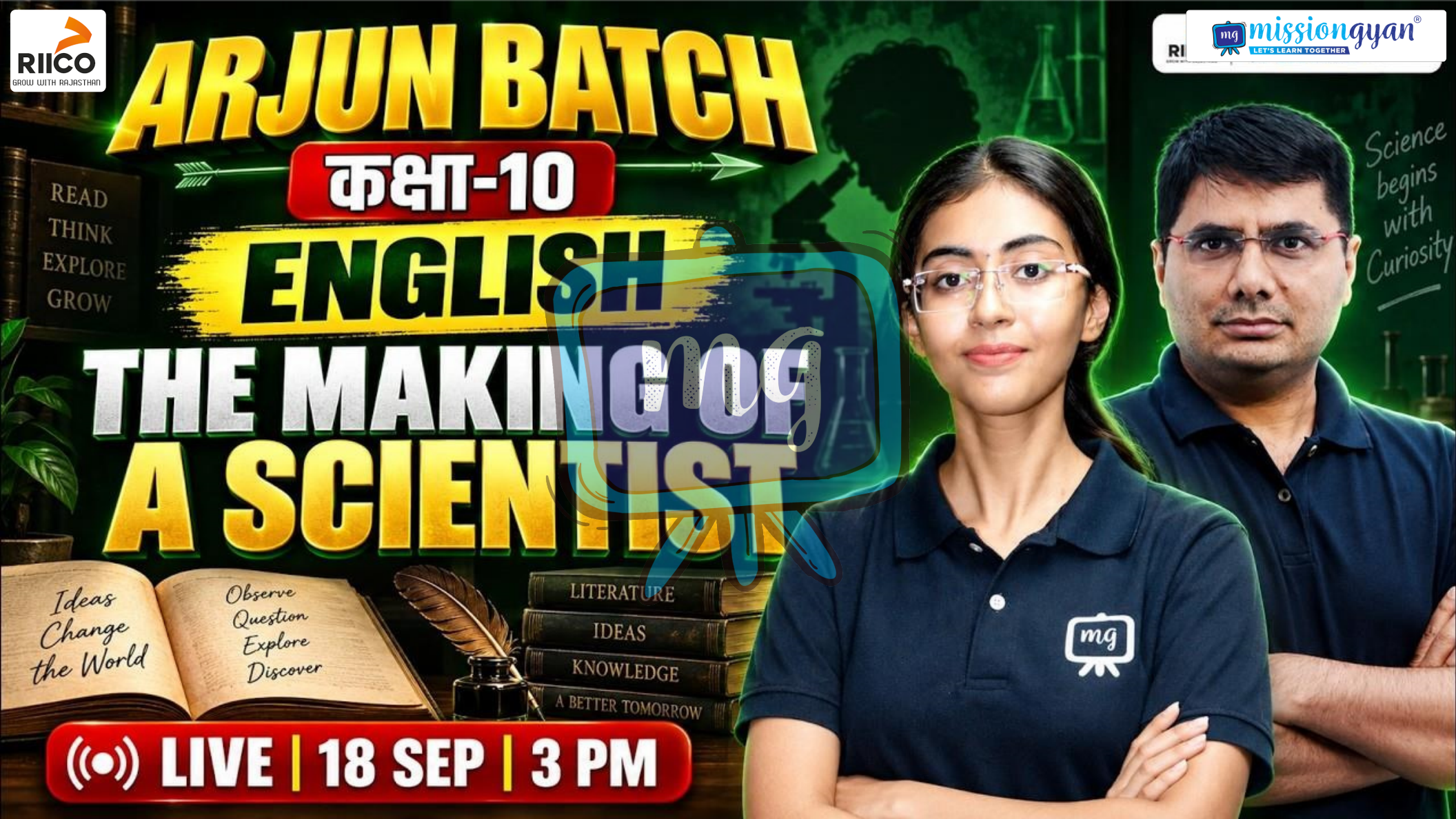
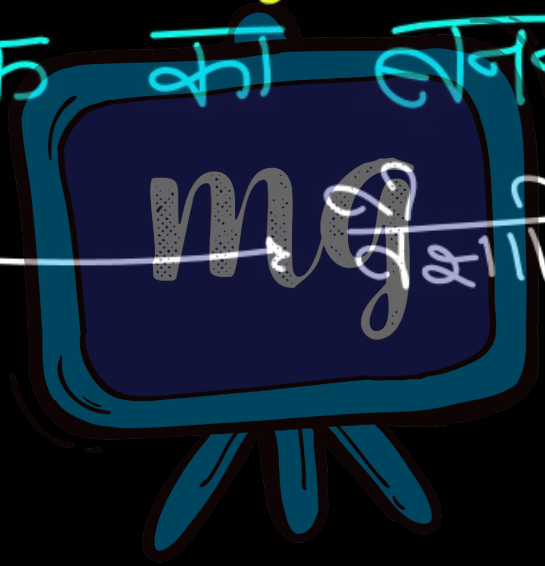

