

considered a wonder in the way of cannon with an ancient ram, which is seen to the right.

In the Rifled Ordnance Factory is carried on the manufacture of the smaller kinds of guns, or field artillery, from the 7-pounder mountain gun to the 16-pounder and 25-pounder. Here the various operations of boring, turning, and rifling may be witnessed.

In the West Forge may be seen at work a couple of hammers, worked by steam, and of immense power. The largest, a 12-ton hammer, is used for producing the large forgings for the trunnion

enormous framework is required to sustain aloft this ponderous mass. This is formed of two immense iron piers, which at about ten feet from the ground bend over so as to form an imperfect arch, open in the centre for the rise and fall of the hammer, and bearing the upper portion of the apparatus. The entire height of the "tool" is 45 feet; the base covers an area of 120 feet square, and the entire structure weighs 550 tons. But to support this structure, the anvil—weighing in itself over 100 tons—and the tremendous blows of the



ARTILLERY BARRACKS AND GATEWAY.

hoops. The force of its heaviest blow is computed at 400 tons, while it is under such perfect control that a blow can be struck by it which will crack a nut without wounding the kernel. The other hammer, a 10-ton, is used principally for welding the large coils together, and attaching the trunnion hoops. The "40-ton steam hammer," in a shed close by, is said to be the most powerful "tool" of its kind in the world. Its falling portion, or "hammer-head," weighs exactly forty tons, and hence its technical description. It was manufactured by Messrs. Nasmyth and Wilson, of Patricroft, near Manchester, and cost altogether over £50,000. The "striking fall" of the hammer is fifteen feet, but by the injection of steam into the cylinder above, it is driven down with such immensely increased force, that the blow is equal to what it would be if the hammer fell of itself from a height of eighty feet. It may be easily imagined that an

hammer, foundations of unusual magnitude are required. These comprise blocks of iron weighing in

the aggregate some 650 tons; the largest of these blocks weighs no less than 100 tons. Besides all this iron, there is timber and concrete to a depth of about 30 feet underground. Two immense furnaces supply the hammer, and four huge cranes, whose combined lifting power is above 300 tons, for the purpose of feeding the monster. This hammer was used for the first time on the occasion of the visit of the Czar of Russia in May, 1874. The scene is thus described in the newspapers of the time:—"But now the sight of

