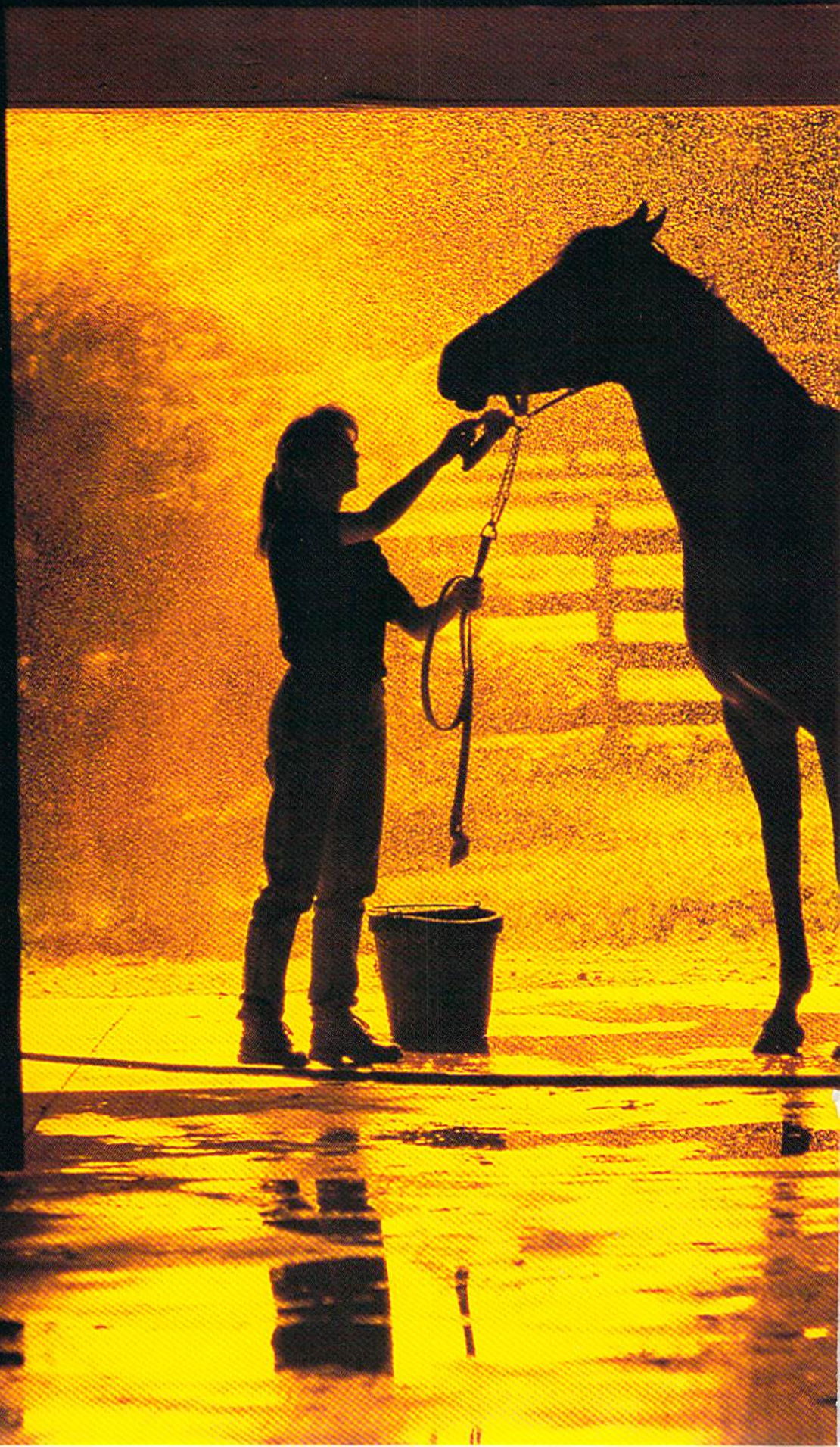


*P*retty as a postcard they may be, but New Jersey's horse-breeding farms are big business—and a life-style for those who work on them. At Walnridge Farm in Cream Ridge, the day begins with early-morning groomings and can extend into the night if a mare requires help delivering a foal.





