

the copper domed brewing kettles, Morton Meilgaard observes a bubbling vat of beer.

Science hops to challenge of producing beer

It last night's beer tasted a bit like apples or choses, Morton Mellgaard knows why a strange flavor came between you and your brew.

Mellgaard of Birmingham is the divector of research and development for the Stroh's Brewing Co. After five years of research, he pinponted 850 chemical compounds that occur during ermentation and can affect a beer's flavor.

The analysis, which earned him a doctorate from the Royal Technical Indiversity of Demmark in Copenhagen, revealed eight times more compounds in beer than program that, purified more than 350 compounds and determined their relevance to 122 flavors that have been dentified in beer.

MOST BEFERS contain from 30-40

MOST BEERS contain from 30-40 flavors. Occasionally, interaction between chemical compounds results in the inclusion of flavors the brewer

ween comment compounds results in the inclusion of flavors the brewer didn't intend to bottle. For example, an apple flavor in beer is easied when fermenting slicohol and an acid form elwiph beamonie, a flavor compound found in apples. A desivative of hops, isovateria catel leasts beer a compound found in apples. A desivative of hops, isovateria catel leasts beer a compound found the flavors they cause, people recognized mediocre beer. However, when they wanted to describe the unwanted taste, they were at a loss for a common reference.

One man's burnt sugar taste is another man's toffee taste. A standard list of the state descriptions Meligard helped compile calls both sensations a caramel flavor. The list was compiled in conjunction with the Subcommittee of Flavor Testing for the American Society of Brewing Chemists.

Other flavors, such as hannan, are present in the beverenge of the drinking public. Meligard is old the chemical compounds the state.

UNINER OTHER SERSES. Laste.

UNLIRE OTHER senses, taste hasn't been the subject of many classroom discussions. Teachers play records to acquaint studenes with guidelines for listenines with guideness of the subject of the subject

to look at certain tetails, Meligaard said to look at certain tetails, Meligaard and a child learns to describe flavors in dood and beverages by observing adult reactions and comments.

"Sometimes people learn the wrong term from childhood," Meligaard said. In a survey of college graduates, one of seven people incorrectly called citrus flavors bitter instead of sour. One of 15 people called quinine sour instead of bitter, he said with the control of th

careful and not believe the analysis if your tasters disagree.
"The tasters are always right."
Those guns of the tastebud practice their art in a small room that resembles a library more than aber hall. Wood-paneled partitions built like study carousels contain waist-high tables. On each table is a tray with six glasses and a detailed score sheet.
"That little room down there is more important than the equipment up here," said Meligaard, gesturing to other rooms near his office filled with expensive stallness stell equipment used to analyze beer.

sive stainless steet equipment analyze beer.

It was in the nearby laboratories that chemical tests were used to create the firm's new beer, Signature.

"We used every trick in the book," said Meilgaard, who was part of the team responsible for the beer.

the big breweries and all of the institutions.

TEST FORMULAS were brewed in
the laboratory before the final version
of the beer was produced in the firms
large brewing rounds to some the short
street from Meilgaard's office in the
firm's manufacturing complex, which
has the atmosphere of a small village.
Up the street from the brewing area is
the ice cream plant, which kept the
company alive during Problibition.
Inside the brewing building, Meilpaard walks around the large copper
kettles, opening the stiding doors in the
gold-domed filed to offer a view of bubbling beer.

Meilgaard's beer career began by accident. In 1947, when he was a chemical test was needed.

At the time, he was director and
rewing consultant for Alfred JorgenAfter 10 years with the firm, he
rewing consultant for Alfred Jorgenmelled the school to place students in
indistrial laboratories. Mielgaard, was
placed in a brewer's hoge laboratory.

"It tickled my fancy," he said He
also was looking for a topic for a doctoral thesis.

'The taster is always right.'

- Morton Meilaaard

"I didn't think it would take until I was 54," he said.

HIS RESEARCH into the chemical properties of beer and ways in which brewer's can control the taste of their product isn't completed.

product isn't completed.

"There are lots of parts on the map that need to be filled in. We can explain maybe about half.

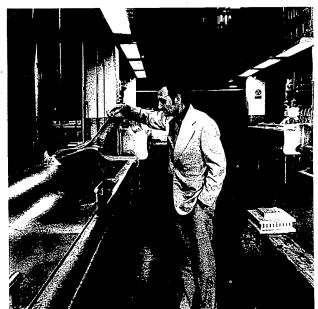
"The other half is vacant. But we are doing it. Research is taking place in all the big breweries and all of the institutions."

tions."

His fascination with the subject was fueled by his experience as a consultant to breweries.

a chemical test was needed.

At the time, he was director and brewing consultant for Alfred Jorgensen Laboratories in his native Copensen Laboratories in his native Copensen. Atter 10 years with the firm, het append at years as a resolution of the firm, het append to the compensation of the properties of the properti



Litting another door, Morton Meilgaard (above) in the lab, Meilgaard (left) confers with Dr. Karl spects the wort, a solution of sugars obtained Siebert, manager of Stroh's research and development lab.

