ply by 17 percent. Demand for scientists, engineers, and related specialists and for managers and financial specialists also exceeds the supply by 16 percent.

Best of All Worlds

As a result, those seeking careers in agriculture have the best of all possible worlds. Not only does agribusiness offer careers that are challenging and rewarding, but, in many areas, there are more opportunities than there are qualified individuals.

Philosopher Francis Bacon once said, "A wise man will make more opportunities than he finds." As we approach the 21st century, his words ring true for students of the food and agricultural sciences. Their opportunities are limited only by their ability to create them.

Scientists and Professionals
On the Job

Stanley C. Ernst, associate Extension editor, Agriculture, Office of Information, and Applied Communications, and Kenneth W. Reisch, associate dean, College of Agriculture, The Ohio State University, Columbus

The old gray mare might not be what she used to be, but neither is the college student studying her. In fact, students in agricultural colleges are much different than in the early days of the Nation's land-grant system. Where once colleges of agriculture trained students to be farmers and home economics teachers, today's students are being educated to go new places and do things many people would never think go along with a degree in agriculture. Agriculture programs at the Nation's land-grant universities are graduating food scientists, marketing specialists and economists, as well as providing an excellent foundation for degrees leading to jobs as lawyers, medical doctors, editors, teachers, and a host of other professions.

A recent survey of agricultural colleges in the Midwest showed barely 10 percent of those schools' graduates going into farming or professional farm management. Over 28 percent of the graduates entered some form of agribusiness, 13 percent went into another industry, and nearly 14 percent entered graduate or advanced professional studies.

The advanced scientific training available through agricultural colleges is just one reason those who use agricultural colleges as a springboard into other areas took a nontraditional route to their career. Some of these people
come from the traditional farm background and want to move into other fields. Other students have no relationship at all to farming but find agriculture is the career they want to pursue. And still more find that an agricultural degree is a great stepping stone into unique careers.

Take Barbara Durrant for instance. While many of her peers at North Carolina State University were content with studying pigs and cattle, she had other plans for her expertise in reproductive physiology.

"I never wanted to spend my life producing domestic animals strictly for slaughter," she says. "I went into animal science to get a good overall basis and physiological training with the thought of applying my skills to endangered species."

Everything from antelopes to zebras are part of Durrant's "herd." As the San Diego Zoo's reproductive physiologist, she is working in a field that is both challenging and sometimes frightening. Unlike traditional livestock studies, zoo researchers may have only one or two individuals of a species to work with. This requires greater caution in research, she says, and there is little chance to gather results from large groups and often no prior work to base her studies on.

When she left North Carolina State in 1979 with a Ph.D. in Animal Science, Durrant had most of her experience with domestic animals. Today, she may be working with exotic birds, tomorrow it might be peccaries, a relative of the domestic hog. Her traditional training has paid off for the ex-
otic species for which she is now responsible.

"I'm seeing that embryo transfer is not the savior of endangered species that we once thought it could be. Going to my background in animal science I know the primary genetic improvement method hasn't been embryo transfer but artificial insemination. I'm finding that to be the same with the more exotic animals."

Is there room in the zoo business for more Barbara Durrant's? Currently, she says, only three zoos—San Diego, Washington, D.C. and Cincinnati—have full-time reproductive physiologists on their staffs. That should change. More and more zoos are recognizing the need for larger research groups and that should mean more openings for physiologists and other specialists in the field.

"I don't think most agricultural schools or animal science students think much about the exotic animals as a profession," Durrant said, "But it's something more and more of them need to consider. Virology, endocrinology, genetics, nutrition, physiology and animal behavioral sciences are all areas where we need specialists, and animal science is a good background. True, there aren't all that many jobs in zoos right now, but I think that as administrators continue to recognize the need for good research, we're going to see more opportunities opening up."

Sometimes things don't turn out the way they were intended to. Steven Gerdes intended to get his B.S. in agriculture and specialize in finance. Somewhere along the way the Walnut, Illinois farmboy took an entrance exam for law school. Now Gerdes specializes in federal income taxation, particularly as it applies to municipal finance, for Vinson & Elkins—a law firm of more than 400 attorneys in Houston, Texas.

"I hadn't really thought about law, but for some reason, the accounting program at the University of Illinois was full of pre-law students," Gerdes says. "I was taking all these accounting courses to pass a CPA exam and started thinking about law from being surrounded by those people. I finally said, 'OK, I'll take the entrance exams for law school, and if I can get into a good one, I'll do it.'"