A RUN FOR THE ROSES



New Jersey's on the fast track in the horse industry, and insiders are betting on Rutgers to help it nose ahead of Kentucky as the country's top equine state.

By Bill Glovin

Photographs by Bill Ballenberg

In a lonely stall that seems a thousand miles away from the highways and development that define so much of New Jersey, a freckle-legged filly named Bantry stands sad-eyed and listless. Her trainer, Harry Harvey, grumbles to Sarah Ralston, an associate professor of equine science at Rutgers–New Brunswick, that Bantry isn't eating well and has lost weight and energy. She won't be joining



New Jersey's
reputation
as the
Garden State
is tied
in part to its
60,000
horses~
that's more
horses
per square mile
than
Kentucky.

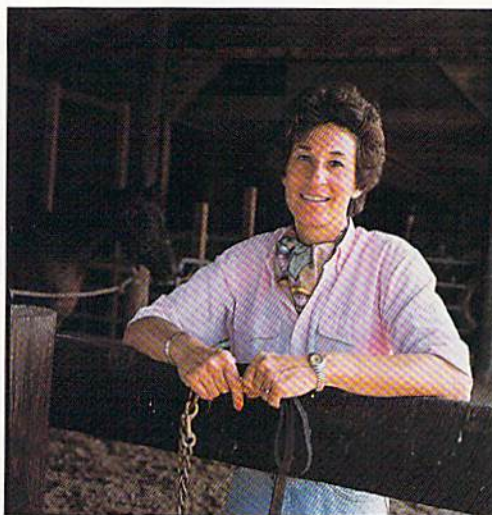
the young standardbreds who have come from across the state to the training track here at Showplace Farms in Englishtown to run in today's "baby races." The races—held two or three times a year before the racing season—are designed to acclimate novice standardbreds to the atmosphere that they will soon encounter at a real track.

Harvey, who has trained horses since 1947, tells Ralston that he is slowly losing faith in his regular veterinarian: Bantry is still experiencing cramps despite electrolyte supplements and continues to have problems with the stifle joint of her hind leg. Six years ago, faced with another problem horse, Harvey saw Ralston's name in a trade publication and contacted her through Cook College's Department of Animal Science. He's been calling her ever since. "Harry likes to make it seem that he's unsophisticated, but he's clever like a fox," says Ralston, a veterinarian with a Ph.D. in anatomy. "Through the years, he's gone to equine conferences in Texas and Florida looking for that edge. He knows how important it is to keep up with the latest advances."

As Ralston examines Bantry's diagnostic report, she hardly notices as anxious horses pulling sulkies buzz past on the track outside the barn. An expert on equine nutrition, Ralston suspects that Bantry's ailments are related to diet. She hands Harvey a receptacle containing a deep-blue copper and zinc solution and, explaining that Bantry's blood iron is up, instructs him to add two milliliters of the high-dosage mineral solution

to the horse's feed for two weeks. Conversing casually about some of his other standardbreds, the veterinarian complains that his current crop doesn't measure up to past money-winners like Albatross and Machine. Of one of his underachievers, he grouses: "If she had her way she'd be at the beach every day in sunglasses."

This liaison between professor and trainer is typical of the public-service role filled by Rutgers' equine science program. Its three professors—Ralston, Karyn Malinowski, and Ken McKeever—



Growing up in Somerset County—the home of the U.S. equestrian team—Rutgers associate extension specialist Karyn Malinowski took an early shine to the animal. Today, the holder of three Rutgers degrees is a national figure in equine circles.

and their graduate students are well-known on large farms and small paddocks throughout the state as they dispense advice and assistance gleaned over their years of research and teaching. "Our current mandate is 30 percent extension, 30 percent teaching, and 40 percent research, but it seems like we do 100 percent of all three," Ralston says, chuckling. "Even if we had twice the staff, we couldn't keep up with the demand." Ralston, for example, talks to an average of two or three callers a day, perhaps a first-time owner who doesn't know what to feed a horse, or an experienced veterinarian who needs guidance on a special diet for a yearling that's just had intestinal surgery.

