

CHEMISTRY

Narcotics Control Seen

► THE ILLICIT NARCOTICS trade will be more tightly controlled by use of new chemical techniques for analyzing marijuana and opium components, the American Chemical Society learned in Washington, D. C.

Scientists can trace and detect the origin of narcotics. This is an important step in spotting illegal drug traffic.

The advances include a new way to measure PM (porphyrine-mecnidine) in opium, the use of infrared techniques on drug ingredients, new measurements for morphine and codeine, and ways to analyze resins of marijuana.

International control of the illegal trade can be tightened and the flow of the drugs slowed if international police and agents can trace their origin. The methods were explained by Klaus Genest, T. W. McConnell Davis and Dr. Charles G. Farmilo, of the Canadian Food and Drug Directorate at Ottawa.

Because opium contains PM in varying quantities depending upon where it is grown, it is possible to trace its origin by a simple color test, Mr. Genest declared. Previously, measuring methods were not adequate but the new method seems to be conclusive.

Since the amount of marijuana resins also varies from region to region, the source of the marijuana can similarly be traced.

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Fallout Petroleum Shield

► RADIATION SHIELDING can be chemically built into hydrocarbon liquids such as oil for protection against fallout and for use in atomic research equipment, the nation's leading chemists were told.

The protective shield is made by adding a benzene, or aromatic, compound to the hydrocarbon mixture, Dr. Milton M. Wald, Shell Development Company chemist, Emeryville, Calif., explained at the American Chemical Society's national meeting in Washington, D. C.

Two percent aromatic added to an aliphatic (containing no aromatics) compound will reduce radiation damage greatly, he said. And if the compounds are joined in the same molecules, the protection is much greater.

Large governmental and industrial storage areas of petroleum compounds, essential during a national crisis, might be reduced or destroyed from fallout if unprotected during a nuclear attack.

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Possible Cancer Cure

► A SUGAR-LIKE mixture produced by bacteria is being studied by the National Cancer Institute as a possible cure for cancer, it was revealed.

The substances, polysaccharides, are

known to attack tumors, but the mixture has been thus far too toxic for clinical use, Dr. Stephen I. Oroszlan explained at the American Chemical Society meeting in Washington, D. C.

Latest experiments show it may be possible to separate the substance from those producing the bad effects, he said. The mixture is an "endotoxin," or biological poison occurring in bacterial cells. It is released when the cells are disrupted.

The scientist said that it is not yet known whether the harmful effects have been eliminated, but further studies should reveal the chemical feature responsible for tumor damage.

The endotoxin polysaccharides are produced by bacteria called *Serratia marcescens* that cause tumor damage in experimental animals and in patients.

Dr. Oroszlan, a Hungarian biochemist who came to the United States in 1956, collaborated with Dr. Peter T. Mora in the studies.

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SPACE

Astronauts to Scan Space

► ASTRONAUTS observing the stars may in time help solve such universal puzzles as whether other stars besides the sun have planets on which intelligent life could possibly exist.

Lt. Col. John H. Glenn Jr.'s orbital flight is the first step in the right direction, and future astronauts will follow his sky traces.

Stars with dark companions, which may be cool stars or possibly planets, will not be seen close enough for serious observations on the early orbital flights, which are "merely" 100 to 150 miles away from the earth. However, when astronauts set up telescopes on the moon, new answers about these star systems are expected.

Observations made by astronauts on the first orbital "hops" around the earth will be highly valuable in explaining many phenomena connected with earth and the stars.

When the second orbiting astronaut, U.S. Air Force Maj. Donald K. (Deke) Slayton whizzes into orbit this spring, he will try to observe more than Glenn did.

He, and later astronauts, will try to test the faintest star visible. This is done by counting the number of stars seen within a certain area in the sky. This may be part of a constellation, such as the head or the belt of Orion, the hunter.

Theoretically, a person can see a star of sixth magnitude under a desert sky, which is exactly how Astronaut Glenn described the sky in space: a sky very clear and dark with very bright stars. The planet Uranus is of sixth magnitude when it appears opposite the sun from the earth.

Astronaut Slayton will also try to estimate and compare the brightness, size,



FAST HEAT—10,000-watt lamps are used in searchlights by the Boeing Company, Seattle, Wash., for fast heat in determining heat-loss characteristics of space age materials.

color and position of stars. From this information, astronomers will be able to make better measurements of stars and their distances from the solar system.

For the first few flights, astronomers are more interested in the overall view the astronaut observes with his own eyes than what he can see with a telescope.

No instrument could show the whole sky-earth picture which the astronaut can survey. He will look for the reported libration "clouds," one 60 degrees ahead and one 60 degrees behind the moon on its path around the earth. These two clouds are reported to be natural satellites of the earth, possibly consisting of fine material traveling in an orbit like the moon's. They would appear as hazy patches in the sky, but Astronaut Glenn did not see them because there was a full moon on the three "nights" he experienced during his three-orbit flight.

The astronaut will also try to observe zodiacal light, a cone of light which extends from the horizon to the ecliptic at different angles various times of the year. The ecliptic is the path among the stars through which the sun appears to travel. During the spring, when Astronaut Slayton will ride three times around the earth, it can be seen in early evening. Astronomers have asked him to study the variations in intensity and color of the light.

Another phenomenon he will try to see is the gegenschein, a nebulous light about 20 degrees across the ecliptic and opposite the sun. This light is believed to be of same origin as the zodiacal light.

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