

8367—October 18—Authorizing Messrs. St. Clair Bros., of Gault, Ont., to lay and thereafter maintain gas pipe under the track of the G.T.R. where the same crosses Beverley Street and Stone Road, Galt, Ont.

8368 to 8372—October 8—Authorizing the Volcanic Oil & Gas Company, Ltd., to lay and thereafter maintain pipe line under the tracks of the Michigan Central Railroad at four points in the Tp. of Essex and one point in the Tp. of Maidstone, Ont.

8373—October 19—Authorizing the United Fuel Company, Ltd., to lay and thereafter maintain pipe for conveyance of natural gas, under the tracks of the P.M.R.R. between Lots 15 and 16, first and second Cons. Tp. of Chatham, Ont.

8374—October 13—Extending time within which the G.T.R. Company may appeal to the Supreme Court of Canada for leave to appeal from Order of the Board No. 7613, July 22nd, 1909; said Order directing the G.T.R. to provide station accommodation at or near the point where the railway company's line from Hamilton, Ont., to the town of Niagara Falls cross the town line between Tps. of Clinton and Louth, County Lincoln and Province Ontario.

(Continued on Page 498.)

### SELECTIVE ECONOMY IN RAW MATERIALS.\*

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The keen, aggressive competition of modern business demands the most careful scrutiny of every element of manufacturing cost. In spite of this, observations extending over a number of years, under peculiarly favorable conditions, have sharply emphasized the fact that the economic selection of raw materials is not given the painstaking, systematic consideration which this vital detail of every industry deserves. It is no exaggeration to state that there is probably not one manufacturing concern in operation to-day for which a substantial saving cannot be made in the cost of at least one, if not several, of its raw materials, without the slightest detriment to the quality of its finished products.

Where a true selective economy is exercised in the purchase of raw materials, the choice is not determined by either quality or price, but by the relative industrial efficiency of the materials under consideration. The opportunity to economize may, therefore, lie in the substitution of a high-priced material for a cheap one; in a change from a coal which the fireman likes to one which gives more heat for a dollar; in selecting lubricants with reference to their physical constants instead of by brand; or, very commonly, in discarding altogether some particular material long in use in favor of another more efficient at the price.

Large industrial corporations provide and maintain purchasing departments, the duties of some of which apparently end when the necessary materials have been purchased from the customary source of supply, or at the best offered prices. To meet its full responsibility, and rise to its proper place in the organization which it serves, the purchasing department must have a much broader aim, and must search for and investigate every possible chance for economy which may have its origin in the source, properties and group relationships of available raw materials, no less than in their price. That so many purchasing departments voluntarily

limit their scope and fail to grasp their opportunities, is explained by several reasons, of which the more important are:

First, lack of knowledge on the part of the purchasing agent of the fundamental chemical or physical qualities which make the material suitable. To be sure the majority of purchasing agents are not technically trained men, and cannot be expected to know many of these qualities. Consequently they cannot adequately appreciate what the market affords in materials with the suitable fundamental properties, especially when these are not obviously characteristic.

Second, ignorance of the group relationships of particular raw materials with other materials, which are thus overlooked, though equally available.

Third, lack of knowledge as to the source or origin of the specific materials offered. It is easy to pay too much for wood pulp under the name of filter masse, or for waste soda pulp liquor when buying boiler compound, or for type foundry waste when it appears as a special bearing metal.

Fourth, the tendency to adhere to the raw material, standardized years previously, because it has been demonstrated by long experience that it will do the work satisfactorily. While such an attitude does have its points of justification, far too often the case is one where great economies can be effected, but where the opportunity is unrecognized or lost.

Finally, and most important as the common underlying cause of all the others, the unwillingness to learn so often shown by those who should be broadest, but who are stubbornly and persistently narrow and intolerant of the views of others whose school may not be of such long experience, but rather of more varied training and more advanced thought.

Organized and co-operative effort is essential to the success of every large industrial concern. Without it there must be unnecessary losses. It certainly cannot be neglected in the selection of raw materials. For best economy there must be co-operation between the purchasing department and every consuming department, and especially should there be co-operation with the industrial chemist and chemical engineer, whose business it is to keep abreast of the rapidly-changing modern conditions of production, and who is in position to follow the course of a material from its first manipulation to its ultimate use, through many different processes and varied applications.

True it is that a material that is strictly raw when it is used unaltered in a manufacturing operation, but "raw material" may be defined broadly, and is here considered as any material the regular or periodic consumption of which is essential to the manufacture of a finished product. In the majority of instances the raw materials of one industry are the finished products of another, as, for example, wood pulp, bleach, alkali, flour, oils, glue, and paper.

In accepting the above conception of raw materials it becomes apparent that these may be derived from various sources. They may be obtained from natural resources or they may be the result of a manufacturing process, of which they may either be the primary product, a by-product or a waste. This last source is not by any means of slight consideration, and the history of the last few years has shown that live men are now awake to the great possibilities of large profits to be derived by successful utilization of wastes as raw materials in their own or other industries.

Raw materials may be classified in a number of groups, the factors to be considered in economical selection differing for these various groups. Such a classification may be made as follows:

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