practice in docking, or in launching a ship, is to use simple wooden keel and bilge blocks. In docking a vessel, nearly the whole of the weight comes on the keel blocks, and the bilge blocks are few in number, and extend only for about the middle third of the ship's length. In launching a vessel, the weight is transferred from the keel-blocks on to the launching ways on each side of the same, by means of a couple of narrow cradles or bilge logs of hard wood, packed up to the hull of the vessel by soft wood filling. These cradles carry the ships down the too often imperfectly bedded inclined launching ways at a speed of some twelve miles an hour. As the vessel is leaving the launching way, her stern is waterborne, whilst the bow is pressing hard on the shore, but yet it is the rarest thing for any mishap to occur to a vessel even under this singularly rough treatment

The best way of blocking a vessel on the cradles will be quickly determined after a few weeks' experience, but in the first instance, the well tried one, of timber keel and bilge blocks, cannot be far astray.

The following extracts from Trautwine, relating to the laws governing moving bodies on inclined planes, will assist to an understanding of the subject :

Sliding force (parallel to surface of plane) = W, × Sin M N O.
Pressure (perp. " " " ) = W, × Cos M N O.
Friction (parallel " " " ) = W, " " co-eff. of fric.

Friction does not vary as the angle of the plane, but as the cosine of that angle, or in the same manner as the perpendicular pressure varies. Suppose we desire to slide a vessel of say 600 tons, in the manner proposed, up an inclined plane, sloping 8° or 14 feet in 100 feet, we have to overcome the parallel sliding force and the friction.

W
Sliding force = 600 tons, nat sine 8°.
= 83.3 tons.

W
Friction = 600 tons nat. cosin 8° x co-eff. of friction.
= 600 .9903 .14 prop. of friction to pres.
= 81.79 tons (angle of fric 7° 59').

combined force to overcome = 81.79 + 83.52 = 165.31 tons.

This force but balances the downward tendency of the load together with its friction, and in this condition, it is plain, that to impart motion to the now unresisting load we must apply some additional force ; we desire again to slide the load down the plane, what force have we to employ ? Here nothing resists but the friction, viz.: 81.79 tons, and the sliding parallel force helps to the extent of 83.5 tons, therefore in this case we would have to apply about 1.73 tons of break power to keep load from sliding down the plane.

It has been stated that the main object of the author in bringing forward these skidways was the vital one of cost, as compared with the lockage system. In the first place, where a series of locks would be necessary, these ways could be put in at half the cost of locks. Secondly, the greatest saving would be effected in the reduced quantities in excavation, and earthwork in the canal as a whole. The skidways can be lengthened with very little additional expense, for the purpose of placing the centre line of the canal proper on the contour of minimum excavation, by this means the quantities can be considerably reduced, which, taken with the saving effected in dispensing with locks, together would make quite a respectable showing.

Where one lock only is required to overcome a summit, these skidways can offer no advantages over the lockage system.

In conclusion, the writer hopes that this important subject will meet with some consideration from the members of the Society, and draw out such discussion as the subject deserves, although an innovation, it may be the means (through discussion) of bringing to light some practicable scheme to accomplish the object in view. In which case this paper will not have been written in vain, nor love's labour lost.