

ENGINEERING

Eyes Have Same Limitations as Cameras

► YOUR EYES have the same ultimate limitations as a photographic film or a television pick-up tube, but the eye is 250 times as effective in viewing as a camera is in taking motion pictures.

Comparing human eyes with movie and television cameras, Dr. Albert Rose of the RCA Laboratories, Inc., told the Society of Motion Picture Engineers that a unified approach to the limitations and possibilities of the three picture pick-up devices would help the study of "seeing" media.

The great limitation to what we can see with our eyes is "the discrete nature of light flux," and the same is true for photographer's film and the television set's pick-up tube, according to Dr. Rose.

He said that terms used in studying human vision, television and photography should be standardized. For example, Dr. Rose said that what is called minimum discernible contrast in eyesight becomes graininess in films and signal-to-noise ratio in television.

Comparing the eye with a camera, he reported that not all the greater effectiveness of the eye can be attributed to a lower quantum efficiency of film. Part of the eye's greater vision power is a result of the high gamma of the printed film which requires a higher than normal signal-to-noise ratio, he said.

Science News Letter, May 18, 1946

GEOGRAPHY

Common Geographical Groundwork Planned

► ALL THE WESTERN hemisphere will have a common basic groundwork of maps, surveying networks, earthquake recording and historical research when cooperation begun at a meeting in Mexico City of officials of the Pan-American Institute of Geography and History comes to fruition.

More than a dozen experts from five countries made plans for international meetings in August at Caracas, Venezuela, when the Fourth General Assembly on Pan-American Geography and History and the Third Pan-American Cartographic Conference will be held.

Brazil, represented at the meetings by Dr. Christovam Leite de Castro and Dr. Jorge Zarur, has offered to support for two or three years an international committee on geography to be a part of the UNO as well as serve the western hemisphere.

Use of a uniform method of triangulation and other geodetic methods and coordination of all mapping by various countries is the problem of another committee. Hemisphere-wide reporting of earthquakes is another project. A history commission is also being studied.

Representatives from the United States in attendance included Robert H. Randall of the Coast and Geodetic Survey, Dr. Wallace W. Atwood, the geographer, Dr. Andre C. Simonpietri of the Department of State, Dr. Lewis Hancke of the Library of Congress, Capt. Clement L. Garner, U. S. Navy, Lt. Col. Albert G. Foote, Army Air Forces, and Com. George F. Kennedy, U. S. Navy.

General Eduardo Zubia represented Uruguay at the conference, while Engineer Arturo Posnansky attended from Bolivia. Mexican representatives on the committee were: Lic. Silvio Zavala, Engineer Pedro C. Sanchez and Engineer Alfonso Vaca Alatorre.

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CHEMISTRY

Deodorized Gas Endangered Bank

► A DISASTROUS explosion might have been the price of a new bit of information about city gas chemistry. If one of the bank clerks had been tempted to light a cigarette while he was working in that underground vault—

Here's the story:

Clerks in a Colorado bank complained of headaches and nausea when they worked in the cellar vault. No odor was noticeable, so at first gas was ruled out as a cause. Finally, however, the State Division of Industrial Hygiene had an instrumental test made. It showed air pollution by combustible gas close to the explosive limit.

Gas used in this locality is a nearly odorless natural gas. To give warning of leaks, a pungent-smelling compound, known technically as a calodorant, was mixed with it. Gas men believed that nothing could remove this warning substance.

The gas that got into the vault was traced to a leaky main about 50 feet from the bank. It apparently seeped through the moist sandy subsoil, following a six-inch water pipe that passed through the vault, gaining entry via an apparently tight joint between the pipe and the concrete wall.

Later laboratory tests showed that the "calodorated" gas could be deodorized by passing it through a mass of moist sand, confirming the field conclusions.

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IN SCIEN

CARTOGRAPHY-GEOLOGY

Large Size Glacial Map Of North America

► A GLACIAL map of North America, large size, is now available. It presents the Pleistocene glacial features of the continent from the North Pole to Los Angeles, and from the Aleutians to Iceland. It is published by the Geological Society of America.

The map measures 79 by 52 inches, and is drawn at a scale of 72 miles to the inch. It is the result of three years of work by a committee of American geologists. Previous glacial maps have all been on a very small scale.

Major topographical features are shown by form lines on the land and sea floor. In this way the relation of the glaciated area to highlands and to continental shelves is brought out. Areas glaciated during each of the four Pleistocene glacial ages, and during the sub-ages of the last glacial age, are differentiated in color wherever a basis for differentiation exists. A total of 23 different color conventions are used on the map.

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ENTOMOLOGY

Insects Absorb Water From Vapor in the Air

► SOME INSECTS, at least, do not need to drink; their bodies are able to absorb water in vapor form from the air. This has been neatly demonstrated by two Belgian scientists, J. Govaerts and J. Leclercq, of the University of Liege, who report on their experiments in the British scientific journal *Nature* (April 13).

They kept several species of beetles and one bug species, without food, in closed vessels in which the air was saturated with water vapor. This was "tagged" by the addition of 8% of "heavy water", in which the hydrogen atoms have doubled their ordinary atomic weight.

After a few days, some of the insects were killed and their body fluids analyzed. It was found that in all species the water from their bodies contained 8% of heavy water—a clear demonstration that they had taken it directly from the air until they were in equilibrium with it.

