of the Albany Museum Herbarium, they fall under the director, and are curated by the systematists from Rhodes University. In the 1990s, Tony Dold was appointed assistant curator in a full-time post, financed by the university.

In addition to being an important resource centre for the local communities where questions on poisonous plants, garden plants, illegal trafficking of plants and so on can be answered, the herbarium also possesses a library and contains important data on plants of the Eastern Cape and many other parts of Africa.

The main focus of current research in systematics at the

university is on the plants used for traditional medicine in the Eastern Cape.[14] Molecular systematics has become an important field of study by Nigel Barker and his team at Rhodes and the herbarium is a valuable resource for voucher specimens in these studies.[15] Interesting species have been described in groups including the grasses,[16] and bulbous plants, such as a new species of *Drimia,* namely *D. acarophylla.*[17] In the 1990s the herbarium also became an important resource base for exploration into areas of southern Africa such as Pondoland,[18] as well as in Madagascar and East Africa.[19]

Fig. 4. A class photograph of 1953/54. Those ringed are (A) Edgar Twyman, (B) Christopher Cresswell, (C) Bob Noel, (D) Stanley Seagrief, (E) Eily Gledhill, and (F) Phillip Martin.

Plant physiology: functional plant studies

In the traditional schools of botany in Europe in the nineteenth century, the systematics of the entire plant kingdom was the most important aspect of study. However, in the late nineteenth and early twentieth centuries, more extensive studies on the physiology of plants had already started, leading to important findings on nutrient uptake, photosynthesis and the more intricate analysis of the functioning of plants. Schonland presented some information on the physiology of the whole plant in the early days at Rhodes[5] but only with the arrival of specialist physiologists in the mid-twentieth century did plant physiology became a more important subject of study at Rhodes.

Professor William Isaac came to South Africa in 1933, where he worked in Cape Town until 1948, when he was appointed senior lecturer and acting head of department at Rhodes. From 1949–1951, he was a professor at Rhodes before he returned to the University of Cape Town. He also had an interest in marine phycology and collected about 3000 plant specimens.[1] His main interest, however, was physiology, which had as great an influence on students during his short time at Rhodes.

Professor Edgar Twyman (1913–1996) came from the University of Birmingham in England and was head of the department from 1951 to 1973. He had a marked influence on the research directions and interests within the department. With a good basic understanding of plant physiology, he could see that the area to apply this knowledge was the local agricultural industry. His students worked on citrus and pineapples in the Eastern Cape, and in 1968 he established the Pineapple Research Unit. Two technicians of that unit obtained master's degrees on pineapple research. Twyman kept up-to-date on the latest literature, but did no hands-on research himself while he was at Rhodes. Consequently, although he encouraged students to pursue postgraduate studies, he published little in his time at the university. He later became dean of science, was responsible for the expansion of the Botany Department building in the 1970s and 1980s, and was also behind the establishment of the Department of Microbiology (see below). He became the vice-principal and deputy vice-chancellor in 1975, until retirement in 1984.

During this period, students of plant physiology became leaders in South African botany. Professor Nat Grobbelaar (b. 1928) came from Port Elizabeth to study at Rhodes under Isaac, and developed a special enthusiasm for nitrogen metabolism and nitrogen fixing in indigenous plants. He moved to the University of Pretoria and ultimately became head of department there from 1961 to 1986. He was awarded the Gold Medal for Botany in 1981, the highest honour bestowed by the South African Association of Botanists. Professor Christopher Cresswell (1933–1998) also studied as an undergraduate at Rhodes under Twyman, and obtained an M.Sc. in 1958. He went on to Bristol University to obtain his Ph.D. and, thereafter, was at the University of the Witwatersrand where he became head of botany (1967–1988). He contributed greatly to the growth of that department and to the training of many plant physiologists. In 1989 he became vice-principal at the University of Natal, a post he held until his retirement in 1996. In 1981 he received the Senior Medal for Botany (silver) from the South African Association for Botanists and, in 1994, was awarded the South Africa Medal (gold) by the South African Association for the Advancement of Science for his lifetime's achievements.

