

The Centraalbureau voor Schimmelcultures of Baarn, Netherlands

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Since the middle of the nineteenth century when the science of plant pathology was born, the interest in the knowledge of fungi and the application of that knowledge to the control of plant diseases and to industrial applications has increased tremendously. The increasing amount of attention that is being given to mycology is evidenced by the rapidly growing volume of literature on the subject. This interest is not a local one but is world-wide, and every country of the world can boast its mycological experts.

Every institution in which fungi are objects of study carry a variable number of cultures. A few of the larger universities in the United States put these cultures in the hands of trained experts, but, in the majority of our institutions, the care of fungus cultures rests in the hands of poorly trained assistants or staff members, who have little time to give the critical attention which such organisms need if they are to retain their morphological characters, physiological potentialities, or even their viability. In such instances, in which the care is adequate, the number of fungi in culture are usually limited to those typical species that are used in classroom work or to other species that happen to be the objects of investigational research.

Every worker with fungi has realized the importance of established centers where any fungus might be obtained within a reasonable length of time and where he could expect such fungi to be cared for in such a reliable manner that their purity and viability would not be questioned. Such a center should be a repository also in which new strains or species or even new and interesting isolations of old species might be sent and maintained. Furthermore, an establishment of this sort would be of service in the verification of fungus species.

Though the United States has a large percentage of the active mycologists of the world, we do not have such a center for the care of fungus cultures as I have described.

The American Type Culture collection, now housed in the Georgetown University Medical School, Washington, D. C., offers to the mycologist the best service available in this country. Many species and strains of fungi are listed in this collection, and I can testify from personal experience that the cultures received from the American Type Culture collection are quite satisfactory. This collection, however, is primarily of interest to the bacteriologist and to the medical student, and the list is not as complete nor the service so all-embracing as it should be in order to interest the mycologist. Furthermore, the fungi that are listed have had their origin largely in this country among our own research workers. In no sense, may the American Type Culture collection be considered "international" in scope. These same criticisms

apply also to other but less ambitious collections of fungi extant in the United States.

There has been an advertisement carried in *Phytopathology* at intermittent intervals for the past several years, describing the services offered by the *Centraalbureau voor Schimmelcultures* at Baarn, Holland. Our scientific journals have carried brief notes concerning the work of this bureau and the collection maintained there, and the necessity for its support has been mentioned at some of the business meetings of the American Phytopathological Society.

Such meagre accounts as were available have always stimulated an interest because I was aware of the need of such a bureau. Last year when I was abroad on Sabbatical leave from Purdue, I determined that the *Centraalbureau* at Baarn should be one of my objectives. I, therefore, wrote to Dr. Joh. Westerdijk, requesting permission to visit her laboratories and to inspect the work of the Bureau. This request was graciously granted.

The Willie Commelin Scholten Phytopathological laboratory was founded in 1894 by Mr. and Mrs. Scholten Commelin, in honor of their son Willie, a student of biology, who died in 1894. This institute had a threefold purpose: (1) to give information in the practice of agriculture, horticulture and forestry, about diseases and their prevention; (2) to increase knowledge of plant diseases by research-work; (3) to promote the interests in instruction in phytopathology.

This laboratory was established in Amsterdam. In 1905, the government withdrew its financial support. In 1906, Dr. Johanna Westerdijk was appointed director of the laboratory, and, in 1917, she was appointed also Professor of Phytopathology at the University of Utrecht. Much of the practical work in plant pathology was done by Dr. Westerdijk's students in the laboratory of the Institute in Amsterdam. This laboratory soon became overcrowded. The congestion was relieved by an unexpected gift. Mr. A. Janssen, a retired tea planter, lived at Baarn, 13 miles from Utrecht. In the neighborhood of his mansion, Canton-Hall, he bought a plot of ground on which he had constructed conservatories and a gardener's lodge and laid out ornamental gardens with pinetum, kitchen garden, and orchard. In 1920, after the death of Janssen, this entire property was offered to the State of the Netherlands to be used in botanical instruction in the University of Utrecht. The former kitchen garden and the orchard are used for instruction in plant pathology by Dr. Westerdijk. The Willie Commelin Scholten Institute purchased a country house with grounds in the immediate neighborhood of Cantons-Park and removed from Amsterdam to Baarn in 1920. Dr. Westerdijk also retains a professorship in the University of Amsterdam. The Institute has become a center for investigational work by graduate students of the various universities of the Netherlands, as well as for occasional foreign students.

The *Centraal Bureau* for fungus cultures has been allotted space in the laboratories of the Willie Commelin Scholten Institute at Baarn.

The history of the Bureau began in 1905, at which time the *Association Internationale des Botanistes* decided to bring together a collection of pure cultures of fungi. Dr. Westerdijk eventually became director of

the collection. During the first World War, the International Association of Botanists ceased to exist. In order to provide funds to keep the collection in existence, several Dutch Scientific Societies provided the necessary funds. In 1918, the Royal Academy of Sciences in Amsterdam succeeded in obtaining a regular grant of money from the government for the Centraal Bureau. This academy also furnished support by issuing necessary publications, including the annual "list of fungi". The Bureau is also supported by the Section botanique of the Union internationale des Sciences biologiques. These various avenues of financial support are not sufficient to maintain the collection, and additional funds must be sought by the sale of cultures.

At the present time, a staff of four scientific workers is engaged in maintaining and extending the collection. One of these is constantly transferring and inserting newly obtained fungi; the other three have specialized in various groups of fungi. New species are regularly being published. The yeasts are being monographed, and other groups will be monographed as time and funds permit. A complete case record is kept of each fungus from the time it is received, and notations are made for each transfer. These records are filed. When a fungus is received, it is cultured to determine the purity of species, and a complete description of the fungus with sketches of spores and fruiting structures is kept as a part of the record. Before a culture is sent to a subscriber, it is first transferred and tested for purity by comparing it to the original descriptions. If for any reason a culture loses its viability or becomes atypical, it is discarded, but its record card is kept although transferred to another file.

The total number of cultures at the beginning of 1939 was 6,394. This number is increased each year by 400 to 500. Of course, a few are lost, but the total continues to increase annually. As the number of cultures carried by the Bureau increases, the value of this service to mycologists likewise increases. It must be apparent that the burden of expense also mounts. Additional room is required with this expansion. More expert assistance must be employed. An increased budget for media, glassware, and equipment is demanded. The available funds do not increase. The donations by the Dutch Scientific Societies and by the government of the Netherlands is probably now at a maximum. In fact, such sources of income will probably be less in the next few years because of the confused political situation in Europe.

The facts that have thus been presented would indicate that the continued usefulness of the Bureau is threatened unless mycologists everywhere and especially in the United States give it more effective support.

This support should come by seeing to it that the institutions to which we belong become subscribers to the collection.

A subscription of 60 guilders, about \$33.00, entitles the organization subscribing to 50 cultures a year to be chosen from their printed lists.

A subscription of 30 guilders a year entitles one to select 20 cultures annually.

Cultures may be purchased individually without subscription at

the rate of two and one-half guilders per culture. Identifications are made for the same price.

Mycologists and plant pathologists may receive any culture in the list in exchange for one that they send which is not included in the published list.

Persons paying five guilders a year are considered to be donors.

The interest that is shown in fungi in this country, as may be indicated by the vast amount of published research, should cause mycologists to support eagerly the only elaborate clearing house for fungus cultures that is in existence.