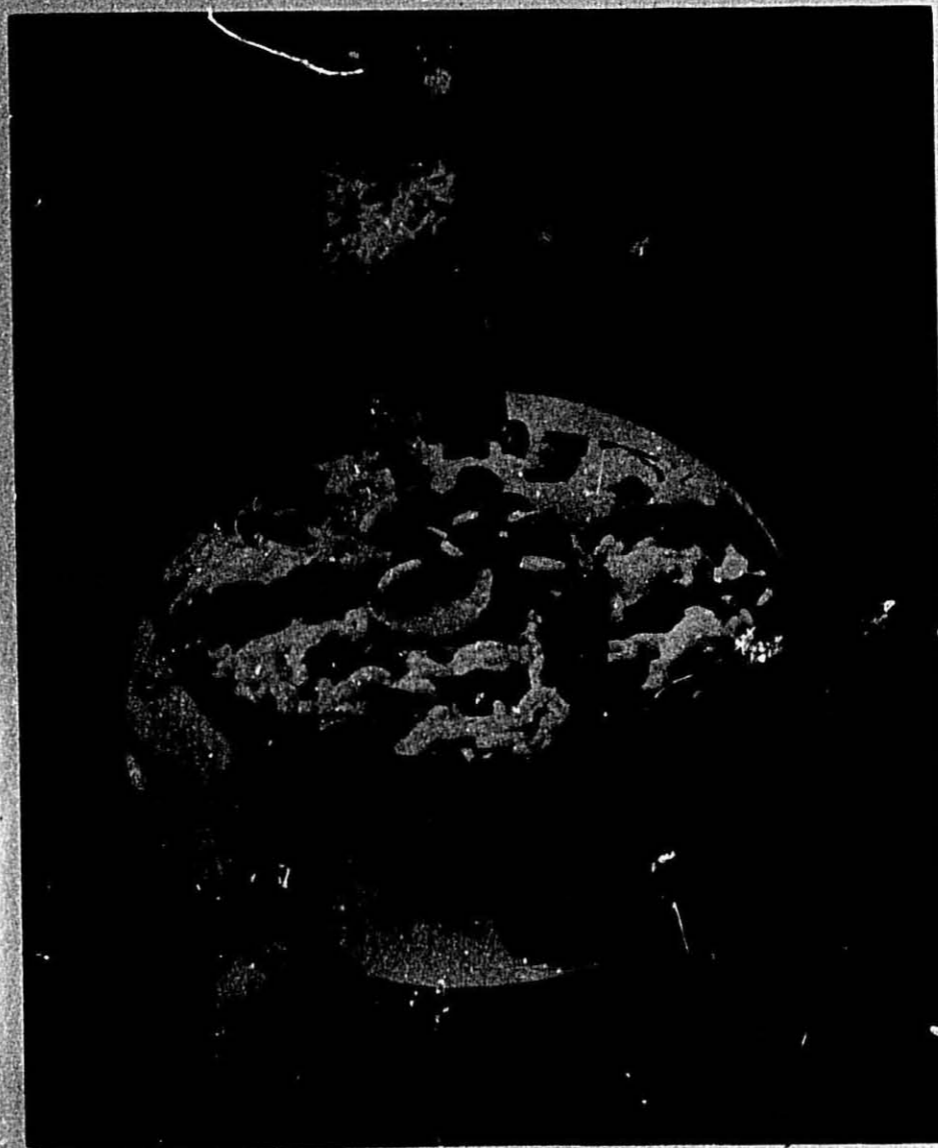


**THE  
MACARONI  
JOURNAL**

**Volume 58  
No. 1**

**May, 1976**

#632  
*Macaroni Journal*  
MAY, 1976



Macaroni California

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**Fibreboard**

## The Macaroni Journal

May  
1976  
Vol. 58  
No. 1

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19 South Bothwell Street, Palatine, Illinois. Address all correspondence  
regarding advertising or editorial materials to Robert M. Green, Editor,  
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### Editor's Notebook:

As we go to press the Plant Operations Seminars in North Hollywood, California, and Dearborn, Michigan, are before us. They will be reported in the next issue.

The 72nd Annual Meeting of the National Macaroni Manufacturers Association in this Bicentennial year will be held in Colorado Springs in the last week in June. Particulars on page 31.

Spring is early this year and durum planting is off to an unusually good start. A technical paper from the North Dakota State University Experiment Station begins on page 18.

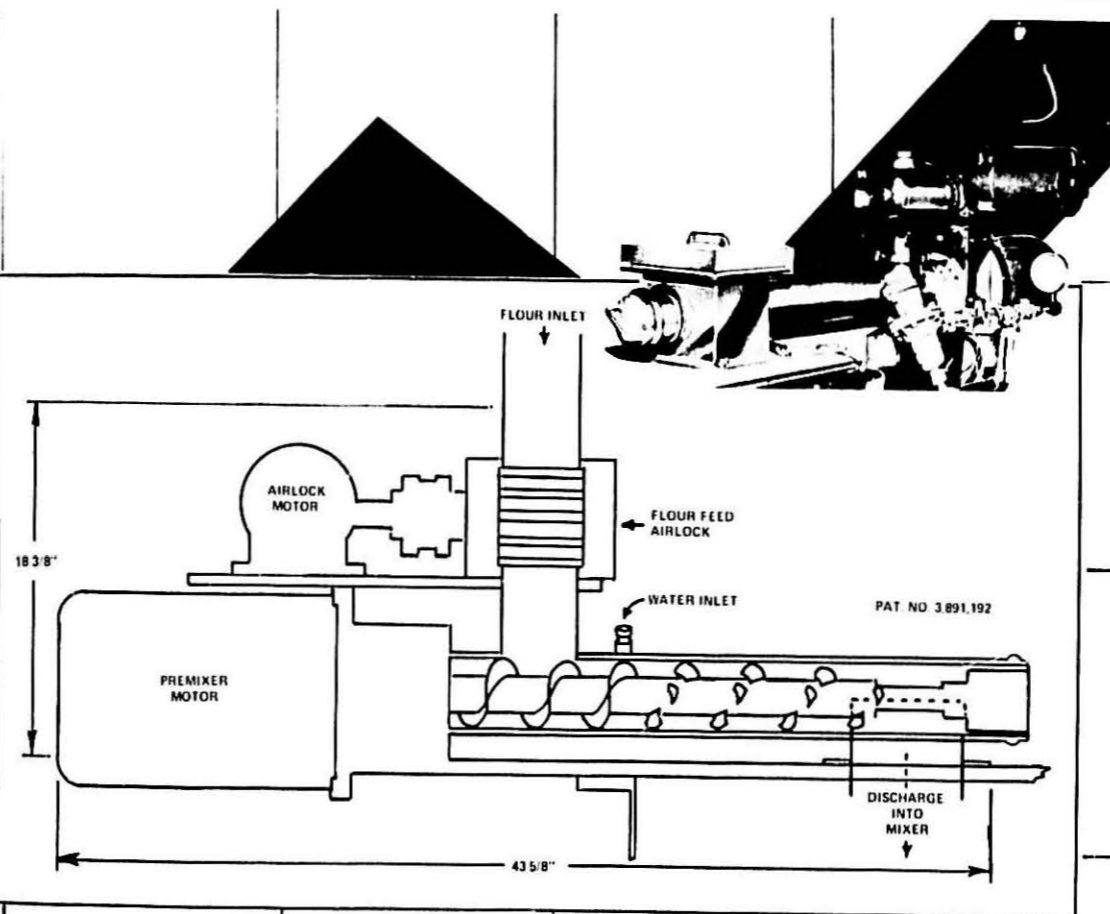
### Small Business

The 13,000,000 American enterprises making up the small business community account for 97% of all U.S. firms, 43% of U.S. business output, one-third of gross national product, 52% of all private employment and more than one-half of all major inventions.

Some of the problems of small business are discussed on page 30.

Next month we will bring you some ideas on planning for succession in the family business.

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## Go California— With Macaroni

How fortunate we are to live in such a vast country, with such variety of terrain and climate. There's an area where the finest durum wheat in the world is grown: this special wheat is used to make macaroni products. There are places favoring the raising of large herds of animals for meat. And other spots for fruits and vegetables. With such efficient methods of food manufacture and processing plus swift transportation, we might truly call our country "America, the Bountiful." We're thinking now of just one state, California, which produces a fantastic array of fruits and vegetables for the whole country. We've chosen a few of the sunny state's products to combine with macaroni for delectable and nourishing main dishes.

### Casserole Concoction

Macaroni California is a casserole blending elbow macaroni with oranges and ripe olives in an interesting sauce. Chopped almonds add the final exotic touch to a delicious dish. Kraut and Frankfurter Sauce is a natural with egg noodles; and when you add California seedless raisins, you have a recipe far from ordinary.

### Macaroni California (makes 4 servings)

1 tablespoon salt  
3 quarts boiling water  
2 cups elbow macaroni (8 ounces)  
2 tablespoons butter or margarine  
2 tablespoons flour  
1 cup milk  
¼ cup French dressing  
8 slices bacon, cooked and crumbled  
½ cup sliced ripe pitted olives  
¼ cup chopped almonds  
salt and pepper  
2 medium oranges, pared and sliced

Add 1 tablespoon salt to rapidly boiling water. Gradually add macaroni so that water continues to boil. Cook uncovered, stirring occasionally, until tender. Drain in colander.

Meanwhile, melt butter. Add flour; blend. Gradually add milk and cook over low heat, stirring constantly, until thickened. Add French dressing; mix well. Combine macaroni, bacon, olives, almonds, salt and pepper to taste and French dressing mixture;



Spring Salad

mix well. Turn into buttered 2-quart casserole. Top with orange slices. Bake in 350° (moderate) oven 30 minutes. Garnish with cooked slices of bacon and whole blanched almonds, if desired.

### Egg Noodles with Kraut Frankfurter Sauce (Makes 4 to 6 servings)

1 pound frankfurters, quartered  
2 tablespoons butter or margarine  
1 small onion, chopped  
1 or 2 cloves garlic, minced  
1 can (1 pound, 12 ounces) tomatoes in puree  
2 to 4 tablespoons firmly-packed brown sugar  
½ teaspoon salt  
½ teaspoon basil leaves  
¼ teaspoon oregano leaves  
dash crushed red pepper  
2 cups drained sauerkraut  
¼ cup California seedless raisins  
1 tablespoon salt  
3 quarts boiling water  
8 ounces wide egg noodles  
(about 4 cups)

In saucepan saute frankfurters in butter until lightly brown; remove with slotted spoon, then saute onion and garlic until crisp-tender. Add tomatoes, brown sugar, ½ teaspoon salt, herbs, pepper, and kraut. Simmer covered 1 hour, stirring occasionally. Add frankfurters and raisins; cook over low heat 15 minutes.

Meanwhile, add 1 tablespoon salt to rapidly boiling water. Gradually add noodles so that water continues to boil. Cook uncovered, stirring occasionally, until tender. Drain in colan-

der. Combine with frankfurters sauce.

### Every Month Is Salad Month

Springtime is traditionally salad time as are the summer months. The Marketing Research Corporation of America suggests that every month could be a salad month based on conclusions of their research.

About 8 out of 10 households serve a vegetable salad at least once during their two weeks of reporting to Menu Census. Not surprisingly, lettuce is most often used; 2 out of 10 households serve a salad containing lettuce at least once in the two weeks.

When lettuce salads are served there are about 2½ individual servings per salad, which makes them a family item rather than an individual item.

Whenever lettuce salads are served more than 85% of servings contain some sort of salad dressing. Dressings are only a part of the story, however, for consumers add cottage cheese, sour cream, chicken, beef, hard-boiled eggs, gravies, sauces, lemons and a host of other ingredients.

Marketing Research Corporation notes that either mayonnaise or oil-spoonable salad dressing type products are added to about 10% of lettuce salads. Also, 18% of the salads appear with some type bottled French Dressing added; about 10% with Italian; 9% with bottled and vinegar; 7% with Thousand Islands; and 3% each with Russian Blue Cheese. In total 60% of lettuce salads appear with some sort of liquid dressing.

