

The Home Forum®

They put the flavor in what you eat

WHEN it's time to pick strawberries, Dennis Kujawski goes to his laboratory instead of the berry patch. You see, he creates the flavors in many foods you enjoy. Take strawberry yogurt, for example. It's not the fruit that gives most yogurt that strawberry flavor. Read the label: Does it contain "natural and artificial flavors"? Then Mr. Kujawski and his fellow scientists probably cooked up those flavors by blending natural oils and chemicals in a New Jersey lab.

Kujawski's office looks like a science classroom. Shelves are filled with little vials. Each vial contains a different liquid. To an untrained nose (such as this reporter's), each liquid smells vaguely familiar. One smells like cut grass and another like a green apple. Others have a hint of butter or lime or cotton candy. All these scents are important in creating a food flavoring because, Kujawski says, 85 percent of a flavor comes from its smell. Kujawski's job is part art and part science. Picking out the right ingredients for a flavor is like composing music or painting a picture. When he talks about adding flavors, he asks whether it adds the right "note."

He is one of many "flavorists" who work at International Flavors & Fragrances (IFF) near Princeton, N.J. Each year, they create flavors for hundreds of foods - from candy and cereals to soups and marinades.

Some flavors are based on the taste of familiar, natural products - like strawberry or chocolate. But many flavors we recognize are completely made up: cola and fruit punch, for instance.

How about a hamburger-flavored potato chip?

One snack-food company asked for a new flavor for a potato chip. They wanted it to taste like an entire hamburger, with pickles, ketchup, and meat. IFF made the flavor, but the chip never reached supermarkets. (Maybe the makers had second thoughts about its potential success. See story on facing page.)

IFF even creates flavors for dog food. Dogs have very sensitive noses, but it's usually the owner who is more picky about the smell.

It's a fun job, Kujawski says, but it's not easy. Flavorists usually study chemistry or biology in school. They must work for years as apprentices to train their nose and tongue to recognize thousands of ingredients. Kujawski first worked for a food company as a summer job in college. As a kid, he liked science and experimenting.

Just as a painter must learn how different colors go together, Kujawski says he had to learn how different flavor "characters" interact. Flavors may change when heated or frozen. He had to learn the language used to describe flavors.

Most flavorists develop a specialty. Kujawski's is sweets. He's most proud of a tea flavor he created for use in China. He developed the flavor here, without ever visiting China. Still, the flavor is very popular there.

Creating a flavor starts when a food company calls up with a new idea for a product. Flavor scientists first need



INTERNATIONAL FLAVORS & FRAGRANCES

HOW ABOUT THIS ONE? Children serve as testers, rating the flavors developed by flavor scientists at International Flavors & Fragrances. Testers are isolated from each other so they don't compare.



'FLAVORISTS' AT IFF
ARE CHALLENGED TO
CREATE A 'NEW
STRAWBERRY' OR A
'BETTER CHOCOLATE.'

to know something about the idea behind the product. Will adults or children be eating it? Is it supposed to taste natural? Extra sour? Are there other considerations that might affect what ingredients are used? (Non-kosher ingredients might offend Jewish consumers, for instance. Nonvegetarian ingredients might upset Hindus.)

Not every food that's supposed to taste like strawberry gets the same flavoring. Strawberry yogurt for adult consumers tastes different from strawberry in red-licorice candy or in ice cream. (Ice cream needs a "seedy" flavor, Kujawski says.)

The flavoring's ingredients may be natural or artificial. Natural flavors may include lemon oil, orange oil, even rose oil. An oil's flavor may depend on how it was extracted. If you grind up a lime and heat it, the resulting oil is sweet-smelling. Extract the flavor from the peel without heating, though, and it smells more like a fresh lime.

Getting oils that way is very expensive, though, so artificial flavors are often used. These flavors can be created from ingredients that are present in natural foods but have been manufactured in a laboratory. (Vanillin, or artificial vanilla flavor, is made from wood pulp. But it's chemically almost identical to "real" vanilla, made from vanilla beans.) Some of these flavors are so strong that only a few parts per million - or parts per billion - are needed to add a flavor. That's like putting one drop in a swimming pool of water. By themselves, some of the ingredients may not smell very good, such as one that adds a "ripe" note to a flavor's "profile."

Tastes change. IFF employees do research to find what new flavors are popular - especially among kids. Children like intense flavors. Today's kids seem to like new combinations of familiar and different tastes and sensa-

tions, says IFF's Amanda Smith. She tries to find out what kids like. (They seem to enjoy kiwi/lime fruit juices and crackling candy in ice pops.)

