

Chocolate Craze Growing

Is Americans' passion for chocolate a passing infatuation or a lasting love affair?

Once considered an indulgence permitted only on special occasions, chocolate has become a prestigious treat for just about any time.

"People are very aware of nutrition, but they will cut down calories somewhere else so they can eat chocolate. There definitely has been a growing chocolate craze in the past two years. People can't seem to get enough of it," according to Linda Funk, home economist at Ambrosia Chocolate Co. in Milwaukee, Wisconsin.

U.S. Department of Commerce's Bureau of Industrial Economics statistics show Americans consume approximately 16 pounds of candy per capita each year. Approximately 9 of these pounds are made of chocolate. Since 1979, more than $\frac{2}{3}$ of confectionery producers' sales have been chocolate and chocolate-type candy, the bureau reports.

While some consumers aren't choosy about the kind of chocolate they consume, Funk said a growing number are buying the more expensive ones. "It has to do with European influence," she said.

Mike Schaff, Ambrosia's technical director, explained it this way: "In Germany and throughout Europe, chocolate is looked on as a fine wine is here. There's a certain pride associated with eating fine chocolate that is catching on here."

Author-illustrator Sandra Boynton's humorous best seller, *Chocolate, The Consuming Passion*, claimed "Research tells us that fourteen out of any ten individuals like chocolate." Manifestations of a chocolate craze include specialty shops offering high-quality expensive chocolate, chocolate trade

shows and festivals and fad items with chocolate as the theme. Cookie chain stores, particularly those featuring chocolate chip cookies, have helped promote chocolate sales. A Minneapolis confectioner has concocted a chocolate-fudge cologne. A New York-based company, Chocolate Photos, offers cameos on dark or milk chocolate copied from photographs. Meanwhile, a quarterly magazine, *Chocolatier*, has been established "for chocolate lovers."

According to the September 1983 issue of the *Manufacturing Confectioner*, chocolate trade shows and festivals have become prevalent during the past 3 years. Those sponsored by

hotels traditionally hand out free samples to attract people to their establishments, while independent promoters charge admission fees to their chocolate-tasting binges. In addition to samples, such events commonly include demonstrations and lectures on chocolate topics, taste panels and food consultants. Some have drawn as many as 7,000 chocolate enthusiasts, the *Manufacturing Confectioner* reported.

Trends include both a heightened awareness of chocolate and a push by the industry to educate consumers about the nutritional value of candy. Such chocolate companies as M&M/Mars and Hershey print the nutritional

Table I

U.S. Imports (in million pounds)

	1980	1981	1982
Cocoa beans	332.6	548.7	435
Cocoa liquor	96.5	73	69.2
Cocoa butter	76.4	95.2	82.3
Cocoa powder and cake	144.6	171.7	133.5
Chocolate	60.5	55.7	82.2
Sweetened cocoa	0.4	1.7	N.A.
Confectioners' coatings (chocolate)	0.7	0.8	N.A.

Source: U.S. Department of Commerce, USDA Foreign Agricultural Service.

Table II

U.S. Exports (in million pounds)

Cocoa butter	1.0	1.3
Cocoa liquor	1.2	0.4
Cocoa powder, sweetened and unsweetened	6.1	6.6
Cake and other residue	4.4	2.9
Confectioners' coatings (chocolate)	18.1	5.3
Sweetened chocolate	2.5	7.9
Other chocolate preparations	4.5	4.0
Confectionery, cocoa or chocolate	16.4	22.1

Source: U.S. Department of Commerce.

Feature

content of their candy bars on the wrappers.

The Chocolate Manufacturers Association of the U.S.A. reports that a 1.5-ounce bar of milk chocolate, the most popular chocolate in the U.S., supplies the following percentages of U.S. recommended daily allowances: calcium, 9%; riboflavin, 9%; protein, 6%; iron, 3%; vitamin A, 2.4%; thiamine, 2%. It also notes that the addition of nuts increases these nutrient values. One-third of the content is fat.

Those in the snack industry point out that chocolate and chocolate-type confections are the best-selling candy snacks. In 1982, chocolate and chocolate-type confections accounted for 68.2% of confection sales and 53.8% of total pounds sold, according to the July 9, 1983, *Food Institute Report*. Approximately 2 billion pounds of these products are sold annually in the U.S.

Chocolate all begins with an imported commodity, the cocoa bean. Approximately 3.5 billion pounds of cocoa beans are produced worldwide each year. According to *Swiss Economic News*, the U.S. is the largest importer, handling more than 20% of the world's supply of cocoa and cocoa products (Tables I and II).

