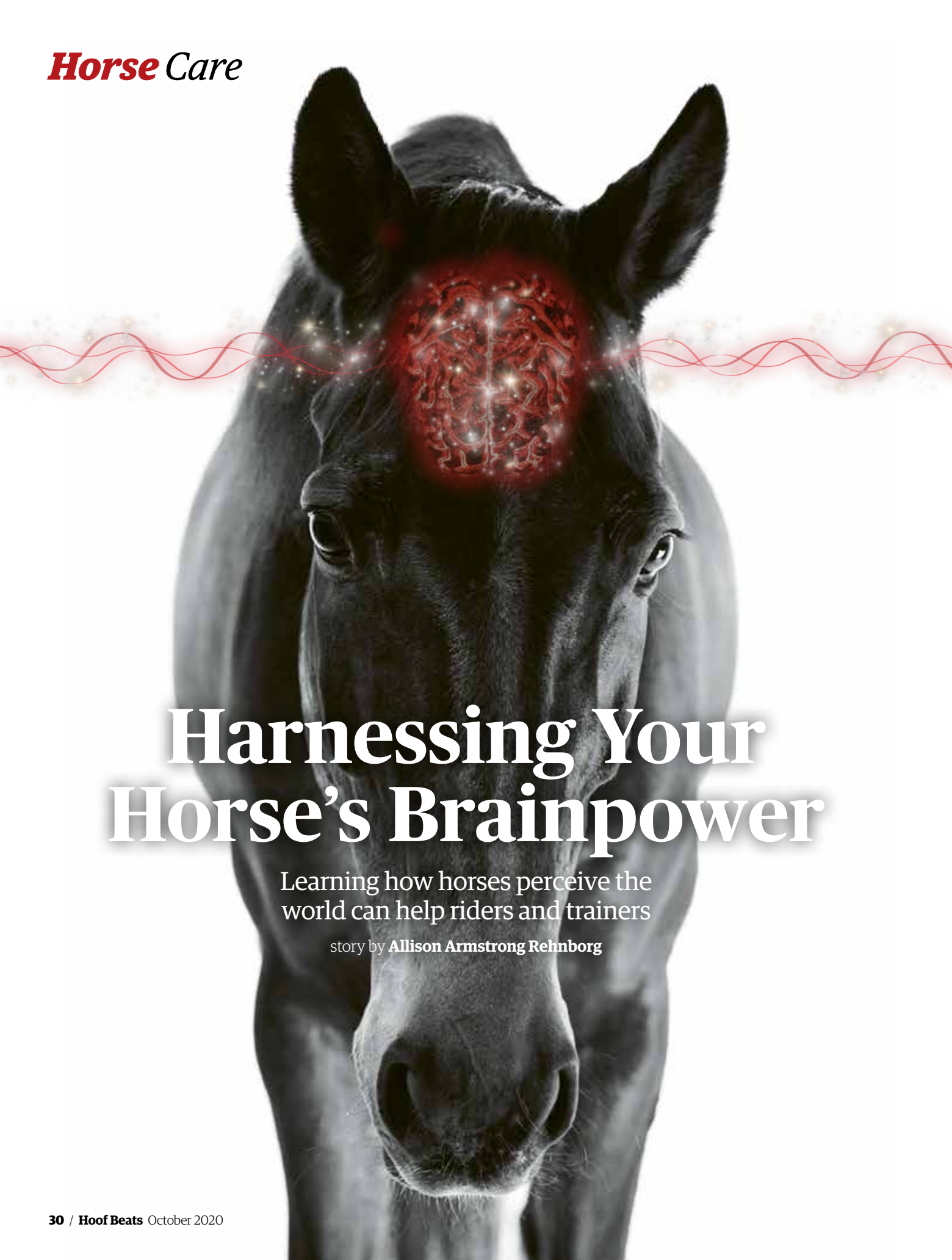


Harnessing Your Horse's Brainpower

Learning how horses perceive the world can help riders and trainers

story by **Allison Armstrong Rehmborg**

From size and volume to evolutionary programming, a horse's brain and a human brain differ drastically from one another. A horse's brain weighs roughly 1⅓ pounds and manages a body more than a thousand times its weight. The average human brain weighs a little more than 3 pounds and controls a much smaller area.

