ESSAY AND QUESTIONS

A Biologist on the Farm

A wildlife biologist was driving to the coast one day when his car broke down. He walked a mile along a country road before he finally came to a farm. He knocked on the door and told the farmer his situation. They called for a wrecker (tow truck) and the driver said it would be a while but when he finished this run, he'd drive out there, get the car and then come get him at the farm. Yes, he knew the farm well.

When he hung up, the farmer offered the scientist lemonade and a tour of the farm.

As they walked, he said, "I never spend much time with domestic animals. I'm interested in adaptations in wild animals. I love discovering the neat things they do to live in their specific habitats."

"Farm animals have some pretty neat adaptations, too," said the farmer.
He hesitated. "They do? I never thought about that. Let's see if I can figure some of them out. Don't tell me."
The farmer laughed, "Okay!"

The scientist pulled a small field journal and a stubby pencil from his jeans pocket.

He went quiet as he started making observations. He was not saying anything, and not writing, either. They didn't get very far before he said,

"I think I'm going to need some hints! What, for example, are those? They don't look like any duck I've ever seen."
"Those are Runner Ducks," said the farmer.
"They're so tall and skinny!" he replied.
"Sure are."
The scientist shook his head. "They're not built for swimming, that's for sure. A typical duck is basically built in a permanent swimming position."
The farmer nodded. "You're right. That's a good observation. However, over the generations, this particular breed of duck actually spent more time walking than swimming. They're from China. These ducks evolved there as a breed with a special trait of being upright. Children would herd them to the rice paddies where they'd eat pests all day and, not only would they walk there in the morning, but then they would have to walk all the way home every night." The scientist's eyes lit up. "Ah! Now I

know why they developed this special adaptation!" He wrote his hypothesis (guess) down in his journal:
(What do you think he wrote?)

Why are runner ducks tall and skinny instead of flat and long like other ducks?

ANS: Runner Ducks are adapted for walking since they walked more than they swam, and an upright duck walks more efficiently than a horizontal one.

The two walked on. The scientist watched the cattle and sheep grazing in the field. "Are those goats?" he asked.
"Nope, those are sheep," the farmer answered.
"But, they have no wool!"
"That's right," said the farmer. They're called Barbados Sheep."
"Barbados, eh? " said the Scientist. I've been there. That is one hot and humid place! I bet I know their special adaptation." He made a note in his journal.

What is the adaptation of the Barbados sheep and why did it adapt that way?
ANS: It has no wool because it comes from a hot climate.

As he wrote, a fly landed on his paper. He swished it away with his hand, and one landed on his leg. "I hate flies," he said. "I don't know how the animals deal with them. I remember visiting a farm when I was little. It was springtime. The grass was long and very rich and green…and so were the backsides of the sheep! They could not digest the grass well because it was so rich and it passed through them very quickly." "You mean, they had diarrhea?" asked the farmer. The scientist smiled, "Yes, that's what I am getting at. Anyway, there were flies all over the sheep."

"I wonder if they had fly strike," said the farmer.
"Fly strike?" he asked.
"It's a disease in sheep. The flies lay eggs that hatch in the thick wool of the tail, and the larvae (basically, maggots) infect the sheep. A thick, bushy tail gets full of manure and this is a breeding ground for flies."

"Ugh!" he groaned. "Maggots are ten times worse than flies! I really, REALLY hate maggots!"

The farmer laughed, "You're pretty sensitive for someone who works with animals! Actually, we've found a breed that is adapted against fly strike." She pointed to a sheep in the pasture. "See the one with the very thin

tail? That thin tail is called a rattail. Those sheep aren't prone to fly strike. Can you tell why? "

"Brilliant!" said the scientist. "Say no more" and made a note in his journal.

What did he write down? Why is the rattail an adaptation for rich spring pastures?
ANSWER: The thin tail does not provide a breeding ground for flies.

"Actually", the farmer continued, "our winters are so mild here, we tend to seek out breeds of animals that are adapted to warm climates. Many of the farm animals people are familiar with were developed in northern Europe and Britain where the winters are cold and the summers do not get so sweltering hot." She opened the door to the chicken house and kept talking.

