

GENERAL SCIENCE

Russian Science Today

Soviet planning technical domination of world, writer concludes after first-hand examination of Russian scientific efforts in such fields as atomic power, education and translation.

By HOWARD SIMONS

from Moscow

► RUSSIA is determined to be the world's leading scientific and technological power.

There can be no doubt in the Western mind that Soviet scientists and politicians are currently engaged in a well-oiled and well-designed program to wrest the world leadership from the United States.

To achieve this goal, Red scientists are today employing the same tactics in the field of science that the Red army found so successful on the field of battle—mass attack.

The emphasis on mass attack can be found in every area vital to transforming a huge agricultural nation into the number one scientific and industrial nation.

It is evident in the current Soviet scientific education program, in which the Reds are mass producing scientists in much the same manner as we mass produce toasters.

It is evident in their atomic energy efforts, where they have already built the world's largest atom smasher and are working on plans for an accelerator five times its size.

It is evident in the dissemination of scientific information to Russian scientists, in which the Soviet Union today is the world's largest dealer in translated texts.

It is evident in those fields of inventive genius displayed to Western observers, such as the TU-104 jet passenger airplane, currently the world's best.

All this points to the fact that Russia is on the move scientifically and at a rapid rate.

The character of Russian science and the role of the scientist in Russia today is very different from what it was five years ago. Much has changed since the death of Stalin. But not all.

There are still areas considered sensitive and scientists who are "on vacation," "too busy" or "ill" when a Western correspondent asks to interview them.

However, today the Russian scientist has greater freedom than at any time since the 1930's. He is often free to talk with newspapermen and certainly with his Western world colleagues.

More and more Russian scientists are going abroad to international scientific meetings and this reporter found that still more will be traveling in the future. Western scientists are welcome when they visit the Soviet Union.

The Russians are eager to exchange information with the West and, in many cases, but not all, stand to gain more than they

give. They still reveal to the free world only what they want to reveal.

The top Red scientists are equally as good as ours. Their younger scientists are well-trained and ingrained with the spirit of their elders to transform the Red giant into a scientific mammoth.

As a reward, the scientists today are better

paid than most workers and certainly better paid than the other professionals, such as lawyers and medical doctors. They enjoy certain rights and privileges accorded those high up in the Government. Even the emphasis on Communist Party doctrine as it applies to the various fields of science has been watered down to a great degree in the last few years.

Russian science is being pushed across the spectrum of scientific endeavor all along the front from atomic energy to zoology.

It may very well mean the balance of power in the Cold War.

Training Many Scientists

► TWICE as many students in science fields are being graduated in Russia as in the United States.

However, like the United States, Russia has a current scientific manpower shortage, although it is never quite phrased in these terms.

The President of the Academy of Sciences of the U.S.S.R., when asked by SCIENCE

SERVICE whether Russia has a shortage of trained scientists, answered, "in the Soviet Union the development of the production forces is going on at such a rapid rate that we never feel we have an over-production of scientists."

This answer is significant because it contains the essence of three prime factors now vitally important to modern Russia.



SCIENCE FACTORY—Soviet scientists are produced practically on a production line basis at the University of Moscow, a "city within a city."

Russian Science Today

Special Report Starts on Page 339

1. The Russians are convinced that scientific manpower is the keystone to their well-designed program to wrest the world's scientific leadership from the United States.

2. Scientific manpower in the Soviet Union is being "produced," in terms equal to American production of automobiles.

3. The scientist has gained equal stature with the politician in Russia. This has been brought about by the drive to transform an agricultural nation into a scientific and industrial power.

It is already evident to Western observers that the Russians are pulling ahead in sheer numbers of science students trained.

The Reds begin training their young for careers in science at seven years of age, when they first enter elementary school. In the primary grades, 30% of a youngster's study is in science. In the secondary schools, it is 40% of the curriculum.

The battle for the scientific minds of Russia's young people is beginning to pay off handsomely. Last year, for example, the Russians graduated 63,000 engineers, compared to 30,000 graduated only three years before in 1952. (In this same period the number of engineers graduated from American colleges and universities fell from 30,000 to 23,000.)

The Russians have the world's largest

factory for the mass production of scientific manpower. This is the new Moscow skyscraper, the University of Moscow. A show-place for foreign tourists and Russians visiting this capital city, the 32-story structure is devoted solely to the teaching of science.

Opened in 1953, the "city within a city" is actually a complex of 27 basic buildings and 10 service buildings.

It has 1,693 laboratories, 21 auditoriums, 141 recitation rooms, 6,000 rooms for living quarters and a library of 1,200,000 volumes. More than 9,000 undergraduates attend science classes in this huge science training center. They are taught by a faculty numbering 2,300.