New Jerseyans who ride highways rather than horses probably don't realize the economic and environmental impact and extent of the state's horse industry. The most recent New Jersey Equine Survey reported that the industry employs 10,400 people, has \$4.1 billion in assets, and generates \$725 million in annual income—more than the amount generated by all other animals in the state combined. New Jersey's reputation as the Garden State is in part tied to its 60,000 horses—

that's more horses per square mile than Kentucky. Two of the nation's preeminent horse facilities—the United States Equestrian Team headquarters and the 147-acre Horse Park of New Jersey—are located in Somerset and Monmouth counties, respectively. And

since 1966, about 100,000 acres of dairy, crop, and livestock farms that were in decline—land that might otherwise have been sold for office parks or town-house developments—have converted to horse farms. The 30-year boom in the horse industry is also tied to New Jersey's role as the nation's harness-racing capital. Although the Atlantic City gambling mecca and the New Jersey lottery have led to a steady decline in attendance at the state's five racetracks, the Meadowlands remains the highest-grossing standardbred track in the world. New Jersey's compactness

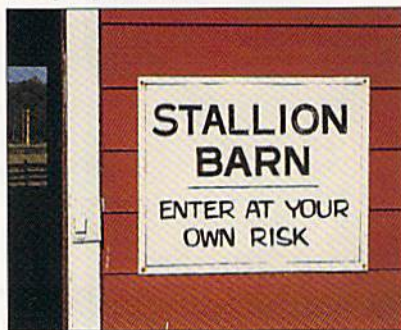




offers the racing industry other advantages: It allows trainers and jockeys to race at more than one track in a day and helps reduce the cost, expense, and wear-and-tear associated with transporting horses.

Associate extension specialist Karyn Malinowski (CC'71,GSNB'75,'83), who has been with Rutgers since her undergraduate days in the late 1960s, helped build Cook's equine science program and Rutgers' New Jersey 4-H Horse Project into what they are today and is now a national figure in equine circles. Her pride in the industry and in the growth of the Rutgers program, however, is tempered by her feeling that the task isn't nearly complete. "When I first came to Rutgers, there wasn't any cohesion between various factions of the

industry within the state," she says. "We could have helped ourselves on lots of issues: limited partnerships, animal welfare, farm protection. I've busted my butt for 20 years to help organize those factions and build the strongest equine science program on the East Coast. But I know in my gut that we're not where we need to be yet."



On a tour of three Monmouth County horse-breeding farms—each with 300-plus acres and hundreds of stallions, mares, and foals—longtime breeder and veterinarian David "Doc" Meirs II (CC'50) pulls up his shirt sleeve to reveal a large semicircular indentation on his shoulder. The scar is a 1972 souvenir

Helping to keep overdevelopment at bay are New Jersey's horse farms. Since 1966, they have taken over 100,000 acres of land that might otherwise have sprouted offices and townhouses. The state's five racetracks and special purses for horses bred in state make New Jersey an appealing place to raise horses.



Within days of being born, foals romp in pastures with playmates but never stray far from their mothers. At six months, fillies and colts are separated from the dams and are weaned. At 18 months, they're groomed and prepared for auctions that take place each fall in the Meadowlands or at other East Coast venues.

from a mare that didn't like the feel of a stomach tube that Meirs had inserted. "It was a good thing it happened in winter when I had on several layers of clothing and a heavy coat," says Meirs. "Otherwise, that kind of bite could have taken off my arm."

Meirs, whose artificial hip replacement and slight limp are also tied to job-related mishaps, owns Walnridge Farm and Concorde Stud Farm in Cream Ridge. Combined, the two farms breed more than 500 mares each year, contain 550 acres, and are among the nation's top 20 breeding operations. Meirs has spent more than half his lifetime in the business

and has raised two sons to follow in his footsteps: Walnridge general manager David Meirs III and veterinarian Richard Meirs.

The Meirs men and some farmhands have spent the morning driving from barn to barn examining mares to see if they're pregnant or ready to breed. "I know of two vets who were killed by horses; you can't be skittish if you work around them," the elder Meirs says as his entire arm and the cord of a portable ultrasound machine disappear inside a mare's rectum. Meirs looks at the machine's screen and informs his son David that Adams Ant, who nuzzles her foal, has a large follicle on her ovary and will have trouble getting pregnant again. David notes the mare's breeding status on a chart before they move to another barn to complete the next handful of a scheduled 30 exams.



