SCIENCE NEWS

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MEXICAN ASTRONOMICAL EXPEDITION TO OBSERVE THE TOTAL SOLAR ECLIPSE

AN expedition of leading Mexican astronomers will observe the total eclipse of the sun on January 25 from Peru, and the party is now *en route* on board a Mexican warship.

Headed by Dr. Joaquin Gallo, director of the Mexican National Observatory at Tacubaya, the group also includes Dr. Luis Enrique Erro and Dr. Carlos Graeff Fernandez, director and assistant director of the newly established Astrophysical Observatory at Tonanzintla, in the state of Puebla. Both observatories have provided instruments and equipment, which includes modern eclipse cameras and spectrographs.

The eclipse expedition has the joint sponsorship of the Mexican federal government, the state of Puebla and the University of Mexico. The initiative for the expedition came from Dr. Gonzalo Bautista, governor of Puebla, who has also sponsored the Tonanzintla Observatory, which has had the cooperation of Harvard Observatory. President Avila Camacho has aided the plans on behalf of the federal government and Ambassador Luis Fernan Cisneros of Peru promised a welcome from that country to the Mexican astronomers.

The instruments will be set up at Cajamarca in Peru, well within the narrow path of total darkness created by the moon coming between the sun and the earth.

The voyage to Peru from an unannounced Mexican port will be a training cruise for Mexican midshipmen as well as an astronomical trip.

Because of war conditions it is expected that the eclipse of January 25, whose totality extends across South America through Brazil and Peru, will be poorly observed. So far as known, there will be no eclipse expeditions from the United States.

This will be Dr. Gallo's third eclipse expedition, as he went to the 1905 eclipse in Spain as a member of the Mexican expedition to that eclipse. When in 1922 a total eclipse was visible in northern Mexico, Dr. Gallo was at the head of a Mexican expedition that cooperated with U. S. parties from north of the border.

Astronomical expeditions from Mexico date back to 1769, when the Mexican astronomer Joaquin Velazquez de Leon joined French and Spanish expeditions in Lower California to observe the famous transit of Venus. In 1874 Mexico sent another transit of Venus expedition to Japan, which was headed by Francisco Diaz Covarrubias, founder of the National Observatory.—AUGUSTIN ARAGON LEIVA.

THE VAN GENT COMET

CALCULATIONS received at the Harvard College Observatory from South African astronomers confirm the belief that the comet recently found in the constellation of Aquarius, the water-carrier, by Leslie C. Peltier, an American amateur astronomer, is the van Gent comet. This comet was discovered near Nova Puppis late in November by Dr. H. van Gent, of the Union Observatory at Johannesburg, South Africa.

The comet follows a parabolic orbit, according to a report from Dr. J. W. Jackson, director of the Royal Observatory at the Cape of Good Hope, and Dr. W. H. van den Bos, director of Union Observatory. It is estimated that the comet will be nearest the sun early on the morning of January 12.

The new-found comet will probably be visible in the constellation Aquarius to observers with binoculars for some time, due to its motion northward. Northern astronomers, at the time of its discovery, thought the comet to be heading too far south for them to see it at this time. The path of the comet across the sky has apparently curved northward.

The positions which the comet was expected to occupy were worked out by Dr. van Gent for December 22, 26 and 30. On December 22 the comet was expected to have a right ascension of 22 hours, 51.7 minutes, and a declination of minus 8 degrees, 40 minutes. On December 20 rough visual observations made at Harvard Observatory placed the comet very near that location, at 22 hours, 50 minutes of right ascension, and 10 degrees 30 minutes south of the celestial equator.

In a small telescope it shows a rather bright center and a large hazy head, but no observer has reported seeing a tail. Photographs may be expected, however, to show at least a faint, short tail.

THE PHOTOELECTRIC CELL

THE electric eye, or photoelectric cell, has another job added to its many: it is now used to "see" invisible gases and vapors in manufacturing plants, and warn of dangerous concentrations that might be injurious to workers.

An apparatus, with the electric eye as its key-piece, has been developed by scientists of E. I. du Pont de Nemours and Company and is now in successful use, particularly in detecting the presence of carbon disulfide.

The apparatus, called an ultraviolet photometer, is based on the phenomenon of light absorption by gases. Most gases absorb light of some particular wavelength, in effect casting a shadow where that particular wavelength light should have fallen. In a spectrum the shadow is known as an absorption line.

The instrument, as used as a carbon disulfide analyzer, is so constructed that the air to be analyzed is pumped through several small chambers which filter out dust, oil and moisture, and then into a pair of parallel tubes 31 inches in length. The contaminated air runs into the first tube and then through a canister of activated charcoal which removes the carbon disulfide. The air then passes into the second tube. This makes possible a comparison of the purified with the contaminated air.

Rays of invisible ultraviolet light from a mercury lamp pass through the two tubes and fall upon a photocell mounted at the opposite end of each tube. Carbon disulfide, if present, absorbs light of a particular wavelength.

