

EDUCATION

Soviets Pushing to Be First in Science

► THE SOVIET UNION is equal or superior to the United States in mathematics, some types of physics, and many areas of geology, especially oceanography. But the United States is ahead in biology, chemical sciences, social sciences and agriculture.

This view was presented by Rep. John Brademas (D-Ind.) when he released a House Committee on Education and Labor report entitled "Recent Trends in Soviet Scientific and Technical Education." The report said the following:

In the past four years, the Soviets have doubled graduate enrollment in institutions of higher learning, with a heavy emphasis being placed on science and engineering.

They have doubled their scientific research budget in the past three years.

They are graduating over three times as many engineers as the United States every year, and plan to train three technicians for every engineer.

The quality of Soviet scientific-technical education is roughly equal to ours, although our leading institutions are better than anything in the USSR.

Rep. Brademas said it is most important that the United States continue to support advances in scientific-technical education in this country. He added that he does not believe this support has to come at the expense of other areas of education, such as the humanities. We "must increase support for both," he said.

He admitted that we have a problem in trying to compete with a Government dominated educational system such as that in the USSR. Our goal, he said is to maintain scientific superiority using the methods of a free society, without Government control.

"We should not conclude from this study of Soviet education that America need become alarmed," Rep. Brademas said. "We should conclude rather that America must continue to be first in education."

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PSYCHOLOGY

Babies Born in Winter More Advanced in School

► PARENTS who want their children to have a good chance of doing well at school and college should arrange for them to be born in the fall or early winter. This is one of the conclusions to be drawn from the report of a survey carried out by the National Foundation for Educational Research in London.

The survey, carried out by P. C. Jinks, a teacher in a grade school in southern England, investigated the school performance and birth dates of an entire group of 1,315 children in a single town.

It found that more children born in the last four months of the year made their way into the higher ranks of schools than those born in other months. This group also gained a higher proportion of high school places.

Children born in the January-April period scored next best on these two counts. Summer-born children, with birthdays in the four months from May to August, fared worst as a group.

For example, of 315 children entering more advanced grades, 120 were born in the September-December period, 103 in January-April and 92 in May-August.

Although slightly fewer children were born in the first period, 228 of them had been placed in higher ranks, against 203 born in January-April and 155 of the summer-born children.

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GERONTOLOGY

Elderly Also Need A Full Night's Sleep

► A FULL night's sleep is important for the elderly as well as for growing youngsters, a study shows.

Dr. Philip M. Tiller Jr. of the department of internal medicine at Louisiana State University, New Orleans, reported that elderly persons feel healthier and less tired when they get at least eight hours of sleep a night than when they do not.

Dr. Tiller's study, which covered 83 subjects aged 60 or more, was reported in the *Annals of Internal Medicine*, July 1964.

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TECHNOLOGY

New Pushbutton Gadgets Produce 'Instant Fire'

► TWO NEW GADGETS can produce "instant fire" with a push of a button or a flip of a switch.

One apparatus, known as the Crede Grenadier, is an electric firelighter that operates without paper, wood or matches. This machine, which looks somewhat like a miniature wartime flamethrower, uses superheated air to light a fire. All that is needed is fuel—any fuel—and someone to point the machine at it. Within minutes after a flip of the switch, the fire is lit.

The Grenadier is made by the Simplex Electric Company, Staffordshire, England, and is reported to be a clean and efficient means of lighting coal or coke fires. The machine can be adjusted on its stand for use in any fireplace or boiler.

The other new firemaker is an electrically operated cigarette lighter that produces an instant gas flame at the touch of a button.

The lighter is powered by a 22.5 volt dry battery and has an ignition system comparable to an automobile spark plug. The battery, similar to those used for flashbulbs or for hearing aids, charges a capacitor, which is in turn discharged through the primary winding of a high voltage transformer.

Gas, sent from a nozzle in the lighter, is ignited by a high voltage electric spark, about 5,000 to 10,000 volts, generated between two point electrodes.

The lighter, made by the Rowenta Company in West Germany, needs filling only once a year.

