areas of a sediment-filled karst depression. The depression, roughly circular in shape, was developed in the Spearfish Formation (Permian-Triassic) as a result of dissolution in the underlying Paleozoic carbonates.

The first concentration of bones, area A in the northeast part of the depression, occurs in a sequence of channel sands and gravels. The second concentration, area B in the southwest part of the depression, occurs in a series of varved muds with a known total thickness of over 16 feet. The varved muds also contain pollen and a macroflora.

In addition to mammoth, this site has also yielded teeth of two carnivores, one herbivore, and several rodents.

Although analysis of the site is not finished, its age is presumed to be Late Pleistocene.

BOISE GEOTHERMAL PROJECT: A PROGRESS REPORT

Applegate, J.K., Donaldson, P.R., Hollenbaugh, K.M. Department of Geology, Boise State University, Boise, Idaho 83725; Mink, L.L., Idaho Bureau of Mines and Geology, Boise State University, Boise, Idaho 83725; Nichols, C.R., Department of Geology, Boise State University, Boise, Idaho 83725

A project has been funded by ERDA (AEC) to investigate the potential geothermal reserves along the Boise Front for possible utilization for large-scale space heating of government office buildings. The study will include geological, geophysical, and hydrological studies in an integrated program to define the nature of the resource. Engineering feasibility studies will be carried out by Aerojet Nuclear Corporation.

The Boise Front study area is envisioned as an interbedded sequence of lake beds, stream deposits, and lava flows which lap onto the granitic rocks of the Idaho Batholith. The Front represents the northeastern edge of the Snake River Plain and may be bounded by a series of northwest-southeast trending faults which are down towards the center of the plain.

Some hot springs and numerous hot water wells have been documented along the Front. It is postulated that the leakage of hot water is controlled by the northwest-southeast fault trend and a possible perpendicular fault trend.

The geological, geophysical, and hydrological studies are attempting to define the location of the large hot water reservoir which is feeding the shallow system. Geological field mapping will be carried out in the area in addition to hydrological studies in existing hot water wells, and wells to be drilled specifically for the project. Geophysical studies will include dipole-bipole resistivity mapping, magnetometer and gravimeter surveys, microseismicity study, an active seismic program, and borehole geophysical studies of the hydrological drill holes.

MULTILAYER CLAY MODELS OF THRUST FAULTS AND ASSOCIATED STRUCTURES

Balicki, M.A., Department of Geology, University of Calgary, Calgary Alberta, Canada T2N 1N4; Spang, J.H., Department of Geology, University of Calgary, Calgary, Alberta, Canada T2N 1N4

Multilayer models composed of several clay layers which have different relative viscosities have been used to study the development of thrust faults and associated structures. The ratio of viscosities (maximum of 7:1) is controlled by varying the proportions of different types of clay, along with water content and grain size. The use of an internally layered clay, such as kaolin, strengthens the resemblance of these models to the layered structures in nature. The application of a uniaxial stress field, such as is enc Canadian Rocky Mountains, produces self fold sequences which need no artificial amplitudes. With these models, single faults, en échelon faults, stepped thru plunging folds, concentric folds, simil fold hinges have been produced. Radica produced by changing the position and/o sequence. These models have been used problems, such as the origin and mechan effect of a reef complex on the locatio els clearly show the geometry and the i faults and folds along with the sequenc grids and serial sections cut along the how one structure transfers into anothe conical fold into a cylindrical fold.

Fe/Fe+Mg RATIOS IN BIOTITE AND BULK ROC OF TEMPERATURE REGIMES IN A SECTION OF STANLEY, IDAHO.

Bennett, Earl H.,II, Idaho Bureau of University of Idaho, Moscow, Idaho

Fe/Fe+Mg ratios in biotites have been s temperature and oxygen fugacity conditi the crystallization of the biotites (W Fe/Fe+Mg ratios in biotite were determi in 15 polished thin sections of graniti from 378 rock samples taken from the Id Idaho. The Fe/Fe+Mg ratios in the biot Fe/Fe+Mg ratios from the 15 whole rock which the 15 thin sections were made. done by semiquantitative spectrographic the two ratios was significant. The 37 were fitted to a temperature scale cons tures determined from the 15 biotite Fe on the scale.

Isotherms were drawn on a map of the the temperatures determined from the 37 The distribution of these isotherms agr hornblende (found in high temperature a An% in plagioclase (indicating high and distribution of trace and major element indicators, and sample elevations whic stages of the batholith.

GEOLOGY OF LA CARIDAD FAULT, SONORA, MI

Berchenbriter, Dean K., Department Iowa City, Iowa 52242

La Caridad porphyry copper deposi of the International line within th Madre Occidental of Sonora, Mexico. Eocene age intrusion of highly alte monzonite (54 m.y.) intruding Early rhyolites, and diorite host rocks. phyritic disseminations and as a se richment in the intrusive rocks and