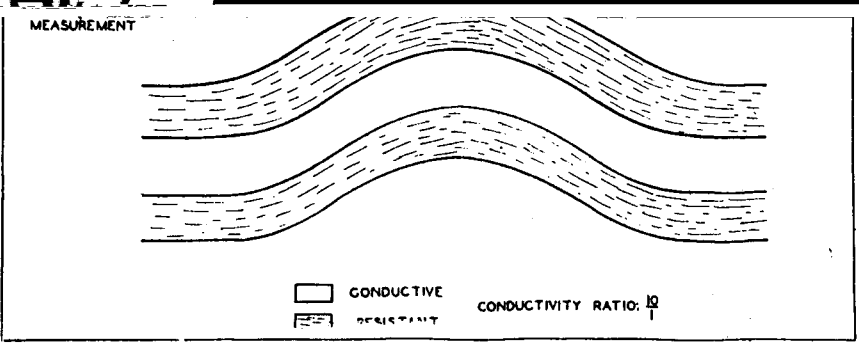


Figure 4-2. Electric log and temperature log in a well in thermal equilibrium (Dickinson field, Texas.)
 Courtesy Humble Oil & Refining Company.

such a cylinder does not modify the ground temperature, except perhaps very close to the pipe (at a distance less than 20 feet) where no definite data could be secured because of the smallness of the model ($1'' = 400'$). Data are also lacking on the temperature of the fluid inside the casing. However, it is probable that the temperature of this fluid is modified qualitatively as follows:

In the bottom half of the casing the temperature is somewhat less than normal. Near the top of the casing, the temperature is slightly greater than normal.

The foregoing statements are based on the fact that, basically, a casing is similar to a very conductive salt dome turned upside down. Therefore, the isogeothermal pattern inside a casing must be, in some respects, similar to the pattern obtained in a salt plug (see Part 2 of this series). How much the presence of the casing modifies the temperature of the fluid situated inside is not known



every instance because the relative conductivity values are not appreciably modified.

Application

To summarize, continuous temperature measurements when properly made can be used to log wells, even cased ones. A temperature log, however, is

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Figure 4-6. Horizontal temperature changes near an anticline comprising heat-resistant beds (scale model data).

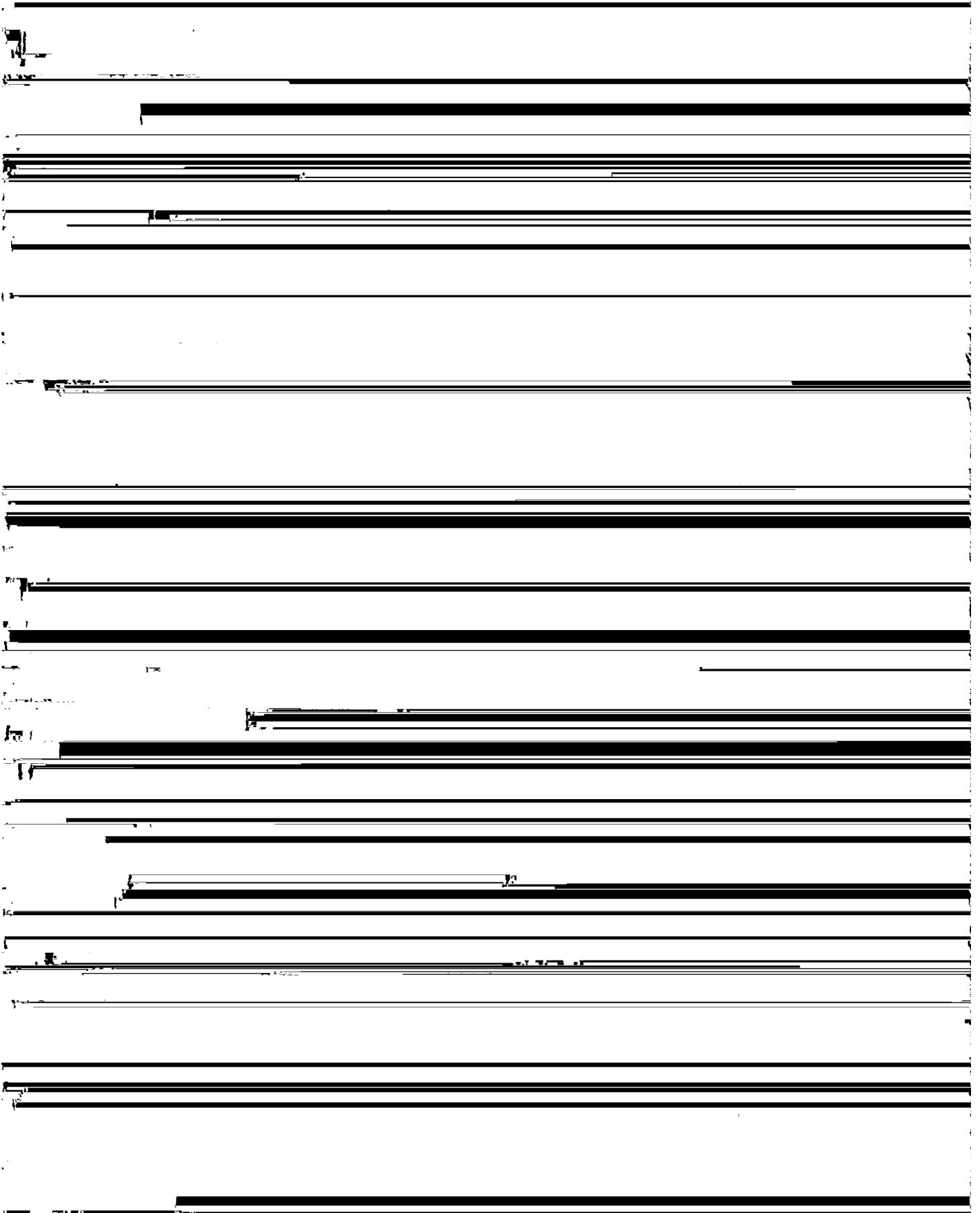


Figure 4-8. Depth-temperature graphs in the vicinity of an ore deposit. A. Ore does not generate heat. B. Ore generates heat.

Oil Well Cementing Company. Previous parts have appeared in THE OIL WEEKLY of October 21 and 28 and November 4.