accuracies of, say, about $\pm 10\%$ in the values of compressibility which determine the structure factors, this will alter the resistivities by about $\pm 7\%$. We have simplified our calculations by taking the valence Z to be a constant independent of density or temperature. If we allow for increases in the Fermi radius due to possible variation of Z, then the resistivity is only likely to increase by a factor of two at most.

The Earth's outer core almost certainly contains lighter elements in solution with iron. It has long been suggested that these elements might be nickel or silicon. Recently, BUSCH *et al.* (1971) have measured the resistivity of some liquid transition metals at normal pressures. They find that alloying iron with germanium increases the resistivity of pure iron (139 $\mu\Omega \cdot$ cm) to maximum of 186 $\mu\Omega \cdot$ cm at about 35 at.% of germanium. Silicon is expected to behave in much the same way as germanium. When gold is alloyed with liquid iron, the resistivity is increased by a few % and nickel should be similar in this respect.

Our simple model has been applied to various alloys of liquid noble and transition metals (DREIRACH *et al.* 1972) and can explain many features of the alloying behaviour. The model predicts that the alloying dependence of the resistivity is much the same for the liquids at high pressures as at normal pressures. We do not expect very large changes in the resistivity of iron in the outer core due to the presence of nickel or silicon in solution. This is contrary to STACEY's (1967) estimates, but it is in accordance with GARDINER and STACEY (1971). The experiments of KEELER and ROYCE (1971) at 1.4 Mb give results for the resistivity of Fe–20% Ni and of Fe–20% Si as 94 $\mu\Omega \cdot$ cm and 182 $\mu\Omega \cdot$ cm, respectively. Unfortunately, it is not known whether these alloys are solid or liquid. We are unable to make accurate estimates of the effect of sulphur on the resistivity of an iron core, but we would not expect any drastic increase to occur, i.e., the resistivity should not be greater than the lower limit of 330 $\mu\Omega \cdot$ cm.

At this conference, RUNCORN (1972) has suggested the possibility of a dynamo model for the magnetic field of the Moon. If one assumes a liquid iron core for the Moon in its earlier history, then one can probably estimate the electrical conductivity of such a core from table 2 by assuming some values for the relevant density and temperature.

In conclusion, we would like to point out that our model can be applied to most liquid metals at normal or high pressures, and we feel that it might be especially useful in interpreting static high-pressure conductivity data.

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