Still striving for 'the perfect strawberry'

Even after creating flavors for 29 years, Kujawski says it's still a challenge coming up with new versions of familiar flavors like chocolate and strawberry. But he's willing to keep trying to produce the perfect strawberry flavor. "Like an artist or a photographer," he says, "you think, 'Gee, I could have done that better.'"

Sometimes, the scientists start with a strawberry flavor they've already created. The labs are full of bottles of "finished" flavors that smell like marshmallows, smoked meat, or blueberry pie. Usually, though, they start a new flavor from scratch, drawing on the hundreds of vials in rotating spice racks lining the walls of each lab.

Either way, flavorists have to work fast: Clients usually want the finished flavor in just a few weeks.

Once the flavorists are satisfied with a few options, another group of scientists add the flavor to a sample of the new food. IFF has many kitchens where technicians can bake a cake, make chewing gum, or put soup in cans.

IFF tests its flavors by asking people to try it. Sitting in small testing booths, different versions of a product are passed to employees and even to children.

The taste-testers rate the flavors, writing answers on a computer screen. Is the flavor too strong or too weak? Too sweet or too sour? There's also a small sink so you can rinse out your mouth between samples.

If the kids don't like what they taste, scientists must go back and try again. When the flavor is finally ready, IFF makes big batches of it to sell to the food company. The food company adds the flavor to the product at the factory. The exact formula is always a secret.

CORRECTION

Because of an editing error, Gen. Dwight (Ike) Eisenhower was deprived of one star in a photo caption that ran June 11. (See: "How do you do, Mr. President?" page 18.) General (later President) Eisenhower had five stars, not four. The five-star rank was created in World War II and bestowed on George Marshall, Douglas MacArthur, Eisenhower, and Henry Arnold. Three US Navy admirals also had five-star rank in that war: William Leahy, Ernest King, and Chester Nimitz.

The museum of food failures

NO MATTER how hard designers try, not every new supermarket product is a success. Take the egg designed to cook in a toaster, for example. Or the deodorant that smelled like cucumbers.

Those are just two failures collected by Robert and Jean McMath. They have spent decades snatching up 70,000 new foods, drinks, and beauty supplies.

That's twice as many items as you'd find in a large supermarket. And that doesn't even count the ones that raccoons ate in the collection's old home (a barn).

They're all on display in a former car showroom in Ann Arbor, Mich., called the NewProductWorks Product Collection. The packages are arranged by category on grocery-store shelves. There are 12,000 drinks alone! But it's only open to companies who want McMath's firm to consult on new product ideas for a fee.

Most of the packages are empty. The products would simply melt or spoil, since they are not stored in refrigerators or freezers. Bugs would eat the snack foods. Some drinks would eat through the cans if they sat too long.

But the McMaths and their friends do get to sample everything before adding the packages to their collection. Even after trying so many different foods, Mr. McMath still gets excited about some new ideas, like colored ketchup. He still isn't sure chocolate french fries are a good idea. "Nobody wants to try them," he says.

The McMaths keep finding new products in visits to supermarkets, drug stores, and trade shows where manufacturers show off new products. The couple says it's hard for them to go to shopping and just buy a few groceries. "There's always something new to see," he says.

Such trips add between 5,000 and 7,000 new products to the collection each year. But that's just a small part of the 30,000 new packaged products introduced annually. Most fail. Just one or two out of every 10 new products succeed.

Why doesn't a new product catch on? It may taste bad. Or it may change something that people like. When Coca-Cola introduced "New Coke" in 1985, it flopped. Pepsi found few takers for "Crystal Pepsi," a clear cola, in 1992.

People may find a product difficult or

confusing to use. For instance, Planter's introduced a new package for its peanuts: a coffee-style can. Some customers thought it was a new kind of coffee and wound up ruining their coffee grinders trying to grind the peanuts like coffee.

A new product may have a strange or hard-to-pronounce name. Or the name of the product may be hard to read. Many "copycat" products fail, too. When one manufacturer comes out with a successful new product, others may try to duplicate their success with a similar item.

Companies thinking about introducing new products come to the McMaths' "supermarket" to learn about what didn't work in the past. It may cost millions of dollars to create a new food product, design its package, and advertise it. They can save a lot of money by studying previous failures.

Next year, the McMaths plan to retire. But Mr. McMath doubts he'll ever be able to go to the grocery store and come back with just a few items. "If we see something new, we'll probably still want to try it ourselves, particularly if we thought it was something crazy."

S.S.

Some notable flops

Garlic Cake: It was supposed to be served with sweet breads and meats. But the company forgot to list ways to use the product on the package. Consumers wondered, "What is garlic cake, and why on earth would I buy it?"

