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M Stewart

*RAC
Complmt*

See pages 4 to 7 for Tide Tables.

COGSWELL'S NAUTICAL ALMANAC. 1898.



—CONTAINING—

Lists of Light Houses in Canada, Newfoundland and Bermuda.
ALTITUDINAL TABLES,
TIDE TABLES, PHASES OF THE MOON, Etc.

175 Barrington Street, - Halifax, N. S.

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NOVA SCOTIA PRINTING COMPANY, SACKVILLE ST.
1898.

PRICE 25 CENTS.

WM. STAIRS, SON & MORROW, Ship Chandlers

—AND—

HARDWARE MERCHANTS.



174 to 190 LOWER WATER STREET,

(OPP. JONES WHARF.)

SELL AT LOWEST PRICES:

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OAKUMS, COPPER PAINT, CEMENT,

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— AGENTS FOR —

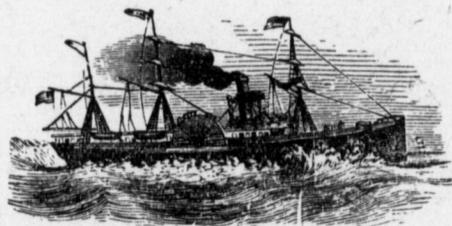
Yarmouth Cotton Duck,

Muntz Metal Sheathing,

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 CALL AND SEE OUR NEW ESTABLISHMENT.

PICKFORD & BLACK'S W. I. S. S Line between Halifax and Bermuda.



PICKFORD & BLACK,

Ship Brokers & Steamship Agents,

HALIFAX, N. S.

● ————— AGENCIES ————— ●

DONALDSON LINE OF STEAMSHIPS

Between Glasgow and Halifax.

PICKFORD & BLACK'S STEAMSHIP LINES

Between Halifax, Bermuda, Turk's Island and Jamaica.

— and —

Halifax, Bermuda, St. Thomas, St. Kitt's, Antigua, Guadaloupe,

Martinique, Dominica, St. Lucia, Barbados,

St. Croix, Trinidad and

Demerara:

— and —

Halifax and Charlottetown.

— via —

Eastern Shore and Cape Breton Ports.

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HALIFAX AND NEWFOUNDLAND S. S. COMPANY,

Between Halifax, Cape Breton and Newfoundland Ports

FUNCH, EDYE & CO., - NEW YORK.

Macdonald & Co., Manufacturers and Fitters of Steam Heating Apparatus.

Pickford & Black's West India S. S. Line between Halifax, Bermuda, Turk's Island and Jamaica.

Ships' Water Closets by MACDONALD & CO.—See adv. page 4 cover.

Pickford & Black, Ship Brokers and Steamship Agents, Halifax, N. S.

Macdonald & Co., Manufacturers of Ships' Patent Water Closets, Halifax.—See adv. p. 4 cover.

2 ROBERT H. COGSWELL'S [1898

PHASES OF THE MOON—1898.

Mean Time at Greenwich.

January.				July.			
	d.	h.	m.		d.	h.	m.
☉ Full Moon	7	12	24.3	☉ Full Moon	3	9	12.2
☾ Last Quarter	15	3	44.5	☾ Last Quarter	10	4	42.8
☽ New Moon	21	19	24.7	☽ New Moon	18	7	47.1
☽ First Quarter	29	2	32.7	☽ First Quarter	26	1	40.0
☾ Apogee	4	3	9	☾ Perigee	3	2	3
☾ Perigee	20	0	6	☾ Apogee	16	5	5
☾ Apogee	31	2	0.7	☾ Perigee	31	10	7
February.				August.			
	d.	h.	m.		d.	h.	m.
☉ Full Moon	6	6	24.2	☉ Full Moon	1	16	28.8
☾ Last Quarter	13	12	34.7	☾ Last Quarter	8	18	13.0
☽ New Moon	20	7	40.6	☽ New Moon	16	22	34.6
☽ First Quarter	27	23	13.3	☽ First Quarter	24	8	32.3
☾ Apogee	16	19	3	☉ Full Moon	31	0	50.8
☾ Perigee	28	17	1	☾ Apogee	12	16	6
				☾ Perigee	26	13	3
March.				September.			
	d.	h.	m.		d.	h.	m.
☉ Full Moon	7	21	28.7	☾ Last Quarter	7	10	50.9
☾ Last Quarter	14	19	48.0	☽ New Moon	15	12	10.2
☽ New Moon	21	20	37.1	☽ First Quarter	22	14	39.4
☽ First Quarter	29	19	40.2	☉ Full Moon	29	11	10.7
☾ Apogee	14	2	9	☾ Apogee	9	9	5
☾ Perigee	28	13	5	☾ Perigee	24	17	7
April.				October.			
	d.	h.	m.		d.	h.	m.
☉ Full Moon	6	9	19.6	☾ Last Quarter	7	6	4.7
☾ Last Quarter	13	2	28.4	☽ New Moon	15	0	37.3
☽ New Moon	20	10	20.7	☽ First Quarter	21	21	9.3
☽ First Quarter	28	14	4.7	☉ Full Moon	29	0	18.2
☾ Apogee	9	10	1	☾ Apogee	7	5	0
☾ Perigee	25	7	4	☾ Perigee	19	13	6
May.				November.			
	d.	h.	m.		d.	h.	m.
☉ Full Moon	5	13	33.7	☾ Last Quarter	6	2	27.8
☾ Last Quarter	12	9	35.9	☽ New Moon	13	12	20.6
☽ New Moon	20	0	58.2	☽ First Quarter	20	5	5.0
☽ First Quarter	28	5	14.0	☉ Full Moon	27	16	39.2
☾ Apogee	7	8	8	☾ Apogee	4	1	4
☾ Perigee	22	20	6	☾ Perigee	15	19	6
June.				December.			
	d.	h.	m.		d.	h.	m.
☉ Full Moon	4	2	11.3	☾ Last Quarter	5	22	5.6
☾ Last Quarter	10	13	4.2	☽ New Moon	12	23	43.2
☽ New Moon	18	16	19.3	☽ First Quarter	19	15	21.6
☽ First Quarter	26	16	54.1	☉ Full Moon	27	11	39.2
☾ Apogee	4	16	4	☾ Apogee	1	19	8
☾ Perigee	19	2	1	☾ Perigee	14	1	3
				☾ Apogee	29	6	5