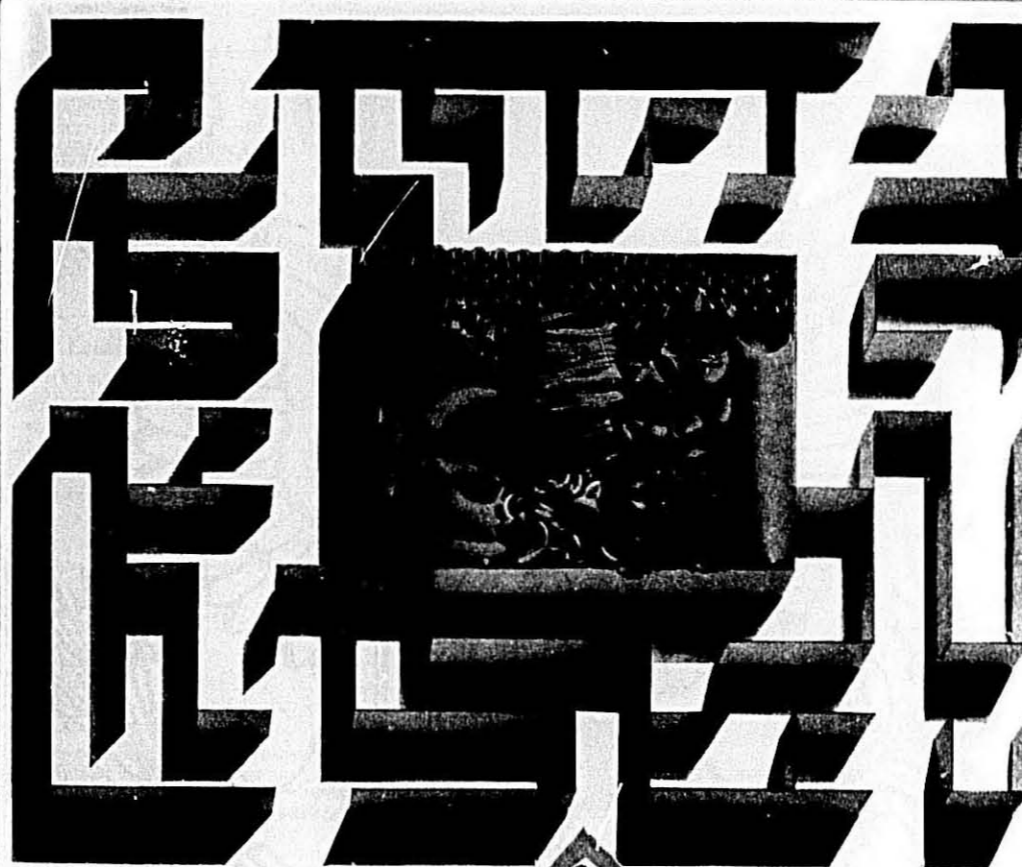
Over 5% of all lettuce salads served with some sort of low-calorie dressing, most popularly French Italian and Thousand Islands.

### Pasta Salads

Pasta salads have their great popularity in the April-May-June quarter with almost half of their year-long average consumed in that period, although July through September salad eating has taken the summer slump out of macaroni production pasta makers know. Cucumber salad has its greatest popularity in the summer months, while slaws and poultry salads come into their own during the fall and winter season.

(Continued on page 7)

THE MACARONI JOURNAL



# No Puzzle.

It's no puzzle. Superior pasta products begin with superior ingredients. ADM pasta-perfect ingredients. Milled from the finest Durum into golden Semolina and flour. Clean and consistent.

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America's Largest Macaroni Die Makers Since 1903 - With Management Continuously Retained In Same Firm

**Pasta Salads**

(Continued from page 6)

Pushing pasta salads develops effective advertising approaches and gives grocer profitable tie-ins with multiple opportunities for in-store merchandising and creating better seasonal campaigns. Pinpointing products to specific market segments such as managers, dieters, working wives and others are good ways to promote pasta salads.

**Recipe Leaflets**

The National Macaroni Institute is offering two recipe leaflets for a quarter—sent to you first class mail. Plan ahead with Pasta has eight Spring salad recipes. Entertaining with Pasta has eight easy to do, economical party recipes. If you want to distribute these recipe sheets the Institute will offer them at five cents each f.o.b. Flatine, Illinois.

**Hamburger Helper for Spaghetti**

Hamburger Helper introduces its newest flavor—Hamburger Helper for Spaghetti—via ads in April women's magazines and network television in mid-March.

Full-color page ads announcing the new flavor and carrying 10¢ store coupons will appear in April Family Circle, Good Housekeeping, Better Homes & Gardens and McCall's. Thirty-second TV commercials backing the introduction will run in daytime and fringe time for six weeks starting March 22.

Like the nine existing flavors, the new Hamburger Helper for Spaghetti requires only the addition of a pound of hamburger to make a complete main dish that serves five. While skillet preparation is featured in the commercials and magazine ads, the product can also be prepared as an oven casserole as suggested on the package back.

Dual usage of the Hamburger Helper line (skillet and oven casserole) has been advertised and promoted since October.

**Food for Fitness**

April issue of Seventeen magazine commends pasta rather than steak before an athletic event.



**Rice-A-Roni Co-Sponsors Tennis Event**

Again this spring, Rice-A-Roni is a co-sponsor of one of the most exciting TV tennis events of the year—the annual Family Circle Cup featuring the world's top women professional tennis players.

The event will be telecast live on the NBC network Saturday, May 1 and Sunday, May 2. As cosponsor, Rice-A-Roni television commercials will be seen both days during the telecast.

Held in picturesque Amelia Island, Florida, the tournament is part of the Big 4 of women's tennis. According to Sports Illustrated it ranks among Wimbledon and Forest Hills in importance. An invitational list of 58 international ranked stars will compete including: Chris Evert, Evonne Coolagong Cawley, Billie Jean King, Kerry Melville and Margaret Court.

Rice-A-Roni, a regular advertiser in Family Circle, is participating as co-sponsor of the Family Circle Cup for the fourth straight year.

**Ragu' Campaign**

Ragu' Italian Cooking Sauce is launching a new ad campaign that features recipes for various chicken, meat, fish, egg, and vegetable dishes—all cooked with Ragu'.

The campaign breaks with a full-color page ad in April's Family Circle offering four different recipes for chicken, using Ragu' Italian Cooking Sauce. The ad explains how the consistency of Ragu' is such that it can

be used for poaching, stewing, broiling, baking, roasting and braising.

Subsequent ads in the new campaign will offer recipes for beef, shrimp, egg and other dishes. All the ads will invite readers to write in for a free recipe book, "There's More to Italian Cooking Than Spaghetti."

In addition to Family Circle the ad series will appear in Ladies' Home Journal and Redbook. Network and spot television commercials in major markets will support the magazine campaign.

Ragu' Italian Cooking Sauce has been a "resounding consumer success," reports Ragu' Foods, Inc., Rochester, N.Y., the manufacturers. The unique sauce is basically a rich tomato stock with chunks of tomato in it and hefty mushroom slices, with seasoning that is subtly Italian. It is versatile because of the variety of cooking forms it can accommodate and the variety of foods it can be used with. "Whatever you cook in Ragu' will end up tasting authentically Italian," says the firm.

**John Bruno Joins Bravo**

John R. Bruno has joined the Bravo Products Company with headquarters in Rochester, N.Y., as assistant to the president and director of marketing and sales. Anthony J. Giola, president, announced. Bravo Products manufactures a full line of pasta products which include macaroni, spaghetti and noodles, and spaghetti sauces sold throughout New England, the Middle Atlantic States, and as far west as Michigan. Distribution is through supermarkets, brokers, wholesalers and other food distributors.

Previously Mr. Bruno was a vice president and account supervisor for Rumrill Hoyt, Inc. of Rochester, and has been associated with Batten, Barton, Durstine and Osborn Advertising Agency in New York City.

Mr. Bruno is a graduate of the Wharton School of Finance, University of Pennsylvania. He, his wife and their three children live in Pittsford, N.Y.

**Push Pasta**

National Macaroni Institute puts pasta sales at \$707,000,000 last year with 2 billion pounds consumed.

## San Giorgio Macaroni

Hershey Foods Corporation annual report says:

The new management organization installed in early 1975 has made significant productivity gains in cooperation with employees at all plants. This performance has helped the subsidiary attain higher operating margins, which in turn, raised operating income to record levels.

Hershey's brands, "San Giorgio" and "Delmonico" achieved higher sales volume in 1975 and together realized the largest market share increase of any pasta manufacturing company in the United States. Total sale volume, however, remained approximately equal with the previous year due primarily to lower selling prices plus reduced volume on private brand sales and institutional products.

### Intense Competition

The generally lower selling prices in the industry were brought about by intense competition and the reduced cost of semolina. Durum wheat prices receded to an average per bushel price of \$8.03 versus a 1974 average of \$7.56. This came about because of heavier plantings induced by 1974's higher prices and because of new strains of durum wheat being developed in the Southwest, primarily Arizona. While the U.S. manufacturers continue to use the long established durum wheat of North Dakota, the Arizona durum is being well received in the export market.

As commodity prices receded in 1975, the company engaged in extensive promotional programs to stimulate demand and maintain shelf position.

Major capital additions in 1975 included two new presses installed in the Lebanon plant. These are modern, high speed units, one for long cut products such as spaghetti, and one for short cut products such as macaroni.

San Giorgio continues to supply ten major markets—Philadelphia, Pittsburgh, Baltimore-Washington, Columbus, Cincinnati, Louisville, Indianapolis, Richmond-Norfolk, Southern New Jersey, and Northern New Jersey. The company expects to enter several new markets in 1976.



Up to their elbows are Joseph P. Viviano, President of San Giorgio Macaroni, Inc. (left) and Paul Serff, General Manager of Hersheypark. The two are working on a joint project offering \$1.00 discount coupons to Hersheypark with purchases of specially marked San Giorgio products. Colorful end-aisle displays, shelf talkers, radio commercials and specially designed boxes will promote the offer in nine east coast markets.

## San Giorgio Brings You Hersheypark

San Giorgio Macaroni, Inc. has announced its participation in a joint promotion with Hersheypark, Hershey, Pennsylvania.

One dollar discount coupons to Hersheypark, a multi-million dollar theme park and one of Pennsylvania's largest commercial travel attractions, will be packed inside special boxes of San Giorgio Rigatoni, Rotini, 1 lb. and 2 lb. Elbow Macaroni.

The Lebanon, Pa. based company will support the offer with 60 second radio commercials, with a jingle intro and close, 8 ft. tall end-aisle displays, shelf talkers and specially designed



Eugene S. Mahany

packages throughout the Philadelphia, Baltimore, Washington, Pittsburgh, Scranton / Wilkes Barre, Altoona, Johnstown, Wheeling and Steubenville areas. San Giorgio will also place full-page trade ads in these markets.

According to Joseph P. Viviano, San Giorgio President, "Families are always looking for new things which they can enjoy together; and people are constantly searching for ways to save money. This family-oriented promotion fulfills both these needs and we have every confidence that it will be an extremely successful venture."

### San Giorgio Offer

San Giorgio Macaroni, Lebanon, Pa., is offering 25 per cent more macaroni in specially marked boxes of elbow type. The boxes note that the free extra macaroni is part of its Bicentennial bonus, as is a Colonial flag playing-card offer, also being promoted on the boxes.

### Advertising & Promotion

The role of promotion in marketing and advertising is likely to grow even more over the next five years, Eugene S. Mahany, senior vice president of Needham, Harper & Steers, Inc. told a recent marketing conference of grocery products manufacturers.

Mahany cited some trends in consumer and trade promotions in U.S. marketing:

- Cents-off packs have been out of favor, due to trade resistance, but lately they have started to re-emerge.
- Premiums continue to grow, especially in the more expensive areas and also in the "free" write-in premiums for multiple proofs of purchase.
- Couponing has "gone through the roof" in today's value-oriented economy—up 75% in the last four years.
- Sampling is expensive but effective, and it continues to grow.
- Consumer sweepstakes are coming back strong after being out of favor a few years ago.

Looking ahead to future promotional strategies, Mahany feels there will be more selectivity in fine-tuning promotions to specific marketing objectives.

98¢ worth of Spaghetti sells \$7.6 in related items.

## Introducing FLEXITRON 1600 net weighing system

Put this new integrated solid state system together with our new Pulsamatic form-fill-seal equipment and you've got a packaging line that continuously monitors and adjusts itself to deliver outstanding reliability.

And that's only a start.

We just designed in a tough, dead-sure and lightning fast integrated solid state circuitry to bring you a system that thinks for itself once you've told it what to do.

Set it and you've got hands-off packaging that electronically monitors every performance-altering variable and each weight, then instantly adjusts itself, like no team of experts could ever do.

This means zero underweights, really consistent production, exceptional repeatability, and the kind of reliability that only comes with currents that don't depend on contacts, switches and cam shafts to get the job done.

Our new system not only takes orders, it also tells you how it's carrying them out. Diagnostic lights on the simple plug-in printed circuitry boards tell you currents and functions are happening in cycle sequence.

Simplicity and economy are built-in, too. The diagnostic lights cut troubleshooting to the bare minimum. Simply plug in a fresh PC board and you're out and running.

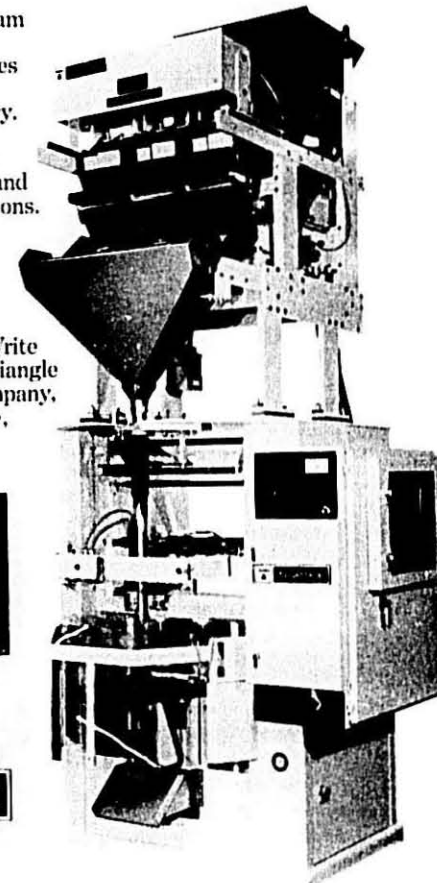
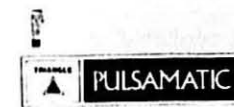
And, when mated with our new Pulsamatic form-fill-seal equipment, you actually can dial another setting while the unit is running!

