very satisfactory packing for high pressures. It does not leak when properly made and the friction is not excessive. The valves are all of the poppet type, carried in bronze casings."

The arrangements for cooling are very thorough. The air cylinders and heads are water-jacketed, and water circulates in the intermediate and high-pressure rams.

Between compressions and after the final compression the air passes through large intercoolers, situated in cement tanks the foundation of the machine.

The American Machinist gives the following as the result of a test:

The I.H.P. of the steam cylinders was 351.6 horse-power. This was at 100 revolutions per minute, or a piston speed of 400 feet per minute. The combined I.H.P. of the air cylinders was 286.7 horse-power. This gives a mechanical efficiency of 81.5%. The pressure of the discharge of each air cylinder, as shown by gauges, was as follows:

Low pressure	75 pounds
Intermediate	375 "
High	2,000 "

TEMPERATURES.

	Temperature of suction	Temperature of discharge	Temperature by adiabatic compression	Difference
Low pressure cylinder	75°	320°	444°	124°
Intermediate pressure cylinder.	73	289	355	66
High pressure cylinder	69	358	392	34

The final temperature of single-stage adiabatic compression to 2,000 pounds is 1,769 degrees.

These figures indicate the relative amounts of heat abstracted by the jackets and coolers. The last column shows that the amount of heat removed by the jackets is about in proportion to the cylinder areas. The difference between the temperature of discharge and the temperature at the entrance to the next cylinder indicates the amount of heat removed by the intercoolers. The low temperature of the suction of the intermediate and high pressure cylinders shows that the intercoolers were very efficient.

It will be seen that many of the features in this compressor are such as would be adopted in any large and economical plant for furnishing air at a high pressure. This is more particularly the case with the air end. In the design of steam end, however, the usual