BIOLOGY

New Powerful Microscope Proposed to Spur Biology

➤ A POWERFUL new microscope that could make visible objects only four-billionths of an inch (an angstrom) in diameter would have the same effect on biology as the first sputnik had on space research, Dr. John R. Platt, professor of physics at the University of Chicago, said.

The resolution of the most powerful light microscope is about 5,000 angstroms, and electron microscopes have a resolution of eight angstroms. The so-called field-ion microscope has a resolution approaching two angstroms, but there is no known way of examining an organic molecule or biological sample with this instrument.

The best way to develop a one-angstrom microscope and other needed instruments would be in national biological laboratories, similar to those in atomic sciences and astronomy. The problem is that no one is working on developing such a microscope. In contrast, groups in at least six major laboratories are working on focusing designs for high-energy atomic particle accelerators.

Dr. Platt urges that biologists "take a leaf from the physical scientists' book and establish a permanent national biological research and development center—a kind of small-scale Los Alamos for biology." Development of the proposed microscope and other tools could change the face of biology, Dr. Platt argues in Science, 136:859, 1962.

• Science News Letter, 81:392 June 23, 1962

MYCOLOGY

Molding of Oranges Controlled in Tests

➤ THE COMMON green mold, which destroys millions of oranges and lemons each year, has a new enemy with a large chemical name and an effective punch.

The post-harvest growth that decays and rots valuable citrus fruits is caused by a fungus known as *Penicillium digitatum*. Two pathologists at the University of California, Riverside, discovered that a treatment of fruit with 2-aminobutane could prevent these microscopic organisms from spoiling oranges and lemons for long periods of time.

Even when applied at room temperatures, the chemical stopped the fungus from rooting, an asset for any potential fungicide.

Preliminary tests have also shown that a half percent of 2-aminobutane in water could effectively control a similar fungus which attacks apples, even at very low temperatures.

The oranges were washed in a low concentration of solution after being cut with a saw covered with *Penicillium* spores. The fruit that were not rinsed after the treatment showed no signs of mold, while the control group (those dipped in water only) was almost entirely destroyed.

Citrus fruits from California and Florida are attacked by the mold. It has been commonly believed that green mold is the most important problem of the fruits in the United States. Europe also rates it high, since much U. S. fruit is imported there.

The mold frequently occurs in shipment, often spoiling whole carloads of merchandise before the fruit reaches northern or foreign markets. An effective attack, therefore, is welcomed by citrus growers, who are supporting much of the present research.

Dr. J. W. Eckert and M. J. Kolbezen reported their findings in Nature, 194:888, 1962.

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ICHTHYOLOGY

Tropical Fish Ride Gulf Stream to Cape Cod

➤ TROPICAL FISH found in New England waters are proof of the power of the mighty Gulf Stream, the warm oceanic "river" streaming northward along the East Coast.

Tropical and subtropical fish usually found between Florida and Brazil ride the powerful current north in the summer months, leaving the warm Gulf Stream to enter northern harbors, only to die when temperatures drop, Dr. Donald J. Zinn, zoologist from the University of Rhode Island, explained in The Biologist.

The Portuguese man-of-war, cobblers, sharks, giant sunfish and the puffers are left in the cool northern waters, he said.

Millions of eels travel the Gulf Stream from their birthplace southwest of Bermuda to North America and Europe. Although the larvae travel together, no European eels venture inland in North America and the American eels leave the current before they reach Europe.

The Gulf Stream is an important factor in oceanic life, Dr. Zinn pointed out. It has a large effect on currents, winds and climates, and is being studied on an international scale.

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FORESTRY

Foam in Cavities May Perk Up Trees

➤ GAPING CAVITIES may soon be filled by foam to help rotting trees in their fight for life.

Mixtures of urethane foam have been tested by Dr. Curtis May, pathologist at the Agricultural Research Service, U.S. Department of Agriculture, Beltsville, Md., and found to bind wood firmly and yet remain flexible enough to allow movements of tree parts. The foam is durable and lightweight, a seemingly better filler than concrete, according to Dr. May.

Concrete has been used for many years to patch ailing trees, he said, but it is too rigid and does not make a water-tight seal with the wood. Freezing water behind the filling can break concrete and let in fungi which cause decay.

