

Over \$2.3 billion

# Swelling soil costly disaster

"All the earthquakes, hurricanes, tornadoes and floods added together do less than half the financial damage each year of the simple swelling of the soil when it rains or its shrinking when it doesn't," a Texas A&M geologist said Monday.

"Expansive, or swelling soils, in which the soil of the earth expands, perhaps only hundreds of an inch, upon being wetted causes twice the damage of the other natural disasters," Dr. Christopher Mathewson explained.

"In the U.S. alone, swelling soils cause over \$2.3 billion in damage per year," he continued. "Over a billion dollars of this damage was done to streets and highways, while \$300 million was related to the reported damage to single family homes.

"Thus, expansive soil is the single, most costly natural disaster, at least in terms of dollars," Mathewson declared.

"To become a problem the soil must be acted on by changes in the normal environment; it must get wetter or drier," he went on. "Changes in the moisture content of the soil lead to changes in the volume of the soil, resulting in swelling."

"For it to become a natural disaster, man only needs to construct a home, street, or other rigid structure on these expansive clays," Mathewson pointed out.

"The National Science Foundation has funded Dr. Mathewson and Dr. Robert Lytton (civil engineering) with \$70,100 to continue the research to determine how the soil moisture changes and what causes these changes," he said.

According to Mathewson,

building on expansive soils, found all through the United States (including Houston, Dallas, El Paso, and the rural homeowner in between) can be very much like building in an area subject to hurricanes, floods, or other natural phenomenon. It's this way because of the uncertainty involved in predicting the severity of movement and consequent damage to overlying structures.

"If an engineer has the proper knowledge he can predict the response of the expansive clay and figure how to combat the expected distortion of the structure," he said.

The several factors that have to be taken into consideration in this prediction include: vegetation, climate, soil moisture active zone, topography, drainage, time and site control exerted by the occupant, and the quality of construction. It is

these factors that will be studied in the NSF supported research project.

"Climate is the single most important environmental factor," Mathewson noted. "Regions which receive a large percentage of their annual rainfall within a short time and experience dry conditions the rest of the year (like the Southwestern U. S.) have the worst expansive soil problem. Regions receiving the same amount of rain but spaced at more regular intervals have fewer problems."

Research by Dr. Mathewson, supported by the Texas Real Estate Research Center, produced several recommendations to decrease the danger of damage to a home in Central Texas including:

- Install gutters and downspouts for all roof eaves
- Drains should be spaced at least five feet from the slab

the slab

- Lot finishing should place the home on a mound to carry water away from the foundation
- The house should be placed as far from trees as practical.
- Large trees shouldn't be planted near the foundation.
- Soil moisture should be kept constant around the slab
- Wing walls off the foundation should be avoided
- Frame sections at doors and windows will result in a more flexible wall and decrease losses from cracks through bricks or along mortar joints.
- Frame construction, which is becoming popular again, will also help to decrease the esthetic damages caused by expansive soils because it is more flexible.

## Library formally named

The university library will be formally named Saturday, Oct. 25, in honor of Sterling C. Evans, a 1921 graduate of the institution and one of its major supporters for more than a half century.

The 9:30 a.m. ceremonies at the library will include the unveiling of plans for the \$12 million addition authorized by the university's board of regents. The addition is envisioned as a six-story structure containing 235,088 square feet of floor space, giving the overall library complex the capacity to accommodate two million volumes.

Evans, who has farming and ranching interests in Texas and Louisiana and currently resides in Chopin, La., served as a member of the Texas A&M University System Board of Regents from 1959 until 1971 and was board chairman in 1963-64. He is a recipient of the "Distinguished Alumni Award," the highest honor bestowed by the university and its Association of Former Students.

He has long been interested in the university's library and served as the first chairman of Friends of the Library, an organization formed in 1971 to help the library accomplish certain goals which might otherwise have been unattainable.

Evans is a former president of the Federal Land Bank of Houston and the Houston Bank for Cooperatives and later served as general agent of the Farm Credit Bank of Houston. He also is a past president of the Texas Agricultural Workers Association and a former board member of the Houston Fat Stock Show and Livestock Exposition.

The naming ceremony is part of Scholarship Weekend activities to be held in conjunction with the Texas A&M-Baylor football game.

## Bryan grad leads ROTC at PVAM

Heading the approximately 700 cadets in the Army ROTC program at Prairie View A&M University this year is Cecil Webster, a graduate of Bryan High School.

Webster, a senior student with the rank of cadet colonel, is a civil engineering major at Prairie View.

He earned his diploma from Bryan High in 1972, as a member of the first class to graduate from the new facility.

Webster has also qualified for the silver wings of a paratrooper.

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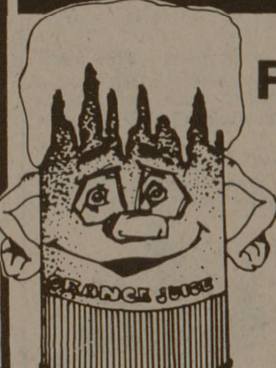
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