1898]

NAUTICAL ALMAMAC.

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SUN'S SEMI-DIAMETER.

Mean Time, Greenwich.

Macdonald & Co., Manufacturers of Composition Butt Bolts and Spikes, Halifax.

Pickford & Black, Agents Halifax and Newfoundland Steamship Company, Limited.

Day of Month.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1	16 18 16 15 16	10 16 16 15 16	10 16 16 15 16	16 15 53 15 48	15 47 15 47 15 47	15 45 15 47 15 48	15 45 15 47 15 48	15 47 15 53 16	16 1 16 9 16 15			
2	16 18 16 15 16	9 16 16 15 16	9 16 16 15 16	16 15 53 15 47	15 47 15 47 15 47	15 45 15 47 15 48	15 45 15 47 15 48	15 53 16 1 16 10 16 16				
3	16 18 16 15 16	9 16 16 15 16	9 16 16 15 16	16 15 53 15 47	15 47 15 47 15 47	15 45 15 47 15 48	15 45 15 47 15 48	15 54 16 2 16 10 16 16				
4	16 18 16 15 16	9 16 16 15 16	9 16 16 15 16	16 15 53 15 47	15 47 15 47 15 47	15 45 15 47 15 48	15 45 15 47 15 48	15 54 16 2 16 10 16 16				
5	16 18 16 15 16	9 16 16 15 16	9 16 16 15 16	16 15 53 15 47	15 47 15 47 15 47	15 45 15 47 15 48	15 45 15 47 15 48	15 54 16 2 16 10 16 16				
6	16 18 16 15 16	9 16 16 15 16	9 16 16 15 16	16 15 52 15 47	15 47 15 47 15 47	15 45 15 47 15 48	15 45 15 47 15 48	15 54 16 2 16 10 16 16				
7	16 18 16 14 16	8 16 16 14 16	8 16 16 14 16	16 15 52 15 47	15 47 15 47 15 47	15 46 15 48 15 55	15 48 15 55 16 3 16 11 16 16					
8	16 18 16 14 16	8 16 16 14 16	8 16 16 14 16	15 59 15 52 15 47	15 47 15 46 15 48 15 55	15 48 15 55 16 3 16 11 16 16						
9	16 18 16 14 16	8 16 16 14 16	8 16 16 14 16	15 59 15 52 15 47	15 47 15 46 15 48 15 55	15 48 15 55 16 3 16 11 16 16						
10	16 18 16 14 16	7 16 16 14 16	7 16 16 14 16	15 59 15 51 15 47	15 46 15 49 15 55 16 3 16 11 16 17							
11	16 17 16 14 16	7 16 16 14 16	7 16 16 14 16	15 59 15 51 15 47	15 46 15 49 15 56 16 4 16 12 16 17							
12	16 17 16 14 16	7 16 16 14 16	7 16 16 14 16	15 58 15 51 15 46	15 46 15 49 15 56 16 4 16 12 16 17							
13	16 17 16 13 16	7 16 16 13 16	7 16 16 13 16	15 58 15 51 15 46	15 46 15 49 15 56 16 4 16 12 16 17							
14	16 17 16 13 16	6 16 16 13 16	6 16 16 13 16	15 58 15 51 15 46	15 46 15 49 15 56 16 5 16 12 16 17							
15	16 17 16 13 16	6 16 16 13 16	6 16 16 13 16	15 58 15 50 15 46	15 46 15 49 15 56 16 5 16 12 16 17							
16	16 17 16 13 16	6 16 16 13 16	6 16 16 13 16	15 57 15 50 15 46	15 46 15 50 15 57 16 5 16 13 16 17							
17	16 17 16 13 16	6 16 16 13 16	6 16 16 13 16	15 57 15 50 15 46	15 46 15 50 15 57 16 5 16 13 16 17							
18	16 17 16 12 16	5 16 16 13 16	5 16 16 13 16	15 57 15 50 15 46	15 46 15 50 15 57 16 5 16 13 16 17							
19	16 17 16 12 16	5 16 16 12 16	5 16 16 12 16	15 56 15 50 15 46	15 46 15 50 15 58 16 6 16 13 16 17							
