

Arboretum Progress

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Those institutions observing July 1 through the following June 30 as their fiscal year are thinking "annual report." The Arboretum's is identified as the Director's Report and is distributed principally to the interested officers of the three sponsors. Some of the highlights and accomplishments of the past year, as reported there, will be shared with you in this installment of *Arboretum Progress*.

The Arboretum has for many years utilized its two display greenhouses to contrast and compare plants of the cactus family with succulent plants drawn from other plant families. One greenhouse is planted entirely with cacti while its counterpart just across the store and reception area displays only the succulents other than cacti. The cactus display greenhouse was completely replanted this year under the direction of Mr. Kent Newland with the advice and consent of the rest of the professional staff. All existing plants and soil were removed. Planting beds were washed clean and allowed to stand dry and empty for several weeks while all interior and exterior wood and metal of this wood and glass frame greenhouse were repainted. A 6500 cfm three-sided evaporative cooler was installed with appropriate venting. Planters were filled with soil constructed by a Phoenix, Arizona nursery supply company to our specifications: 3 parts commercial potting mix (principally silt and sawdust), 2 parts sharp sand and 1 part horticultural grade pumice. Some of the specimen plants were returned to the greenhouse, but many which had grown too large or did not fit the new design were replaced by species not previously displayed. The plantings have flourished in the new soil and with the protection from the blazing Arizona summer sun provided by this relatively small amount of evaporatively cooled air.

The second year of the Young Adult Conservation Corp (YACC) work force at the Arboretum (Desert Plants 1(1): 48) was a productive one. They have contributed their labor to almost every activity at the Arboretum from daily operations through special events to special projects assigned to them. Principal among the latter was the rebuilding of the "High Trail" (Desert Plants 1(1): 48; 2(2): 136-137), construction of plots for desert ground cover trials and the installation of an expanded Arboretum irrigation system. The latter is a long-term project which started last fall. It will involve digging a trench in which to bury some 5,000 feet of 2-inch diameter polyethylene pipe and connecting some 15,000 feet of ¾-inch and 30,000 feet of ½-inch diameter drip tubing. The pipe, tubing and fittings were furnished by the YACC project. Nearly 1,000 feet of the 2-inch diameter pipe has been laid. Digging of another 1,000 foot segment is now beginning. A pneumatic hammer and chisel was required to dig much of the first 600 feet of the trench through soft rock to a depth of two feet to allow the installation of electric cable in the same trench. The cable will bring electric power to the required pumping station now under construction just below the Ayer Lake reservoir.

The Arboretum staff is building the pumping station with equipment purchased by the Arboretum. A prefabri-

cated metal storage building measuring nine feet by ten feet was assembled to house a pump, a ballast tank and a filtering system along with all controls and valves. It was necessary to design and have fabricated as a part of the pumping station a water strainer box to place in the Ayer Lake outlet pipeline to separate live fish, crayfish and large particles of solids, originating in the open reservoir, from the water reaching the pump. Although the strainer box, building and equipment are now in place, some wiring and plumbing must be completed before the pumping station will be operable.

It was necessary to drain Ayer Lake completely in order to install the strainer box and necessary valves and fittings in the lake outlet pipe line. Through a cooperative effort with the Arizona Game and Fish Department, the lake has for several years served as a breeding pond for both the Gila Top Minnow (*Poeciliopsis occidentalis*) and the Mexican Pupfish (*Cyprinodon macularius*), two native desert species faced with possible extinction. We have been aware for some time of a growing threat to this program in an ever increasing population of crayfish. Last winter we became aware of a much greater threat in a population of catfish developing there. Draining the lake then served the added benefit of allowing the elimination of the catfish and the opportunity to greatly decrease the number of crayfish. The protected fish species were removed to aquaria and holding ponds until they could be reintroduced into the freshly filled lake. It is good to observe both species rapidly re-establishing their numbers in the lake.

The irrigation project and building the High Trail are the early fruits of long-range planning by the Arboretum staff and its Advisory Committee to expand and improve the gardens. Mr. Charles Eatherly and Mr. Allan Gross, Chief Planner and Recreational Planner respectively, Arizona State Parks Board (State Parks) and Professor Warren Jones and Ms. Marianna Holland of the Program in Landscape Architecture, University of Arizona (U. of A.) have been providing much of the expertise needed to organize a master plan and to put it into operation.

Expansion will open additional areas of the gardens to the visitors where plant communities representative of the different deserts of the American Southwest will be developed. This will be a deliberately slow transition accomplished by transplanting new material among the existing plants and thinning out the undesired specimens as the designed plantings mature. The expanded irrigation system will allow the establishment of the new material. Plantings in existing garden areas will be upgraded in their designs through the same technique.

Detailed planning this year has focused on a new parking lot and new patterns of ingress and egress for the visitor, on demonstration gardens for landscaping specimens, and also on research plots as a part of a research area. Current parking is at times inadequate with approaches to the gardens and visitor center sometimes confusing to the visitor. It is hoped to replace the existing three somewhat separated parking lots with one large one. A new foot trail would lead the visitor to and from the gardens and visitor

center through excellent specimens of desert plants, native and introduced, as well as provide a most impressive view across the gardens of Picketpost Mountain.