'Hey! There's a Monster in My Room': This 'monster buster' room-freshener spray smelled like bubble gum. It was supposed to give parents a way to ease their children's fear of bedtime 'monsters.' Instead, it scared kids even more.

Gerber's Singles: Small servings of fruits, vegetables, and entrees came in the same jars used for baby food. But adults didn't like eating out of jars, and the name of the product made them feel lonely.

S.S.



COURTESY OF NEWPRODUCTWORKS

THEY STAYED ON THE SHELVES: The NewProductWorks Product Collection in Ann Arbor, Mich., has more than 70,000 products that didn't 'click' with consumers.

TODAY'S ARTICLE ON CHRISTIAN SCIENCE

Bringing a spiritual perspective to daily life

How to stay free

THE GROUP OF PEOPLE had escaped from a country where they'd been used as forced labor. They had been promised a life of freedom by their leaders, but, having escaped the pursuing army, they now found themselves in a desert. They were frequently hungry and sometimes without water. Even though these needs were often supplied miraculously, there was a disquiet and disorder that did not bode well for the preservation of their freedom.

Willis F. Gross, addressing an Annual Meeting of the Church founded by Mary Baker Eddy, who also founded this newspaper, spoke of these people in the Bible who have come to be called the children of Israel: "An unknown wilderness was before them, and that wilderness must be conquered. The law was given that they might know what was required of them, that they might have a definite rule of action whereby to order aright the affairs of daily life" ("The First Church of Christ, Scientist, and Miscellany," pg. 43).

A driving force behind the children of Israel's escape to freedom was their desire to serve the one God that had been revealed to their forefathers. To serve Him meant being obedient to His law, and, as yet, those laws had not been codified. Moses realized that neither he nor his appointees could settle the many controversies brought to them without having a fundamental and coherent foundation of righteous law. It was then that his prayers were answered with God's gift of the Ten Commandments.

Although those Commandments continue today as a basis of Western secular law, their essence is spiritual and of broad interpretation.

An interesting read of the Bible is to discover how the specific, pragmatic laws become more merciful as the nature of a beneficent and universal God becomes more apparent. Attempts to free punishment for a crime from mere revenge resulted in laws that demanded that the punishment duplicate the crime. Eye for eye and tooth for tooth became the law (see Exodus, chap. 21). This was an improvement over harsher existing customs.

Years later, however, the man who thoroughly understood God moved law both upward and inward. He had a

higher understanding of God as Love, and a conviction that the hearts of humanity should be obedient to this law. His teaching was the fulfillment of Jeremiah's prophecy that God would put His law "in their inward parts, and write it in their hearts" (Jer. 31:33).

Jesus said, "Ye have heard that it hath been said, An eye for an eye, and a tooth for a tooth: but I say unto you, That ye resist not evil." Then he added what is so familiar to us today - to turn the other cheek and go the extra mile: "Ye have heard that it hath been said, Thou shalt love thy neighbour, and hate shine enemy. But I say unto you, Love your enemies ..." (Matt. 5: 38, 39, 43, 44). Then he gave specificity to the law of Love, that we should bless, do good to, and pray for those enemies.

This presents a standard higher than the laws of any nation or the motives that any individual consistently achieves. As an ideal to aim toward,

Every enslavement eventually breaks up as we learn what it means that God is Love.

this teaching provides for more humane laws and secures greater obedience to them, which is essential to maintain freedom from both oppressive law and debili-

tating lawlessness.

Obtaining political freedom and democratic governments, as important as that is, is not an end in itself. It is, rather, an impetus and protection for other freedoms - freedom from discrimination, limitation, poverty, even freedom from oppressive social and human relationships.

The list is long of those things that enslave humanity, but every enslavement eventually breaks up as we learn what it means that God is Love and pray to have that love of Love in our hearts. As the Bible states, "Love is the fulfilling of the law" (Rom. 13:10). It is this law of Love, progressively obeyed, that ensures continuing freedom.

Stand fast therefore in the liberty wherewith Christ hath made us free, and be not entangled again with the yoke of bondage.

Galatians 5:1

Monitor the world five days a week

- 3-month trial \$59
 6-month trial \$109
 Check/money order enclosed. Bill me, please.

Name _____

Address _____

City _____ State _____ Zip _____

Offer available only in the U.S.A.

S02M1

Mail to:
 The Christian Science Monitor
 P.O. Box 98
 Boston MA 02117-0098, U.S.A.

Or call toll-free: Daily Edition Only.
New Orders Only.

1-800-456-2220

Mon.-Fri. 9 a.m. to 5 p.m. ET.