

evenly and thoroughly with the "gun," the same government inspector mentioned above has ruled against its use, demanding the painting by brush as in the "good old days."

In barrel lots, the cost of copper paint averages about \$2.20 a gallon, and when used without thinning for three coats, one gallon will cover about one and one-fifth squares. By thinning the first coat with an equal quantity of thinner, one gallon of paint will cover approximately two squares.

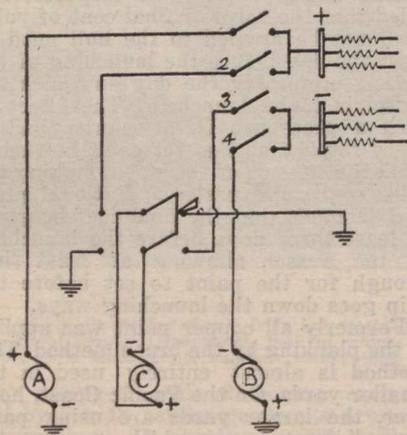
Sea going vessels that have been properly painted with "copper" paints must be repainted at intervals varying from six to eight months. One company operating a large fleet of scows on Puget Sound reports the repainting of scow bottoms at intervals of 12 months. The first repainting must be done about 6 months after the vessel has been placed in service, as spots that are covered by the propping used in supporting the vessel during construction receive only one coat, which is applied immediately before launching after the vessel is safely resting in the launching cradle.

In conclusion, the writer wishes to emphasize the necessity of allowing each coat of paint to dry thoroughly before the next is applied. When properly applied, copper paint is an excellent substitute for copper sheathing, and where it is convenient to dock the vessel at intervals of from 6 to 8 months, will give even superior service.

Motor Generator and Switch Arrangement C.P.R. Telegraphs.

W. J. Camp, Assistant Manager, C.P.R. Telegraphs, Montreal, forwards a sketch of the motor-generator and switch arrangement designed by him and which is in use at the company's large terminal offices.

Referring to the diagram, it will be noted that when the single-pole single-throw switches 1 and 4 are closed, positive and negative machines are connected respectively to the positive and negative bus-bars.



When it is desired to run machine C to relieve machine A, the double-pole double-throw switch is thrown to the left. Then, closing switch 2 places machines A and C in multiple to the bus-bar. After machine C has reached running speed switch 1 may be opened, thereby maintaining an uninterrupted application of positive potential to the multiplex sets while one machine is started and another stopped.

Machine C can, in like manner, be used to supply negative potential in place of machine B, by throwing the double-pole double-throw switch to the right.

This arrangement of switches provides against short-circuits between generators; the only precaution required being that the single-pole switch of the generator to be stopped must be opened before the switch in the motor circuit of that machine is opened.—Telegraph Age.

Telegraph and Telephone Lines' Estimates for 1918-1919.

The Public Works Department estimates, for the year ending Mar. 31, 1919, contain, among others, the following items:—

NOVA SCOTIA.	
Cape Breton telegraph system, renewal of poles between Eskasoni and East Bay	700.00
PRINCE EDWARD ISLAND.	
Half cost of reconstruction of telegraph lines jointly owned by Anglo-American Telegraph Co., and Dominion Government	17,000.00
QUEBEC.	
Improvements to repair service	3,000.00
SASKATCHEWAN AND ALBERTA.	
Moose Jaw, Wood Mountain telegraph line, renewal of poles, to complete Peace River line, office and dwelling at Grande Prairie	4,000.00
Peace River line, office and dwelling at Dunvegan	4,000.00
Peace River line, woods clearance at Edmonton to Peace River	5,000.00
Peace River line, completion of pole renewals between Edmonton and Athabaska	570.00
Peace River line, repairs and renewals between Spirit River and Pouce Coupe, and between Athabaska and Grouard	1,545.00
Qu'Appelle, Edmonton line, shifting wire to pole line of C.N.R. between Humboldt and Warman, Sask.	1,000.00
Repairs and improvements to office buildings	2,750.00
Shifting line to roadways	5,500.00
BRITISH COLUMBIA.	
Mainland telegraph and telephone lines, general repairs and improvements	3,300.00
Mainland telephone line, extensions in Lootenay District	4,000.00

The following items are chargeable to collection of revenue:—

Telegraph and Telephone Lines.	
Prince Edward Island and mainland Land and cable telegraph lines, Lower St. Lawrence and Maritime Provinces, including working expenses of vessels required for cable service	7,000.00
Saskatchewan	202,000.00
Alberta	58,000.00
British Columbia, mainland	79,000.00
British Columbia, Vancouver Island district	60,000.00
Yukon system (Ashcroft-Dawson) ...	100,000.00
Telegraph and telephone service generally	250,000.00
	10,000.00
	\$766,000.00

Trade and Supply Notes.

