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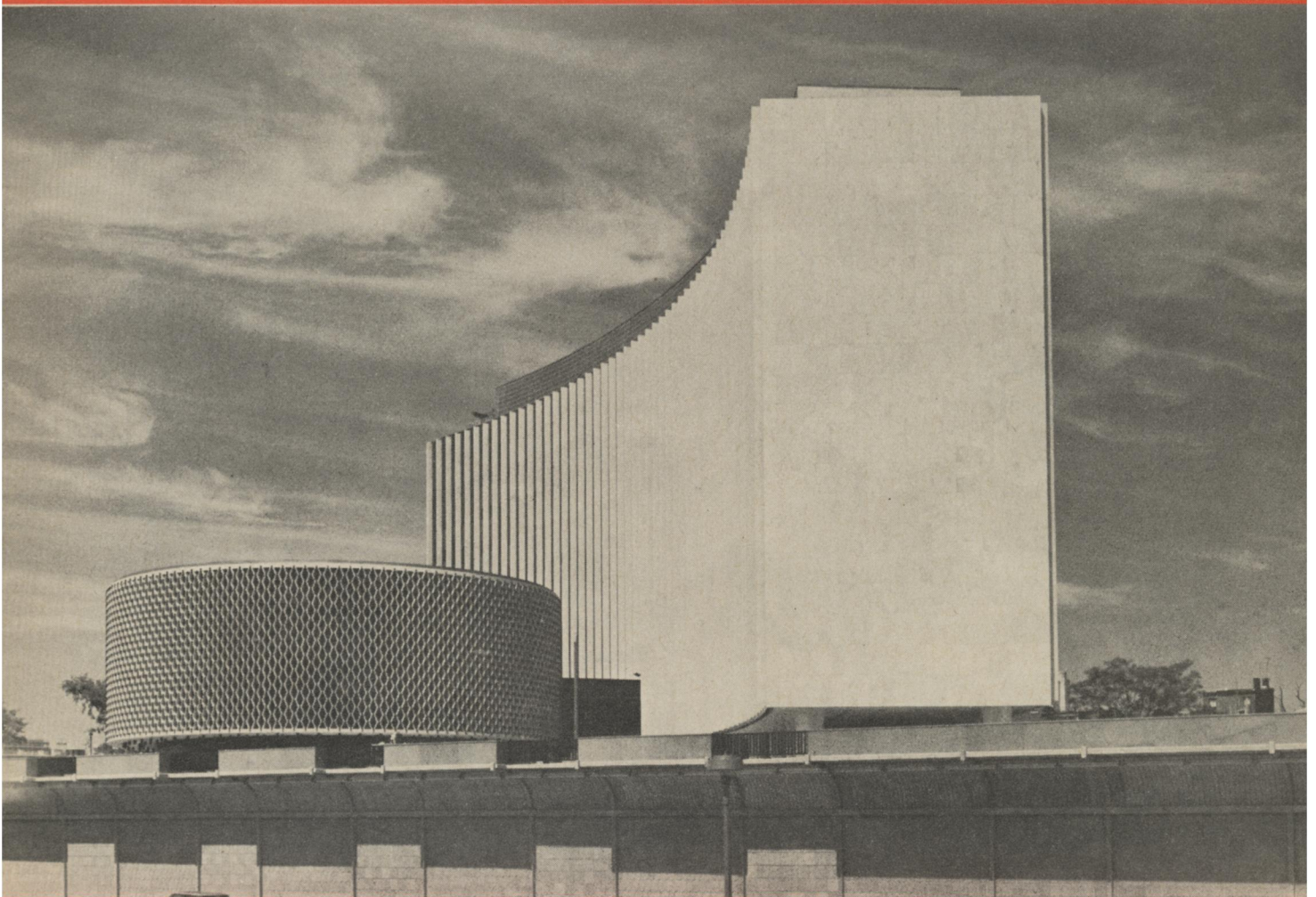
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SCIENCE NEWS LETTER

®

THE WEEKLY SUMMARY OF CURRENT SCIENCE



World Health Organization

For Pan American Health

See Page 217

A SCIENCE SERVICE PUBLICATION

One of a series briefly describing GM's research in depth

How do you measure the roughness of a smooth road?

Did you travel a rough road this morning?
How rough? Specifically.

Chuck holes, broken pavement, and tilted slabs are obvious. But more subtle irregularities also cause vibrations and bouncing.

GM Research engineers measure and record these surface variations accurately at speeds up to 70 mph. Analysis of the recorded road profiles identifies disturbing frequencies with elevation changes as small as 20 thousandths of an inch. And these can be significant.

In good vehicle design, you keep a car's wheels on the ground. All the time. You help to do this by designing the car to eliminate critical resonant frequencies . . . by matching the car suspension to the road surface.

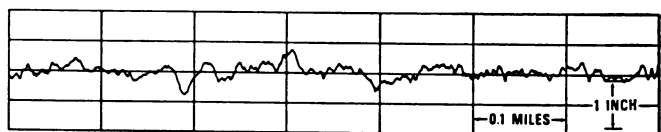
But first you have to find the typical road geometries. The GMR Road Profilometer pinpoints recurring bumps or dips and shows the detailed surface condition. Recordings are made in a panel truck traveling at highway speeds. Profile-measuring wheels trail underneath. The resulting information aids in designing smoother riding vehicles and building better highways.

In addition to aiding state highway departments, the Profilometer has also helped airport authorities quickly determine runway surface conditions and is being used to measure profiles of railroad rails. It can show irregularities having wavelengths up to 1,000 feet.

Research travels many roads . . . sometimes building the tools to gather information, analyze it, and suggest its uses. It all helps General Motors to find a better way.

General Motors Research Laboratories

Warren, Michigan



GM Research oscillograph trace of concrete highway profile.