20	16 17 16 12 16	5 16 16 12 16	5 16 16 12 16	15 56 15 50 15 46	15 46 15 51 15 58 16 6 16 13 16 17							
21	16 17 16 12 16	4 16 16 12 16	4 16 16 12 16	15 56 15 49 15 46	15 46 15 51 15 58 16 6 16 14 16 17							
22	16 17 16 12 16	4 16 16 12 16	4 16 16 12 16	15 56 15 49 15 46	15 47 15 51 15 58 16 7 16 14 16 17							
23	16 16 16 11 16	4 16 16 11 16	4 16 16 11 16	15 55 15 49 15 46	15 47 15 51 15 59 16 7 16 14 16 18							
24	16 16 16 11 16	4 16 16 11 16	4 16 16 11 16	15 55 15 49 15 46	15 47 15 51 15 59 16 7 16 14 17 18							
25	16 16 16 11 16	3 16 16 11 16	3 16 16 11 16	15 55 15 49 15 46	15 47 15 52 15 59 16 7 16 14 16 18							
26	16 16 16 10 16	3 16 16 10 16	3 16 16 10 16	15 55 15 49 15 45 15 47	15 52 16 0 16 8 16 15 16 18							
27	16 16 16 10 16	3 16 16 10 16	3 16 16 10 16	15 54 15 48 15 46 15 47	15 52 16 0 16 8 16 15 16 18							
28	16 16 16 10 16	2 16 16 10 16	2 16 16 10 16	15 54 15 48 15 46 15 47	15 52 16 0 16 8 16 15 16 18							
29	16 16 16 10 16	2 16 16 10 16	2 16 16 10 16	15 54 15 48 15 46 15 47	15 52 16 0 16 9 16 15 16 18							
30	16 16 16 10 16	2 16 16 10 16	2 16 16 10 16	15 54 15 48 15 45 15 47	15 53 16 1 16 9 16 15 16 18							
31	16 16 16 10 16	1 16 16 10 16	1 16 16 10 16	15 53 15 48 15 45 15 47	15 53 16 1 16 9 16 15 16 18							

All kinds Nautical work repaired, at **COGSWELL'S**.

PICKFORD & BLACK, Ship Brokers & Steamship Agents, Halifax, N. S.

TIDE TABLES FOR HALIFAX, 1898.

These Tide Tables, for Halifax and Quebec, with the Tidal Differences for other places, are supplied by the Tidal Survey Branch of the Department of Marine and Fisheries of the Dominion of Canada. They are based upon direct observations of the Tides obtained by means of self-registering gauges which are kept in continuous operation day and night throughout the year. The records are reduced by the latest methods of analysis, and the computation of the Tables is made by MR. E. ROBERTS, F. R. A. S., of the Nautical Almanac Office, London.

The TIDAL DIFFERENCES, when applied to the Tide Tables, give the time of high and low water at other places in Standard Time. The differences applicable to the HALIFAX TABLES are derived from the establishmen's given in the Admiralty list. They will, therefore, be correct at full and change of the moon, and approximate only at other times in the month.

TIDAL DIFFERENCES FOR ATLANTIC COAST OF NOVA SCOTIA.

These differences when applied to the Halifax Tide Tables, give the time of High and Low Water at the places named, in Intercolonial Standard Time, for the 60th Meridian; which is four hours slower than Greenwich Mean Time.