After graduating with highest honors from Illinois in May 1977, Gerdes entered Harvard Law School and received his J.D. degree in May 1980. He says he was probably the only student in the Harvard Law School at the time with a degree in agriculture.

Gerdes' roots were still on his mind after law school, but Vinson & Elkins offered a different opportunity from the firms he interviewed that had agricultural specialties. In short, the Houston firm offered what he saw as a once-in-a-lifetime chance.

"This position provided me an opportunity to do something I won't be able to do again. I ended up here because I wanted to try it. This is a very specialized firm, and municipal finance is the specialty they've assigned me here. While it doesn't deal with agriculture all that often, occasionally I have something involving a grain elevator or agribusiness and at least I know what they're talking about."

In some parts of the country, agricultural law is a big interest, and some college students today may take that route, Gerdes says. But lawyers always have options. Legal principles are basically the same whether they concern municipal finance or farm foreclosure, he says.

The key for prospective law students is the education they receive. Gerdes says his degree in agriculture prepared him for law school. But getting locked into a career-oriented mindset, first with accounting and later law, may have kept him from making the most of his opportunities.

"In an agriculture major, you often
have a lot of electives that enable you to diversify. I think I fell victim to the philosophy that if you can’t use it on the job, you don’t need it. Students should go ahead and broaden their horizons—take a classical literature course or some art history or whatever. Those are the kind of things you won’t have time to do later that you have the opportunity to benefit from in college, and who knows when they might come in handy.”

Some people with degrees in agriculture or home economics have had diverse educational experiences, many times caused by a change in plans.

Cassie Murphy-Cullen had bachelor’s and master’s degrees in political science and was teaching the subject at Texas Tech University while preparing for law school in the mid-1970’s. A personal tragedy made her think about how families interact with the medical system, and she found a course in Texas Tech’s Department of Home and Family Life that appeared helpful. That course’s focus on family behavior in crisis times changed her career focus, she says.

Murphy-Cullen completed a Ph.D. program in family relations at Texas Tech in 1979, specializing in family interaction and family intervention with minor work in child development and medical sociology. She is now part of the Department of Family Practice and Community Medicine at the University of Texas Southwestern Medical School in Dallas.

“I feel very secure in my educational background and its relevancy to a post-graduate residency training program,” she says. “I go on daily rounds with the residents to see their in-hospital patients and am available the rest of the day to discuss patient care and personal concerns with the residents working in the family practice center. If you help the physician and care about how he or she is re-

acting, assistance to the patient and family is more effective. I observe not only from the perspective of how they (the physicians) are doing with their patients, but how they are doing, in general, as human beings in terms of taking care of themselves and their families.”

William Richards says he graduated in 1953 from Ohio State with a good education in agricultural economics and little practical knowledge of farming. But graduate school could wait. He found a farm, jumped on the then-innovative concept of minimum-tillage cropping and kept going.

Bill Richards is more than a farmer. The 7,000 acres cropped by Richards Farms, Inc. in 1986 are slightly less than past years, but the agricultural economy makes other farm ventures more practical, he says. Marketing, consulting and custom farming for others are just part of the future for the Circleville, Ohio operation.

“The financial management and organization of the family farm is going to be the innovation it’s going to take to survive in the near future,” Bill Richards says. “We’re changing, retrenching our position, farmers will have to operate much differently in the future to stay competitive.”

Competitive advantage comes from innovation, and the Premium Ag Commodities cooperative is one way Richards achieves both. Several years ago, he pulled together 10 of his area’s larger farmers to form the private co-op. Individually, these farmers had some bargaining power. Collectively, he says, they can do much better when buying or selling products. And, although a few more members have been added, the organization is still small enough that each member serves on the board of directors and the cooperative can cater to individual needs.

Richards also promotes farmers not owning their own land. He rents land from investors from as far away as
England. He sees more and more farmers looking for outside investors for land and machinery in the future.

"Let the long-term investor own the land," he says. "Farmers need control, not ownership. Take inflation out and land is not profitable for the farmer. He cannot afford it. The operating farmer, to obtain the scale of operation he needs, just can't put that farm base together with net income if he tries to own that land."

