June 8, 1841.

The PRESIDENT in the Chair.

The following were balloted for and elected: John Ball and Adalbert Morawski (of the Grand Duchy of Posen), as Associates.

"Description of Stephenson's Theatre Machinery."—By J. B. Birch, Grad. Inst. C. E.

In this communication the author describes a system of machinery ^{Theatre ma-} which was erected for the purpose of avoiding the confusion, mis-^{chinery.} takes, and noise, consequent upon the number of men usually employed in the stage department of a theatre, and with a reduced number of men to effect more perfectly all the operations required there.

The apparatus provides means for shifting simultaneously and without noise, any number of distinct pieces of scenery, bringing at the same time into view other scenes to replace them. The general arrangement of the machinery for effecting this, is fully described.

The interior of the house between the basement and the roof, is divided into four compartments, viz.:

1. A raised platform on which the gearing for working the stage ^{Under the} traps is placed. The trap frames are mounted upon rollers; they ^{stage.} traverse on the lower platform in every direction; and when brought under the apertures in the stage, allow the traps to sink or rise steadily at any required speed.

2. The stage, with its traps of various dimensions, including a ^{Stage} considerable portion formed to rise or fall by suitable machinery, and ^{level.} called the sinking stage.

3. The lower flies or corridor, between which and the stage are ^{First story} placed the wings or side scenes, and the border frames are sus- ^{above} ^{stage.} pended.

4. The upper flies, upon which is placed the machinery to com- ^{Second} municate motion to the whole, from the upper horizontal shaft, ^{story} by means of bevel gear, provided with double clutches to reverse the ^{above} motion and shafts, on the lower ends of which are the slow-motion ^{stage.} wheels and drums, an endless chain is driven horizontally in either direction; to this are attached the borders representing clouds, foliage, arches, &c.

The side scenes or wing frames, the number of which is determined by the depth of the stage, may be either flat, circular, or

triangular, and receive a rotary motion, combined with or apart from a forward and backward movement at pleasure, and can be placed at any desired angle to the audience. At every change of the scene they revolve through 120° or $\frac{1}{3}^{\text{rd}}$ of a circle, and the scenes when removed from sight are replaced by those which are to succeed them.

The traversing frames revolve on a centre, and are suspended from the border frames, or from the upper part of the theatre, for crossing the stage in any direction, and at any given inclination.

Several improvements in the mode of lighting the stage and house have been introduced with the machinery; they are more fully referred to in the detailed description which accompanies the ten elaborate drawings sent with this communication.

“On the Combustion of Anthracite, and its value as a Fuel for Steam Engine and other Furnaces.” By Andrew Fyfe, M.D.

Combustion of : n-
thracite.

Anthracite, although known as a valuable fuel for particular purposes, is so difficult of combustion, that it has hitherto been very partially brought into use; it has, however, become desirable to introduce it more generally, and the author having been engaged in testing the value of Mr. Bell's patent furnace, was induced to make some experiments on the use of anthracite in conjunction with that system.

Bell's
patent
furnace.

The objects sought to be obtained by the apparatus are, to insure a larger amount of evaporation, by passing heated air, unmixed with the products of combustion, through tubes in the boiler and surrounded by the water, thus increasing the evaporating surface; and that the surplus caloric taken originally from the fuel, and not given out in its passage through the water, should be beneficially used in aiding the combustion beneath the boiler.

Heated air

It has been found in the manufacture of iron that anthracite could be advantageously used by means of heated air; the author therefore considered that the experiments upon this apparatus (the intrinsic merits of which he does not at all discuss in this communication), afforded an advantageous opportunity for ascertaining in what manner this fuel could be successfully employed under steam boilers.

Conditions
of the ex-
periments.

The anthracite supplied to the author was unfortunately of inferior quality, analysis giving only of fixed carbon 71.4, and of volatile inflammable matter 13.3; the setting of the boiler required much alteration before sufficient draught could be procured. The