Gone is the wear-prone cam shaft. Pulsamatic's solid state generator also makes limited-life contacts and relays only a bad memory.

Sanitation and safety come with things like hose-down clean-up and gasketed electrical junctions.

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## Grocery Sales Rise Again

In the keynote address delivered to the annual meeting of the National-American Wholesale Grocers' Association in Chicago, Edgar P. Walzer, President and Editor-in-Chief of Progressive Grocer, pointed out that with retail food sales climbing 9.5% to \$143,250,000,000, "the industry as a whole managed to come out of 1975 in better condition than it went in."

This rise of almost 12½ billion for the year is smaller than that reported to the same group the year before, in both dollars and percentage-wise, due to the lowered rate of inflation.

But it is, Walzer noted, "a somewhat healthier increase because it includes more 'real' growth than any year since 1972." The "spread" between last year's sales gain and last year's advance in the "food-at-home" portion of the Consumer Price Index widened in the right direction, according to the speaker. Examples given: sales gains in 1973 were 11.2% vs. a 16.3% gain in the CPI . . . in 1974, 15.0% vs. 14.9% . . . while in 1975, 9.5% vs. 8.3%.

"Given the inadequacies of the CPI and the consumer's ability to outmaneuver the statistical market basket by trading down and buying specials, the actual growth was probably even bigger than is shown here," he concluded.

### Consumers Cope—And Tell How

About those consumer practices to adjust to that market basket: a consumer panel regularly tapped by Progressive Grocer shows agreement with the trade's assessment. To the market managers' observation that coupon cashing has reached blizzard proportions, 58% of the consumer panel would answer that they're doing more of it, as against only 4% of consumers reporting less. Some 40% of the consumer panel report more "cherry picking" in doing their shopping, while only 8% indicate less indulging in this cautious practice. And some 38% of the panel report they are doing more shopping for cheaper cuts of meat, with only 7% reporting less.

Asked to rank these practices as to their importance to smart shopping,



the figures were even more impressive, with a whopping 78% saying coupon redemption is "economically important," 69% saying purchase of cheaper cuts of meat is, 53% so rating "cherry picking" as their mode of shopping.

### Coupon Blizzard

The consumer preference for coupons produces some staggering statistics. It is estimated that 60 billion coupons of all types were put into distribution last year. This can be measured in another way—some 1,000 per household. Super markets redeemed about 3 billion of the total—for a 5% redemption rate.

The weekly rate of redemption by super markets is now running at 60 million, an operating factor that is causing some anxious looks at the practice by operators.

In spite of this, half of chain executives polled anticipate even more in-aid coupons coming their way, if that's possible. About the same proportion expect more TV advertising for super market-distributed products, while still greater numbers of them look to more discounting across the board and (even more) hotter specials as the competitive weapons of the near future.

### Trade Generally Feels Optimistic

In its annual "Mood Barometer" Progressive Grocer this year finds a rising degree of optimism, especially noticeable among chain executives, followed closely by wholesalers and independent super market operators.

This optimism is seen particularly in relation to the spokesman's own com-

pany and personal economic situation a bit less so in regard to the probability to be expected from food retailing in the near future. While still up, the optimism is less pronounced when it comes to the possibilities for price stability being maintained for food items and all items across the board.

(Two thirds of consumers surveyed feel that super markets are making more money than ever before, either a lot or a little. And even larger shares would opt for more government regulations—even conceding as an overwhelming majority of this already-impressive proportion does that "the consumer pays" for these regulations.)

### Independents Set the Growth Pace

In a year marked by sharply increased competition, pressures from government and consumers, squeeze on margins, it was the faster-moving independent operations that set the growth pace. Non-public chains grew by 14.4% . . . independent super markets by 12.1% . . . and that part of the industry which insiders have been watching closely for some time—convenience stores—by 16.5%.

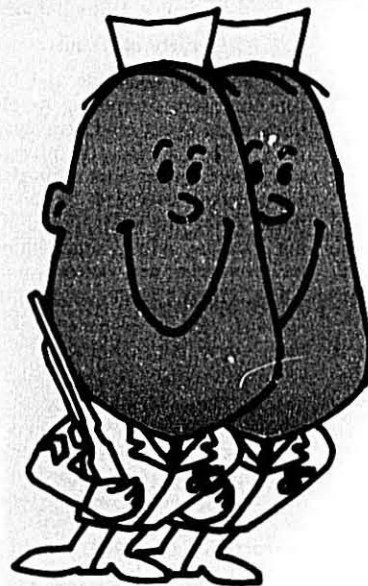
In dollar terms, it reads thus: independents grew by \$8.025 billion in 1975, chains by \$5.510, convenience stores by \$880. (The greater proportionate growth of convenience stores offers a comment on consumer buying habits and price sensitivity, since these outlets don't offer price as an inducement.)

In numbers of stores, chains showed a net decline (largely A&P's contribution): 19,690 stores in 1974 . . . 18,890 in 1975, while independents increased from 11,740 in 1974 to 12,730 in 1975.

Interestingly, there is the growing phenomenon of a super market closing and reopening "under new management." In almost all such cases the original operator was a chain, the new one an independent. Marginal chain units are being taken over and turned profitable with personal supervision, neighborhood awareness and responsive pricing.

Thus the American Dream, going into the Bicentennial Year.

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Durum is our middle name . . . uniformity is our game. If you have a formula that is successful, you want the same uniform results every time. We continuously test our product to give you the uniformity you desire. You can depend on the durum people. You start with the best when you order Durakota No. 1 Semolina, Perfecto Durum Granular or Excello Fancy Durum Patent Flour. And you get the same uniform quality every time. Call us for uniformity.

the durum people



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## The Food Revolution

Senior editor Frank Lalli recently wrote in *Forbes* magazine: The average American, the figures show, now consumes 1,500 pounds of food a year, about four pounds per day. That's a lot of calories, and it's also a lot of money—about \$185 billion last year. Within this giant market there are powerful trends taking shape: Businessmen alert to these shifts will do well, come recession or boom. Those who ignore them are bound to suffer.

### Cooking Coming Up

Craig Claiborne, the New York Times' renowned food editor, calls what is happening a "beautiful revolution." Cooking, once a demeaning activity fit only for servants, sissies and overweight mothers-in-law, has begun taking on glamour. In a recent issue of starstudded *People* magazine, no fewer than six of the celebrities profiled said their hobby was—cooking. And what a range of people! Olympic gold-medal skater Dorothy Hamill; MIT Professor James Williams; novelist Paul Theroux; movie producer Dino DeLaurentiis; professional ski racer Henry Kashiwa; Sweden's Prince Bertil.

Claiborne, with his food columns and restaurant reviews was an early revolutionary. So was cooking teacher Julia Child. And so, too, were the flower children and food faddists who first preached of health and nutrition.

What was dismissed in the mid-Sixties as gourmet cooking (whatever that is) for the elite (whoever they are) has filtered down to a mass appreciation of good cooking and natural foods. People are spending one-third of their food and drink dollars in restaurants and demanding higher quality there. They are also cooking home "from scratch" with efficient new appliances, such as stand mixers that knead bread dough and "crock pots" that simmer stews and soups. Many are becoming extremely competent.

### The Price Factor

Lately, the biggest factor—among many—behind the trend was the 40% increase in food prices over the past two years. Specifically, shoppers have used their pocketbook veto on food products that are relatively expensive

and easy to duplicate at home (like canned soups, frozen vegetables with butter or "nifty" sauces, frozen entrees, TV dinners, frozen pies and prepared puddings). For example, the sales tonnage of frozen vegetables with butter has been dropping 10% to 20% per year since 1972. Instead, consumers have been sticking to basics (like flour, cheese, fresh and frozen seafood and fresh produce). And for relatively cheap thrills, they have been experimenting with ethnic dishes. Sales of tomato sauce—for Italian pasta or, say, Mexican-style omelets—increased 15% last year alone. A food market researcher calls Chesebrough-Pond's 1969 purchase of the dominant spaghetti sauce maker, Ragu, "the best acquisition in ten years." And the longtime director of the National Macaroni Manufacturers Association, Robert Green, exults: "People in Boston are eating more pasta now than beans."

### Back to Basics

Reaction to this back-to-basics shift among the major food processors is split. Some say it is a long-term trend that they must meet with new products and concepts.

Others, however, call it a recessionary fad that will peter out as the economy rebounds; consumers will again spend their extra money for convenience.

Polls by Yankelovitch, Skelly & White suggest that, as a result of the recession and the traumatic run-up in food prices, "a lot of new behavior has taken root." It is now fashionable to save.

For as long as anyone can recall in the U.S., cooking was considered a chore. The fashionable "woman of the house" planned the menu; the servants cooked. As servants began disappearing in the late Thirties and Forties, the trend-setting "new women" of that time were forced to cook.

Their daughters grew up in the Forties and early Fifties determined to be "modern mothers" rather than dull housewives. They stocked their Frigidaires with new "labor-saving" frozen food. The heat-and-eat concept captivated the generation. By the late Fifties, shortly after Claiborne began

his avant-garde *Times* column, there were a mere handful of cooking schools in the New York area (today there are more than 100). The *Ladies Home Journal* had yet to run one recipe calling for wine as an ingredient. And *Gourmet* magazine, whose circulation has quadrupled since 1960, was then hanging in largely by appealing to male gourmands.

Julia Child's cookbooks and those of other pros (like Claiborne, James Beard, Mexican food specialist Diana Kennedy and baker John Clancy) contained reliable recipes and also illustrated solid cooking techniques. Young people especially learned how to cook by studying those books, just as they learned geology from their college texts. There are indications now that the cookbook boom may have crested. But at what a level! Last year, publishers printed 474 new cookbooks more than double 1970's output.

### Variety of Trends

In addition, economic and health concerns were compelling people to think more about food. Beginning in 1973, with the lifting of price controls, food prices shot through the supermarket roof and became the public's No. One worry, ahead of rising gasoline prices, drug addiction and even crime and violence.

Now middle-class families: felt they couldn't afford convenience foods they had to start cooking.

Back at home they learned another lesson. Those blenders, mixers and other appliances that they had gotten as gifts really could take the drudgery out of cooking. Today something like 90% of the households have mixers; 45% have blenders; 38% have dishwashers; 17% have slow cookers; and 44% have full-size freezers to store the bounty of a weekend cooking jag.

Generally, much of the new home entertaining is among friends who pool their talents once a month or so and cook a high-class, pot-luck dinner.

Another nationwide trend is men in the kitchen. By some estimates, fully one-third of the students enrolled in the thousands of night cooking classes from coast-to-coast are men. Even more notable high school boys are pouring into home economics to study "bachelor cooking."

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## The Food Revolution

(Continued from page 14)

### Behavioral Studies

Sensing the country's new food consciousness, GE commissioned extensive behavioral studies last year that included in-depth interviews of couples while they shopped and cooked.

GE's food preparation product manager, Freeman Robinson, says the results divided the market into three main parts. Roughly 60% of the households are run by Love-to-Cooks, 30% by Hate-to-Cooks and 10% by Couldn't-Care-Lesses.

The biggest—and fastest growing—portion of the Love-to-Cooks tend to be young, affluent and educated couples who often eat out together and also cook home together. One can call the other part of the Love-to-Cooks, the mammas. She tends to be an older, blue-collar, and less educated woman, who shows her love by trying to fill her husband's belly. But she does not want him in her kitchen.

GE believes that the Love-to-Cooks rarely buy TV dinners, and then only for their children. But more than half regularly eat frozen vegetables.

At the other extreme are the Couldn't-Care-Lesses, who cut across age, economic and social brackets. They simply have no interest in food, and tend to buy large amounts of TV dinners and other prepared products.

The Hate-to-Cooks are in the middle. Interestingly, they tend to be as young, affluent and educated as the first group of Love-to-Cooks. They are also the most concerned of all with dieting, health and nutrition. Yet, their eating habits are schizophrenic. On weeknights, they lean toward takeout, fast-food and convenience items. On weekends, they are likely to dine at a fine restaurant, or cook a five-course dinner for guests.

It's probable that some of the growing number of Love-to-Cooks were Hate-to-Cooks only a few years ago.

### Heart of the Home

The kitchen has upstaged the family room as the heart of the home. The shift began in the Sixties as home-builders merged the kitchen and dining room into one informal space. The housewife loved it; instead of cooking in isolation, she was at center stage, with her family around her.

While other are welcoming the new food consciousness, executives of the giant food companies remain wary. They fear that if the public continues to reject higher margin prepared products, they will be forced to make sweeping adjustments back to basics. Fewer frozen pies, more flour.