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ARJUN BATCH
कक्षा-10
ENGLISH
THE MAKING OF A SCIENTIST
READ
THINK
EXPLORE
GROW
Science begins with Curiosity
Ideas Change the World
Observe
Question
Explore
Discover
LITERATURE
IDEAS
KNOWLEDGE
A BETTER TOMORROW
LIVE | 18 SEP | 3 PM

The Making of a Scientist

वैज्ञानिक को बनना

सच्चा → वैज्ञानिक



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The Making of a Scientist

रिचर्ड एब्राइट की कहानी

बच्चा

Richard Ebright

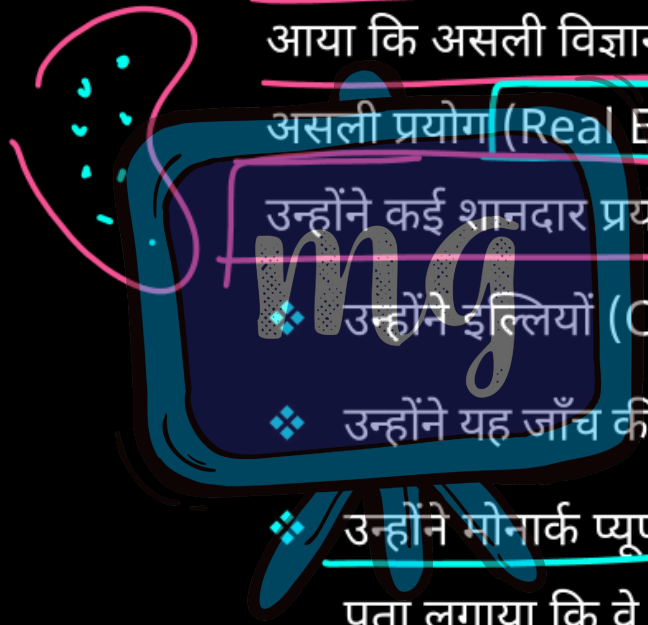
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बचपन से ही रिचर्ड एब्राइट को चीज़ें इकट्ठा करने का बहुत शौक था। उन्होंने पेन्सिलवेनिया में पत्थरों, सिक्कों और मुख्य रूप से तितलियों (Butterflies) को इकट्ठा करना शुरू किया। कम उम्र में ही उनकी माँ ने पढ़ाई और विज्ञान में उनकी बहुत मदद की।

एक दिन उनकी माँ ने उन्हें 'द ट्रैवल्स ऑफ़ मोनार्क एक्स' (The Travels of Monarch X) नाम की एक किताब दी, जिसने उनकी जिंदगी बदल दी। इस किताब को पढ़कर उन्होंने तितलियों पर रिसर्च करना और उन्हें टैग करना शुरू किया। आगे चलकर उन्होंने अपने तहखाने में हजारों तितलियाँ पालीं।

The Making of a Scientist

Butterfly baby is called a caterpiller



सातवीं कक्षा में स्कूल के विज्ञान मेले में हारने के बाद उन्हें समझ आया कि असली विज्ञान केवल सुंदर सजावट करना नहीं, बल्कि असली प्रयोग (Real Experiments) करना है। इसके बाद उन्होंने कई शानदार प्रयोग किए :

