

## Frankenstein Novel Excerpts with Electricity References

**Directions:** First, read the excerpt from each chapter and circle unfamiliar words. Look up these words then reread the excerpts. During the second read, underline any words or phrases that relate to electricity. Lastly, summarize the main idea of each excerpt in your own words.

### Chapter 2, Paragraphs 9-10:

"...When I was about fifteen years old we had retired to our house near Belrive, when we witnessed a most violent and terrible thunderstorm. It advanced from behind the mountains of Jura, and the thunder burst at once with frightful loudness from various quarters of the heavens. I remained, while the storm lasted, watching its progress with curiosity and delight. As I stood at the door, on a sudden I beheld a stream of fire issue from an old and beautiful oak which stood about twenty yards from our house; and so soon as the dazzling light vanished, the oak had disappeared, and nothing remained but a blasted stump. When we visited it the next morning, we found the tree shattered in a singular manner. It was not splintered by the shock, but entirely reduced to thin ribbons of wood. I never beheld anything so utterly destroyed.

Before this I was not unacquainted with the more obvious laws of electricity. On this occasion a man of great research in natural philosophy was with us, and excited by this catastrophe, he entered on the explanation of a theory which he had formed on the subject of electricity and galvanism, which was at once new and astonishing to me..."

Main idea summary for Chapter 2 excerpt:

## *Frankenstein* Novel Excerpts with Electricity References

### **Chapter 5, Paragraph 1:**

"It was on a dreary night of November that I beheld the accomplishment of my toils. With an anxiety that almost amounted to agony, I collected the instruments of life around me, that I might infuse a spark of being into the lifeless thing that lay at my feet. It was already one in the morning; the rain pattered dismally against the panes, and my candle was nearly burnt out, when, by the glimmer of the half-extinguished light, I saw the dull yellow eye of the creature open; it breathed hard, and a convulsive motion agitated its limbs."

### **Main idea summary for Chapter 5 excerpt:**

## A Play: How did the Frog Jump Across the Road?

**Directions:** Assign each role to a member of your group. Note that one member will need to play two roles (Assistant and Ms. Luigi) in Scene I then play Mr. Frog in Scene II. Read aloud the two scenes then answer the questions on the "Play: Follow-up Questions" worksheet.

### Scene I, Act I: Galvani, Volta, and the Mystery of Twitching Frog Legs

*The year is 1791. The scene is set in the laboratory of Luigi Galvani. The room is filled with a collection of laboratory equipment. There is a knock at the door.*

*Luigi:* Enter!

*Alessandro:* Hi, Luigi. I just read about your experiments with frog legs. Please tell me more.

*Luigi:* Yes, my friend. My assistant and I were working in our laboratory during an electrical storm.

*Assistant:* The lightning was fierce!

*Luigi:* I touched the legs of a dissected frog with a scalpel and they twitched! I was so surprised, I nearly dropped my scalpel. Then, the same thing happened several days later.

*Ms. Galvani:* Really Luigi, it was not the same thing. There was no storm. The second time you had an electric generator running. You must be precise if Mr. Volta is to understand the situation.

*Alessandro:* Please show me exactly what you were doing. I want to see if we can repeat the situation.

*Luigi:* Well, I was holding the tools like so. And cutting the fresh frog leg, this way.

*Alessandro:* Alessandro: The legs are not twitching. Assistant, please turn on the generator.

*Alessandro:* Okay, the electricity is on. I see the sparks.

*Alessandro:* Okay, now let's try again. Luigi, please start at the beginning again, thank you.

*Luigi:* You see, when I touch the frog leg here and here with my metal tools. The leg twitches. Clearly, the frog leg contains electricity. Bodies must make electricity just like that generator. Then my hypothesis is that the electricity is the life force that keeps us alive!

*Alessandro:* Luigi, I must disagree with you. I do not think the body makes electricity. I think the twitching comes from electricity flowing through the frog leg from one of your metal tools to the other metal tool.

## A Play: How did the Frog Jump Across the Road?

### Scene II, Act I: Galvani and Volta Interview Mr. Jumping Frog

*It is still 1791. This scene is set at a frog pond. Enter Luigi and Alessandro. Luigi is explaining something to Alessandro as they walk toward the pond.*

*Alessandro:* Hello, Mr. Frog. We came to ask you about jumping.

*Luigi:* Mr. Frog, we know why the Chicken crossed the road. What we want to know is how you jumped across the road.

*Mr. Frog:* Good question, Luigi. I think about jumping and then all of a sudden I am jumping. My brain sends a signal to my legs. My leg muscles move to push against the ground and I leap through the air. Wheee! It's fun.

*Alessandro:* Mr. Frog, how would you describe the signal from your brain to your legs?

*Mr. Frog:* That's a tough question. I thought you and Luigi were the experts. It works like this...I think, "Jump!", and my brain sends chemical signals along my spinal cord to nerve cells. The nerve cells connect to muscles. The chemical signals pass from the nerve cells to the muscle cells telling them to contract.

*Luigi and Alessandro:* You said, "chemical signals" not "electricity"?

*Mr. Frog:* That's right. The body uses chemical signals to communicate.

*Luigi:* Chemicals, not electricity! I really must get back to the laboratory and look into this.

*Alessandro:* So, Mr. Frog, you're saying there is no electricity in your body.

*Mr. Frog:* Not exactly. The body does not use electrical currents like a light bulb, which Thomas Edison won't invent until 1879! But, when muscles contract they produce small amount of electrical activity that can be measured. You know, scientists will finally figure out how to measure that in 1900s then they will come up with medical tools like pace makers and EKG—electrocardiogram—to measure the electrical activities in heart!

## Play: Follow-up Questions

**Directions:** Answer the following questions based on the play. Be prepared to read the play and/or share answers to the questions with the whole class.

1. What is the important observation that Luigi made during his experiment?
2. Why is that observation significant? And what conclusion did Luigi draw from it?
3. How is Luigi's observation and conclusion reflected in the Frankenstein film and novel excerpts you have viewed and read?
4. According to how Mr. Frog explains the relationship between the body and electricity, would you agree with Luigi's hypothesis that the electricity is the life force? Why or why not?
5. List at least one question about Luigi, Alessandro, or electricity that you want to know more about.