A number of companies are beginning to react. For example, Norton Simons' Hunt-Wesson division, which has relied on superconvenience in the past, has just named a new executive vice president, Robert Fox. The division is now launching a spicy spaghetti sauce called Prima Salsa to complement its line of basic tomato and oil products. At the same time, it is suffering with such slumping old favorites as Skillet Dinners, and Snack Pack Puddings. Right now, the company's Snack Pack sales are running 75% under the original annual target.

The most promising possibilities appear to be in frozen ethnic entrees, like Buitoni's popular baked shells, manicotti and so on. The trick there is being sure that today's cooking consumers can't easily approximate the dish at home.

The next ethnic explosion, following Italian and Chinese, could be Mexican food. Recent National Restaurant Association surveys show that Mexican restaurants are catching on especially with the young.

Diana Kennedy, the leading Mexican food authority, says the trend has been building for three years: "It is spreading east from the Southwest."

Someday the taco may be as American as chop suey and pizza.

### Productivity

Productivity was the underlying theme of the National-American Wholesale Grocers Association Convention in Chicago.

Outgoing president of the Association and president of Chris Hoerr & Son Company of East Peoria, Illinois, Chris R. Hoerr III declared "The cost of fuel has become so critical, we now must measure its use as a factor of productivity." He contended wholesalers are beginning to look for total energy-management programs when attempting to increase efficiency. Such an approach includes a look at backhaul, strongly linked to fuel use.

"We have to look at everything,

from how you design a building installing heat-reclamation systems warehouses to running trucks," Hoerr pointed out. "And if we are really going to be serious about energy we cannot ignore the energy savings of backhaul. It is ridiculous for empty trucks to travel the highways."

### October Conference

The Association has deemed productivity so critical that it planned an entire conference on the subject. Scheduled for October in Minneapolis, the conference will consist of seminars, field trips to warehouses and equipment exhibits. As part of the program, NAWGA launched a manufacturer-wholesaler exchange program last October which enables members of the two industry branches to become familiar with each other's operations.

### People Are the Key

People are the key to productivity was emphasized at two workshops during the NAWGA Convention. Ralph A. Clinton, Executive Vice President, Scrivner, Oklahoma City, summed up the problem when he noted two identical warehouse facilities which have totally different productivity. The answer, he said, lies in the fact that "people are still more important than machines."

Saul Pilnik, President, Human Systems Institute, Morristown, New Jersey, declared: "Absenteeism, spoilage, product damage and sanitation are factors that affect productivity more than mechanical ones. Industry accepts mediocrity as its standard, noting that most people rarely operate at much more than 50% of production efficiency, even though they often expend more than 110% of the required energy. Technological problems generally are comparatively easy to solve," he noted, whereas people problems tend to stymie management.

### UPC

Supermarket News headlined their front page: "Electronic Front End Benefits Stressed But Customer Appraisal Advised." Vincent Little, President, Roundy's, Milwaukee, said: "The food industry has been loose with cash controls and electronic front end systems provide

(Continued on page

THE MACARONI JOURNAL



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## Microscopic Structure of Durum Wheat, Semolina Dough and Spaghetti

by Orville J. Banasik,<sup>a</sup> Tadeusz A. Haber<sup>b</sup> and Abdelmonem A. Seyam<sup>c</sup>

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4. Assistant Professor, Department of Cereal Chemistry and Technology.

Durum is a speciality class of wheat which is used almost exclusively for producing pasta products. The quality of durum wheat relates to its unique processing characteristics. Most durum varieties show a very weak type of gluten, are highly pigmented, yet are very hard and vitreous.

The cellular structure of wheat was studied very extensively by Bradbury et al. (1-4) for the purpose of presenting a detailed account of the structure of the wheat kernel. This work pointed out differences between the vitreous endosperm and the soft, starchy type. The vitreous endosperm showed cells that were completely filled with starch and proteinaceous material packed together in a solid mass; the cells of the mealy or starchy endosperm have many small spaces around the starch granules of fissures between cells. These authors stated that endosperm texture is one of the most constant characteristics associated with different classes and varieties of wheat.

Microscopic examination provides a means to observe structural differences that may be of value to the finished product as well as to reach certain decisions concerning the manufacturing process. Several papers have been published concerning the milling process by microscopically examining cell wall disintegration during milling (5-8).

Recent work by Moss (9) employed sectioning and staining techniques to

study the micro-structure of bread doughs. From his study Moss concluded that mixing destroys the protein matrix in wheat that encloses the starch granules and develops the gluten into compact masses surrounded by starch granules free from any supporting protein. These masses are then stretched out to form a continuous network throughout the dough which appears fibrillar up to optimum mixing time. Mixing did not alter the amount of damaged starch granules. The references listed in Moss (9) show some of the early studies conducted on the structure of bread and dough.

Very little information has been published concerning the microstructure of durum wheat or the microscopic appearance of the pasta product. The appearance and texture of cooked pasta are important physical properties. Pasta should not be sticky and should offer a certain resistance to the teeth when chewing. Holliger (10) discussed some of the factors involved in cooking macaroni while Walsh (11, 12) and Matsuo et al. (13) indicated various means of evaluating the quality of cooked macaroni products. Many of the causes of poor cooking quality are not known.

Only recently has the structure of undried pasta goods been examined microscopically (14). The changes in the framework of the gluten structure, starch damage and the arrangement of starch and protein materials as a result of cooking were observed. The gluten framework is of utmost importance to the cooking behavior of conventional pasta goods. Factors that improve and strengthen this framework automatically helps to improve the cooking quality. From this research (14) certain properties were noted: (a) the raw material must contain at least 11-12% protein (D.B.), (b) the gluten must contain certain qualities that provide sufficient elasticity and strength, (c) certain component parts of the wheat kernel affect the protein framework, (d) certain added protein materials such as coagulable

albumins can enhance cooking properties, while others may not, and the addition of dialdehyde starch improved cooking quality considerably by strengthening the gluten framework.

The objective of the present study was to follow the structural changes microscopically that take place in the original wheat kernel to the finished product. The effect of environment was also examined.

### Materials and Methods

Two varieties of durum wheat, Rolette and Leeds, grown at North Dakota locations during 1974 crop year were utilized.

The experimental spaghetti was processed on a unit described by Harris and Sibbitt (15) with modifications by Walsh et al. (16).

### Stain Solutions

An 0.1% Ponceau-2R aqueous solution acidified with 4 drops of H<sub>2</sub>SO<sub>4</sub> per 50 ml of stain solution saturated 70% ethanol solution of Sudan IV, and 0.01% aqueous solution of methylene blue buffered to pH 4.6, a buffered (pH 8.0) 0.05% congo red solution and an 0.05% aqueous solution of toluidine blue buffered to pH 4.4 were all employed as staining solutions.

### Equipment

A Nikon microscope Model L with a built-in Koehler illumination system was used in this study. The microscope was fitted with a Nikon automatic exposure setting Micro Model AFM photomicrography unit. An International Cryostat Microtome was utilized for preparing sections from frozen dough or spaghetti. Ultra-thin Scientific Products microtome was used to prepare wheat section slices.

### Wheat Sectioning

Prior to sectioning, 50 g of wheat kernels were steeped in a fixative solution as described by Bradbury et al. (1). The mixture contained 80% ethanol (95%), 5% glacial acetic acid.

(Continued on page 19)

THE MACARONI JOURNAL



Food critics always give good reviews when the cook serves up good-tasting, wholesome noodle dishes.

**The cook with fussy customers has to use her noodle.**

Sometimes the people hardest to please are sitting right around the family table. So the smart cook really uses her head...and serves up good-tasting noodle dishes.

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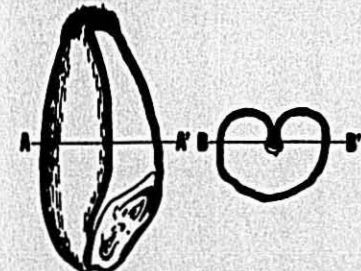
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## Microscopic Structure

(Continued from page 18)

10% formaldehyde and 5% water. The kernels were soaked in this solution for two weeks prior to embedding in paraffin. A diagrammatic sketch (Fig. 1) shows the area used for the preparation of the transectional and longitudinal slices of 8 microns thick.



1. Diagrammatic sketch showing the area of the kernel for preparing transverse (A) and longitudinal (B) sections.

### Dough Sectioning

The structure of a semolina dough is too fragile to enable thin sections to be successfully cut without a supporting medium. Paraffin wax, gelatin, water-soluble waxes, celloidin and plastics have been used as embedding media. All are unsuitable for use with dough. The only embedding medium

that appeared to be suitable was ice derived from the naturally occurring dough water.

Samples of dough made from Rolette and Leeds semolina were taken at the following processing intervals: (a) pasta dough after 3 min. of mixing; (b) pasta dough after kneading and resting; (c) pasta dough after extruding; and (d) spaghetti after cooking. The 5 g sample was rapidly frozen by immersion in liquid nitrogen. Rapid freezing was necessary to avoid any observable disruption of the structure due to ice formation. Cubes of 0.5 cm were cut from the frozen samples, fastened to the stainless steel holders by freezing a supporting medium with liquid carbon dioxide. The 8 micron sections prepared from the frozen cubes were oriented on cold glass slides and allowed to thaw. The sections were at least 24 hours at room temperature before being stained.

### Results and Discussion

#### Quality

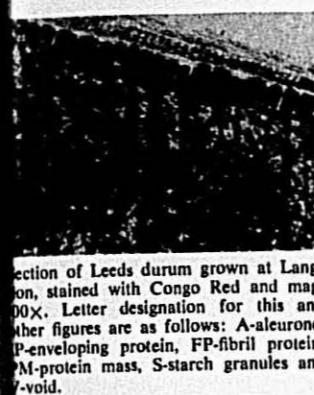
The grain, semolina and spaghetti quality of Leeds durum is summarized in Table I while the quality of Rolette is shown in Table II. The averages show that both varieties are quite similar in most properties. Leeds

durum is higher in spaghetti cooked weight and tenderness score. Rolette durum has larger kernels, higher wheat protein and a better semolina extraction. The ash (mineral content) of Rolette averaged less than Leeds.

The grain quality from the five stations is quite variable. Test weight ranged from 58.0 to 63.7 lbs/bu. The vitreous kernel content varied from 75 to 95% while wheat protein content ranged from 14.5 to 18.6%.

#### Microscopy of Durum Wheat

Over 100 individual slide sections were prepared to study the structural difference between Leeds and Rolette durum as affected by different environmental conditions (locations and growth). Careful study of the sections and the photographs made from them showed differences between the two varieties. Also, environmental factors affected the amount of protein found in the wheat grown at the five locations (Table I and II) which in turn changed the appearance of the internal structure. Photomicrographs were selected from Langdon (low protein), Carrington (medium protein) and Dickinson (high protein) to illustrate the differences between varieties and stations.

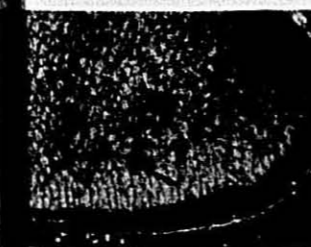


2. Section of Leeds durum grown at Langdon, stained with Congo Red and magnified 200X. Letter designation for this and other figures are as follows: A-aleurone, P-enveloping protein, FP-fibril protein, PM-protein mass, S-starch granules and V-void.

Figures 2, 3 and 4 show sections of Leeds durum which includes the pericarp and adjacent tissues. Longitudinal sections magnified 200X are shown to be specified differently. In general, the fibril protein (FP) is discontinuous in nature and is not a uniform type of network. Most of the protein appears to be concentrated in the outer third of the cellular structure of the kernel. As the protein concentration increases some protein masses (PM) appear near the pericarp. A significant amount of protein appears to be surrounding the starch granules (enveloping protein, P).

A colored photograph or viewing a stained section through the microscope shows increasing intensity of the protein in solution. Generally, it can be concluded that most of the protein is found within the cell structure surrounding the starch granules and enveloping protein with lesser amounts found as fibril protein or deposited as a protein mass.

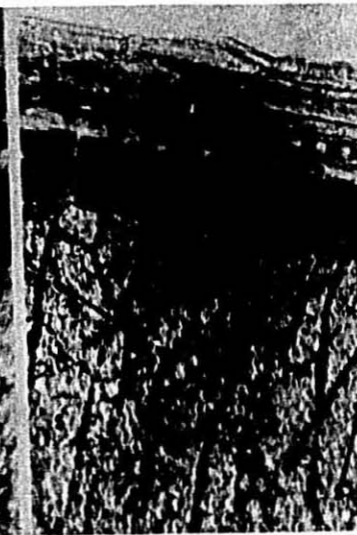
Figure 5 shows a longitudinal section of Leeds durum grown at Langdon indicating the lack of strong, continuous fibril protein network.