At present, the United States still has more living scientists than does Russia. As of 1955, there were 1,536,000 graduates in all scientific fields with at least a bachelor's degree in the U. S. There were 1,158,000 Russian science graduates with an equivalent degree.

One factor should be mentioned, however. When a Russian chemistry student graduates from the University of Moscow, for instance, he or she must accept a job where told and hold it for at least three years.

More often than not, a Russian scientist or engineer can be found working as a scientist or engineer for life.

The same is not as true in the United States, where often a scientist or engineer enters the business side of his profession or works at something other than his trained profession.

Using Sun's Energy

► BY NEXT YEAR the Russians plan to be producing 1,000 to 1,200 kilowatts of electrical power by harnessing the energy of the sun.

Pressed by great needs for cheap power, especially in those areas where power resources are limited and costly, the Russians are more than interested in the use of solar energy.

Most of the theoretical work of the Russian solar energy program is being carried on at the Helio-technical Laboratory of the Krzhizhanovsky Power Institute in Moscow, headed by Dr. V. A. Baum. The practical experimenting is being carried out in the sunny regions of the Central Asian Republics of the Soviet Union.

Dr. Baum says studies in Russia show that solar energy will eventually insure the elevation of water for irrigation, the distillation of salt water, the heating and cooling of houses and public buildings, the drying of vegetables and fruits, production of steam for technological purposes and refrigeration.

The Russian work in solar energy has been proceeding along two main lines of investigation and experimentation. The first is for installations without special apparatus for concentrating the rays of the sun. These solar energy devices operate at temperatures of between 60 and 70 degrees Centigrade

(140 to 158 degrees Fahrenheit) and can be used to heat water for laundries and baths and for drying foodstuffs.

The second is for installations that will employ mirrors or lenses for concentrating the rays of the sun and are capable of producing temperatures higher than 100 degrees Centigrade (212 degrees Fahrenheit). These devices yield boiling water and steam.

The Russians have a variety of experimental and operable solar energy devices.

The simplest and least expensive is the hot-box, a solar water-heater capable of heating water to a temperature of from 50 to 60 degrees Centigrade (122 degrees to 140 degrees Fahrenheit).

The lower part of the hot-box is covered by one sheet of glass and the top by two sheets. The collector is a sheet of aluminum painted black and equipped with two one-half inch pipes through which the water to be heated flows. Gravitation circulation insures automatic action and, after the hot-box has been functioning for an hour or two, hot water can be taken from the top of the tank.

The same type of solar heater can be used as a small hothouse for growing vegetables.

The Russians have also designed a solar

cooker which is a non-accurate parabolic mirror that increases the sun's rays 100 times. Its efficiency for boiling water is put at 55%.

They also have a solar boiler with a parabolocylindrical aluminum mirror 12 square meters, or about 40 square feet, which rotates on tilted axis. The sun's rays are collected by the mirror into a long narrow beam that falls on the boiler.

In addition, the Russian solar energy engineers have tested solar energy devices that distill salt water, refrigerate and air condition, and heat dwellings.

Perhaps their most ambitious program for putting the sun to work is the construc-

SCIENCE NEWS LETTER

VOL. 70 December 1, 1956 NO. 22

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N.W., Washington 6, D. C., NCRN 7-2255. Edited by WATSON DAVIS.

Subscription rates: 1 yr., \$5.50; 2 yrs., \$10.00; 3 yrs., \$14.50; single copy, 15 cents, more than six months old, 25 cents. No charge for foreign postage.

Change of address: Three weeks notice is required. When ordering a change please state exactly how magazine is now addressed. Your new address should include postal zone number if you have one.

Copyright © 1956 by Science Service, Inc., Republication of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicated services issued by Science Service. Science Service also publishes CHEMISTRY (monthly) and THINGS of Science (monthly).

Printed in U. S. A. Entered as second class matter at the post office at Washington, D. C., under the act of March 3, 1879. Acceptance for mailing at the special rate of postage provided for by Sec. 34.40, P. L. and R., 1948 Edition, paragraph (d) (act of February 28, 1925; 39 U. S. Code 283) authorized February 28, 1950. Established in mimeograph form March 13, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Reader's Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

Member Audit Bureau of Circulation, Advertising Representatives: Howland and Howland, Inc., 1 E. 54th St., New York 22, Eldorado 5-5666, and 435 N. Michigan Ave., Chicago 11, Superior 7-6048.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