"We also have Wiltshire and Gulf Coast Native sheep. They shed their wool in summer. Not a lot of sheep can do that. Most of them have to be shorn each spring. Shearing sheep is hard work and I'm just glad I don't have to do it. Fortunately, no one in this family is determined to be a weaver. I've tried my hand at it, and really enjoy it, but not to the point of having to raise a bunch of wooly sheep."

The Scientist made a note about Wiltshire and Gulf Coast Native sheep.
What adaptation did he write down?
Answer: Wiltshire and Gulf Coast natives are adapted to heat. They shed their wool when it gets warm.

"You sure are a good note taker," said the farmer.
The chickens swarmed around their legs. There were about 40 hens of all different colors. "They're beautiful!" said the scientist.
"What's your name, anyway?" said the farmer.
"Marcos. Yours?"
"Angela. Nice to meet you."
"Well, Marcos, I have to agree with you here. These chickens are beautiful. Look at those feathers. People who don't know rare breeds of chickens have no idea the variety available. This one here is an Aracauna. They lay green eggs."
Marcos laughed. "Green!? "
"The rare breeds are threatened with extinction, there are so few of them. Apparently not enough people think it's worth keeping a breed alive just because it lays green eggs.

"Ah, but where would Dr. Seuss be without them?" he teased. "I always thought he just made that up…green eggs and ham…but I guess it's true!"

The rooster strutted at their feet, his large comb bobbing on top of his head. That's a gorgeous bird, too." Marcos said. "I bet I know what that large comb is for."
"You do?" Angela sounded surprised.
"Showing off" he said.
"Maybe, partially, at least, but there's another purpose, too. That's a particularly large comb, you're right. Good observation. It's doing some specific work for him. The rooster's blood travels up into the comb, cools there at the surface and then it returns into the circulatory system. Wherever the air blows across the comb, the blood cools down. That large comb has a large surface area. If his body temperature is high, the comb acts as a cooling mechanism. Remember what I said about how we choose our breeds of farm animals?
"You choose animals adapted for warm climates."
"Right."
Can you see why a large comb would be an advantage over a small one in a warm climate?
"I sure can." Said Angela, and made a note in her book. "What a great adaptation."

What did Marcos write about the rooster?
Why does a large comb help the rooster in warm climate?
The larger the comb, the more surface area and therefore, the greater the heat exchange.

Just then, the wrecker pulled into the farm driveway with Marcos' car.
"This your vehicle sir?"
"Yes sir, I'll be right there."

"Angela?" said Marcos, turning to say goodbye, "I think I was supposed to break down on this road. I have never learned so much in one day. I sure have a new appreciation for farm animals and all their unique adaptations. I'll be a more keep observer because of our time here today. I can't thank you enough."

Angela smiled. "You're quite welcome. In fact, I have to say, I never thought a scientist ever left the lab or took off that white coat, so, you taught me something new, too. It's been a pleasure."

He handed her his empty lemonade glass. "And that was great lemonade, too."

"Come back anytime" she said.

As they shook hands goodbye Marcos said, "I just might do that".

1. What does Marcos hate even more than flies?
    a. manure
    b. maggots
    c. sugarless lemonade
    d. breaking down in her car
    e. All of the above

2. How does Marcos feel by the end of his visit at the farm?
    a. Like a better scientist and observer
    b. Tired and hot from all the walking
    c. Confused by all the information
    d. Embarrassed that he didn't know farm animals have adaptations.
    e. All of the above

3. When does the farmer learn the Scientists' name?
    a. When she meets him
    b. When she gives him a lemonade
    c. When he says it to the wrecker driver
    d. When they are half way through their walk
    e. All of the above

4. What kinds of breeds does this farmer look for?
    a. Unique animals
    b. Beautiful animals
    c. Animals adapted to a warm climate
    d. Any animal that is a rare breed
    e. All of the above

5. What literary reference does Marcos make when talking about green eggs.
    a. He refers to his childhood.

b. He refers to a Dr. Seuss book.
c. He refers to the Aracauna chicken
d. He refers to how long the wrecker is taking
e. All of the above

6. What is the message the author is teaching in this story?
    a. Scientists need to learn more about farm animals.
    b. Farmers need to learn more about Scientists.
    c. People need to learn more about rare breeds.
    d. Farm animals have many unique adaptations.
    e. All of the above