duced the first three volumes between 1860 and 1865. To this end Harvey received numerous collections from amateur and professional collectors in the Cape Province and Natal, mainly between 1850 and 1870. He published many new species, the holotypes of which are at TCD. In addition, the relevant sections of the herbarium were loaned to Kew during the preparation of the second part of the Flora Capensis under Thiselton-Dyer (between 1896 and 1913) and so contain iso-, syn-, and some holotypes of the very numerous new species published during the preparation of that great work.

After Harvey's death in 1866 the College did not spend any more money on the herbarium, although further gifts of material were received from all over the world. Much of this material was not mounted or incorporated, and was kept in boxes. Some of this material was donated to the National Botanic Gardens of Glasnevin. Unfortunately they are as short-staffed as the University, and consequently much of this material is still in the original parcels. It does contain at least some material from Harvey's herbarium, and might contain historically important collections.

As a sample of what TCD contains, I surveyed two subtribes of the Orchidaceae. The following collectors were represented in the Disinae: Harvey (about half of the collections, mostly around the Cape Peninsula), Ecklon & Zeyher (material from the Uitenhage area), Drège, Hutton, Fannin (some watercolours, with vouchers collected by G. F. F. (George F. Fannin), Gerrard & McKen, MacOwan, Bowker, Barber (they often collected together, signed as F. W. B. and J. H. B.), Hallack, Saunders, Sanderson, Holland, Cooper, Plant, Krauss, Verreaux (acquired from the Delessert herbarium in 1844), W. S. M. D'urban and Brownlee. This collection includes the types of 17 names, of which several are holotypes.

In the Coryciinae (Orchidaceae) there are even more types. In several other groups there are interesting collections: a large set of Ericaceae from the Cedarberg collected by Wallich and a set of Cyperaceae from around Graaff-Reinet by H. Bolus. I am sure that more detailed research will expose much more material of great interest.

DBN houses, amongst others, a collection by McNab, that includes a set of all plants that flowered at Kew in the first decade of the nineteenth century. This is being catalogued by Dr Nelson, the botanist at Glasnevin. This collection may provide types for names published in the Hortus Kewensis.

Until 1870 there were three large herbaria of South African plants: those of Sonder, Harvey and Hooker. Sonder's herbarium included a fairly complete set of Ecklon & Zeyher collections, as well as other collectors. The Cape plants in this herbarium were sold to Stockholm and to Melbourne, and it is not always clear where the types are. Hooker's herbarium is at Kew, and forms the core of the modern collections there. Harvey's herbarium is still preserved intact. As very little material has been added to it since 1868, it constitutes a time-capsule of the material available to botanists in the mid-nineteenth century, and so can be invaluable in illuminating the species concepts of authors such as Harvey and Sonder.

H.P. LINDER

BASELINE DATA FOR THE VEGETATION OF TWO PROTECTED PLOTS AT THE MATIMBA POWER STATION, ELLISRAS, NW TRANSVAAL

In December 1983 an approximately five hectare study site was enclosed with security fencing for joint research by the Botanical Research Institute and ESCOM. The study site is situated in the north-western corner of the Matimba Power Station terrain, about 15 km west of Ellisras. The site is representative of Acocks's (1975) Mixed Bushveld with a mean annual rainfall of 487 mm.

In February 1984 two structurally representative plots of the vegetation in the study site were selected for long-term monitoring of the floristic composition. Plot no. 1–01/84 represents a closed woodland formation (Edwards 1983) and plot no. 2–01/84 represents an open shrubland formation (Edwards 1983). Plot numbers were allocated by the Secretariat of the National Working Group for Vegetation Ecology. In each of the formation types one 10 m × 10 m plot was permanently demarcated by fencing standards situated at each corner. Rectangularity was obtained with optical squares. Each plot was subdivided into a grid of 100 1m^2 subquadrats, numbered as indicated in Fig. 1. The presence of all plant species identifiable during sampling, rooted within each subquadrat, was recorded. Voucher specimens were collected outside each plot for all species recorded. Vegetation structure was recorded according to Edwards (1983). Species abundance was calculated as percentage frequency in 100 subquadrats using 10% class intervals. The data were loaded onto the Burroughs B7900 computer of the Department of Agriculture and Water Supply via a Sharp PC1500 portable computer using the PHYTOCAP program (Westfall 1985), and ordered according to frequency and occurrence using the PHYTOTAB program package (Westfall *et al.* 1982). The results of the floristic baseline data are given in Table 1 and structure is illustrated by means of layer diagrams according to Ito (1979). Fig. 2.

