

Egg-laying for 1933 was finished in August, Dr. Larrimer stated, and preliminary cursory examinations give every indication that 1934 will again be an exceedingly bad grasshopper year, unless unpredictable climatic factors come to the rescue of the farmers. The Bureau's annual detailed grasshopper-egg survey is now in progress, and will be completed some time in November. It will then be possible to make a better estimate of damage to be expected next summer.

The one bright spot on the whole depressing grasshopper map, Dr. Larrimer said, is Minnesota. Here an active and informed state government has been cooperating with the farmers and local authorities in an intense eradication campaign for the past two or three seasons, with the result that in Minnesota the grasshopper damage last summer was negligible, while the insect hordes played havoc in states farther west and southwest.

Science News Letter, October 14, 1933

AERONAUTICS

Soviet Ascension Breaks World Altitude Record

See Front Cover

ENCLOSED within the metal shell pictured on the front cover of SCIENCE NEWS LETTER, three Soviet scientists rose higher above the surface of the earth than man has ever been before, in an ascension from Moscow on September 30. It is the gondola of the Soviet free balloon USSR. Only twice before has man using similar means reached comparable heights, and the leader of both flights was Prof. Auguste Piccard.

The Soviet balloon, larger than those of previous ascensions and carrying three men, Ernest Birnbaum, George Prokofiev and Konstantin Gudenoff, is reported to have reached an unofficial altitude of 62,340 feet, compared with the official record of 53,153 feet set by Prof. Piccard in August of 1932. On both of Prof. Piccard's ascensions only two men were taken up.

Instruments bringing data on cosmic rays, physical and chemical composition of air at high altitude and its electrical conductivity, pressure, temperature and humidity are said to have landed safely with the balloon. The craft was built by military engineers and has a gas bag 36 meters in diameter with a volume of 25,000 cubic meters.

Science News Letter, October 14, 1933

CHEMISTRY-BIOLOGY

New Heavy Water Kills Tadpoles and Guppy Fish

Large Output, Thimbleful Every Two Days, Enables Princeton Scientists to Use the Water Freely

HEAVY WATER, containing the recently discovered double weight hydrogen, kills tadpoles, guppy fish and worms.

Prof. W. W. Swingle of Princeton, using some of the rare heavy water manufactured by Princeton chemists, found that the extraordinary H two O, with 92 per cent. of its hydrogen atoms consisting of the isotope mass two (deuterium), is lethal to certain fresh water animals.

Green frog tadpoles survived only an hour when placed in the heavy water. Tadpoles of the same sort immersed in distilled water that contained only 30 per cent. heavy water, lived happily and unaffected for 24 hours. Paramecia, one-celled organisms that are favorite biology experimental material, resisted the heavy water successfully for 24 hours.

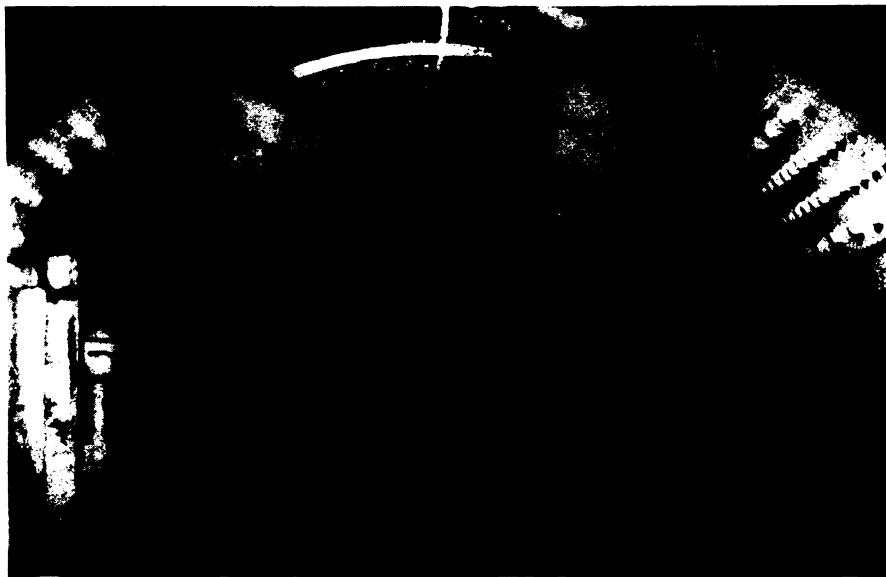
Relatively large quantities of heavy water are now being produced in Princeton's Frick Chemical Laboratory by Prof. Hugh S. Taylor, Prof. Henry Eyring and Arthur A. Frost, chemistry

fellow. A cubic centimeter, approximately a thimbleful, of the heavy water is produced every two days. This unusual supply of heavy water is allowing Princeton scientists to use it in various untried experiments.

Prof. Earle E. Caley has demonstrated that it has a smaller capacity for the dissolving of salts than ordinary water. Tests are now being made to ascertain its effect upon acids.

Physicists studying the structure of the atom will find the heavy water of great use, because most of its hydrogen atoms are twice the ordinary hydrogen mass. Experiments have shown that in attempts to break down the atom by collision with electrically propelled hydrogen projectiles, much smaller voltages are required when heavy water is used.

Prof. Taylor explained that there is one part of heavy water in every 5,000 parts of ordinary Princeton rain-water. Twelve hundred gallons of ordinary water are treated in order to produce three ounces of heavy water. The new substance has become one of the most



TEST CHAMBER

These men are being examined in a special test chamber built at the Military Medical Academy, Leningrad, in preparation for the stratosphere ascension.