Thoughts like this are not always well-received in the farm sector but make Richards a popular speaker. He's been on panels at the Harvard Business School, Agri-Business Executive Education Program and American Agricultural Law Association Conference, been part of a special report on CBS-TV's "60 Minutes," spoken at the National Public Policy Education Conference, and in 1976 was the first farmer ever to speak at the USDA Outlook Conference in Washington, D.C. And he regularly returns to Ohio State as a visiting instructor in agricultural economics.

"Basically, we take university research and adjust things to work for us," Richards says of his farm's success. All three of his sons have studied agriculture at Midwestern universities and contribute their knowledge to the Richards' enterprises. Staying on top of the markets, looking for the best possible financing and arranging for outside investors are all part of the plan. And keeping up with the latest research and developments made by agricultural colleges is important too, he says.

"Waiting 12 years to go to graduate school made it much more valuable," Richards says. "I knew more about the business and was able to get what I needed for our operation out of it."

"Business"—that's how Bill Richards looks at farming. Instead of riding a tractor or driving to town for machinery parts, the Ohio businessman is more likely to be studying futures markets or talking to a group of financial specialists about the agricultural economy. He says he's always learning. He's teaching, too.

Many people attribute their first job to being in the right place at the right time. But for Elizabeth Sloan, it was more a case of being in the right place in the right era.

Sloan, editor-in-chief of McCall's magazine and vice president of the McCall's Corporation, had the skills to capitalize on the 1970's "consumer revolution." When she earned her Ph.D. in 1976, there was much misunderstanding about the safety of the Nation's food supply, she says. By then, the New Jersey native had de-
cided to do something new—explain to the public the scientific facts of food safety. No one with her background had tried this area before, but it was something she felt needed to be done. It was almost like a social reform, a changing of misconceptions.

“I guess I was really the first one with any training in this area,” Sloan says. “Now I’m running around the country trying to get schools to go along with the major companies who are looking for people to bridge the communications and scientific gap. There’s a growing need for people with technical knowledge and practical communications skills.”

Sloan is a 1973 honors graduate of Rutgers University in New Jersey with a B.S. in food science. She earned a Ph.D. in 1976 from the University of Minnesota in food science with a minor in communications and journalism. With that background she was able to take a product, test it, and let the public know what the results were. Before going to McCall’s, Sloan did educational projects in food safety and nutrition for General Mills, edited food magazines, put together special features for all types of media and tested products to receive the Good Housekeeping Seal of Approval.

“The marketplace is becoming more and more technical,” Sloan says. “People are demanding more information, and they know more about topics like food safety and nutrition. Let’s face it—the agriculture areas are the backbone of everything. They’re the life areas.

“The best thing about an education in agriculture is you get into the very logical, scientific way of thinking,” she adds. “Once you can think that way, it’s a matter of being able to tell others. So, this type work is much more than communications or journalism—it’s conveying scientific research.”

“Universities must stress that our greatest enemy is inertia—the tendency to keep moving in the same direction we always have,” says Rich Feltes. “That may be part of the problem in the farm sector right now. We must look ahead to change and adapt to change. If you can’t adapt to change, you’re in trouble. If you’re an inertia person, you are in trouble.

Richard J. Feltes is vice president, director of commodity research for Refco, Inc., in Chicago. He believes the time is right for young people in agriculture. And production, according to the 1970 University of Illinois graduate, may be the best bet. Someone who is sharp and gets ahead in production agriculture’s new emphasis on marketing should do well in an industry currently experiencing a major shakeout. He says success in production agriculture requires knowledge, discipline, courage, money, and the energy to merge them properly. But if farming does not attract agricultural graduates, there are many career opportunities in marketing and processing.

Feltes grew up on a farm that now includes the largest roadside market in DuPage County, Illinois. Rich contracted polio as a child but was quite active in wheelchair sports throughout his college career at Illinois. In fact, he set a world record for the mile as a senior in 1970 that stood for 4 years. Feltes also earned an MBA from Southern Illinois University in December of 1972 before joining Continental Grain Company as a cash grain merchandiser.

Feltes coordinates commodity research and price forecasting in agricultural and financial markets for Refco, Inc., the world’s largest futures commission merchant. He also is specifically responsible for the grain and oilseed price forecasting delivered daily and weekly to Refco’s domestic and international offices. Continental Grain’s crop research department, where Feltes developed
Research for Tomorrow

monthly crop production forecasts for North and South America, provided an ideal springboard for his leap into the fast-paced commodity futures business.