The matter which appears under this heading is compiled, in most cases, from information supplied by the manufacturers of, or dealers in, the articles referred to, and in publishing the same we accept no responsibility. At the same time we wish our readers distinctly to understand that we are not paid for the publication of any of this matter, and that we will not consider any proposition to insert reading matter in our columns for pay or its equivalent. Advertising contracts will not be taken with any condition that accepting them will oblige us to publish reading notices. In other words, our reading columns are not for sale, either to advertisers or others.

L. C. Chase & Co., car upholstering, Boston, Mass.—Frank Hopewell, head of the firm, died, Apr. 25, aged 61. He had been associated with the company since 1881.

The Northern Electric Co., Montreal, has established a department for the sale of water sterilizing equipment, on the ultra violet ray system, in charge of S. H. Opdyke.

Commercial Acetylene Supply Co., Inc.

Commercial Acetylene Welding Co., Inc., New York, has changed its name to Commercial Acetylene Supply Co., Inc. H. H. Wood, 18 Toronto St., Toronto, is Canadian Manager.

Robert W. Hunt & Co., Ltd., Montreal, has received an order from the Dominion Government to inspect the 100,000 tons of steel rails which it has ordered from the Dominion Iron & Steel Co.

Independent Pneumatic Tool Co.—A re-organization has been effected of the Independent Pneumatic Tool Co., a New Jersey corporation, and the Aurora Automatic Machinery Co., which was incorporated in Delaware. Both companies were owned by the same interests, the Independent Pneumatic Tool Co. being the selling division for the Thor pneumatic and electric tools, and the Aurora Automatic Machinery Co. being the manufacturing department. The latter company also manufactures and sells Thor motorcycles and gasoline engines. The combining of the two companies under one corporate name is for convenience in handling business. Under the re-organization plans the company is known as the Independent Pneumatic Tool Co., incorporated in Delaware for \$3,000,000. The directors are:—J. P. Hopkins, Chairman; J. D. Hurley, President; R. S. Cooper, Vice President; Fletcher W. Buchanan, Secretary, and E. G. Gustafson, Treasurer; J. J. McCarthy, W. A. Libkeman, L. S. Florsheim, R. T. Scott, and A. Gatzert. The general offices are in the Thor Building, 1307 South Michigan Boulevard, Chicago. Branches are maintained in New York, N.Y.; Pittsburg, Pa.; Detroit, Mich.; Birmingham, Ala.; San Francisco, Cal.; Toronto and Montreal. The pneumatic and electric tool factory is located in Aurora, Ill., and the motorcycles and gasoline engine plant is at 361 West Superior St., Chicago.

Transportation Associations, Clubs, Etc.

The names of persons given below are those of the secretaries unless otherwise stated:

- Canadian Car Service Bureau—W. J. Collins, Manager, 401 St. Nicholas Building, Montreal.
- Canadian Electric Railway Association—Acton Burrows, 70 Bond Street, Toronto.
- Canadian Freight Association (Eastern lines)—G. C. Ransom, Canadian Express Building, Montreal.
- Canadian Freight Association (Western lines)—W. E. Campbell, 305 Boyd Block, Winnipeg.
- Canadian Railway Club—J. Powell, St. Lambert, Que. Meetings at Montreal 2nd Tuesday, each month, 8.30 p.m., except June, July and August.
- Dominion Marine Association—F. King, Counsel, Kingston, Ont.
- Canadian Ticket Agents' Association—E. de la Hooke, London, Ont.
- Canadian Society of Civil Engineers—F. S. Keith, 176 Mansfield St., Montreal.
- Eastern Canadian Passenger Association—G. H. Webster, 54 Beaver Hall Hill, Montreal.
- Engineers' Club of Montreal—R. W. H. Smith, 9 Beaver Hall Square, Montreal.
- Engineers' Club of Toronto—R. B. Wolsey, 94 King Street West, Toronto.
- Express Traffic Association of Canada—C. N. Ham, Montreal.
- Great Lakes and St. Lawrence River Rate Committee—James Morrison, Montreal.
- Hydro-Electric Railway Association of Ontario—T. J. Hannigan, Guelph, Ont.
- International Water Lines Passenger Association—M. R. Nelson, New York.
- Niagara Frontier Summer Rate Committee—James Morrison, Montreal.
- Quebec Transportation Club—A. F. Dion, Quebec.
- Railway Association for National Defence—W. M. Neal, Montreal.
- Shipping Federation of Canada—Thos. Robb, Manager, 42 St. Sacramento Street, Montreal.
- Toronto Transportation Club—W. A. Gray, 143 Yonge Street, Toronto.
- Transportation Club of Vancouver—H. W. Schofield, 553 Church Street, Vancouver, B.C.