

SPACE

Track World Weather

► NEWS ABOUT the world's weather could be gathered by a weather satellite system and broadcast to all parts of the earth by communication satellites.

Such weather information on an international scale would be of great value to all the peoples of the world in warning of severe storms and other weather changes, Dr. Harry Wexler, the U. S. Weather Bureau's director of meteorological research, said.

A beginning of this type of weather service has been made—weather satellite information from TIROS II has been sent by word message to the International Antarctic Analysis Center at Melbourne, Australia. There meteorologists from several nations are studying the weather patterns of large portions of the Southern Hemisphere.

A system of satellites of two types would be ideal for charting the world's weather. One system would circle the earth over the poles, the other would circle around the equator, Dr. Wexler told the First National Conference on Peaceful Uses of Space in Tulsa, Okla.

He said both types of satellites could send their observations into a central weather office. They could also pick up and transmit information from automatic weather stations located in uninhabited areas.

The hundreds of "small" weather cells 40 to 50 miles across, some of which develop into hurricanes, could be tracked by weather satellites, Dr. Wexler said. If such hurricanes were detected in their early stages, the next steps would be to prevent their further growth and possibly divert them so they would not hit populated areas. To do this, more knowledge of hurricane formation is necessary.

No one now knows why any one of the hundreds of thunderstorms turn into twisting tornadoes. Evidence from photographs taken by TIROS I indicates that the "mother" cloud of the tornado could possibly be picked from among the other clouds. Satellites might help in detecting the tornado-producing clouds, Dr. Wexler said.

He noted that world weather observations now cover only one-fifth of the earth's atmosphere.

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Man Can Beat Machines

► MEN WILL BE more effective than machines in space travel to the moon and planets.

An interplanetary rocket could not be controlled very precisely from earth because it takes information five to 15 minutes to travel over the immense distances. Men on the spot in the space vehicle would do a superior job, Dr. Lloyd V. Berkner, chairman of the National Academy of Sciences' Space Science Board, said.

One solution to the difficulties of designing radio and electronic systems for sending

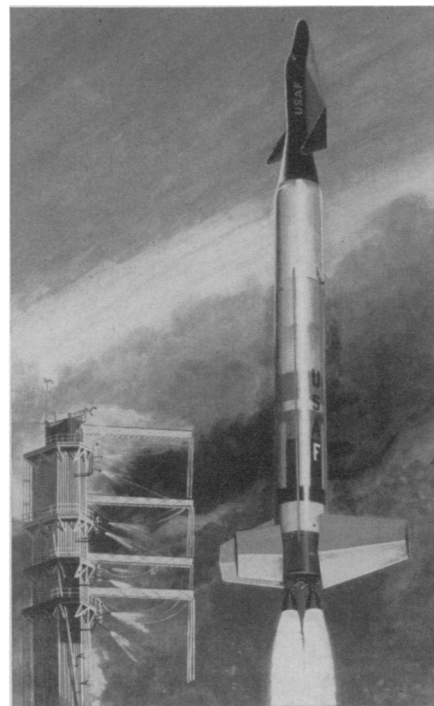
information back automatically would be to land a machine from the space vehicle on another planet where it could "write" down the information about the planet in a reduced form and send it back to earth. However, Dr. Berkner said he doubts that equipment will reach this level of sophistication in the near future.

It is inconceivable that instruments can be designed to evaluate the many different things that can be explored in space by man's superior "computer brain," he told the First National Conference on Peaceful Uses of Space in Tulsa, Okla.

However, he said the competition between man and the machine in space is a "rough one." He predicted it will be a long time before man can be equipped to do jobs that several hundred tons of instruments cannot do.

This country leads in scientific knowledge gained from its satellite program, Dr. Berkner said. He cited as an example the information from Pioneer V, which holds the communications distance record of 20,000,000 miles. Pioneer V is also credited with the discovery of the third ring current surrounding the earth at 40,000 miles. It also measured and gave important information about radiation from the sun.

In meteorology the televised pictures of the earth and its cloud cover has had "revo-



SPACE GLIDER—The U. S. Air Force space glider, *Dyna Soar*, will be boosted into orbit by a modified *Titan II* rocket powered by the inorganic liquid fuel, anhydrous hydrazine, being produced by Olin Mathieson Chemical Corporation, Saltville, Va.

lutionary impact" on understanding weather, Dr. Berkner said. In another year the Nimbus satellite will map the earth's cloud cover and heat balance.

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One Stage Space Vehicle

► A WINGED space vehicle that could fly from the ground into space in one stage and be recovered may be developed by the early 1970's.

J. R. Dempsey, vice president of Convair Division, General Dynamics Corporation, San Diego, Calif., said Convair is developing such a "single-stage-to-orbit" concept, and plans to adapt the system to its crew and to train such a crew to operate in the new type vehicle.

He told the First Conference on Peaceful Uses of Space in Tulsa, Okla., that the crew member of this model would not just be riding in the vehicle but actually control it at horizontal take-off from a runway. He would probably use automatic controls for the flight into orbit. Later he could again take control of the ship in flight as well as for recovery and landing.

Today's fast boosters cannot be manually controlled at take-off because man is not able to react fast enough. Boosters for space vehicles would become ineffective in performance if they were to be slowed down so man could control them.

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Repeater Satellite for World Communications

► A REPEATER satellite to relay telephone, telegraph and television communications across the oceans is now a step closer.

The National Aeronautics and Space Administration announced that the Radio Corporation of America has been selected from seven firms to negotiate the construction of such an experimental satellite.

The Goddard Space Flight Center, the NASA installation responsible for communication satellite programs, will negotiate and manage the contract, which will cost about \$3,250,000.

The repeater satellite is planned to weigh about 100 pounds and is to be placed in an orbit 3,000 miles from earth.

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Star Field Tracker For Space Guidance

See Front Cover

► A LIGHTWEIGHT simple instrument for navigating a spacecraft has been developed by The Martin Company, Baltimore, Md.

The instrument, seen on the cover of this week's SCIENCE NEWS LETTER, stabilizes the spacecraft and can guide it to an accurate landing on the surface of the moon.

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