

## GENERAL SCIENCE

## U.S.S.R. Institutions Centralized at Moscow

**C**ENTRALIZATION is the order of the day in the activities of the Academy of Sciences of the U.S.S.R. The Academy's principal activities, formerly divided between the one-time capital at Leningrad and the present capital at Moscow, have been concentrated at Moscow; and in addition, in several instances bureaus once separate have been consolidated.

Outstanding is the establishment of an Institute for Physical Studies, under the directorship of Dr. P. L. Kapitza, for whom the research apparatus he used at Cambridge University has been purchased and transferred to Moscow.

Other research bodies established by the reorganization of the Academy include Institutes of General and Inorganic Chemistry, of Animal and Human Physiology, and of Evolutionary Morphology and Paleozoology, a Laboratory of Mechanics, and several museums.

*Science News Letter, December 21, 1935*

## PHYSICS

## Sound Flutter Mars Main Room of U. S. Supreme Court

**T**HE ACOUSTICS of the new Supreme Court Building in Washington are so bad in the main courtroom that Justice Stone at one end of the bench cannot hear Justice Butler at the other end clearly, it was revealed reluctantly at the meeting of the Acoustical Society of America.

There's nothing wrong with Justice Butler's voice, for he can't hear Justice Stone either. Moreover, persons sitting near the middle of each side of the huge room cannot hear what lawyers are saying if they stand in certain spots of the room.

The amazing acoustical flaw in the courtroom of the highest court in the nation was described by V. L. Chrisler, expert of the National Bureau of Standards in Washington, who told the cause and possible cure of the architectural fault.

Specially treated walls and ceiling were built into the courtroom when it was constructed, but for beauty in keeping with the rest of the magnificent edifice four great eight-foot-tall marble slabs adorn the corners of the room.

Tests by Mr. Chrisler showed that sounds are reflected back and forth on the two diagonals of the room and that the ends of the justices' bench where

sit Justice Stone and Justice Butler are right near these diagonal "lanes of sound." Experiments demonstrated that sounds starting in the diagonal lanes can rarely be heard clearly due to so-called "flutter."

Flutter is a type of reverberation sound phenomenon where sounds persist for some seconds so that any given word in a speech extends and overlaps following words with the result that they blend into a confusing Tower of Babel mixture.

One way to cure the fault is to place about the room sound-absorbing materials which cut down the time a given sound persists. Architects are now considering such absorbing material in front of the four marble slabs.

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## MEDICINE

## Link Between High Blood Pressure and Brain Fluid

**A** LINK between high blood pressure and the fluid which bathes a portion of the brain has been found by Dr. Irvine H. Page of the Hospital of the Rockefeller Institute for Medical Research. (*Science*, Dec. 7)

This fluid contains a substance which brings about a high blood pressure by stimulating a portion of the brain known as the diencephalon, it appears. While the discovery has significance, Dr. Page does not, however, claim that he has found the cause of high blood pressure.

Some patients suffering from the kind of high blood pressure known to physicians as "essential and malignant hypertension" show signs and symptoms like those which occur when centers in the diencephalon are irritated, Dr. Page previously noted. An extract of the fluid which bathes this portion of the brain was injected into cats' veins. The blood pressure rose sharply to a high peak.

Fluid from the brain cavities of five cases of malignant hypertension, one case of high blood pressure associated with cancer of the adrenal glands, and three cases of kidney disease with high blood pressure was examined, and all contained the blood pressure-raising substance. Fluid obtained at operation from a patient with a brain tumor and from a patient suffering from epilepsy with hydrocephalus had no blood pressure-raising effect. Fluid from a patient with normal blood pressure who died as the result of a gunshot wound contained but moderate amounts of blood pressure-raising substance.

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# IN SCIENCE

## BIOLOGY

## Bacteria and Wild Yeasts Multiply Below Freezing

**B**ACTERIA and wild yeast species can live and even increase in numbers at temperatures well below freezing, experiments performed by Miss Helen F. Smart of the U. S. Department of Agriculture indicate. (*Science*, Nov. 29)

Miss Smart found 26 distinct species of bacteria and yeasts on fruit preserved by freezing for three years. They were insignificant in numbers, and all of harmless species; but it was considered interesting that they could survive at all under the circumstances. She accordingly planted samples of each kind in tubes of nutrient material. She kept the tubes in a refrigerator, at 16 degrees Fahrenheit, and examined them every month for a year, to detect possible signs of growth.

Eight of the species did increase visibly, though very slowly—not much more growth in a year than they could make in 18 hours at room temperature. Thirteen species showed no growth, but when the tubes were warmed up to ordinary temperatures they immediately went into action, showing that they had survived the long chill with their ability to grow still unimpaired. Only five species were apparently lifeless.

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## ARCHAEOLOGY

## Cave Dwelling of Ice Age Hunters Found in Germany

**A** CAVE where Ice Age cave bears lived, where Ice Age cave men pursued and killed them, and took over the den as their own dwelling while they gnawed their bones, has been discovered and explored in Schleswig, by Dr. Lothar F. Zotz, curator of prehistory of Breslau.

Many of the bones and teeth of the monstrous bears found in the cave have been worked over into implements and utensils, and there are abundant charcoal remains of the old hunters' fires. This cave, Dr. Zotz says, is the first of its kind to be found in northeastern Germany.

