HOOKED!

ON THE (LAKE ERIE) WATERFRONT:
OHIO 4-H SEA CAMP
The resident instruction programs in agriculture and natural resources at Ohio State University are entering a new and exciting era. The future is bright and opportunities abound for college graduates in a wide variety of career areas. Students in the College of Agriculture can select from more than 60 majors, most of which relate to the so-called glamour careers of the 1980s—business, science, technology and communications.

A recent USDA study indicates a continuing shortage of college graduates in agriculture and natural resources during this decade. Fewer than 44,000 graduates are estimated to be available annually to fill 48,000 employment openings. The major areas accounting for the 10 percent shortfall are in these employment clusters—scientists and engineers; managers and financial specialists; and marketing, merchandising and sales representatives.

The keys to developing the needed expertise are: 1) an increasing supply of talented young people entering our College of Agriculture and 2) a revitalization of our curricula to address the needs of graduates in the 1990s and beyond.

Our College of Agriculture continues to prepare for both needs. For example, the College is engaged in an extensive marketing program to reach urban and suburban students and rural sector students currently not electing careers in agriculture or natural resources. In addition, efforts to attract minorities to our programs are being expanded.

Curricular revitalization also is underway on the Ohio State campus and the College of Agriculture. With rapid technological change and new discoveries, our graduates must have a strong and broad foundation in the physical and biological sciences, the social sciences, and humanities.

In addition, they will need excellent communications skills; technical and business skills including computer competency; and the ability to synthesize and solve problems. With our broadening interaction with other areas of the globe, our students also must understand the politics, economics and cultures of foreign lands to compete in an internationally driven economy.

Above all, students must have the foundation which will permit them to adapt to changes inevitable during their lifetimes. As we move to liberalize our curricula, probably even more internships and experiences outside the classroom will add to that foundation.

Graduates of our programs have made distinguished contributions to our nation’s agricultural and natural resources enterprise. Scientific and professional expertise is the key to future growth and progress in quality of life as we move into an ever expanding global marketplace toward the 21st century.

Kenneth W. Reisch
Associate Dean, Resident Instruction
College of Agriculture
Ohio State University
Cover Story

4 by Scott Turner
HOOLED!
Ohio's 4-H Sea Campers, you'll discover, are a special breed. With Kelleys Island their home, 'booming' Lake Erie their classroom, they learn the skills and science of a Great Lake.

Features

2 by Jacqueline M. Ulery
STRAWBERRY YIELDS FOREVER
OARDC scientists and private industry come together to improve Ohio strawberries. They seek new markets—and the very best berry.

8 by Kurt Knabusch
MAN WITH A MISSION
Director of development Clancy Biegler leads his team into and beyond the College of Agriculture Campaign.

10 by Stan Ernst
RAISING ANGORA
Goats, llamas, blueberries and birdseed—here's how your back forty can come alive with innovative enterprise.

14 by Judy Kauffeld
TAKE ME TO THE RIVER
Traveling 610 miles down the Ohio River, the Boatload of Knowledge sailed waters deep with natural and human history.

20 by Jacqueline M. Ulery
FIGHTING PHYTOPHTHORA
A new tissue culture process lets plant pathologist A. F. Schmitthenner speed the race for resistant soybean varieties.

22 by Scott Turner
CROSSROADS
Paulding County juvenile offenders face a detention center alternative: 4-H. What they learn can show the way to a positive future.

Updates

25 THEY CAME FROM OUTER SPACE
Ohio State's educational satellite programs are on the air.

26 GET R.E.A.L.
The Research-Extension Analytical Laboratory offers analysis and a little more. By Jacqueline M. Ulery.

27 OHIO'S FINEST
Cuyahoga County's Master Gardener program thrives on enthusiasm. By William Warren Jr.

News Briefs

28 POT SCRUBBERS BENEFIT HIGH-CONCENTRATE CATTLE DIETS
28 EXTENSION'S FUTURE: TASK FORCE TAKES LONG-RANGE LOOK
29 DYNASTY: OARDC RELEASES NEW BEARDED WHEAT VARIETY
29 IN PRINT: NEW PUBLICATIONS FROM OCES, OARDC
They're after a strawberry second to none. And while they're at it, Ohio State University researchers aren't letting hefty odds stop them from determining if Ohio can find a better niche in the strawberries-for-processing business.

Joseph C. Scheerens, project coordinator and Ohio State horticultural plant breeder at the Ohio Agricultural Research and Development Center, explains that less than 5 percent of Ohio's strawberries are marketed for processing. Most of the state's 1,650 acres of strawberries are sold fresh or as pick-your-own.

In the past few years, Ohio strawberry production ranked seventh in the nation and continues to decline from peaks in 1979-83. Though most strawberries in this country were grown east of the Mississippi before World War II, California now produces 90 percent of the total U.S. crop.

California's strawberry yields typically reach 60,000 pounds per acre, or from 12 to 18 times those in Ohio. California has similar excellent records for the production of other fruits and vegetables.

One goal of Ohio State's research is to develop the best strawberry possible. Next question: When do we start the toast?
mechanical harvesters or overhead irrigation systems for frost protection." Ohio gross return is currently $3,000 per acre with only 20 percent of growers planting more than 10 acres.

"It's easy to think about having a strawberry growing business, but doing it well is complex," Rhodus says.

Although economics plays a big part in the Ohio State project, some of the other researchers have already set out to build a better strawberry.

"We've started with consumers," Cahoon says. "In fact, they're calling the shots with the kind of strawberry we develop."

The Smucker Company and Ohio State both are collecting opinions about different strawberries and preserves from taste panels around the country. Panels are telling the researchers what flavors, colors, and textures they would like to buy.

Scheerens along with David C. Ferree, OSU/OARDC plant physiologist, and others have planted and are collecting detailed data about 32 U.S. strawberry varieties.

These varieties include not only good strawberries but poor ones as well. The idea is to collect a large variety of berries with differences in fruit and other plant characteristics. Even generally poor plants can have desirable traits scientists may want to transfer to another plant.

James F. Gallander, OSU/OARDC food technologist, has logged extensive data about berry color, size, texture, taste, sugar content, and acidity. Such information is gathered with precision instruments and chemical tests for both fresh and frozen berries.

On many days, the sweet smell of hot strawberry concoctions bubbling in beakers lingers down laboratory hallways. In other rooms, on both the Wooster and Columbus campuses, people on taste panels dip spoons into red jams and jellies.

With taste panel results and the large collection of berry characteristics in hand, the chemical data of the various varieties can be linked with the sensory findings. Then Scheerens and others can use the data to develop several new varieties using traditional crossbreeding procedures in the greenhouse and field. Scheerens' goal is to get several strawberry plants with 80-90 percent of the desired traits.

Then, he will pass his best plants on to Ray Miller, OSU/OARDC horticulturist, who will attempt to improve them more through some of the latest biotechnological techniques. Miller is already working on perfecting tissue culture procedures in growth chambers, which allow faster reproduction than in the field. In addition, Miller can select for desirable traits by monitoring naturally occurring variabilities in plant tissue culture. No one has tried this same tissue culture procedure with the strawberry plant. But Miller has used it to produce a cottonwood tree with fewer woody cells, important to the paper industry because those cells must be removed before paper can be made.

Miller has his work cut out for him, however. The difference with the strawberry plant is that the color, flavor and texture traits are in the fruit and not identifiable in tissue culture cells as in the cottonwood tree.

Both Miller and Scheerens will watch for berries that tend to stay naturally free from disease and insect damage, permitting producers to grow berries with fewer chemicals. They'll also watch for a multitude of other cultural considerations. Ohio State's history of working with strawberries and other plants provides built-in background for the project.

At this point Scheerens says the work remains broad-based and can go many directions, depending on findings and interests of growers and processors. He says the project is different from strawberry research programs at other universities around the country, because such a wide variety of expertise is channeled into it all at the same time.

This Ohio State project is young, but the signals are clear. New knowledge about strawberries will be heading for berry patches and for spreading on bread.
Walleye landing net (also can be used for freshwater drum, slow stinkpots, fast bullfrogs, wind-blown Sea Camp hats)

Snorkel: Marine Boy used Oxy-Gum, fish use gills, Sea Campers use this.

Compass points to Ontario (north), Toledo (west), Cleveland (east), nearest "McDonald's" (south)

Binoculars help distinguish eagles from egrets, gulls from grebes, Bayliners from Sea Rays.

Camera records Sea Camp highlights: first scuba dive, biggest catfish, longest rockskip, oranges!

Comfortable yet stylish swimwear: Bright colors attract minnows, hummingbirds; frighten tourists.

Sturdy fishing pole keeps the Big One—walleye, small-mouth, drum, Cladophora—from getting away.

Official Sea Camp hat provides (a) latitude-longitude of Sea Camp, (b) transporter coordinates for Scotty.

Diving mask lets campers go face to face with Perca flavescens.

Personal Flotation Device for safety; fosters "Banana Republic" look.

