

PHYSICS

New Gas in Atmosphere

Sun photographs detect the presence of nitrous oxide close to the earth. May result from slow decomposition of fertilizers in farming areas.

► THE EXISTENCE of the gas, nitrous oxide, in the earth's atmosphere in sufficient quantity to record on spectrum photographs of the sun has been established by Dr. Arthur Adel, of the Randall Laboratory of Physics, University of Michigan. He reported his work before the meeting of the American Astronomical Society in New York.

Dr. Adel has discovered and analyzed an absorption band at wavelength 7.77 μ in the infra-red photographic spectrum of the sun. This is a "telluric" band, which means that it is put into the spectrum by the selective absorption of sunlight as it passes through the earth's atmosphere. Telluric lines, such as those of oxygen and carbon dioxide, are easily recognized in most cases because they do not show the Doppler shift shared by lines originating in the sun's atmosphere and partaking of the sun's rotation and other apparent motions.

In recent examinations of soil air, M. W. Kriegel, of the Carter Oil Company, Tulsa, Okla., has found a gas which he believes to be nitrous oxide, and he suggests that this may result from the slow decomposition of commercial fertilizers in farming areas, since nitrogen is the common element in ammonium salts, nitrates, and other fertilizers. Decomposing vegetable matter under aerobic conditions also gives off a gas having the properties of nitrous oxide. Dr. Adel suggests that soil air is thus probably the chief source of the "layer" of atmospheric nitrous oxide.

Better Infra-Red Photos

► THE NITROUS oxide band at 7.7 μ is far out in the infra-red region of the spectrum—at 77,000 Angstroms. Observations of the spectra of the stars have not extended out nearly this far, but Dr. W. F. Swann, of Eastman Kodak Company, Rochester, N. Y., reported to the astronomical meeting that astronomical spectroscopic plates had received much improvement during the war, and that within the past year Mount Wilson Observatory has succeeded in obtaining

spectra beyond 11,000 Angstroms of some of the brighter stars.

Dr. Swann reported an increase in the sensitivity of Type IZ, an infra-red emulsion, of five times; he also noted that Type 649-GH spectroscopic plate is capable of resolving more than 1,000 lines per millimeter, making it very useful for making reticles and gratules. The industrial applications of this film are widespread.

Lost Sun-Star

► THE DISCOVERY of a "dark" companion star to the brightest star in the constellation of Ophiuchus, was reported by Dr. Nicholas E. Wagman, acting director of Allegheny Observatory, University of Pittsburgh. Preliminary estimates indicate that the companion of Alpha Ophiuchi is a star similar to the sun, but because the brighter star outshines it 20 times, its light is lost in the glare. This companion appears to be moving about the bright primary star at a distance seven times that of the earth from the sun, in a period of about $8\frac{1}{2}$ years. The presence of the faint companion is determined by its effect on the motion of the bright star, which appears to pursue a wavy path across the sky.

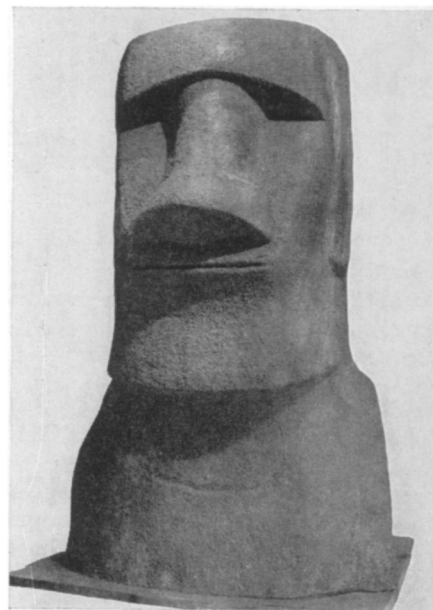
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ARCHAEOLOGY

Easter Island Relics Only a Few Centuries Old

► THE GREAT, gaunt stone faces that stare sightlessly over the ocean from the slopes of lonely Easter island in the South Pacific are not the last relics of a great civilization, drowned by a continental catastrophe thousands of years ago, declares Dr. Alfred Métraux, Smithsonian Institution anthropologist. Although their origin remains veiled in mystery, the best evidence he has been able to muster indicates that they are almost certainly less than 800 years old, possibly not more than 500 or 600.

Dr. Métraux points out that although the huge images are made of soft stone and stand where heavy rains beat and



NOT SO OLD—This Easter Island man in the Hall of Fame at the American Museum of Natural History is almost certainly less than 800 years old.

the ceaseless wind works on them night and day, they are relatively little weathered. Their outlines are still sharp and hammer marks are plainly visible. If they were as old as romantic accounts would have them, they would be much more severely weathered.

Dr. Métraux has also attempted to solve the riddle of the figure-inscribed pieces of wood found on the island. He is convinced that the inscriptions are not true writing, and that they have no relation to 5,000-year-old stone tablets covered with hieroglyphics that have been found in India, and which they are said to resemble. After testing and discarding several hypotheses, he regards as most probable the idea that these inscribed slabs represent a special type of "orator staff," a badge of office used by tribal story-tellers elsewhere in Polynesia.

Easter island itself is not a last surviving mountain-peak of a sunken continent, Dr. Métraux is convinced. Soundings show that it is the emerged top of an isolated submarine volcano, standing alone on a monotonously level ocean floor. The Polynesian ancestors of the present inhabitants came there in canoes, probably about the twelfth or thirteenth century A.D.

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Chinook salmon spawn, usually, only in water below 54 degrees Fahrenheit.