

ASTRONOMY

Copernican Planetarium

A new type of "planetarium" that shows the motions of the sun, moon and stars in colored lights on a screen also displays how space probes are launched, Tove Neville reports.

► A NEW INSTRUMENT can now be used to teach "youngsters" of all ages about what space, or the universe, contains. It is the Musser Copernican Planetarium designed by Dr. Clair O. Musser of the astronomical division of Scientific Industries, Inc., Los Angeles, Calif.

This new type of "planetarium" displays on a round four-foot screen, set in a console, the solar system in colored lights. It also shows the planets as they move in relation to each other.

For the showing of the solar system, the center light is the sun, with a red flare around it, to represent the corona. The sizes of and distances between the planets are accurate and relative to the real solar systems as far out as Mars.

This projection also shows the moon's orbital path around the earth and the ring of asteroids between Mars and Jupiter. Asteroids are small bodies thought by some astronomers to be fragments from a planet that disintegrated.

All the planets, their satellites (moons) and the sun can be individually lighted, and the light's intensity varied.

Another projection shows stars, constellations and galaxies. Stars on a disc rotate and disappear behind a black opaque area while new stars appear, simulating the stars' movement across the sky.

One feature of the planetarium is an all-time calendar worked out from the American Ephemeris. With this calendar, projections can be set at any date or year, past or future, and one is able to see in what position the stars or planets were or will be.

The new planetarium stands eight feet high and resembles a giant television set. It is being used by the Hayden Planetarium in New York for a program of adult courses in astronomy, navigation and space science.

Models of the Musser planetarium are also being used by commercial aviation companies. The instrument would be useful for teaching in universities, primary and secondary schools as well as for museums and might have an additional important use in the missile and rocket field.

The planetarium could be an important part of the advanced navigation systems used for guided rockets and missiles as a star finding or identification device, its producers told SCIENCE SERVICE. The planetarium could in this manner provide immediate and continuous reference to the sky in an automatic star tracking device.

The planetarium can be used to demon-

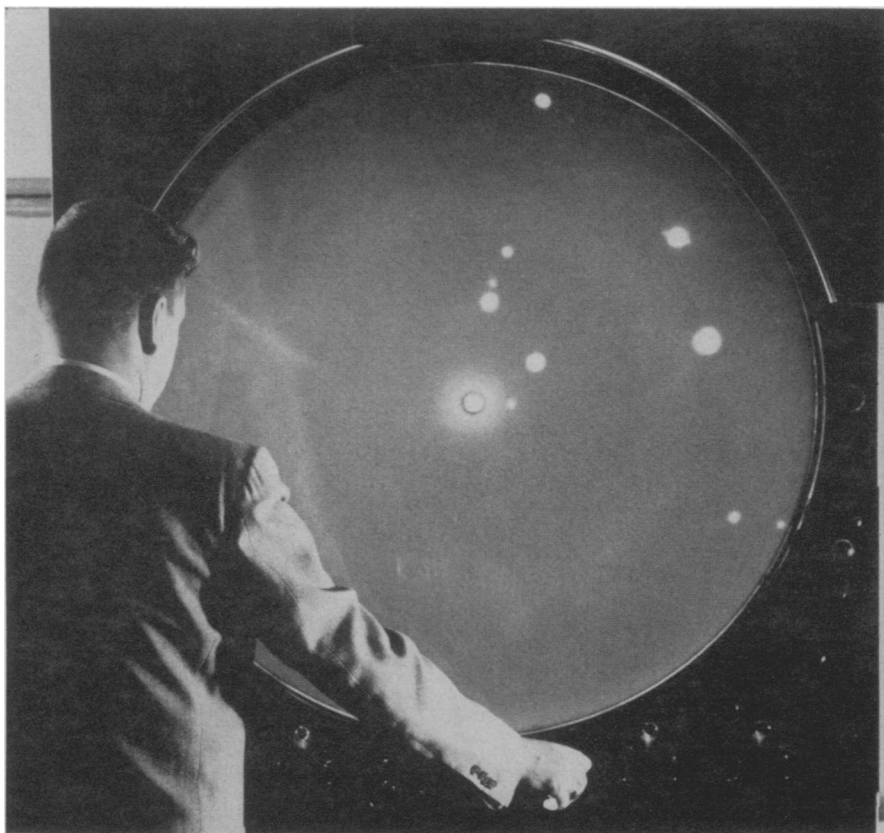
strate the methods and problems connected with space probes. It shows how

probes can be launched to various space objectives, either with minimum orbits or with excess of energy to provide more rapid trips.

One projection shows velocities involved in transfer of a space vehicle from orbit of earth to Mars. The path taken by the space vehicle is shown by color lines in various shades of red and blue.

The Musser instrument may also be useful for on the spot television reports of the plans and actual outcome of space probes.

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COPERNICAN PLANETARIUM TEACHES ASTRONOMY

MEDICINE

Cigarettes Blamed Again

► STOP SMOKING cigarettes to save yourself from lung cancer. This warning is emphatically reiterated, in medical language, in an authoritative article in the Journal of the American Medical Association, 175:997, 1961.

Two experts of the Sloan-Kettering Institute for Cancer Research, New York, Drs. Ernest L. Wynder and Emerson Day, declare that there is sufficient evidence of a causal relationship between cigarette smoking and lung cancer. They state:

"Obviously, if a statistical and epidemiological relationship has been proved, then the removal or modification of the factor (cigarette smoking) is indicated."

They cite 30 studies applying statistical evidence that "the more a person smokes, particularly cigarettes, the greater is his

risk of developing cancer of the lung." They take issue with the contention that the relationship between smoking and lung cancer could be attributed to some constitutional factor that makes one smoke cigarettes and be susceptible to lung cancer.

Lung cancer is discussed only as an example in setting forth general postulates for the evaluation of causative factors in chronic diseases, which they described as noninfectious disorders caused by multiple factors.

(The Tobacco Institute, Inc., of Washington, D. C., in commenting on the article, said, "Careful readers will see that the authors offer no new findings or new scientific results to support their opinions set forth in this article.")

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