Cocoa beans come from the cacao (ka-ka'-o) tree, *Theobroma cacao*. *Theobroma* means "food of the gods," a theme on which some chocolate firms capitalize. The tree is cultivated in West Africa, South America, Central America and the Far East. The leading cocoa-bean producer is the Ivory Coast, with almost 25% of the world's output. Brazil is the second largest producer.

Trees begin bearing fruit when they are 3-5 years old and produce for 30-50 years. Beans are harvested, allowed to ferment up to 7 days then dried in the sun or a mechanical dryer. Cocoa beans are 88% nib and 12% shell on a dry basis. Fat content of the roasted nib and shell is 55% and 3% respectively. Calculated fat content of the whole bean, on a dry basis, is 48.7% (nib fat 48.4%, shell fat 0.3%).



Groves of cacao trees, like that shown above, grow in tropical parts of the world.

Jack J. Ward, president of Barretto Peat Inc., said Brazil leads the producing countries in grinding beans "and is even running neck and neck with the U.S. as the largest grinder of beans in the world."

The flavor of chocolate varies, depending on the geographic area where the cocoa beans were grown, as well as the way the beans are roasted and the type of milk fat used. West African cocoa is held up as the standard to which others are compared.

In the U.S., chocolate manufacturers obtain cocoa beans in large bags shipped from overseas or buy cocoa butter already extracted from beans. At a chocolate factory, beans are dumped into a hopper where a vibrating screen separates out sacking fiber, grit and other extraneous materials. The beans then are cleaned and stored in silos. From the silo they are transported to another bean cleaner or to a roaster.

At the Ambrosia Chocolate factory in Milwaukee, the beans are roasted with the shell on, although some manufacturers prefer to remove the shell first. One drawback with roasting before removing the shell is that some loss of cocoa butter to the shell occurs, Ambrosia's Mike Schaff said. The roasting, he explained, kills any bacteria in the nibs and helps develop the chocolate flavor.

After roasting, the beans are trans-

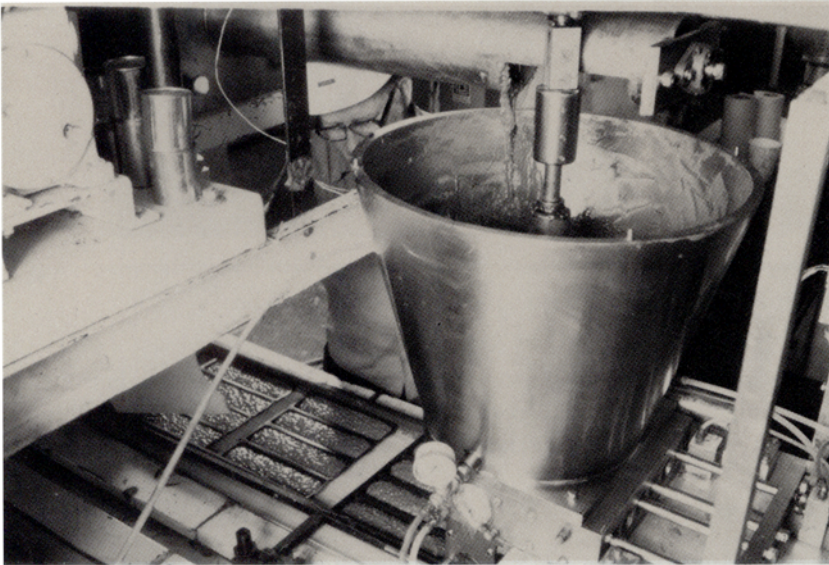
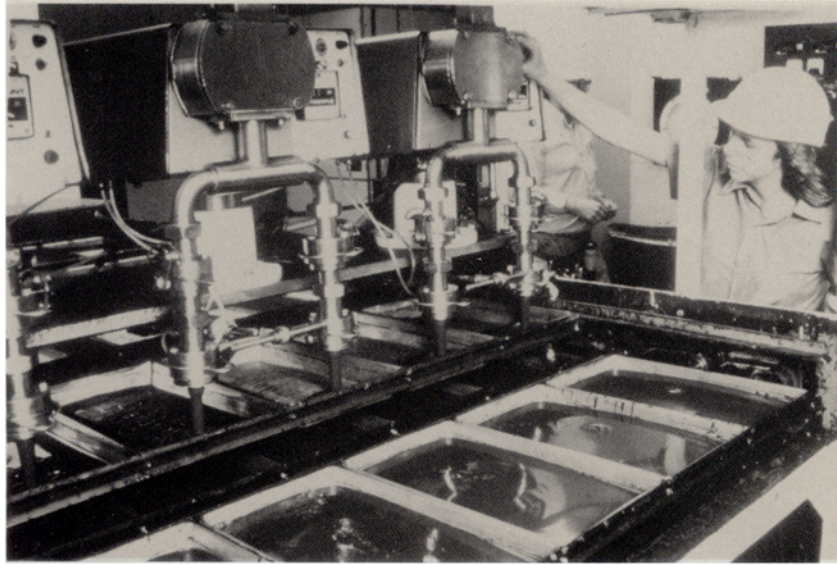
ported via a bucket elevator to a cracking machine where rollers break the beans, separating the nib, which is pure chocolate, from the shell. The shells are suctioned off with a vacuum while the nibs undergo continuous screening, then are stored for grinding.

