CREATE LABORATORY "STAR"—Temperatures of 15,000 degrees, almost three times as great as those on the surface of the sun, are produced for split seconds in this University of Michigan shock tube, providing information of great value to astronomers in learning about stellar composition. In the foreground, Thomas D. Wilkerson opens the valves that control the supply of high-pressure gas into the shock tube, while research associate Eugene Turner watches a gauge and Prof. Otto Laporte supervises.

PHYSICS

Reach Star Temperatures

➤ STELLAR TEMPERATURES, about three times as high as those of the sun's surface, have been reached momentarily in the laboratory, a University of Michigan physicist has reported.

Dr. E. B. Turner told the American Physical Society meeting in Pasadena, Calif., that the 15,000-degree temperatures were generated in a shock tube, after a diaphragm separating gases under extremely high and low pressures is broken. (See SNL, Oct. 16, 1954, p. 247.)

Shock waves, because of the stellar-like temperatures they generate, have been suggested as a method of triggering hydrogen bombs without exploding an atomic bomb. Doing so might be one way of building baby hydrogen bombs. (See SNL, July 30, 1955, p. 76.)

As a high-pressure gas rushes into a low-pressure zone, a powerful shock wave is produced. In the University of Michigan instrument, it moves along the 12-foot tube at 10 to 20 times the speed of sound.

Since heat is the energy of atoms in motion, the violently agitated gas particles in the shock wave's wake reach incredibly high temperatures for an instant.

This heat is partially dissipated in the form of brilliant light, then is quenched by the cool "pushing" gas. So short-lived is the shock wave it does not have time to heat the walls of the tube.

By observing the characteristic light, or spectral lines, of the excited atoms at one end of the shock tube, physicists gather data under known conditions that can then be used by astronomers to check their interpretations of stellar spectra.

Present experiments center around the spectral lines of hydrogen, a major component of nearly all stars, including the sun. These lines vary in brightness and shape, depending on conditions at their source.

Dr. Turner told the Physical Society's Division of Fluid Mechanics they have now obtained quantitative measurements on spectral line shapes, using a revolving drum camera.

Dr. Turner said the shock tube will be valuable in helping to determine the amounts of elements present in stars. Although now astronomers can tell what elements are present, there is no reliable way to measure the quantity.

Science News Letter, March 24, 1956

•RADIO

Saturday, March 31, 1956, 2:05-2:15 p.m. EST

"Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio Network. Check your local CBS station.

Dr. Gerald D. Dorman, president of the Medical Society of the County of New York, 2 East 103rd Street, New York 29, N. Y., will discuss "Public Services of a Medical Society."

ASTRONONY

Second Comet of Year Spotted in Eastern Sky

➤ A NEW COMET, the second to be discovered this year, has been spotted in the eastern sky by a Czechoslovakian astronomer, Harvard College Observatory reports.

The comet is magnitude nine, bright enough to be seen with binoculars away from city lights. It is in the constellation of Ophiuchus, the serpent holder, which rises in the east about midnight.

Antonin Mrkos of the Skelnate-Pleso Observatory in Czechoslovakia, who discovered the comet, last year found the first comet in seven years bright enough to be seen with the naked eye from the Northern Hemisphere. (See SNL, June 25, 1955, p. 404.)

When found, the comet's position in the sky was right ascension, 18 hours, 20 minutes; declination, plus six degrees, 30 minutes. It was spotted at 2:30 a.m. Universal Time, on March 12.

Science News Letter, March 24, 1956

MEDICINE

Anti-TB Drug Needs Metal for Cure Effect

➤ THE SECRET of how isoniazid, one of the big three anti-TB medicines, acts to stop tuberculosis germs in the body is announced by five Australian scientists in *Nature* (March 10).

The five scientists are Drs. S. D. Rubbo and Janice Edgar of the University of Melbourne and Drs. J. Cymerman-Craig, G. N. Vaughan and D. Willis of the University of Sydney.

Isoniazid, or INH for short, is active against TB germs after it has formed a special combination with a metal. The combination is the kind chemists call a chelate complex. A chelate complex of INH with copper is very active against TB germs both in the test tube and in laboratory animals.

The copper-INH combination is, the scientists report, as active as any drug they have so far tested.

The copper combination, however, is very toxic. Since INH does not show toxic effects in the body, the scientists feel sure it must work by combining with another metal in the body. So far, they do not know what this metal it. They are now testing other metal chelate complexes with INH to try to find one that is active against TB germs and non-toxic.

Science News Letter, March 24, 1956