- उन्होंने इल्लियों (Caterpillars) की बीमारी पर प्रयोग किया।
- उन्होंने यह जाँच की कि पक्षी मोनार्क तितलियों को क्यों खाते हैं।
- उन्होंने मोनार्क प्यूपा पर बने सुनहरे धब्बों की खोज की और पता लगाया कि वे एक खास हॉर्मोन बनाते हैं जो तितली के विकास के लिए जरूरी होता है।

The Making of a Scientist

अपनी कड़ी मेहनत और तेज दिमाग के बल पर उन्होंने हार्वर्ड यूनिवर्सिटी से पढ़ाई पूरी की और सेल्स (Cells) के अंदर डीएनए (DNA) काम करने के सिद्धांत का पता लगाया। मात्र 22 साल की उम्र में उन्होंने और उनके दोस्त ने इस नई थ्योरी को एक प्रसिद्ध वैज्ञानिक पत्रिका में प्रकाशित किया, जो कॉलेज के छात्रों के लिए एक बहुत बड़ी उपलब्धि थी।

विज्ञान के अलावा वे डिबेट (वाद-विवाद), फोटोग्राफी और अन्य चीज़ों में भी बहुत आगे रहे। उनकी सफलता का राज़ उनकी जिज्ञासा, कड़ी मेहनत और हमेशा सबसे अच्छा काम करने की लगन थी।

The Making of a Scientist

OVERVIEW

Richard Ebright : The Boy Who Loved Butterflies

1. The Beginning of a Big Curiosity
2. The Book That Changed Everything
3. Learning What Real Science Means
4. The Golden Spots and the Big Discovery
5. Reaching the Top of the Scientific World
6. More Than Just Science

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The Making of a Scientist

only child
started collecting things

Richard Ebright : The Boy Who Loved Butterflies

1. The Beginning of a Big Curiosity

- **Starting Young :** Richard Ebright was an only child who grew up in Pennsylvania. Since he couldn't play team sports by himself, he started collecting things. By kindergarten, he was eagerly collecting rocks, fossils, coins, and butterflies, and even staying up all night to look at the stars.

The Making of a Scientist

- Only Child – इकलौता बच्चा
- Eagerly – उत्सुकता से
- Fossils – जीवाश्म



The Making of a Scientist

his father died – 3rd class

- **A Loving Mother:** After Richard's father died when Richard was in the third grade, his mother became his best friend and only companion. She supported his love for learning by buying him telescopes, microscopes, cameras, and books, and they spent every evening learning together at the dining room table.

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Q.1 What was the role of Ebright's mother in his journey of being a scientist ?



The Making of a Scientist

- Companion – साथी
- Supported – समर्थन किया/सहायता की
- Telescopes – दूरबीन
- Microscopes – सूक्ष्मदर्शी



The Making of a Scientist

2nd class

25

तितलियों की प्रजाति

2. The Book That Changed Everything

❖ **The Monarch Butterflies :** By the second grade, Richard had already collected all twenty-five species of butterflies around his hometown.

★ Species – प्रजातियाँ

★ Hometown – गृह नगर

The Making of a Scientist

The Travels of Monarch X

मोनार्क प्रजाति की तितलियों की यात्रा

- **A Magical Book :** His mother then bought him a children's book called The Travels of Monarch X. The book showed how monarch butterflies migrate to Central America and asked readers to help tag butterflies for research by Dr. Frederick A. Urquhart.
  - ★ Migrate – प्रवास करना/पलायन करना
  - ★ Research – अनुसंधान/शोध

The Making of a Scientist

Cycle

egg
↓
Caterpiller
↓
pupa
↓
adult

❖ **Raising Thousands :** Richard started attaching light adhesive tags to butterfly wings. Soon, he began catching a female monarch, taking her eggs, and raising thousands of butterflies in his basement through their life cycle (egg to caterpillar, pupa, and adult) before letting them go.

★ Attaching – जोड़ना/चिपकाना

★ Adhesive – चिपकने वाला

★ Basement – तहखाना

★ Cycle – चक्र/जीवन चक्र

The Making of a Scientist

7th grade

frog tissue slides



3. Learning What Real Science Means

❖ **Losing the County Science Fair :** In the seventh grade, Richard entered a county science fair with slides of frog tissues under a microscope, but he didn't win anything. He felt very sad, but it taught him a big lesson: real science is about doing **real experiments**, not just making a neat display.