Board of Trustees—Nominated by the American Association for the Advancement of Science: Paul B. Sears, Yale University; Karl Lark-Horovitz, Purdue University; William W. Rubey, U. S. Geological Survey. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; George W. Corner, Rockefeller Institute for Medical Research; Edward U. Condon, Washington University. Nominated by the National Research Council: Leonard Carmichael, Smithsonian Institution; Jerome Hunsaker, Massachusetts Institute of Technology; I. I. Rabi, Columbia University. Nominated by the Journalistic Profession: Michael A. Gorman, Flint Journal; Neil H. Swanson, Garrison, Md.; O. W. Riegel, Washington and Lee University. Nominated by the Scripps Estate: John T. O'Rourke, Washington Daily News; Charles E. Scripps, Cincinnati, Ohio; Edward J. Meeman, Memphis Press-Scimitar.

Officers—President: Leonard Carmichael; Vice President and Chairman of Executive Committee: Charles E. Scripps; Treasurer: O. W. Riegel; Secretary: Watson Davis.

Staff—Director: Watson Davis. Writers: Marjorie Van de Water, Ann Ewing, Howard Simons, Dorothy Schriver, Helen M. Davis, John W. Robinson. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Production: Priscilla Howe, Marcia Nelson. Interlingua Division in New York: Alexander Gode, 80 E. 11th St., GRamercy 3-5410.

Russian Science Today

Special Report Starts on Page 339

tion of a helioboiler, scheduled for completion in 1957, that will produce 1,000 to 1,200 kilowatts of electrical power.

The rotating station will be set up on a tower 40 meters (132 feet) high in the center of a square. The heating surface is a flat tubular screen measuring 8 by 15 meters (26 by 50 feet).

Twenty-three concentric railway lines surround the tower on which trains move with the same speed as the rotating boiler. On each platform car there is a flat reflector three by five meters (about 10 by 16 feet) consisting of 28 flat mirrors. Each reflector in turn revolves around an axis.

The radiation energy reflected from all the mirrors is then concentrated in the focal plane of the heating surface of the boiler.

The practical results of this complicated scheme, Dr. Baum says, will be a power plant that in the winter will heat a settlement with a population of 17,000 to 20,000 persons.

Science Is Translated

► THE WORLD'S LARGEST dealer in translated scientific texts today is Russia.

By hand, and experimentally by machine, the Russians are grinding out more information on everybody else's scientific work than any other country.

This means that the Russian scientist, more than any other scientist, has access to what his counterparts are doing throughout the world.

To provide this scientific service for its scientists, Russia maintains a permanent army of 1,800 translators, abstractors and publishers. This staff is reinforced by more than 13,000 professional engineers and scientists throughout the Soviet Union who act as part-time translators and abstractors in specialized fields of science.

The headquarters for this mass attack on the world's scientific literature is housed in a drab and bare building in what was once a peasant village and is now a slum area of Moscow. It is known as the All-Union Institute of Scientific and Technological Information.

Run by the Academy of Sciences of the U.S.S.R., the Institute was established only three years ago. It is headed by Dr. D. Yu Panov, a mathematician and a recent visitor to the United States.

The main job of the Institute's staff is to abstract scientific papers and translate them into Russian. These abstracts are published in 13 abstract journals. To gain some idea of just how big a job the Russians are doing in this field, last year the Institute's journals contained 400,000 abstracts.

These abstracts were culled from more than 10,000 journals originating in 80 different countries.

First Atomic Ship

The first Russian ship to be powered by atomic energy is on shorings at a Leningrad shipbuilding yard. It will be an atomic ice-breaker.

In addition to making hydrogen and atomic bombs, the Russians also have an ambitious program for using the atom peacefully. Their plans, and no one knows for sure where Russian plans end and building begins, call for atomic energy to power turbines, ships, locomotives and airplanes.

The weight of the Reds' atomic effort seems to be in the field of transportation. The atomic ice-breaker will be the first concrete product of this push.

The ice-breaker's nuclear reactor will be a boiling water reactor and have a thermal power of 200,000 kilowatts. This is the equal of a new atomic power plant for electricity that the Russians are now building in the Urals.

The ship's engines will be 40,000 horsepower. The ship is 440 feet long and 87 feet wide and displaces 16,000 tons.

Capable of sailing for two to three years without refueling, the ice-breaker will be used as a "mother" ship for convoys plowing through northern polar waters. It can travel at a speed of 22 knots and the Russians figure that at maximum speed it will use only two grams of nuclear fuel a day.

At the Institute for Research on Transport Problems, where most of the work on atom-powered vehicles is being carried out, scientists say that atomic engines can also be used for tankers and cargo ships. They are currently experimenting with coupling atomic fuel and gas turbines to power their sea craft.

