

believe that the increase in blood vitamin A after alcohol is due to a mobilization of the vitamin from other tissues. They suggest that this might form the basis of a test for vitamin A storage in the body.

*Science News Letter, January 11, 1941*

## GEOGRAPHY

## Maps Show Changing World As Possible Aid to Peace

**W**ITH the world changing so rapidly, present-day maps are not adequate to show its alterations, S. Whittemore Boggs, geographer of the U. S. Department of State, told the American Association for the Advancement of Science. New maps are needed, which may aid in establishing a peaceful society.

Speaking before the section on geology and geography, he said that "maps should be devised to portray more effectively the great changes that have taken place throughout the world in the last century, largely as a result of improvements in travel, transportation and communication facilities."

He showed examples of several new maps. One he called an "isotachic map," the name coming from a Greek word meaning "equal speed." This, he said, "is analogous to physical maps with shadings between contours, in which the higher elevations are depicted in darker shadings. The territory in which travel within a given range of speed prevails is shown in a single shading, the lighter the shading the greater the speed. A map of 1940, by comparison with one of 1800, represents a change as fundamental as if giant steam shovels and grading machines had leveled the mountains and made the surface of the United States almost as smooth as a billiard table."

Such maps, he said, might prove an aid to thinking in terms of the earth as a whole, which might aid in world peace. They may show, he declared, "that recent inventions and techniques, instead of making a 'shrinking world,' have greatly lengthened the outreach of nations and groups, multiplied impacts, and tended to intensify rivalries which may be manifested anywhere on the globe. Such maps may also stimulate thinking in world terms, which is important at a time when such thinking is partially paralyzed."

*Science News Letter, January 11, 1941*

To prevent snow glare on Canada's snow-covered aviation landing fields, corrugated pipe equipment is rolled over the snow to form ripples.

## PHYSIOLOGY

# Change in Nine Molecules Produces Sensation of Sight

## Each Quantum of Light Able to Cause Necessary Change in Visual Purple; No Physical System Like It

**A** CHANGE in only eight or nine molecules of the "sight chemical," visual purple, in the retina of the human eye is sufficient to produce the sensation of sight, Prof. Selig Hecht of Columbia University told the American Association for the Advancement of Science at Philadelphia. Associated with Prof. Hecht in his experiments were Simon Shlaer, also of Columbia, and Dr. Maurice H. Pirrenne of the Belgian-American Educational Foundation.

In the research, an observer would stay in a dark room for half an hour, until his eyes had become dark-adapted and reached a maximum of sensitivity to light. Then a flash of light, exactly a hundredth of a second in duration and of carefully measured radiant-energy content, was shot at his eyes. The amount of light actually reaching the retina, when the minimum sight-causing illumination was reached, was calculated at eight or nine quanta, each quantum being able to cause the necessary chemical change in one molecule of visual purple in the retina.

Prof. Hecht commented, "Judging by the structure of the retina, the structure of light, and the chemistry of visual purple, it is hard to conceive of a biological system which could be more sensitive than this. Certainly there are no physical systems which even approach it."

*Science News Letter, January 11, 1941*

## Cicadas May Harm Trees

**S**EVENTEEN-YEAR cicadas, usually called "locusts" when their shrilling swarms appear, may do more harm to trees than is commonly supposed, Dr. Gregory Thoennes of St. Mary's College of Winona, Minn., suggested. Dr. Thoennes has kept track of trees affected by an outbreak of seventeen-year cicadas in Missouri six years ago, and is of the opinion that the consequences of the excessive egg-deposition in the rind of young twigs are being too lightly dismissed by biologists.

The cicada, emerging after seventeen years of subterranean life, sings, mates,

lays its eggs and dies. The eggs are shoved into the green bark of young twigs, frequently in such numbers that the twigs wither and fall off.