Tackle box holds all-important Eagle Claws, Erie Dearies, Hot-N-Tots, Snickers, Kit-Kat.


Microscope unveils Lake Erie's teeming plankton life; just look at what those copepods are doing.

Diving knife for snorkeling, scuba, Norman Bates impressions.

Diving flippers for snorkeling, scuba, Charlie Chaplin impressions.

Lake Erie, Sea Campers discover, supports abundant wildlife (including several introduced species).
You'll know 'em when you see 'em—Ohio's teenage Sea Campers are a special breed.

BY SCOTT TURNER

An avid explorer of aquatic life near his home in Circleville, Brian Frank, 14, is just as zealous lecturing about the walleye's place in the food chain in Lake Erie, 150 miles away. He'd only been to Lake Erie twice, but Brian, along with 64 other Ohio teens, studied the world's 12th largest lake firsthand when he spent a week in July at the 1987 Ohio 4-H Sea Camp on Kelleys Island.

Campers there range from those hoping to become aquatic biologists to those who want to learn to fish, scuba dive and snorkel—the three most popular activities at Sea Camp. Additional sessions include water safety, ecology, lure making, weather study, aquatic science, and boat operation. All are conducted by professional instructors such as, Ohio Cooperative Extension Service specialists and agents and Ohio Department of Natural Resources personnel.

For Kerry Conrad, 16, of Marysville, snorkeling and scuba diving in the clear waters of the island's quarry was a career move. "I've never done either of these things but I'll probably do them again," he says. "I want to be an oceanographer or marine biologist."

It was the first trip to Lake Erie for Karen Bishop, 17, of Chandlersville. "I was afraid of putting on the heavy scuba gear. And breathing under water feels funny. But I've learned a lot."

Many of the campers had never fished in Lake Erie. Some, such as Conrad, had never fished at all. Her biggest battles during shoreline fishing came as she tried to keep her rock-snared line from snapping.

Ohio 4-H Sea Camp is conducted by the Ohio Cooperative Extension Service and Ohio Sea Grant with direction from Ohio 4-H agents, district specialists and volunteer leaders.

Ohio Sea Grant is a state-federal program to enhance development and improve management of state and regional aquatic resources. It seeks wise use of those resources to strengthen the quality of life in surrounding areas through research, education and extension.

Denny Weilnau, Erie County 4-H agent and Duane Plymale, south district 4-H specialist, co-directed the 1987 Sea Camp. Orrin Leimbach, a volunteer leader from Vermilion and Carolyn Keller, Erie County 4-H program assistant, were the camp's activity coordinators. Fred Snyder and Dave Kelch, district extension specialists,
Sea Grant, conducted several of the camp sessions. Snyder is based in Port Clinton. Kelch works out of Elyria.

Snyder says: “Lake Erie is booming. Fishing is a major industry. Investment in condominiums has skyrocketed. The lake is cleaner and rejuvenated and is drawing people from across the Midwest.”

Sea Camp began in 1985. It’s open to Ohio teens ages 13-17. Each applicant must write an essay about why they want to attend camp and what they hope to learn. The campers applied through their county extension office or through their district Sea Grant specialist.

“The camp reflects the renewed interest in Ohio’s greatest natural resource,” Kelch says. “There was a time when Lake Erie was considered dead, a victim of human activities. It wasn’t dead but it was close to it.”

Today the lake is a playground for boaters, anglers, sunbathers, swimmers, and campers. In 1985, Lake Erie sport fishing generated nearly $123 million in sales by Ohio companies, $43 million in personal income to Ohio residents, and 2,466 person-years of employment.

Much has been done to reduce pollution in Lake Erie, but human activity still threatens the lake and the communities around it. Programs help control toxic discharges into the lake, yet simply dredging a channel can stir up chemical-laden sediments.

In March 1987, for example, an advisory was issued by health agencies in Ohio, Pennsylvania and Michigan because excessive levels of PCBs were found in Lake Erie carp and catfish. PCBs are a group of chemicals linked to cancer and other health disorders.

“We want the kids to see that a clean lake has a ripple effect,” Kelch says. “A healthy environment does everyone good. That’s why camp focuses on both natural history and resources. And with Ohio 4-H camps mixing fun and education in areas such as conservation or leadership, we thought why not do the same in the area of marine education.”

Snyder says that this holistic introduction of teens to Lake Erie has led local marine industries and other Lake Erie-related organizations to donate new boats and fishing equipment as well as personnel to the camp.

As teens examined the deep glacial grooves found in Kelleys Island State Park, Snyder explained his Sea Camp philosophy: “I consider Sea Camp a training session for future mariners. I don’t want them to misinterpret that a cleaner lake is something to take advantage of. A healthy lake benefits an ecosystem stretching hundreds of miles from its shores.”

Snyder’s philosophy may best be represented by camp’s all-day charter boat fishing trip. The teens spend the day with experienced charter boat captains who share their stories on what a rejuvenated, respected resource means.

The campers also learn that the number of licensed charter boat captains in Ohio has increased from 46 in 1975 to nearly 900 today. On the trip, campers test their new skills in fishing and walleye lure construction. And when the day is over, another opportunity awaits them—they get to clean and cook their catches.

For some campers, a day spent on the lake is something not soon forgotten. Tracie Krysiak, 16, of Akron, went on her first fishing trip during 1985 Sea Camp. She caught a 7½ pound walleye, the biggest fish caught during the camp. The fish was mounted for free by the Lake Erie Charter Boat Association.

In 1987, Tracie was a Sea Camp counselor. “This was my best camp because I was part of the teaching, especially when I worked with the charter boat captain helping the kids fish,” she says.

As Brian Frank helped his boat mates identify the fish they caught, charter boat captain Bob Vicek discussed the origin of Sandpiper Charters in Parma: “This is our first year in the charter boat business. We like to fish and we want to maintain extra income. This is a way of combining business and pleasure. We thought we’d start off by booking eight trips but so far we have 13.”

Vicek has fished and boated in Lake Erie all his life. Although he handles most of the charters by himself, his wife Sheila helps him with the sea campers.
The Viceks and their two teenage daughters use their boat for family trips as well as chartering. Neither Bob nor Sheila want the charter boat business to become full-time. From August to June, Bob is a high school math teacher. Sheila works charter trips around her schedule as a cardiac nurse.

Bob and Sheila shared fishing techniques and fishing stories with the sea campers on their boat. Between banter and assistance with hooks, lines and lures, nearly every teen caught six walleye, the state limit.

“The real fun out here comes from finding the fish and helping someone pull one in,” Bob says. “I remember during Lake Erie’s dark days when people were keeping sheepshead and smoking all the ones they could. Port Clinton, for example, owes so much to the lake’s revival. It reminds me of an East Coast resort town. I’m getting customers from as far away as Chicago.”

Sea Camp was the first trip to Lake Erie for Susie Vargo, 16, of Plain City. “Fishing was the best, but seining a marsh and studying its plankton, fish and tadpoles were fun. I’m interested in teaching and aquatic biology. This shows me I can do both. I’ve learned more here than I ever did before in a camp.”

Julianne Barth, manager of the Big Island Wetland in Sandusky, donated her time to lead the aquatic science sessions. Standing knee-deep in the lake, Barth told the teens that during the 1950s and ’60s, phosphorous from sewage and agricultural runoff caused algae to bloom and oxygen levels to plummet in the lake. This caused mayfly larvae to die and the fish that fed on them to die, move or feed on other, less nutritional insects. History and biology lesson over, Barth sent a group into the lake with a specialized bucket to scrape up a layer of sediment for examination. “Where else but here can these youngsters hold a gizzard shad or a shiner in their hands,” she says.

Sea Camp caught the media’s attention in 1987. The Toledo Blade featured the story on its July 16 front page. WTOL-TV, Channel 11-Toledo, sent a news crew and aired a report on Sea Camp during a Sunday news segment.

On the charter boat fishing trip, Conrad showed that during camp she definitely had learned something: “I almost went overboard during a fight with a walleye. I did catch five of them, though.”

Elyria diving instructor Russ MacNeal teaches scuba to campers in East Quarry.
Clancy Biegler wears his heart on his sleeve. Make that his lapel, because that's where his gold Ohio State pin shines. In charcoal suit, burgundy tie and black wing tips, Biegler speaks openly, excitedly, looking straight in the eyes. He's the College of Agriculture's director of development, and he wants $18 million. From you.

As captain of the College of Agriculture Campaign, part of the on-going $350 million Ohio State University Campaign, Biegler sells the vision of an improved College of Agriculture—"Look to the future," challenges the Campaign's theme. With his audience ranging from mortarboard-tossing March graduates to Fortune 500 giants, Biegler seeks the contributions that the University bean counters hope will total or surpass $18 million.

"We have the opportunity to build the College for the future, to build a base for continued improvement," he says. "The contributors are the key players. Their contributions—from alumni to corporate—are vital to our success."

