

## I.—INTRODUCTION.

In his preface to the *Fungi of Manitoba* (by Bisby, Buller and Dearness, 1929) Sir Edwin Butler wrote "Knowledge of the fungus flora of a region appears to me to be the foundation of all mycological work in that region, applied as well as pure ; but it is not to be gained in a few months, even in the older countries where most of the fungi have already been collected and named."

Over forty years have passed since the appointment in 1905 of I. B. Pole Evans as mycologist in the Transvaal Department of Agriculture, and the beginning of the serious study of mycology in South Africa. At that time there were no collections of fungi in the country except those of MacOwan and Medley Wood, consisting of some 765 specimens, housed in herbaria at Grahamstown, Cape Town and Durban (Pole Evans, 1916). Dr. Pole Evans laid the foundation of a national collection of fungi at Pretoria, and with the assistance of members of his staff some hundreds of specimens of fungi on indigenous and exotic plants were prepared ; MacOwan's collection at Grahamstown was acquired by purchase and Dr. Medley Wood presented his fungi to the Government ; these collections were incorporated in the cryptogamic herbarium at Pretoria, which now contains over 35,000 specimens of fungi, of which a large proportion is from southern and tropical Africa. The lichens are not so well represented ; only some 2,200 numbers are registered, few of the African specimens having been named.

At Stellenbosch, Dr. P. A. van der Byl's collections of fungi and lichens were bequeathed to the University and have been housed there in the Department of Botany since his death in 1939. A second fungus herbarium developed in the Department of Plant Pathology of the Stellenbosch-Elsenburg College of Agriculture under the direction of Dr. Len Verwoerd and with the assistance of his colleagues.

There is also a considerable number of fungi, including many of MacOwan's specimens in the herbarium of the South African Museum, Cape Town. Unfortunately there is no complete set of the fungi of Stellenbosch and Knysna found by Dr. A. V. Duthie, these being scattered in several herbaria, but her Myxomycetes are in the Bolus Herbarium, University of Cape Town ; they are under the care of Mr. S. Garside, who has a very considerable private collection of lichens. Miss E. L. Stephens is responsible for a valuable collection of the larger fungi, chiefly from the south-western Cape, which is housed in the museum of the University of Cape Town.

In the mycological section of the Timber Research Laboratory, Johannesburg, maintained by the Transvaal Chamber of Mines, it was reported in 1940 that about 1,460 organisms had been collected and over 1,000 cultured (Mrs. R. Brown) including not only fungi found underground, but a number from timber in storage and from plantations, or cultivated from spores caught in agar plates exposed to air currents in mines.

In Southern Rhodesia, the collections of fungi started by F. Eyles were built up in the Department of Agriculture, Salisbury by Dr. J. C. F. Hopkins, who published a list of Rhodesian fungi in 1938.

In September, 1939, an opportunity was afforded of listing South African fungi in the Kew Herbarium. At the time it was not possible to record fungi and lichens in the herbarium of the British Museum, from which types had already been sent away to a place of safety. Obviously it was not possible then to search European herbaria for South African collections, nor, during the years 1939-1945, to discover by correspondence what South African fungi and lichens were to be found on the continent of Europe. Some information on this subject has been gleaned from published records, but data are necessarily incomplete.

No comprehensive list of South African fungi and lichens has been published. At the end of 1945, which is the limit of the period covered by this record, the senior mycologists associated with the Cryptogamic section of the National Herbarium at Pretoria are on the eve of severing their official connection with that institution. Owing to the disturbed conditions during the years 1939-1945, when many South Africans volunteered for military service, there will be a gap of some years before younger mycologists will be ready to take up the work. It is a suitable moment, therefore, for the compilation of a record of the South

African species and of the literature concerning them, for the use of future workers. It is hoped that the account in the following pages will be of use, not only to students of systematic mycology, but to phytopathologists charged with the study of the cause and prevention of diseases of plants in southern Africa.

#### Scope of the Work.

The aim of this compilation is to assemble all available information about the fungi and lichens which are known to occur in southern Africa or which have been recorded as occurring in the sub-continent, to record the hosts or substrata on which they are found, to indicate as far as possible their distribution and the publications in which reference to South African species has been made.

The Myxomycetes and lichens are included, and the peculiar difficulties encountered in connection with the lichen records are set forth in the section on groups of fungi and lichens.

#### Literature.

The earlier literature on South African fungi consists of a number of scattered references and some short papers in European publications. Even in later years it was found necessary, owing to the absence of authentically named specimens in South African herbaria, to send fungi to Europe to be named. Fungi were sent by Dr. Pole Evans to P. Hennings, H. and P. Sydow and others, and later many of the larger fungi were identified by C. G. Lloyd. A few mycological papers appeared in the Transactions of the Royal Society of South Africa and since the initiation of "Bothalia" in 1921, work on fungi in the Pretoria herbarium has been published in that journal. The Annals of the University of Stellenbosch handled work done by van der Byl and his colleagues and the lichens were sent to Zahlbruckner, Wainio and others, who published many descriptions of new species.

Owing to the foresight and initiative of Dr. I. B. Pole Evans, a fair mycological library exists in Pretoria, but there are many inevitable gaps, especially in the older literature; for example, no set of "Flora" is available in the country and references to South African species in that publication could not be verified; in listing the lichens, the absence of the Lichenologische Beiträge of J. Müller (Arg.) published in "Flora" was particularly unfortunate.

In the bibliography all publications have been listed in which references to fungi and collected in southern Africa have been traced, and these have been verified wherever possible. Reference to original descriptions of species first described from other countries has been omitted.

#### Acknowledgments.

In making a compilation such as this, it is impossible to rely on the unaided efforts of a single individual, and help has been sought from many other workers.

To Miss A. M. Bottomley, for many years in charge of the cryptogamic section of the National Herbarium, Pretoria, the author is indebted for generous help throughout the work and in particular for assistance with the Basidiomycetes and for listing the fungi in the South African Museum, Cape Town.

Thanks are due to the Director, Royal Botanic Gardens, Kew for permission to examine the fungus collections in the herbarium for South African fungi, and Miss E. M. Wakefield has given much valuable assistance. Grateful thanks are also due to the Director and Staff of the Imperial Mycological Institute for identifications and for photostatic copies of a number of publications.

Appropriate acknowledgments for help with identification of fungi and hosts and for assistance in other ways will be found in succeeding chapters.

For transcribing the lists of fungi and lichens in Burchell's "Catalogus Geographicus" and for her attempts to trace the fungi and lichens which Burchell collected, tribute must be

paid to Mrs. Helen McKay, who pursued this quest with the enthusiasm inspired in her by anything connected with that explorer.

Miss M. Gunn, Librarian of the Division of Botany and Plant Pathology, has been consistently helpful in tracing references and obtaining books on loan from other libraries; she has lent books from her private library and allowed the use of her own notes on the early botanical explorers. Many interesting historical details have come to light through her unstinted effort.

Members of the staff of the National Herbarium, both in the phanerogamic and cryptogamic sections have been extremely helpful, and the author wishes particularly to acknowledge the assistance of Misses Edwina Phillips and Eunice Scott who carried out the laborious task of verifying the herbarium records quoted.