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IN SCIEN

VETERINARY MEDICINE

Distemper Diagnosed By Test on Eyelid Cells

► A SIMPLE ROUTINE TEST for distemper in dogs has been reported in Copenhagen, Denmark, using scrapings from the "third eyelid," found in the inner corner of the dog's eye.

Dr. Henning Erno, 28-year-old veterinary scientist at the State Veterinary Serum Laboratory, who spent two years perfecting the technique, said any practitioner can take a scraping from a suspected distemper suffered at the owner's home. The slide can be rushed to a hospital for prompt diagnosis, or some skillful practitioners with microscopes can make the diagnosis themselves.

Distemper is a highly contagious virus disease, often fatal, and the new technique permits the diagnosis in about 30 minutes without hospitalizing the animal.

Dr. Erno, who now has a two-year international postdoctorate research fellowship at the University of Connecticut, told SCIENCE SERVICE that the test is based on the observation of protein bodies, or "inclusions," in the cytoplasm of cells, and then staining the smear with a commonly used dye called Harris-Hematoxylin.

This dye has been known for 20 years and has been routinely used in Denmark for the past 15 years in postmortem diagnoses.

Dr. H. E. Ottosen, Dr. Erno's laboratory director, said that in no case has there ever been a doubt about a positive finding when this dye is used. The stain causes the "inclusions" to sand out in cherry red, while the plasma turns blue.

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SPACE

'Hitchhiking' Satellite Rides in Waste Space

► A SATELLITE has been unveiled that will "hitch rides" on large launch vehicles that can carry more weight than their missions require.

Satar, or satellite for atmospheric research, will ride along in a special "cradle" attached to the side of the launch vehicle. Once outside the earth's atmosphere, Satar will be ejected from the cradle and will then coast to ballistic apogee, the peak of the curve caused by the force of ejection from the cradle.

At apogee, Satar's own solid-fuel motor will be fired, providing the added velocity needed to place the vehicle in orbit. During the journey from cradle to orbit, attitude of Satar is controlled by 12 hydrogen peroxide motors. General Dynamics/Astronautics built Satar for the U.S. Air Force Office of Aerospace Research.

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CE FIELDS

ZOOLOGY

Squirrels Remain Active 100 Days Without Water

► THE ROCK GROUND SQUIRREL, a little resident of southwestern American deserts, has remained alive and active under observation for periods as long as 100 days without water.

The squirrel, officially called *Citellus variegatus*, may thus be the all-time non-drinking champ among mammals that do not conserve their body water by aestivating, becoming inactive. The camel can last only about a month without water.

The rock squirrel's cousin, the mantled ground squirrel, can survive only 20 active days without drinking. Consequently, the mantled squirrel aestivates during the hot dry season, but the rock squirrel does not.

In the winter, however, both animals hibernate if food and water are scarce. Laboratory experiments have shown that the rock squirrel will not hibernate at low temperatures if food and water are supplied.

If water only is withheld in the winter, rock squirrels will also remain active and stay at normal body temperature, although they will die in about 45 days under these conditions.

The 100-day observation was made for warm temperatures.

E. T. Pongelley of the University of California division of life sciences, Riverside, reported the study in *Nature*, 203:892, 1964.

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DENTISTRY

Regular Transplants of Human Teeth Foreseen

► TEETH may be the next part of the body transplanted regularly from one human to another.

Dr. Milton Siskin, an associate professor at the University of Tennessee's College of Dentistry, has performed four teeth transplants on humans, three of them successfully.

The transplants followed extensive experiments with animals. Dr. Siskin is now evaluating the transplants and preparing a report on them.

Dr. Siskin obtains his teeth for transplants from fellow dentists. The teeth are healthy and intact, but have been pulled because of gum diseases or for replacement by false teeth.

The teeth are cleaned and the matter in the pulp chamber and canal is removed and replaced with an inert substance. Then the teeth are sealed in sterile plastic bags and stored at 20 degrees below zero Fahrenheit.

The removal of the pulp does not greatly affect a fully developed tooth, although there is some color change and the tooth becomes slightly more brittle.

Dr. Siskin has 300 teeth in storage and believes a form of tooth bank is possible, but teeth vary greatly in their size, shape and color.