The Russians are also interested in atomic airplanes and locomotives and have done a good deal of the necessary paperwork on plans for both.

If and when the Red scientists build an atom-powered airplane, and it is thought they are now working on a prototype, it will probably look like this.

The first plane will be a cargo carrier that can be flown by remote control. This will skirt the problem of danger to humans from radioactivity. The plane will weigh between 80 and 150 tons and fly at 780 miles an hour. Its engines will be turbo-compressor airjets run on nuclear fuel.

When tests have gone far enough to allow maximum protection for passengers, the plane will be designed to have the nuclear reactor in the tail and the passengers seated in the nose.

Although production of an atom-driven plane is a better bet than of an atom-driven locomotive, the Russians have also worked on this means of transportation. They say that any such locomotive will weigh 330 tons, 200 tons of which will be material designed to protect crewmen and passengers from deadly atomic rays.

Any atomic train for Russia, however, would mean the need to operate on a wider gauge track than the Russians have at present for electric, steam and diesel locomotives. One possible solution, they report, is to power an A-train from nuclear stations set up along the route.

For peaceful use of the atom the Russians are currently building three power plants in the Ural Mountains. The first will be a 200,000 kilowatt (kw) station, the second a 400,000 kw station and the third a 600,000 kw station.

The Russians have had a power reactor with an output of 5,000 kw in operation since June, 1954.

The Russians have concentrated on building reactors for power stations, rather than experimenting with several different types of nuclear reactors to find the best one, as the United States has done. This is explained because the U. S. is considered a "have" nation with economical sources of power for its needs. Russia, on the other hand, has wide gaps in her power resources and, at the same time, suffers from ex-

In addition to abstracts of work in progress, new book reviews, patents and dissertations are also carried in the journals.

The Russians also have what they call "express" journals, designed to get vital information to industry in two to three weeks after the foreign publication has been received at the Institute.

But abstracting and translating the papers of foreign scientists for the Abstract Journals is not the only work of the Institute staff.

They also provide Russian scientists with the complete translation of any scientific paper in any language on request. The Institute also publishes technical foreign dictionaries, such as English-Russian and Chinese-Russian.

One of the big efforts of the Institute is the work on a translating machine that, Dr. Panov said, has already been used to translate one complete scientific text from English into Russian.

The Russian automatic translator is similar to those being tested in the United States. The Russian machine uses an electronic computer as its main working part.

Satisfied with the results to date, Dr. Panov said that his staff is now engaged in experimenting with machines for translating Japanese, Chinese and German into Russian.

It is the ultimate hope of the Russian scientists to perfect a machine that will be able to translate from one language into another using Russian as the medium.

The chief object of the Institute is to keep Soviet scientific workers abreast of the main branches of learning in all countries of the world.

Russian Science Today

**Special Report
Starts on Page 339**

pensive power in several important areas, particularly in the Urals and Siberia.

By 1960, the Russians hope to be generating from 2,000 to 2,500 megawatts (mw) of electricity from atomic power plants.

Largest Atom Smasher

► **ATOMIC PHYSICISTS** in Russia already have the world's largest atom smasher and are now beginning work on one five times bigger.

If there was much doubt about the competence of the Soviet theoretical physicist, most of it has been dispelled in the past few years. American scientists have come away from Russia and from scientific meetings in the United States and elsewhere with a good deal of respect for the experimental work in atomic physics now going on behind the Iron Curtain.

This was made quite evident at the Geneva Atoms-for-Peace Conference last year, and even more sharply by the paper given at Harwell in England by Dr. I. V. Kurchatov when he startled Western scientists by revealing details of Soviet experiments on thermonuclear reactions still under secrecy wraps in the United States and Britain.

Recently Russia's spanking new "atomic village" was put on display for members of the press representing the West. The "village" is considered to be one of the world's major nuclear research centers.

It is here that the world's largest proton synchrotron is housed. This high-energy machine is capable of accelerating particles to energies of 10 Bev (10,000,000,000 electron volts). It is scheduled to go into operation by the middle of 1957.

The "atomic village" is also the headquarters for the Joint Institute of Nuclear Research set up for 11 members of the Communist Bloc, including Russia. It will be here that scientists from Communist China, Albania, Hungary, Bulgaria, East Germany, North Korea, Outer Mongolia, Poland, Romania and Czechoslovakia will receive whatever atomic information the Russians wish to hand out.

Not satisfied with having a 10 Bev machine, the Russians are already planning to build a 50 Bev machine.

