

MEDICINE

Epilepsy Treated in USSR As in United States

► EPILEPSY in the USSR is treated as in the U.S., with drugs, psychiatry, and in some cases, surgery.

Six members of the Soviet Psycho-Pharmacology delegation exchanged information with epilepsy specialists from Washington universities and the Epilepsy Foundation in Washington and found themselves in general agreement.

Russian patients with seizures are transferred from dangerous work such as driving vehicles, running lathes or machines, electrical jobs and occupation that takes them to high places. They are compensated financially for any downgrade in job, however, Dr. A. V. Snezhnevski, director, Psychiatry Institute, USSR Academy of Medical Sciences, said.

There are shops for the disabled, and a program of public education is carried on so the epileptic will be understood. Sixteen regional dispensaries in Moscow are open to epileptics, but there are more patients in rural areas than in cities, the psychiatrist said.

Patients read magazines and learn about new drugs before the doctors do, Dr. Snezhnevski said, but caution is used to be sure that the drugs will not interfere with blood cell formation in the bone marrow. Benzoinol, a phenobarbital derivative, has been a successful sedative in Russia.

In the United States Dilantin is usually the drug of choice, although careful trials of others are constantly being made. Diamox gives good results in children with petit mal attacks in which there are short periods of confusion or unconsciousness without convulsions.

Doctors have found that Diamox loses its effect after two weeks during which it acts as a powerful inhibitor. They take the patient off the drug and then start dosage again to keep up the proper effect.

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IMMUNOLOGY

Typhoid Vaccine Not Always Effective

► TYPHOID VACCINE does not always work in the face of massive exposure.

In an outbreak of typhoid fever at an American Youth Activities Camp in West Germany, all except one of 62 children and adults had been previously immunized against typhoid.

The one exception, a two-and-one-half year-old adopted German child, did not suffer from a more severe illness than the others. No conclusions can be drawn from this one case, however.

German doctors are critical of the value of typhoid vaccine, and U.S. military physicians, although they usually find vaccination effective, admit that it does not always give protection in the face of carriers and heavy food contamination.

The outbreak in the American camp was traced to a German woman civilian cook

and some bad potato salad. The woman had been hospitalized in Berlin in 1945 for typhoid fever and had been registered as a carrier with the German Public Health Authorities (Gesundheitsamt) in 1951.

In the meantime she had worked as a cook in a U.S. Army high-school cafeteria attended by 1,000 American dependents, where her services were given to all children and teachers. Her past typhoid record was unknown to the U.S. Army authorities, and the Gesundheitsamt had lost contact with her.

Because typhoid carriers should not be permitted to handle food, the woman was relieved of her job and reported to the Gesundheitsamt. (Sometimes penicillin therapy will end the carrier state. If not, gall bladder removal terminates it in 90 per cent of the cases, physicians say.)

Patients taken to U.S. Army hospitals in the Rhein-Pfalz area were not immediately diagnosed as typhoid cases because of their previous immunization. Typhoid organisms showed up in cultures later, however, and treatment with the antibiotic chloramphenicol prevented any deaths.

The outbreak was reported in the New England Journal of Medicine, 267:742, 1962, by Col. Walton M. Edwards of Ireland Army Hospital, Fort Knox, Ky.; Col. Richard I. Crone, Madigan Army Hospital, Fort Lewis, Wash., and Col. John F. Harris, now in Viet-Nam.

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MEDICINE

Purely Medical Approach To Addiction Proposed

► A COMPLETELY medical approach to the narcotics problem with legal low-cost drugs supplied under supervision was proposed in Washington, D. C.

This would be an answer to the illicit traffic in narcotics and forestall crimes now being committed under the influence of drugs, Dr. Edwin Schur of the department of sociology, Tufts University, Boston, told the White House Conference on Narcotic and Drug Abuse.

An experiment under the U.S. Public Health Service would involve selection of a small number of conscientious addicts who would agree to almost constant observation and guidance by a trained case worker during the test period.

Assuming that the results were favorable, Dr. Schur said the Public Health Service should administer an addiction treatment agency to supervise a nationally financed program for medical care of the addicts.

"As compared with the current costs of the addiction problem, the expense involved in such a program would not be prohibitive," Dr. Schur pointed out.