"I do not believe you will ever be able to have a tooth bank large enough to eliminate this problem," he said. "This suggests the possibility of using a tooth root as an anchor for an artificial crown. We would then be able to shape the crown with the anatomy of a patient's teeth and the shape of his dental arch."

Dr. Siskin is interested in research under way in the Soviet Union where a dentist reports a high degree of success in removing badly decayed teeth, repairing them with a plastic crown and replanting them in his patients' mouths.

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PSYCHOLOGY

Pep Pills Believed To Impair Judgment

► PEP PILLS, once found to improve a person's performance on various mental and physical tasks, are now believed to greatly impair his judgment.

In an experiment headed by Dr. Gene M. Smith, Harvard Medical School, 78 male students took five calculus tests to study the effect of amphetamines, better known as pep pills, on their judgment.

Each student was given amphetamine sulfate before two test sessions, a placebo before two sessions and secobarbital sodium, a sedative, before one session.

To determine the subject's judgment-error score, the number of problems he solved correctly was subtracted from the number he thought he had solved correctly.

After taking the placebo and the secobarbital the student's tendency to overestimate was high, Dr. Smith reported. However, after taking the amphetamines the student overestimated his test results even more.

The increase in judgment errors was "statistically significant" with amphetamine but "only suggestive" with secobarbital, Dr. Smith explained.

Dr. Smith reported his findings at a meeting of the American Society for Pharmacology and Experimental Therapeutics in Lawrence, Kans.

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ENGINEERING

More Plastic Parts Coming in '65 Cars

► THE 1965 AUTOMOBILES will contain some 15% more plastic per car, 7% more zinc and about 4% more aluminum than the 1964 models.

Plastics will show up in such surprising places as fender extensions and radiator parts, *Chemical and Engineering News*, July 27, 1964 reported. In addition, aluminum side trim, radiators, fan blades and wheel hubs will appear on some new models. Zinc instrument panels and rear end trim will also be used.

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BIOTECHNOLOGY

Frozen Red Blood Cells Cause Fewer Ailments

► RED BLOOD CELLS, preserved by freezing, cause less fever, high blood pressure and allergic reactions when given to persons in transfusions than fresh red blood cells, it was reported to the first annual meeting of the Society for Cryobiology held in Washington, D.C.

Dr. Hugh M. Pyle, Protein Foundation Incorporated and the Chelsea Naval Hospital, Boston, said about 85% of red blood cells that are frozen can be recovered after they thaw. In almost every type of medical and surgical stress they have been used beneficially, he said.

Dr. Pyle said there are three ways to preserve red blood cells in the freezing process: taking the water from the cells before freezing, replacing the cell water with glycerol or other similar additives, and freezing the cells so fast that the water inside does not change into ice crystals.

The discovery that red blood cells treated with glycerol could stand freezing and thawing was made 10 years ago.

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OCEANOGRAPHY

Seamount Towers Above Pacific Ocean Floor

► AN UNDERSEA MOUNTAIN has been discovered by the U.S. Coast and Geodetic Survey's floating laboratory ship *Pioneer*, 175 miles south of Wake Island, between Hawaii and Guam.

The peak rises 14,130 feet or more above the ocean floor, and is 3,800 feet below the surface. (California's Mount Whitney is 14,495 feet high.) It was discovered at the end of a six-month scientific expedition to the Indian Ocean, by the *Pioneer's* depth-sounding equipment.

Survey oceanographer Dr. Robert S. Deitz said the seamount is probably an extinct volcano, once an island, which sank about 50 million years ago.

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AERONAUTICS

Simulator Imitates Noise, Motion, Weather

► AN AIRCRAFT weapons systems trainer that simulates weapons, radar, weather, and cockpit noise and motion has been installed at the Naval Air Station in Oceana, Va.

Simulating the cabin of the Navy's A-6A Intruder attack bomber, the simulator fills two 40-foot long trailers, one with electronic computers and one with the cabin mock-up and instructor's consoles.

Moving ground targets and radar jamming can both be simulated by the system, one of the most complicated ever built. Various weather conditions, such as sunlight, broken clouds and lightning are created by controlling the light coming through the translucent windows of the "cockpit."

The simulator was designed by Goodyear Aerospace Corporation, Akron, Ohio.

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