One brain belongs to a prey animal, the other to a predator. Yet, through horsemanship, horses and humans have learned to communicate through physical cues and neural signals, or messages sent by the brain.

This "brain to brain" communication is an example of brain-based horsemanship, a new way of thinking about horse-human relationships developed by Dr. Janet Jones. Combining her education as a neuroscientist with her expertise as a horsewoman and trainer, Jones is the author of *Horse Brain, Human Brain: The Neuroscience of Horsemanship*.

In Jones' opinion, brain science is the key to achieving a better understanding of how horses and humans can think, act and work together.

"Brain-based horsemanship is the application of brain science to horse and human behavior," she said. "It applies to all types of horses and every activity that's related to them, whether it's riding, driving or training them. When you start applying brain science to behavior, you begin to understand more about these two types of brains and how they interact. Every horse has a brain and every human has a brain, and the connection between those two is our point of contact."

Jones became interested in brain science as a young woman when, after taking a nasty tumble from a horse in training, she lost consciousness. She did not remember any of the activities she participated in throughout the day.

That's when she realized her brain had been operating on autopilot for hours. Fascinated, she began to read books on brain activity and earned her Ph.D. in cognitive science from the University of California, Los Angeles. Jones spent the next 30 years studying and teaching brain science before eventually returning to her roots as a trainer.

"When I opened my horse training business, I realized right away the problems I saw between horses and handlers often stemmed from brain differences," she said. "I realized that most people, including some excellent riders, were actually working against their horses' brains, rather than with them. At that point, it occurred to me that if you could really begin to understand how a horse's brain operates and try to do everything in your capacity to work with that brain, that would make working with horses a whole lot easier."

Brain-Based Horsemanship

Practicing brain-based horsemanship means developing an understanding of how horses think and how they perceive the world. The next step is learning how to accommodate those differences. Although the procedure sounds relatively simple, it's not always easy to put into practice.

> **"Humans have an actual brain process that causes us to be biased toward the idea that everyone thinks the same way we do. But of course, horses don't think the same way we do."**
>
> Dr. Janet Jones

For example, a novice horseman's first lesson almost always involves learning how differently horses see the world.

As predators, a human's eyes are positioned on the front of the skull, resulting in excellent frontal vision but poor rear and side vision. As prey animals, horses' eyes are positioned on the sides of the skull, resulting in excellent peripheral vision but also blind spots directly in front of and directly behind the horse. That's why experienced equestrians counsel novice riders not to walk directly up to or directly behind a horse in order to avoid getting kicked or spooking the animal.

"When a horse is afraid of a low

Horse Sense vs. Human Sense

The average horse brain is smaller than the average human brain, but the two organs share the same major components.

