The Great Exhibition Building.

The London *Building News* thus describes the progress of the building at South Kensington for the International Exhibition of 1862 :—

It is scarcely more than two months since the vast plot was an undisturbed green field, with buildings of unusual extent and magnificence around it. It was, however, made over to Messrs. Kelk and Lucas, and they are not men to let the grass grow under their feet; the sheep were removed, and the turf-cutters turned in there. They soon stripped the green spring carpet from it, and on the 9th of March the first stake was driven for the guidance of the workmen. From this stake the whole site was divided into squares, the positions of the piers were fixed, and pegs driven to guide the excavators. At the first glance this may appear a very simple operation, but a minute's reflection convinces us of its vast importance, and how much every subsequent operation depends upon its accuracy. A divergence of an inch or two in the length of a brick or stone building is of no particular moment, but in this case, where the several particles of the building are of various materials, and made in different parts of England, all to be finally fitted together here, it becomes of vital importance. The points must be determined and shown visibly with mathematical justness, so that all the details can be united, like the parts of a watch or a steam-engine.

More than half of the piers—those at the eastern end of the site—are already built, and the ground is staked out for the remainder. The walls are up to the hight of 20 or 30 feet at the south-eastern corner. The window frames, some 12 or 13 feet wide, and proportionally high, are in many places fixed. The arches are being turned over the inner openings, and thus the basement of the extensive galleries which are to contain the choicest specimens of pictorial art which have been produced within the last 100 years approaches completion. There seems no lack of men and no want of energy.

But the work yet done dees not give one-half such an idea of the undertaking as the preparations which arrest our attention at every step we take. Some half-dozen sheds are thrown up in different parts of the ground. Forges are glowing at a white heat, and our ears catch a roar from the stimulating bellows, mingled with the deadened sounds of the hammered metal. Close by it is a steam engine, for hoisting materials and other purposes. Tramways are laid down for facility of transport. Bricks are stacked in thousands and hundreds of thousands, and gravel dug out and sifted as though a new town were about to be built; timber in such quantities lies about as if a forest had been felled.

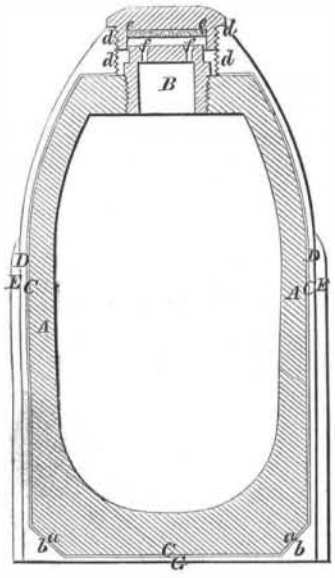
Three of the trees standing on the ground are preserved, fenced temporarily round for protection, and will, like those in the 1851 building, cast off their sere and withered leaves next autumn within the building. Every one, from Captain Fowke downward, seems in earnest, the sure earnest that there will be no disappointment next year, as far as the building is concerned.

SAWYER'S PROJECTILE.

We have published two descriptions of this famous shell, by two of the inventor's rivals, and now we publish his own with a full illustration. It will be seen that the description already given was correct as far as it went.

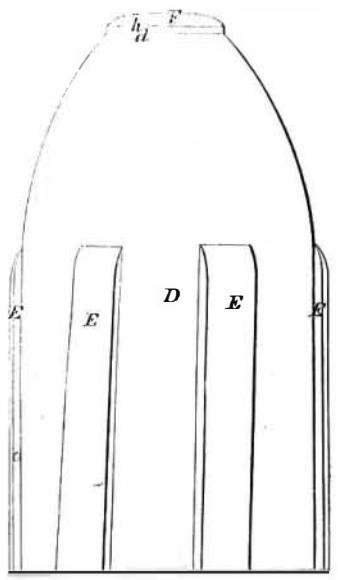
This shell was patented in 1855, by Sylvanus Sawyer, who has since conveyed one undivided half to Addison M. Sawyer. The Messrs. Sawyer are now the sole owners of the patent.

