Reply[1]

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We think this is a good opportunity for restating the summary of our paper 'Relationship among Terrestrial Heat Flow, Thermal Conductivity, and Geothermal Gradient,' which appeared in the April 10, 1970, issue of the *Journal of Geophysical Research,* pages 1985–1991.

We found that in many continental geological provinces heat flow Q is correlated positively to thermal conductivity K. The most natural interpretation of this observation is that it exemplifies the principle of thermal conduction in an inhomogeneous medium, in which the flow of heat tends to converge where the conductivity is high. We illustrated in our paper the nature of the phenomenon by a simple model in which an ellipsoid of anomalous conductivity is embedded in a half-space with the two principal axes of the ellipsoid lying on the boundary surface of the half-space. *Naidu* [1970] seems to elaborate this problem by using a model of randomly distributed thermal conductivity, which enables us to estimate the anisotropy of the medium from the variances of heat flow and thermal conductivity.

On the other hand, in some of the continental geological provinces, quite a high correlation has been found between heat flow Q and the rate of heat generation A by *Roy et al.* [1968] and *Lachenbruch* [1968]. Since the validity of this relationship is undeniable and its significance for the interpretation of heat flow is far-reaching, we thought the interrelationship between the relationship of heat flow to conductivity and the relationship of heat flow to rate of heat generation must be considered. From our observation

$$Q = a + bK \tag{1}$$

and the observation by *Roy et al.* [1968] and *Lachenbruch* [1968]

$$Q = \alpha + \beta A \tag{2}$$

the correlation between the thermal conductivity K and the rate of heat generation A is readily inferred.

In summary, it is not necessary to assume the relationship between thermal conductivity and rate of heat generation as long as we interpret the heat flow to thermal conductivity correlation by thermal conduction in a heterogeneous medium. However, it becomes necessary to infer the relationship between thermal conductivity and rate of heat generation if the relationship of heat flow to thermal conductivity is to be compatible with the relationship of heat flow to rate of heat generation.

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Comments on Paper

Lawrence Radiation

In their discussion of strain central California, *Scholz and* show that measured fault mov explain long-distance geodimeter They propose as one possible that creep is occurring on geol faults.

Surveys for horizontal movem Pleasanton faults, in the weste Valley of California [*Gibson an* 1968], indicate that measura movement is taking place on i might consider geologically mi with the neighboring Calaveras veys of horizontal movement we 1964 by the U.S. Coast and Ge and were repeated in 1965. (T of an engineering study by the La tion Laboratory to judge the su area for construction of a 200-Ge erator; the laboratory was una support of the measurements a short one-year time base made determine the magnitude of ho ment. However, there was a co wise directional trend to vectors quadrilateral survey figures that suggesting a right-lateral com Mrs. Dorothy Radbruch of the

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