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BSCS BIOLOGY

. . . a student's viewpoint.

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Ames

In recent years a new set of text books have appeared in high school biology courses. These have



Glenn M. Snyder The versions differ basically in their approach to the subject. The Blue Version—**Molecules To Man** stresses the molecular organization of life, the Green Version—**High School Biology** is oriented toward the ecological aspect of life, and the Yellow Version—**An Inquiry Into Life** is presented from a developmental-evolutionary approach.

BSCS materials were begun in 1959 with a grant from the National Science Foundation. They were tested for three years in high school classes and underwent revisions each summer.

Through all three versions run certain unifying themes that tie them together. Some of these can be seen and a quick comparison can be made by examining the table of contents of

the Blue and Green Versions.

A comparison of the contents of BSCS Blue and Green Versions:

Blue Version

One—Biology-Facts and Ideas

1. Science as Inquiry
2. Variety of Living Things
3. The means of Evolution
4. Origin of Living Things

Two—Evolution of the Cell

5. Forerunners of Life
6. Chemical Energy for Life
7. Master Molecules
8. The Biological Code

Three—The Evolving Organism

9. Light as Energy for Life
10. The Evolved Cell
11. The Cell Theory
12. The Multicellular Organism

Four—Multicellular Organisms

13. Reproduction
14. Development

Five—Multicellular Organisms

15. Patterns of Heredity
16. Genes and Chromosomes
17. Origin of a New Species
18. The Human Species

Six—Multicellular Organisms—Energy Utilization

19. Photosynthetic Systems
20. Transport Systems
21. Respiratory Systems
22. Digestive Systems
23. Excretory Systems

Seven—Integrative Systems

24. Regulatory Systems
25. Nervous Systems
26. Skeletal and Muscular Systems
27. Integrated Organism and Behavior

(continued next page)

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Eight—Higher Levels of Organization

28. Populations
29. Societies
30. Communities

Green Version**One—The World of Life: Biosphere**

1. The Web of Life
2. Individuals and Populations
3. Communities and Ecosystems

Two—Diversity Among Living Things

4. Animals
5. Plants
6. Protists

Three—Patterns in the Biosphere

7. Microscopic World
8. Land
9. Water
10. The Past
11. The Geography of Life

Four—Within the Individual Organism

12. The Cell
13. The Functioning Plant, Part I
14. The Functioning Plant, Part II
15. Reproduction
16. Heredity

Five—Adaption

17. Genetic Adaptation: Evolution
18. Individual Adaptation: Behavior

Six—Man and the Biosphere

19. The Human Animal
20. Man in the Web of Life

The BSCS course presents biology as a quest “. . . as an adventure in ideas, in which the ideas refer to specific observations and experiments about living things. An understanding of the growth, development, and function of these biological concepts is important.” It is presented as an examination of theories and ideas some of which are still being developed. An example of this is the detailed treatment of the heterotroph theory of the origin and development of life presented in the Blue Version. The students spend nearly one-half the book examining and following a possible explanation of the origin of life on earth.

The textbook, however, forms only a part of the course. A real challenge can come to the student through the

laboratory work. BSCS actually centers on the laboratory with all other experiences in learning contributing to it material and many discoveries that the student will actually be using and experiencing, are found in the laboratory. The student will have an opportunity to repeat Pasteur's experiment in which a common notion about the origin of life was disproved and he will find himself involved in solving problems similar to those that lead Darwin to his theories of evolution. The laboratory is primarily a discovery-problem solving experience that has the world as its subject. Both laboratory and text book have material designed to challenge even the brightest student and yet not frustrate the slow learner with repeated failure to understand.

The BSCS materials place the emphasis on exploration, search, and discovery with a laboratory stress on problem-solving experiences. There is a minimum of emphasis on word lists, collections, and the traditional set of laboratory dissections. The idea is to present the material in an interconnected set of relationships rather than specific facts to be learned or tasks to be mastered.

This new series appears to have many advantages. It offers an enriched study for all mental abilities, includes greatly improved laboratory suggestions, and provides better comprehension of and more interest in traditionally different topics.

It has been charged that the materials are too detailed and complicated for the average learner and that they require too much time on the part of the teacher preparing for the laboratory. The detail presented is a challenge to the brightest student and does need to be carefully presented and possibly modified for the average learner. It is no doubt that the BSCS course requires considerable laboratory preparation and equipment. Much of the equipment can be home-made quite easily and the extra time spent should be well worth the in-

crease in the value of the laboratory to the student.

BSCS is not an endpoint—not a cure-all. It is a radical revision, a beginning, a stimulus aimed at enriching biological education at all levels.

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CONSTRUCTING MODELS OF ORGANIC MOLECULES to visualize the chemistry taking place in cells are these four high school students at The State University of Iowa. Pictured are (seated) Diane Looney, Solon; (standing, from left) Hollis Hunter, Coggon; John Eckstein, Iowa City; and Jeff Powell, Elkader. The 8-week institute for high ability high school students was sponsored by the National Science Foundation in the summer of 1964.