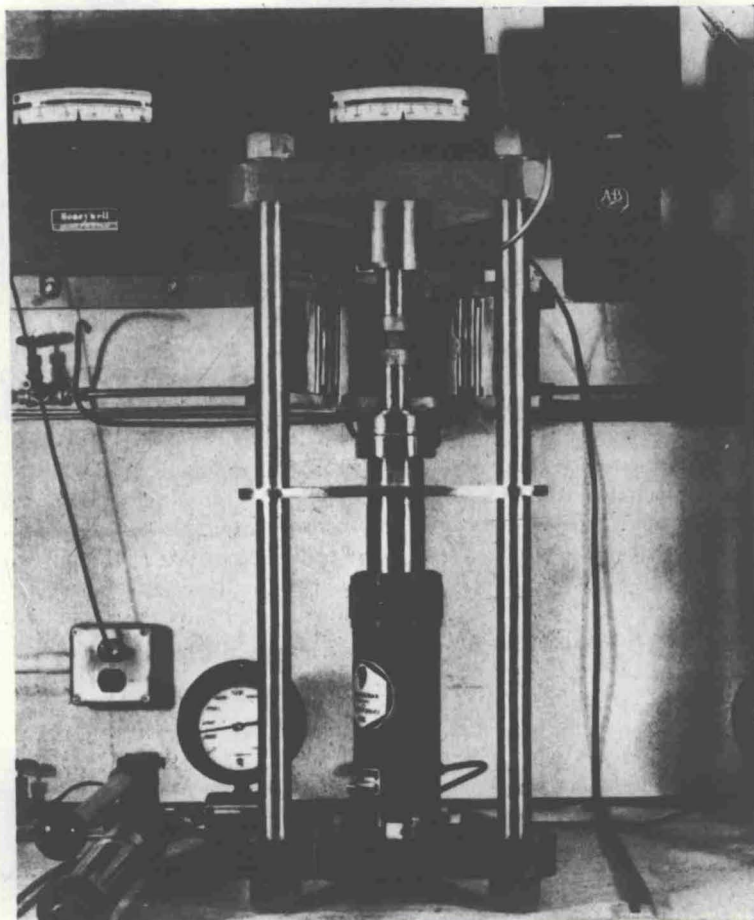


0.5 percent of full scale, and that the friction on the Blackhawk rams is 1 percent. The Heise gauge is regularly used to check the U. S. gauges. It is desirable to measure the diameter of the piston faces to 1 percent or better, which we do with a cathetometer. One must be sure that there are no elements in the system which can introduce any undetermined friction or in any way bear any of the force which is thought to be applied to the specimen. In our apparatus, there are two such elements: the plate which aligns the ram (pl. 1), and the stainless steel ring. The alignment plate has been found by the above force calibration to introduce no measurable friction. The stainless steel ring clearly bears some load outside the piston face. This has been evaluated by measuring the deformation in the ring and roughly calculating the force required to produce this. The magnitude of this force varies with pressure, temperature, and sample size, but in our configuration it is always less than

## PLATE 1



Apparatus, with furnace open to show piston assembly.