PHYSICS

Don't Worry About Rockets from Overseas

➤ IF YOU have been lying awake nights worrying about rockets attacking us from some other continent, relax.

The maximum practical range for rockets of the V-2 type, improved with wings for gliding, is about 500 miles, not enough to offer much of a threat from any other continent.

Dr. J. C. Hunsaker, chairman of the National Advisory Committee for Aeronautics and Massachusetts Institute of Technology professor, in a scientific communication to the National Academy of Sciences, gave this engineer's view of the future possibilities of an improved V-2 type rocket.

Calling the German V-2 weapon "the highest state of the art of rocket design," he explained that its starting weight was nearly 14 tons of which 9 tons was fuel, yet its true pay load was only one ton of explosive. It had an artillery type trajectory of about 200 miles. A ratio of starting weight to empty weight of much more than three is unlikely in an improved rocket, in Dr. Hunsaker's opinion, and the present range of 200 miles is near the maximum for the type.

By the addition of wings, Dr. Hunsaker explained, the range could be stretched several hundred miles. This would change the artillery type of path through the air into a glide under the pull of gravity. But this would not be enough "to provide missiles to be projected on an intercontinental adventure."

Science News Letter, May 25, 1946

PHYSICS

Quarter of a Million Revolutions per Second

➤ SPINNING at speeds approaching a quarter of a million revolutions per second, little steel balls in the physics laboratories of the University of Virginia are the fastest-turning things in the world. Use of these whirling spheres as super-centrifuges to study the behavior of steel and other materials under great strain was described before the meeting of the Virginia Academy of Science in a joint report prepared by J. L. Young III, J. W. Moore and Prof. J. W. Beams.

At a measured speed of 211,000 revolutions a second, the "equator" of one of these one-sixteenth-inch steel spheres reaches a velocity of a little more than 3,300 feet a second, which is approximately three times the speed of sound, and 600 feet a second faster than a bullet as it leaves the muzzle of a Garand rifle. The centrifugal force generated is 1,400,000 times greater than the pull of gravity at the earth's surface. This far exceeds the calculated gravitational pull at the surface of the sun, which is only about 27 times that of the earth.

Nothing touches the sphere as it spins. It is held up by a carefully adjusted magnetic field, like the legendary coffin of Mohammed, and kept going by an electric drive. To eliminate air friction, which might cause it to burn itself out like a stationary shooting star, it is operated only in a vacuum.

Science News Letter, May 25, 1946

ENGINEERING

Latin American Engineers Study Road Building

➤ HIGHWAY OFFICIALS of 16 Latin-American countries started from Washington, D. C., last week to visit modern highways in Midwestern states, roads under construction and plants making road materials. They have come to the United States to gather technical information to apply to their local highway building programs.

These engineers, together with others from China, India and Egypt, have just completed a five-week Inter-American highway course in the National Academy of Sciences building. The course was given by outstanding engineers from federal and state highway departments. As a part of the instruction visits were made to nearby Maryland and Virginia highways.

The western trip, which will be by special bus, will be over the famed Pennsylvania Turnpike to Pittsburgh, and then over other noted roads to Chicago, where the delegates will attend a Road Show and Highway Congress of the American Road Builders' Association.

The inspection trip will be followed by several months of actual employment in a variety of engineering, manufacturing and construction jobs, after which the delegates will return to Washington for a round-up course.

Latin-American countries represented are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, El Salvador, Ecuador, Honduras, Mexico, Panama, Paraguay, Peru, Uruguay and Venezuela.

Science News Letter, May 25, 1946

IN SCIEN

BIOLOGY

Skipper Caterpillar Solves Housing Problem

See Front Cover

➤ THE LARVA of the silver-spotted skipper butterfly handles its own housing problem by using several leaves, as shown in the photograph by George A. Smith on the front cover of this SCIENCE NEWS LETTER, for a comfortable dwelling place. In building a house, the larva fastens several leaves together with strands of silk so that it will have a retreat when resting or molting. It generally remains in its house during the day, and comes out to feed during the night. As the caterpillar molts and grows bigger it leaves its old home, and constructs a new and larger one. This is shown by the fact that many of these peculiar dwellings, among locust leaves where the caterpillar usually lives, are empty when examined. Whether or not the house is occupied, it is always as scrupulously clean as that of a Dutch housewife.

Science News Letter, May 25, 1946

CHEMISTRY

Cellulose Acetate Made By Unusual Process

➤ CELLULOSE ACETATE, widely used in transparent and high-strength plastics, was produced during the war by an unusual process in Germany which required less acetic acid than normally used, it is now revealed.

The process involves treating beechwood pulp with acetic acid in the presence of a large excess of zinc chloride. The mixture used for acetylation consists of 950 pounds of solid zinc chloride, dissolved in 1780 pounds of 100% acetic anhydride and 1000 pounds of glacial acetic acid. No sulfuric acid, commonly used as a catalyst, is required.

British and American scientists learned of the new process while visiting Germany since the war in search for technical developments of value to the two governments. The U. S. Department of Commerce released a report giving details of this unusual method.

