

In the structure described, the cylindrical and conical pistons 6 and 1 operated almost without backing (if the lead collar 2 is not counted), which permitted an evaluation of the pressure attained from the displacement of the pistons. Figure 3 shows the results of one of these experiments in which a small cylinder of bismuth was placed inside the pyrophyllite cylinder. The polymorphic transformation of bismuth, taking place at around 25,000 atmos, and accompanied by a decrease of volume, is clearly apparent from the break of the curve of piston displacement versus pressure on the press multiplier.

It follows, from an examination of Fig. 3, that, in this experiment, there was attained a pressure exceeding almost double the pressure of the bismuth transformation. It should be noted that experiments carried out repeatedly in an apparatus of the indicated construction, at pressures of around 50,000 atmos and temperatures to 1500° for several hours, did not leave any noticeable changes on the internal surfaces of the wedges forming the bore of the high-pressure vessel.

Obviously, the limit of pressures attainable in an apparatus of the described type can be raised by the application of backing to the moving piston, making the pistons and wedges out of hard alloys and, when necessary, construction of mechanical backing of the wedges by known methods.

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LITERATURE CITED

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