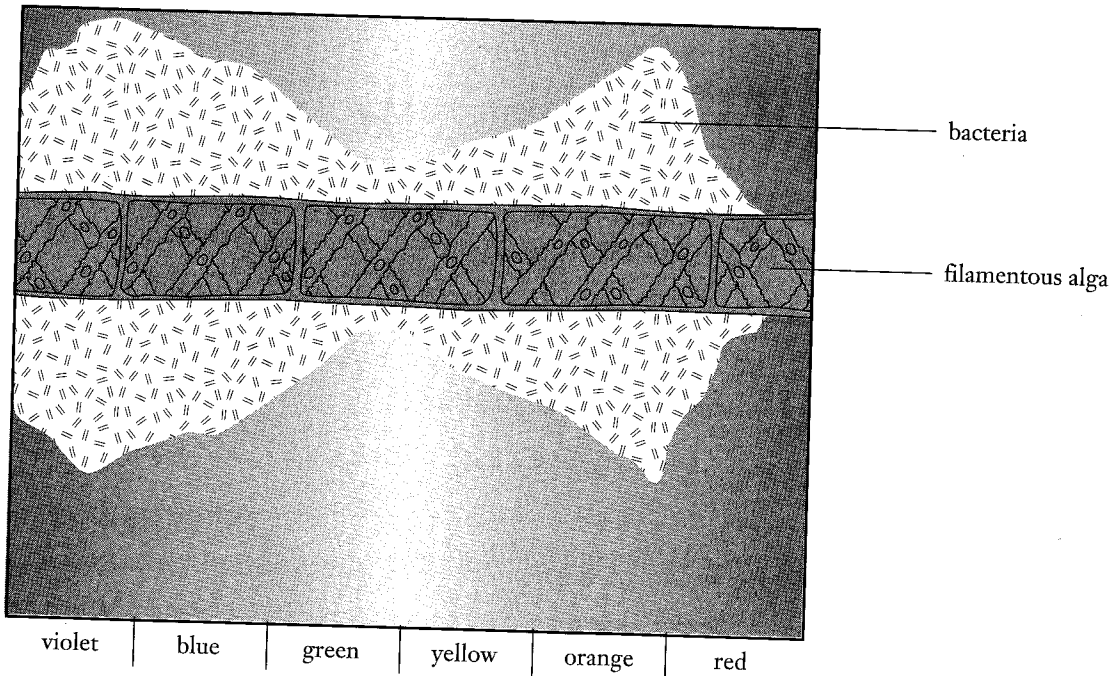


Applying Scientific Methods

In 1803, Thomas Engelmann of Germany used a combination of aerobic bacteria and a filamentous alga to study the effect of various colors of the visible light spectrum on the rate of photosynthesis. He passed white light through a prism in order to separate the light into the different colors of the spectrum; then he exposed different segments of the alga to the various colors. He observed in which areas of the spectrum the greatest number of bacteria appeared. Refer to the diagram below to answer the questions that follow.



- Using his setup, Engelmann was able to determine in which areas of the visible light spectrum the alga was releasing the most oxygen. Explain his reasoning.

- Was determining where there was more oxygen the purpose of his experiment? If not, state the purpose.

- How was the observation of the amount of oxygen present related to Engelmann's purpose?

Applying Scientific Methods *continued*

4. Why did Engelmann select aerobic rather than anaerobic bacteria?

5. Based on the diagram, what would Engelmann's conclusion be?

6. What was the independent variable in this experiment?

7. Describe one control Engelmann might have used. Explain.

8. Did Engelmann's observations verify his hypothesis? Explain.
