Piney Point, and the Eureka Heights faults. These recorded episodes of faulting lasted from 1 hour to 4 days and resulted in vertical displacements ranging from 0.09 mm to 3.33 mm. The episodes were separated by periods of inactivity lasting from 4 to 60 days. The annual rate of vertical displacement observed during the 14-month period of observation ranged from 6.7 mm/yr. at site C on the Eureka Heights fault to 34 mm/yr at site B on the Long Point fault. Reverse faulting was accomplished by 8 of 34 recorded episodes.

These apparently aseismic active faults are among some 52 now known in the Houston area with a cumulative length of about 220 km; fault zones range from 2 m to 20 m wide, with scarps up to 2.2 m high. All appear to be the surface trace of faults known in the subsurface to be associated with salt domes or growth faults of regional extent.

The faults currently most active are those subparallel to the contours representing the decline in elevation during the last ten years of the piezometric surface of the aquifer underlying Houston. The activity is caused by at least two mechanisms operating concurrently: (1) the release of extensional stress engendered by the continued sliding of the unstable wedge of Cenozoic sediment basinward, and (2) consolidation and expansion of the interbedded montmorillonite-rich clays of the aquifer system underlying Houston.

Potentially damaging faults around the periphery of metropolitan Houston are up to five times more abundant than currently active faults judging from (1) faults mapped in the subsurface, or (2) linears on infrared imagery.

RARE EARTH PARTITIONING: COEXISTING METAMORPHIC PYROXENES

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Metamorphically equilibrated clinopyroxenes and orthopyroxenes from mafic granulites, Lofoten-Vesterålen and Arendal regions, Norway, were analysed by radiochemical neutron-activation methods to determine their contents of rare earth elements (REE). Chondrite normalized values for all the pyroxenes exceed unity, the pyroxenes tend to be slightly more enriched in the heaviest, smallest REE than they are in the lightest, largest REE, they show Eu anomalies because of preferential Eu^{2+} entry into coexisting plagioclase, and clinopyroxenes are always more enriched in the REE than the coexisting orthopyroxenes. The chondrite normalized patterns for clinopyroxenes bow upward in the middle REE range while the patterns for orthopyroxenes bow downward. This demonstrates a preferential fractionation of the middle R.E.E. into clinopyroxenes with respect to orthopyroxenes, the preference being strongest at about the size of Gd. The regularity of the behavior of the R.E.E. indicates that they do occupy regular structural positions substituting for other elements and that they achieve equilibrium or near equilibrium distributions in these metamorphic systems despite their very low absolute concentrations.

The work reported was done while we were both guests at Mineralogisk-Geologisk Museum, University of Oslo, Norway.

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HEAT FLOW STUDIES IN NEW MEXICO AND NEIGHBORING AREAS OF THE SOUTHWESTERN UNITED STATES

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As part of a study concerned with the geothermal structure of the Rio Grande rift and associated geologic provinces, over one hundred drill tests have been thermally logged in New Mexico and neighboring areas in the southwestern United States. From these data approximately one hundred distinct heat flow sites are expected; presently thermal flux values are available at over fifty distinct sites. Several profiles across New Mexico transversing the Rio Grande rift at various latitudes suggest that the Rio Grande rift is associated with a regional geothermal high. Along these profiles the heat flow generally changes from about 1.5-2.5 HFU west of the rift to about 1.2-1.6 HFU east of the rift, with higher heat flow values typically occurring near the rift and in areas in juxtoposition with the rift. The interplay between the Rio Grande rift and the bordering geological provinces, complicated by numerous volcanic fields in close proximity, make an analysis of the subsurface thermal structure quite difficult. Data in the southern Colorado Plateau give heat flow values of 1.3-2.5 HFU, the higher values possibly associated with regions of volcanic activity and/or upwarps in the Mohorovičić discontinuity. This range of data in the southern Colorado Plateau suggest the region is geothermally complex.

ECOLOGIC AND ZOOGEOGRAPHIC FACTORS IN THE BIOSTRATIGRAPHIC UTILIZATION OF CONODONTS

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Conodonts possess many of the ideal criteria for use as 'guide-fossils' in biostratigraphy. They are found in varying abundance in marine strata ranging from Middle Cambrian to Upper Triassic in age, and their resistant phosphatic microscopic remains are relatively easily extracted from most rock types. They seem to have been pelagic (or, less probably, planktonic) in habit and they have been described from all continents except Antarctica. Several of the zonal schemes established in North America and Europe show striking similarities to successions in other areas and suggest that conodonts will ultimately provide the most comprehensive biostratigraphic reference scale for the Paleozoic and Triassic. In spite of such current optimism, recent studies have demonstrated greater facies restriction of some forms, more zoogeographic provincialism, and more complex evolution in conodont faunas than was earlier supposed, and the recognition of multi-element association has shown the need for a radically new taxonomic framework. Although this will produce a more cautious and critical approach to