

sary for me to make any comment on it. If we got a list like this at every meeting we should soon have a very large Club.

The next order of business is the reading of papers and the discussion thereof.

We have with us to-night Mr. J. A. W. Archer, manager of the Jeffrey Manufacturing Co., of Toronto, who will read a paper on "The economical handling of materials by machinery," and I am sure we shall all have great pleasure in listening to this paper, and I hope that when Mr. Archer is through we shall have a lively discussion without my having to call on members individually.

THE ECONOMICAL HANDLING OF MATERIALS BY MACHINERY.

By J. A. W. ARCHER, MANAGER JEFFREY MANUFACTURING CO., TORONTO.

As the title of this paper indicates I am dealing with a very large subject and my endeavor will be simply to explain and demonstrate the various standard appliances used to elevate and convey materials, and describe some actual installations.

Probably the simplest conveying equipment in use to-day is the Belt conveyor, illustrated Fig. 1, which consists of a belt, usually rubber or canvas running over pulleys at either end and supported at intervals by guide pulleys to take the weight of the belt and material being handled. When used for carrying such materials as coal, ashes, crushed ore, rock, grain, etc., it is the usual practice to trough the carrying side of the belt by means of troughing idlers as shown, Fig. 2, the return strand being supported by flat idlers. The troughing idlers are generally spaced four or five feet centres and the return idlers eight or ten feet centres.

The head and tail pulleys are usually about two inches wider across the face than the width of the belt and crowned as for transmission purposes. As belting of any kind has a certain amount of stretch, which must be taken care of, a belt tightener must be provided. This tightener arrangement must be in the form of take-ups, which are used on the tail end of the conveyor. It is good practice to provide long adjustment take-ups. They are manufactured with standard lengths of adjustment from twelve inches up to five feet.

Where rubber belting is used for carrying such gritty material as coal, ashes, crushed stone, etc., the general practise is to use a belt with a 1-16 inch or $\frac{1}{8}$ inch carrying face, that