TABLE 1.—Baseline data for the two protected plots at the Matimba Power Station, Ellisras, in the form of a two-way matrix, showing floristic composition and percentage frequency. Numbers in brackets are voucher specimens collected by Westfall (PRE)

Floristic composition	Percentage frequency * in protected plot no. 1-01/84	2-01/84
Euclea undulata Thunb. var. *myrtina* (Burch.) Hiern (1617)	8	
Indigofera nebrowniana J.B. Gillet (1616)	7	
Barleria mackenii Hook. (1631)	5	
Cenchrus ciliaris L. (1629)	5	
Talinum crispatulum Dinter ex V. Poelln. (1626, 1632)	5	
Grewia flava DC. (1628)	4	
Boscia foetida Schinz subsp. *rehmanniana* (Pestal) Toelken (1627)	3	
Combretum apiculatum Sond. subsp. *apiculatum* (1621)	3	
Commelina benghalensis L. (1640)	3	
Grewia subspathulata N.E. Br. (1637)	3	
Hibiscus micranthus L. f. (1641)	3	
Schmidtia pappophoroides Steud. (1643)	3	
Talinum arnotii Hook. f. (1636)	3	
Boscia albitrunca (Burch.) Gilg & Ben. (1647)	2	
Cyphostemma puberulum (C.A. Sm.) Wild & Drum. (1639)	2	
Hoffmannseggia burchellii (DC.) Benth. ex Oliv. subsp. *rubroviolacea* (Bak. f.) Brummitt & J.H. Ross (1625)	2	
Monechma divaricatum (Nees) C.B. Cl. (1638)	2	
Ornithogalum seineri (Engl. & Krause) Oberm. (1634)	2	
Spirostachys africana Sond. (1630)	2	
Gisekia pharnaceoides L. (1654)		9
Commelina undulata R. Br. (1660)		7
Acanthosicyos naudiniana (Sond.) C. Jeffrey (1652)		6
Aristida stipitata Hack. subsp. *graciliflora* (Pilg.) Meld. (1669)		6
Rhynchelytrum repens (Willd.) C.E. Hubb. (1653)		6
Cleome rubella Burch. (1657)		5
Indigofera daleoides Benth. ex Harv. var. *daleoides* (1655)		5
Limeum fenestratum (Fenzl) Heimerl (1649)		5
Phyllanthus burchellii Muell. Arg. (1650)		5
Tephrosia purpurea (L.) Pers. subsp. *leptostachya* (DC.) Brummitt (1656, 1665)		5
Acacia tortilis (Forssk.) Hayne subsp. *heteracantha* (Burch.) Brenan (1668)		3
Cyperus margaritaceus Vahl (1662)		3
Felicia mossamedensis (Hiern) Mendonça (1671)		3
Hibiscus meeusei Exell (1659)		3
Pogonarthria squarrosa (Roem. & Schult.) Pilg. (1667)		3
Tribulus terrestris L. (1651)		3
Cassia sp., cf. *C. absus* L. (1664)		2
Waltheria indica L. (1648)		2
Ziziphus mucronata Willd. subsp. *mucronata* (1673)		2
Acacia erioloba E. Mey. (1635)	3	2
Aristida congesta Roem. & Schult. subsp. *congesta* (1619)	3	8
Dichrostachys cinerea (L.) Wight & Arn. subsp. *africana* Brenan & Brummitt var. *africana* (1644)	3	4
Eragrostis lehmanniana Nees var. *chaunantha* (Pilg.) De Winter (1618)	5	8
Grewia retinervis Burret (1633)	5	2
Panicum maximum Jacq. (1666)	8	5
Mariscus chersinus N.E. Br. (1646, 1663)	2	4
Ruellia patula Jacq. (1672)	6	3
Solanum panduriforme E. Mey. (1645, 1661)	2	6
Tragus berteronianus Schult. (1623)	4	3
Urochloa brachyura (Hack.) Stapf (1624)	4	8