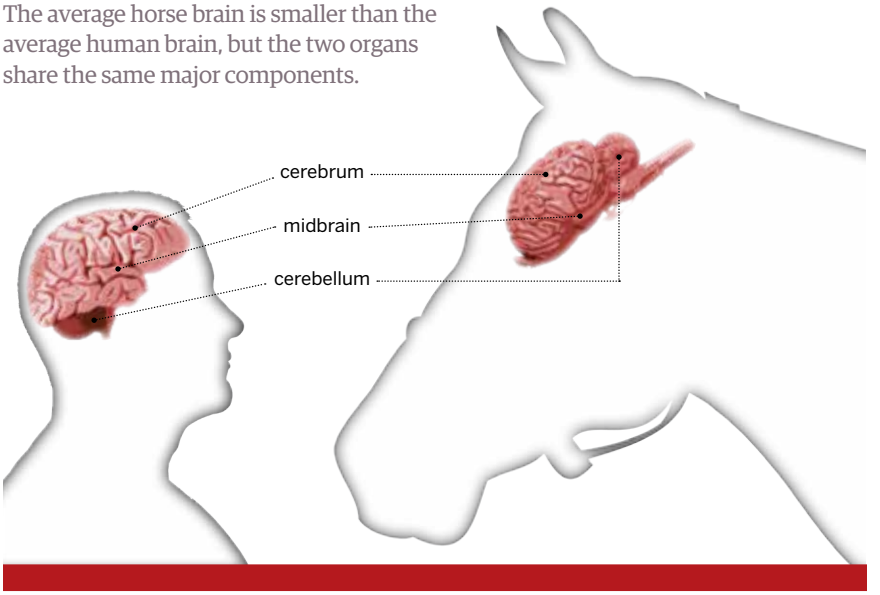


PHOTO ILLUSTRATION BY GENA GALLAGHER/SHUTTERSTOCK

object, we've all been taught to have the horse approach the object from a frontal direction," Jones said. "We see excellent riders and trainers do this. We've all done it ourselves. And we've also all seen the kind of back-and-forth jam that results when the rider is insisting that the horse move forward, and the horse is trying to shy off to the left or turn back to the right instead. That approach makes sense to us because our eyes are in the front of our heads and because our blind spots are behind us and off to the side. For the horse, the frontal approach is the very worst approach you can take because as the horse gets closer to the scary object, it disappears."

In this situation, when a horse's handlers know better, why do they still ask horses to do things that go against the animals' programming? The answer to that question lies in the human brain.

"Humans have an actual brain process that causes us to be biased toward the idea that everyone thinks the same way we do," Jones said. "But of course, horses don't think the same way we do."

Becoming aware of that internal, brain-based bias is the first step toward cultivating a better understanding of how to train horses. By applying brain-based horsemanship, horsemen can learn to accommodate those differences to become better trainers.

Horse Brain, Human Brain

Horses and humans also have a significant difference in their sense of smell.

"About one-third of the human brain is devoted to vision, but very little is devoted to smell," Jones said. "The equine brain commits much of its space to the processing of smell. This means we have a miserable ability to smell, while horses have the neural hardware to smell with extreme precision. They can take one sniff of something and derive much more information than we ever could."

Armed with this knowledge, it's easy for a horseman to understand that when a horse shies at what could be considered nothing, that horse may, in fact, be reacting to an offensive smell.

"In this scenario, it's easy for the human to think the horse is shying at nothing because the human can't see anything to shy at," Jones said. "But what's happening there, at least partly, is that we think nothing is there because we can't sense it. We can't smell anything, but our horses can smell if a wild animal has walked through there an hour ago. That's one big difference between equine and human brains, and it can cause us to overlook a lot of what horses may be sensing while we're working with them."

Another way in which human brains and horse brains differ is how they categorize the objects they see. Human brains operate by categorical perception, which is an automatic, higher brain process that groups instances of similar objects together.

"Basically, categorical perception

PHOTOS BY MARK HALL

WORLD VIEW / ***Clockwise from far left:*** Horses may spook over things like shadows on a track because of the placement of their eyes, which creates a blind spot as they approach objects in front of them. • They are constantly assessing their environment with their precise sense of smell, especially when encountering anything unfamiliar to them. • As prey animals, they are always on the alert for danger, like these yearlings studying a deer in the distance. • Lacking what is known as categorical perception, they are unable to recognize an object in different settings. So the hat they see you wearing every day in the barn becomes a foreign object worth investigating when they find it in another setting.

organizes the sights, sounds and smells of the outside world for us," Jones said. "If we see a pair of mud boots, for example, in 10 different circumstances, our brain categorizes those 10 instances together. Horse brains, on the other hand, don't do that. Horse brains process each instance separately, as if each instance of the mud boots is a different instance. This explains why your horse won't shy if your mud boots are standing in the barn where they always are, but he will shy if he sees them sitting out by the water trough one day. That view is a whole new instance or experience for him, but for us, they're still just the same old mud boots."