Tests with ten species of wood-rotting fungi show that the foam will not deteriorate readily. Further research is being carried out by Dr. May.

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IN SCIEN

PSYCHOLOGY

Knife-Fight Movie Makes Viewers More Aggressive

➤ WATCHING a motion picture of a knife-fight scene makes those who view it more aggressive and willing to inflict pain.

This was discovered by Toronto scientists who compared the effect of the switch-blade knife-fight portrayal with the reaction of a comparative group that merely saw an innocuous educational film.

The volunteers in the experiment were male hospital attendants who thought they were measuring the effect of punishing electric shocks on learning. Actually the device showed how long the shocks were given but no shocks were received by the person who made wrong answers by arrangement. Those who saw the aggressive movie were rougher in their judgments than the other group.

The scientists who reported their experiment in Science, 136:872, 1962, were Richard H. Walters, Edward L. Thomas and C. William Acker of the University of Toronto and Ontario Hospital, New Toronto, Canada.

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ENTOMOLOGY

Southern Lawns Attacked By Mighty Mite Army

➤ AN ARMY of mites, munching from west to east, reached the State of Florida where they had previously not been observed, attacking the green carpets of Bermuda grass and leaving them stunted and dying.

The discovery of the Florida encounter was made by the Florida Cooperative Survey and reported to the plant pest control division of the U.S. Department of Agriculture during a scouting mission.

The Eriophyid mites have caused heavy damage to lawns in California, Nevada, Arizona, New Mexico and Texas, reportedly on a large scale this year. This is, however, the first recognition of this lawn enemy in the East.

Bermuda grass was introduced into this country from Africa when it was used as bedding for Negroes on slave ships 200 years ago. Now it is the basis of most permanent southern pastures and is probably the most important single grass in the South today. It also comprises a high percentage of the lawns in California and other western states.

The mites feed in the terminal leaf sheaths of the grass, causing stunting (a witches-broom effect) and general decline of the grass. In some parts of the country an additional pest, a fungus associated with mites, contributes to the decline of the grass.

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CE FIELDS

NUTRITION

Location of Milk In Store Changes Taste

➤ THE TASTE of milk bought in grocery stores can depend on where the carton is located on the display shelf, three University of California food scientists have found.

Light from white fluorescent lamps, the kind commonly used in grocery display cases, can change the taste of milk even in cardboard cartons. However, the unpleasant flavor develops only in the outside cartons close to the lamp, and sometimes does not develop at all.

"Some types of cartons and some lamps are worse than others," Walter Dunkley told the Institute of Food Technologists meeting in Miami Beach, Fla. The effects are hard to pin down, he reported, and the flavor change can be confused with others.

Temperature, length of exposure, freshness of the milk, the cow's diet and many other factors also can affect development of light flavor, which occurs under commercial conditions often enough to create an occasional milk quality problem.

The flavor changes created by fluorescent lamps are similar to those caused by sunlight, which have been known for years. Nutrient value of the milk is also reduced by prolonged exposure to high-intensity fluorescent light.

J. D. Franklin and R. M. Pangborn, also of the University of California, cooperated with Mr. Dunkley in the milk-flavor studies.

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SOCIOLOGY

Fla., Calif., Great Lakes Rival E. Coast in 1980

➤ THREE WIDESPREAD urban areas will challenge the Atlantic Seaboard region in population within 20 years.

The Great Lakes region extending from Green Bay, Wis., to Rochester, N. Y., with an estimated 37,000,000 persons in 1980; the Florida area from Miami to Tampa-St. Petersburg, with 10,000,000 and California, from the Mexican border to San Francisco, with 27,000,000 persons, will approach the size of the East Coast strip.

The Atlantic Seaboard, sometimes called "the city 500 miles long," extends from Portland, Me., to Washington, D. C. This area now contains more than 36,000,000 persons and by 1980 the population should reach nearly 50,000,000. The area is not growing as fast as the other three areas, however.

While the East Coast area is growing 15% each 10 years, other urban communities are climbing more than 40% during the same time, according to Dr. Jerome L. Pickard, research director of the Urban Land Institute, Washington, who has looked into the future of America's population.

