

the cistern, B; when a fresh supply descends by $ax y$, to be in its turn heated and driven out as before.

If distilled water could always be supplied to the cistern, B, and that kept clean, the tue-iron would have a fair chance of doing its duty to the end; but as it is not so, and as there is a great probability that other substances get into the cistern, and ultimately find a settlement in the tue-iron, some contrivance was desirable for preventing the accidental, or perhaps, in some instances, wilful choking of the tue-iron.

The means adopted for this purpose will be readily understood by again referring to the two figures.

Instead of the water descending by the curved pipe, $ax y$, it is conveyed by the straight pipe, ab , into the cast-iron box, C, which is fixed considerably below the tue-iron, and must first be filled before any can rise up the pipe, c , into the tue-iron.

Should any sand or ashes get into the cistern, B, it will settle in the box, C, and not in the tue-iron, which will be supplied with water containing no heavy particles.

Amud-hole door, n , is provided by which the box may be cleaned out at any time when the work is not going on.

This additional apparatus, if attended to, will ensure a satisfactory working and add a considerable period to the existence of the water tue-iron.

The box, C, I have made, is of the capacity of one cubic foot to each fire, and I would recommend that the mud-hole door be opened every two or three weeks according to circumstances.

On the Coal Fields of Alabama. By CHARLES LYELL, Esq. F.G.S.

The author, in this paper, announced the fact, that the great Appalachian coal field of North America extends southwards as far as lat. $33^{\circ} 10'$, where it is covered up with beds of the cretaceous period. The coal is worked in open quarries at Tuscaloosa, near the centre of Alabama, and is there associated with carbonaceous shales, containing many fossil vegetable remains, recognized as of the same species as those found in the mines of Ohio and Pennsylvania. The strike of these coal beds is N.E. and S.W. The coal in this district appears to occupy the highest place in the carboniferous series of deposits, and with it occur white quartzose sandstone and grits, reposing on shales and clays containing seams of coal of less value. These are of considerable thickness, and overlie a great deposit of quartzose grit, passing downwards into thinly laminated sandstones. Next succeeds a group of fetid limetones, with chert resting on another limestone, in which occurs what seems to be a bed of brown hæmatite of vast thickness. The Alabama coal fields may be considered as forming three basins, of which the most western is not less than 90 miles long, and from 10 to 30 miles across, and the eastern is of nearly as great extent. The third is to the north, and appears to be of smaller dimensions.—*Trans. Geolog. Soc.*

Athenæum.