In order to work with horses safely, humans also need to understand that, as prey animals, horses' brains are driven by external stimuli. By contrast, human brains are driven by internal goals. This means that horses are programmed to react to items in the environment, while humans can ignore those items for other pursuits.

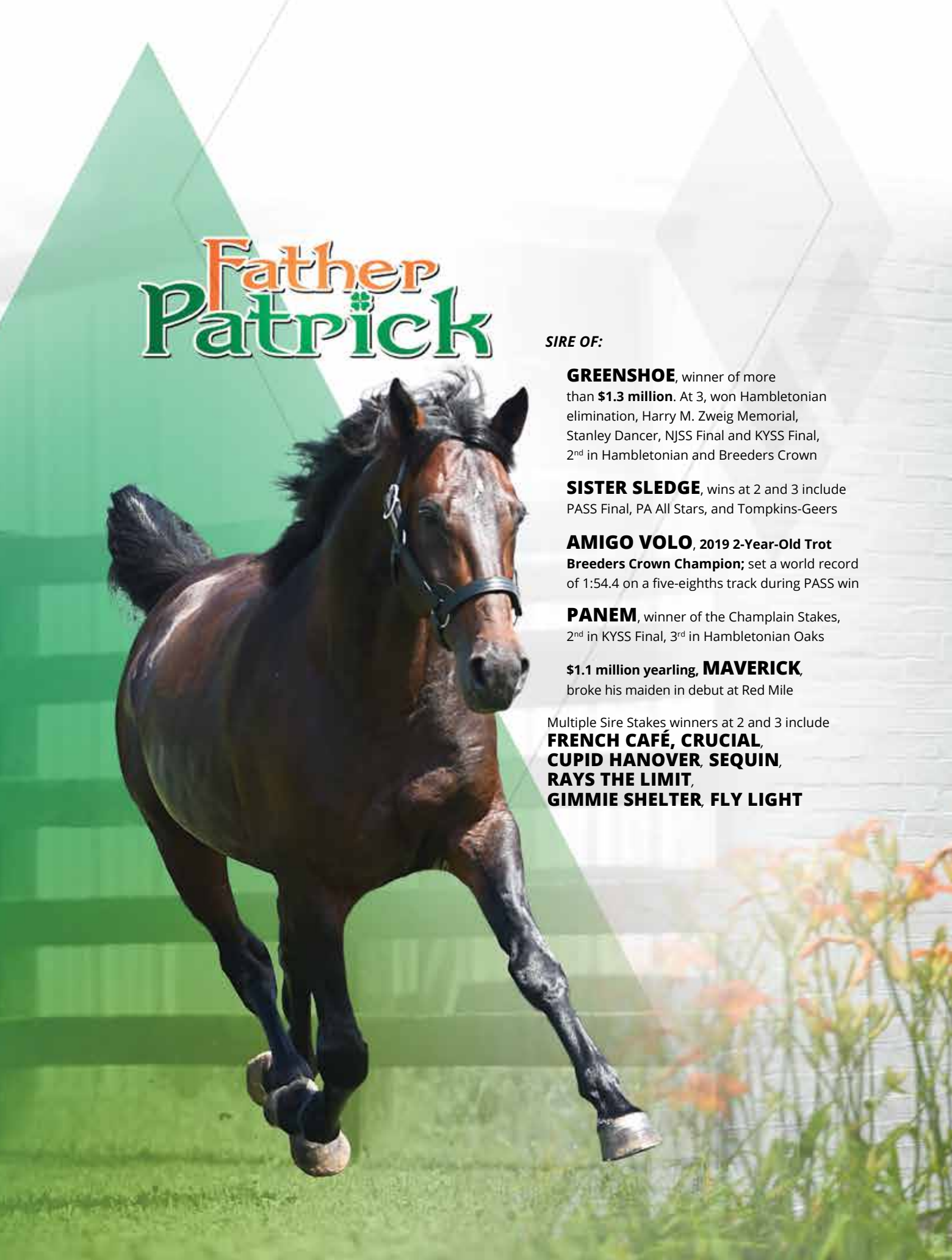
> **"Horses' brains evolved to prioritize survival, so they had to pay close attention to the stimuli in their environment to avoid being eaten, chased or killed. Humans, on the other hand, are occupied by goals, which means we can easily ignore various stimuli in our environment."**
>
> Dr. Janet Jones

