

BIOPHYSICS

Plant Growth Control

Finding that certain wavelengths of light cut down the observed "afterglow" associated with photosynthesis suggests a way to control cell growth by filtering sunlight.

► THE POSSIBILITY of controlling plant growth rate by filtering sunlight plants receive was foreseen by four scientists.

Working with the one-celled plant, *Chlorella*, they found certain wavelengths of light cut down the observed "afterglow" associated with photosynthesis. This offers a way to control cell growth, they suggested to the American Physical Society meeting in New York.

Two physicists and two biologists teamed up to study the basic life process of photosynthesis. They are Drs. H. O. Albrecht and C. E. Mandeville of the Bartol Research Foundation, Swarthmore, Pa., and Drs. W. C. Denison and L. G. Livingston of Swarthmore College.

The energy upon which *Chlorella* cells live and reproduce is obtained from sunlight, which is absorbed in the plant cells to provide "food" for growth in a process called photosynthesis.

Using artificial light instead of sunlight, other scientists have found plants grow at different rates under red and blue light. They have also found that some of the

light is not used but is re-radiated almost instantly. Some, however, is not re-emitted until several seconds after the photosynthesizing light has been cut off. This delayed radiation is called phosphorescence, or afterglow.

When the afterglow resulting from radiation by red light alone is observed, it is only about half as strong as that excited by a blue light source, the Swarthmore scientists have found. When the two light sources are used together, the afterglow is equal to that of the red source alone.

They conclude that the afterglow caused by blue light radiation has been "quenched" by some part of the red light source.

The mechanism of this quenching process is still to be determined, but the scientists believe it involves transfer of an electron of the chlorophyll molecule to an excited state, and its subsequent return. Depending upon this mechanism, the growth rate could either be speeded up or slowed down by eliminating that part of the light causing the quenching.

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PHYSICS

Atomic Samples Added

► ATOMIC ITEMS, including uranium, tritium and carbon-14, have now been added to the Government's store of scientific samples.

The store, known formally as the Standard Samples Storeroom of the National Bureau of Standards, U. S. Department of Commerce, sells only samples of materials whose composition, purity or properties have been evaluated and certified.

These materials may be metals, ores, chemicals, rubber, glass, ceramics, rocks, or even paint or sugar. The 600 kinds of samples now in stock enable industry to keep its instruments in order, maintain the quality of its output, and settle arguments with customers.

A series of standards containing known amounts of uranium-235 as well as other isotopes of uranium have been developed for use in testing nuclear fuels and other atomic energy research. These materials are available only to buyers licensed by the Atomic Energy Commission.

Eight samples are now on sale and another seven will be added within a few months.

Many of the items on the shelves look like a druggist's wares, neatly labeled cardboard cylinders containing sealed bottles. One bottle may contain shot-sized chips of Bessemer steel whose analysis has been cer-

tified by the National Bureau of Standards and a half dozen outside laboratories. Another may hold opal glass in the form of a fine white powder whose composition also has been determined by Government, university and industrial chemists.

Some samples, too dangerous to keep on the shelf, are stored in radiation-proof vaults. Among these radioactive materials are tritium (hydrogen-3), with which the ages of wine and liquor may be determined, and carbon-14, the isotope with which scientists date ancient archaeological specimens that once were living things.

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PHYSIOLOGY

Men Lose Weight More Successfully Than Women

► MEN OUTCLASS women when it comes to losing weight, medical reports show.

Three separate studies have revealed that a far higher percentage of men than women were able to achieve the modest success of a 20-pound weight loss, two scientists report.

Men are even more successful than women when both sexes are trying to lose 40 pounds, Dr. Albert Stunkard, psychiatrist at the University of Pennsylvania School of

Medicine, and Miss Mavis McLaren-Hume of the department of nutrition at New York Hospital, explain. They offer no reason for this apparent male success.

"Sex of the patients has not, to our knowledge, been previously suggested as a possible factor in the success of efforts at weight reduction," they say.

At least three other possible criteria for predicting success have been suggested. They are the "night-eating syndrome" in which the patient eats at night, the outcome of previous attempts at dieting, and the amount of anxiety in the patient.

A review of literature and a study of 100 patients at New York Hospital revealed none of these had any validity as indications of success at weight reduction.

Weight reduction is a difficult business, the scientists point out. Success occurs when the patient and physician alike give up the naively optimistic idea that weight reduction will follow as a matter of course once treatment is begun. They must realize that treatment is more than just prescribing and following a diet, the scientists conclude in the *Archives of Internal Medicine* (Jan.).

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BIOCHEMISTRY

New Method Yields Purer Folic Acid

► A NEW METHOD has been developed for producing pure folic acid, a vitamin important in the treatment of some anemias.

Commercial folic acid has numerous impurities, Drs. Warwick Sakami and Robert Knowles, biochemists of Cleveland's Western Reserve University School of Medicine, report in *Science* (Jan. 30). These impurities have an "intense effect on certain enzymes" in the body, they explain.

A completely pure product, according to some established standards for purity, resulted from a process combining cellulose chromatography and filtration.

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ENGINEERING

A/C Motor Has Smooth Speed Control

► AN ENGINEER from India has described a new type of alternating current motor that uses direct current excitation to the stator and two-phase alternating current to the armature.

The motor combines the smoothly adjustable speed characteristics of a direct current motor with the desirable power factor characteristics of a synchronous motor.

Prof. Paul K. Charlu, head of electrical engineering at P.S.G. College of Technology, Coimbatore, South India, told the American Institute of Electrical Engineers meeting in New York that the motor could also be used in single phase systems, or operated with a series and compound excitation. If additional stationary brushes are provided, it can be used as an auto-synchronized converter.

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