When Meirs was an undergraduate at Rutgers in the late 1940s, there was little if any equine science at Cook College or, for that matter, any other agricultural school in the country. Highly supportive of the current program, he has spent the past 20 years delivering occasional lectures to animal-science students, encouraging Malinowski's efforts, and prodding Cook officials to recognize and support equine science. He; Taylor Palmer, Jr., who is chair of the Rutgers University Board for Equine Advancement (RUBEA); and members of a group called Friends of Rutgers University Equine Research—founded in 1990 by John Walsh (Ag'72) and Susan Data-Sampak—are determined to help the equine science program raise the \$18 million needed to create an Equine Research Center for Excellence at Rutgers. Plans for the center, which were unveiled this past summer, include a state-of-the-art classroom-laboratory; expanded and improved stall and pasture space; an endowed chair for an internationally known horse researcher who would serve as the center's director; and more courses, students, and faculty.

For industry insiders, the ambitious plan

to upgrade the program is the next phase of what has been, until recent years, an uphill climb. In the 1970s, with the horse industry gaining prominence in New Jersey, state secretary of agriculture Phillip Alampi (Ag'34, GSEd'45) and the 54-member New Jersey Equine Advisory Board (NJEAB) successfully lobbied the state legislature to have the horse named the New Jersey state animal and recognized as an important agricultural commodity. The legislature also created special standardbred and thoroughbred purses to encourage the growth of horse breeding in New Jersey.

Meirs, the first veterinarian appointed to the NJEAB, was one of several insiders who felt that the legislative action was an unofficial mandate to expand equine science at the state university. "Any fool could see that the horse was now the only game

in town, but animal-science students were still concentrating on castrating lambs and dehorning baby cows," he says. "The official attitude was, 'We can't improve the equine program because the horse industry won't give us any money.'" Meirs feels that Cook College and the state's horse industry reached a "chicken-and-egg" impasse whereby each party waited for the other to make the first move.

In defense of her alma mater, Malinowski says, "Cook simply mirrored the rest of the state—and even the nation—in not recognizing early on the economic and environmental potential of horses. Agricultural schools throughout the country have had problems making the shift from traditional to nontraditional agriculture."

In 1978, Malinowski, who was working toward her Ph.D., was hired by Cook as the nation's first female equine extension specialist. At the time, there were no equine science courses and no horses on campus, so she spent most of her time managing Rutgers' sprawling 4,000-member 4-H horse project. A native of Manville, she had been involved

with 4-H and horse exhibitions since her childhood and had befriended many of the state's important horse-industry people. They, in turn, introduced her to some of the key players on the national level. "Horse people took a shine to the fact that I would get up at 4 in the morning and work 'til dark. They took me around, and I joined every committee I could find," says Malinowski, who

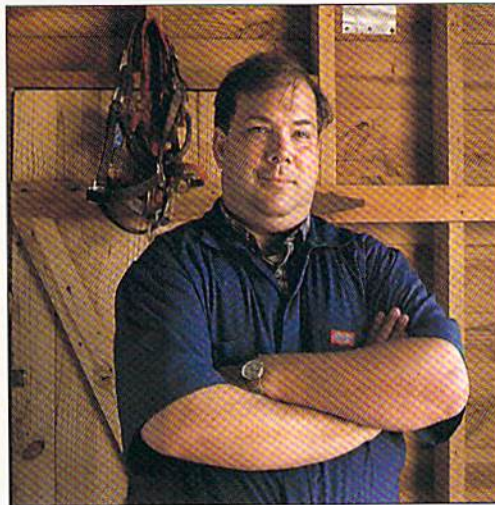
is now state chair of the American Horse Council and Cook's representative to the NJEAB. "Over time, my involvement brought recognition and support for the program."