5. Distal end section of Leeds durum. Stained with Methylene Blue. Mag. 40X.



3. Section of Leeds durum grown at Carrington. Non-stained. Mag. 200X.

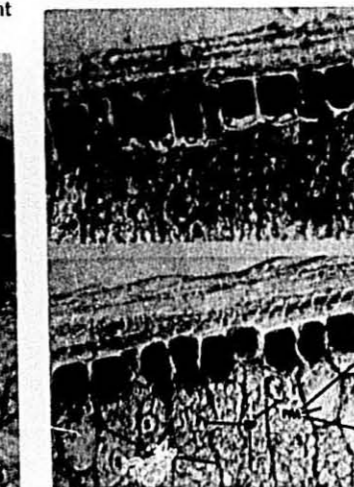


4. Section of Leeds durum grown at Dickinson. Note protein mass (PM). Stained with Congo Red. Mag. 200X.

The next three figures (Fig. 6, 7, 8) show similar photomicrographs for the variety Rolette durum from the same three locations that Leeds was grown. Figure 6 illustrates a characteristic of Rolette durum that is quite different than the Leeds variety. First, the aleurone (A) cells of Rolette vary more in shape and uniformity compared to Leeds. Also, the voids (V) in the aleurone cell pockets of the low protein sample (Fig. 6) are evident

with a few showing up in the medium protein sample of Rolette (Fig. 7) and, finally, a complete disappearance of the voids (Fig. 8) when the wheat protein reaches 17.7%.

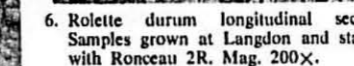
A few scanning electron micrographs (SEM) were made of the aleurone and adjacent cell structures supplied by the Department of Botany, NDSU. The samples used



6. Rolette durum longitudinal section. Samples grown at Langdon and stained with Ronceau 2R. Mag. 200X.



7. Longitudinal section of Rolette durum grown at Carrington. Stained with Methylene Blue. Mag. 200X.



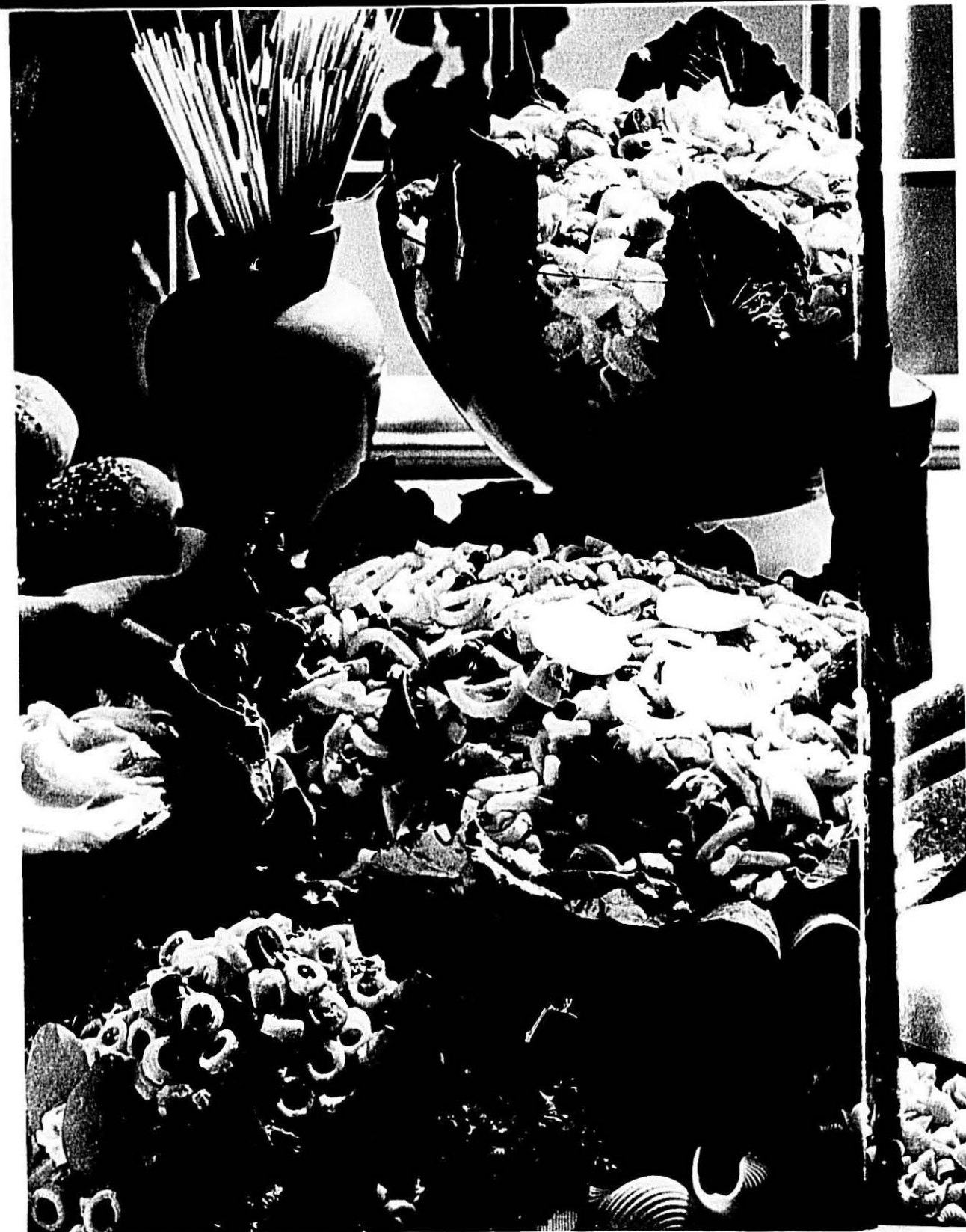
8. Longitudinal section of Rolette durum grown at Dickinson. Stained with Ponceau 2R. Mag. 200X.

Table I Quality of Leeds Durum, 1974 Crop

Station	Test Wt lbs/bu	1000 K. Wt g	Vit. Kernels %	Protein		Semolina			Spaghetti			Tend Score g. cm
				Wheat %	Semo %	Extr %	Specks No	Ash %	Color	Cooked Wt g	Cooking Loss g	
Langdon	63.4	41.5	95	14.5	13.1	53.8	25	0.53	9.5	36.4	5.5	5.71
Minot	62.7	40.2	87	15.5	13.9	52.9	27	0.52	9.5	37.9	4.8	5.21
Carrington	61.5	34.5	75	16.3	14.8	53.2	33	0.53	9.0	37.7	5.3	5.01
Dickinson	60.8	38.0	97	17.7	16.7	50.0	22	0.72	9.5	35.0	5.0	7.22
Williston	58.0	25.1	90	18.5	17.8	47.2	12	0.61	10.0	34.6	4.3	8.31
Average	61.3	35.9	89	16.5	15.3	51.4	24	0.58	9.5	36.3	5.0	6.21

Table II Quality of Rolette Durum, 1974 Crop

Station	Test Wt lbs/bu	1000 K. Wt g	Vit. Kernels %	Protein		Semolina			Spaghetti			Tend Score g. cm
				Wheat %	Semo %	Extr %	Specks No	Ash %	Color	Cooked Wt g	Cooking Loss g	
Langdon	61.5	42.6	85	15.0	13.5	53.0	30	0.50	7.5	36.9	5.5	4.38
Minot	63.7	47.6	90	15.8	14.3	53.8	22	0.46	9.0	36.3	5.4	5.08
Carrington	60.2	39.4	78	17.5	15.5	50.8	48	0.45	8.5	39.4	5.5	4.19
Dickinson	60.7	34.6	95	17.8	16.7	52.8	20	0.66	9.0	34.1	5.3	6.59
Williston	59.7	33.1	91	18.6	17.2	51.5	17	0.61	8.5	34.3	4.6	7.61
Average	61.2	39.5	88	16.9	15.4	52.4	27	0.54	8.5	36.2	5.3	5.57



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## Microscopic Structure

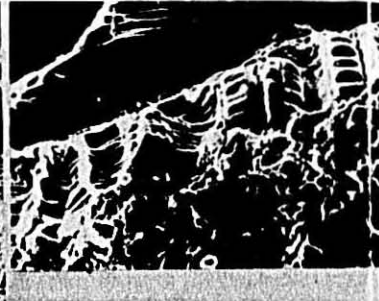
(Continued from page 21)



10. SEM photograph of Rolette durum aleurone and adjacent cells near the outer, central area of the kernel. Mag. 270X.



9. SEM photograph of Leeds durum aleurone and adjacent cells near the outer, central area of the kernel. Mag. 270X.



11. SEM photograph of Rolette durum aleurone cells. Mag. 270X.

were grown at Dickinson (high protein) and the specimens prepared by cracking the kernel through the crease.

An entirely different view of cell structure of Leeds durum is noted as shown in Fig. 9. Notice how endosperm structure cracked along cell-wall outlines. The aleurone cells appear to be a podlike structure containing an irregular shaped cell within the pod.

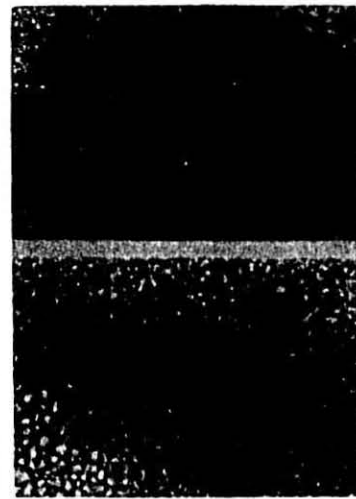
The SEM photograph of Rolette durum aleurone cells shows a different shape as illustrated in Fig. 10. The cells are more elongated and have a very rough texture as compared to Leeds. A close-up view of Rolette's aleurone is shown in Fig. 11.

### Microscopy of Semolina Dough and Extruded Pasta

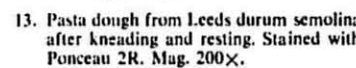
The microstructure of semolina dough, extruded and cooked spaghetti are shown in Fig. 12-15. Since the details of Leeds and Rolette doughs were quite similar, only the Leeds photographs will be shown.

Figure 12 is a photomicrograph of Leeds semolina dough after 3 min. mixing. The large and small granules of starch with protein surrounding the starch is easily seen. The few voids are air-spaces caused by the mixing action. Ponceau 2R is the stain used.

The intermixing of the protein and starch for durum semolina is entirely different than the network shown by a bread dough. Moss (1) showed in his studies of the microstructure of bread doughs that the protein fibrils link together to form a continuous network. There are large spaces between adjacent fibrils containing starch



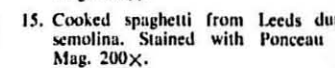
12. Pasta dough from Leeds durum semolina after mixing. Stained with Ponceau 2R. Mag. 200X.



13. Pasta dough from Leeds durum semolina after kneading and resting. Stained with Ponceau 2R. Mag. 200X.



14. Extruded pasta dough from Leeds durum semolina. Stained with Ponceau 2R. Mag. 200X.



15. Cooked spaghetti from Leeds durum semolina. Stained with Ponceau 2R. Mag. 200X.

granules free from enveloping protein. The pasta dough has mainly enveloping protein and no detectable fibril protein network.

Little change has taken place after 3 min. of kneading and resting of the dough under pressure (Fig. 13). However, most of the air bubbles noted in the mixing stage have disappeared.

A considerable change takes place in the dough during extrusion. Heat and pressure causes the starch to lose its granular shape as shown in Fig. 14. The intermixing of the partially gelatinized starch and protein is quite uniform.

Another interesting change takes place when the pasta is cooked. In

Fig. 15, the starch gelatinization complete while the protein reappears as chain-like fibrils of coagulated protein. It is this network that is most important to the consumer as it apparently establishes whether pasta is tender or more resistant to the bite.

### Summary

Studies of the structure of durum wheat showed that varieties respond differently to how protein is deposited in their matrix. Two durum varieties used in his study were quite similar in their external appearance and processing characteristics but were quite different in their internal structure. The aleurone cells were different between the two varieties as shown by SEM photographs and light-type

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- Double screw presses from 1200-8000 lbs./hr.
- Four screw presses up to 16,000 lbs./hr.
- Shaking pre-dryers for short goods
- Short goods belt dryers from 600-16,000 lbs./hr.
- Two-stick spreaders and four-stick spreaders
- Long goods dryers from 600-4000 lbs./hr.
- Long goods accumulators for one shift per day discharge
- Long goods cutters
- Raw material handling systems
- Complete production lines
- U.S.-made motors
- U.S.-made electrical controls
- U.S.-made climate controls
- Engineering services including design, planning and installation of complete macaroni processing plants

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Skilled, experienced BUHLER Engineers develop the optimal processing system after making a careful analysis of the customer's particular plant layout, operation and specific requirements.



Every facet of machine operation undergoes scrupulous examination by Buhler Design Engineers. Extrusion of short goods will be viewed in extreme slow-motion from high-speed, 600-frames-per-second movie camera used above.



Buhler designs, fabricates and installs all types of macaroni equipment for any size operation. Above, world's largest short goods press (4-screw, 16,000 lbs./hr. capacity) dwarfs 100 lb./hr. laboratory model shown in inset.

## Microscopic Structure

(Continued from page 24)

photomicrographs.

The presence of "voids" in the structure of Rolette probably caused the increased speck count in the semolina. Since 1974 was a very late crop year, the variety-environmental interaction may have caused this to happen.

### Acknowledgement

The authors appreciate the financial help supplied by the National Wheat Institute and the North Dakota State Wheat Commission. Without their help, this research would not have been possible.

Also, the help of Dr. K. A. Gilles in coordinating the project work is gratefully acknowledged.