* blank = no occurrence; 1 = 1 – 10%; 2 = 11 – 20%; 3 = 21 – 30%; 4 = 31 – 40%; 5 = 41 – 50%; 6 = 51 – 60%; 7 = 61 – 70%; 8 = 71 – 80%; 9 = 81 – 90%; 0 = 91 – 100%

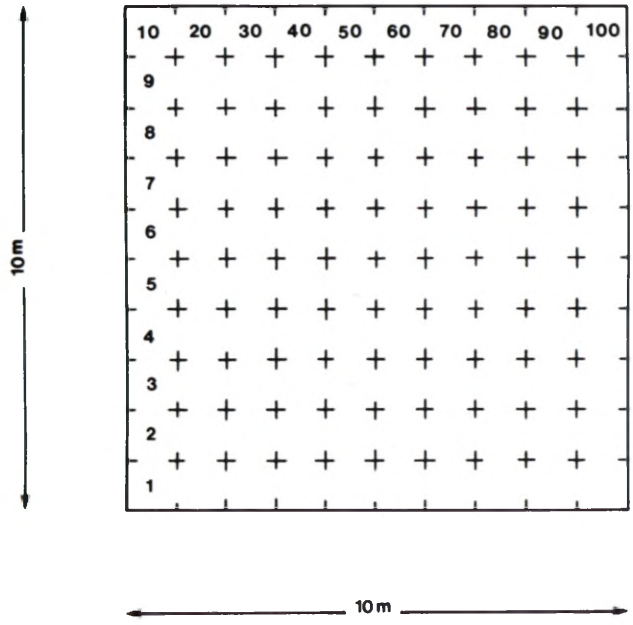

FIG. 1. — A diagrammatic representation of the layout of one of the plots showing numbering of subquadrats.

Changes in floristic composition over time will be shown by means of a temporal classification for each plot. The baseline data show species at a given time. When sampling over a period of time, the species that are present, or have disappeared, or occur throughout that period, can be effectively depicted in the form of a two-way matrix. The repeatability of quantitative, quadrat-derived frequency data together with the concise yet complete depiction of results in a two-way matrix makes this a particularly reliable and sensitive method for determining vegetation change. The authors thank ESCOM for support, the staff of the National Herbarium, Pretoria, for specimen identification and Mr C. W. Ries for technical assistance.

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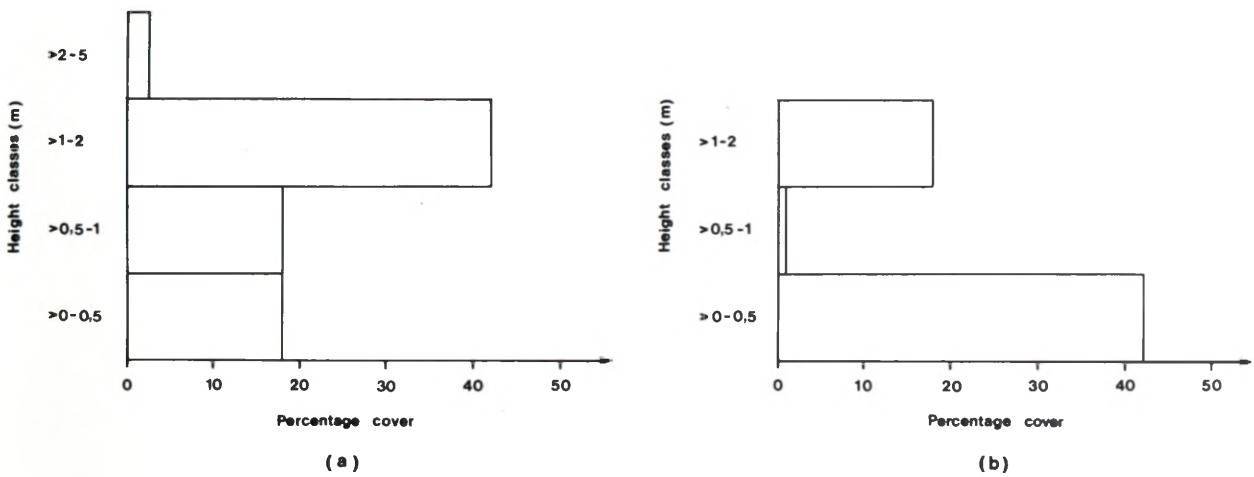

FIG. 2. — The structure of the protected plots at the Matimba Power Station, Ellisras, illustrated by means of layer diagrams showing height classes and percentage cover: a, Plot no. 1-01/84; b, Plot no. 2-01/84.

