

FOOD TECHNOLOGY

Coffee: Natural or Synthetic?

Today coffee is grown the world over, but natural coffee may in the future be threatened by a synthetic product.

By TOVE NEVILLE

THE COFFEE break is almost as much a daily routine as is the rising sun, but if tomorrow's cup of coffee will be the natural brew or a synthetic concoction, only time can tell.

Although the synthetic coffee is still at the research stage, scientists are confident that it could go into production within a couple of years if only a sufficient amount of money were spent on research. Dr. Albert Zlatkis of the University of Houston has, by the process of chromatography, succeeded in separating 30 components, or parts, of the coffee flavor or aroma. He expects to find at least 50 different components, all of which can be produced very cheaply from common chemicals, such as acetone and corn chemicals.

The research so far completed by Dr. Zlatkis has involved only himself and one research assistant working for a few weeks. In a relatively short amount of time much was accomplished. Encouraging results: The mixture of the 30 components did not taste exactly like coffee, but it was similar. It is expected that when all 50 components have been found and reproduced chemically the result will be coffee flavor.

Now, one might ask, why all this trouble about making a synthetic coffee? What about a new International Coffee Agreement which will cut coffee exports?

The coffee agreement was made among some of the leading coffee producing nations because coffee prices have gone down 50% the last three years. Fifteen Latin countries, Portugal, the French Community and the State of Cameroon agreed to export only as much coffee as each country had produced in the best year out of the last ten, minus 10%.

Still, in the laboratory, the scientists are trying to produce more coffee of a synthetic variety. What is the reason?

Originally the research on coffee flavor was begun in an effort to improve instant coffee. During the last ten years, the consumption of soluble, or instant, coffee has increased steadily to an all-time high in 1958 when 3,600,000 bags of coffee were used in making the soluble variety.

The increased popularity of instant coffee must be accounted for by the fact that it is the quickest cup of coffee available. It is practical, fast and easy to make, and is especially suited to the national institution called the coffee break.

However, there is one drawback to the instant coffee. It does not have the full

flavor of the brewed natural coffee. Unfortunately some of the flavor in instant coffee is lost in the dehydration process, it was reported lately by the Stanford Research Institute, and it was because of this loss that aroma-research began.

But if the natural flavor can be reproduced so the instant brew tastes and smells exactly like coffee, why add it to the instant variety which is already coffee? The next step would logically be to add it to a much cheaper substance, such as any kind of a roasted grain.

This is of course a possibility which has occurred to many, but the big question is: Will the synthetic taste like the real thing?

On this point there are various conflicting opinions. It seems that only the finished



RAKING BEANS — Coffee beans are laid out to dry on concrete patios. A Guatemalan laborer is turning the beans so they will all be exposed to the sun. A very large amount of human labor is required in the coffee harvest, a fact which accounts for high coffee cost.

product will give the answer at the first synthetic coffee break. George Robbins of General Foods, New York, told SCIENCE SERVICE that he was not very optimistic that synthetic coffee would ever capture the real coffee flavor. He also pointed out that stabilizing the flavor would be a difficult problem, and he predicted that the price of synthetic coffee would be higher than that of natural coffee.

Dr. Zlatkis, who headed the Houston team, told Science Service he believed the synthetic flavor could come pretty close to the natural one. At least, it can be approximated very closely, though it may not be exactly like natural coffee.

The synthetic components can be produced very cheaply, he said, and the stabilization problem can be overcome. Dr. Zlatkis saw an important use for the synthetic flavor as an additive to instant coffee, whether synthetic coffee is eventually produced or not.

If successfully and cheaply produced, a completely synthetic coffee will be another replacement of a natural food product by chemistry, just as the synthetic vanillin has largely usurped the place of vanilla from the natural bean. What the price of the finished product on the grocer's shelf will be is anybody's guess.

Yet even more important to consider are the economic repercussions a synthetic coffee selling cheaper than natural coffee might have on the coffee-growing nations.

In Latin America alone, where coffee is the most important commodity, 14 countries are dependent on the coffee consumption of the world. The Western Hemisphere now grows about three-fourths of the world's coffee.

Of the total world export of coffee in 1958, amounting to 36,552,000 bags (each weighing 132.2 pounds), Brazil supplied 35.2%, Colombia 14.9%, Mexico 3.6%, El Salvador 3.8%, Guatemala 3.3%, Costa Rica 2.1%, Ecuador 1.4%, Venezuela 1.6%, Dominican Republic 1.2%, Cuba 0.3%, and Honduras 0.5%. These countries comprise the Pan-American Coffee Bureau which together exported 67.9% of the world's coffee. Other Western Hemisphere nations, Haiti, Nicaragua and Peru among them, produced an additional 4.1% which brings the full export figure for the Americas up to 72%, or 26,314,000 bags, of all exported coffee for 1958.

The total export for Africa, including the countries of Continental French Africa, British East Africa, Angola, Belgian Congo, Madagascar, Ethiopia, Spanish Africa and others, amounted to a little over 9,000,000 bags, or 24.7% of last year's exports.

Exports from Asia and Oceania with Indonesia, India, Yemen and others, amounted only to something over 1,000,000 bags, or 3.3%, but considering the over-all world picture, a major economic revolution would

have to take place in many of these countries if natural coffee became superfluous.

The giant coffee industry had modest beginnings in the western half of the world. In the 17th century when coffee was first sold in England, it was described as a berry, growing on little trees only in the deserts of Arabia, which was boiled into a drink after being dried and ground to a powder. It was said to aid the digestion, quicken the spirit, and make the heart light, and it was considered a good remedy against dropsy and scurvy.

In the 18th century coffee became widely used in England, where it was drunk in the famous coffee houses where men of culture and learning gathered to discuss the current political developments or settle their disputes as to the latest literary and scientific theories.

The coffee plant was introduced to the Caribbean by the French and English and to South America by the Dutch early in the 18th century. The plant thrived so well that it soon became a general crop in all of tropical America.

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Questions

ASTRONOMY—What was the first discovery made with the 120-inch telescope? p. 339.

MEDICINE—What are the names of two tuberculosis vaccines used in Great Britain? p. 341.

TECHNOLOGY—How much will the completely loaded core of the reactor at the Dresden nuclear power station weigh? p. 342.

VIROLOGY—What might be achieved if the cow adenovirus is related to a human adenovirus? p. 344.

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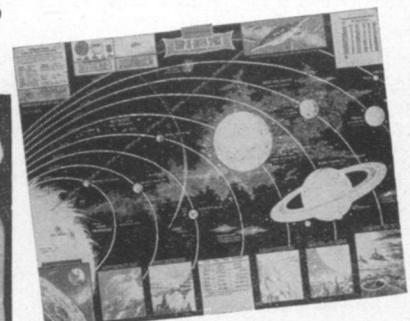
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