★ County – जिला

★ Display – प्रदर्शन

★ Tissues – ऊतक

The Making of a Scientist

8th class

Starling नाम पढ़ी?
monarch – ?

Viceroy
प्रजाति

Monarch
प्रजाति

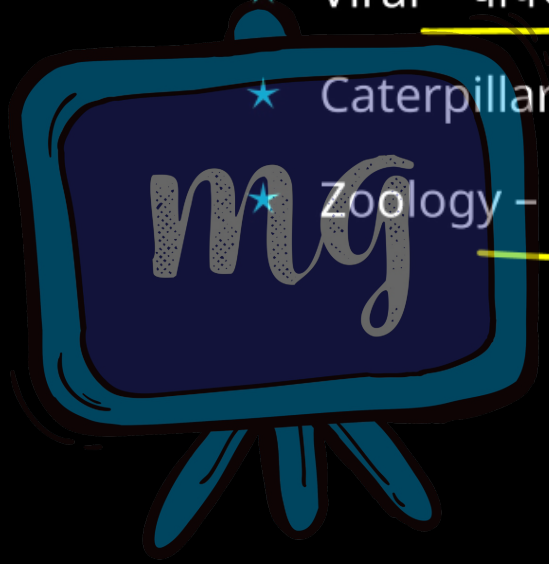
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❖ **Trying New Experiments :** Determined to do better, he asked Dr. Urquhart for ideas.

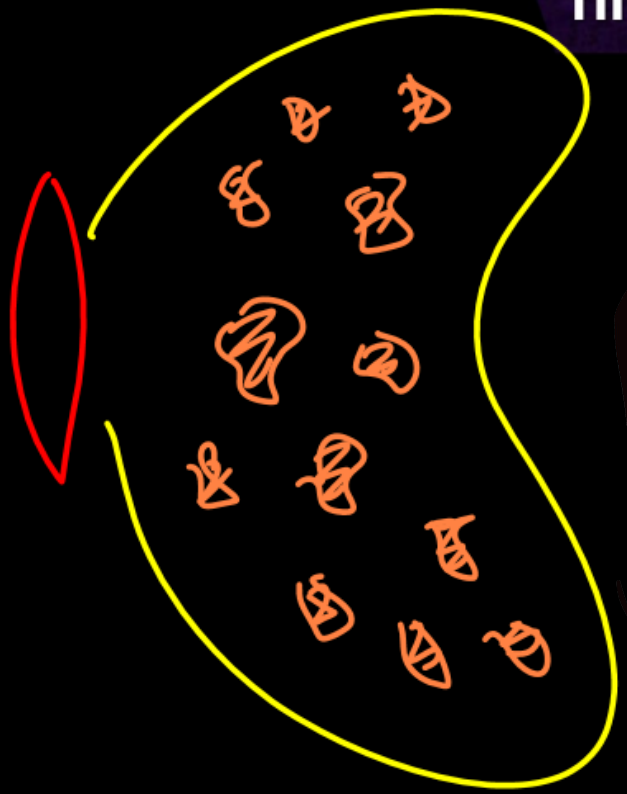
- For his **eighth-grade project**, he tried to find the cause of a viral disease killing monarch caterpillars by raising them with beetles, and he won!
- For his **next project**, he tested whether birds like starlings would eat monarch butterflies to see if viceroy butterflies copy monarchs to stay safe. This won first place in zoology in the county.