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## Testimony on Proposed Grain Standards Act

On March 18, 1976, Dr. Alvin W. Donahoo, Executive Vice President of the Minneapolis Grain Exchange, testified before the Senate Committee on Agriculture and Forestry and several other Senate subcommittees on the proposed S. 3055 U.S. Grain Standards Act.

The Act, calling for federalization of all inspection and weighing, was characterized by Dr. Donahoo as cumbersome, complex, and nonresponsive to the marketing needs of the farmer, the grain trade and users of grain. Dr. Donahoo testified that while we are proud of our marketing system and believe it to be the best in the world, we recognize that there have been some dishonest practices in the handling of grain at some ports. We want to go on record that the members of the Minneapolis Grain Exchange do not in any way condone unethical, dishonest or criminal practices that weaken the credibility of our marketing system and destroy public confidence.

The original grading of grain in the Minneapolis-St. Paul and Duluth-Superior markets is done by State employees. In the States of North Dakota and South Dakota the original grading of grain is done by private inspection firms licensed and supervised by the USDA. Both State and private inspection agencies have served our market adequately.

The Minneapolis Grain Exchange has one of the largest, if not the largest, Weighing Departments in the country and serves a great cross section of both buyers and sellers. The change over from supervision of weights by the State of Minnesota was made in 1968, when the cost of this supervision became excessive. Dr. Donahoo testified that, "We are proud

of the skill and integrity of weighers and weigher supervisors in our market. The change over from State supervision to Grain Exchange supervision was accomplished with no loss of integrity of weights in our market."

In summary Dr. Donahoo said, "I do feel that the present basic system of grain weighing should be carefully studied and analyzed before any substantial changes are made that prove extremely costly to the producer and the trade and yet may not add to the integrity of the weighing procedure."

## More Flour Extraction

Five percent more flour can be recovered from each bushel of wheat by a new milling procedure developed by scientists of USDA's Agricultural Research Service.

With the extended extraction procedure, Dr. William C. Shuey estimates that a mill of 5,000 hundred weight daily capacity could produce enough flour for about 51,000 people each year from the same amount of wheat.

Dr. Shuey, an ARS food technologist here, says the procedure has been tested only with hard red spring wheat but may have equal application in milling flour from other types of wheat. He, Robert D. Maneval, and Joel W. Dick developed the procedure in cooperation with North Dakota State University, Fargo.

### Three Additional Steps

The procedure requires three additional steps after milling straight grade flour the usual way. The bran and head shorts are reground to get in an impact mill, and the flour is covered by sieving. Tail shorts are reground twice in an impact mill, the flour recovered by sieving. The extended extraction flour is a blend of the original straight-grade flour and the three flours obtained by grinding the millfeed products, which usually go into animal feeds.

Dr. Shuey points out that the flour contains more than double the amount of vitamin B<sub>1</sub> in straight-grade flour. Its nutritional value is further proved by an increase of about 7 percent in the essential amino

acids and added minerals. These are nutritionally important components that are recovered from the part of the wheat kernel immediately under the seed coat.

No changes are needed in mill settings or procedures for regular flour production. The flour has a slightly darker color and higher mineral content than are currently considered optimum, Dr. Shuey says. Neither production environment nor kernel characteristics appear to affect the amount of flour recovered, but flour yield is influenced by varietal differences in hard red spring wheats.

## Planting Plans

Great Plains Wheat, Inc. reports that private estimates indicate spring wheat planting may be increased by about 11 or 12 percent, because of the unusually mild weather this year. Seedings of durum are expected to be lower, however, because of the badly depressed market.

Export business is down largely because of favorable crop conditions in foreign countries. Algeria crop conditions are reported to be excellent and Algeria has deferred shipments of at least two cargoes of durum it had purchased in the United States. Algeria is reported also to have exported some small quantities of oats, a rare occurrence, since Algeria is customarily grain deficient.

Adequate rains in southern Italy have also enhanced the prospects for the Italian durum crop, and Italians, likewise, appear to be in no hurry to make new purchases.

### In Canada

Reports from Canada indicate that the Soviets have taken only about one-third of the million tons of durum sold last fall. Canadian growers are reported to be increasing their wheat acreage by about 26.7 percent to approximately 26.7 million acres. Of the total, about 3.4 million acres should be seeded to durum which would indicate a decline of about 7 percent.

Durum markets are also anticipating a large crop in Arizona and California, which are creating further pressure on the market. Although a very large percentage of these crops are reported to have been sold, there

is still some durum there not yet under contract. Since, however, farmers in Arizona and California do not have adequate storage space for wheat, all this durum is expected to have to move into the market relatively soon after harvest, which may begin as early as May in some areas.

## Crop Glossary

**Cereal**—A grass cultivated for its edible seed or grains.

**Seeded**—also planted or sown—The seed has been placed in the soil and covered.

**Sprouted**—The seed has put forth a shoot and root in the soil.

**Emerged**—The new shoot has appeared above the soil surface.

**Seedling**—The juvenile stage of a plant grown from seed.

**Tiller**—An erect shoot arising from the crown (base) of a grass.

**Stool**—A clump of young shoots or tillers arising from a single plant. (The terms "tiller" and "stool" are commonly used synonymously.)

**Jointing**—Developing joints (nodes) and internodes in a grass culm (stem).

**Shooting or shot blade**—A rapid elongation of the stem, pushing up the leading leaf.

**Boot, also sheath**—The lower part of the leaf that encloses the stem and growing head.

**Heading**—Emergence of the first heads from the boots.

**Flowering**—The stage after full head formation when fertilization takes place. Evident to the casual observer by the appearance of pollen.

**Milk Stage**—Kernel development has progressed to a point where a milky liquid can be squeezed out with pressure of the thumb and finger.

**Dough Stage**—Kernel development is such that the milk has stiffened into a doughy consistency. (Also further refined to early dough and late or stiff dough).

**Ripe**—The plant is mature and seed formation is complete.

## ADM Approves More Shares

Archer Daniels Midland Co. said its shareholders approved a previously proposed increase in the number of authorized common shares from 30 million to 40 million.

## Controlling Indian Meal Moth

A microbial insecticide, a granulosis virus, effectively controlled the Indian meal moth in wheat and corn in preliminary laboratory experiments by USDA's Agricultural Research Service.

The virus is thought to act by inhibiting only unique aspects of the target insect's physiology, says Dr. William H. McGaughey, the ARS entomologist who conducted the tests at the U.S. Grain Marketing Research Center in Manhattan, Kansas. The virus affects cells of the epidermis, fat, tracheae, and perhaps other tissues of Indian meal moth larvae.

Demonstration of its potential as a biological alternative to insecticides is a significant step toward safer, more effective protection of stored grain and grain products. Dr. McGaughey points out that the Indian meal moth, a serious pest, is difficult to control because of its resistance to malathion and synergized pyrethrins.

## Where the Food Dollar Goes

Farmer's share	38¢
Labor's share	30
processing	
distribution	
retailing	
Packaging	8
Transportation	5
Profits after tax	1.6
Federal taxes	1.9
Business taxes	2.5
Depreciation	2.0
Rent	2.0
Advertising	2.0
Repairs	1.0
Interest	1.0
Utilities,	
other expense	5.0

## Supermarket Tabs

Supermarket tabs are up almost 100% from 10 years ago, says Progressive Grocer magazine in a recent study. An average shopper now spends \$25.75 per trip compared with \$12.90 in 1965, and the time spent in a supermarket has climbed from 22 minutes a decade ago to 27.5 minutes. Another big change in shopping habits is that 41% of today's shoppers use a list vs. 35% 10 years ago. Moreover, says the study, 6% shop with calculators.

## Why National Marketing Needs Local Focus

When it comes to buying and eating habits there are still enough differences among items, brands, sizes, flavors, and seasonality to make individual marketing knowledge a must.

Chain Store Age collaborated with Selling Areas Marketing Inc. in a study of 33 markets to track specific product categories according to product movement and household usage. By creating a total base of 100 as an index of household usage, it is possible to make market-by-market comparisons for each of the above variables.

Market Development Indices—dollar basis: 52 weeks ending 8-29-75. Per household consumption rate in all 33 SAMI markets combined—100.

Pasta		
Hi	1 New York	148
Hi	2 Boston	139
Hi	3 Pittsburgh	139
Lo	1 Birmingham	52
Lo	2 Charlotte	58
Lo	3 Minneapolis	60

Meat Sauce		
Hi	1 Charlotte	194
Hi	2 Atlanta	188
Hi	3 Houston	181
Lo	1 Boston	32
Lo	2 Buffalo	58
Lo	3 Pittsburgh	61

Canned Pasta Dishes		
Hi	1 Boston	156
Hi	2 New York	149
Hi	3 Baltimore/Wash.	124
Lo	1 Cincinnati/Dayton	63
Lo	2 Minneapolis	65
Lo	3 Cleveland	65

Canned Oriental Food		
Hi	1 Seattle/Tacoma	226
Hi	2 Portland OR	184
Hi	3 Milwaukee	155
Lo	1 Memphis/Little Rock	36
Lo	2 Birmingham	46
Lo	3 Charlotte	47

Canned Mexican Food		
Hi	1 Phoenix/Tucson	548
Hi	2 Los Angeles	379
Hi	3 Denver	289
Lo	1 New York	1
Lo	2 Philadelphia	1
Lo	3 Boston	3

Private Label Penetration—market-by-market differences in \$ shares. 52 weeks ending 8-29-75.

Pasta—17.8%		
Baltimore/Washington		36.3%
Indianapolis		33.4%
St. Louis		32.2%
Miami		2.7%
Birmingham		3.9%
Denver		4.3%

Baltimore/Washington is an unusual market for private labels. It has the highest store brand penetration in more than a third of the categories monitored for this study, such as: Italian food sauces, peanut butter; dry dog food; pasta; mayonnaise; fabric softeners; plastic household bags and more.

### Brands & Items

There's another factor which varies market-by-market, and that is the number of brands in a category or the number of items. This is especially true for pasta. The market extremes point up the contrast: Oklahoma City/Tulsa has the least number of brands in competition, three. But in Cleveland there are 21 brands vying for the business. Looking at the number of pasta items offered in a market, there is a range from 64 in Kansas City to over 200 in a host of cities including Boston, Chicago and Los Angeles.

The Atlanta market has fewer than 90 items offered but 29 of those, 35% of the total, account for a huge 88% of the business. This means that 55 pasta items are fighting it out for just 12% of the Atlanta pasta business.

In Miami, one-third of the items pull in better than three-quarters of the sales. And in Cleveland there are 352 different pasta items! Yet only 19 of these account for fully one-third of the total business.

### Markets Vary

Markets, then, vary widely. Seasonality starts and stops at different times, lasts for varying periods, and shows widely fluctuating extremes whenever one market is compared with another. And geography alone is not a good indicator. There are differences from downtown or the inner city to the rural and outlying areas. Each local marketing area has its own characteristics.

### Television Favored Media

Print advertising isn't the most controversial subject in town, but recently it has been the target of both criticism and praise.

First, the bad news, as they say. In a survey of small- to medium-sized advertising agencies, newspapers were lowest in terms of the

agencies' marketing efforts. Television was ranked first, radio second and magazines third.

The survey was made among 35 member agencies of the National Federation of Advertising Agencies. The members of the loosely knit advertising network have billings of \$1 million to \$16 million.

Members were asked to rate each of the media on 11 different questions. The media were given a point rating of 4 (the best) to 1 (the worst) in each of the areas.

On the total point count, TV ended with 624, radio with 546, magazines with 448, and newspapers with 351.

Asked, "Which media have the most effective sales representation?" agencies gave TV a 49, radio a 46, magazines a 46 and newspapers a 39. Newspapers also fared poorly. "Which media understand best who you're trying to accomplish for your clients?" (TV 43, radio 34, magazines 45, newspapers 3) and "Which media are apt to go out of their way to do something special for a particular buy?" (TV 56, radio 62, magazines 56, newspapers 3).

### Newspapers Score

Newspapers scored best in "which medium do you think your clients understand best?" Newspapers scored 56, compared with 20 for TV, 3 for radio and 12 for magazines.

While the survey reflected the feelings of smaller agencies, an executive of one of the larger agencies was saying that print and outdoor advertising deserve more attention from major advertisers.

Edward M. Stern, vice president of media and programming at Food Cone & Belding, said "... most creative departments almost automatically start thinking of television storyboards. ... There is really no proclivity in making a commercial that will incorporate all of the selling points. The question is, how much, if any, will be absorbed by the viewer?" Stern said the 100 largest advertisers spend about two-thirds of their total media budget on TV, while the remaining one-third is divided among radio, magazines, newspapers and outdoor.

He made his remarks in a speech at the annual meeting of the Trade Audit Bureau in Miami.

## PUSH PASTA



Invest 1 3/4¢ per cwt. monthly in pasta production promotion, consumer education, and trade advertising to keep sales up.

Constant promotion of macaroni, spaghetti, and egg noodles by the National Macaroni Institute, keeps these products in the consumer's view.

Recipes and photographs go to food editors of every type of media.

Educational materials and recipe leaflets are distributed to consumers, teachers and students.

Films and film strips are distributed for general use and special television showings.