Science News Letter, May 25, 1946

CE FIELDS

PSYCHOLOGY

Human Volunteers for Bikini Test Declined

➤ A CURIOUS medley of motives stimulated the 40 persons who have offered themselves for exposure to the atom bomb's blast on the target ships at Bikini atoll. Their offers, though not their names, were disclosed at Vice Adm. W. H. P. Blandy's final press conference before he took off for the Crossroads Operation site.

One individual wanted to be paid $10,000—presumably in advance. Several were obviously crackpots, and some were daredevils seeking publicity or a thrill. A few, including one old man who didn't expect to live much longer and one convict who lost his chance to fight in World War II, declared their anxiety to be of service to their country.

All 40 received courteous answers—declining their offers.

Even the pigs and goats will not be exposed to the full fury of the blast. They will be on vessels outside the center of the target area, or behind the thick steel of turrets and conning towers.

"We can't learn anything from dead animals," Adm. Blandy commented. "We don't want dead animals, we want sick animals." And he added that medical officers will try to bring the radiation-sick specimens back to health.

The last human beings on the target ships, there to place instruments, etc., will be removed three hours before the bomb is dropped.

Science News Letter, May 25, 1946

GENERAL SCIENCE-EDUCATION

Virginia Conducts First Statewide Talent Search

➤ AT A BANQUET, held in candlelight due to emergency power restrictions, the Virginia Academy of Science turned the spotlight on the 15 high school seniors, winners in the first statewide Science Talent Search.

Top honors of $100 each went to Barbara Ann Macy, Thomas Jefferson high school, Richmond, and Lewis Franklin Garber, Highland Springs high school, Sandstone. Miss Macy plans to be a chemist; Mr. Garber a physicist. Both were named for honorable mention in the national Science Talent Search earlier this year.

Fifty-dollar bonds were awarded to the rest of the 15 contestants.

Offers of scholarships from colleges, universities and technical schools in and out of the state to the 15 teen-age scientists now total $30,000.

The Virginia Science Talent Search has been run concurrently in cooperation with the National Science Talent Search, administered by Science Clubs of America, a Science Service activity.

Science News Letter, May 25, 1946

PHOTOGRAPHY-CHEMISTRY

Metallic Silver Recovered Cheaply with Wood Waste

➤ SILVER CAN be recovered cheaply and quickly from used photographic hypo through the use of lignin, waste product from wood. When lignin treated with alkali is poured into the hypo, silver in the photographic solution quickly settles to the bottom along with the lignin. The liquid hypo is poured off, the lignin burned, and metallic silver is left.

This process, far more convenient than any used at present in salvaging silver from used photographic solutions, will be a boon to companies that develop films on a large scale. It was devised by Dr. Eduard Farber and Dr. M. Sciascia of the Timber Engineering Company, where research into lignin and other chemical phases of wood is conducted.

Only a small amount of lignin need be used, an amount equal to the silver to be saved being sufficient—a fraction of the quantity of other solutions needed.

All of the silver will drop to the bottom of the solution within an hour when it is heated.

Lignin left from making wood sugar is good for recovering silver from the hypo. Treated plain sawdust and even mill waste may also be employed. The solution can be dehydrated for shipping.

For quickest results, the used hypo should be heated before the wood solution is added. Silver will begin to settle out a few minutes after the mixture has been made sufficiently alkaline.

By burning the organic wood material in the precipitate, silver is obtained in the form of a metallic residue. This can be purified by washing with dilute mineral, acids which do not attack the silver, or by any other method usually employed for refining metal.

Science News Letter, May 25, 1946

MEDICINE

New Memorial Fund for Medical Research

➤ GRIEF OVER the loss of friends and relatives will provide the means for scientific attacks on the diseases from which they died, if a new memorial plan recently proposed captures the imagination of the American public.

A group of medical men, scientists and laymen have organized a medical memorial fund to receive memorial gifts that would be applied to some of the neglected fields of medical research. A memorial certificate would be sent by the national organization to a relative of the person in whose memory the gift is made.

Heart and artery diseases, the nation's greatest causes of death, had only 17 cents per death in charitable funds given for research upon these diseases, Dr. Harlow Shapley, Harvard astronomer and chairman of the trustees of the new memorial, said in announcing the new fund.

Dr. Henry S. Simms of Columbia's College of Physicians and Surgeons, is president, while Dr. J. Murray Steele is medical director and head of the group that will allot funds for research.

Science News Letter, May 25, 1946

ACOUSTICS

Hearing in Noisy Places Aided by "Ear Wardens"

➤ YOU CAN HEAR better in noisy surroundings if you wear ear plugs. That was proved on fighting ships during the war, and may find important uses in peacetime industry.

Experiments on wartime plugs, called "ear wardens," were reported to the Acoustical Society of America by K. D. Kryter of the Psycho-Acoustic laboratory, Harvard University.

Using the "ear wardens," you can understand announcements over a public address system better if the surrounding noise is any greater than normal conversation or 75 decibels, the scientist declared.

He said that in many situations where high noise levels are present, ear plugs can be used to understand speech more clearly, to prevent hearing losses and to reduce annoyance and fatigue commonly attributed to noise.

During the war, the Navy used "ear wardens" to help make orders more clearly understood in the noise of battle.

Science News Letter, May 25, 1946