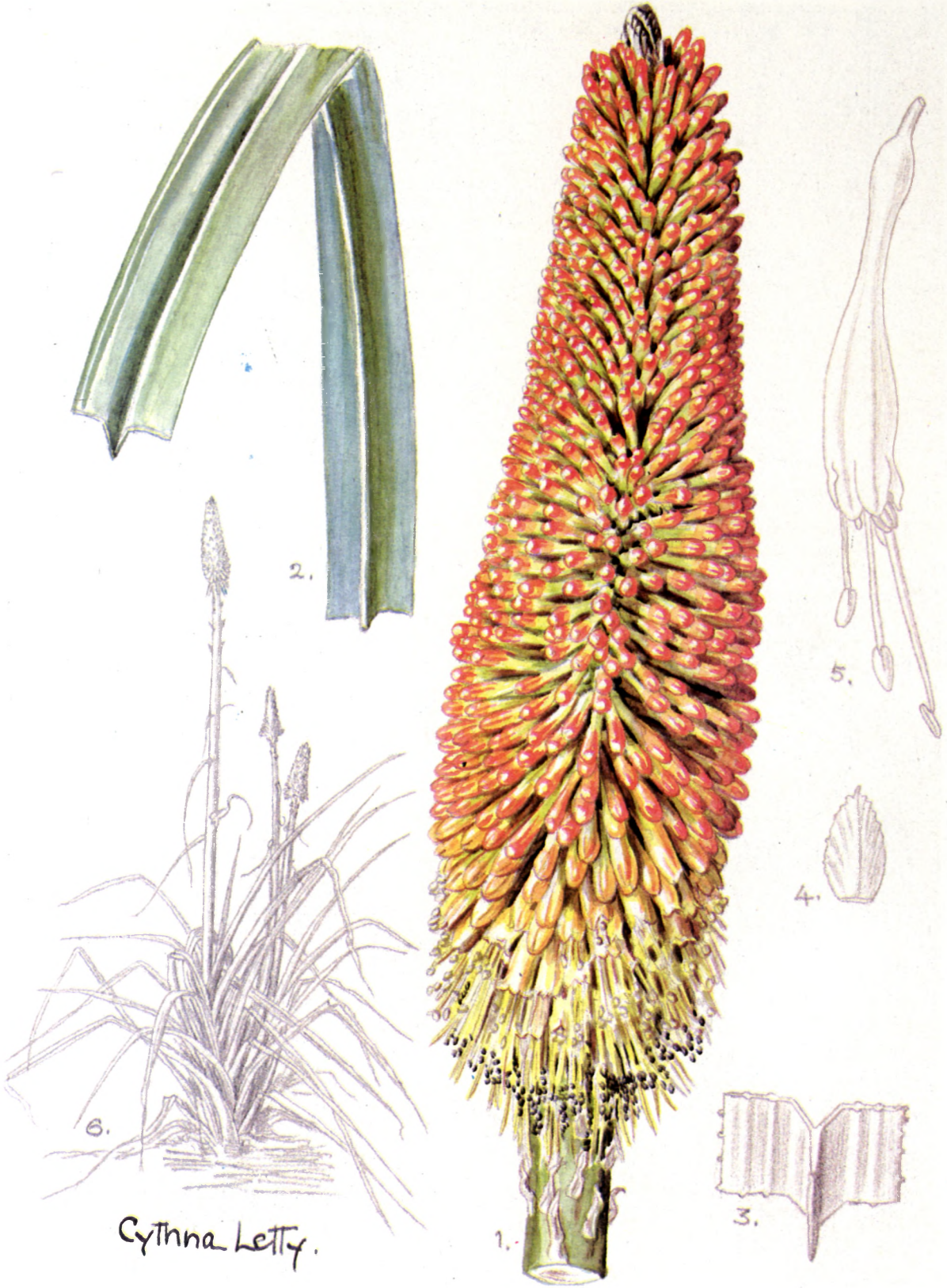

PLATE. 1. — *Kniphofia splendida* E. A. Bruce.