The countries of the Socialist Bloc (East Germany, Poland, Czechoslovakia, and Hungary) exhibited a great number of the latest machines at Intergormash-67.

Among the earth moving machines was the UB-162-1 universal, full-turning tracked excavator of the continuous type, produced at the Zemag plant in East Germany. It is intended for working light, medium, and heavy ground and has a single-beam, circular-section boom with a rock type thrust system. If so desired, the machine can be delivered with a subordinate or independent thrust mechanism. The bearing and swivel is composed of double-row ball bearings. The drive is provided by a 12-cylinder, 4-stroke air-cooled diesel motor (204 hp for 1500 rpm). Transmission is pneumatically controlled. There are facilities for an electric motor for drive purposes. Operating equipment comprises the following range: forward-operating shovel and bucket capacity of 2 m$^3$ for heavy ground, 2.5 m$^3$ for average ground, and 3 m$^3$ for light ground; a backhoe with capacity 1.9 m$^3$ (Fig. 1) for medium or heavy ground and 2.4 m$^3$ for light ground; a drag line with 1.4, 1.8, and 2.3 m$^3$ buckets and with boom lengths of 21, 18, and 15 m, respectively; a grab with 1.0, 1.25, 1.55, and 2 m$^3$ buckets and booms of 21, 18, 15, and 12 m, respectively; and a crane with maximum load 30 t, which has a boom of 12 m and a span of 4 m. Maximum excavation height provided by the excavator with a forward-operating shovel is 9.77 m, and the digging depth for a backhoe shovel is 8 m. The excavator with a forward-operating shovel weighs 62 tons.

The Zemag factory has used the UB-161-1 excavator as a basis for a whole range of UB-266 diesel excavators for work in severe climates. The machine has undergone successful trials in the Northern USSR. It is fitted out with the same range of exchangeable equipment as the UB-162-1.

Drilling equipment exhibited included pneumatic picks from Czechoslovakia (Table 1) and electric core drills from Poland (Table 2). The picks work on air legs and are driven by compressed air (5-7 kg/cm$^2$). Air flow is 230-240 m$^3$/h. Drillings are flushed out by air or water. The Czechoslovakian stand also exhibited the VK-15 hand-held jack hammer; it weighs 14 kg and is intended for drilling shotholes of diam. 34 mm to a depth of 1.5 m.

The MDR-06E and MDR-03E drills are chiefly for underground use. Drill feed is effected hydraulically at a fluid pressure up to 30 atm. The drillings are flushed out by water at 18 atm with total dust suppression facilities. The machines can drill shotholes or boreholes at any angle to the horizontal and at any point of the accessible face of the working.

East Germany exhibited machines for drilling holes with final diameters of 2000 mm and depth up to 250 m, working on the grab and rotary-suction drilling principles. Grab drilling is effected as follows. A grab with three to

*Further information on this exhibition—see also No. 1, 1968. — Editor.

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four drills is suspended on a rope so as to penetrate and break up the ground. A winch is then activated and the
grab grips the loosened soil and raises it to the surface. The grabbing tool can work in dry and waterlogged areas.
These machines are mostly used to drill holes in friable and semihard rock where the walls of the holes are lined
by steel tubes connected up by welding or threads. The Brucken and Stahlhochbau factory (E. Germany) has pro-
duced a range of this type of drill to deal with holes of diam. 620-1020 mm to depths of 100 m. In rotary-suction
drilling, or drilling with return circulation, during flushing the water strikes the face between the outside wall of
the drilling pipes and the surface of the hole itself. Drillings are drawn out through the drilling pipes in the form
of slurry to a settling tank where the slurry is cleaned and then returned to the hole. The ground is drilled by con-
ventional roller bits or special combined bits, designed to build up different dimensional types from individual ele-
ments to match the calculated diameter of the hole. As a rule, this rotary-suction method can deal with holes of
diameter 260-2000 mm to a depth of 250 mm without supporting the walls by casings or using clay mud in the
drilling.

This factory also produces the K2/S100, K5/S150, and K6/S250 types of standard wheel equipment. These
machines can deal with hole diameters of 260-750, 480-1100, and 750-2000 mm, respectively. The K6/S250 ma-
cine is hydraulically controlled and can move on a tired chassis at 20 km/h. The overall transport dimensions of
the unit are: length 13.3 m, width 2.75 m, height 3.59 m, and weight 15 tons. The motor rating is 50 kW. One
operator is required.

East Germany also manufactures two types of percussion machine and one rotary model which can drill holes
100-750 mm in diameter to a depth of 600 m. The K8/RT100 dry drill of the combined type can drill holes 168-
377 mm in diameter to a depth of 100 m.

Poland exhibited the OP-1200 tracked drill from the Glinik factory. It is designed for drilling 143-308 mm
prospect holes to a depth of 1200 m and operates on a rotary suction principle. The weight is 47 tons; the two diesel
motors are both rated at 175 hp.

Poland and Czechoslovakia exhibited track-mounted continuous loaders of new design, which can be used
both with batch-type or continuous transport facilities. Polish bucket loaders of the Goliat range either discharge
from the rear or in the same way as the LBV-2P (Fig. 3), which is a side-tipping machine fitted with 0.34 and 0.3

### TABLE 1

<table>
<thead>
<tr>
<th>Indices</th>
<th>VK-22-1</th>
<th>VK-25</th>
<th>VK-29-1</th>
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<tr>
<td>Drilling diameter, mm</td>
<td>42</td>
<td>42</td>
<td>42</td>
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<tr>
<td>Drilling depth, m</td>
<td>Up to 6</td>
<td>Up to 6</td>
<td>Up to 15</td>
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<td>Impacts per min</td>
<td>2,100</td>
<td>2,500</td>
<td>1,950</td>
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<td>Piston stroke, mm</td>
<td>50</td>
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<td>60</td>
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<td>Overall dimensions, mm:</td>
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<td></td>
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<tr>
<td>Length</td>
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<td>620</td>
<td>720</td>
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<td>Width</td>
<td>285</td>
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<tr>
<td>Weight, kg</td>
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### TABLE 2

<table>
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<th>Indices</th>
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</thead>
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<td>45; 56; 66</td>
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<tr>
<td>Drilling depth, m</td>
<td>Up to 50</td>
<td>Up to 100</td>
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<td>Maximum rate of advance of drill, m/min</td>
<td>2.4</td>
<td>1.45</td>
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<tr>
<td>Rate of drill rotation, rpm</td>
<td>211-1,230</td>
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<tr>
<td>Power of motor, kW</td>
<td>2.8</td>
<td>4.5</td>
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<tr>
<td>Weight, kg</td>
<td>210</td>
<td>375</td>
</tr>
</tbody>
</table>

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