

Perkins's Portable Steam Oven.

On Monday last a trial was made at the works of Mr. A. M. Perkins, Seaford street, Regent square, in the presence of some of the principal officers of the Commissariat department, of a new portable steam oven, constructed by Mr. Perkins, for military purposes. The oven consists of a casing of an O-form, 10 feet 7 inches long outside, 9 feet of this length being occupied by the oven proper, and the remainder by the furnace and the division wall between it and the oven. The casing is made double, being formed of two shells of 1-16th inch wrought-iron plates placed 2 inches apart, and the space between the shells is filled in with vegetable black to prevent radiation, which it does most effectually. The oven is heated by twenty-four water tubes, 10 feet 3 inches long, 1 5-16th inches diameter outside, and $\frac{1}{4}$ inch bore; twelve of the tubes are placed under a false bottom, and twelve along the top of the oven. The tubes are inclined downward towards the furnace, into which one of them projects 9 inches, the twelve lower tubes forming the fire-grate; they are filled with water for 3 feet of their length, and then have their end welded up so that no evaporation can take place. Similar tubes have been long successfully employed by Mr. Perkins for heating purposes, and some which had been in use for upwards of nine years have been recently opened, and found to contain the same quantity of water as was originally placed in them. When heat is applied to these tubes steam of a high pressure is, of course, found within them, and the tubes thus become of an equal temperature throughout their length. In the case of the oven forming the subject of the present notice, the heat transmitted to it by the tubes is found to be uniform in all parts. Above the furnace, and surrounding the short chimney leading from the top of it, is placed a copper boiler; this absorbs some of the waste heat from the furnace, and gives a good supply of hot water. The oven is fitted at the end farthest from the furnace, with a pyrometer for indicating the temperature, and glazed sight-holes for watching the process of baking, and the whole apparatus is carried upon four wheels, and is intended to be drawn by two horses. The oven tested on Monday is capable of baking at one time eighty "three-ration" loaves, each weighing 3 $\frac{1}{2}$ lbs, the time required for heating the oven for baking being only one hour, and the time occupied in baking each charge being two hours. About 60 lbs. of coke are used per day for working the oven, and the bread baked in it is found to be slightly heavier, for the same weight of dough, than that baked in an ordinary oven, a result ascribed to the uniform temperature of the oven not destroying the saccharine matter of the bread. The weight of the whole apparatus complete is a little under 38 cwt. Another oven, made by Mr. Perkins on the same plan, is now in use at Aldershot, and is working very satisfactorily. In that tried on Monday, however, several improvements have been made, and the weight has been materially reduced. This portable oven appears to be a very great improvement upon that now used, and there seems to be no reason why it should not be extensively employed for military and naval purposes, as well as in a modified form in other situations.—*Engineering*.

New Photographic Printing Process.

We have received from the inventors, Messrs. G. E. Desbarats and W. A. Leggo, of Quebec, C.E., some specimens of prints—done upon a common hand-printing press—of their newly-patented process for making printing plates by means of the photograph.

The object of the patentees is to produce electrotype plates of pictures, ready for common printing like ordinary type printing, without engraving or other hand work.

The process is briefly as follows:—Upon the varnished side of an ordinary negative, pour a solution of gelatin containing bichromate of potash. Dry, and expose the uncoated surface uppermost to light, which fixes that portion of the bichromate upon which the rays fall. Dissolve off the unfixed portion by dipping in warm water; drain, and we have a film upon the glass more or less raised, according to the strength of the lights in the picture. Take an impression of this film in plaster. Dip the impressed plaster in hot wax, and place the waxed surface upon a glass plate also covered with hot wax. The wax upon the plate unites with the wax upon the plaster, and the latter may then be removed, leaving upon the plate a fac simile in wax of the original photographic gelatin film.

The fac simile being now dusted with plumbago and electrotyped in the usual manner, a printing block in copper is produced, capable of use with printer's ink upon any press.

The specimens we have received are for the most part copies of steel plate engravings, and the pictures are comparatively well done. There is, however, room for improvement.—*Scientific American*.

The diminution of the magnetic dip has been going on in London for the last half century with great regularity at the rate of about three minutes annually.

MANAGEMENT OF STEAM-BOILERS, POCKET GUIDE TO: W. C. Chewett, & Co., Toronto. Price 25 cents.

This is a short but valuable treatise on the subject of which it treats, written by W. Gill, Esq., of this city, and first published in the June number of this Journal. It is done up in a neat form, suitable for the pocket, and should be in the hands of every person either owning or having charge of a steam-boiler. The writer is a gentleman of long experience, and for several years past chief engineer of the Toronto Rolling Mills, where eight large boilers have been in use day and night, almost continually, for the last six years; and although the water used is usually extremely muddy, these boilers by careful attention and regular inspection have been kept in the most perfect working order. Secure a copy of this little work, which we suppose will be for sale by various booksellers.