

increased vigor of the plants, probably due to an increased rate of the use of plant foods."

In another experiment, performed on individual plants in the greenhouse, the pistil, or seed-bearing part of the flower, was treated with a paste containing col-

chicine and indole acetic acid. Unpollinated pistils produced fertile seed, which thus had a mother but no father. Plants are now being grown from those seeds. The cotton fibers from the colchicine-treated flowers were longer and stronger than that from untreated flowers.

Science News Letter, January 11, 1941

GENERAL SCIENCE

Dr. Irving Langmuir Elected New A.A.A.S President

Scientists Honor Man Whose Study of Surfaces Led To Brighter Light Bulbs and Wetter or Drier Water

See Front Cover

WHENEVER you switch on an electric light you are getting the benefit of one of the many researches of Dr. Irving Langmuir, newly elected president of the American Association for the Advancement of Science. For Dr. Langmuir, who won the Nobel Prize in chemistry in 1932, is responsible for the present-day practise of filling light bulbs with gas (usually nitrogen) that prolongs their life, makes them more efficient, and cuts down your monthly light bill.

This, however, is only one of the applications that have been made of a central principle that has dominated the long series of physical investigations which he and his staff have been carrying on in the research laboratories of the General Electric Company at Schenectady, N. Y., during the past thirty years and more. What Dr. Langmuir is really interested in is what happens at surfaces where two substances come together. He was led to the discovery of a way to make better and longer-lived electric lamps by his interest in what went on when molecules of various kinds of gases were in contact with the surface of hot metals. Nothing much goes on when nitrogen or another inert gas touches hot tungsten—and that is why a gas-filled lamp keeps on shining so brightly and so long.

Another of Dr. Langmuir's accomplishments has been the production on a large scale, and the industrial utilization, of what is known as dissociated hydrogen. Ordinary hydrogen, such as every high school chemistry student makes by pouring acid on zinc, consists of two atoms tied together to make one molecule. These two-atom molecules can be split apart into single atoms by squirting hydrogen through an electric arc.

Making dissociated hydrogen was only a kind of scientific stunt until Dr. Langmuir took it in hand. He devised a way to control the jet, and to turn it on metals to be welded. The single molecules of hydrogen, eagerly seeking mates, end their solitary state in a union that produces very high temperatures. These high-temperature jets are particularly

good for welding, because there is no oxygen present, as there always is in ordinary flame, to produce troublesome oxides and scale.

Dr. Langmuir has lately been performing some other interesting but as yet apparently useless scientific stunts with ways to make the surface of water and other liquids wetter or drier than they normally are. What use will be made of this is not yet evident—but if past records mean anything, those "stunts" will doubtless bear watching.

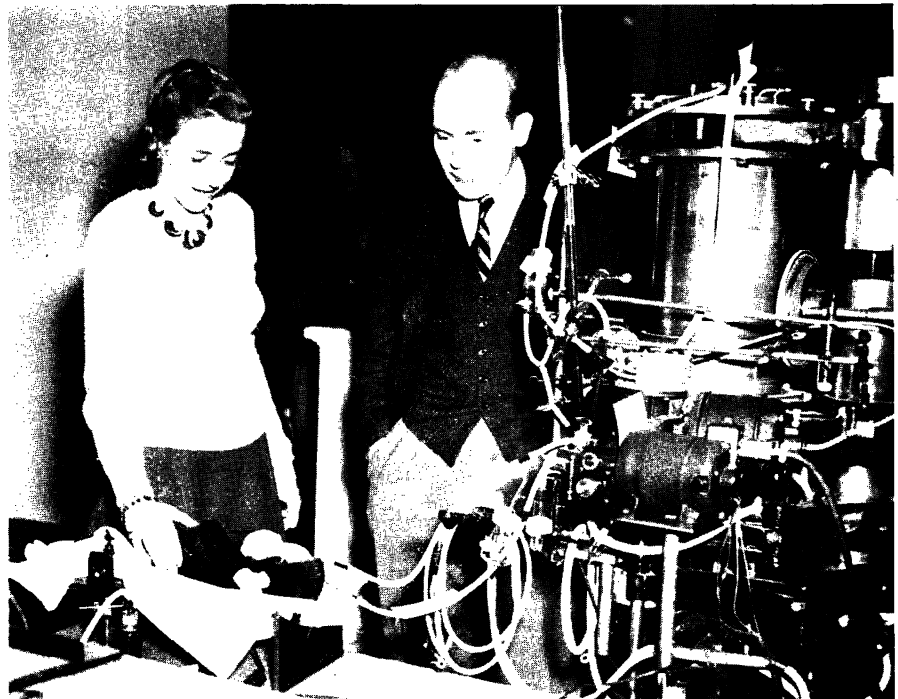
Science News Letter, January 11, 1941

ENTOMOLOGY—BOTANY

Insect Resistant Plants Are Now Being Bred

PLANTS that "bugs" don't like are being bred by American agricultural scientists in a new offensive against the insect menace. While the new kinds of plants become untouchable to devouring insects, they remain tasty and nutritious to man and beast for whom they are raised as food.