The first research plots constructed are for trials of desert plants to provide ground cover. Fifteen plots measuring eight feet by three feet were provided by using railroad ties to frame and terrace. Plot frames were filled with one foot of suitable soil mix in which to initially establish the test plants. This study is directed by Dr. Charles Sacamano, Extension Specialist and Horticulturist in the Department of Plant Sciences of the University of Arizona. In the area of research, this work follows the completion of a three-year study testing desert plants as sources of biologically active elements. That was a cooperative study between the Arboretum and the University of Arizona. Principals conducting the study were U. of A. graduate student James Self and his advisor, Dr. Paul Bartels, with assistance by Dr. Frank Crosswhite. Another thesis project supported by the Arboretum and the U. of A. was that of Ms. Marianna Holland. Last summer she completed the design of the arid vegetation information system (Desert Plants 1(2): 71-76).

The Arboretum educational program touches every visitor to the gardens through its displays, self-guided tour, plant labels, and museum displays. The more organized efforts continue at all levels from elementary school class tours through student intern programs to college level field courses and the adult education oriented Audubon Institute of Desert Ecology. Nearly 5,000 elementary and secondary school students were furnished pre-tour orientation materials, given lecture tours of the gardens, display greenhouses, and museum exhibits and presented with live succulent plants to grow in their classroom.

Utilization of the Arboretum by college groups remains at about the same level as in previous years. We have an ongoing student internship program in Horticulture. Students receive practical experience and college credit while the Arboretum receives the fruit of their labor. The Arboretum provides the instruction, supervision and housing. The student receives no stipend and provides his own meals, transportation and other costs incurred. California State Polytechnic University at San Luis Obispo is one of the principal cooperators in this program. In addition to college-sponsored field trips and courses, the Arboretum's Desert Biology program provides housing and laboratory space at a nominal fee to interested biologists for field studies. This year Robert Clark from McGill University in Canada completed such a field study of the population of Turkey Vulture (*Cathartes aura*) at the Arboretum and Steven Sherwood from the Museum of Comparative Zoology of the University of California at Berkeley has been studying the Arboretum population of Bailey's Pocket Mouse (*Perognathus baileyi*). This rodent has the rare ability to metabolize the wax of the seed of Jojoba (*Simmondsia chinensis*) and shows some geographic correlation with Jojoba.

The Audubon Institute of Desert Ecology (Desert Plants 1(2): 96) matched its highly successful meeting of May, 1979 at the Arboretum by returning here in May of 1980.

Sixty-five enrollees were provided perhaps the most intense five day workshop on the desert environment available anywhere.

In total, approximately 78,500 people visited the Arboretum either in organized groups or as individuals and families. This represented a 15 percent increase over the previous year. Considering the effects of inflation on transportation costs, we have to be pleased with the continued growth of this important indicator. Since we have often stated that the Arboretum's first responsibility is to serve the public, this seems to be a particularly significant statistic.

The annual report would not be complete without mention of the Annual Plant Sale (Desert Plants 1(2): 95) and the publication of Desert Plants journal, two major efforts at the Arboretum this year. The 1980 plant sale was the fourth in the series begun in 1977 and the most successful in every way. The number of plants sold and gross revenues doubled that of the best previous year. Although the sale itself occupies only Saturday and Sunday of the first full week-end in April each year, preparations for the next sale begin immediately following that week-end and continue under the very capable direction of Dr. Carol D. Crosswhite throughout the following year.

The first issue of Desert Plants was published in the fall of 1979 and the Arboretum takes considerable pride in its acceptance to date. This issue is the fifth to be published. At the end of the fiscal year, June 30, there were 2,619 paid subscribers. The editor's goal is to increase that number to 4,500 by the beginning of 1981.

Finally, we would like to acknowledge two signal honors received this year by Mr. William T. Smith, the Chairman of the Boyce Thompson Southwestern Arboretum and its Chief Executive Officer who is also the Chairman of the Arboretum Advisory Committee. First, the main administration and visitor center building at the

Arboretum was named the William T. Smith Building by the Boyce Thompson Southwestern Arboretum Board, in recognition of his many years of service to the Arboretum (Desert Plants 2(2): 137). The second award came when the College of Liberal Arts of the University of Arizona presented him with its Distinguished Citizen Award at its Fall Honors Convocation ceremonies in October. A part of the citation read at the convocation stated "It is particularly satisfying to recognize him because of his relationship to the State of Arizona and specifically to the University of Arizona. In other words, not only is Mr. Smith an altruist in the sense of his participation with such things as the finance section of the Presbyterian Church, the economic support and coordination of the financial structure of the YMCA, he was instrumental as the key person in maintaining for the State of Arizona one of the finest arboreta in the world. It was Mr. Smith who negotiated with Dr. Patrick through Dr. Harvill the coordination of the Boyce Thompson Arboretum in Superior, Arizona, with the University. Had it not been for Mr. Smith's efforts, this fine natural history, public-oriented facility would have probably been closed." Although his services to the Arboretum were the dominant consideration in both awards, they were made entirely independent of each other. The Arboretum staff is both appreciative of his efforts and proud of their close ties with Mr. Smith.

In summary, it has been a very good year for progress at the Arboretum. There is a great diversity in the kinds of activities that are mounted here. The quantity and quality of the end product achieved can be credited directly to the dedication and hard work of the small but talented staff of the Arboretum and a few loyal volunteers. The staff in turn recognizes with appreciation that all which was accomplished was made possible by the vigorous support received from each of the three sponsoring institutions.