genes and chromosomes which are the carriers of hereditary characteristics in plants and animals. One of Dr. Krug's mutant trees has very high yields, but the beans are poorly formed.

Most agricultural scientists who have studied the problem are convinced that the only hope for greater coffee production is a combined plant-breeding, modern-methods program to reach every coffee plantation in Latin America.

Nathan Koenig of the Department of Agriculture set up a project on coffee cultivation at the University of Puerto Rico in 1950. Since that time the application of scientific methods has more than doubled coffee yields in Puerto Rico, he reports.

In discussing agriculture in the coffee countries and particularly their coffee culture problems, Mr. Koenig characterized their agriculture as similar to this nation's before the development of new methods, crops and machinery.

Hybrid Plant Needed

What coffee production needs is a hybrid plant and methods that will do for the coffee countries what hybrid corn and new methods did for corn production in this country.

This possible increased production probably would not bring a return to the cheap coffee U. S. housewives dream about. In addition to production problems, coffee processing as now carried on is largely a hand operation.

Cheap coffee died with the start of industrialization in the Latin countries, Alphonso Varela, technical adviser to the Coffee Commission in Washington, reported. The industrialization ended the vast pool of cheap labor which was the basis of cheap coffee.

The fruit of a coffee tree is called a cherry. The seeds of the cherries are the coffee beans. Each cherry usually contains two beans enclosed in pulp and covered with a silvery skin. Pulp and skin must be removed, the beans dried and graded before they can be shipped.

Cooperation on Research

To separate the beans from the pulp and skin, a fermentation process has been used in the past. This process is inefficient, time consuming, and often results in beans of widely varying quality.

A cooperative research program between the United States and El Salvador worked out a chemical coffee curing method that takes less than an hour to free the beans from the pulp. The chemical method utilizes caustic soda.

One of the worst aspects of the fermentation method is that it reduces the weight of the coffee beans by transforming some of the solid materials in the bean into gases that are lost. This loss can go as high as nine percent in a 40-hour fermentation period. Due to its speed, the caustic soda method reduces the weight losses.

Because the plant owner can control the curing time, he can put his whole operation on something resembing an assembly line basis, lowering his costs and producing coffee of uniformly good quality.

Naturally the final test of any coffee processing method is in the cup. According to reports, chemically cured coffee has a better flavor and aroma than the coffee produced from fermented beans.

More research of this type on coffee processing which will substitute machines and chemicals for hand labor will be needed to lower the cost of coffee in grocery stores.

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MEDICINE

Overweight and Cancer

► FOR MICE and men, overeating is dangerous in cancer development.

Formation of cancer tumors has been noticeably blocked in mice that were fed a small proportion of calories, stated Dr. Albert Tannenbaum, director of the Department of Cancer Research at the Medical Research Institute of Michael Reese Hospital in Chicago.

Mice restricted to as much as one-third of their calorie diet lived far longer and maintained their weight more than other mice not restricted calorie-wise, Dr. Tannenbaum pointed out before a group of biologists and graduate students at New York University. In these calorie-restricted mice, no cancer tumors arose over a period of two years, although carcinogenic agents had been injected.

The more restricted the calorie intake, the less the incidence of tumors, he stated.

"The same seems to hold for men also," Dr. Tannenbaum said, pointing out that life insurance records show a definite relationship between overweight and cancer mortality. Cancer incidence increases with increasing weight, insurance reports show.

It takes about one-fifth of the life span of animal or man for a tumor to develop after the patient has been exposed to cancer. Dr. Tannenbaum cited a four- to six-month period between the time cancer has been induced in mice and the sign of the first tumor. For dogs, tumors are noticed two to three years after induction. And for man, 10 to 15 years can pass before the actual lump is noticed.

"This means that the cancer process has been going on for a long while by the time the patient actually notices a tumor and calls his doctor," he said. It is in this time period that caloric diet can restrict the appearance of tumors, the loss of weight and increase the life span of man and animals with cancer.

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