Ohio State, Biegler says, is state-assisted, not state-supported. State funds provide less than one-third of the University's budget, tuition and fees provide just under one-sixth, and the remainder comes from external sources—the federal government, corporations, foundations, payments for service and philanthropic contributions.

"Our margin of excellence comes from the contributions we receive," he says.

Enter the College of Agriculture Campaign. It seeks to fund seven endowed chairs, four specialized programs, and student scholarships and fellowships—targeted institutional priorities, or TIPs, identified by College faculty and Dean Frederick E. Hutchinson. The TIPs are designed to enhance the academic core and enhance and support the student body, Hutchinson says.

Current Campaign TIPs are the Chair in Agricultural Economics, the Chair in Biotechnology (Animal), the Chair in Biotechnology (Plant), the Chair in Biotechnology (Virology), the Chair in Dairy Foods, the Chair in Water Management, the Chair in 4-H and Youth Development, Computer and Communications Systems, the Food Industries Center, Science and Business in 4-H, the 4-H Endowment Fund, and the Endowment for Undergraduate Scholarships and Graduate Fellowships.

"But we have a lot more balloons in the air," Biegler says. "The development program in agriculture encompasses the College of Agriculture Campaign and predates it by several years, so the $18 million in Campaign TIPs represents only a part of our funding plans. The Annual Fund, for example, supports the College of Agriculture Discretionary Fund..."
and allows Dean Hutchinson to fund programs that otherwise would not be possible."

"The development program and the Campaign help provide 'essential extras,' programs that go beyond our level of state funding," Hutchinson says. "They're necessary for us to attract the best students, faculty and resources."

Biegler directed development programs for Muskingum College, St. Andrews Presbyterian College, and the Marts & Lundy consulting firm before becoming development officer for Ohio State's College of Veterinary Medicine. He came on board the College of Agriculture in December 1986.

"Agriculture changes," he says. "So our funding priorities change, too. Some are met, some are added. This is as it should be, because we need to keep research, extension and instruction viable."

►The Anderson Chair in Agricultural Marketing and Trade Policy and the Haas Chair in Food Industries are two College priorities that have already been met, Biegler says. Both were completed more than a year ago.

►Currently underway is the Farm Income Enhancement Program, initiated by Governor Richard F. Celeste's challenge to the Ohio Farm Bureau and the College of Agriculture. "We're undertaking a $3 million program to help improve the nation's farm economy," Biegler says. Additional funding will come from the U.S. Department of Agriculture.

The Chair in Dairy Foods in the Department of Food Science and Nutrition is more than half way to its goal of $1.25 million. Biegler says the chair will provide intensive research into dairy industry problems, bolster the teaching program, and provide better information for the extension service.

One additional on-going priority Biegler mentions is the continuing effort to acquire more equipment for the Agricultural Engineering Building, opened in 1987.

►Biegler also highlights the future priorities: A chair in turfgrass research is proposed to meet the growing needs of the turfgrass industry, focusing on the fates of chemicals in aquifers. A chair in dairy science is proposed to study lactational physiology and mammary health and mastitis. A professorship or chair is proposed to continue biotechnical studies of the corn maize virus. The coming year will see the start of a $2 million endowed program for undergraduate scholarships and graduate fellowships. And the Chadwick Arboretum is emerging as a major priority with campus-wide benefits.

The College's funding priorities also include 4-H, animal science judging teams and the LEAD program. "Our priority list is long, but it's important that we strive to meet the needs of our society," Biegler says. "The list, as a result, can seem never-ending."

But supporting research and development is critical to the future, Hutchinson says. "We all have something to gain. The work done in the College can benefit agriculture throughout the world through increased productivity and profitability and an improved quality of life. That's something we consider important."

Now, with the College of Agriculture Campaign boosting the development program, both Hutchinson and Biegler predict results as new heights of educational excellence.

"We're striving for excellence in our programs, and the Campaign keeps us moving after that goal," Hutchinson says. "Our programs will be positioned for the 21st century."

"The Campaign is just the beginning," Biegler adds. "What we're doing is building a base—and the College will keep moving up."

Magnificent Seven
Who's who in agriculture's Development Office.

Development Office headquarters are in Room 115, Agricultural Administration Building, Columbus. But its busy staff members often work elsewhere, on- and off-campus. Here's the team en masse—the staff, seven-strong, of Ohio State's agricultural development programs.

(Left to right) Roy Kottman, land gifts and estate planning; Clancy Biegler, director; George Greenleaf, LEAD and farm enhancement program; Sandra Lueschen, development officer, ATI/OARDC; Larry Rummell, 4-H programs; Lynda Heyl, home economics and agricultural corporations/foundations; and Dan Grafner, development officer, veterinary medicine.
Innovation is becoming big business in rural America. The back forty is filling up with llamas, blueberries and bed-and-breakfast houses.

A depressed farm economy and continued migration to rural areas have increased interest in non-traditional enterprises for farmers and others with a few acres and or extra time. And while their approaches may differ, the bottom line for both groups is still making money.

Marketing your innovative product is the key, according to Gregory R. Passewitz, small business specialist for the Ohio Cooperative Extension Service. “What we talk about is not ‘Can I grow herbs in Noble County?’” Passewitz says. “The questions are ‘Is there a market for herbs grown in Noble County?’ and ‘How much time am I willing to put into this operation?’”

For persons considering new businesses, here are suggestions from Passewitz, Ohio State marketing specialist Kelso L. Wessel, and others:

- Read as much information as you can about direct marketing and producing the product of interest. Try popular farm and garden publications and newspapers. Use the library to keep costs down.
- Talk with people with innovative businesses. Find out what does and doesn't work for them. Focus on people with businesses similar to one you'd like.
- Check with your county extension office about special programs and publications related to specialty crops or home-based businesses. Find specialists at a university or in support industries who can give unbiased advice about production and marketing.
- Visit roadside markets, craft shops, bed-and-breakfast homes or other innovative enterprises. Attend conferences on direct marketing or training sessions related to the enterprises you're interested in.
- Inventory resources. Know how much time, money, and skill you're willing to invest and what is demanded by each alternative. Personal skills and interests are critical. If you don't like working with the public, pick-your-own berries may not be a good idea unless you're willing to hire someone to do the selling. Likewise, don't start a woodworking business if you don't
have the patience to do quality work.

Study your market. Why waste time and money producing something you can't sell? Ask potential buyers what they want. Who is your competition? Is there room in the market for you?

Analyze your budget. Do a cash flow analysis for your potential business. Plug in different variables and include both start-up and maintenance costs. Be realistic. Compare potential ideas or combinations of ideas before making final decisions.

Select an enterprise. Doing your homework will make your decision easier.

Start small. And don't put all your eggs in one basket, Passewitz says. Many ideas fail because people try to get their business too big too fast. Try several things on a small scale to see which will be the most successful.

When trying something new, spend only what you can afford to lose on a new enterprise. Risking big bucks on an unproven idea usually isn't smart. Spend money on better buildings and equipment after you've proven you can make the business go.

No matter how cautious you are, you'll still have to take some chances. "Try to minimize risk by raising your awareness level and being realistic about your goals and expectations," Passewitz says. "Risk management is part of business management."

Kelso Wessel says to fine tune your current farm operation before making any radical changes. Little adjustments could be better than starting a whole new enterprise.

For example, forward contracting and using the futures markets to hedge prices may improve profits more than a new enterprise. Grow crops for maximum return rather than maximum production. Are your soybeans high enough quality for human consumption? If so, consider marketing edible soybeans.

Also, remember that underutilized facilities cost money. Rent them or use them. Could you custom feed livestock for others? Does your area have a market for "lean" or "natural" meats? Can you sell individual animals to local customers as "freezer meat"?

Improving business skills saves money. Are you buying inputs in bulk and shopping for the best price? Good records help single out profits and losses and are critical at tax time.

Rural people are trying new ways to keep their financial futures in the black. Here are a few ideas at work in Ohio.

DAN AND DONNA ROUSTER ADDED blueberries to their Clermont County orchard in 1982. The idea was a pick-your-own operation to replace peach

Let's talk llama: The selling price of a male averages $1,500—and the maximum can reach $52K.
ENTERPRISE
trees. Three acres of plants yielded about 18,000 pounds of berries in 1987. As the plants mature, the Rousters hope to get up to 40,000 pounds. With those yields, even a crop as expensive to produce as blueberries can be profitable.

“We needed something that would add some income to our whole operation, and we also needed something that would come in during a normally slow part of our year,” Donna says.

The blueberries didn’t interfere with the Rouster’s fall apple harvest. And the berries could be easily frozen for sale in the farm market in the fall. About 80 percent of their crop is sold as pick-your-own, another 15 percent goes through their farm market, and 5 percent is wholesaled to other markets.

But blueberries aren’t for everyone. They require a fairly acidic soil and can’t be grown in some parts of Ohio. Initial high costs of plants and irrigation systems require commitment to the crop, the Rousters say.