The nibs are run through a crusher, or pregrinding mill, where they are ground into a heavy slurry. This semi-liquid paste, called chocolate liquor or mass, is a mixture of cocoa butter and cocoa solids. It then is reduced in particle size with liquor mills. Hydraulic presses squeeze out the cocoa butter from the chocolate liquor. Some fat can also be obtained from solvent extraction of shell particles. The cake that remains is broken down into cocoa powder.

Cocoa butter requires no refining and is used in chocolate and confectionery manufacturing as well as for specialized uses in soaps, pharmaceuticals and cosmetics. Most, however, is used in manufacturing chocolate confections and coatings for chocolates and candies.

Chocolate manufacturers can make a variety of products from chocolate liquor, cocoa powder and cocoa butter. These include sweet chocolate, milk chocolate, bitter or bittersweet chocolate or compound coatings.

Chocolate is formulated with chocolate liquor, sugar, whole milk powder, flavorings, butter oil, cocoa butter and lecithin. The finished

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Chocolate-handling equipment drops the brown liquid into molds of various sizes and shapes. Among the finished products are 10-pound blocks of glossy chocolate.





When opened, mature pods from the trees each yield approximately 20 to 40 beans.

product is judged on the basis of its color, flavor, fineness, viscosity, fat content, liquor content and milk solids. The formula for milk chocolate includes 10% or more chocolate liquor and 12% whole-milk powder. For bittersweet chocolate, the formula must include at least 35% chocolate liquor.

To make milk chocolate, the confectioner mixes chocolate liquor, whole milk, sugar, butter oil, nut pastes and flavors with enough cocoa butter to form a soft paste. The mixture is mechanically refined and additional cocoa butters and emulsifiers are added to reduce the chocolate to a workable viscosity. Conching, a mixing process, is used to help develop flavor and texture. This is followed by tempering, a process of cooling the liquid chocolate with various types of heat exchangers.

The butter oil (from whole-milk powder) or anhydrous butter oil is added to the chocolate formula

because it partially inhibits cocoa-butter fat bloom and a certain concentration is required by FDA Standard of Identity laws for milk chocolate. Because adding 4% butter oil tends to soften the chocolate, some candy makers prefer to use 2% to retain "snap" in the chocolate texture. Dehydrated milk products used include milk crumb, dry whole milk and dry skim milk.

Soy lecithin is the main and the least expensive emulsifier used to improve the fluidity of chocolate, particularly for enrobing. Lecithin is added at levels of 0.2-0.5% during refining and conching to reduce viscosity. Levels above that can make the coating more viscous. Bernard Minifie, in *Chocolate, Cocoa and Confectionery: Science and Technology* (2nd Edition), wrote, "Chocolate with a working viscosity for molding or enrobing can be prepared with much lower cocoa butter content if lecithin is present, and since cocoa

butter is an expensive ingredient, the economic value of lecithin is obvious."

Another emulsifier that has been developed is a synthetic phospholipid, YN, by Cadbury Brothers Ltd. YN, which can be used in concentrations up to 0.9%, is designed to help prevent off flavors in milk chocolate. Lon Wilson, national and international technical service representative for Durkee Foods, said YN may be used alone or with lecithin to reduce viscosity. In Europe, polyglycerol ester is allowed as a gloss enhancer and bloom retardant. In the U.S., however, the chocolate standards do not allow its use.

Although specialty fats can be used to provide less expensive, chocolate-type products for general consumption, these will never replace America's fetish for pure chocolate.

For chocoholics, there can be only one "food of the gods"—chocolate.