

PRAYDA VERSION OF MOON FLIGHT
Now the race for a manned landing.

SPACE

Evaluating Zond

Zond 5's successful loop around the moon and its safe recovery in the Indian Ocean provided fair warning last week that Russia is well and truly back in the race for the moon. Many scientists believe that the flight was merely a prelude to the circling of the moon by a Soviet cosmonaut, a mission that could be carried out within the next few months. But U.S. space officials are still hopeful that American astronauts can make a lunar landing before the Russians set foot on the moon.

Retiring NASA Chief James Webb was mightily impressed by Zond's flight, calling it "the most important demonstration of total space capacity up to now by any nation." British Astronomer Sir Bernard Lovell, who predicts Russian probes almost as well as he tracks them, was certain that cosmonauts would soon follow in Zond's path. "Why else would they have transmitted the human voice that we recorded?" he asked. But the chief of the National Aeronautics and Space Council, Edward C. Welch, expressed confidence that the U.S. was still ahead in the lunar race.

Before making a lunar landing, space experts say, the Soviets will probably want to test two techniques that they have not yet attempted: 1) manned rendezvous and docking in space, and 2) an unmanned soft landing on the moon. Unmanned Russian spacecraft have twice rendezvoused and docked automatically in earth orbit, but the technique would be far more difficult near the moon, 240,000 miles away from terrestrial control stations. And the Russians have yet to demonstrate a soft-landing system as reliable as the one that lowered five U.S. Surveyor spacecraft gently to the lunar surface.

The U.S. meanwhile is proceeding

with plans to launch the first manned Apollo into earth orbit next week on a ten-day mission to check out spacecraft and ground control systems. If all goes well, the following Apollo flight, scheduled for late December, may take three astronauts for as many as ten orbits around the moon before returning them to earth.

NUCLEAR PHYSICS

Tales of the Bomb

The Double Helix, James Watson's personalized account of the discovery of the structure of DNA, the master molecule of life, had one important side effect. It shocked many scientists into the realization that they are public figures—and fair game for biographers, critics and even gossip columnists. Last week the point was driven home again by the publication of another gossip book, *Lawrence and Oppenheimer*, in which Author Nuel Pharr Davis calls the roll of America's nuclear greats. He judges them not only as scientists, but also as human beings. Some do not fare too well.

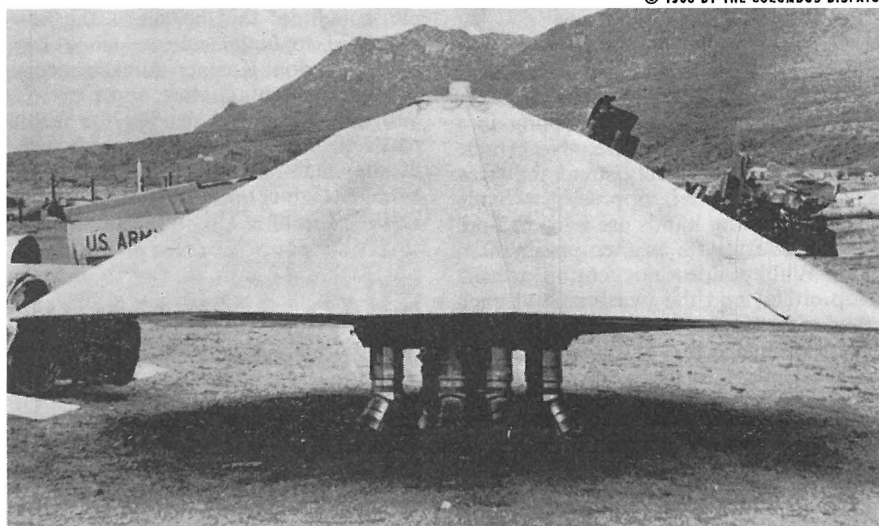
Davis, a University of Illinois English professor, tries to weave the story of the A-bomb around the friendship and eventual falling out of America's two most influential wartime scientists—Ernest Lawrence, who won a Nobel Prize for his invention of the cyclotron, and Julius Robert Oppenheimer, who headed the team of scientists that developed the bomb. The literary device does not quite work. Oppenheimer, after death as in life, dominates the scene; he provides the point, but Lawrence does not emerge as a man big enough to supply the counterpoint. Still,

Author Davis' seven years of research and some 100 interviews were not spent in vain. His book not only adds rich anecdotal material to the already familiar Oppenheimer lore, but brings alive lesser-known atomic scientists and places them in perspective.

Burned-out Beam. While paying tribute to Lawrence's inventive genius and leadership, Davis details his failings, which were considerable. Although Stanley Livingston, graduate student at Berkeley, devised two of the beam-focusing techniques that enabled Lawrence to build the first of the big atom smashers, Lawrence failed to mention Livingston in his patent application and generally avoided crediting him for his work. When Livingston complained, Lawrence coldly suggested that if he felt dissatisfied he was free to drop out of the cyclotron project.

With characteristic optimism and consummate salesmanship, Lawrence raised funds and began building a 100 million-volt cyclotron in 1940, despite warnings by theoretical physicists that complex relativistic considerations would make it unworkable. World War II halted the project and saved Lawrence from great embarrassment. But the postwar years brought another. Putting his prestige and influence in Washington to work, Lawrence overcame the objections of other scientists and won approval for the construction of a monstrous proton accelerator for converting nonfissionable uranium 238 into fissionable plutonium, which could be used in nuclear weapons. This time, after three years and huge expenditures, Lawrence completed the accelerator. But to his chagrin, it produced an effective beam of protons for only two hours, then

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Standing forlornly among other discarded space hardware at the White Sands Missile Range in New Mexico, this familiar-looking object may well explain some of the flying-saucer sightings reported over the Southwest during the past few years. Spotted and photographed by Columbus Dispatch Reporter

Paul Massa, the UFO is actually a test vehicle for NASA's Mars-landing Voyager program. Five times during the summers of 1966 and 1967 it was lifted to a height of 130,000 ft. by a balloon, then rocketed to 140,000 ft. (where the thin air simulates the Martian atmosphere) before being parachuted back to earth.