PHYSICS

Extreme Low Temperatures Obtained at Rutgers

➤ A TEMPERATURE of roughly 456 degrees below zero, Fahrenheit, was obtained at Rutgers University in a trial run of a new helium liquefier, it has been revealed. This is less than four degrees above what scientists call absolute zero, the point where matter contains no heat. A temperature of minus 458 is expected to be reached later.

The complicated machine, called a Collins helium cryostat after its designer, Dr. Samuel C. Collins of the Massachusetts Institute of Technology, works somewhat like the ordinary household electric refrigerator. Highly compressed gas is forced through a tiny jet. The cryostat, in addition, makes the helium gas used in it operate a piston-driven engine as another means of cooling the gas.

Other machines to reach temperatures approaching absolute zero have been designed and are in use. The device to be used at Rutgers will be employed in studying the fundamental structure of matter. It is expected to be used in exploring such things as the magnetic properties of the atom and the atom's nucleus.

Helium, the non-combustible gas used to inflate American balloons, is employed in this device because it becomes a liquid at a lower temperature than any other gas. Its liquefaction point is approximately 452 degrees below ordinary Fahrenheit zero, or about eight degrees above absolute zero.

Science News Letter, August 30, 1947

BIOLOGY

Germ Warfare Advances More Potent than A-Bomb

➤ ADVANCES in biological warfare have made the atomic bomb all but obsolete.

This is the opinion expressed by Dr. Brock Chisholm, executive secretary of the Interim Commission of the World Health Organization. Questioned at the Summer School of the World Federation of the United Nations Associations in Geneva, Dr. Chisholm remarked:

"Biological warfare has developed much more potency than the atomic bomb. Now continents could easily be wiped out."

He explained that armies, navies, and huge war plants are in effect relegated to no importance by frightful new biological weapons.

"The tiniest country now has the same war potential as the largest," the World Health Organization's executive secretary said. "All that is needed is an expert biologist with a laboratory and a small group of technicians. Methods of survival of 10 years ago are outdated. Efficiency in killing has outreached all types of defensive weapons. The old concept of new weapons producing counter weapons is no longer valid and there is no foreseeable way of coping with biological warfare. However, it should be remembered that those employing biological weapons could themselves become their own victims."

Dr. Chisholm said that the Interim Commission of the World Health Organization had thus far not considered the question of biological warfare. He explained that the United Nations' Security Council was charged with warfare matters but added that the World Health Organization might be called on for advice at a later date.

Science News Letter, August 30, 1947

CHEMISTRY

Germanium Used to Make Special Optical Lenses

➤ CHEMICAL ELEMENTS that used to be merely symbols on a classroom chart are one by one being drafted into industrial uses. Beryllium alloys are becoming familiar on the tool-bench; suburban gardeners push wheelbarrows and lawnmowers made largely of magnesium; uranium dominates the turbid politics of a shuddering planet.

Germanium, an element something like silicon discovered only two generations ago, now claims its place in the sun of science. Quite literally: its usefulness is in a new optical glass developed by a Chinese-born chemist in the research laboratories of the Eastman Kodak Company at Rochester, N. Y., Dr. Kuan-Han Sun. He has substituted germanium oxide for its familiar chemical analog silica (sand), in a formula including also titanium oxide and sodium fluoride, to obtain a glass with high refractive index, that should be especially useful in wide-angle camera lenses and microscope objectives.

Since current market price for germanium oxide is between $30 and $40 an ounce, immediate use is likely to be limited to special lenses. U. S. patent 2,425,403 has just been issued on the new fluogermanate glass.

Science News Letter, August 30, 1947

IN SCIENC

ENTOMOLOGY

Mosquitoes Grow in Trees In Northern South America

➤ MALARIA mosquitoes grow in trees on the cacao plantations of northern South America. This is no Munchausen tale of their building nests like birds or clambering around like monkeys. It is a serious report of a mosquito-control problem brought back to the U. S. Department of Agriculture by H. H. Stage, lately returned from a tour of investigation in the Caribbean area.

When planters arrange to set out a new cacao grove they first clear away all the jungle vegetation. Then, to shelter cacao trees, which like a certain degree of shade, they interplant a taller tree species, known locally as immortelle.

Bromeliads, or air plants, roost by thousands on the branches of these shelter trees. They are small plants of the pineapple family, and in the cuplike cavities at the bases of their curved, stiff leaves they catch and hold rain water. These minuscule ponds afford breeding places for one species of malaria mosquito, *Anopheles bellator*.

It is not practicable to attack these treetop mosquito nurseries with DDT, but planters in the British island of Trinidad have found a practicable solution for the problem. They use a powerful spray-pump to apply a dilute solution of copper sulfate to the air-plants. This kills them without harming either the cacao trees or their taller sheltering companions.

Science News Letter, August 30, 1947

ENTOMOLOGY

Oklahoma Ground Cherry Yields Good Fly Poison

➤ AN OKLAHOMA plant, commonly known as the smooth ground cherry, yields a chemical which is a good fly poison, Dr. Loyd E. Harris of Ohio State University College of Pharmacy reported at the meeting of the American Pharmaceutical Association in Milwaukee.

The technical name of the fly poison plant is *Physalis mollis*. Its anti-fly chemical is probably an alkaloid.

