

## ASTRONAUTICS

# Flight to Moon in 3 Years

With a man-made satellite circling the earth space travel to the moon seems much nearer. The year 1960, says a Russian scientist, may see man flying to the moon.

► A FLIGHT to the moon is possible within the next three years. A flight to Mars—within the next 13 years.

This is the opinion of Prof. Kirill Stanyukovich of the Baumann Institute of Technology in Moscow and one of Russia's leading rocket experts. It was Dr. Stanyukovich who was picked to broadcast the details of the Soviet earth satellite to the Russian people on Saturday, Oct. 5.

But whether the Russians will attempt an interplanetary flight seems unlikely. They might, however, together with the United States. Thus, the current rivalry and technological race between the U. S. and the U. S. S. R. could end in man's next step at conquering outer space.

The reason Russia might balk at going it alone to the moon and Mars, Dr. Stanyukovich says, is financial.

"The interplanetary rocket will require a mass of complex automatic equipment. The cost of its construction will run to tens of billions of dollars, more than any one country can afford. It will have to be an international undertaking," he states.

The "rendezvous with Mars," as Dr. Stanyukovich calls it, as well as a flight to the moon, has long been a dream of Russian rocket experts.

Although there are still problems to be worked out, Dr. Stanyukovich is optimistic that a rocket can be sent to the moon. He says that "calculations suggest that interplanetary craft will be in the form of atomic rockets."

While he admits that no atomic reactor capable of operating at the high temperatures needed has been devised as yet, Dr. Stanyukovich believes "reactor techniques are developing very fast, and it can safely be predicted that the necessary type will be produced within the coming few years, in a number of countries."

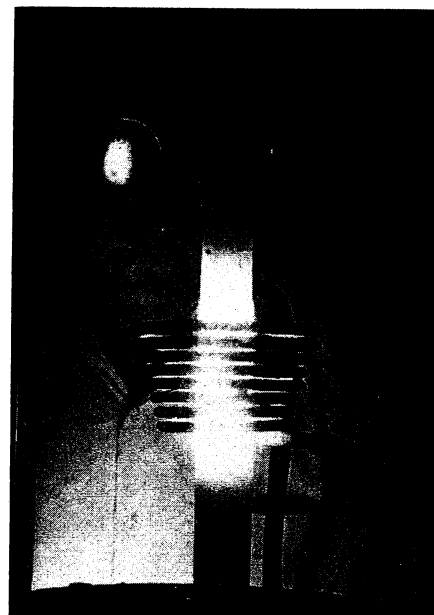
Manned flights, he says, are still a long way into the future.

Even unmanned spaceship flights will have to wait until such questions as magnetic fields in cosmic space and the impact of meteorites have been answered.

This is where the earth satellite now whirling around the earth will figure importantly in outer space travel plans for the Russians.

"These are all difficulties that must be overcome, step by step," Prof. Stanyukovich says, "by dispatching first an earth satellite, then a rocket to the moon, and then a rocket to Mars."

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**ULTRAPURE NIOBIUM**—Rising slowly inside a copper coil carrying high-frequency alternating current, a bar of niobium is made ultrapure. The process, called "cage zone melting," produces a molten zone of metal which moves along the length of the niobium bar while trapped in a cage formed by the four corners of the bar which do not melt. Engineering specialist J. W. Salatka observes the near-4,400-degree Fahrenheit temperature of the molten metal.

## METALLURGY

## Study Wonder Metal In Pure Form

► A LITTLE-KNOWN metal, niobium, believed to be a major key in the development of future engines and nuclear reactors, has been produced in its purest form by Westinghouse scientists, Pittsburgh, Pa.

Perfection of a technique to provide enough pure niobium for detailed study of its properties is expected to bring the metal a step closer to its use in power plants of tomorrow.

New alloys based on niobium are foreseen as holding up well at temperatures above 1,800 degrees Fahrenheit, more than 100 degrees beyond the maximum operating temperatures of the best existing engine and reactor structural materials.

The scientists purified the metal by repeated meltings in a nearly perfect vacuum. The high temperature and low pressure distills impurities out of the metal.

The work on the "wonder metal" is being done in cooperation with the U. S. Air Force's Wright Air Development Center.

Recently, says R. T. Begley, metallurgist at Westinghouse, large reserves of niobium ores have been discovered which could take the metal, formerly called columbium, out of the "rare metal" classification.

Science News Letter, October 19, 1957

## PHYSIOLOGY

# Need Strong Space Men

Man will have to overcome his physical frailty in flight and conquer the medical problems of "inner" space before he can undertake journeys into the outer space.

► U. S. NAVY pilots are engaged in a peacetime combat that is claiming more lives than those lost by non-flying naval officers during World War II, scientists at the International Conference of Ultrasonics in Medicine meeting in Los Angeles learned.

"This combat is not man against man, or plane against plane, but man battling the forces of nature often under very unfavorable environmental conditions," Captain Ashton Graybiel, director of research at the Navy's School of Aviation Medicine, Pensacola, Fla., said.

Dr. Graybiel explained that a pilot in a high-performance aircraft "who is knocking against the barriers which still confine him to earth" is subjected to three problems: spontaneous development of disease or disorder, unfavorable environmental influences, and mechanical or equipment failures.

Illustrating the sudden development of a disorder, even after a pilot has received an

O.K. from the flight surgeon, Dr. Graybiel pointed to acute attacks of coronary heart disease in young persons.

"There have been a number of instances of acute coronary insufficiency developing in pilots during flight. There may have been more but we are unsure, many accidents go unexplained," he reported.

Add to this the extraordinary stresses, unforeseen complications, bad weather and mechanical failures and the pilot ends up a given flight much the worse for both mental and physical wear.

Travel into outer space, Dr. Graybiel said, exposes this same pilot to new and possibly more devastating hazards; prime among these is cosmic rays. Space travel for man therefore, although exciting to the imagination and a possible means for bringing the nations of the world together, will have to hurdle the "frailty of man in flight" before becoming a reality.

Science News Letter, October 19, 1957