

ASTRONOMY

Moon Craters Change

► UNMISTAKABLE changes in two lunar craters were detected following the eclipse of the moon of Oct. 6, it was learned in Albuquerque, N. Mex. Walter Haas, staff astronomer of the University of New Mexico's Institute of Meteoritics, observed the changes in the craters Eratosthenes and Grimaldi on the night of the eclipse. A total of four areas of the moon were examined during the eclipse for possible alterations.

The changes in Eratosthenes consisted in the definite lightening of a dark area of about 15 square miles on the crater floor. The change persisted several hours after totality ended. The affected area had been matched with a neighboring spot on the crater floor several months before the eclipse, the last check observation being taken only 15 hours before the end of totality. In all the pre-eclipse comparisons the two areas were of equal intensity.

Two bright spots on the outer west wall of the equatorial crater Grimaldi provided the second example of eclipse-induced changes. The night before the eclipse the southern spot was observed to be definitely brighter than the northern one. The next night Grimaldi emerged from the umbra at 8:41 p.m., MST, and at 8:48 the northern spot was considerably the brighter of the two. This greater brightness of the normal-dimmer spot persisted until after 10:50

p.m. At 12:11 a.m. on Oct. 7 the southern spot had regained equal brilliance with its neighbor, and by 12:54 a.m. it was finally, again, definitely the brighter.

The changes observed by Mr. Haas in Grimaldi were partially confirmed by E. E. Hare in Owensboro, Ky., and by C. B. Stephenson, of the University of Chicago. Mr. Stephenson had also reported similar changes in Grimaldi during the April, 1949, eclipse of the moon.

Eratosthenes has frequently been suspected of changes following eclipses, but the observations made in October are probably the most satisfactory yet to be obtained, for the degree of contrast left little doubt that actual changes had occurred.

The nature of such changes is quite debatable. Mr. Haas points out that most areas of the moon are unaffected by the sudden cold and darkness of an eclipse, and that most of the changes which do occur are very slight, requiring considerable care and experience to detect. Furthermore, the same lunar object may be affected differently at different eclipses. Nevertheless, with all variables weighed, evidence increasingly points to definite physical or chemical changes caused in the lunar crust by eclipses.

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PSYCHIATRY-DERMATOLOGY

"All-Over" Itching May Spell Family Resentment

► ELECTROSHOCK treatment might be good medicine for patients who complain of itching all over, Dr. Frank E. Cormia of New York City suggested at the meeting of the American Academy of Dermatology and Syphilology in Chicago, Ill.

Such patients, and others who suffer intense itching or burning sensations in just one or two spots, are unconsciously harboring feelings of resentment or hatred toward a close relative or toward their work, which may be unsuitable for them.

In a study of 300 patients, Dr. Cormia found that more than half, 57%, had severe disturbances in their family situations. Maladjustments in early life affected 77% and long standing conflicts in adult life affected as many as 87%.

Abnormal strictness of parents, family strife, sexual difficulties and unsuitable work actually caused the severe itching and skin disturbances, Dr. Cormia said.

Successful treatment of these patients was difficult because of the considerable amount of time required for analysis of each individual's problems.

Measures designed to block the progress

of harmful nervous impulses to the skin, by injections of nerve-blocking drugs, were of little value and in some cases were actually harmful.

Although some 30% of the total group were cured and another 27% greatly improved by sympathetic reassurance, understanding of their problems and help in recognizing their conflicts and reconstructing their attitudes, the poor results in many patients led Dr. Cormia to suggest trying electroshock treatment in future for such patients.

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ENGINEERING

Gas Turbines for Autos Present Many Advantages

► GAS turbines for automobiles, which hold many advantages over present reciprocal engines, were predicted for the relatively near future at the meeting of the American Society of Mechanical Engineers at Erie, Pa., by Prof. Frank L. Schwartz of the University of Michigan, Ann Arbor.

In the United States, several companies have already built small gas turbine engines designed for use in automobiles. Two automotive gas turbines in England have been under development for several years, he said. Czechoslovakia is reported to have an-

nounced the development of an automobile propelled by a gas turbine having from 60 to 80 horsepower. It is said that it will operate on naphtha, coal gas, hydrogen, acetylene, butane or gasoline.

Advantages of the gas turbine as an automobile power plant listed by Prof. Schwartz include smaller and lighter than present engines, fewer moving parts, low oil consumption, no need of antifreeze, smooth operation, elimination of automatic transmissions, and the ability to use low-grade fuels, that is, fuels that do not require a high degree of refining.

Gas turbines can effect a 50% saving in engine weight, he stated. It gives about seven times as much exhaust gas, but the gas is cooler than from the reciprocating engine. The hot gas flowing from the rear of a gas-turbine-propelled vehicle is no different from that of the conventional automobile.

There are many problems to be solved before the gas turbine becomes a practical machine that is competitive with the reciprocating engine for vehicle propulsion, he added. Progress to date on gas turbines does not indicate that these problems can not receive adequate solutions.

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Words In Science— MALLEABLE-DUCTILE

► THE two terms, malleable and ductile, both refer to the workability of metals.

Malleable is derived from the Latin word *malleus*, meaning a hammer. It is applied to a metal that can be hammered into shape. Pure gold is the most malleable metal known; it can be beaten out into leaf only 1/300,000 of an inch thick.

The word ductile is also from the Latin, from the verb *duco*, which means to lead. It was also from this verb the former Italian dictator took his title, "Il Duce."

Ductile is applied to a metal that can be drawn out into wires. Wires are made by forcing the metal through a series of holes of diminishing diameters in some harder metal or substance. These are called dies. Copper is quite ductile and is easily drawn out. Steel is harder, but it is still made into wires by using a larger number of dies so that each one makes only a small reduction in diameter. Tungsten is very hard, so that a great many diamond dies have to be used.

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On This Week's Cover

► ERMINE-CLAD mountain hemlocks in Crater Lake National Park bend under their coats of snow. Serene in their splendor, they have been spared the axe of Yule tree hunters.

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