Science News Letter, August 30, 1947

E FIELDS

ZOOLOGY

Costly Fur Coats Displayed by Zoo

See Front Cover

➤ FOUR rare and expensive fur coats have arrived at the San Diego Zoo. The coats are being worn by their owners, a quartet of northern fur seals, the only ones in any zoo.

The four seals were donated to the zoo by the Fish and Wildlife Service for close-range study by scientists. Biologist William H. Sholes brought the precious cargo from St. Paul Island in the Pribilof group off Alaska.

Zoo personnel are going to keep the seals under close observation. Day-to-day study of the animals in the zoo will supplement the field observations of government scientists seeking more knowledge about the native life of this valuable species of fur coat.

Science News Letter, August 30, 1947

MEDICINE

Penicillin Successful For Babies' Sore Eyes

➤ THE SILVER NITRATE drops now routinely put into the eyes of newborn babies as prophylaxis against gonorrheal and other eye infections may be replaced by penicillin.

Success with penicillin eye drops and advantages of the mold chemical over the silver compound are reported by Dr. H. Charles Franklin of the University of Tennessee College of Medicine in the *Journal of the American Medical Association* (Aug. 9).

Ophthalmia neonatorum, meaning inflammation of the eyes of the newborn, is the condition for which the German obstetrician, Crede, first used silver nitrate as prophylaxis. Until recently, doctors used this medical term, and the layman used the term, "babies' sore eyes," to mean the inflammation due to gonorrhea which the baby got from its mother. Now the term is applied to all inflammation or soreness with pus in the eyes within two weeks after birth. The germs of gonorrhea are the ones demanding most attention from the standpoint of preventing blindness. But pneumonia germs and perhaps others which can get into newborn babies' eyes may be as damaging.

Penicillin checks these germs and the soreness of the eyes as well as silver nitrate does, Dr. Franklin found in a study of 1,710 infants. The mold chemical has the advantages of not being painful or irritating and of being safe so far as damage to the eyes is concerned.

Science News Letter, August 30, 1947

ORNITHOLOGY

Geomagnetism, Earth-Spin May Guide Homing Pigeons

➤ Are aviators about to take lessons in navigation from birds, as they originally took lessons in flight and soaring? Are ornithologists about to learn how homing pigeons find their way back home, and how migratory birds hold to a true course on night flights?

These questions are raised anew by a report given at the General Electric Forum, by Prof. Henry L. Yeagley of Pennsylvania State College, on the curious behavior of homing pigeons under his care during experiments for the Army Signal Corp.

Taken west of a certain midway point, the birds always flew to one spot in the state of Nebraska, instead of back to their home loft. Geophysical investigation showed that this western spot possessed the same intensity of earth magnetism, and also moved at the same rate as the earth turned on its axis.

Prof. Yeagley suggests that pigeons, perhaps birds in general, can sense these two things that we human beings do not feel, and that when taken away from home they fly in the direction that takes them towards the combination of geomagnetism and earth-spin to which they are used. They probably do not feel the earth's magnetism directly, he thinks, but do perceive differences in their own electrical state induced by flying across changing lines of magnetic force.

If Prof. Yeagley's hypothesis is valid, it might help explain a number of reported anomalies in bird behavior, such as the reported confusion of homing pigeons when in the neighborhood of radio towers, their inability to orient themselves when small but strong magnets are fastened to their legs, and the wild breakup of flights of ducks when radar beams were "squirted" at them by wartime experimenters.

Science News Letter, August 30, 1947

ASTRONOMY

Historic Telescope Is Being Sent to China

➤ AN HISTORIC American telescope is being sent to China's Sun Yatsen University Observatory in Canton.

The telescope is the 11-inch Draper refractor telescope of the Harvard College Observatory. Dr. Harlow Shapley, director of the Observatory and president of Science Service, said that dismantling and shipment of the instrument from Cambridge to China will be financed by funds contributed by Chinese residents of the Boston area.

Built originally for the Lisbon, Portugal, Observatory, the telescope was acquired by Dr. Henry Draper in 1880 for his observatory at Hastings-on-Hudson, N. Y. His widow donated the instrument to Harvard in 1886, and it has been in service there since.

First photograph of the great nebula of the constellation Orion, said by some observers to be the most beautiful object in the sky, was made with the Draper telescope. This instrument was also used by astronomers first to discover stars which have orbital motions around other stars and are called spectroscopic binaries.

Sun Yatsen University's observatory was founded in 1929, but most of its equipment was looted by the Japanese in 1938. The University is believed to be the only Chinese institution now offering courses in astronomy.

Science News Letter, August 30, 1947

CHEMISTRY

Pure Hydrogen Gas Made From Methanol and Water

➤ THE ABUNDANT and industrially important gas hydrogen can be cheaply made from methanol (wood alcohol) and water by a process on which patent 2,425,625 has been granted to a du Pont chemist, Dr. Alfred T. Larson of Wilmington, Del.

Methanol, which has the formula CH_3OH, can be cracked by an already known process to yield two molecules of hydrogen and one of carbon monoxide. Dr. Larson simply adds water, in the form of steam, in the presence of a catalyst. The oxygen from the water goes to convert the carbon monoxide to the dioxide, releasing one more molecule of hydrogen. The carbon dioxide is readily removed, leaving pure hydrogen to be "bottled" for use.

Science News Letter, August 30, 1947