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# E FIELDS

## PHYSICS

### Huge Submarine Batteries Used in Atomic Research

**S**ALVAGED from now-obsolete Navy submarines at the New London, Conn., navy yard, huge batteries which formerly drove Uncle Sam's subs beneath the waves are being used at Columbia University in scientific experiments testing theories concerning the "spin" of electrons in the atom.

The batteries each stand five feet high, weigh 1,600 pounds and have a rating of 3,000 ampere-hours at two volts. The ordinary drycell battery which may run the doorbell in the home also has a two-volt rating. Batteries in motor cars are usually of six volts potential and have a capacity rating of only 100-110 ampere-hours.

In experiments under the direction of Prof. I. I. Rabi of Columbia's physics department, the giant batteries are connected in parallel and yield currents of hundreds of amperes. The intense magnetic field generated when these large currents are passed through helical coils is used to deflect charged ions. The study leads to new knowledge of the clockwise or counter clockwise spin of the electrons in the atoms which is intimately bound up with theory concerning magnetism. Rare isotopes can also be detected with the device.

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## CHEMISTRY

### Gas Explosions Prevented By Suffocating Vapors

**S**MOTHERING dangerous vapors to the point of suffocation is the latest method of preventing dangerous gas explosion which has been developed by scientists of the U. S. Bureau of Mines.

Inert, non-combustible carbon dioxide and nitrogen gas are the smothering agents used to prevent disaster in gas lines, gasoline tank cars and storage holders while they are being repaired.

In air-tight rooms in the Bureau of Mines laboratory various gas burners were lighted and allowed to run until their flame was extinguished from lack of oxygen. By analyzing the oxygen

content of the room at this time the critical percentage of oxygen was determined below which combustion could not occur. From 10 to 12 per cent. of the normal oxygen content was found sufficiently low for safety.

The suffocating and diluting carbon dioxide and nitrogen gases were then pumped into the air-tight room, containing an explosive mixture, until the oxygen content was lowered to the critical non-combustion supporting stage. Again the flame would not burn.

The discovery should find use as a precautionary measure in closed places, with a great improvement in safety.

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## METEOROLOGY

### California, Land of Sun, is Proud of Christmas Snows

See Front Cover

**S**NOW and California would seem at first glimpse to be mutually irreconcilable ideas. Yet Californians are proud of the snows that fall in their state, and with right: saw you ever a lovelier Christmas landscape than this, in Yosemite National Park? These winter snows of the Yosemite, indeed, are not only beautiful in themselves; they are indispensable for the maintenance of the Park's summer beauty as well. The waterfalls that seem to drop from the sky itself, the firmament of flowers on the valley floor, the dark and awesome giant trees, are all the offspring of the white, brief glory of the snow.

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## AVIATION—ZOOLOGY

### Pocket Gophers Become Menace to Airplanes

**G**REAT transport planes, carrying tons of passenger and freight loads, have reason to be afraid of pocket gophers, small animals less than the size of rats or squirrels.

The gophers love the open grass stretches of landing fields, and burrow shallow runways close to the surface, making landings rough and bumpy, and sometimes tripping up a plane into a "nose-over."

The U. S. Biological Survey, which has had long experience in ridding ranches and farms of small rodent pests, has lately been cooperating with the Bureau of Air Commerce in ridding landing-fields of the troublesome pocket gophers.

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## MEDICINE

### Babies Doomed to be Blind Are Now Saved by Radium

**O**NE of the most hopeless conditions, cancer in the eye of a newborn infant, with the choice lying between a lifetime of blindness or death, is yielding to the curative power of radium, Dr. Le Grand H. Hardy, director of the eye service of the Fifth Avenue Hospital, New York, told a conference of the National Society for the Prevention of Blindness.

To save the infant's life, it was formerly necessary for the surgeon to remove the affected eye. Only too often, the cancerous growth recurred in the other eye. The application of radon seeds to the cancer in such desperate cases "has been attended with some measure of success and holds forth a promise of more hope for the future," Dr. Hardy said. Some otherwise hopelessly lost eyes have been salvaged by this form of treatment and eye specialists hope to perfect and extend the method of treatment so that still more vision can be saved.

Modern surgeons are audaciously making the "human dead serve the living," Dr. Hardy said in describing other important recent advances that are giving sight to the blind.

"Russians have conscripted the blood of their traumatic dead for transfusions and in this country and England surgeons have successfully transplanted parts of the cornea from a dead eye to a living human host," Dr. Hardy said.

The attempt to transplant "clear, transparent tissues to take the place of the horrible white scars which so completely shut off from many blind eyes a clear view of the world without" was made over a hundred years ago, perhaps earlier, Dr. Hardy said. It is an effort to solve one of the major problems in sight restoration.

The outstanding progress in sight restoration in the past few years has been made in the treatment of detached retina.

"Until recently the chances of recovery from this condition were less than one per cent. It was a situation met mainly with despair. Today a much more hopeful attitude is taken. As a result of a tremendous amount of work leading to more accurate diagnosis and the introduction and perfection of radically different surgical technic the percentage of cures has rapidly risen and for certain types of detachment the patient is now offered close to a 50 per cent. chance of recovery."

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