A class photo of 1953/4 shows Professor Twyman as head of department with some of the staff and students who became distinguished contributors to botany in later years, especially Seagrief and Cresswell (Fig. 4). Other students who obtained Ph.D.s in plant physiology at this time were Charles Been (1971) and George Marr (1973). Marr carried out research under the auspices of the Pineapple Research Unit and, later, became managing director of a company in the pineapple industry in East London.

Seaweed hunters and aquatic ecologists

An era of phycologists (algologists) emerged in the 1920s at Rhodes. Interest in aquatic plants, algae in particular, was due to the exploration and research of Mary Pocock (1886–1977). She arrived at Rhodes from Cambridge and London universities with a teaching background, initially at schools and then at the universities of the Witwatersrand and Cape Town in the 1920s. She spent years in Grahamstown, on and off, during her exploits all over the world. She was without peer in encouraging exploration and interest in phycology, both of the freshwater and marine coasts of South Africa.

Pocock was a true explorer of Africa. With her sole white companion, Dorothea Bleek, she embarked on a seven-month trek on foot from the Zambezi River in Zambia to the Angolan coast in 1925.[20] She is best known for her research on the algae, particularly *Volvox,* a small colonial alga found in ponds around Grahamstown. Pocock was an avid seaweed collector and accumulated a great many specimens (some 20 000–30 000) in her lifetime, which are kept in the Selmar Schonland Herbarium. These

are still in urgent need of curation and study.

The person most influenced by Pocock's endeavours was Stanley Seagrief (1927–1998), who was an undergraduate at Rhodes in the 1940s. He started his career as a postgraduate student specializing in ecology, but was a botanist with a wide variety of interests. While an undergraduate at Rhodes, he was no doubt inspired by Pocock's work on phycology in the Eastern Cape, although he went on to do his M.Sc. on the ecology of Fern Kloof, an attractive forested area below Mountain Drive. He subsequently studied at Cambridge University with Professor Godwin, who was at that time doing world-renowned research on palynology and the history of the British flora and vegetation. After completing his Ph.D. at Cambridge, Seagrief returned to South Africa, lecturing at the University of Natal (Pietermaritzburg), at the former University of Rhodesia, finally returning to Rhodes as a senior lecturer and then professor and head of department from 1975 to 1989.

Seagrief lectured on a wide range of subjects and was responsible for introducing new courses, one of which was microbiology in the 1960s. Although he attempted to research southern African palynology, he found it more difficult than the work being done in Europe and finally switched to the study of seaweeds. He produced detailed line-drawings of the seaweeds around our coasts (Fig. 5) and had a particular interest in the nomenclature of these plants. With meticulous attention to detail, he listed all the South African marine algal names known in a major contribution.[21] He developed an interest in watercolour illustration and used to draw fine illustrations of the seaweeds, which were accepted for exhibition in South Africa and overseas.