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- 2—Egg Solids and Color Score in Eggs and Noodles.
- 3—Semolina and Flour Analysis.
- 4—Micro-analysis for extraneous matter.
- 5—Sanitary Plant Surveys.
- 6—Pesticides Analysis.
- 7—Bacteriological Tests for Salmonella, etc.
- 8—Nutritional Analysis

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### Problems of Small Business

Legislation to stimulate in the federal government greater understanding of the problems of small business has been introduced by Sen. Gaylord Nelson (D-Wis.).

"Small business has been at the bottom of every Washington priority list for a generation," said Nelson, the chairman of the Senate Small Business Committee. "It obviously would be at the top if people in government understood the crucial role of small business in the economy. This legislation takes steps to help achieve that understanding."

The legislation consists of a resolution and a bill.

Under the resolution a federal agency would designate an individual already on the staff to become expert in small business problems. This person would be alert to the impact on small business of any policy, regulation, reporting form or deadline proposed in the agency.

He or she also would serve as an agency contact for smaller companies. "This individual would become, in a sense, the small business spokesman in his or her organization," Nelson said.

The bill would require that small business be sufficiently represented in the make-up of the 1,300 citizen panels that federal agencies and departments appoint to advise them. Nelson said a recent study of panels advising the President's Office of Budget and Management reported domination by the representatives of big business.

Both pieces of legislation will help "guard against unreasonable federal policies that too often in the past have sapped the time, energy, funds and patience of small business," Nelson said.

### Big Business Well Organized

Nelson said that big business was well organized and well represented to the federal government. "Small business, by comparison, is disorganized."

"Big businesses are generously supplied with legions of technical and managerial experts to help them take advantage of federal programs. Small businesses simply cannot afford that sort of help."

"As a result there is a big business bias in the federal establishment. Despite the fact that small business furnishes 52% of all private jobs, 43% of the business output, and one-third the gross national produce, it plainly is neglected here," the senator declared.

### Examples of Neglect

Nelson offered a list of examples indicating how Washington neglects small business.

#### Taxes

Despite repeated complaints by owners of family farms and small businesses that estate and gift taxes are preventing them from passing on their enterprises to their children, and forcing them to sell out or merge with big corporations instead, the taxes have remained unchanged since 1942, Nelson said. Although inflation has expanded the value of farm and business assets 289.3% since then, the amount of an estate or gift not subject to steep taxes has remained at \$60,000 and \$30,000 respectively since 1942, Nelson pointed out.

He said that the corporation income tax treatment of small business did not change from 1950 to 1975. When a "modest" change was made in 1975 it was only temporary to help small business get through the recession.

"A number of studies have documented how the biggest corporations pay an effective rate of only 25%, while most small companies pay the full 48% rate," Nelson said. "Income taxes discriminate against small business. But, again, nothing has been done about it because the voices of big business drown out small business," the Senator declared.

#### Energy

In the area of energy, the Energy Research and Development Administration concocted a plan to stimulate solar heating and cooling research without consulting the Small Business Administration, although 14 other agencies did participate in the plan's development, Nelson said.

"This happened despite the fact that virtually all the imaginative work in solar energy so far has been done by very small businesses, and despite the fact that the potential in this field is great for small business because large amounts of capital are not required," he said.

### OSHA

The federal government, Nelson charged, issued a 330-page volume of regulations in occupational health and safety "to every small business owner who was expected to read, understand, and comply with the applicable sections under penalty of substantial fines."

### Pension Reports

In the area of pensions, he said, a 20-page form was issued to get reports from each of the country's 680,000 small pensions plans. Nelson said the form was long, complex and poorly designed. It was eventually withdrawn following complaints by Nelson, other senators and the public.

"I could go on at length documenting examples of how the federal government is oblivious of the problems of small business, which means that it also is oblivious of the position of small business in the economy," Nelson said.

"Every important study of the last decade about innovation confirms that half of all innovations, including major industrial inventions, and processes, were originated by individual inventors and small businessmen. Social scientists and economists have documented time and again that the quality of life is better in communities where small business furnishes most of the jobs."

"I hope it is becoming common knowledge that small business is in a very serious bind because of confiscatory and discriminatory tax policies, government red tape, lack of understanding and the economic situation."

"Small business needs and deserves equal treatment; not special treatment, but equal treatment. We cannot ignore this any longer. If we want to preserve the kind of life we have enjoyed in America we have to create a climate in which small business can grow and prosper."

### National Small Business Week

May 9-15 is to be designated as "National Small Business Week." Smaller independent enterprises, entrepreneurs, and family farms have been the backbone of our economy, the heart and soul of local communities, and the key to the survival of a competitive, free enterprise system."

### 72nd Annual Meeting

National Macaroni Manufacturers Association at the beautiful Broadmoor, Colorado Springs, Colorado.

Board Meets.

Sunday evening, June 27, 1976

Coming Reception.

Planned dinner function.

MONDAY, JUNE 28

Breakfast in Broadmoor West.

Business Session 9 to noon.

Physical Fitness, State of the Industry,

Government Affairs in an election

Discussion Mixer in the afternoon.

Colorado Cookout in the evening.

TUESDAY, JUNE 29

Breakfast

Business Session 9 to noon.

Dialogue with Grocers.

Tournament in the afternoon.

Business Dinner Party with the

Chorus Singers in the evening.

WEDNESDAY, JUNE 30

Breakfast

Business Session 9 to noon.

Product Promotion Plans.

Ballot for Election of Officers,

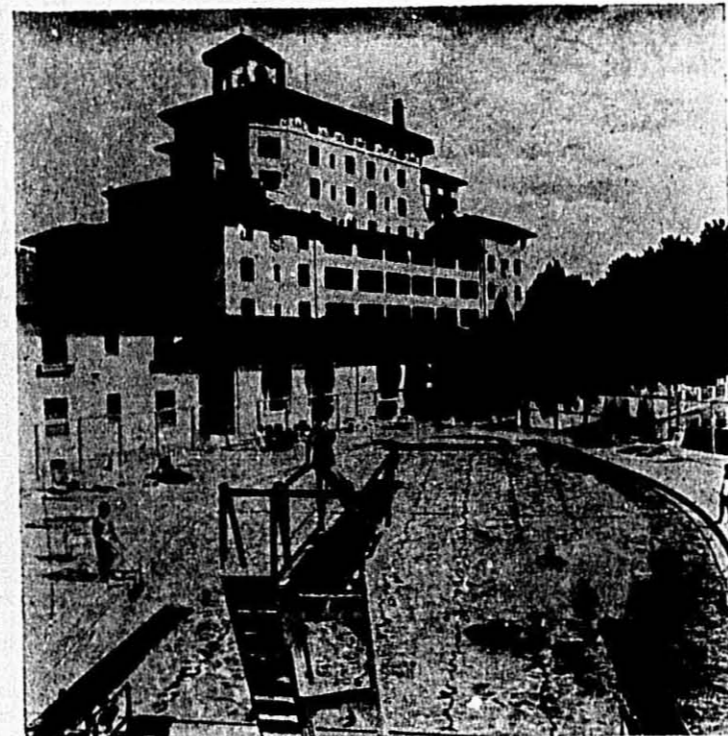
Resolutions.

Afternoon tour of Air Force Academy.

After-Dance in the evening.

THURSDAY, JULY 1

Board of Directors Meeting.



## 72nd Annual Meeting

June 27 - 28 - 29 - 30 - July 1



### Cous-Cous

Cous-cous is a Middle Eastern concoction. Here is a Sicilian style recipe:

- 1 pound semolina
- 2 tablespoons olive oil
- ½ teaspoon cinnamon
- ½ teaspoon salt
- ¼ teaspoon saffron diluted in ¼ cup warm water
- 3 pounds fresh fish as varied as possible (a piece of halibut, a small porgy, ½ pound mussels, ½ pound shrimp, a whiting, a butter fish, a piece of blue fish)
- 1 large onion
- ½ cup olive oil
- ½ red pepper pod, seeded
- ¾ cup almonds
- 3 to 4 cloves garlic
- 2 tablespoons minced parsley
- 2 cups plum tomatoes, chopped
- 1 teaspoon ground white pepper
- 3 quarts warm water
- 2 teaspoons salt, or to taste

#### Two Methods

For the cous-cous you can follow two routes:

1. Use prepared cous-cous, available in many supermarkets or in stores carrying Middle Eastern products. Mix it well with 2 tablespoons olive oil, cinnamon and salt and saffron diluted in 2 teaspoons warm water. Steam it in a cous-cous steamer or rice steamer for 1½ hours. If steamer isn't available, follow the instructions on the package.

2. Mix the saffron with ½ cup warm water. Put in 1 or 2 tablespoons of the saffron water in a large shallow earthenware bowl and whirl it around to dampen sides of bowl. With one hand, sift the semolina flour into the bowl and with the fingertips of the other hand mix it swiftly to obtain small lumps of cous-cous, no bigger than a grain of rice. (It takes a few tries, but it can be done.) Once you have obtained the grains, put them to dry on a clean kitchen towel or brown paper (Clean paper bags are fine for this). Continue until all the flour is dampened and then let dry for 30 minutes. Once dry, mix it with 2 tablespoons oil, salt and cinnamon and steam semolina in a cous-cous steamer or a rice steamer for 1½ hours.

While the cous-cous is steaming, prepare the fish broth. Clean fish and save heads and shrimp shells. Slice onion thinly and saute gently in a

large pot with ¼ cup olive oil and the red pepper pod. Pound together in a mortar almonds, garlic and minced parsley. Add to the onions, stir and cook gently for 2 to 3 minutes.

Add chopped tomatoes and pepper and cook for several seconds, until all the ingredients are blended.

Add 3 quarts warm water and salt and bring to a boil. Once boiling, add fish heads and shrimp shells and cook 20 minutes. Taste for salt and adjust if necessary. If using mussels, clean them well and add them to the soup and boil them until they have opened. Retrieve the mussels with a slotted spoon and put aside for later use. When cooked, put the soup through a sieve into another pot and keep warm on low heat. Discard fish heads and shrimp shells.

As soon as the cous-cous is steamed, put it into an earthenware bowl and add enough fish soup to barely cover. Cover bowl with a plate to keep warm.

Put the fish into the pot with the remaining broth, according to textures, the meatier fish first, and when gently boiling add the more delicate fish. Keep the broth boiling gently until the fish is done. (The fleshier fish take about 20 minutes total time and the smaller fish 14, while the shrimp are done in 5.) Take care not to overcook. When all fish are almost cooked, add the mussels to reheat them.

Serve fish and its broth in one plate and the cous-cous in another. Cous-cous should be eaten adding some fish and some broth to the cooked semolina as you please. 6 to 8 servings.

### Spaghetti takes on Spanish flair

Spaghetti suppers usually are Italian in style, but here's one inspired by the Spanish—*fideos a la cazuela*, which means spaghetti in a pot. The seasonings in this pork and cheese dish are lively surprises. Trim excess fat from 2 to 3 cups cold cooked pork (leftover pork roast, simmered pork hocks, country spareribs, etc.). Cut in small pieces. Skin ½ pound garlic sausages; cut in ½-inch chunks. Lightly brown meats in casserole or dutch oven adding oil, if needed. Add 1 onion, chopped, 1 clove garlic, minced, and cook to golden. Stir in 1

large tomato, peeled and cut chunks, 2 to 3 tablespoons chopped green chili, and 1 teaspoon sea-salt. Dissolve 1/16 teaspoon Spanish saffron in 1 cup pork, beef, or chicken stock; add to pork mixture. Simmer 20 minutes. Add 1 teaspoon chopped parsley. Mix well 3 tablespoons ground lightly toasted almonds, and 1 tablespoon cocoa. Stir into mixture. Cook 12 ounces spaghetti rings or other thick, short spaghetti to package directions. Drain; add to pork mixture. About 20 minutes before serving, sprinkle with ½ cup shredded Monterey jack cheese and slivered almonds. Bake at 350 degrees until bubbly and cheese melts. Makes 6 to 8 servings.

### U.P.C.

(Continued from page 32) almost unbelievable information this area." Little feels this and other advantages of scanning systems more important than faster customer throughput, which "is not as much we were led to believe." The other advantages he mentioned were "believable accuracy" and "better inventory management." His firm has four scanning systems in operation, another four on line and three planning stages.

### Egg Review

The nation's laying flock produced 5.2 billion eggs during February, above February, 1975. The average rate of lay during the month was 5% from a year earlier. The number of layers on farms March 1, 1976, was 279 million, down 1% from 281 million a year earlier but nearly the same a month earlier. The rate of lay March 1 average 64.2 eggs per layer, an increase from the 63.8 a year earlier and 63.8 on February 1976.

Egg-type chicks hatched during February, 1976 totaled 39.2 million, 7% from the 36.8 million produced a year ago. Eggs in incubators on March 1, 1976, at 42.0 million were 6% above last year.