"An equine brain is designed to pick up and react to any stimulus in the environment that might indicate danger," Jones said. "When a horse hears a sound, sees a sight, feels a touch or smells an odor, his brain is immediately occupied by that particular stimulus. And it doesn't have a lot of capacity left over for thinking about other things. Their brains evolved to prioritize survival, so they had to pay close attention to the stimuli in their environment to avoid being eaten, chased or killed. Humans, on the other hand, are occupied by goals, which means we can easily ignore various stimuli in our environment."

As anyone who has ever been near a horse that shied or spooked knows, horses are fast, agile and powerful–which means they can easily injure or kill a person when startled. That's why it's key for people to learn to be present in the moment when they're with horses–and to stay alert and aware of

*See **Horse Care** on page 109*

Father Patrick



SIRE OF:

GREENSHOE, winner of more than **$1.3 million**. At 3, won Hambletonian elimination, Harry M. Zweig Memorial, Stanley Dancer, NJSS Final and KYSS Final, 2nd in Hambletonian and Breeders Crown

SISTER SLEDGE, wins at 2 and 3 include PASS Final, PA All Stars, and Tompkins-Geers

AMIGO VOLO, **2019 2-Year-Old Trot Breeders Crown Champion;** set a world record of 1:54.4 on a five-eighths track during PASS win

PANEM, winner of the Champlain Stakes, 2nd in KYSS Final, 3rd in Hambletonian Oaks