LOCALITY.	CORRECTION.	RANGE.	
		Springs.	Neaps.
	H. M.	Feet.	Feet.
Cape Sable, Clark's Harbor.....	Add 1 17	11	9
Shelburne	" 0 22	7	5½
Liverpool Bay	" 0 06	8	5
Lunenburg	" 0 08	7	6
Mahone Bay.....	Subt. 0 01	7½	6½
St. Margaret's Bay.....	" 0 00	7	6
Sable I., North Side	" 0 33	4
" South Side	" 1 33	4
Jeddore Harbor	" 0 06	6½	5
Sheet Harbor	Add 0 13	6½	4½
Liscombe Harbor	" 0 05	6½	4½
Country Harbor	Subt. 0 16	6½	5½
Whitehaven	Add 0 02	6½	4½
Guysborough	" 0 23	6½	4½
Arichat	" 0 11	5	4
St Peter's Bay	Subt. 0 30	6	4
Louisburg Harbor	" 0 03	5	4
Sydney Harbor.....	Add 0 13	5	4

Pickford & Black's West India Steamship Line, between Halifax and Demerara.

Macdonald & Co., Manufacturers of Vessels' Fastenings and Deck Fixtures, Halifax.

COGSWELL—Aneroid Barometers.

PICKFORD & BLACK, Agts., Halifax & Newfoundland Steamship Co., Ltd.

Macdonald & Co., Manufacturers of Brass Binnacles and Stands, Halifax.—See adv. p. 4 cover.

JANUARY.												FEBRUARY.												MARCH.												APRIL.											
HIGH WATER.				LOW WATER.				HIGH WATER.				LOW WATER.				HIGH WATER.				LOW WATER.				HIGH WATER.				LOW WATER.																			
Date.	Day.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.	Morn.	Even.																		
1	S.	2.84	15.8	8	9.19	22.8	8	5.90	16.9	4	10.20	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	1	F.	3.40	15.12	10.6	22.36																			
2	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	2	F.	4.42	16.46	11.0	23.25																			
3	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	3	S.	5.33	17.45	11.50	24.11																			
4	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	4	S.	6.20	18.36	0.8	13.36																			
5	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	5	S.	7.2	19.26	0.60	13.18																			
6	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	6	T.	8.24	20.12	1.81	13.59																			
7	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	7	T.	9.6	21.39	2.66	15.26																			
8	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	8	F.	9.9	22.24	3.40	16.13																			
9	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	9	S.	10.34	23.12	4.27	17.6																			
10	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	10	S.	11.22	24.0	5.20	18.9																			
11	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	11	M.	12.0	24.8	6.18	19.14																			
12	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	12	T.	12.8	25.6	7.16	20.19																			
13	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	13	T.	13.6	26.4	8.14	21.4																			
14	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	14	F.	14.4	27.2	9.12	22.97																			
15	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	15	F.	15.2	28.0	10.10	24.5																			
16	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	16	S.	16.0	28.8	11.08	26.0																			
17	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	17	S.	16.8	29.6	12.06	27.5																			
18	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	18	T.	17.6	30.4	13.04	29.0																			
19	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	19	T.	18.4	31.2	14.02	30.5																			
20	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	20	F.	19.2	32.0	15.00	32.0																			
21	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	21	F.	20.0	32.8	16.00	33.5																			
22	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	22	S.	20.8	33.6	17.00	35.0																			
23	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	23	S.	21.6	34.4	18.00	36.5																			
24	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	24	S.	22.4	35.2	19.00	38.0																			
25	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	25	S.	23.2	36.0	20.00	39.5																			
26	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	26	T.	24.0	36.8	21.00	41.0																			
27	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	27	T.	24.8	37.6	22.00	42.5																			
28	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	28	F.	25.6	38.4	23.00	44.0																			
29	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	29	F.	26.4	39.2	24.00	45.5																			
30	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	30	S.	27.2	40.0	25.00	47.0																			
31	S.	2.83	15.8	8	9.18	22.8	8	5.89	16.9	4	10.18	23.14	4	3.5	14.12	8.43	21.37	11	H.	M.	H.	M.	31	S.	28.0	40.8	26.00	48.5																			

The Time used is Standard time for the 60th Meridian; or four hours slower than Greenwich Mean Time. It is counted from 0 to 24 hours, from midnight to midnight.
 HALIFAX Dry Dock.—To find the depth of water on the sill of this dock at any tide, add 22.4 feet to the height of High Water as above given.

Pickford & Black, Agents Funch, Edge & Co., New York.

PICKFORD & BLACK'S W. I. S. S. Line between Turk's Island & Jamaica.

Pickford & Black's West India S. S. Line between Halifax, Bermuda, Turk's Island and Jamaica.

