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TO commercial growers, as well as to the laymen who buy their plants, correct scientific names are most important. The nurseryman must be certain of his product to maintain both his integrity and his business while the layman, with less at stake, may be motivated by a desire to have complete and correctly identified collections.

Daily, the larger botanical and horticultural institutions are called upon to name cultivated plants. A few years ago when, for the most part, only well-known species or varieties were involved, this was hardly a problem. Today, however, when hybrids and cultivars are in vogue, plant identification has become a difficult, time-consuming and unfortunately often a hopeless chore. It may be impossible to give a true name to the specimen of a hybrid or cultivar unless one has ample and complete material of the plant and sufficient additional material available for comparison.

The Arnold Arboretum now has a separate horticultural herbarium of approximately 100,000 mounted specimens. This herbarium is composed of specimens gathered from its own extensive living collections, as well as of material cultivated in other botanical or private gardens throughout the world. It is one of the largest of its kind. The material for this herbarium has been accumulated over a period of time extending into the last century. Even so, many modern introductions, hybrids and cultivars, are lacking among the vouchers of our herbarium, as is no doubt the case with many another such institution.

For the complete record of a taxon, specimens should be collected from the same plant during various times of the year so as to include flowers, fruit and

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mature leaves. When the plant happens to be of a woody nature, it is desirable also to have specimens collected in winter to show clearly the winter buds and other branchlet characteristics. Often adventitious shoots or other special parts are also required.

In the systematic collection of material from any garden, it is desirable to prepare beforehand a book, small in size so as to be carried easily, in which to record the names of the species found in the collection and the institution's accession numbers assigned to them. The collector then records his specimens at the time of collection, indicating whether the plant is in flowering or fruiting stage, etc. This method is very helpful when maintained over a period of time, since the collector can see at a glance those phases of development which are represented in the herbarium, as well as those which should be added. This is the method which has been employed in the collecting of material in the Arnold Arboretum. No specific records have been kept of material acquired in exchange from other institutions.

It is good practice to collect at a single time several specimens of the same plant. The duplicates can be used for exchange purposes, since many botanical gardens, the Arnold Arboretum among them, are anxious to have specimens of cultivated woody plants in exchange or for spontaneous material.

Besides the name of the taxon, the date of collection and the garden number, any data which might be helpful in identification, such as the size and stature of the plant, the color of the flower or other individual characteristics, should be recorded in the notes. The garden accession number associates an herbarium specimen with a living plant. These notes should be transferred to a label which is fastened to the sheet on which the dried specimen is mounted. When finally mounted, the specimen is filed with related taxa in a systematic arrangement.

In the case of a hybrid or a cultivar the procedure is slightly more involved. When man-induced, besides the voucher of the hybrid itself, specimens of both parents should be collected, when possible. Specimens of other progeny of the cross might be collected also to show any variations within the hybrid. Only recently has the importance of preserving voucher specimens of hybrids been impressed upon the geneticist. While these records are of the utmost importance in validating a new hybrid, many geneticists today continue to disregard this important phase of their work. By international agreement, the parentage must be known before hybrids of many groups can be considered for registration of new cultivated varieties. A suggestion might be directed also to the cytologist. When recording a chromosome count, a voucher specimen suitable for reidentification should be made. If such cytological work is done in a botanic garden or arboretum, the accession number of the plant should be recorded also. Today only a small percentage of existing chromosome counts can be traced to specific plants. Without vouchers or reliable data, chromosome counts are likely to be worse than useless.

Cultivars are the most difficult of all to preserve as an aid to identification. So often, color in the flower is the important feature of identification. As far as I know, no feasible method has been evolved whereby true color can be preserved in a dried specimen. Here accurate notes, along with a color name from an official color chart, should be included on the record. Even then a true identification is very difficult, especially when variation in the color pattern is found within the flower.

In the case of a cultivar, I feel that its registration should not be acceptable unless a well-preserved specimen is made along with a characteristic diagnosis and a color photograph or slide.

In studying some recent reports and records of botanical gardens, I was impressed by the fact that most of the institutions record the possession of a library, even though the numbers of books may be small, but few list the presence of an herbarium. A check on reports from ninety botanical gardens (*The Arboretums and Botanical Gardens in North America*, Wyman, Chronica Botanica Press) of varying sizes in the United States shows that only approximately ten institutions have an accompanying herbarium of cultivated plants. Of these, only two, the Arnold Arboretum with approximately 100,000 specimens and the Rancho Santa Ana at Claremont, California, with 30,000 specimens, record a number of any considerable size. The other few institutions which mention the herbarium at all refer to their collections as "Garden Herbarium," meaning, one may assume, only plants cultivated in that individual garden.

Some of the larger gardens, especially those connected with institutions, probably possess cultivated herbaria of a size much larger than recorded. I am certain that in some of the large general herbaria there are many specimens of cultivated plants filed along with the spontaneous collections. If the cultivated specimens were withdrawn into a single series, these institutions would find that they possess horticultural herbaria of considerable size.

Until the horticultural specimens are segregated into a single series, an institution cannot begin to realize its full potentialities for identifying horticultural material. To separate an horticultural herbarium to make space for the horticultural material is, of course, a task of major proportions. The horticultural herbarium of the Arnold Arboretum, which occupies close to one hundred cases, was shifted in just this manner.

One thing which we discovered in making this shift was that we possessed more than twice as many horticultural specimens as we had originally estimated. A second discovery, which we had hoped would occur, was that identifications can now be made with greater ease. Formerly, when identifying a specimen of the genus *Rosa*, for instance, it was necessary to work with material dispersed in ten or eleven cases. Now, the material is confined to two cases, making it a much simpler procedure.

The accurate identification of horticultural material is the foremost reason for

the establishing of an horticultural herbarium. The staff working in such an herbarium is always willing to serve horticulture and horticulturists by rendering such service. The horticulturists, nurserymen, cytologists and geneticists, in turn, could help the herbarium staff, their science and themselves by preparing complete and ample specimens of plants sent for identification and in particular of new cultivars and hybrids and by depositing their vouchers in horticultural herbaria which serve the public.

CLARENCE E. KOBUSKI



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