Having a market helps. The farm’s market is six miles outside the Cincinnati beltway in what could be described as a bedroom community. And the Rousters have a reputation for quality fruit.

“The biggest thing is to put out a quality product,” Dan says. “We try to get our quality up. We don’t care about how many acres or bushels we’re picking.” He says their goal is a quality product with personal service to customers.

SOME HAIRY LITTLE CRITTERS SAVED the farm for Earl and Nancy Paramore of Shiloh.

“We were like a lot of other farmers,” Nancy says. “We were in financial trouble and we were looking to diversify.”

The Paramores say they stumbled onto Angora goats and are glad of it. Earl saw an Angora goat in a magazine and jokingly suggested Nancy get one.

Angora goats are smaller than the more common dairy goat. They are quiet, curious and have a strong herding instinct. Angoras can be pastured with other animals and will do a good job of eating thorned bushes, brush and thistles.

They don’t usually jump over fences and other barriers but do climb and are small enough to crawl through small openings.

The Paramore’s herd has grown from 50 in 1983 to more than 300. The Richland County couple says the cost of maintaining the animals has been minimal and their Texas-born stock has adapted surprisingly well to Ohio weather. The goats eat little but need a good diet. The Paramores recovered the cost of the first 50 animals in less than a year, even though they had minor nutrition problems and lost a few animals to dogs and theft.

Where’s the profit in Angora goats? From the mohair—used for expensive sweaters and other clothing. A top goat in the Paramore’s herd will shear 10 to 11 pounds, twice a year. Even an average goat yields about 7 pounds per shearing.

Mohair sells for $2 to $7 per pound, depending on the age of the goat. Kid hair is the most expensive.

The Paramore’s haul most of their mohair to Texas to sell. Buyers are in Michigan and Ohio, but Nancy says they have enough to justify taking it directly to a Texas warehouse for a better price. It also gives her an opportunity to visit a daughter in Dallas. She sells kid hair to spinners through a small mail-order business.

FARMERS HAVE LONG USED COOPERATIVES to increase their buying or selling power. Now a group of people from Cadiz have joined together to sell their neighbors’ rural crafts.

“We’re a group of volunteers interested in people helping people,” says Lois Brown, a retiree who coordinates the Cottage House Craft Shop.

Cottage House is part of the Harrison Valley Cooperative, which sells the work of local people such as the Paramores. People like to see things made here,” Brown says.

Great news for grosbeaks: Sunflowers being grown and sold for bird seed.
Hills Cottage Industries project that markets crafts from five Ohio counties. Local pottery, woodworking, toys and woven items are sold in the Harrison County store and in shops as far as Florida.

Cottage House is run by volunteers with some financial help from public and private donors. The store, a year old now, is open four days a week. Staff constantly look for new markets in other areas and the mail-order business.

Helping someone on welfare make some extra money from their crafts is especially rewarding, Brown says.

SUE, MIKE AND TIFFANY MEYER HAVE a business that's for the birds. The Ashland County mother and her two youngest children sell tons of birdseed each year.

Five years ago Mike and his brother had their FFA corn project flooded out, so they planted sunflowers. That began what has become big business for the Meyers. They raise corn, sunflowers, wheat and milo on half of their 1,000 acre farm. The other half is rented to another farmer. Most of the Meyers' crops are used to make birdseed. They also buy crops from other farmers for their birdseed plant. The grain is cracked, mixed and bagged by assembly line and is placed in either standard or custom mixes.

Sue says getting into the birdseed production business was costly even though they built or rebuilt much of their equipment. The processing plant would not have been feasible without her husband's income as a real estate broker.

About three-fourths of the Meyers' business is wholesale. Wholesale customers get either the standard mix or special mixtures in customized bags.

The rest of the sales are done at the farm. Individual customers from Ohio and surrounding states buy up to several tons of sunflower or mixed seed to feed their feathered friends in the winter.

The Myers admit they're in a unique business. But without it, Sue says she's not sure they'd be farming at all. They weren't making enough profit in traditional grain farming.

"We're phasing out the (traditional) farming and going more into the birdseed business," Sue says.

Birdseed has given them the variety and the profit they need. They say they expect the birdseed business to expand, but exactly how much remains to be seen.
TAKE ME TO THE RIVER

The Boatload of Knowledge explored 610 miles of Ohio River life. Its findings? Vital signs are strong.

BY JUDY KAUFFELD

It's early on July 20, 1987—a hot, muggy morning typical of Pittsburgh summers. Trolleys clank through the "City of Bridges." Barges float ponderously down the Allegheny and Monongahela rivers and sound their horns as they approach one another at Pittsburgh's notorious "point," the eastern origin of the Ohio River.

The sultry air stirs on the river bank as 12 anxious scholars step aboard the houseboat that will send them drifting 610 miles on the Ohio River to Louisville, Ky. Nine graduate students and three instructors from universities throughout the Ohio River Basin settle onto the 43-foot research vessel that will be their home base for 15 days.

This is no pleasure cruise but rather an educational enterprise—a chance to piece together the rich culture, human history and ecological diversity of a major U.S. waterway. It is a rare opportunity to view the Ohio River as few ever see it.

Collectively, they call themselves The Boatload of Knowledge, a name borrowed from a 19th-century voyage launched from Pittsburgh aboard a keelboat. That first trip, led by Robert Owen, took considerably

(Left) The I-470 bridge, spanning the Ohio River near Wheeling, W. Va.
(Inset) The Boatload of Knowledge off Point Pleasant, W. Va.
longer than 15 days in the winter of 1825-1826. Owen wanted to establish a “Community of Equality” in New Harmony, Ind. His entourage included some of the leading scientists, educators, and Utopians of the time. One among them declared they represented more learning than was ever before contained in a single boat. Thus, they became labeled for history, The Boatload of Knowledge.

This 20th-century boatload, however, was conceived and directed by William J. Mitsch, professor of natural resources at Ohio State University and executive director of the Ohio River Basin Consortium for Research and Education.

“Our modern-day boatload was a true scientific venture, very much like the original,” Mitsch says. “We were not as driven by Utopian zeal, however, as we were by scientific and cultural inquiry, and we had enough sense to schedule our trip in the summer!”

Mitsch was accompanied by professors Gary Mullins from Ohio State and Ralph Taylor from Marshall University in West Virginia, who also served as the boat’s captain. Graduate students from six universities rounded out the crew.

Ohio River townspeople who greeted the boat along the route saw an assortment of energetic adults on a summer cruise down the river.

However, closer inspection revealed a knowledgeable group with impressive credentials.

The students, chosen for the trip based on a variety of criteria, received graduate credit from their universities. They represented diverse institutions, cultural and academic backgrounds, skills and interests. Each conducted a research project and presented the findings after the trip at a scientific meeting. Most of the students chose subjects dealing with water quality and sediment in the Ohio River, but two studies were based on terrestrial topics.

“The variety of research subjects really kept things jumping on the trip,” Mitsch says. “Some students were sampling water quality and sediment and others were jumping off the boat at every chance to conduct a bird census and investigate leaf damage caused by air pollution. The voyage had a rich and varied scientific flavor.”

Teresa Cavanaugh and Siobhan Fennessy, Ohio State graduate students in natural resources, organized the rigorous schedule for the 610-mile trip. The itinerary would have worn out even the hardest voyager, with 16-hour days being the norm. Lectures, demonstrations and tours were conducted for the group by university professors, agency personnel and industry representatives both on board the boat and at various land locations along the route. Topics included historical and cultural aspects of the Ohio River as well as its ecology.

The group toured chemical facilities run by DuPont and Monsanto, an Appalachian Power Company generating station, and a wastewater treatment plant in Cincinnati. They saw demonstrations of gill netting and electroshocking of fish and dredged for mussels. They also visited Environmental Protection Agency labs in Wheeling and Cincinnati and the Edge of Appalachia forest in southern Ohio.

“The trip made me realize that the Ohio River has a tremendous impact on the country’s economy and the lifestyle of people everywhere,” Cavanaugh says. “The river supports industries and power generating facilities that provide essential goods and services.”

“A wonderful sense of human history permeated the entire trip,” Mitsch says. “We saw archaeological digs of pre-settlement cultures near Gallipolis, restored early 19th-century settlements at Old Economy Village near Pittsburgh and Blennerhassett Island near Parkersburg, and silhouettes of abandoned twentieth century steel mills in the Upper Ohio Valley.

“The reliance, and subsequent ‘boom-bust,’ of Ohio River towns on one natural resource after another impressed us. We heard about forest clearing, oil discoveries, button factories that used river mussels, limestone quarries, and the ever-present ‘king-coal’ that now fuels more than 35,000 megawatts of electrical generating capacity along the river.”

