

Questions

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ASTRONOMY

Mars Surface From —50 to +70 Degrees

► **COMPLETION** OF the calculations on 2,000 measurements of the surface temperature of the planet Mars shows that the mean range there is between minus 50 and plus 70 degrees Fahrenheit.

This was learned by U. S. Weather Bureau scientists who heard Frank A. Gifford, Jr., tell of his work in translating measurements of the energy radiated by Mars into measurements of the surface temperature. The energy measurements were begun in 1924 by Dr. W. W. Coblentz, now retired from the National Bureau of Standards, and the late C. O. Lampland of Lowell Observatory, Arizona.

Mr. Gifford, now with the Weather Bureau, did his measurement translating at Lowell for the Planetary Atmosphere Project under a contract from the Air Force. He found, for the first time, evidence of a lag in the annual mean temperature of Mars' surface behind the sun's movement.

This was in good relationship with a daily lag which also showed up in his calculation, confirming previous evidence of such a lag. The hottest time of the day on Mars is about one hour and a half after noon, the calculations show.

Presence of such lags, Mr. Gifford said, gives further confirmation of the presence of an atmosphere on Mars.

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MEDICINE

Check for Blood Clots

► "HOW ARE your legs today?" This could be a lifesaving question if asked routinely every day of adult hospital patients, Dr. Meyer Naide of the Women's Medical College, Philadelphia, declared at the meeting of the American Academy of General Practice in St. Louis.

The question would help pick up blood clots while they are still in the legs instead of after the patient "suddenly drops dead of pulmonary embolism," he stated.

"Runaway blood clots," medically termed emboli, kill 30,000 persons annually. Dr. Naide called this a "grave problem when the figure is compared with the 40,000 people who die in automobile accidents in this country annually."

Factors responsible for blood clots in the veins of the legs cannot be entirely prevented, he said. In practically all patients operated on or having babies, the blood clots more after, than before, the operation or delivery. The anxiety associated with an operation or having a baby may be enough to make the blood clot more rapidly.

Inactivity of the patient is an important

factor, but getting the patient out of bed early, even the same day as the operation or delivery, has not solved the problem. One reason is that patients are never as active as normal people, even when they do get out of bed early.

Moving may cause pain in the operation wound. The patients cannot "ambulate," or be out of bed walking around, at night. Sedatives and drugs to ease pain make them lie still for longer periods than normal. This slows the blood flow and gives more chance for clots to form.

Dr. Naide told the doctors to watch for these early signs of blood clots in the veins:

1. Firmness on gentle palpation of the calf of the leg.
2. Tenderness of the calf.
3. Tenderness along the inner thigh.
4. Discomfort in the calf on drawing up the foot.
5. Swelling of the calf.
6. Slight elevation of the temperature.
7. A sudden or sharp pain in the chest and cough.

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TECHNOLOGY

Synthetic Oil for Jets

► A **SYNTHETIC** oil has been developed to keep gears turning smoothly in tomorrow's higher-climbing, faster-flying supersonic jet aircraft.

Air Force officials said that the new oil is the first synthetic to meet military specifications for "lubricants of the future."

Using an ester base obtained from an unnamed alcohol-acid combination, the synthetic breaks some of the bonds now shackling jet aircraft designers. It works over a wider temperature range without becoming too sluggish to lubricate the small whizzing gears inside jet engines. It does not boil as soon as petroleum oils. It does not break down as easily into chemicals that will jam the engine works.

This lets designers create fighter airplanes that can fly higher and faster, and that can zoom through the skies in quick, tactical maneuvers. It also lets the engineers design the plane to work as well in the Arctic's minus 65 degrees as in the tropic's sultry 100.

Developed jointly by Standard Oil scientists in Linden, N. J., and in England, the oil was acclaimed by Air Force officials as the first successful "lubricant of the future." They pointed out, however, that other companies are working on similar synthetics and that some of them are about ready.

Synthetic oils are needed in modern jet aircraft because petroleum oils break down in the "furnace" in which they must work. Temperatures inside the engine near the jet's fuel burners may climb to more than

600 degrees Fahrenheit. Under these temperatures and in thin atmospheres, petroleum oils boil away violently. They also break down into chemical products that can ruin the engine.

The new synthetic works satisfactorily from minus 65 to a secret temperature in excess of 450 degrees Fahrenheit.

Although the synthetic costs about \$9 a gallon to make, compared to the 40 cents a gallon price for regular oil, future planes will need only a few gallons each. It is believed that mass manufacture of the lubricant will lower the price.

The synthetic now is being used in tests in the United States and in Europe.

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INVENTION

Sikorsky Patents New Helicopter Rotor

► **IGOR I. SIKORSKY**, father of the modern helicopter, has received a patent from the government for a helicopter rotor.

The long-time airplane and helicopter designer assigned his patent, number 2,627,929, to the United Aircraft Corp., East Hartford, Conn.

The new rotor, Mr. Sikorsky says in the patent, is designed to provide "a helicopter which is safer and easier to fly, and which will reduce pilot fatigue and the presently required pilot training time."

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