### Egg Processing

Shell eggs broken in the last half of 1975 were down 7% compared with the last half of 1974. Frozen products were down 9%, dried products 11%

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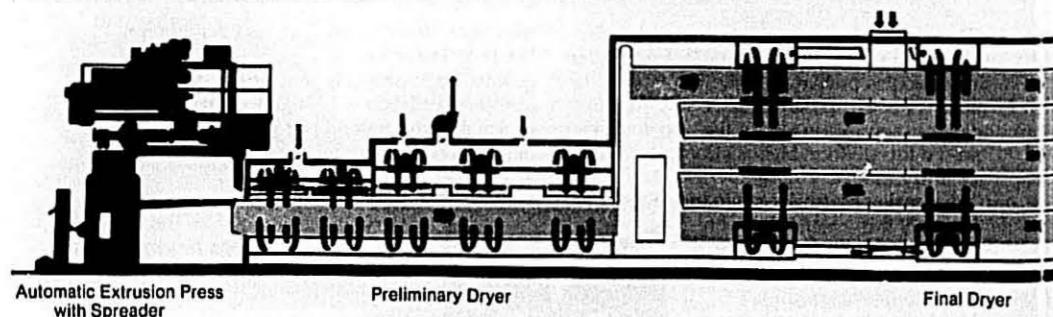
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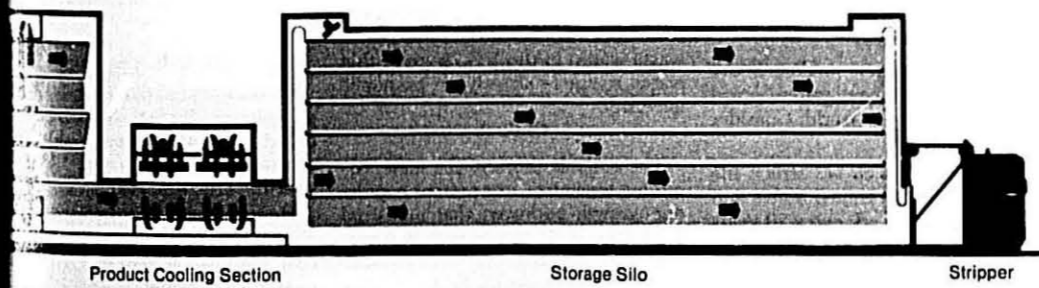
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## WATER—The largest Single Component of our diet

By the editors of *The Professional Nutritionist*, a public service publication of  
Foremost Foods Company

Water re-use has become a common practice as a matter of necessity. We no longer have enough fresh water, on a per capita basis, to use it once—and then throw it away.

The world's supply of water could be considered unlimited in relation to man's foreseeable needs. But this does not mean that an unlimited supply is available for present and immediate use.

### Quality and Location

Quality and location are but two of the problems. About 97% of all the water on earth is salty—in the oceans. This leaves about 3% that is fresh. Of this latter small quantity, about three-fourths is found in remote locations—bound in polar and glacial ice. The remaining quarter of our fresh supply occurs as ground water, and much of it at great depths.

At any one time less than 0.4% of fresh water (or less than 0.004% of the total supply) is present at reasonable available locations in lakes and rivers and as ground water.

### Weather

Another important factor in fresh water availability is the unpredictability of weather. It's directly dependent on our global weather system. Changes in the weather can either take from or add to our available supply of fresh water.

Climatologists now predict a dry weather period in many water-critical areas throughout the world. Consider that:

- The drought, which has struck the Great Plains of the United States and Canada like clockwork every 20 years since the Civil War, is overdue, say the weather experts.
- More frequent drought (every fourth year instead of 18 years) also is expected in India and other parts of Asia. The monsoons are moving in a cyclical shift away from land (and population) masses, dumping their water directly back into the sea.
- No letup is foreseen in North Central Africa where severe drought has persisted for eight years, and where the south edge of the Sahara Desert

is over-running fertile land at a rate of up to 30 miles annually.

### Social Concern

Water has long been woven into the social, political and economic affairs of man. The traditional uses are well known: irrigation, industrial, hydro/steam electric power, power cooling, recreation, and of course, domestic (municipal and bottled). Further, its use, in terms of withdrawal and consumption, has been classified by Professor J. E. McKee of the California Institute of Technology, as follows:

Withdrawal use includes domestic, industrial, irrigation, and steam-electric power. Non-withdrawal use includes hydro-power, navigation and recreation.

Consumptive use include evapotranspiration, water in products (such as beverages), losses, and evaporation from cooling towers. Non-consumptive use of water includes returned sewage, returned industrial water, returned irrigation water, and returned cooling water.

The extent of water re-use is difficult to quantify in precise terms. River water, for instance, may be used many times and for different purposes as it flows from city to city in its journey to the sea. One measure, the almost \$10 billion annual expenditure for water treatment (incoming and waste water) in the U.S., is proof that water re-use is already an economic necessity.

### Outlook

The outlook: more of the same. Assuming we stay on our present population growth pathway, that industrial production will keep up with the surging needs of man, and that weather changes are more likely to deplete than add to the fresh water supply, it may be concluded that:

- The need for fresh water will increase with the population growth—exponentially.
- Fresh water supplies available for municipal and industrial use will be stretched by sophisticated water treatment, to achieve more extensive water reclamation and re-use.

- Desalting of brackish and sea water will be used where necessary to supplement the fresh water supply.
- And, even tighter government regulations in the areas of safety and conservation can be expected.

### Aim for Water Use Efficiency

Addressing the North Dakota State Water Conference, Dr. Donald Anderson of the agricultural economics department of North Dakota State University described the increasing demand placed on water resources in expanding world food needs.

"A new emphasis must be placed on research to create more efficient agricultural and industrial uses of water," Dr. Anderson said. "The biological budget of mankind stipulates that water is demanded in ever increasing quantities by a growing population seeking higher standards of living."

Dr. Anderson noted that 300 to 500 lbs of water are required to produce a lb of organic matter in wheat, 600 to 800 lbs for a lb of potatoes and 3,000 to 5,000 lbs for a lb of organic matter in vegetables. Furthermore, he noted, many agricultural processing industries require huge volumes of water in preparation of food and fiber products.

### 35 Gals. per Slice

"It is estimated that 35 gals of water go into production of one slice of bread from the wheat field to the consumer's table," Dr. Anderson stated.

He observed that industrial processes, such as rubber, oil refining, and coal gasification require even larger quantities of water.

He said that research to determine the optimum use of irrigated land in the Garrison Diversion Project in North Dakota indicates that the water-using crops, such as potatoes, beets and beans, do well under irrigation.

Smooth waters—making progress with rough waters—the opposite.

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### GMA Opposes Anti-UPC Legislation

Those who want to stop the tests of the Universal Product Code-assisted automated checkstands "carry the banner of a 'Consumer's Right to Know,' yet their efforts would prevent consumers from finding out for themselves what they wish to know, how they wish to acquire such knowledge and how much they are willing to pay for its presentation," according to Senate testimony of the Grocery Manufacturers of America, Inc. (GMA). Jane E. Fawcett, Manager of Information Services, appeared on be-

half of the Association to state their opposition to H.B. 720 which would require that all products sold at retail bear an individually marked price on each item.

Miss Fawcett referred to consumer concern over high food prices and commented that, "the chief link in covering increased costs, is obviously an increase in productivity. Rarely are we given an opportunity to increase productivity while simultaneously improving the quality of customer service," she observed.

### In Testing Stage

"The UPC," according to the GMA witness, "is still very much in the testing and experimental stage. Although considerable research has been done on developing a more efficient pricing and checkout system for grocery products, much more is still to be done. The primary purpose of these tests is to determine whether the addition of other pricing information elsewhere can serve the interests of consumers just as well or better than individual item pricing and; of course, whether significant cost savings can be achieved through this method in conjunction with other variables within the system's potential."

The GMA representative concluded her remarks by saying, "H.B. 720 would kill an idea which has yet to be born. If left to its natural course, the idea might prove unfruitful, in which case it will die a natural death in the marketplace. If marketplace experience proves it to be a bad idea, that is the time for the legislature to consider regulation in this regard."

### GMA Endorses Upgrading and Strengthening FDA

"It does not appear that the number and quality of scientific personnel in the FDA have kept pace with the demands placed upon them," said Dr. Robert O. Nesheim.

Dr. Nesheim, Vice President for Research and Development of The Quaker Oats Co., testified before the House Subcommittee on Health and the Environment on behalf of the Grocery Manufacturers of America, Inc. The Subcommittee is considering legislation to upgrade the status of the FDA within the Department of Health, Education and Welfare.

In Nesheim's testimony he called for a thorough upgrading in personnel levels of the FDA with the head of the agency having the rank of Administrator, appointed by the President with the advice and consent of the Senate. The Administrator's level would be that of Assistant Secretary of the Department of Health, Education and Welfare.

### Single Location Suggested

Dr. Nesheim also suggested that proposed legislation include a future single location for the FDA. "High quality scientific personnel can be attracted to the FDA, and retained by the agency, only if the current facilities are substantially upgraded and consolidated," he said.

Several recommendations were outlined by Dr. Nesheim to strengthen the scientific capabilities of the FDA. Among them he proposed the concept of "visiting scientists" and academic authorities who could provide advice and supplementary opinion on specific issues as well as consultation in broader areas.

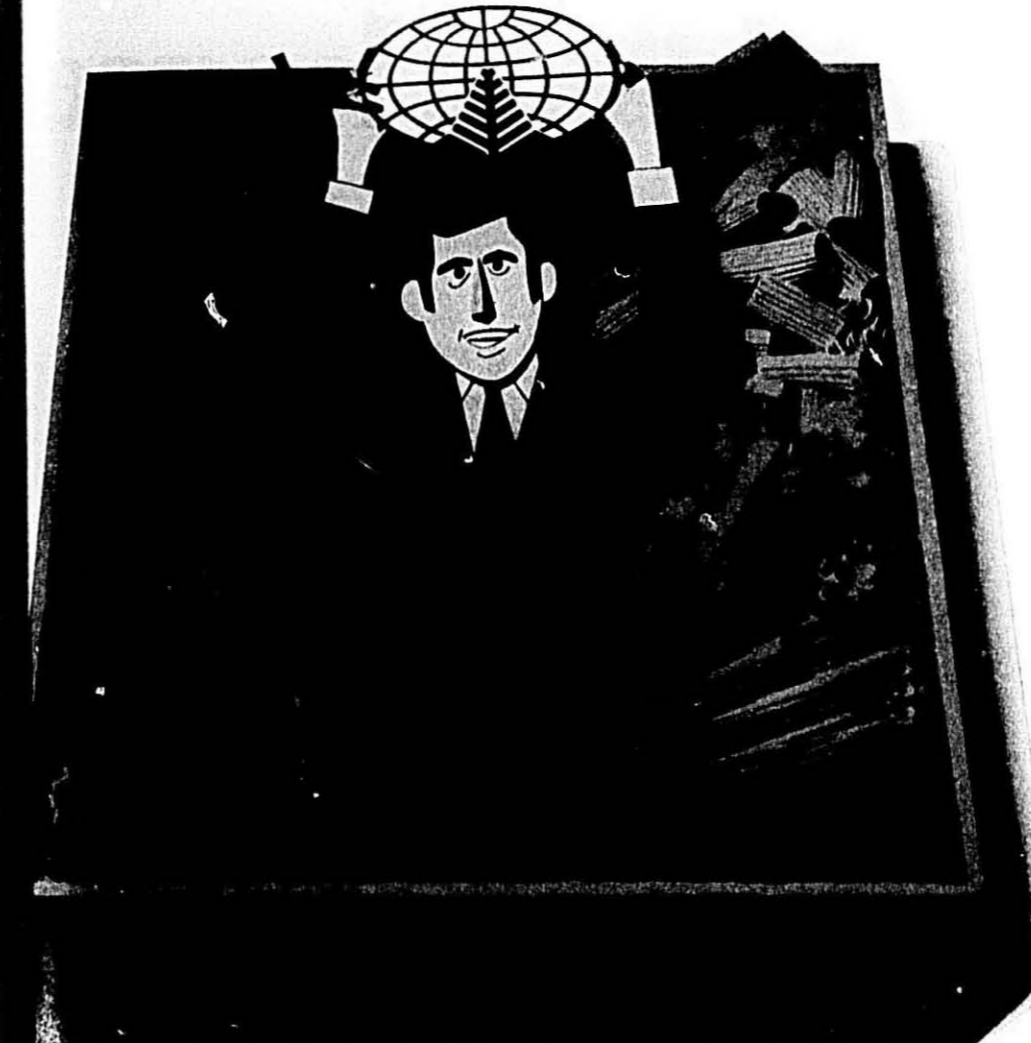
Nesheim urged "greater use of advisory committees, particularly through the National Academy of Science, in order to bring to the agency the best expertise available on Food Safety matters in his country."

### National Food Policy Needed

"A mandate for a national food policy is essential to prevent further unnecessary inflation of food prices," according to Nesheim. To accomplish this he suggested that a national policy on all food and drug law matters be established, with federal funding to states to assure compliance and uniformity.

A current trend, he said regretfully is, "... an increasingly diverse set of requirements established by state and local jurisdictions, in conflict with, in addition to federal requirements. Federal law, he said, should preempt state law in the food area.

Nesheim concluded by opposing that aspect of the bill which would authorize unlimited FDA subpoena power in its information gathering. He recommended the provisions of a similar Senate bill (S. 841) be substituted.



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