The Boatload of Knowledge caught the imagination of residents and press along its route. The City of Ravenswood, W. Va., sent a convoy of speedboats upstream to escort the boat to dock and provided dinner and breakfast to the group. The mayor of Maysville, Ky., personally led a tour of historic homes in her city.
Ohio River a cost-effective transportation of electrical energy-large amounts of essential cooling water make its banks a prime location for facilities that convert coal to natural gas and petroleum substitutes.

Until recently, the prevailing view was that Ohio's border ended on the north bank of the Ohio River. The river's namesake did not, in fact, own the river at all. In 1980, the U.S. Supreme Court ruled that 15 to 20 percent of the river does indeed belong to Ohio. Since that landmark decision, the state has assumed a major role in managing the Ohio River as one of its greatest natural resources.

History has shown that the river, while a prized resource, is also highly vulnerable and jeopardized by such things as the competing uses of industry, transportation and recreation, shoreline erosion that threatens residential and commercial riverfront property, and the discharge of sewage, industrial wastes and thermal effluents into its waters.

These problems could seriously threaten the vast economic and recreation opportunities afforded by the Ohio River unless the state acts to clean up, protect and sensibly plan for further development of the Ohio Riverfront." This conclusion was drawn by the Ohio River Redevelopment Task Force, created in 1986 by the Ohio General Assembly to study the uses of the Ohio Riverfront and recommend ways to implement those findings.

A review of the Ohio River's recent history includes the founding of the Ohio River Basin Consortium for Research and Education in 1985. The Consortium is housed in the Ohio State School of Natural Resources and presently has 30 member universities, colleges and industries.

"In 1983, the Virginia Environmental Endowment became interested in the Ohio River and authorized three studies on the status of water quality in the basin, specifically in Kentucky, Ohio and West Virginia," Mitsch says. "When three researchers from those states met we realized we were all talking about the same issues—they crossed state borders—and we recommended the formation of an organization to serve as a communications network among researchers and educators in the basin. The Virginia Environmental Endowment funded the start-up of the Consortium and we've grown into a unique clearinghouse of information and research on Ohio River Basin environmental issues."

The July Boatload of Knowledge, supported in part by a grant from the Virginia Environmental Endowment to the School of Natural Resources, was a true Consortium effort, according to Mitsch. Eighteen member organizations and a similar number of non-member organizations and agencies provided lectures, tours and support.

Throughout the trip, the group looked closely at causes of water pollution, thermal pollution, air pollution, acid precipitation, and river erosion in the Ohio River Basin. Despite the problems that plague the area, the Boatload crew agrees that all is not negative or depressed in the Ohio River Valley.

Water quality samples collected on the trip suggest that things are not as bad on the river as they once were. Mitsch, a native of Wheeling, W. Va., says Ohio River water quality declined from about 1945 until the mid-1960s.

"I would guess the Ohio River was at its worst when I was growing up and drinking the water," Mitsch says. "In my hometown, steel was the name of the game, and before the advent of environmental regulation in the 1970s, water quality was not good. Thanks to environmental regulations and efforts by
The Boatload of Knowledge nears port, Huntington, W. Va.

communities and industries, the water is cleaning up quickly."

Industries along the Ohio River have either met regulations designed to prevent pollution at its source or gone out of business, Mitsch says. He believes that municipal wastewater treatment plants are now the worst polluters of the river. According to the Ohio River Valley Water Sanitation Commission, 127 municipal wastewater treatment plants and 125 industrial plants discharge into the Ohio River.

"The Ohio River is a marvelous resource, all along its length," Mitsch concludes. "Besides the beauty of the river and the surrounding hillsides, there is a sense of renaissance in many of the river cities and towns as they recognize the Ohio River as their reasons for existence, after years of treating it as a sewer. Buildings are once again facing the river rather than turning away. It is a much-improving river. Whether that trend continues will depend largely on the efforts of state and local governments.

"We need to continue scientific study of the Ohio River Basin," according to Mitsch. "I'd like to see a Boatload trip every other year as a research tool to continually and consistently assess the quality of the river."
The Ohio Riverfront Redevelopment Task Force was created by a joint resolution of the 116th General Assembly of the State of Ohio. In that resolution, the General Assembly cited the economic and recreational benefits of the Ohio River and stated the need for "study, evaluation and planning to direct development of the Ohio River area to achieve maximum enjoyment of its aesthetic values, enhancement of water-related recreational activities on the River, usefulness of the River to industry, residential potential, maintenance of water quality, and pride in its history."

The "Ohio Riverfront" includes the Ohio River, its shoreline, its adjacent flood plains and the 14 counties contiguous to the Ohio River.

The Task Force was directed to study the best and most cost-effective recreational, residential, ecological, and industrial uses of the Ohio Riverfront, and to make recommendations in the form of a 20-year plan for development of the Riverfront.

The Task Force included directors of various state agencies, local officials and citizens from Riverfront counties, and Ohio legislators. The group reported its findings to the Governor and General Assembly in July 1987. Their report is organized around five major goals:

1. To establish the Ohio River region as a prime location for economic development.
2. To establish the Ohio River region as a major recreation attraction in the state of Ohio.
3. To establish the Ohio River region as an effective steward of its natural resources.
4. To create many opportunities for achieving the highest possible quality of life.
5. To establish the Ohio River area as a prime national location and attraction.

A Cincinnati water intake. Effective stewardship of Ohio River resources is one goal of the ORRTF.
FIGHTING PHYTOPHTHORA
Resistant soybean varieties save Ohio growers $50 million a year. OARDC plant pathologist A.F. Schmitthenner highlights the latest breakthrough.

BY JACQUELINE ULLERY

Three years ago, it couldn’t be done,” says A. F. “Fritz” Schmitthenner, Ohio State University plant pathologist, as he squints up at the light through the speckled contents in a petri dish.

He can’t hide the pride as he makes that remark about a recent tissue culture breakthrough in his lab that could cut two years from the usual seven or eight needed to develop a new soybean variety.

“We essentially get rid of a lot of junk genes when we refine a plant for crop purposes,” he says. “We try to eliminate genes that tell the plant to have low yield or other undesirable traits.

“Our new developments with the use of a new tissue culture process can possibly help us find the part of the chromosome involved for disease resistance in the soybean and more easily leave junk genes behind. Currently, many breeding cycles in the field are required to eliminate those unwanted genes.”

Other scientists know the new procedure Schmitthenner refers to as somatic embryogenesis, or the regeneration of soybeans using immature seeds on a gel solution. Neither Schmitthenner nor his Ohio State colleagues discovered that process but rather an adaptation of it for learning more about soybean disease resistance. Schmitthenner is using it especially to zero in on Phytophthora, a fungus which has been a plant destroyer and money grabber from midwestern soybean crops for many years.

Schmitthenner's latest progress is one more link in a chain of efforts he started soon after graduation from Ohio State when he began work for the Ohio Agricultural Research and Development Center in 1953. His first assignment? Research a new root rot disease threatening soybeans grown in heavy clay soils of the Midwest.

Early, he discovered the cause—the Phytophthora fungus. He’s been on the trail of this fungus and its control ever since. Schmitthenner found the first source of resistance and cooperated with plant breeders to release Phytophthora-resistant cultivars of soybeans. As a result, the crop was again profitably grown in heavy soils in Ohio and neighboring states for about a decade—until new races of the pathogen appeared.

Again, Schmitthenner and his students isolated the new race and others that appeared later. Each time, resistance to these races was found and incorporated into soybeans released to growers.

Eventually, Schmitthenner put together an integrated program for Phytophthora control. Depending on specific needs and budgets, growers use a combination of highly tolerant varieties and Phytophthora specific seed with recommended soil treatment, tillage, drainage and crop rotation.

The Phytophthora disease problem has been reduced considerably, but it hasn’t stopped. Schmitthenner hasn’t quit either. He views his latest efforts with somatic embryogenesis as simply one more step.

Plant researchers have only been readily tossing the term, somatic embryogenesis, in professional meetings and in parking lot chatter since 1984. During the past few months is the first time the technique has been used to study disease resistance by the Ohio State plant pathology department, one of the few labs in the world known to be using it with soybeans.

Soybeans account for about 20% of Ohio’s farm cash receipts.
"Saving time with breeding cycles in field work is not the only reason for using this new approach," Schmitthenner says. "We'd like to see if we can test for resistance and also see if we can transfer DNA associated with resistance from one type of soybean plant to another. Ultimately, transferring resistance from one type of plant to another might be possible.

"For example, common snap beans never get Phytophthora. Soybeans do. We might be able to find out why snap beans don't get it, find out what DNA is involved, and transfer the protective mechanism to soybeans."

The techniques for testing for resistance are not well established, according to Schmitthenner. He wants to: 1) develop methods for testing for resistance in tissue culture, 2) study whether culturing tissues will change resistance, and 3) develop regeneration systems that do not change plant types.

"There's no point in our taking a tissue and putting it into culture, adding genetic material and regenerating plants only to have lost some resistance we had there already," he says. "So we're approaching this carefully."

He explains one way to test for Phytophthora resistance in soybeans is to put a few zoospores produced by Phytophthora on tissue cultures and watch if spores will colonize the tissue.