It has always been supposed that the trees recovered from these infrequent partial defoliations with little injury, but Dr. Thoennes declared that in the case of orchard trees especially, measurements made for the past six years indicate a marked decrease in the yearly growth of injured branches. This change in growth rate, he said, is more noticeable in older trees than in younger ones, and in neglected trees than in those that have been well cultivated. In either case, however, the growth of affected branches is less than that of uninjured ones.

*Science News Letter, January 11, 1941*

## Plants With Roots in Air

**"A**EROCULTURE," a new method for growing plants with their roots suspended in air, never either touching soil or being kept immersed in water, was described before the plant physiologists attending the meeting by its inventor, Prof. M. A. Raines of Howard University. Water, with mineral nutrients dissolved in it, is supplied by spraying or frequent dipping. A promising feature of the method, said Prof. Raines, is that sugar or other carbohydrates may be supplied without the elaborate precautions necessary to prevent fermentation or bacterial and mold growth when other methods are employed.

*Science News Letter, January 11, 1941*

## Growth-Chemical Spray

**C**OTTON yields were boosted by a third in experimental plots sprayed daily for three weeks during July with a one-to-one-million solution of the growth-promoting chemical, indole acetic acid, Prof. J. C. Ireland of Oklahoma Agricultural and Mechanical College reported before the meeting of the American Society of Plant Physiologists.

"This would suggest that the use of a synthetic hormone causes the cotton plants to develop more bolls to maturity," said Prof. Ireland. "There is an apparent

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.

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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*

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

**W**HENEVER 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.

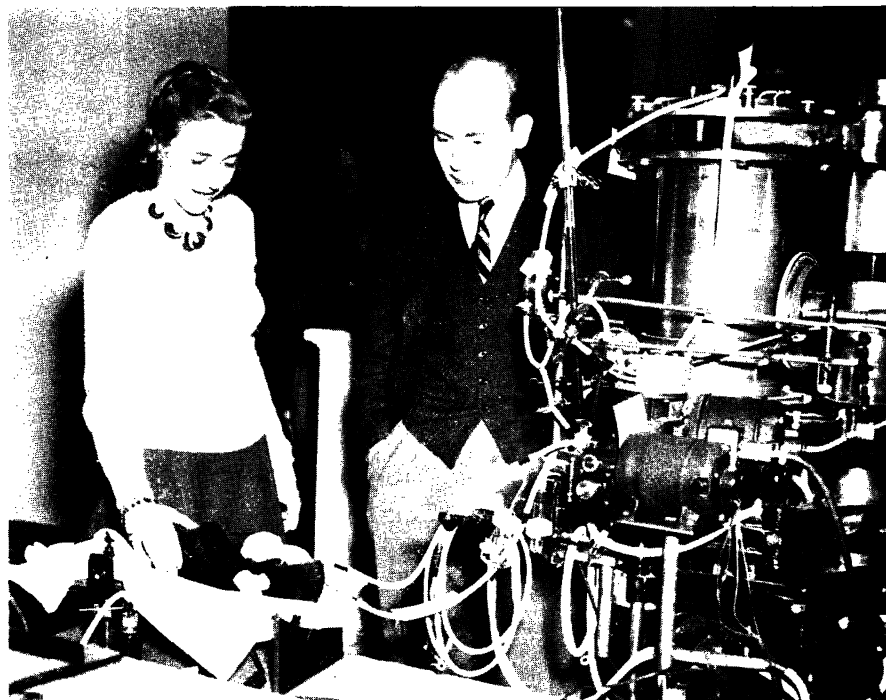
Making dissociated hydrogen was only a kind of scientific stunt until Dr. Langmuir took it in hand. He devised a way to control the jet, and to turn it on metals to be welded. The single molecules of hydrogen, eagerly seeking mates, end their solitary state in a union that produces very high temperatures.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

ENTOMOLOGY—BOTANY

### Insect Resistant Plants Are Now Being Bred

**P**LANTS 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.*