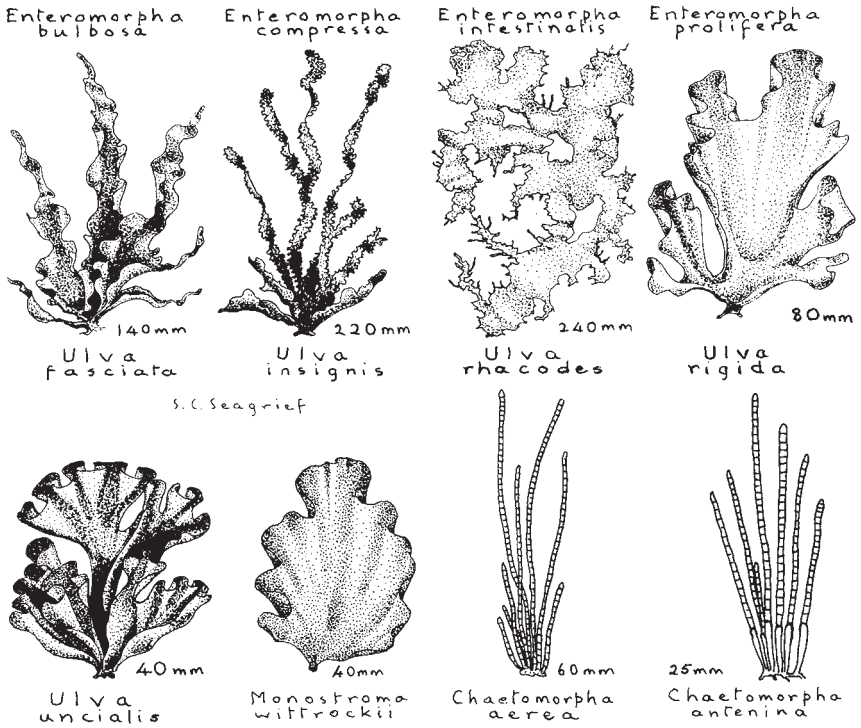

Fig. 5. Professor Stanley Seagrief's black and white illustrations of algal species of the Eastern Cape.[25]

During the Pocock and Seagrief eras at Rhodes, an interest developed in freshwater algae, which resulted in the CSIR's National Institute for Water Research (NIWR) establishing a freshwater institute at Rhodes. Dr B.J. Cholnoky, a Hungarian immigrant working at the CSIR, was based at Rhodes at this time, and he and departmental staff encouraged students to pursue studies of seaweeds and freshwater algae. The most notable student at this time was Eldred Archibald, who received his Ph.D. (1982) on diatoms of the Sundays and Fish rivers. His brother, Colin, went on to the Durban branch of the NIWR. Peter Ashton, also an aquatic specialist, who joined the NIWR in Pretoria, carried out detailed studies for his Ph.D. (1982) on the aquatic water fern, *Azolla filiculoides.*

Charles Breen (b. 1939) was the first Rhodes botany B.Sc. graduate to continue at Rhodes with an M.Sc. and Ph.D. He was a junior lecturer and then lecturer from 1961 to 1972 and had an all-round interest in botany, especially plant physiology, mycology and general ecology. He developed an interest in wetland ecology and aquatic ecosystems and later became senior lecturer at the University of Natal (Pietermaritzburg), where he went on to become director of the Institute for Natural Resources.

Mycology and microbiology: fungi and microorganisms

Noel Smith (professor 1925–1948) came from the U.K. with an expertise that ran from fungal classification through to fungal plant diseases, subjects he inspired students to study during the early period of his tenure. Edgar Twyman, who succeeded him in 1949 as professor of botany, also had an interest in mycology, which he encouraged a number of students to pursue for postgraduate study. They included Phillip Martin (Fig. 4F), who went on to study fungi in California for his Ph.D., Sarah Gess, who later went on to become an entomologist with her entomologist husband at the Albany Museum, Charles Been, who initially studied mycology for an M.Sc, and Steven Timm, who was the first doctoral student to receive a Ph.D. (1970) after full-time study at Rhodes. Timm later became an expert in horticultural botany at the New York Botanical Gardens. He was instrumental in establishing a cactus garden at Rhodes when the new botany building was erected in the 1960s.

In the early 1960s, Twyman realized the need for microbiology at Rhodes, and together with Seagrief and other members of the department, introduced a one-year course in 1961. Two of its first students were David Woods and the senior author. After completing his honours degree in botany at Rhodes, Woods went on to Oxford where he studied for his D.Phil. in microbial genetics, returning to Rhodes after a postdoctorate at London University, to take up a senior lectureship in the then Botany and Microbiology Department. Microbiology thrived at Rhodes, and in the early 1970s it developed into a fully-fledged department in its own right. The new building constructed in 1968 behind the old Schonland Laboratory catered for the Microbiology Department on the upper floors and the Pineapple Research Unit on the ground floor. Thus, arising from early beginnings in studies of fungi, microbiology became a well-established department with many notable microbiologists emerging in the last 35 years.