No other atmospheric element has been found in factories where the instrument is used that absorbs this particular band of light. The operator knows immediately by the action of the photocell if carbon disulfide is present in the sample under investigation.

The instrument developed by du Pont can take quick "grab samples" or run continuous samples and give direct and instantaneous readings.

SCIENTIFIC INSTITUTIONS AND BUILDINGS OF LENINGRAD

THE scientific institutions and buildings of Leningrad remain in relatively good shape. Soviet scientists are preparing to resume normal scientific life.

The conditions in Leningrad were surveyed by Academician Leon Orbeli, vice-president of the Academy of Sciences of the U.S.S.R. and director of the Pavlov Physiological Institute, in a report prepared by the Soviet Scientists' Anti-Fascist Committee.

The main buildings of the Leningrad Academy remain in good shape, largely due to the work and care of its members who remained there during the war. The old academy buildings and the ethnological museum that formerly housed Peter the First's collection of curiosities are still standing.

Only the botanical gardens suffered heavily. A direct hit demolished the conservatory, destroying rare palms of great value and other tropical plants. Academician Orbeli reports that it is difficult to estimate the damage done to the results of research in the field of botany. The herbarium and world collection of seeds, however, are safe, having been removed to a bomb-proof shelter in good time. The employees of the botanical gardens have begun to restore the gardens and are now growing new seedlings.

Asked how their scientific research work is progressing, Academician Orbeli stated that although the greater part of the scientific workers and their most valuable equipment were evacuated from the city in good time, more than 400 investigators who remained in Leningrad with the Academy and institutions, are continuing their work.

The library of the Leningrad Academy also serves various military and civil organizations.

Work on plants for camouflaging airdromes, cultivation of various medicinal herbs and consultations with truck gardeners are among the war projects of the Botanical Institute, named in honor of Academician V. Komarov. Every foot of available ground in Leningrad was used for truck gardens, so that the average quantity of vegetables per person this winter is higher than that received from outside the city before the war.

In the autumn of 1941, a bomb struck a building of the Pavlov Physiological Institute, but work was continued as every dog used for experimental purposes was saved. Even during the most difficult months of the siege and blockade, Leningrad authorities supplied these animals with sufficient food.

Professor Maria Fetrova, the closest colleague of Ivan Pavlov's, who remained in Leningrad, is conducting experiments on these dogs to determine the influence of bombings and shellings on higher nervous activity. The Koltushi Experimental Station, in which Pavlov spent so much time during the last years of his life, remains the same and continues its scientific work.

The Leningrad Scientists' House, which used to be a club for scientists, with restaurant, library and lounge rooms, has become a center of activities for scientists in the city. Lectures, forums and concerts are held there, with scientific, political and technical experts attending and holding conferences on questions connected with the country's defense. Lectures are often given to Army and civilian audiences.

Looking toward the day when normal scientific life can be resumed in Leningrad, necessary steps are being taken to repair the buildings of the Leningrad Academy and scientific institutions.

ITEMS

A HUGE altitude wind tunnel for research on aircraft engines, the first of its kind, now being built at the Cleveland Airport by the National Advisory Committee for Aeronautics, will see completion the early part of next year. This tunnel, which is part of the $20,000,000 Aircraft Engine Research Laboratory, the largest in the world, will be the first to combine all conditions approaching those of the stratosphere. It will be used to improve the high altitude performance of aircraft engines and engine installations for Army and Navy planes. Giant-bladed fans will create a 500-mile-an-hour wind in the tunnel. Air temperatures in the wind tunnel as low as 67 degrees below zero Fahrenheit, simulating stratosphere conditions at 50,000 feet, will be maintained by the huge refrigeration plant, which will have a capacity twice as large as that of the biggest refrigeration plant in the world. Designed to test engines with a maximum of 3,000 horsepower, it is expected that the tunnel will prove adequate to test engines up to 4,000 horsepower.

LATEST report on the much-discussed question of whether sulfa drugs should be given for the common cold is again disappointingly negative. This time Dr. Russell L. Cecil, Major Norman Plummer, M.C., A.U.S., and Dr. Wilson G. Smillie report, in the *Journal* of the American Medical Association, the results of a careful study of seventy-two colds in sixty-six different persons. Small doses of sulfadiazine were given by mouth daily for four days to forty-eight of these cold victims, while twenty-four served as controls. The treatment did not shorten or alter the course of uncomplicated colds. No striking benefits were seen in the complicated colds. The number of germs, other than the cold virus itself, at the back of the nose above the soft palate decreased uniformly under the treatment and the growth of disease-causing germs, such as pneumococci and hemolytic streptococci, was checked. The cold virus itself is known not to be affected by sulfa drugs. The physicians therefore are opposed to routine use of sulfa drugs for the common cold, but favor their use in a few selected cases as protection against severe secondary infection or complications. Giving sulfadiazine by mouth is simpler and more dependable, they found, than trying to apply a sulfa drug directly to the nose and throat.