The problem is to know how many spores to put in. With too many, the spores could overwhelm resistance. If too few are used, the inoculum threshold might not be reached.

Schmitthenner says scientists know much about the genetics of the soybean Phytophthora system. Not known is what the fungus produces that triggers the resistance response. And, researchers don't know all the physiological steps between the trigger and the ultimate plant reactions. Terrance L. Graham, OSU/OARDC plant pathologist, is working on this specifically.

Schmitthenner and colleague Arthur F. Olah have been regenerating soybeans from callus tissue, or undefined tissue grown from immature seed from 40 varieties of soybeans. Initially, other scientists told them to expect short, abnormal plants, at least in the first generation.

"But the plants look normal, produce seed normally, and so far I think they give a very normal disease reaction. We are still testing that to make sure," Schmitthenner says.

That finding excites him because he now knows technological problems won't prevent him from using the procedure for his purposes.

"Two years ago we submitted a proposal for such a project based on somatic embryogenesis to a major funding agency, and the reply was that this can't be done. The study was rejected. The next year, four different laboratories successfully regenerated soybeans with the procedure."

"That shows how fast technology is expanding in this area," he says.

Schmitthenner emphasizes that developing tissue culture systems has not been the intent of his part of the program. He describes his efforts as a bridge between basic biotechnological research and work by researchers who test a plant in the field.

Basic researchers have developed the tissue culture techniques. Schmitthenner is using the techniques to look for disease resistance, and he'll pass on his disease-resistant seed to plant breeders such as Steven K. St. Martin and Brian A. McBlain, both at OSU/OARDC, who will check it for further characteristics such as yield and growth habits under a variety of field conditions.

"Also, John J. Finer, OARDC agronomist, has developed some excellent tissue culture systems and we have utilized his progress," Schmitthenner says.

"Until Finer's work advances slightly, we're limited to producing about a dozen embryos per tissue culture. He's shooting for systems that produce hundreds of embryos. When that works, we will have greater opportunity for faster, more accurate testing and for getting plants with consistent genetic components."

One day, years ahead, Schmitthenner thinks scientists will tailor-make plants that will adapt automatically to new situations, such as when a new race of fungus appears.

Some of Schmitthenner's students watch the man at work and swear he is in love with fungi. Even more agree with his fellow faculty who notice something else—his relentless propensity to answer questions, question answers and question questions.
’Basically, these are good kids’

CROSSROADS

Judge Harvey Hyman and Paulding County 4-H personnel have created a five-week program to help troubled youth—and troubled parents—overcome their problems.

BY SCOTT TURNER
ILLUSTRATION BY SCOTT F. KELLY

When troubled youngsters come before Judge Harvey Hyman, most aren’t sentenced to a detention center or jail. They’re sent to 4-H.

“It’s more effective,” says Hyman, juvenile court judge in Paulding County, Ohio. Since 1986 when he and the local Cooperative Extension Service began the Juvenile Diversion Through 4-H program, 54 boys and girls from ages 6-17 years have gone to 4-H rather than a detention center.

“I was receiving kids in court who really weren’t that bad,” Hyman says. “They were truants, shoplifters, and kids who had gotten into fights or were unruly. They needed encouragement and an alternative.

“Then I realized that I never had 4-H’ers before me. My experience with 4-H was good. Why couldn’t these kids be diverted to 4-H? I didn’t want to give them a record. Maybe we could have a program to bring them self-respect and help them and their parents.”

Hyman says the diversion program is incomparable to other juvenile sentences. The state has nothing that can touch it or substitute for it, he says. Hyman is unaware of any program like this in the country. He says he searched hard and long before coming up with the idea.

“The public is not aware of the benefits of 4-H,” Hyman says. “If there wasn’t a 4-H program in the county, my case load would be considerably higher. I’m 100 percent for 4-H because it helps children and parents. 4-H keeps kids out of trouble. Kids do constructive things, learn while they’re doing, and are exposed to a great peer group.”

So, Hyman went to Susan Shockey, Paulding County home economics and 4-H agent, and Beth Little, then Paulding County 4-H program assistant. Shockey, Little and David Jones, Paulding County extension agriculture and community and natural resources development agent, created a special 4-H club for juveniles diverted from the court. Their effort was supported by the Home Economics Program Review Committee, county commissioners, the Extension Advisory Committee, Paulding County’s 70 4-H volunteer leaders, local schools, and the state home economics and 4-H administrations.

The club meets each time Hyman has between 4-10 youngsters he thinks are ready. Sessions last for five weeks with meetings once a week in the county’s extension building. Each session lasts two hours. The first hour is classroom instruction and discussion in areas such as self-esteem, communication, peer pressure, goal-setting or stress. The second hour is a 4-H club meeting. The youngsters also work on traditional 4-H projects such as photography or woodworking as part of the meeting. All the youngsters learn the 4-H pledge.

The instructors never enter the courtroom and the judge never enters the classroom. Before each group starts, the instructors receive information from the judge about the youngster’s crimes, as well as personal profiles and family status.

The curriculum was prepared by Shockey, Little and Jones. They used their materials and those from other agents as well as from schools and counseling centers. Hyman and the county’s chief probation officer reviewed the final package. “We couldn’t add to it or come up with anything else,” Hyman says. “It met the need.”

Youngsters in the program have become involved in the county Christmas workshop, where they make crafts for display or gifts. Some have attended 4-H camp. Two recently enrolled in a traditional 4-H club. None have been arrested since going through the 4-H program.

“The youngsters who also attended 4-H camp fit right in. You’d never know they’d been in juvenile court,” Shockey says. “We encourage the kids to participate in traditional 4-H clubs. Our goal to have them do this.”

Greg, a 16-year-old arrested for shoplifting, says being diverted worked for him: “Those five weeks kept me busy. It was a pretty good learning experience. I learned to deal with the pressures of day-to-day life.”

The program’s creator says its major objective is to give the youngsters self-esteem. “Often, these kids have none,” Hyman says. “They have a low self-opinion. Now, they can have fun together with others. They can have a mutual exchange of good ideas and friendship.”

But Hyman is not lenient with youngsters who won’t cooperate. “I tell them this class is their last chance,” he says. “If you don’t follow through, your case will be handled in another manner. Unfortunately, one boy thought he didn’t need the class, that he was above it.” That boy had an alcohol problem, Shockey says. He became a discipline problem in class and became the only youngster not to finish the five-week program.

“These youngsters seem to have been shown a lack of attention,” Hyman says.
Many of these kids have been encouraged to believe they don’t amount to much, which is hard to overcome.”

“These are basically good kids who made a mistake,” says Jones, who was a schoolteacher for six years.

Shockey earned her master’s degree studying teenage self-esteem and self-control problems. “The kids’ problems are some of the same problems all of us experience,” she says. “These youth don’t know who they are yet. Some of them don’t get personal love and attention at home. The one thing all the kids need is recognition—to know they’re appreciated and they have something to offer.”

Little says that working with the kids deepened her appreciation of how important a parent is to a child. “It also has changed my perception of what a delinquent is. The kids aren’t much different from the junior leaders who are considered the outstanding youth in the county. They haven’t had the same advantages to develop their self-confidence and leadership abilities.”

The youngster’s parents are expected to attend at least one of the five classes. When they do go, work on a 4-H project often becomes a family affair.

Shockey estimates that so far between one-half to three-quarters of the parents have attended with their children. A parent who goes to the first class usually goes to the rest.

“Working with parents may be our most rewarding experience,” Shockey says. “They learn as much or more than the kids on how to improve self-esteem and communication skills. We do a test to measure self-esteem, and parents usually score lower than the kids.”

Jones says parental participation works two ways: “A kid may feel inhibited with them there but parents also encourage the kids to speak.”

“Parents freely enter into discussions,” Little says. “Their presence is the biggest aspect of the communication class because they respond to their children and describe their own stress and self-confidence problems. For many youngsters it was a side of their mother or father they had never seen.”

Hyman thinks the sessions might do more for the parents than for the kids. He says that parents have come to him saying they didn’t know how much they were hurting their children. “The program brought home to them their inattention and how they were passing the kid off with a ‘here’s $10, get lost attitude.’ They saw how that was really hurting the child and not replacing parenting.”

The mother of a 14-year-old arrested for shoplifting in April 1987 attended all of the sessions. “I enjoyed the program, though at first I was very uncomfortable.” She says. “Between those sessions and my seeing a psychologist, I learned about myself. I’m definitely glad the county has such a program. It’s good for kids, even if they didn’t have trouble with the law.”

“‘The diversion program gives young people and their parents a purpose in life,’ says Joe Vogel, Paulding County commissioner. ‘They can see a side of life other than the route they’re traveling.’

“My son can now think things through and thinks about what could happen before he acts,” says El, the mother of a 16-year-old arrested for shoplifting in 1984. “He made honors in school the first nine weeks after attending the program.”

