F. R. Boyd and I. L. England, and independent of them Iu. N. Riabinin and L. D. Livshits, improved the boosters with a cylindrical piston, supporting the stressed end of the piston quasi-hydrostatically by means of a plastic gasket (fig. 1b).

In turn, L. F. Vereshchagin and colleagues strengthened the booster piston by using a tapered instead of a cyclindrical piston (fig. 1f). The piston moves into the working space of the chamber as the plastic conical gasket leaks out. T. Hall used a piston of complex shape with a multilayered gasket for this purpose. In these variants, a filler of supporting rings keeps the cyclindrical chamber from breaking.

Returning to the possibilities of the high-pressure method, let us note that Vereshchagin was able to obtain a pressure of 170,000 atm at a temperature of 1500°C using the apparatus design principles examined above. A new, denser modification of SiO_2, stipoverite (stishovite), was obtained using this apparatus. Stipoverite (stishovite) was named after the scientists who discovered and studied it, viz., S. M. Stishov, S. V. Popova, and L. F. Vereshchagin.

New structural forms of substances may be obtained at lower pressures as well. Recently V. V. Evdokimova discovered a new variant of NaCl at 18,000 atm, which, at atmospheric pressure, is either metastable or transforms very slowly into normal structure.

Rearrangement of the structure of substances under pressure is also very important for fields other than investigation of the properties of substances in a condensed state. Geophysical, geochemical, and metallurgical investigations at high pressures and high temperatures are of both scientific and technological interest.