MAY.										JUNE.										JULY.										AUGUST.									
HIGH WATER.					LOW WATER.					HIGH WATER.					LOW WATER.					HIGH WATER.					LOW WATER.					HIGH WATER.					LOW WATER.				
M.	M.	M.	M.	M.	H.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	M.	H.	M.	M.	M.	M.	H.	M.	M.	M.	M.
3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	
4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10
Th.	W.	Th.	W.	Th.	Th.	W.	Th.	W.	Th.	Th.	W.	Th.	W.	Th.	Th.	W.	Th.	W.	Th.	Th.	W.	Th.	W.	Th.	Th.	W.	Th.	W.	Th.	Th.	W.	Th.	W.	Th.	Th.	W.	Th.	W.	Th.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10
3.49	4.17	5.39	7.12	7.57	8.42	10.17	11.8	12.2	12.41	1.24	2.23	3.24	4.24	5.20	6.15	7.11	8.04	8.91	9.72	10.48	11.21	11.83	12.35	12.77	1.31	2.15	3.03	3.85	4.61	5.32	6.00	6.62	7.19	7.74	8.28	8.83	9.35	9.84	10.30
16.19	17.13	18.93	19.48	20.38	21.23	22.12	23.3	24.14	24.55	25.33	26.09	26.84	27.57	28.28	28.96	29.61	30.23	30.82	31.38	31.91	32.41	32.88	33.32	33.73	34.11	34.47	34.81	35.11	35.38	35.62	35.83	36.00	36.14	36.25	36.33	36.39	36.42	36.43	36.42
9	11	15	21	28	34	41	49	57	65	73	81	89	97	105	113	121	129	137	145	153	161	169	177	185	193	201	209	217	225	233	241	249	257	265	273	281	289	297	305
19	21	25	31	38	45	52	60	68	76	84	92	100	108	116	124	132	140	148	156	164	172	180	188	196	204	212	220	228	236	244	252	260	268	276	284	292	300	308	316
10.30	11.15	12.48	14.21	15.10	16.57	18.54	20.51	22.48	24.45	26.42	28.39	30.36	32.33	34.30	36.27	38.24	40.21	42.18	44.15	46.12	48.09	50.06	52.03	54.00	55.97	57.94	59.91	61.88	63.85	65.82	67.79	69.76	71.73	73.70	75.67	77.64	79.61	81.58	83.55
10.30	11.15	12.48	14.21	15.10	16.57	18.54	20.51	22.48	24.45	26.42	28.39	30.36	32.33	34.30	36.27	38.24	40.21	42.18	44.15	46.12	48.09	50.06	52.03	54.00	55.97	57.94	59.91	61.88	63.85	65.82	67.79	69.76	71.73	73.70	75.67	77.64	79.61	81.58	83.55
10.30	11.15	12.48	14.21	15.10	16.57	18.54	20.51	22.48	24.45	26.42	28.39	30.36	32.33	34.30	36.27	38.24	40.21	42.18	44.15	46.12	48.09	50.06	52.03	54.00	55.97	57.94	59.91	61.88	63.85	65.82	67.79	69.76	71.73	73.70	75.67	77.64	79.61	81.58	83.55
10.30	11.15	12.48	14.21	15.10	16.57	18.54	20.51	22.48	24.45	26.42	28.39	30.36	32.33	34.30	36.27	38.24	40.21	42.18	44.15	46.12	48.09	50.06	52.03	54.00	55.97	57.94	59.91	61.88	63.85	65.82	67.79	69.76	71.73	73.70	75.67	77.64	79.61	81.58	83.55

(See previous note.)

Residences and Public Buildings fitted with Plumbing Fixtures by Macdonald & Co.

PICKFORD & BLACK, owners Steamers between P. E. Island and Halifax.

Macdonald & Co., Machinists, Steam-fitters, Brass-founders, Halifax.

Pickford & Black, Agents Halifax and Newfoundland Steamship Company, Limited.

