is good and that friction either in the sliding parts of the tensile yoke or between the yoke and pressure vessel walls is not excessive. The steel spring sample is then replaced by the tensile sample of interest, and the tensile yoke and sample are inserted in the high pressure vessel atop of the cylindrical spacer in the arrangement of Figure 1. The spacer is chosen so that contact between the pressurizing piston and tensile yoke will occur at a predetermined pressure. The distance between the top of the pressure vessel and the tensile yoke is then accurately measured with a depth gage, the system filled with fluid and the top seal inserted. The system is then pressurized by driving the top piston downward to within approximately 0.100 inch of the tensile yoke as measured by a dial gage attached to the piston on the pressurizing jack. During pressurization the output of the load cell is recorded as a function of pressure and time. The strain measuring LVDT is then set so that the core position is within the linear range of the transducer and the pressurization is continued by hand pumping while recording the output of the load cell and strain measuring LVDT on an X-Y recorder. At contact between piston and tensile yoke there is a discontinuity in the load cell output marking the start of the recording of sample load vs. extension. A typical load-extension curve of a zinc single crystal tested at high pressure is shown in Figure 12.

A number of features of this curve are noteworthy. First of all there is a small change in pressure during the

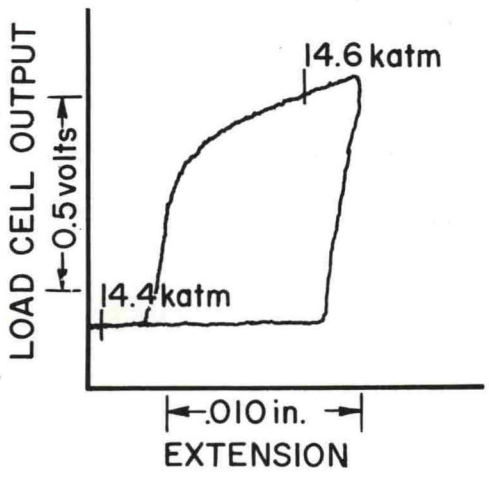

Fig. 12 Load-extension curve for zinc single crystal stretched at a pressure of ~ 14.5 katm.