Instead of trying to fight the insect foes of our farms only with poison and



ARTIFICIAL LUNG AND HEART DEVICE

The toy monkey that Miss Margery Kitchen is admiring has an artificial heart and lung device attached to him. The apparatus is used to withdraw the blood from an animal's veins and return it to his arteries after treating it much as the lungs would. Charles Kraul demonstrated the apparatus for the Harrison Department of Surgical Research at the meeting of the American Association for the Advancement of Science in Philadelphia. The apparatus was designed by Drs. John H. Gibbon, Mary H. Gibbon and Charles Kraul.

other such methods of control, the idea is to make the plant do its own fighting by being so disagreeable to the attacking insects that they will seek their dinners elsewhere and even starve.

Scientists of the American Association for the Advancement of Science meeting in Philadelphia discussed the latest results of this mode of defense. Intensive research is under way at experiment stations in California, Illinois, Indiana, Missouri, Ohio, Oklahoma, Texas, Wisconsin and Kansas where pioneer research was undertaken.

More than a century ago the first insect-resistant plants were discovered. In a few cases they were used practically

on farms. But not until recent years did the entomologists and the plant breeders cooperate to make insect-resisting plants to order.

Alfalfa, corn, onions, sorghum and wheat are among the crops in which insect resistance has been developed. Seeds for a number of these new varieties have already been released or recommended by experiment stations.

But farmers are warned by Prof. Reginald H. Painter of Kansas State Agricultural College that "claims of seedsmen concerning insect resistance of particular plant varieties should be confirmed by a federal or state experiment station before they are counted on too heavily."

Science News Letter, January 11, 1941

not neglect to put their own theories into immediate practice in the defense of democracy.

Science News Letter, January 11, 1941

BIOLOGY

New Biological Society Formed at Science Meeting

A NEW scientific body, the American Biological Society, was organized during the Philadelphia meetings when a group of leading biologists gathered at the home of Col. A. P. Hitchens of the University of Pennsylvania school of medicine.

Various branches of biology, such as zoology, botany, bacteriology and genetics, have special societies, some of them with large memberships, but until now there has been no general, inclusive body to which all biologists can belong, as chemists of all branches are united in the American Chemical Society.

One of the principal purposes of the new American Biological Society is to support and promote one of the most important of American scientific periodicals, *Biological Abstracts*, which presents condensed summaries of all biological articles and books published anywhere in the world. A major part of each member's dues will be credited to his subscription to *Biological Abstracts*.

Membership will not be limited to professional scientists. According to the terms of the constitution, "Any person interested in the promotion of biology shall be eligible for election as an active member of the Society."

Prof. A. J. Carlson of the University of Chicago was elected first president with Col. Hitchens as secretary.

Science News Letter, January 11, 1941

INVENTION

View Through "Telescope" Is Really Just Upstairs

AN AMUSEMENT device which has just been patented has a large and impressive telescope, through which the looker seems to be watching a scene at a great distance, but actually, by a small telescope, and an arrangement of mirrors, he is looking at a subject on the next floor, above, through a small unnoticeable hole in the ceiling. (*U. S. Patent 2,222,084, Harry S. Manchester, Inc., Madison, Wisc.*)

Science News Letter, January 11, 1941

Salting coal piles in winter keeps the coal from caking in troublesome lumps, Canadian railways find.

PSYCHOLOGY

Need Intellectual Defense Even More Than Airplanes

Educator Regards as Disloyal Practice of Schools In Leaving to Chance All Instruction in Democracy

AMERICA needs intellectual and emotional defense even more than she needs tanks, destroyers and airplanes, Dr. M. R. Trabue, of Pennsylvania State College, told the American Association for the Advancement of Science in his address as retiring vice-president of the Education Section.

"The doubts and misgivings of our citizens are as dangerous to American democracy today," he declared, "as the submarines, airplanes and bombs of Herr Hitler. There are among us people of great influence who really believe that democracy can never be highly efficient.

"These attitudes of our own citizens are one of the great dangers that American democracy is facing today. It is against these that we who are students of education must organize and plan for the defense of democracy."

Dr. Trabue indicted as disloyal the practice of the public schools to plan specifically for developing knowledge of algebra, French, and physics, while leaving it to the pupil to pick up incidentally the attitudes and skills he needs for the democratic way of life.

Scientific research has taught educators that learning cannot be acquired by mere repetition—the learning must satisfy some real need in the individual. The habits and skills needed by the citizen in a democracy cannot be ac-

quired until the desire to serve some group has become strong enough to balance the individual's natural craving for personal recognition.

Organized athletic and academic contests might build up such a desire, Dr. Trabue indicated, but in the past such activities have been used to develop academic and physical skills instead of for the building of social attitudes and democratic character traits.

Another finding of educational research that Dr. Trabue believes can be put to work in America's emotional defense program is the discovery of the importance of personal experience in learning. A pupil cannot learn how to be a citizen in a democracy by reading about it in a book or by listening to what a teacher says about it.

Pupils must learn how to cooperate in the activities chosen by their group, even though they personally were in favor of doing something else. They must learn also to respect and help the honest efforts of sincere minorities to change the majority opinion. And the democratic situation that they meet in school must not be so artificial and unreal that the pupils are unable to recognize similar situations met with in later life.

The weakness of democracy, Dr. Trabue concluded, has been in its practice rather than in its theory. Educators must