Dr. Schur's theory, based on the system in Great Britain, is opposed by the American Medical Association, which announced that although it approves experimental outpatient clinics for the rehabilitation of narcotic addicts, it opposes giving drugs in such clinics, which it believes would maintain a condition of addiction.

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IN SCIENCE

PHYSICS

Light Waves Measure Sound Waves

► A METHOD has been found which may make possible accurate visual measurement of ultrasonic waves.

Dr. Kenneth L. Zankel, of the University of Oregon, Eugene, is conducting experiments in which a light is beamed through an ultrasonic wave moving in a transparent medium. By measuring the light fluctuations caused by the sound wave, all pertinent information about the sound wave can be determined, at least in theory," Dr. Zankel said.

Dr. Zankel's research is being done in the range of one million to ten million cycles per second. He produces these vibrations by applying alternating current to a quartz crystal which sends vibrations through whatever medium is being used for the research. The new technique will provide information about the wave form and show the exact type of distortion caused by various media.

If light can be made to fluctuate in a way which is meaningful and the ultrasonic waves are applied to the light from a laser, there is a possibility of developing a new long-range communications method, Dr. Zankel stated.

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SPACE

Tiny Instrument to See If Life on Mars

► A TINY instrument with sticky string and a radioactive broth is expected to ride the first space shot to Mars in 1964. The device will attempt to solve the controversial question of whether life exists on Mars.

The instrument, named Gulliver, will be mounted in an instrument capsule which will be hurled from a Mariner probe rocketing by Mars. A parachute will land the capsule softly, and Gulliver will begin sampling the microscopic life (if it exists) on Mars.

The device, slightly larger than a man's hand and weighing less than two pounds, will fire two "bullets" 23 feet into the Martian atmosphere. The bullets are tethered to Gulliver by a sticky string.

The string is reeled in, passing through a radioactive broth that determines whether any microscopic bits of life were attached. Data are recorded every 15 minutes and relayed back to earth by radio.

"The radioisotope technique is used to detect the evolution of gas as a common product of metabolism," it was reported in Science 138:114, 1962.

The preliminary experiments were described by Drs. Gilbert V. Levin, Allen H. Heim, John R. Clendenning and Mary-Frances Thompson of Resources Research, Inc.

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E FIELDS

MEDICINE

Industrial Noise Not Cause of Illness

► THE WIDESPREAD belief that sustained industrial noise can cause high blood pressure, diabetes or any other systemic disease, or can bring about emotional illness, is termed "strictly nonsense" by Aram Glorig, Los Angeles, director of research for the subcommittee on noise of the American Academy of Ophthalmology and Otolaryngology.

Dr. Glorig finds there "is no authoritative evidence that noise produces any problem with respect to health except hearing loss."

He pointed out, however, that he was referring only to industrial noise, and said the effects of the extreme high energy noise of jet planes have not been studied.

Dr. Glorig said hearing loss depended upon the intensity and frequency of the noise. He noted that there is a normal hearing loss with aging of about 15 decibels, which is equivalent to the amount of hearing that can be lost without serious impairment of the ability to hear speech.

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RADIOLOGY

Need More Studies on Secondary Sex Organs

► THE AMOUNT of sperm, fats and testosterone, the male sex hormone, present in the male secondary sex organs appears to be related to the amount of radioactive material which these organs will absorb.

Dr. Paul L. Risley of the University of Oregon reported his findings at the International Symposium on the Effects of Ionizing Radiation on the Reproductive System held at Colorado State University, Fort Collins.

Scientists have concentrated their research on the effects of radiation on the testes, Dr. Risley observed, but have done little work on the effects to the relatively radiation-resistant secondary sex organs, such as the seminal vesicles and the prostate gland.

Dr. Risley observed in his studies on the accessory sex organs, using mainly isotope tracers of radioactive phosphorus, that young rats treated with testosterone show a less marked uptake of the tracer in these organs than do normal adult and castrated males. These results could be influenced by the fact that the hormone was administered in a sesame oil base, he pointed out.

He found that there were different radioactive phosphorus uptake levels at different places in the sex organ system. Higher uptake was associated with places of high metabolic activity and lower uptake was found in areas of lower metabolic activity.