Through the 1980s, industry insiders and members of the NJEAB continued to lobby Cook officials to upgrade equine science. Colin Scanes, who became chair of the Department of Animal Science in 1986, recalls Meirs taking him on an informal tour of Walnridge and other nearby breeding farms soon after his appointment. Scanes



As

recently as 1978, there were no equine science courses or horses at Cook. Today, the college boasts three equine science specialists, a strong 4-H component, and 50 mares, stallions, and foals.



Ken McKeever, Rutgers' newest equine scientist, once tested horse physiology for NASA. Because equine and human physiology closely resemble one another, says McKeever, findings in horses can have applications for people.



Most agencies view the horse in the traditional way—as a luxury item for hobbyists, not as a commodity to the agricultural industry.

couldn't help but be impressed. He, along with new Cook dean Stephen J. Kleinshuster and New Jersey Agricultural Experiment Station associate director Roger Wyse, got firmly behind the program. "Meirs and industry people like Rod MacDougall and Taylor Palmer helped us see the light," says Scanes, who is now a dean at Iowa State University.

In 1989, the animal science department finally got the go-ahead to hire a second equine specialist, Sarah Ralston. She immediately expanded the curriculum, offering new courses for undergraduate and graduate students as well as evening continuing-education classes for industry people. She also expanded the research program, which now supports the work of the three horse specialists as well as other animal-science professors (sidebar, below). One of the early projects was

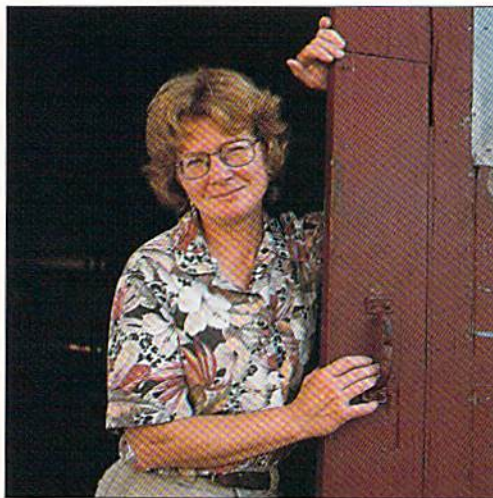
clinical testing of Purina Equine Senior, a feed for aged horses that she had developed while she was at

Colorado State University. The commercial success of the product, which was introduced in 1992 and is now found on the shelf of every horse-feed store in the country, brought added prestige and recognition to the program.

Cook's new commitment to the horse prompted Scanes and Malinowski (who all along had been informally advised by alumni and an ad hoc group of industry insiders) to ask about a dozen people representing various factions of the industry to sit on the college's new equine advisory committee. The committee, which drew up bylaws in 1991 and met for the first time in 1992, serves the program in an advisory capacity and helps pinpoint mutually beneficial projects. Members of RUBEA and the Friends of Rutgers University Equine Research as well as associations and corporations with ties to the equine industry began to donate horses, feed, and the money necessary to fund projects and to build the barns, stalls, and fencing that

today house more than 50 horses on campus.

Later in 1992 the committee convinced legislators to allocate to the equine science program a



When associate professor Sarah Ralston isn't busy at Rutgers, she lends her time and veterinary skills to SPUR, a program for handicapped riders in Monmouth County; the Gladstone Equestrian Association at the United States Equestrian Team headquarters; and trail riding—endurance competitions.

ON THE RIGHT TRACK

Research conducted at Rutgers helps New Jersey's horse industry stay ahead of the pack.

Healthy as a horse" may be the most inappropriate cliché in the English language. Because horses are, says associate professor Sarah Ralston, "1,000-pound creatures standing on four toothpicks," they are prone to injury and susceptible to health problems. Last spring, the New Jersey State Legislature passed a resolution honoring Rutgers'

equine science program for its support of the state's horse industry and its research in the following areas:

EQUINE NUTRITION:

Ralston was instrumental in developing Purina Equine Senior, a feed designed to meet the nutritional needs of older horses.

METABOLIC BONE DISEASE:

Ralston and graduate student

Angela Black have developed new techniques to study bone growth and metabolism in horses and are identifying causes of metabolic bone disease.

EQUINE IMMUNOLOGY:

Associate extension specialist Karyn Malinowski and postdoctoral fellow Rial Christensen have shown that horses participating in strenuous equestrian events do not experience increased

stress levels or altered immune function.