The Making of a Scientist

- Determined – दृढ़ निश्चयी
- Viral – वायरल/विषाणु जनित
- Caterpillars – इल्लियां
- Zoology – प्राणीशास्त्र/जीवविज्ञान



The Making of a Scientist



4. The Golden Spots and the Big Discovery

- **The Mystery of the Gold Spots :** In high school, Richard wanted to know what the twelve tiny gold spots on a monarch pupa were actually for. Everyone thought they were just pretty decorations, but Dr. Urquhart disagreed.
  - ★ Pupa – प्यूपा (कीट का कोकोन/सुंडी की अवस्था)
  - ★ Decorations – सजावट

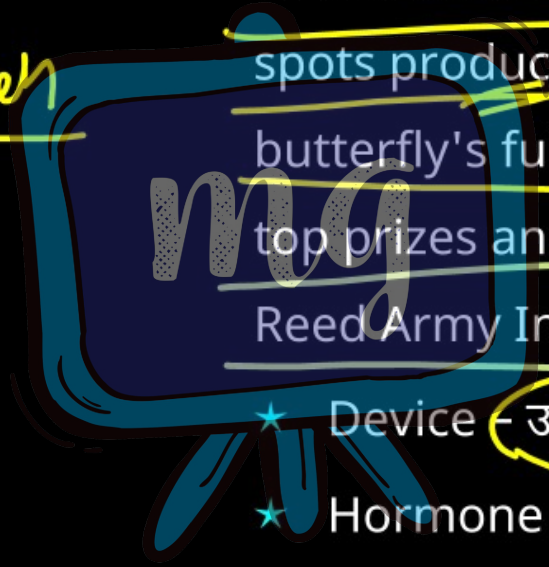
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The Making of a Scientist

Walter Reed Army Institute of Research

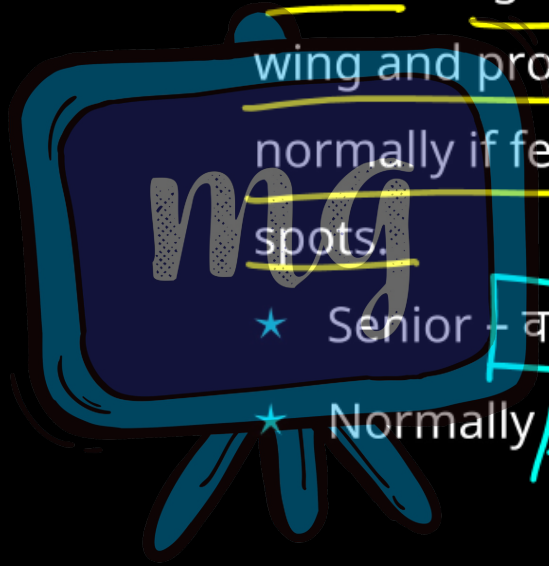
- **Building a Device :** With another student, Richard built a device showing that those spots produced a hormone necessary for a butterfly's full development. This won him top prizes and summer jobs at the Walter Reed Army Institute of Research.



- ★ Device – उपकरण
- ★ Hormone – हॉर्मोन/अंतःस्राव
- ★ Necessary – आवश्यक
- ★ Development – विकास

The Making of a Scientist

- **Growing Wing Cells :** As a high school senior, he grew cells from a monarch's wing and proved they would only grow normally if fed the hormone from the gold spots.



★ Senior – वरिष्ठ (अंतिम वर्ष का विद्यार्थी)

★ Normally – सामान्य रूप से

The Making of a Scientist

DNA Research

The chemical structure of DNA

5. Reaching the Top of the Scientific World

❖ **Cracking the Code of Life :** After graduating from Harvard University, Richard used sophisticated lab instruments to figure out the chemical structure of that hormone.

★ Sophisticated – परिष्कृत/उन्नत

★ Instruments – उपकरण

★ Chemical – रासायनिक

★ Structure – संरचना

The Making of a Scientist

how cells read the DNA

- **A Big Theory :** While looking at X-ray photos of the hormone's chemical structure, he realized how cells read the blueprint of their **DNA** (the substance in cells that controls heredity and life).
  - ★ Blueprint – खाका/रूपरेखा
  - ★ Heredity – आनुवंशिकी/वंशागति

The Making of a Scientist

Richard Ebright
&
James R Wong

Proceedings of the National Academy of Science

❖ **Publishing at Age Twenty-Two**: Richard and his college roommate, James R. Wong, wrote an article explaining this new theory in the Proceedings of the National Academy of Science. It was the first time this famous journal had ever published work by college students—like hitting a home run on your very first time at bat!