SEPTEMBER.												OCTOBER.												NOVEMBER.												DECEMBER.											
HIGH WATER.						LOW WATER.						HIGH WATER.						LOW WATER.						HIGH WATER.						LOW WATER.																	
Morning.			Evening.			Morning.			Evening.			Morning.			Evening.			Morning.			Evening.			Morning.			Evening.																				
H.	M.	S.	H.	M.	S.	H.	M.	S.	H.	M.	S.	H.	M.	S.	H.	M.	S.	H.	M.	S.	H.	M.	S.	H.	M.	S.																					
8	21	1	8	27	21	8	9	21	8	27	21	8	27	21	8	27	21	8	27	21	8	27	21	8	27	21	8	27	21	8	27	21															
9	7	1	9	7	1	9	7	1	9	7	1	9	7	1	9	7	1	9	7	1	9	7	1	9	7	1	9	7	1	9	7	1	9	7	1	9	7	1									
10	8	2	10	8	2	10	8	2	10	8	2	10	8	2	10	8	2	10	8	2	10	8	2	10	8	2	10	8	2	10	8	2	10	8	2	10	8	2	10	8	2						
11	9	3	11	9	3	11	9	3	11	9	3	11	9	3	11	9	3	11	9	3	11	9	3	11	9	3	11	9	3	11	9	3	11	9	3	11	9	3	11	9	3						
12	10	4	12	10	4	12	10	4	12	10	4	12	10	4	12	10	4	12	10	4	12	10	4	12	10	4	12	10	4	12	10	4	12	10	4	12	10	4	12	10	4						
13	11	5	13	11	5	13	11	5	13	11	5	13	11	5	13	11	5	13	11	5	13	11	5	13	11	5	13	11	5	13	11	5	13	11	5	13	11	5	13	11	5						
14	12	6	14	12	6	14	12	6	14	12	6	14	12	6	14	12	6	14	12	6	14	12	6	14	12	6	14	12	6	14	12	6	14	12	6	14	12	6	14	12	6						
15	13	7	15	13	7	15	13	7	15	13	7	15	13	7	15	13	7	15	13	7	15	13	7	15	13	7	15	13	7	15	13	7	15	13	7	15	13	7	15	13	7						
16	14	8	16	14	8	16	14	8	16	14	8	16	14	8	16	14	8	16	14	8	16	14	8	16	14	8	16	14	8	16	14	8	16	14	8	16	14	8	16	14	8						
17	15	9	17	15	9	17	15	9	17	15	9	17	15	9	17	15	9	17	15	9	17	15	9	17	15	9	17	15	9	17	15	9	17	15	9	17	15	9	17	15	9						
18	16	10	18	16	10	18	16	10	18	16	10	18	16	10	18	16	10	18	16	10	18	16	10	18	16	10	18	16	10	18	16	10	18	16	10	18	16	10	18	16	10						
19	17	11	19	17	11	19	17	11	19	17	11	19	17	11	19	17	11	19	17	11	19	17	11	19	17	11	19	17	11	19	17	11	19	17	11	19	17	11	19	17	11						
20	18	12	20	18	12	20	18	12	20	18	12	20	18	12	20	18	12	20	18	12	20	18	12	20	18	12	20	18	12	20	18	12	20	18	12	20	18	12	20	18	12						
21	19	13	21	19	13	21	19	13	21	19	13	21	19	13	21	19	13	21	19	13	21	19	13	21	19	13	21	19	13	21	19	13	21	19	13	21	19	13	21	19	13						
22	20	14	22	20	14	22	20	14	22	20	14	22	20	14	22	20	14	22	20	14	22	20	14	22	20	14	22	20	14	22	20	14	22	20	14	22	20	14	22	20	14						
23	21	15	23	21	15	23	21	15	23	21	15	23	21	15	23	21	15	23	21	15	23	21	15	23	21	15	23	21	15	23	21	15	23	21	15	23	21	15	23	21	15						
24	22	16	24	22	16	24	22	16	24	22	16	24	22	16	24	22	16	24	22	16	24	22	16	24	22	16	24	22	16	24	22	16	24	22	16	24	22	16	24	22	16						
25	23	17	25	23	17	25	23	17	25	23	17	25	23	17	25	23	17	25	23	17	25	23	17	25	23	17	25	23	17	25	23	17	25	23	17	25	23	17	25	23	17						
26	24	18	26	24	18	26	24	18	26	24	18	26	24	18	26	24	18	26	24	18	26	24	18	26	24	18	26	24	18	26	24	18	26	24	18	26	24	18	26	24	18						
27	25	19	27	25	19	27	25	19	27	25	19	27	25	19	27	25	19	27	25	19	27	25	19	27	25	19	27	25	19	27	25	19	27	25	19	27	25	19	27	25	19						
28	26	20	28	26	20	28	26	20	28	26	20	28	26	20	28	26	20	28	26	20	28	26	20	28	26	20	28	26	20	28	26	20	28	26	20	28	26	20	28	26	20						
29	27	21	29	27	21	29	27	21	29	27	21	29	27	21	29	27	21	29	27	21	29	27	21	29	27	21	29	27	21	29	27	21	29	27	21	29	27	21	29	27	21						
30	28	22	30	28	22	30	28	22	30	28	22	30	28	22	30	28	22	30	28	22	30	28	22	30	28	22	30	28	22	30	28	22	30	28	22	30	28	22	30	28	22						
31	29	23	31	29	23	31	29	23	31	29	23	31	29	23	31	29	23	31	29	23	31	29	23	31	29	23	31	29	23	31	29	23	31	29	23	31	29	23	31	29	23						

(See previous note.)

Lead Scupper Pipe, all sizes, MACDONALD & CO'S.—See p. 4, cover.

If you want good articles, call at **COGSWELL'S**.
PICKFORD & BLACK, Agts. Halifax & Newfoundland Steamship Co., Ltd.

1898]

NAUTICAL ALMANAC.

