



Lush growth is converted to dry herbarium specimens, then studied for punch card entry of characteristics.

FROM MEXICO

Electronic Herbarium

National University codes its collections for quick and easy access by computer.

Computers in Mexico have begun a revolution in botanical research.

Botanists of the National University of Mexico, under supervision of Dr. Arturo Gomez Pompa, expect to reorganize the National Herbarium of the University, cutting tedious searches to a minimum by use of computers.

The Mexican National Herbarium has a collection of more than 100,000 Mexican plants, gathered from late in the last century to the present. Each plant is accompanied by data cards.

"This herbarium is the largest in Mexico," says Dr. Pompa, "and it is growing at an accelerated rhythm, with doubling or tripling of the collection possible within a few years."

One of the major problems for botanists throughout the world is recovery of information on specimens on file.

"Many questions of great practical importance and scientific value can be resolved only after many months of routine and tedious work.

"As an example, if we want to know how many and what tree species are native to the Lacandon Indian jungle area in the state of Chiapas, we have to review all 100,000 specimens, Dr. Pompa said. "An adequate answer can require years.

"There are hundreds of similar questions which one can ask of the Herbar-

ium, and the search for answers always has taken far too much time, not only in Mexico, but throughout the world. While electronic computers are standard in many fields today, botany has remained aloof.

"We intend to change all that by switching over to a totally electronic Herbarium; the initial phase will require two years," Dr. Pompa says.

"I know that botanists are more conservative than researchers in other fields. Some have even openly opposed suggestions for application of computers to make botanical research easier. But I am sure that computerizing the Herbarium specimens will not only facilitate our own biologic investigations on flora of our nation, but our experience in the electronic switchover may serve as a standard for herbariums throughout the world."

All information concerning Mexican botanical specimens is to be transcribed on perforated cards which can be handled rapidly and efficiently by electronic selectors.

Another project, which Dr. Pompa feels is unique of its type in the world, is the classification of plant species via electronic computers.

"This is a most laborious task," admitted Dr. Pompa, "for it is very difficult to determine the codes that must

be used in the classification process.

"Here again, some foreign botanists feel that electronic classification is impossible to achieve and that the old procedures of classification on the basis of descriptions in ordinary language is the only acceptable method.

"We differ in our viewpoint, and feel that computers are a definite aid in classification."

Computers, he points out, have proven their efficiency in simulation of biologic processes of plants. Work of this nature has gone on in various parts of the world, as well as at the National University, and in researches undertaken at the National Agricultural School in Chapingo.

In one of the investigations, hundreds of varieties of sugar cane were brought from various parts of the world in cross-breeding experiments.

Instead of taking years of actual crossbreedings, which could have run into the millions, the researchers coded information on genetic characteristics of the varieties and fed the data to the computer in the form of imaginary crossbreedings.

They were able to discard an enormous amount of crossbreeding which would have given poor results, and concentrate on promising strains.

Computers have made things easier in development of most appropriate plants for diverse soil, weather, sun and other conditions.

"So we feel that there will be equal success not only in establishment of the electronic herbarium, but also in classification of botanical species with the aid of electronic computers," says Dr. Pompa.

Emil Zubryn