★ Roommate – सहपाठी/कमरे का साथी

★ Article – लेख

★ Published – प्रकाशित

★ Journal – पत्रिका

The Making of a Scientist

6. More Than Just Science

- **A Well-Rounded Person :** Even though science was his biggest passion, Richard had time for many other things. He was a champion debater, public speaker, good canoeist, and an expert photographer.
- **The Will to Win :** His social studies teacher, Mr. Weiherer, noticed that Richard wasn't competitive just to win prizes; he simply wanted to do the very best job he possibly could.

The Making of a Scientist

- Passion – जुनून/शौक
- Debater – वक्ता/वाद-विवाद करने वाला
- Canoeist – डोंगी चालक/नाव चलाने वाला
- Competitive – प्रतिस्पर्धी



The Making of a Scientist

SHORT NOTES

- **Who was Richard Ebright?** An only child from Pennsylvania who was very curious from a young age.
- **Early Hobbies :** Since he had no team sports to play alone, he collected rocks, fossils, coins, and butterflies, and watched the stars.

The Making of a Scientist

- **Role of His Mother :** After his father died when Richard was in the third grade, his mother became his best friend. She supported him by buying books, telescopes, microscopes, and cameras, and studying with him.
- **Book that Changed Everything :** The Travels of Monarch X (sent by Dr. Frederick A. Urquhart) showed how monarch butterflies migrate to Central America.

The Making of a Scientist

- **Butterfly Tagging :** Richard started tagging butterfly wings and raising thousands of monarch butterflies in his basement through their full life cycle.
- **Seventh Grade Failure :** He entered a science fair with frog tissue slides but didn't win. This taught him that real science requires real experiments, not just a neat display.

The Making of a Scientist

Successful Experiments :

- In the 8th grade, he found the cause of a viral disease killing caterpillars (raised with beetles) and won!
- Later, he tested if birds eat monarchs and if viceroy butterflies copy them for safety.

The Making of a Scientist

- **The 12 Gold Spots :** Everyone thought the tiny gold spots on a monarch pupa were just decorations, but Richard proved they produced a hormone necessary for normal wing and body development.
- **Cracking the Code of Life :** Graduating from Harvard, he used advanced instruments to study the chemical structure of the hormone. This helped him understand how cells read their DNA blueprint.

The Making of a Scientist

- **Early Publication :** At age 22, he and his college roommate published this revolutionary theory in the Proceedings of the National Academy of Science.
- **Well-Rounded Personality :** Richard was also an expert debater, public speaker, photographer, and canoeist.
- **The Will to Win :** His teacher noted that he wasn't competitive just for prizes, but simply wanted to do the very best job possible.

जीतने की चाहत

The Making of a Scientist

1. Which book did Richard's mother buy for him that changed his life and sparked his interest in monarch butterflies?

A. The Life of Insects

B. The Travels of Monarch X

C. The Wonders of Science

D. The Secret of DNA


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The Making of a Scientist

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2. What important lesson did Richard learn after losing the county science fair in the seventh grade?

A. Science fairs are too difficult to win.

B. He should stop collecting butterflies.

C. He needed to work only with frogs and tissues.

D. Real science is about doing real experiments, not just making a neat display.

The Making of a Scientist

3. What did Richard and his high school classmate discover that the twelve tiny gold spots on a monarch pupa actually produce?