$1.1 million yearling, MAVERICK, broke his maiden in debut at Red Mile

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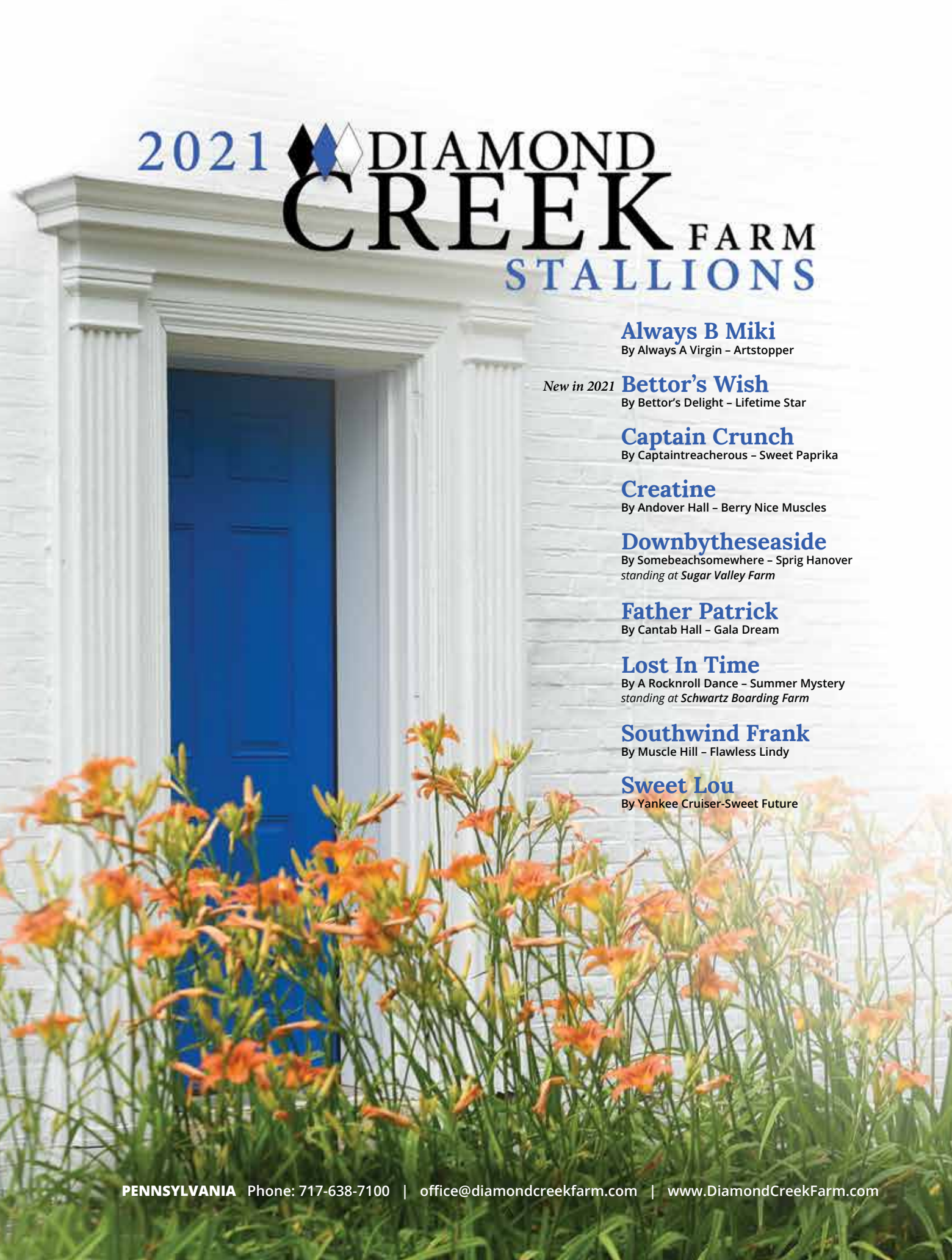
FRENCH CAFÉ, CRUCIAL,
CUPID HANOVER, **SEQUIN**,
RAYS THE LIMIT,
GIMMIE SHELTER, **FLY LIGHT**



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the same kind of stimuli that may provoke a horse to spook.

"At any given moment, a human brain can be caught up so deeply in abstract reasoning and goal achievement that we don't even notice the venomous snake crawling by our feet," Jones said. "But the horse is going to notice. If we aren't paying attention, we're likely to get hurt. Safety is the number-one reason to recognize that horses are driven by stimuli."

Another reason for understanding that horses' brains are stimulus-driven is training. Knowing how the horse's brain is programmed to work may be the most important part of learning how to train a horse effectively.

"Even the most cooperative horse cannot work toward our goals on his own," Jones said. "He doesn't have a goal-driven brain, and he never will. We have to approach learning on the horse's mental playing field, not on ours. If we honor his brain, rather than ignoring it, he will learn more quickly and he will develop a much more trusting relationship with us."

Learning How Horses Think

Understanding how horses think and process thoughts may be one of the most fundamental lessons a horseman can learn. In addition to being an investment in safety, it's an investment in learning how to communicate between the two species.

"If we can understand how the horse experiences us and our world, we can train the horse more effectively and more humanely," Jones said. "We can be sympathetic to some of his fears and worries and we can build his trust over time. And once we have an idea of how the horse's brain works on its own, we can learn how to teach it to work in less natural ways. For the horse, those less natural ways are human ways and the ways we want the horse to work for us. I think the critical message here is that we want to move from unilaterally commanding an animal to do whatever we say toward encouraging an animal to participate mutually in learning something about the human world." ***HB***

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