The deck should have small hatches to admit of using all the available space.

For a sail I would suggest the use of a rig that is seldom seen on the coast but has many advantages for a small boat, viz.: "The Balance Lug," shown in the accompanying figure.

This sail dispenses with the use of rings on the mast, has only one halyard and is easily detached when not in use, it can be used as a fly to cover the boat, or in front of the tent, the spars which are left attached holding it down to perfection.

Last, but not least, let the seeker after fortune provide himself with two pairs of wrought-iron galvanised rowlocks, not the short cast-iron abominations too often used, and let him tie them securely to the boat and prevent the recriminations which occur as the rowlock sinks quietly out of sight in a hundred fathoms deep,

A Prospector's Boat at Barclay Sound.

and the calculation which follows as to how far the piece of rope tied round the ore and through the rowlock hole will carry him.

ORE IN SIGHT.†

By J. D. Kendall.

THE estimation of ore in sight is very far from being one of the most difficult matters with which an engineer has to deal. Yet some of the most serisus losses in mining have been incurred through errors in such estimates, and engineers have, very properly, been most severely censured for their failures in this connection. It is therefore proposed to bring the matter before the Institution with a view of making some recommendations which, if followed, will in the future greatly reduce, if they do not prevent altogether, the losses which have so frequently arisen in the past from so-called estimates of ore in sight.

Definition of terms.—Ore in sight is an expression of very common occurrence in reports on mines. The meaning attached to the phrase does not appear, however, to be always the same. In some instances the so-called "ore in sight" is only "ore in imagination." The former expression, it is true, is not a happy one, for the ungotten ore of a mine can never be all in sight even when "blocked out" in the most complete manner possible in the regular working of mines. No matter how small the pillars, or masses of ore, blocked out may be, there must always be a large proportion in the interior of them which cannot be seen. But if a person of experience can see the four sides of a rectangular mass of ore, in a vein, for example, he can, in the great majority of cases, form an estimate—not absolutely accurate, it is true, but sufficiently so for commercial purposes — of the quantity of ore contained in that pillar. He may in some cases be able to do so if he can only examine three sides of the ore mass, or again even when only two opposite sides are in view; but in each of these cases he will have to employ a different factor of safety. This factor will also vary with the size of the mass under consideration. These remarks may be extended to ore bodies of other shapes. On the other hand, if only one side of a mass of ore can be seen, it must be perfectly clear that no one can tell what quantity of ore is in that mass. The side visible may show a large area of ore, but quantity of ore involves a third dimension. If this be wanting we cannot possibly know anything about quantity The third dimension, so often unfortunately assumed, can only be ascertained, with an approach to accuracy, by "blocking out," so that "ore in sight" may be looked upon as synonymous with "ore blocked out."

By "blocking out" is meant the exposure of ore on two, three, or four sides of a rectangular or other shaped mass, as is partly shown in the following diagram.

These four drawings represent, in vertical section along an ordinary vein, the same mass of ore — A, B, C, and D — on which different amounts of work have been done. It must be quite clear to anyone who has had experience of ore deposits, that it is a much more difficult matter to say what quantity of ore is in block A than in block B. It is likewise more difficult to estimate the quantity in B than in C, and if the block be still further opened up by workings, as in Fig. 4, the

† From a pr[illegible] the Institute of Mining and Metallurgy.