A. Poison to protect against birds

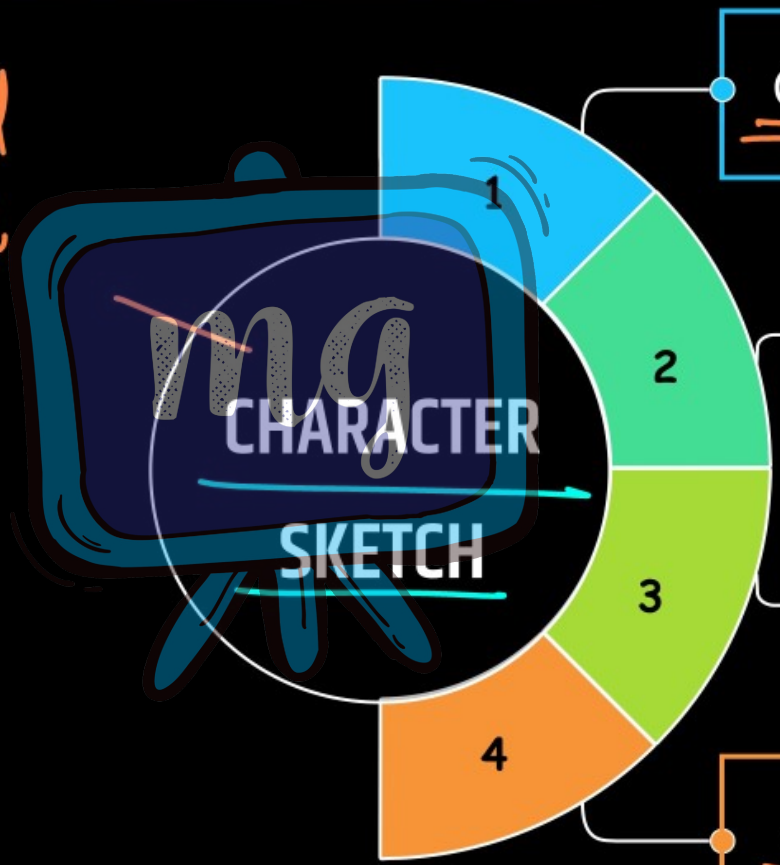
B. Colored wings for camouflage

C. DNA blueprints for heredity

D. A hormone necessary for a butterfly's full development

The Making of a Scientist

Richard Ebright



- Curious
- Determined
- Passionate
- Well-rounded

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On Monday

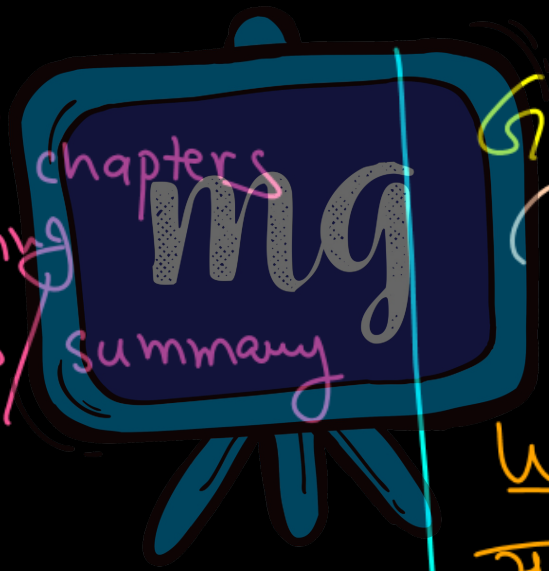


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ONE - SHOT — Monday

1. One shot में chapters
2. Doubts solving
3. mind - maps / summary
4. Notes
5. Questions



Grammar (FULL) + Excercises

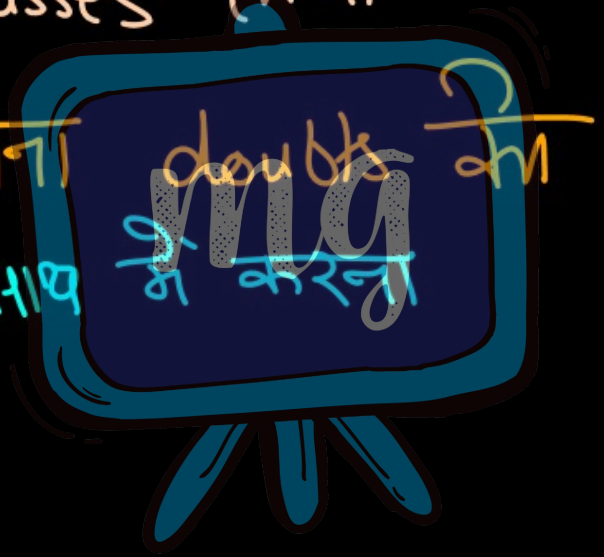
Writing —
सब कुछ जो syllabus में है

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आपका काम — ?

1. Live classes लेना
2. List बनाना doubts की
3. Revision साथ में करना



.1