

## Russian Science Today

Special Report  
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still does not provide enough medicine, medical instruments or equipment to the public health services.

Although Russia claims to have 16 doctors for every 1,000 persons, the highest rate in the world, they say, there is a shortage of medical personnel. And the training of the personnel is not what the Russian doctors want it to be.

In particular, they want the requirements for the master's degree and doctor's degree in medical science to be made much tougher.

# Atomic Rocket to Mars

► AN ATOMIC-POWERED ENGINE for an interplanetary missile is being built by the Russians. They claim that other countries, presumably the United States, are engaged in similar projects.

While Russian politicians plot paths through earthly space, Russian scientists are currently plotting paths through outer space.

They have elaborate dreaming-board schemes for sending an unmanned missile that uses no fuel to the moon and an atomic-powered rocket to Mars. Both, they say, can be done within the next five to ten years and are only logical steps after the launching of an earth satellite.

The Russians want either or both projects to be an international effort. No nation, they say, could afford to go it alone. The estimated cost for launching an unmanned missile to Mars, they figure, would run into the tens of billions of dollars.

However, the Russians are convinced that in five to ten years scientists throughout the world will have all the necessary technical know-how and equipment to tackle what they call our "rendezvous with Mars."

Here are the Russian plans for a trip to the moon and a trip to Mars:

The trip to the moon and back, as calculated by scientists at the Institute of Theoretical Astronomy, will take about ten days. The Institute's scientists have calculated flight trajectories that allow the rocket, after take-off from earth, to fly around the moon and return without using any fuel.

The initial speed of such a spaceship, they say, must be 6.8 miles per second. Near the moon this will drop to zero.

This makes it possible, they state, for scientists to gather information from the instruments within the rocket about the side of the moon that is away from the earth. The Soviet scientists figure these observations can last for 60 hours.

It has also been calculated that the rocket will come within 17,932 miles of the moon and the total duration of the flight will be 236.14 hours, or about 10 days. The rocket is expected to be brought safely back to earth with the aid of parachutes and gliders.

They want the medical student to have more practical education.

Medical institutes, or schools, in the Soviet Union today do not have their own clinics in which medical students can treat patients as part of their training.

In many instances, the medical institutes do not have charge of the existing clinical hospitals in which to train their upcoming doctors.

Recently an American visitor was touring a hospital in Moscow with the medical director of the hospital. The American remarked that the equipment in the hospital did not look as good as that in the United States. In a rather cold voice, the Russian stated, "We are known for our doctors, not our equipment!"

The flight to Mars is described by Dr. Kirill Stanyukovich of the Bauman Institute of Technology in Moscow. Dr. Stanyukovich pictures an atomic-powered unmanned rocket weighing 100 tons for the Mars flight. It would carry 70 to 80 tons of an inert propulsion agent and 20 to 30 tons payload.

The Russian physicist thinks that such a rocket trip across the nearly 620,000,000 miles of space to Mars and back will answer once and for all the question of life on Mars. (Both Russian and U. S. scientists agree there is some form of life on the ruddy planet.)

Once the rocket reaches Mars, it can transmit data back to earth. The instruments necessary for this process are already available to scientists, Dr. Stanyukovich says. They will be able to analyze the soil chemically and the atmosphere photographically.

Dr. Stanyukovich takes issue with some of the world's astronauts. He says there is no need to wait until Mars is closest to the earth to send an unmanned missile there. It could be anytime within the next five to ten years, he points out.

He says that the earth spins around the sun at about 19 miles per second and Mars at approximately 15 miles per second. In the course of the long route to Mars that it will cover according to the laws of celestial mechanics, the rocket's speed will fall off automatically, the Russian states. It will then be traveling at the same speed as Mars.

Manned flights are another matter even to the Russians who are currently dreaming about unmanned flights. Dr. Stanyukovich thinks that manned rocket flights across the heavens are a distant speck on the space horizon.

Nevertheless, the attempt at conquering outer space, long a dream of Russian astronomers and physicists, still appears to be a lively topic for Russian scientific thought and talk.

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Australia, natural home of the *eucalyptus* tree, has supplied seeds to 26 countries where this fast-growing species is helping meet domestic timber requirements.

## ● RADIO

Saturday, Dec. 8, 1956, 1:45-2:00 p.m., EST  
"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Harold A. Zahl, director of research, Signal Corps Engineering Laboratory, Fort Monmouth, N. J., will discuss "Army Electronics."

"Adventures in Science," for the second consecutive year, has received the Thomas Alva Edison Foundation award for "The Best Science Radio Program for Youth."

### CARDIOLOGY

## Baby's Heart and Blood Adjust Slowly After Birth

► THE HEART and blood vessels of a newly-born baby adjust over a period of three or four days following birth instead of in minutes or seconds as has been thought.

Dr. Forrest Adams, pediatrician at the University of California at Los Angeles Medical School, and Dr. John Lind of the Wenner-Gren Cardiovascular Research Laboratory, Stockholm, Sweden, studied the cardiovascular processes of 11 newborn infants, ranging from seven hours to 14 days.

The ductus arteriosus, a tiny blood vessel within the heart of the unborn child that helps to bypass the unfunctional fetal lungs, apparently serves an important function in the newborn child.

This vessel, which normally shrivels up as the child develops, helps to recirculate the blood through the undeveloped lungs of the newborn to insure enough oxygen for brain tissue.

Although it was known that this duct often remained patent for several weeks after birth, it was not previously known that for a few days after birth the blood circulated through it in the same manner as it does prior to birth.

The doctors said further study of this phenomenon was needed to determine if cerebral palsy and certain types of mental deficiency may be related to a sudden accidental reversing of the blood flow through the duct immediately after birth. This could deny the brain sufficient oxygen to cause permanent damage to brain tissue.

Dr. Adams reported results of the study to the American Heart Association.

Science News Letter, December 1, 1956

### MEDICINE

## Time Interval Affects Perception of Space

► TIME AND SPACE are to some extent interchangeable in human perception. Evidence of this is reported by Dr. F. Nowell Jones, University of California psychologist.

The time separating two touches with an electrode on your skin, Dr. Jones found, affects perception of their distance apart.

Increasing the time interval between touches reduces the spatial separation necessary for the two touches to be perceived as occurring at different places.

Science News Letter, December 1, 1956