

PHYSICS

Artificial Meteor Trail

Throwing atomic sodium out of man-made satellite zooming around the earth every 90 minutes would make an artificial meteor trail visible all night.

► THE UNITED States could make an artificial meteor trail 200 miles above the earth's surface by throwing the element sodium, in its atomic form, from a man-made satellite.

Scientists here below could watch the trail, made by spraying from the rocket small amounts of sodium, perhaps as common salt, or sodium chloride. Such an unmanned vehicle, staying in its earth-circling orbit for a limited time, could be sent up with today's know-how if money were available. (See SNL, March 27, p. 197.)

It would cost less than \$1,000,000 for each "shot" of the MOUSE, or minimum orbital unmanned satellite, earth, Dr. S. F. Singer of the University of Maryland has estimated. Very little atomic sodium would be needed to leave a trail "visible" all night to scientists using special instruments.

A little more sodium and you could see the trail yourself, if you wore yellow glasses to cut out all but yellow light.

Since the man-made moonlet would be continuously leaving its artificial meteor trail as it zoomed around the earth every 90 minutes, we could get an "excellent" picture of winds, turbulence and temperatures high in our atmosphere. From other instruments on the satellite, Dr. Singer said, we could get information about the composition of the atmosphere, and the nature of solar and cosmic radiation.

The atomic sodium would leave two distinct kinds of trails. One might duplicate what scientists call the "twilight flash," and the other might duplicate the night light of sodium.

The "twilight flash" occurs when the sun's rays are scattered by sodium atoms high in the atmosphere. It can be seen because the higher levels still receive solar rays, even though it is dark here on earth.

Solar radiation excites sodium atoms so

that they give off their own light, the yellow sodium, or "D" light, which is familiar from sodium lamps used to light highways or from the yellow flame seen when common table salt is burned in a flame.

The night light of sodium is much fainter than the "twilight flash," but it is visible all night, even though there are very few atoms of sodium occurring naturally in the atmosphere. Scientists have found that for every million million atoms in the atmosphere, only one is of sodium.

How even that small amount of this element gets into our atmosphere is a source of controversy, however. The sodium could come from the salt contained in evaporated sea spray, or it could be brought in from outer space, either by meteorites or in the interplanetary dust through which the earth is sweeping. Some scientists think both the earth and outer space contribute the sodium.

Putting controlled amounts of the element into our atmosphere by an unmanned satellite "might help settle this problem," Dr. Singer said. The idea of artificially introducing sodium into the air from a rocket was first suggested by Dr. D. R. Bates of Belfast, Ireland.

Science News Letter, June 12, 1954

ELECTRONICS

Rebecca Guides Jet Pilots Home Safely

► REBECCA, AN electronic navigator that played a big role in Britain's cloak-and-dagger phase of World War II, now has been modified to guide jet pilots home.

The device was used during World War II to lead supply-dropping planes to the hide-outs of special agents operating in enemy territory. It consisted of a radar-like receiver carried in the plane and a ground beacon at the hide-out. The beacon sent signals to the airborne receiver to show on a picture tube the direction and distance of the beacon.

Now the lightweight version has been produced to give a jet pilot the same information on easy-to-read meters instead of radar screens. The ground beacon is at a base airfield, instead of a secret agent's lair.

Modified Rebecca has a range of 200 nautical miles and a four percent margin of error. The airplane component weighs only 40 pounds. A larger version for commercial airliners is being installed by British Overseas Airways and by SABENA, Air France and others.

Science News Letter, June 12, 1954



VIKING NUMBER TEN — Man's probing of the upper atmosphere, necessary prelude to an earth-circling satellite, reached the highest yet, 158 miles above the earth's surface, on May 24 when Viking number 11 roared skyward. Its young brother is shown here before its launching.

ASTRONOMY

Second Supernova Spotted Within Month

► A SECOND supernova, a star that suddenly blazes brilliantly forth, has been discovered by astrophysicist Paul Wild of the California Institute of Technology.

He spotted another such suddenly flaring star on May 4. (See p. 375.)

The new supernova appeared in the stellar object known to astronomers as NGC 4214. The supernova is of magnitude 12.5, too faint to be seen without a powerful telescope. Its discovery on May 30 was announced by Mount Wilson and Palomar Observatories through Harvard College Observatory.

Science News Letter, June 12, 1954

GOLF: Your LEFT SHOULDER makes the amazing difference!

One of the most startling discoveries to emerge from wide research in the golf swing is that your game literally hinges on your left shoulder!

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