AGING AND EQUINE

GROWTH HORMONE: Data from studies conducted by Malinowski and Christensen have shown that the growth hormone somatotropin decreases as horses age. They are currently testing the efficacy of an equine-specific growth hormone, eST, in reversing the effects



With the blessing of Walnridge Farm owner David "Doc" Meirs, associate professor Sarah Ralston and graduate student Angela Black are using the farm's vast resources to study the causes of metabolic bone disease. The collaboration exemplifies the close relationship between Rutgers' equine science program and the state's horse industry.



portion of the \$1.2 million in uncashed parimutuel racing tickets that each year funds Cook initiatives like solid-waste management, urban youth development, and integrated crop management. The program used a portion of the first \$150,000 it

received to hire 4-H specialist Marjorie Margentino, allowing Malinowski to devote more time to teaching and research. In 1994, the legislature raised the equine science program's share
(Continued on page 44)

of somatotropin depletion in aged horses.

HEAT EXHAUSTION AT THE OLYMPICS: Ralston and associate professor Ken McKeever devised methods to prevent heat-related injuries and to counteract the effects of high temperatures and humidity during the equestrian events at the 1996 Summer Olympics in Atlanta.

EXERCISE-INDUCED PULMONARY HEMORRHAGE: Up to 70 percent of race horses show evidence of bleeding in the lungs following a race; pul-

monary hypertension appears to be the cause. McKeever has shown that furosemide can effectively treat exercise-induced pulmonary hemorrhage. He is currently testing horses on a high-speed treadmill to study the effects of endothelin and other hormones on blood pressure.

PERFORMANCE-ENHANCING DRUGS: Many drugs—some legal, some not—can affect a horse's performance. McKeever is working with the state racing commission to develop a method to detect the presence of recombinant human erythropoietin—a

drug tied to deaths in both human and equine athletes—in racing horses. Ralston is collecting the blood sera of horses that are free of drugs; the commission's equine drug-detection lab will use the sera in their drug-testing program. And Malinowski and graduate student Clint Burgher have studied the effects of corticosteroids and nonsteroidal antiinflammatory drugs on horses.

REPRODUCTION AND BREEDING: Associate professor Carrol Bagnell and postdoctoral fellow Peter Ryan are studying the role of the hor-

mone relaxin in placental function in pregnant mares.

PARASITES: To rid horses of the parasite that causes colic and other severe health problems, associate professor Michael Sukhdeo and graduate student Darcy Medica found that it is more effective to treat horses' grazing pastures than to administer drugs to the horses themselves.

ALTERNATIVE BEDDING: Professor James Wohlt and grad student Paula Marie Ward have developed a bedding product made from recycled newspapers.—BG

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A Run for the Roses

Continued from page 23

of the \$1.2 million pie to \$300,000. The additional money was used to hire associate professor Ken McKeever—considered among the top animal-exercise physiologists in the country—and to purchase a \$75,000 treadmill to assist in a variety of new research projects.

At the annual Equine Science Update—an open house on the Cook campus held to showcase current projects—horse people from throughout the state have gathered in and around the horse barns for wine and cheese. Inside the main barn, a crowd watches McKeever demonstrate the eye-catching treadmill. A horse named Chablis trots in place on a sturdy, floor-mounted conveyor belt, while a student holds her halter and speaks to her soothingly. As Chablis breathes into an open-flow calorimeter placed on her nose, data on pulse and heart rates and oxygen and carbon dioxide levels are collected and fed into a computer in the adjoining exercise physiology lab for McKeever to analyze later.

When it was introduced last year, the 21-foot treadmill—one of only a handful used at universities around the country—attracted a deluge of media attention. McKeever, who studied animal physiology at NASA's Ames Research Center and Ohio State University before coming to Rutgers, hopes the treadmill will help him and his colleagues solve some of the important puzzles that continue to plague horses: excessive bleeding in the lungs after racing, metabolic bone disease, premature aging, and the harmful effects of certain drugs administered illegally by unscrupulous trainers to improve the performance of racing horses.

