**Symbiosis School, Nasik.**

**Std: X Term I (2020-21)**

**Subject: English Language & Literature - Worksheet – 50**

**Chapter 6 – The Making of a Scientist**

**By Robert W. Peterson**

### ****About the Author****

### robert w peterson

**Robert W. Peterson** (1925 Warren, Pennsylvania –February 11, 2006) was an American newspaper writer who later became a freelance author of magazine articles and books, especially on the topics of sports and scouting. His 1970 chronicle of Negro league baseball titled ‘Only the Ball Was White’ was hailed by The New York Times as having "recaptured a lost era in baseball history and a rich facet of black life in America". The baseball commissioner at the time, Bowie Kuhn, later credited Peterson's book with having "focused greater attention on the accomplishments of Negro League players", leading to their admission to the Baseball Hall of Fame.

## **Introduction to the lesson**

Richard Ebright has received the Searle Scholar Award and the Schering Plough Award for Biochemistry and Molecular Biology. It was his fascination for butterflies that opened the world of science to him.

The story is about Richard H. Ebright who grew up in the town of Reading in Pennsylvania, USA. As he did not have much to do there, collecting things was his hobby. He used to collect butterflies as a child in kindergarten. Let’s read how this curious child who collected butterflies went on to become one of the greatest scientists of the world.

**Word Meanings**

Former- having previously been a particular thing.  
Scout- a member of the Scout Association or a similar organization  
Proceedings- a published report of a set of meetings or a conference.  
Journal- a newspaper or magazine that deals with a particular subject or professional activity.  
making the big leagues- in a field of tough competition and high rewards, the largest or foremost of its kind. For example- winning an Oscar put the actress in the big league.  
Fossils- the remains or impression of a prehistoric plant or animal embedded in rocks. Astronomer- an expert in or student of astronomy.

Curiosity- a strong desire to know or learn something.  
Encouraged- give support, confidence, or hope to (someone).  
Equipment- the necessary items for a particular purpose.  
Species- a group of living organisms consisting of similar individuals capable of exchanging genes or interbreeding.  
Monarch butterflies- a large migratory orange and black coloured butterfly that occurs mainly in North America.  
Collector- a person who collects things of a specified type, professionally or as a hobby.

Migrations-  seasonal movement of animals from one region to another.  
Adhesive- able to stick fast to a surface or object; sticky.  
Flock- a number of birds of one kind feeding, resting, or travelling together.  
Life cycle- the series of changes in the life of an organism including reproduction.  
Tedious- too long, slow, or dull; tiresome or monotonous.

County- region  
Subject- a person or thing that is being discussed, described, or dealt with.  
Stack- a pile of objects, typically one that is neatly arranged.  
Viral- of the nature of, caused by, or relating to a virus or viruses.  
Starling- a gregarious Old World songbird with a straight bill, typically with dark lustrous or iridescent plumage but sometimes brightly coloured.  
Zoology- the scientific study of the behaviour, structure, physiology, classification, and distribution of animals

Research- the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions.  
Hormone- a regulatory substance produced in an organism and transported in tissue fluids such as blood or sap to stimulate specific cells or tissues into action.  
Assumed- supposed to be the case, without proof.  
Ornamental- serving or intended as an ornament; decorative.  
Sophisticated- advanced  
Blueprint-  a design plan or technical drawing.  
Nucleus- the central and most important part of an object, movement, or group, forming the basis for its activity and growth.  
Heredity- the passing on of physical or mental characteristics genetically from one generation to another.

Room mate- a person occupying the same room as another.  
Researcher- a person who carries out academic or scientific research.  
Debater- a person who argues about a subject, especially in a formal manner.  
Canoeist- A canoeist is someone who is skilled at racing and performing tests of skill in a canoe.  
Exhibits- manifest clearly (a quality or a type of behaviour).  
Admire- regard with respect or warm approval.  
Competitive- relating to or characterized by competition.  
Ingredients- a component part or element of something.

### ****Summary****

The chapter, ‘The Making of a Scientist’ is a story about the famous scientist Richard Ebright. Richie as his mother used to call him was a very curious child right from his childhood. He had started collecting butterflies in his childhood and when he was 2 years old, he had already collected all the 25 species found near his hometown. He thought it to be an end of butterfly collection until one day his mother bought him a book named ‘The Travels of Monarch X’. This was a turning point in his life and he got much more interested in dealing with science. He started with tagging butterflies which a task given at the end of the book that his mother bought for him. Then, when he first entered the county science fair with a slide of the frog tissue he lost. Everybody won something but his project did not win any prize. He was sad but also understood that to win, he needed to do real experiments and not just make neat and clean models. Then he wrote down to Dr. Urquhart at the University of Toronto, asking him for ideas to make projects. He stayed busy during his high school, working on the long list sent to him by Dr. Urquhart. Then, for the next year’s fair, he chose the project of looking at the viral disease that killed nearly all the monarch caterpillars every few years. He thought that the reason for this could be a beetle, so he started raising caterpillars in the presence of beetles but could not get any results. So, when he showed his trial experiment at the county science fair, his project won a prize. Then for the next year he made an experiment to show that the viceroy butterflies copied monarchs. This project also made him win prizes. Then he started his research as to the purpose of the 12 golden spots on the back of a monarch pupa. Everybody believed that it was just a design but Dr. Urquhart thought otherwise. Then Ebright and another brilliant science student got together and made a device that could show that the gold spots were responsible for releasing a hormone that was necessary for its growth. With the help of sophisticated instruments at one of the labs, he got a chance to work and found the chemical structure of the hormone in the gold spots. Then, one day, while looking at the photo of the chemical structure, he solved one of the biggest puzzles of life. He came to know how a cell blueprints its DNA. It was a big breakthrough and was published in a magazine. He also had many other interests and also admired his social studies teacher as he was the one who used to give him new ideas. He was good at debating, public speaking and a great canoeist. He never used to win for the sake of winning or for prizes but because he wanted to be the best at whatever he used to do. It is shown in this chapter that with the right amount of curiosity, a bright mind and the will to win for right reasons are the qualities needed to be a scientist. His mother also played a big role in making him what he was as it was, she who supported him throughout his journey and bought him the book ‘The Travels of Monarch X’ which aroused his curiosity in the field of science.