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ISAAC H. MATHERS,

Ship Agent

— AND —

COMMISSION MERCHANT.

Consul for Denmark.

Vice-Consul for Sweden and Norway.

HALIFAX, - NOVA SCOTIA.

LEITH HOUSE.

KELLY & GLASSEY,

SUCCESSORS TO ALEX. McLEOD & Co.

ESTABLISHED IN 1818.

196, 200 and 204 Hollis Street, - HALIFAX, N. S.

—IMPORTERS OF—

Ales, Wines and Brandies,

ROYAL ISLAY BLEND A SPECIALTY.

— IN WOOD AND BOTTLES.

MACDONALD & CO., Importers Engineers' Rubber Goods.—See cover.

Macdonald & Co., Manufacturers of Brass Sliding Door Rollers, Halifax

Pickford & Black's West India Steamship Line between Halifax and Demerara.

Pickford & Black, West India S S Line between Halifax, Bermuda, Turk's Island and Jamaica.

Chronometers for sale and to hire, at **COGSWELL'S**.
PICKFORD & BLACK, Ship Brokers and Steamship Agts., Halifax, N. S.

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ROBERT H. COGSWELL'S

[1898

FEBRUARY.

Chronometer of
G. M. T.

Day of the Week.	Day of the Month	THE SUN'S				Equation of Time, to be added to Apparent Time.	Var. in l h'r.	Chronometer of G. M. T.					
		Apparent Right Ascension.	Var. in l h'r.	Apparent Declination.	Var. in l h'r.				H.	MIN.	SEC.	THS.	
									h.	m.	s.	s.	o.
T	1	21	0 44.60	10.175	S. 17	0 9.1	42.95	13 51 07	0.317	1			
W	2	21	4 48.37	10.140	16	42 49.4	43 68	13 58.27	0.282	2			
T	3	21	8 51.31	10.105	16	25 12.4	44 40	14 4.63	0.248	3			
F	4	21	12 53.42	10.071	16	7 18.3	45.10	14 10 17	0.214	4			
S	5	21	16 54.71	10.037	15	49 7 7	45.78	14 14 88	0.180	5			
S	6	21	20 55.18	10.003	15	30 41.0	46 45	14 18.78	0.146	6			
M	7	21	24 54.84	9.969	15	11 58 4	47 10	14 21.87	0.112	7			
T	8	21	28 53.69	9.936	14	53 0.4	47.73	14 24.17	0.080	8			
W	9	21	32 51.76	9.904	14	33 47.4	48.35	14 25 69	0.047	9			
T	10	21	36 49.06	9.872	14	14 19 7	48 95	14 26.43	0.015	10			
F	11	21	40 45.59	9.840	13	54 37.9	49 53	14 26.41	0.016	11			
S	12	21	44 41.37	9.808	13	34 42.1	50.10	14 25.64	0.047	12			
S	13	21	48 36.41	9.778	13	14 32 9	50 65	14 24 14	0.078	13			
M	14	21	52 30 73	9.748	12	54 10.7	51.19	14 21 96	0.108	14			
T	15	21	56 24.33	9.719	12	33 35.8	51.71	14 18.95	0.137	15			
W	16	22	0 17.23	9.690	12	12 48.8	52 20	14 15.31	0.166	16			
T	17	22	4 9.44	9.661	11	51 50.0	52.69	14 10.97	0.195	17			
F	18	22	8 0.96	9.633	11	30 39 8	53.15	14 5.94	0.224	18			
S	19	22	11 51.81	9.605	11	9 18.8	53.59	14 0.24	0.251	19			
S	20	22	15 41.98	9.577	10	47 47.4	54.02	13 53.88	0.279	20			
M	21	22	19 31.50	9.550	10	26 6 0	54.42	13 46.87	0.305	21			
T	22	22	23 20 37	9.523	10	4 15.0	54.81	13 39.22	0.332	22			
W	23	22	27 8.61	9.497	9	42 14.9	55.19	13 30.93	0.358	23			
T	24	22	30 56.24	9.472	9	20 6.1	55.54	13 22.03	0.384	24			
F	25	22	34 43.26	9.447	8	57 49.0	55 88	13 12.52	0.408	25			
S	26	22	38 29.69	9.423	8	35 24.0	56 20	13 2.43	0.432	26			
S	27	22	42 15.55	9.399	8	12 51.6	56.50	12 51.77	0.456	27			
M	28	23	46 0.85	9.376	7	50 12 0	56 79	12 40.55	0.479	28			
T	29	22	49 45.62	9.355	S. 7	27 25.9	57.05	12 28.79	0.501	29			
										30			
										31			

Macdonald & Co., Steam Wrecking Pumps for Sale or Hire.—See page 4 cover.

Iron Pipe all sizes, at **MACDONALD & CO'S**.—See adv. page 4, cover.