There are now 21 regions in the country with a total population of 97,600,000; or 55% of the nation's population is living on six percent of the nation's land area, he said. By 1980 these areas will have 170,000,000 persons.

None of the urban regions in the country are experiencing a population decline, he pointed out. Thus a new level of thinking will be required to plan for increased transportation, air and water pollution and many other necessary items associated with such an expanding population.

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EDUCATION

Method Is Not at Fault When Johnny Can't Read

➤ IF IT IS TRUE that American Johnny cannot read, it is not because American schools teach reading primarily by the "look-say" method to the neglect of the widely advocated "phonics" method.

This is the conclusion of a conference of 28 reading specialists supported by the Carnegie Corporation of New York and under the chairmanship of Dr. James B. Conant, well known educator. The report of the conference, entitled "Learning to Read," was issued by the Educational Testing Service at Princeton, N. J.

It is not true, the report declares, that our schools, in general, use primarily a "sight-word" method. It is not true that our schools, in general, do not teach phonics.

The teaching of reading in our schools is not all uniformly good, the report indicates. Some is excellent, much is good, and some is poor. But it is not so bad as pictured by critics who present exceptions as typical examples.

When reading instruction is not good, the main reason is not the method. It is the shortage of good teachers—a plague that affects all educational institutions from school to university.

Other reasons are large classes, meager libraries, inadequate equipment, insufficient books and supplies, and poor public support—both moral and financial.

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HORTICULTURE

Flowers Fooled With Flashing Lights

➤ FLASHING LIGHTS have been used to prevent flowers from blooming too soon.

The plants were exposed to artificial flashing lights during one-tenth of the night but reacted as though it were full daylight.

Dr. Thomas J. Sheehan, ornamental horticulturist at the Florida Agricultural Experiment Stations, has been working with this system to find out whether flower producers can keep the flowers from blooming more economically. The process now requires the lights full-time to keep from blooming until time of greatest market demand.

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AUTOMATION

Russia Hopes to Surpass U.S. via Automation

➤ THE SOVIET UNION'S main hope of surpassing U.S. industrial production lies with the development of adaptive control or "think" automation, a professor at Purdue University, Lafayette, Ind., believes.

This most advanced type of automation, with machinery which can "look over" a situation and teach itself to improve, is gaining impetus both in the United States and Russia, Dr. John E. Gibson, electrical engineer who visited the Soviet's major automation research center, said. But the Russians are necessarily putting more emphasis on it.

"Russia today has very few Detroit-type assembly lines and plants," he explained. "And the plan is to go from a peasant, job-shop economy directly into a highly automated factory economy."

There are six institutes being set up to automate each of the six leading industries in Russia. With huge numbers of engineers being turned out of the universities every year, they expect to completely skip the mass production system on which the present American economy is based.

Can they do it? Dr. Gibson believes they can, just as they jumped from behind in the air to develop the intercontinental ballistic missile. He reported these beliefs in Backgrounder from Purdue.

• Science News Letter, 81:393 June 23, 1962

ASTRONOMY

Test Seen for Einstein's Theory of Gravity Waves

➤ A CHANCE TO TEST the part of Einstein's theory of general relativity that predicts the existence of gravitational waves is seen in a mysterious flaring star 900 trillion miles from the sun's system.

The object is Nova Sagittae, which consists of two stars and has the shortest known period of orbital motion—only 81 minutes are required for one revolution of the eclipsing system. One is a dense white dwarf star, the other is not observable optically.

The stars are believed to be rotating around a common center so fast—1,500,000 miles an hour—that energy is radiated as gravitational waves. Nova Sagittae is very faint and astronomers have not been able to determine whether the second object of the pair is another dwarf star, or a comet-like mass of gas circling the dwarf, or a ring with a lump in it rotating around the white dwarf. The entire system is much smaller than the sun.

Drs. Robert P. Kraft and Jesse L. Greenstein of Mt. Wilson and Palomar Observatories, Pasadena, Calif., with Dr. Jon Mathews, California Institute of Technology physicist, collaborated in pointing out the significance of Nova Sagittae in proving part of the general relativity theory. The star is known as a recurrent nova that flared nearly to naked eye visibility in 1913 and 1946.

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