Feltes thinks his agricultural education prepared him well for a career in commodity market analysis. Students need to pay more attention to specific skills if they want to succeed in agribusiness, he says.

“There’s a real demand for people who are articulate and understand marketing,” Feltes says. “Graduates need to understand the financial markets—futures, stocks and bonds. Their importance grows every day. Communication skills—the ability to sell yourself and your ideas—are crucially important as one must know how to sort out what works (cash flows) and what doesn’t. Above all, however, one must try. It’s better to try and fail then not try at all. Failures must be viewed as stepping stones to success.”

Every once in a while, someone takes their production agriculture classes literally. For example, a self-proclaimed “city slicker” who had spent more time in ballet class than barnyards became a hog farmer a few years ago.

In fact, Julia Ford Fanjoy went into agriculture “whole hog.” The 27-year-old from Hickory, North Carolina now operates her own 310-sow farrow-to-feeder hog operation.

And while hired help handles much of her farm’s daily activity, the 1981 graduate of North Carolina State University also works as part of the field staff for Murphy Farms. Murphy’s is the Nation’s third largest hog processing firm, with nearly 30 farms throughout the Carolinas, including Fanjoy’s, under contract. Fanjoy started her career in the swine industry as Murphy Farms’ first female manager after graduating from North Carolina State.

“I grew up in the streets of Hickory which is a city of about 65,000. I’ve always enjoyed animals and known I wanted to work with them since I was very young. I had cats and dogs and rode horses and liked working with the veterinarian. I never thought it would be hogs, though.”

“I stayed in school an extra year to get the second degree in poultry science because I was discouraged when I saw most people with animal science degrees getting jobs back on their family farm. I didn’t have one (a farm) so I thought I could find something in the poultry industry—marketing or processing. Look where I ended up.”

Where Julia Fanjoy ended up was the White House and on NBC-TV’s “Today Show.” As one of Glamour Magazine’s “Outstanding Young Working Women of 1986,” she became a bit of a national celebrity. And her secret, the fact that she was a city girl, was revealed to her Murphy Farms co-workers.

Not having a farm background shouldn’t discourage young people from studying agriculture, Fanjoy says. It may mean you have to work a little harder to understand the practical side of the classroom instruction, but the important thing is doing what you feel comfortable with.

“Actually, my background, or lack of farm background, was an advantage when I came to Murphy’s. A lot of people come from a family farm, then get 4 more years of college training and go out thinking they know how everything is. I really had no preconceived ideas about this end of agriculture. I really have to be humble and just keep learning.”

Can a person with no family ties to farming be attracted to an industry where financial failure and little profit seem to be the big news? Obviously Fanjoy was, and she thinks other young people should take another look at agriculture, regardless of their
background.

"Young people looking for a career and saying, 'Yuck, look at the farm economy' should look again. Agriculture is still a very possible career and can be a very lucrative one," she says. "It certainly is challenging, and no two days are alike. One day I might be called on to do some veterinary work, and the next it'll be computer analysis. It keeps changing."

Some have found a career in agriculture and others have used their degree as a springboard to other fields. Their titles may be doctor, lawyer, marketer or editor, but they are "today's aggie." Today's education in agriculture is a stepping stone into many fields.

"Aggies"

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Agriculture students of the 1980's aren't the stereotypic "aggies" of the past. Farming, for the most part, is not the vocation they are studying. More of these students are using their degrees to enter fields not usually associated with agriculture. And today's students are more often the cream of the crop. Agriculture attracts top high school scholars, leadership award winners, students who aspire to medical degrees, and individuals from many different walks of life.

Amelia and Mark Besola are an answer to any argument that agriculture does not attract the top students. This brother and sister were both among the State of Washington's top high school scholars and consequently named Freshmen of the Year at Washington State University (WSU).

Amy Besola is described by her advisers as "an outstanding intellect and leader who is at ease as a woman in a nontraditional setting and maintains excellent relationships with peers, faculty and staff." She was one of two students in her State to receive a Century Three Leadership Scholarship and holds both a Washington State Merit Scholarship and a Seattle First Merit Scholarship. The WSU junior is simultaneously enrolled in the College of Veterinary Medicine and as a general agriculture major in the College of Agriculture and Home Economics.

Miss Besola's accomplishments as an active student include reaching the highest levels of distinction in Al-