In another study, he observed that the absence of sperm in immature and castrated animals was associated with a larger uptake

than was seen in normal adult animals with large quantities of sperm. As yet, no explanation has been found for this.

In addition to his specific findings, Dr. Risley believes that the research shows "that radioactivity measurements of injected radioactive phosphorus can be used as a fairly sensitive method to measure altered general metabolic changes in the male accessory sex organs in response to hormonal factors, vitamin and nutritive deficiencies, pharmaceutical agents, ionizing radiations, or other physiological effects."

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SPACE

Space Radiation More Than Previous Estimate

► THE RANGER III lunar probe has shown that the intensity of gamma rays in interplanetary space is probably as much as ten times higher than anticipated.

These findings were reported by Dr. James R. Arnold, the University of California at San Diego; Drs. Ernest C. Anderson and Marvin A. Van Dilla, the Los Alamos Scientific Laboratories, and Dr. Albert E. Metzger of the California Institute of Technology's Jet Propulsion Laboratory. The Jet Propulsion Laboratory is directing the Ranger project for NASA.

Although the gamma ray flux measured by Ranger III was found to be roughly equal to that from primary cosmic rays, its significance is not great enough to require any changes in the design of radiation shielding for manned spacecraft.

Additional data from the Mariner II probe now hurtling toward Venus has indicated that the charged particles radiate as a continuous "solar wind" from the surface of the sun into interplanetary space. The wind has peaks of activity and quiet periods, varying with events on the sun, though the relationship itself is not known.

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PHYSIOLOGY

Weightlessness Does Not Affect Body Functions

► NINE HOURS of weightlessness produced absolutely no variation in Astronaut Walter Schirra's physiological responses.

The astronaut said there was no undue retention of liquid body waste such as experienced by previous astronauts during space flight. Elimination proceeded normally rather than consciously, Astronaut Schirra emphasized.

Astronaut John H. Glenn had reported that he had felt no need to void during weightlessness and had done so prior to re-entry only because he thought it was advisable.

Space medical experts have been concerned that body functioning might show variations such as too long retention of wastes during weightlessness. For long periods of flight, more than a few days, this could be hazardous and result in internal infection.

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CHEMISTRY

Fertilizer By-Product From Ocean Water

► A NEW SOURCE of fertilizer will be minerals extracted when sea water is converted to a fresh, drinkable water supply.

This is the prediction of Dr. Murrell Salutsky, supervisor of agricultural chemical research at W. R. Grace and Company, Clarksville, Md.

It costs almost one dollar per thousand gallons to produce fresh water from the sea. This could be decreased by the value of mineral compounds which now handicap the conversion process. Half again as much water will be needed in 1975 as in 1960.

The compound, magnesium ammonium phosphate, precipitated from sea water, is valuable as a long-lasting fertilizer because it contains nitrogen and magnesium (essential for plant chlorophyll) and has a low solubility that permits efficient consumption by plants. The same fertilizer is also produced commercially from raw materials.

Other markets for sea residues may come from chemical industries which need potassium, chlorine, caustic soda and metals. The only chemicals that are now obtained directly from the sea are salt, magnesia and bromine.

Dr. Salutsky is discussing these new advances with local sections of the American Chemical Society.

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METEOROLOGY

Electricity in Ice Crystals Causes Lightning

► LIGHTNING can be blamed on the electricity in tiny ice crystals, water drops and hailstones, Dr. B. J. Mason, University of London physicist, said in Endeavour, 21:156, 1962.

In wind tunnel experiments, ice crystals were blown against a single hailstone at speeds from approximately two to 60 miles an hour, which are the same as air currents in clouds. Ice crystals of lower temperatures took on positive charges, leaving the hailstone negatively charged. The amount of charge was dependent on the temperature difference between the crystals and hailstone.

Supercooled water droplets were also blown through the tunnel. They accumulated, frozen, on the hailstone surface.

During the freezing process, the droplets ejected positively charged particles. Electrification of clouds is believed to follow the same pattern. Positive charges migrate to the colder particles in the cloud, negative charges to the slightly warmer ones.

Clouds are believed to have three sections, a lower one of water drops, a middle mixture of ice and supercooled water droplets, and an upper layer of ice. The negative charge is concentrated in the lower levels and most of the positive charge is found in the cooler upper levels.

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