Ralston remarks to an interested alumnus that after humans, the horse has more demands placed on it than any other species. "We expect horses to be athletes when they're young, breed and have children, and live long, healthy lives," she says. "And the activities we put them through are as different as ballet and figure skating are to sprinting and marathon running. Horses sweat, experience stress, and, depending on what's required of them, have different nutritional and training needs." McKeever, who had recently

delivered a paper in Australia on the misuse of the hormone erythropoietin in horses, explains to a horse breeder: "Our research is proactive in the sense that unlike a vet school that deals with sick animals, we try to anticipate problems and prevent disease before it occurs."

In response to a question, Ralston points out that the proposed Equine Research Center for Excellence is not viewed as a building block towards eventually establishing a school of veterinary medicine. With no shortage of vets in the state and stringent academic requirements to consider, the percentage of animal-science students planning to attend vet school dwindles from 50 percent during freshman year to less than 15 percent by graduation. "I don't think there's a great demand for a vet school and a costly teaching hospital," concurs Taylor Palmer, chair of Cook's equine advisory committee and owner of Boxwood Farms in Manalapan, New Jersey. "Leave that to the University of Pennsylvania and Cornell; it's not the direction we should be moving in."

What the state does need, says Malinowski, is a sophisticated equine center to provide breeders, racing commission staff, and veterinarians with improved research and diagnostic facilities. Horses, she says, are complex beings that require complex care, and New Jersey falls short in providing it. "As it stands now, to conduct a postmortem examination on a horse, you have to schlep a 1,200-pound animal up three flights of stairs to the state animal-health lab in Trenton or ship the horse out of state, which is costly and time consuming. We need a lab in this state where we can conduct that kind of procedure; whether it's in the Meadowlands, the heart of Monmouth County's horse country, or—here," she says, emphasizing "here" with a twinkle in her eye.

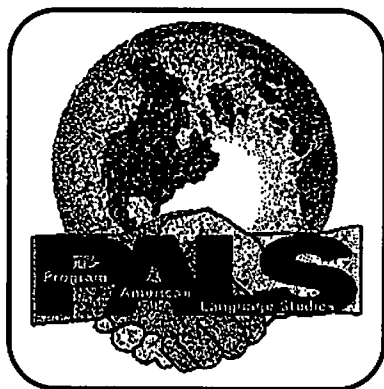
Raising the money to create such a center is a hurdle that will be difficult to clear; horses are still considered the Rodney Dangerfields of agriculture. Most state and federal funding agencies view the horse in the traditional way—as a luxury item for hobbyists, not as a commodity to the agricultural industry. Traditionally, the U.S. Department of Agriculture,

the National Science Foundation, and the National Institutes of Health have not been forthcoming with support for horse-related projects. "From an economic standpoint, I never understood the distinction between raising horses and raising petunias for Aunt Phyllis to plant in her garden," argues Malinowski. "Horses help keep green acres, are raised in an agricultural setting, and contribute to the economy. These are the criteria that federal agencies should use as funding considerations."

Until things change, the proposed center will remain a dream until the equine science program and its friends can raise the money on their own. But once the center is up and functioning, an optimistic Malinowski believes that it could be self supporting. Part of the operating costs could be raised, she says, through new long-distance learning technology that could link the center to Long Island; Bucks County, Pennsylvania; Orange County, New York; and other areas with large horse populations and limited access to equine science. She sees the potential for this right there in front of her at her annual horse-management seminar: a third of its audience travels to Rutgers from out of state.

Twenty years ago, when not a single horse grazed on the Cook campus fields, Malinowski set out to build the equine science program that the state needed. Today, she can look with pride on her own "old girls"—aged mares receiving an experimental hormone that she developed—as well as the extensive curriculum, research, and outreach made possible by her new colleagues and the increased support for the program. But anyone familiar with Malinowski knows that she won't rest until she attains her dream in full. "Give us more stall and pasture space. Give us a roomy indoor teaching facility—not for horse shows—but for seminars, clinics, and demonstrations," she pleads. "Give us video equipment and a diagnostic lab where we can perform important diagnostic tests. The horse industry in this state deserves nothing less." □

Bill Glovin is the senior editor of Rutgers Magazine.



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