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CE FIELDS

MEDICINE

Cure for Colds May Come From Polio Contributions

► A CURE for colds may possibly come out of the \$204,000 grant to Harvard Medical School from the millions of dimes contributed by Americans to fight infantile paralysis.

A study of filtrable viruses is the purpose of the National Foundation for Infantile Paralysis grant.

Infantile paralysis is caused by a filtrable virus. The common cold is caused by another virus. Viruses are also the causes of diseases ranging from cold sores and fever blisters to mumps, measles, influenza and encephalitis, popularly called sleeping sickness.

A study of filtrable viruses attacks a broad front of diseases of plants and other animals as well as humans.

How well a fundamental attack such as this pays off is seen in the chemical warfare studies which produced a cure for bichloride of mercury poisoning and promise better treatments, if not cures, for other diseases.

Even closer to the virus study is the discovery from fundamental research that viruses, which could not be propagated in test tubes, would grow on chick embryos where they were accessible for study without use of laboratory animals. From this came the vaccine that protected our troops from typhus fever, a vaccine against influenza and an improved vaccine against yellow fever.

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PHYSICS

Bombers and Rockets Investigate Cosmic Rays

► BOMBERS and rockets are attacking the problem of cosmic rays instead of fighting Nazis or Japs.

A Nazi V-2 rocket was fired on May 10 from the desert White Sands region in New Mexico by the Army. In its nose instead of explosive was an apparatus to measure the intensity of cosmic rays at a hundred miles above the earth, higher than any measurements have ever been made.

Later this month a specially equipped B-29 bomber will begin taking cosmic ray recorders on round trips between the

northern border of the United States and the magnetic equator flying at 35,000 feet (seven miles) and lower altitudes. This is a cooperation of the Army Air Forces, the Franklin Institute's Bartol Research Foundation and the National Geographic Society. The B-29 flights will provide cosmic ray measurements through a 70-degree range of latitude, important because intensities vary with distance from the equator.

Plunging into the atmosphere from outer space, cosmic rays of great energy constantly bombard the earth and create secondary radiation.

Mesons (or mesotrons), which are atomic particles with a life of only a few millionths of a second, are a product of cosmic ray bombardment. These will be investigated during the cosmic ray researches. Cosmic rays are recorded with an apparatus called a Geiger counter.

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INVENTION

Further Steps Toward Mechanized Cotton Growing

► TWO FURTHER steps towards putting cotton growing on a fully mechanized basis are represented in new patents on a cotton chopper and a cotton harvester. The first, No. 2,399,854, was taken out by William H. Clark of Riverside, Calif.; the second No. 2,399,718, was granted on a joint application by David B. Baker also of Riverside, and Clarence R. Hagen of Chicago, who have assigned their rights to the International Harvester Company.

Cotton chopping consists in making gaps in the rows of seedling cotton plants, so that those left standing may grow larger and bear more heavily. For the traditional hand hoe Mr. Clark substitutes a machine with a large rotating disk carrying a series of revolving cross-shaped cutters, with spaces between them. Where the cutters hit the cotton row they knock out young plants; where the spaces come opposite the row the plants are left standing.

The principal objective of the Baker-Hagen harvester is to prevent piling up of the cotton, with resultant clogging, after the bolls have been picked. This is accomplished by means of two fans, one of which sucks the cotton into an intermediate chamber, while the other blows it out of this into a hopper on the tractor, from which it can be dumped into collecting trucks. Both fans are so screened that the cotton cannot get to them and put them out of action.

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OCEANOGRAPHY

Soviet Arctic Research Conducted Throughout War

► RESEARCH by Russian scientists on the fisheries resources of the Barents sea, the sector of the Arctic ocean directly north of European Russia, went on throughout the war, under the very guns of the enemy.

The saga of the persistent and hardy researchers, who did their work in trawlers and other small craft while the waters were infested with submarines and the air never safe from bombers, was told by Prof. Mikhail Somov, director of the Arctic Institute of the USSR. Prof. Somov has received many honors for his lifelong work on Arctic marine biology, including the Order of the Red Banner of Labor.

Before the first World War, the Barents sea was considered a poor place to look for fish, but investigations started under Lenin's instructions in 1920 showed it to be an excellent food-producing area, especially for cod, haddock, herring and salmon. Movements of the schools of fish are governed largely by the perpetual clash between warm and cold, where an ultimate branch of the Gulf Stream enters the sea and meets the frigid Arctic waters.

Working conditions for fisheries researchers in these high northern waters are always hard. They have to contend with raging Arctic storms, and for months on end they must work without a glimpse of the sun. When Nazi torpedoes, gunfire and bombs were added to their other difficulties, however, they still carried on. Two of their best ships were lost, and many casualties caused by enemy action, but the militant scientists refused to give up. Now the waters, though never quiet, are at least rid of human enemies, and research can go on in relative peace.

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CHEMISTRY

Chemistry Award Given Nutritionist

► DR. ICIE Macy Hoobler of Detroit, director of the research laboratory of the Children's Fund of Michigan, will be awarded the Francis P. Garvan Medal honoring women in chemistry, the American Chemical Society reports.

Dr. Hoobler, an authority on nutrition and child growth, will receive the gold medal at the chemical society's national meeting at Chicago in September.

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