Ecology and the environment

By the 1940s, plant ecology had become a subdiscipline of botany in its own right. Although some postgraduate students conducted some notable descriptive studies in earlier days, the first to make a significant contribution was Tony Martin (lecturer 1947–1956). Along with contemporaries, R.A. Dyer[22] and R. Story[23] (officers-in-charge of the Botanical Research Station

based at the Albany Museum), he really established plant ecology in Grahamstown by the 1960s. Martin with Professor Bob Noel (lecturer 1953–1958) published *The Flora of Albany and Bathurst,*[24] that provided a contemporary classification of vegetation of the region that was overlooked in favour of Acocks' Veld Types for more than 20 years. Their checklist of the flora in this book also proved an invaluable reference for students of the Albany and Bathurst areas for the next 40 years. Unfortunately, Martin left for Australia and Noel for the University of Rhodesia and then Natal University (Pietermaritzburg), after which the emphasis on research and teaching in plant ecology was not continued for some years.

Early field excursions by Rhodes students were to the Amatola Mountains and many specimens in the Selmar Schonland Herbarium were collected during the RU Field Camp at Pirie. Starting in the 1950s and throughout the 1960s, many students were trained in botany and plant ecology on the annual excursion to the Hogsback. This week-long event at Easter for students from the second year upwards gave basic training in many disciplines, when the undergraduates concentrated on ecological field studies and more senior students carried out project work. Basic studies in forest, fynbos and grassland ecology, ecophysiology, fungal taxonomy and the systematics of higher plants accumulated a mass of data on the area. Unfortunately, the staff saw these excursions only as field training exercises for students and did not take the Hogsback studies further and publish scientific papers on the region or even a field guide to the Hogsback. The only documented findings are a comprehensive checklist of the plants and the many specimens collected over the years.

Seagrief conducted preliminary studies on the stabilization of dunes at St Francis Bay and Roy Lubke (lecturer, senior lecturer and associate professor 1975–2003) continued this initial research with investigations of dune formation, succession and dune ecosystems with the aid of many students. He also formalized applied ecological studies in dune stabilization and management. Annual excursions were now held all along the Eastern Cape coast, resulting in many undergraduate and honours students working in the coastal region. Consequently, joint studies were established in South Africa and abroad and many publications, including field guides to the southern and Eastern Cape coasts,[25,26] were published in this era. Honours and postgraduate students, especially Ted Avis (Ph.D. 1993 and lecturer 1989–1997) gave the management of coastal systems and environmental management high priority. Arising from these beginnings was Coastal & Environmental Services, the Grahamstown consultancy that is now one of the largest of its kind in the Eastern Cape. At least two other environmental consultancies were established by students of the department in the 1990s. During this period the Department of Environmental Science, which has blossomed in the last few years, was conceived. It started as an undergraduate environmental programme with the cooperation of a number of departments before becoming autonomous in 1999.

Present directions in the Botany Department

Botany is not a single discipline but consists of several different subdisciplines, many of which have been studied and are still studied at Rhodes. Cytology and plant anatomy, the study of the structure of cells and plants, has always been an important introductory aspect of botany at Rhodes. With the arrival of Ted Botha as professor of botany in 1987, fine experimental and descriptive research on plant cells and tissues, using electron and fluorescent microscopy, has put Rhodes on the map in this area of expertise. As head of department (1987–1999), Botha acknowledged the contribution of earlier botanists of the department by naming laboratories after Pocock and Twyman and established the annual Schonland award to a student who made an outstanding contribution to the department during his or her stay. Plant physiology, how plants function, developed further in the 1970s to the 1990s in plant biochemistry when Ian Railton (1975–1989) and Keith Cowan (Ph.D. 1989, lecturer 1990–1995) expanded this discipline. Eco-physiology, the study of plant functioning in the environment, has also received priority with the studies of Brad Ripley (Ph.D. 1999, lecturer 1996–2002, senior lecturer and head of department 2003–present), linking well with the ecological studies conducted on dune plants. Ecology, how plants respond to other organisms and their environment, has taken a new direction with the arrival of Susi Vetter (2003). Pollination biology, the interaction between plants and their pollinators, is a further addition to the curriculum as Craig Peter (2003) has taken up a post in the department.

We are indebted to the late Stanley Seagrief for an excellent summary of the staff involved and postgraduate botany students until the 1980s. We also thank Sue Abraham for the figures.

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