The patent was taken out before the Armstrong gun or the French rifled cannon were known.



The following is a brief synopsis of the Sawyer shell :—It is fired from a rifled, muzzle or breech-loading cannon. The shell is of iron, coated with a peculiar alloy, D D, soft enough to prevent any abrasion of the metal of the gun; and at the same time is so compounded as to prevent any *leading* of the gun. In size, it is so constructed as to slide readily into its place in the gun while the base of the shell, G, being a plane with a beveled edge, *b*, when acted upon by the powder, has so much of the composition upon the bevel upset as is necessary to prevent windage. Thus the whole force of the powder is applied to the propulsion of the shell and all abrasion of the gun, which is observed in the discharge of ordinary projectiles, is avoided, and the use of a patch is entirely dispensed with.

The shell, which is elongated and conical at the head, invariably moves point foremost. This result



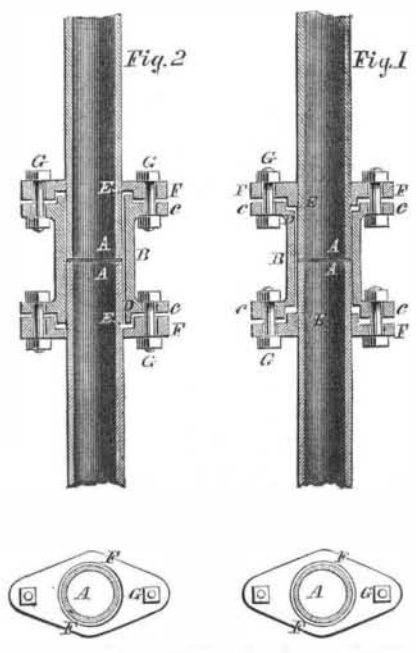
was considered impossible to be attained, until de monstrated by experimental practice with this shell. Upon the point or head, F, is a cap or screw-top, *h h*, filled with fulminate or percussion powder, *e e*, which explodes on concussion—by impact with any resisting substance—the alloy, *d d*, forming the point of the shell yields by the blow upon any hard substance, and communicating the fire to the powder within, thus forms the quickest and most certain mode of exploding a shell that has ever been devised.

This shell can be used with the ordinary time fuse; and as a case shot, from its greater capacity, is far superior to any other shell.

NORMANDY'S MODE OF CONNECTING GAS PIPES.

This simple mode of connecting gas pipes was patented in England July 21st, 1869, by Alphonse Rene le Mire Normandy.

The pipes, A A (see cut), are made plain from end to end, that is to say, without sockets, and when two



such pipes are laid end to end, a short cylinder, B, is slipped over the ends where they meet. This short cylinder is made at its two ends with sockets or recesses, of larger diameter than other parts of the cylinder; and it also has flanges, C C, at its ends. Into the sockets or recesses rings, D D, of vulcanized india rubber or other suitable packing are introduced, and over these filling pieces, F F, or rings of metal, are placed, which enter the sockets or recesses. These filling pieces are furnished with flanges, by means of which the said pieces are forced down upon the packing; screw bolts, G G, being employed to draw the flanges on the filling pieces up to the flanges on the cylinder.

The blackberry crop is of so much importance on the Ohio river that the mail boats recently changed their time of starting from Louisville to an hour earlier to accommodate the shippers of blackberries along the line of the river from Madison to Cincinnati.

A difficult feat in engineering is now in progress at the Manchester (N. H.) Print Works. The foundation of one of the mills, 400 feet in length, is being removed and a new one put in its place, a work requiring no small degree of mechanical skill and judgment. The work is in charge of M. W. Oliver, a young civil engineer, who has built some of the best mills in the country.

FROM THE STEAM PRESS OF JOHN A. GRAY.