One of the scientists engaged in the development of the projected 50 Bev atom smasher told **SCIENCE SERVICE** that work has already started on a 7 Bev model of the larger machine.

He cautioned, however, that the cost involved in building the giant accelerator is enormous and at present prohibitive. This seems surprising, for Russian scientists appear to most Western observers to possess a blank check for their undertakings.

Bureaucracy Is Plague

► **MEDICINE** in Russia is suffering from a common Red ailment found throughout the Soviet Union today—bureaucracy.

Doctors, it seems, are not getting help from research scientists in developing new drugs to conquer diseases. Heads of factories and mines are being criticized by the medical people for failing to safeguard the

worker's health.

Public health services fail to use the large sums of money allocated to them properly. Hospital construction is much too slow.

Nevertheless, the Soviet medical men report that the current death rate in Russia is lower than in the United States, Britain or France. No figures are published, however.

In leveling their critical fire on the research scientist, Russian doctors point out that at present they have no active immunization program against polio, smallpox, whooping cough, scarlet fever or diphtheria.

There is little clarity, they say, on such questions as the cause of cancer. Little has been done in Russia on the study of a chemotherapeutic cure for cancer or in developing synthetic anti-cancer drugs.

Dysentery is still a major problem in the Soviet Union.

Little or no work is being done on developing antibiotics or endocrine and vitamin compounds. No mention is made of tranquilizing drugs.

Russian scientists, on the other hand, are credited by the doctors with having scored successes in combating malaria, tuberculosis and typhoid fever.

The lack of adequate drugs and research on new drugs, however, are not the only flies in the Russian medical ointment. The Russians frankly admit that in a number of fields of medicine they lag behind their counterparts abroad.

They have serious shortcomings in coordinating and planning medical research work. The numbers of research projects being carried on in the medical colleges have fallen off.

The medical industry, the doctors claim,

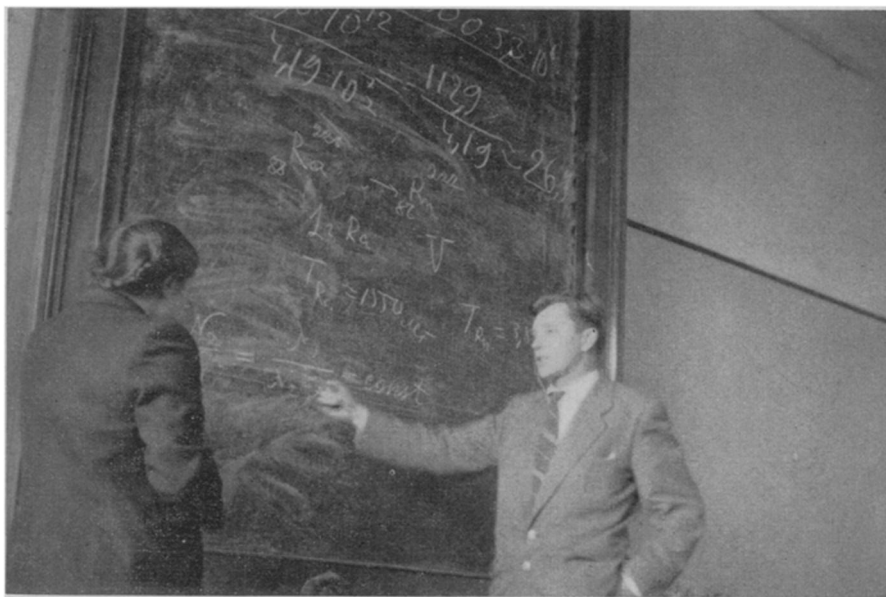
He also said that the Russian high energy physicists had not discovered any antiparticles to date, as have their American counterparts, particularly scientists working with the bevatron at the University of California at Berkeley.

Atomic physics, both practical and theoretical, is playing a more and more important role in Russian science. Every physics undergraduate, for example, regardless of his or her specialty, is required to take a course in nuclear physics.

The Russians are also very propaganda conscious about the atom for their own people. They have established a rather comprehensive atomic display at the permanent All-Union Agricultural and Industrial Exhibition on the outskirts of Moscow.

Here, any Russian or tourist from abroad can get a short, but impressive look at Russia's peaceful atomic energy work.

On display are all the gadgets associated with uranium prospecting, models of uranium refining, samples of ore, protective clothing and devices used in atomic energy plants, and models of the atomic ice-breaker the Reds are building and of a 200,000 kilowatt atomic power plant.



PHYSICISTS LEARNING—A Russian teacher is shown here explaining a physics formula.

Russian Science Today

**Special Report
Starts on Page 339**

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.

Science News Letter, December 1, 1956

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