

## GEOLOGY

## Sinking of Earth's Crust Near Boulder Dam Expected

**M**AN at last has a chance to determine whether the earth's crust—from 17 to 75 miles thick—will bend under a great weight. Theory says it will, but until the construction of Boulder Dam was undertaken, no way seemed possible to prove the answer.

Scientists of the U. S. Coast and Geodetic Survey are planning to make accurate surveys of the region around Boulder Dam to see if the weight of the dam and the huge lake it will store up are sufficient to compress the underlying rock of the great continental shields.

The estimated weight of the lake alone is placed at 41,500,000,000 tons. Never before has man placed such an enormous weight on one spot of the earth's crust.

Theory says the solid layers on the outside of the earth really float on a much heavier material which lies below in a plastic state. The condition is much like a woven raft of logs afloat on a

lake. If a heavy weight is placed on such a raft, it submerges partially.

It is thought that the weight of mountains similarly submerges the bottom of the solid crust into the underlying plastic material.

Behind the plans of the Coast and Geodetic Survey is the thought that an additional increase in weight at one spot will further sink the floating crust until equilibrium is established.

Engineers expect that the elastic compression of the rock in the earth's crust will cause an area of twelve square miles to sink six-tenths of a foot in from two to three years.

The sinking of the solid crust into the plastic matter beneath may cause an additional two-foot drop over an area of 150 square miles. How long this lowering will need to occur, is not known.

Eventually, however, bench marks soon to be established will tell the story.

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## ENGINEERING

## Steam Engine Replaced Camel; Now Diesel Replaces Steam

**L**OCOMOTIVES with Diesel engines are replacing those propelled by steam on the desert railways of Turkmenia, U.S.S.R., just as steam engines once replaced the camel.

Because steam locomotives were forced to carry heavy tanks of water necessary for the journeys across the sun-baked sands, Soviet engineers tried out Diesel-locomotives as an experiment. Tests having proved them to be more powerful and speedy in addition to needing little water, at present 18 powerful Diesel-locomotives are in use between Krasnovodsk and Chardzhuy, a distance of about 709 miles. Formerly 30 steam locomotives were necessary to haul the heavy trainloads of oil, cotton, grain, fruit, and other cargo over the same distance.

In a recent test, Soviet engineers claim that a Diesel locomotive built at the Kolomna plant near Moscow covered a distance of over 3,700 miles without

taking on water or refueling on the way, pulling a freight train. Because of their success in Turkmenia, where all locomotives will soon be those of the Diesel type, the Kolomna plant is being enlarged with the idea of replacing steam locomotives in other parts of the U.S.S.R.

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## ASTRONOMY

## Sunlight Studied to Find Cause of Storms on Sun

**T**HE CAUSE of mysterious storms that rage in spots on the sun is being sought by sunlight analyses being made by Drs. G. G. Cillie and Donald H. Menzel of Harvard Observatory.

Some form of super-excitation of the hydrogen and helium in the sun are believed to cause the storms, Dr. Cillie told the Massachusetts Institute of Technol-

ogy spectroscopy conference. But what causes this unusual excitation is still a mystery.

It may be exceptionally strong ultraviolet light which scientists have not found, due to its being screened out of the sunlight by the ozone gas surrounding the earth. But both Drs. Cillie and Menzel feel sure that whatever causes the storms comes directly from the surface of the sun and not from the solar atmosphere as other astronomers have suggested.

Tremendous heat might also cause this high excitation, but scientists have discounted this theory since it would require a sun having a temperature of more than ten thousand degrees Centigrade. This is nearly twice as hot as the accepted measurement of six thousand degrees which scientists believe to be fairly accurate.

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## CONSERVATION

## Pressure of Population Cited as Cause of Erosion

**"EROSION"** is the answer returned by Dr. W. C. Lowdermilk of the U. S. Department of Agriculture to the ancient question, that might appropriately have been asked by the Great Sphinx, half-buried in drifted desert dust: What caused the fall of ancient nations?

In a study presented to the Society of American Foresters, Dr. Lowdermilk cites his own explorations in northwestern China, and backs up his personal conclusions with the opinions of other scientists on the causes of the fate that overtook the civilizations of Asia Minor and North Africa, Peru and Yucatan. (*Journal of Forestry*, June)

Air photographs of ruins in these lands, he says, are strikingly similar. "All such ruins are in regions of scarce vegetation, bare hillsides, and rocky lowlands. History tells of vast armies surging back and forth across these regions. They must have been entirely dependent for food upon the surrounding country. Yet now these barren, dry lands scarcely sustain the scattered native populations.

"The great despoiler of civilizations and landscapes is soil erosion, by wind and water. It is a disease which has followed man throughout the centuries in his exploitation and destructive treatment of the good earth from which he received his sustenance—a disease, difficult to discern at first and responsive to treatment in the early stages, but absolutely fatal to civilizations in its final stages."