

**New Experiments Suggest Answer To Photosynthesis**

Oak Ridge, Tenn. — (Science Service) — New evidence strongly suggests that the first step in photosynthesis, the vital reaction whereby all green plants convert carbon dioxide and water into glucose, may be purely electronic in nature.

Prof. William Arnold and Dr. Roderick K. Clayton, both of the biology division of Oak Ridge National Laboratory in Oak Ridge, Tenn., have studied by spectroscopic methods, the initial changes that take place in the purple bacteria groups when illuminated. They found the change to be the same at temperatures from slightly above room temperature down to nearly absolute zero, which is 459.7 degrees below zero on the Fahrenheit scale. At this latter temperature no ordinary chemical changes can take place. Thus the reaction must be electronic, the scientists reason.

Prof. Arnold and Dr. Clayton report their work in the June Proceedings of the National Academy of Sciences. Prof. Arnold showed in 1957 that dried chloroplasts (particles containing chlorophyll) act as semiconductors.

**First Step Noted**  
As a result of their present research, the Oak Ridge scientists conclude that "the first step in photosynthesis appears to be the separation of an electron and a hole in a chlorophyll semiconductor."

A hole is a missing electron and behaves, in an electrical field, like a positive charge.

The mechanism of photosynthesis is of great practical importance. It could lead to a direct and efficient method of harnessing the energy of the sun for the use of man.

**Advisors Urge Navy Use Civilian Crews**

Washington (Science Service) — The navy's research ships should be manned by civilian crews, the National Research Council - National Academy of Sciences recommends in a special report.

The committee on oceanography said the use of navy crewmen results in excessive turnover of personnel and time wasted observing "a whole host of regulations that are necessary only for combat ships."

The committee also recommended that the crew be employed by and responsible to the laboratory in charge of the ship, rather than to a part of the Department of the Navy. "This practice could reduce ship operating costs, as navy crews are usually considerably larger than civilian crews."

Research on subsurface currents and the ocean floor will greatly increase U. S. submarines' effectiveness, the committee reported. Dr. Harrison Brown, professor of geochemistry at the California Institute of Technology, is chairman of the committee.

**Teacher Says Kits Stifle Imagination**

Denver (Science Service) — "Do-it-yourself" kits that do not leave much for you to do except read the directions" stifle self-expression, an associate professor at the University of Tennessee told the American Home Economics association meeting here.

"Who's encouraged to use his imagination?" asked Miss Velma M. Riley, who teaches related arts and crafts.

In design and decorating problems today, Miss Riley said, people seem to want packaged answers, like the frozen TV dinner ready to pop into the oven. "You and I know that 'packaged' answers in interior design just will not work, nor should they! In this push-button age, we seem to be expected to produce push-button answers. I hope we never come to that!"

She urged educators to uphold and strive to raise standards of taste — in effect, to "create dissatisfaction."

Miss Riley said there are some signs U. S. taste is improving. "The emergence of the small, simple, economical American car this year, brought about by the impact of foreign competition," she said, "is the healthiest and most heartening sign of our times."

**FLAT TIRE EMERGENCY**

London (UPI) — An emergency was called Tuesday at London Airport when a Brazilian Airlines DC-7 got a flat tire while taxiing to its take-off point. No one was injured and the tire was repaired before taking off for Rio de Janeiro.



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