Although her son didn’t join 4-H after the program was over, El did. As a volunteer, she has helped raise hundreds of dollars for 4-H programs in Paulding County.

Juvenile diversion through 4-H is funded by the Ohio Cooperative Extension Service. Although the county lends moral support, Vogel says it gives no additional funds for the program.

“The instructors are doing a terrific job without extra pay and often on their own time,” Hyman says. “They’re already busy at other things. The program wouldn’t be successful if it had less sincere people.”

Jones says the instructors have found the time for the program because they know they’re helping the youngsters and their families. “Extension is here to serve,” he says. “If the program is valuable, you do it. If the resources are there, you do it. You don’t ask what’s more important — junior fair or diversion. You work it out so you do what does the kids some good.”

Hyman thinks the program could only work in other counties if the administrators and instructors are dedicated, caring and sincere. As a judge who sits in other county courts, Hyman knows that many counties in Ohio and across the nation have similar juvenile delinquency problems.

“Before, some of these kids would end up in the detention center in Bowling Green,” Hyman says. “But it does nothing but house them. Here, a kid is still at home and this program brings a family touch to the child and parent.”

“The program could be redeveloped by counties in Ohio and across the nation,” Shockey says. “The core of the program, its materials, is solid. Instructors need good human relation skills and must be able to talk with youth. It’s a legitimate program for extension because it teaches youngsters not to do wrong again.”

If Shockey and Jones could expand and enlarge the program, they would. They fit the two-hour weekly commitment into busy schedules by holding the sessions in the late afternoon before the office closes. Ideally, they’d like to have a program assistant to conduct the program. When Hyman looks at his juvenile court case load, he thinks the diversion program probably could be enlarged in Paulding County. That’s up to extension, he says.

Current funding makes expansion plans financially unfeasible. Recent staff changes have caused some adjustments. But Jones anticipates the program continuing.

The interest to expand is there. But, the money from extension may not be. The Ohio Department of Youth Services has subsidies that support community-based delinquency prevention and diversion programs. Shockey, Jones and Hyman are exploring this program’s eligibility. “The program is going well, but for now we will have to work with what we have to continue what we have!” Shockey says. “It has a final sound to it, yet we’re looking toward the future.”

Is the work satisfying?
Beth Little: “When you work with youngsters and you see a spark in their eyes, you know something has happened inside them. And it’s more satisfying because you know they came from a troubled home.”
THEY CAME FROM OUTER SPACE
Out of orbit and into your Sony—Ohio State’s satellite programs are on the air.

When you team up the College of Agriculture’s classroom television studio with the Ohio Educational Broadcasting Network’s huge uplink satellite dish, faculty can teach anywhere in the world.

“We haven’t telecast worldwide yet, however,” says Larry Whiting, who heads the Section of Information and Applied Communications for the college. “Our biggest bite has been North America, but give us time.”

The first live telecast, “Grain Marketing: Policy and Options for Survival,” was produced in February 1987. It was a two-hour presentation with an opportunity for nationwide viewers to phone in questions for the agricultural economics faculty who participated. A second, two-hour segment was telecast one week later.

Through January this year, 15 satellite programs representing 25 hours of live television had been produced. Whiting believes four programs generated the largest audiences:

► “Africanized Bees and Bee Mites: Challenges Facing U.S. Beekeeping” debated the potential threat of the so-called killer bee to humans, livestock and honey production.
► “A Chapter 12 Bankruptcy Overview for Farmers and Attorneys” brought the public up to date on the implications and impact of this federal legislation on farm operations.
► “Research in Family Life” was a November program for professional home economists across the nation. The two-hour video teleconference was the first time that two land-grant universities produced one program with live origination from each campus. Researchers from the College of Home Economics at Ohio State and Iowa State University presented information about teenage suicide and family stress and answered questions submitted over toll-free phone lines.
► “AgriTrends,” a quarterly 30-minute program, features discussion about the farm economic situation and agricultural policy. The first two programs were telecast in October and January.

Fourteen satellite video teleconferences have been scheduled for 1988, and several additional programs are in the discussion stage, according to Whiting.

“Satellite telecasting is an economical way for universities to share educational expertise across state boundaries,” Whiting says. “And it’s also cost effective for training field faculty within a state. Satellite video conferencing pays if you save travel costs and time for 50 to 60 people who otherwise may have had to be in Columbus for the event.”

Five of the teleconferences were in-service training programs for extension faculty in Ohio’s county and district extension offices. And many state faculty are not required to travel to country or district locations nor are agents required to drive to Columbus for such meetings.

Telecasting costs are averaging $865 per hour. Satellite receiving dishes have been installed at the five district extension offices. About half of Ohio’s 88 county extension offices are contemplating dish installations. Three of these counties have purchased or leased dishes. Whiting says a cost share plan providing a mix of state and county funds should encourage more county installations in 1988.

Whiting indicates the signal is not scrambled, so anyone in the country can view the Ohio programs. Some data suggest that about 12 percent of rural homes in the Midwest have satellite dishes, and the numbers are increasing rapidly.

Other land-grant universities using satellite technology for educational programs are Oklahoma State University, Kansas State University and Virginia Polytechnic Institute.—Editors
GET R.E.A.L.
More than you bargained for: ‘Analysis plus education’ from Wooster’s Research-Extension Analytical Laboratory.

Imagine 800 samples of soil, water, feed and other materials at the door in freezer bags, baby bottles and other containers. That’s a common mail delivery in a single spring day at the Research-Extension Analytical Laboratory in Wooster.

Maurice E. Watson, head of the lab and Ohio State University agronomist, says the lab analyzes soil, plant tissue, livestock feeds, manure and sewage sludge, water for agricultural uses, soilless plant mixes, and a variety of other materials.

Knowing the contents of such substances helps farmers, for example, balance rations especially with homegrown feeds for livestock. It helps gardeners know how much fertilizer to apply and greenhouse growers to manage soilless mixes better.

For a relatively small fee, anyone can get a test. Watson says those who use the service most are farmers, homeowners, researchers, or people from agri-industries and governmental agencies. Most submit samples through county extension offices where they can also get test kits. The kits include forms and procedures for taking samples as well as instructions for sending them without damage.

Time to complete a test varies by test, but lab personnel try to have results back in the mail within five work days, according to Watson.

The laboratory staff uses modern electronic instruments to make analyses. Much of the lab equipment is connected to a minicomputer so sample identification and specific test results transfer to a main computer that prints final results. This process reduces chance of human error.

Soil samples log the largest number of total tests at 40,000 to 50,000 a year, Watson says. Overall, he’s noticed two recent changes in samples analyzed.

“In the last three years, farmers have been neglecting lime additions to their soils,” he says, “During the recent economic crunch, many producers reduced fertilizer and lime additions to soils. Now, some are applying more fertilizer again, but the lime tends to be neglected. We’re noticing low soil pH in many samples.”

He’s also getting many more water samples. Watson thinks people are more aware of possible water problems than several years ago. The lab is equipped to analyze water for any use other than human consumption. A variety of single tests on water is available, including determination of heavy metals and other elements.

Watson says keeping the lab equipped with up-to-date equipment is a challenge. Price tags of $25,000 are not unusual. His most expensive testing unit cost $110,000, and that was 10 years ago.

Visitors, some wanting to set up similar services in other countries, often tour the lab, which is on the Wooster campus of the Ohio State University/Ohio Agricultural Research and Development Center. They easily can see 10,000 soil samples lined up along several walls and watch the sequence of soil and other samples proceeding from one testing unit to the next.

“We try to give more than just analysis to customers,” Watson says. “We tell them as much as we can about results. We call it analysis plus education.”—J. M. Ullery
Enthusiasm is the driving force. Forty-seven volunteers in Cuyahoga County have served more than 3,000 hours and reached 13,000 people since March 1986 through Ohio's largest and most successful master gardener program.

Master gardeners are volunteers trained by county extension agents and specialists. In return for their training—48 hours of in-depth classroom instruction—each master gardener is required to return 50 hours of community service. Yet, they offer more.

Their involvement is the key. During their community service, master gardeners answer call-in questions, conduct evening plant clinics at local libraries, and staff information booths at fairs. Selected master gardeners deliver talks to local garden clubs and civic groups and judge at horticultural shows.

For some, a highlight is judging at such events as The Greater Cleveland Garden Center's "Harvest Show," where young gardeners display homegrown vegetables, and the Cleveland Metropolitan Housing Authority's garden show, where gardeners display windowsill, container-grown, and plot gardens.

Selected master gardeners also provide horticulture classes for Cuyahoga Community College's (Tri-C) Elder's Program, an educational series of one-hour seminars for senior citizens.

Topics taught by master gardeners include "Landscaping Ideas to Improve Your Home," "Trouble-Free Annuals to Consider," "Improving Garden Soil for Bountiful Growth," and "What is Raised Bed Gardening?"

