stamping engine, by Mr. Sims, junior, showing in great detail the construction of the engine and the stamping machinery.

“On the Effects of the Worm on Kyanized Timber exposed to the Action of Sea Water, and on the use of Greenheart Timber from Demerara, in the same situations.” By J. B. Hartley, M. Inst. C. E.

Effects of
the worm
on Ky-
anized
timber.

There are probably few ports in England where the inconvenience resulting from the attacks of marine worms (*Teredo navalis*) on the timber of the dock gates and other works exposed to their action, is more severely felt than at Liverpool. The river Mersey has a vertical rise of tide of 27 feet at spring, and 13 feet at neap tides, and the stream being densely charged with silt, a considerable deposit takes place in the open basins, and to some extent in the docks. The latter are cleansed by means of a dredging machine; but the former are usually “scuttled,” for which purpose sewers connected with the docks surround the basins, having several openings furnished with “clows,” or paddles, so that the rush of water from the docks may be applied for clearing away the mud from any particular part of the basin. The security of these paddles is, therefore, of the greatest importance, as the failure of one of them might, by allowing a dock to be suddenly emptied, cause great damage to the shipping. These paddles have been usually constructed of English oak or elm, and being much exposed, they suffer from the attacks of the worms. Cast-iron paddles have been tried; but in consequence of the rapidity of the corrosive action, they soon became leaky, and were abandoned. Kyanized oak timber has been tried on the back of these paddles, and found to be perforated by the worm in the same time as unprepared wood. Some oak planks, two inches and a half thick, Kyanized at the Company’s yard, were used on the west entrance gates of the Clarence Half-tide Basin, and in 14 months were completely destroyed. Several similar instances of the non-efficiency of the Kyanized timber are given; and the author proceeds to designate the timber which resists best in such situations. He considers that Teak is less liable to injury than English woods, and instances the inner gates of the Clarence dock, which have been built for 10 years, and at present are but slightly attacked.

Green-
heart
timber.

The timber which he prefers for dock works is the *Greenheart*. It is imported from Demerara, in logs of 12 to 16 inches square by 25 to 40 feet long, and costs about seven shillings per cubic foot. Of its power to resist the attacks of worms, he gives many proofs: one of them may be cited. At the first construction of the Bruns-

wick Half-tide basin, several elm clows were placed at the west entrance ; these were destroyed by the worms in two years, and were replaced by others made of greenheart ; the joints of the plank being tongued with deal, to render them completely water-tight. These clows have now been down about seven years, and, although the deal tongueing has been destroyed by the worms, the greenheart planking remains untouched and perfectly sound.

Many methods of protecting common timber have been tried ; ^{Metallic protectors.} but the only successful ones adduced are—1st, the use of broad-headed metallic nails driven nearly close to each other into the heads and heels of the gates, but if driven an inch apart, the worm penetrates between them ; and, 2dly, steeping the timber in a strong solution of sulphate of copper from the Parys copper mines in Anglesea. Some paddles made of English elm thus prepared had been in use upwards of three years, and, on an examination, were found to be very slightly injured ; while the unprepared timber about them was quite destroyed.

The author observes, that the outer gates of the wet basins are most injured by the worm, from the sills being low down, and the change of water every tide assisting the growth of the worm. Those parts of the gates which are alternately wet and dry are more injured by the worm than the parts immersed always in the same depth of water. At the spot where a leak occurs from a bad joint, a defect in the caulking, or other cause, the worm commences its attack ; so that the most incessant attention is required. Those basins into which the sewers of the town discharge themselves are comparatively free from the worm, from which it would appear that sulphuretted hydrogen gas acts in some measure as a protection against the attacks of the worm.

“An Account of the actual State of the Works at the Thames Tunnel (June 23, 1840).” By M. I. Brunel, M. Inst. C. E.

In consequence of local opposition, the works have not advanced ^{Thames Tunnel.} much since the month of March, 1840 ; but, as that has been overcome, and facilities granted by the City, the works will be speedily resumed, and the shaft on the north bank commenced.

The progress of the Tunnel in the last year has been, within one foot, equal to that made in the three preceding years. During those periods collectively, the extent of the Tunnel excavated was 250 ft. 6 in., and during the last year the excavation has been