**Character Sketches**

**1) Mr. Richard Ebright**

Richard Ebright was a multi-faceted and versatile personality. He was not only man with scientific mind, but also had a panache for sports and other-co-curricular activities such as debates, declamations, etc.

His mother encouraged him to take interest in collecting butterflies, rocks, fossils, coins; astronomy, photography, mountaineering, etc.

Since his childhood, he earned top grades in school. At the age of seven he started participating in science fairs. Science attracted him the most; in eighth grade he did an experiment to find the cause of viral disease that killed a large number of monarch butterflies. This experiment won him a prize.

Then he did many experiments such as finding out why Viceroys butterflies resembled monarch butterflies, discovery of an unknown insect hormone, growing cells from a monarch’s wings, discovering the chemical structure of the hormone, and the role of DNA.

In conclusion we can say, Richard Ebright displayed a well-rounded personality that culminated in his brilliance in science.

**2) Richard Ebright ‘s Mother**

Richard H. Ebright’s mother was an important driving force behind him who laid the foundation of his success . Ebright was her only child whom she affectionately called 'Richie'. After her husband's death, her son who was in third grade was her whole life. She would encourage his interest in learning and would take him to trips, buy him telescopes, microscopes, cameras, mounting materials, and other equipment. She was his only companion until he started school. After that she would bring home friends for him and at night be with him to do things together. She would spend almost every evening at the dining room table with her son 'Richie '. When he did not have things to do, she would find work for him that would help him learn things. This support, guidance, care and concern of Ebright's mother helped the growth of a curious child into an accomplished scientist.

**3) Richard Weiherer**

He was Ebright’s social studies teacher, who had helped Richard to become a good orator and a public speaker.**Mr. Weiherer has a very high opinion about Ebright.**According to Weiherer, Ebright always had put that effort, such that Ebright not only did put in 3-4 hours at night engrossing himself in debate researches but also would do his research with butterflies and cope with his other interest areas.

Mr. Weiherer regarded Ebright was competitive in a genuine sense, and that Ebright did not wish to win merely for the sake of winning. However, in real, Ebright desired to achieve his goal and give the best which he was able to in this field. **Mr. Weiherer felt that Ebright for all the right reasons wanted to be the best**. And this was one of the elements in the making of a scientist. Starting with a excellent mind, adding curiosity, and combining them will to win for all the correct reasons, Ebright has these qualities.

**4) Dr Urquhart**

**Frederick Albert Urquhart**,  (December 13, 1911 – November 3, 2002) was a [Canadian](https://en.wikipedia.org/wiki/Canadians) [zoologist](https://en.wikipedia.org/wiki/Zoologist) who studied the migration of [monarch butterflies](https://en.wikipedia.org/wiki/Monarch_butterfly). Together with his wife, **Norah Roden Urquhart** (June 23, 1918 – March 13, 2009), he identified their migration routes and discovered that the migration spans multiple generations of butterflies. After many years of searching and with the help of Catalina Trail and Ken Brugger, the Urquharts found the location in Mexico where the butterflies spend their winter, far away from their summer residence areas in [Canada](https://en.wikipedia.org/wiki/Canada) and the [United States](https://en.wikipedia.org/wiki/United_States).

**Concept Based Questions**

**Question 1.**

How did Ebright’s mother help him?

**Question 2.**

How did Richard’s mother help him to become a scientist?

**Question 3.**

What experiments and projects did Ebright undertake?

**Question 4.**

Why did Richard Ebright raise a flock of butterflies?

**Question 5.**

“But there was one thing I could do-collect things.” What collection did Ebright make? When did he start making the collection? 

**Question 6.**

What other interests, besides Science, did Richard Ebright pursue ? What opinion did Mr. Weiherer, his social studies teacher, have about Ebright ?

**Question 7.**

What lesson did Ebright learn when he did not win anything at a science fair?

**Question 8.**

What lesson did Ebright learn when he could not win a prize at the science fair?

**Question 9.**

What are the essential qualities of becoming a scientist according to Ebright’s teacher?

**OR**

What are the qualities that go into making a scientist.

**Question 10.**

Wy did Ebright lose interest in tagging butterflies?

**Question 11.**

Who was Richard A. Weiherer? How did he help Richard Ebright?

**Question 12.**

What were the factors which contributed in making Ebright a scientist?