During autumn 1987, eight seminars were conducted on Tri-C's east campus in Warrensville Township, and eight spring seminars are scheduled for the west campus in Parma. Each session addresses 50-60 senior citizens.

Completely developed by master gardeners, Tri-C seminars use Ohio extension publications and materials and will soon become the nucleus of a bank of presentations that any master gardener can access for both general reference and use with groups.

The master gardeners also developed a 39-page index to Ohio extension publications and other additional materials. With this index, a master gardener can reach a full range of information instantly, searching by title or subject.

Large master gardener programs operate in Minnesota, Michigan, Virginia, and Oregon. One of the best master gardener programs in Ohio is represented by Cuyahoga County where Sally K. Ebling, Cuyahoga County chairperson, Leonard Lang, a master gardener turned part-time extension employee, and Nicholas M. Stephin, extension agent, prepare master gardener classes. Lang coordinates the Cuyahoga County gardener program.

Master gardener training is intensive. Master gardeners learn about ornamental shrubs and trees, pest management and disease control, turf management, how to grow a garden, and many phases of vegetable gardening. Instruction also includes training to use computerized information on growing, propagation, preserving, fresh uses, and problems of many plants.

"Staffing is becoming critical for extension, so master gardeners have more and more work responsibility, providing tremendous support and help in easing that pressure," Lang says.

For more information about the Cuyahoga County Master Gardener program, contact: Leonard Lang, Coordinator, Master Gardener Program, Cuyahoga County Extension Service, 3200 West 65th St., Cleveland, Ohio 44102.—William Warren Jr.
POT SCRUBBERS BENEFIT HIGH-CONCENTRATE CATTLE DIETS

No joke. Yellow and orange plastic pot scrubbers usually found near the kitchen sink are inside beef cattle at the Ohio Agricultural Research and Development Center. The cattle are staying healthier and gaining more weight as a result, according to Steven C. Loerch, Ohio State University animal scientist doing the project.

Loerch says the pot scrubbers act as artificial fiber for cattle fed high concentrate diets such as corn, particularly inexpensive and excellent feed now. Cattle on high concentrate diets for long periods tend to develop stomach and liver problems. With no “scratch factor” from hay or silage, the rumen can become ulcerated and compacted with hair and feed. This allows bacteria to pass through the rumen linings and cause liver abscesses.

That reduces cattle performance and carcass value, particularly during the final third of the feeding period. Loerch believes the pot scrubbers add the missing “scratch factor.”

The researcher has tried the pot scrubber idea with two lots of cattle—31 steers the first year and 78 the next. Both times, cattle numbers were divided in thirds. A third had pot scrubbers and were fed an all-grain diet, another third had no scrubbers and were fed all grain, and remaining cattle had a 15 percent silage/85 percent grain diet.

Each time the cattle with the pot scrubbers gained more, from 29-40 pounds, especially at the end of the feeding. For $2 worth of pot scrubbers, Loerch figures he collected roughly an additional $24 in beef. He didn’t note any difference between cattle with four pot scrubbers versus those with eight. Loerch said he heard about the pot scrubber idea from an animal scientist in Scotland trying it with sheep. He also has read about others who tried plastic chips for the same reason. But the chips don’t stay in the stomach. The pot scrubbers do.

Cattle don’t just swallow a pot scrubber when tossed one. Loerch compresses them into a small ball and inserts them down the throat, much as he would a medicine capsule.

Loerch feels more research is needed before he can recommend pot scrubbers. But as long as corn prices remain so low, he thinks the idea makes sense.

“However, the clerks at the local grocery thought I was crazy when I asked for 120 pot scrubbers,” he says.

EXTENSION’S FUTURE: TASK FORCE TAKES LONG-RANGE LOOK

Agriculture will remain the primary program emphasis of the Ohio Cooperative Extension Service, but leadership will be an important component of it and other educational efforts such as in the community development, home economics and 4-H programs.

That recommendation was one of several submitted at press time by the OCES Strategic Long Range Planning Task Force in a prelim-

1988 Field Days

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 16</td>
<td>Performance Tested Bull Sale</td>
</tr>
<tr>
<td>May 31</td>
<td>Greenhouse Vegetable Day</td>
</tr>
<tr>
<td>July 13</td>
<td>Dairy Day—Central Ohio</td>
</tr>
<tr>
<td>July 14</td>
<td>Dairy Day—Northeast Ohio</td>
</tr>
<tr>
<td>July 16</td>
<td>Sheep Day</td>
</tr>
<tr>
<td>July 19</td>
<td>Dairy Day—Western Ohio</td>
</tr>
<tr>
<td>July 20</td>
<td>Alfalfa Day</td>
</tr>
<tr>
<td>July 28</td>
<td>Field Crops Day</td>
</tr>
<tr>
<td>Aug. 4</td>
<td>Fruit Crops Day</td>
</tr>
<tr>
<td>Aug. 17</td>
<td>Processing Tomato Day</td>
</tr>
<tr>
<td>Sept. 8</td>
<td>Turfgrass &amp; Landscape Horticulture Day</td>
</tr>
<tr>
<td>Sept. 20-22</td>
<td>Farm Science Review</td>
</tr>
</tbody>
</table>

Learn about ongoing and current research at these events, sponsored by the Ohio Ag Center, the Ohio Cooperative Extension Service and The Ohio State University.
binary draft for OCES planners as budget and focus of the organization change in the next few years.

The Task Force, comprised of OCES state and field faculty and representatives of the state extension advisory committees, made additional recommendations:

➤ That one extension agent remain or be placed in each county of the state. Additional county staff will be added in each county depending on total households, rural population, number of farms and county funding.

➤ That overall staffing patterns reflect program emphasis and may include more non-tenure track professionals to increase flexibility and control costs. Professional staff will be maintained at a high quality level.

➤ That more communications technology such as computers, car phones and video services be available to extension offices throughout the state to make county agent communications with state staff and other information sources more efficient. There is also interest in establishing a statewide, toll-free public hotline to expedite getting vital information from state specialists to Ohio citizens with requests that need urgent attention.

**DYNASTY: OARDC RELEASES NEW BEARDED WHEAT VARIETY**

Dynasty, a new soft red winter wheat variety released by Ohio State’s Ohio Agricultural Research and Development Center, is the first bearded variety released by the organization in three decades.

H. N. Lafever, Ohio State plant breeder and developer of the variety, says bearded varieties have several advantages. Deer won’t eat it. And, birds, sometimes a problem around wooded areas, don’t damage it either.

And though he doesn’t have proof involving Dynasty wheat, Lafever says bearded varieties are generally more tolerant of stresses such as with extremes in moisture, temperature and disease.

The researcher says Dynasty didn’t surpass the overall record of 66 bushel per acre yields of Cardinal, a variety released last year. But it only missed the mark by .4 bushels per acre over five years of testing in Ohio. Both varieties yielded more than 100 bushel yields in good years and locations.

Dynasty, as Cardinal, is adapted to many Ohio conditions and has excellent disease resistance including leaf rust resistance.

Lafever says Dynasty is not resistant to Hessian fly and needs to be seeded after the fly safe dates for each area. Dynasty’s winter hardiness exceeded all comparable varieties in Ohio tests over five years.

The new wheat is the fourth wheat variety released by OSU/OARDC to the public in the past four years.

**IN PRINT: NEW PUBLICATIONS FROM OCES, OARDC**

➤ 1988 Family Life Calendar

Extension Bulletin 756 offers daily activities for parents and children to share. The calendar also helps family members develop commitment, good communication, and appreciation for each other. Price is $1.75 plus $.73 postage.

➤ The 4-H Discovering Series: Discovering 1, Discovering 2, and Discovering 3

Extension Bulletins 91, 92, and 93 introduce 4-H to 8- to 11-year-olds. This first-time experience offers activities in health, nutrition, animal care, plant life, and environmental studies. Price is $1 plus $.56 postage per book.

➤ Home Economics Research Impacts: Framework for Evaluation

OARDC Research Bulletin 1182/North Central Regional Research Publication 316 examines the purposes of evaluating home economics research as well as the conceptual framework employed for evaluation of its impacts. Four major research thrusts pertinent to home economics research are identified and detailed. Single copies may be ordered without charge from: Mailing Room, OARDC, 1680 Madison Avenue, Wooster, OH 44691-4096.

➤ Tips on Growing Bedding Plants

Extension Bulletin 265 offers 65 pages of current bedding plant information from 11 coauthors representing Ohio and six other states. Some 33 color photographs and 50 tables are included. Tips are given for growing healthy bedding plants for ornamental and home gardening uses. Topics include organic matter, fertilizers, temperature, light after transplanting, insect pests, disease control, marketing, and variety introductions for 1988. Price is $7.50 plus postage.

Unless otherwise noted, requests for copies or more information about these publications, contact your county extension office. Out-of-state residents can write to: Publications Office, 4 Agricultural Administration Building, 2120 Fyffe Road, Columbus, Ohio 43210, or call (614) 292-1607. Publications are available while supplies last.