Quadrants and Sextants, best quality, at **COGSWELL'S**.
PICKFORD & BLACK, W I. S. S. Line between Turk's Island & Jamaica.

1898]

NAUTICAL ALMANAC.

11

BLACK BROS. & CO.,

—IMPORTERS OF—

AMERICAN and CANADIAN DUCKS,
ENGLISH SAIL and REPAIRING HEMP,
MANILLA and HEMP CORDAGE,
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Paints, Oils, Naval Stores,

PATENT LOGS, COMPASSES, LIGHTS.

CALL AND GET OUR PRICES.

Agents for Lunenburg Packet LUNENBURG.

HALIFAX, - NOVA SCOTIA.



PLANT LINE,

Fast Direct Route between

BOSTON, and NOVA SCOTIA,

CAPE BRETON & P. E. ISLAND.

Fast Palatial Steel Passenger Steamships

"HALIFAX," and "OLIVETTE,"

All Year Round
Between Boston and Halifax.
(One Night at Sea.)

During Season of Navigation
Between Boston & Charlottetown,
Calling at Hawkesbury.

Regular Sailings. Lowest Rates. Through Tickets and Baggage checked to and from all points. For Folders, Rates and further information apply to LOCAL AGENTS or to

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Plant Wharf, HALIFAX, N. S.

J. A. FLANDERS, N. E. Agent,
290 Washington St., Boston.

M. F. PLANT, Vice-Pres. and Manager,
New York.

B. W. WRENN, Pass. Traffic Manager,
207 Washington St., Boston.

Brass Hinges, Hasps and Locks, at **MACDONALD & CO'S.**—See cover.

Macdonald & Co., Importer of Steam Pumps, &c., Barrington Street, Halifax—See adv. p. 4, cover.

Pickford & Black, Brokers and Steamship Agents, Halifax, N. S.

MARCH.

Chronometer of
G. M. T.

Pickford & Black, Ship Brokers and Steamship Agents, Halifax, N. S.

Macdonald & Co., Manufacturers of Plumbers' Brass Goods, Halifax — See adv. page 4, cover.

Day of the Week	Day of the Month	THE SUN'S				Equation of Time, to be added to Apparent Time	Var. in 1 h'r.	Chronometer of G. M. T.				
		Apparent Right Ascension	Var. in 1 h'r.	Apparent Declination.	Var in 1 h'r.			H	MIN.	SEC.	THS.	
		<i>h. m. s.</i>	<i>s.</i>	<i>° ' "</i>	<i>"</i>	<i>m. s</i>	<i>s</i>	1				
T	1	22 49 45.62	9.355	S. 7 27 25.9	57.05	12 28.79	0.501	2				
W	2	22 53 29.87	9.334	7 4 33.4	57.31	12 16.51	0.522	3				
T	3	22 57 13.62	9.313	6 41 35.1	57.54	12 3.73	0.542	4				
F	4	23 0 56.88	9.293	6 18 31.3	57.77	11 50.48	0.562	5				
S	5	23 4 39.69	9.274	5 55 22.3	57.97	11 36.76	0.581	6				
S	6	23 8 22.05	9.256	5 32 8.7	58.16	11 22.61	0.598	7				
M	7	23 12 4.00	9.239	5 8 50.6	58.34	11 8.04	0.615	8				
T	8	23 15 45.55	9.223	4 45 28.5	58.50	10 53.09	0.631	9				
W	9	23 19 26.72	9.209	4 22 2.7	58.64	10 37.76	0.646	10				
T	10	23 23 7.56	9.195	3 58 33.6	58.77	10 22.09	0.660	11				
F	11	23 26 48.07	9.182	3 35 1.5	58.89	10 6.10	0.673	12				
S	12	23 30 28.28	9.170	3 11 26.7	59.00	9 49 81.0	0.685	13				
S	13	23 34 8.23	9.159	2 47 49.7	59.08	9 33.24	0.696	14				
M	14	23 37 47.92	9.149	2 24 10.7	59.16	9 16.42	0.705	15				
T	15	23 41 27.39	9.140	2 0 30.1	59.22	8 59.38	0.715	16				
W	16	23 45 6.64	9.132	1 36 48.3	59.26	8 42.12	0.723	17				
T	17	23 48 45.71	9.124	1 13 5.7	59.28	8 24 68	0.730	18				
F	18	23 52 24.61	9.117	0 49 22.7	59.29	8 7.07	0.737	19				
S	19	23 56 3.35	9.111	0 25 39.7	59.28	7 49.30	0.743	20				
S	20	23 59 41.95	9.106	S. 0 1 57.1	59.26	7 31.40	0.748	21				
M	21	0 3 20.44	9.101	N. 0 21 44.8	59.22	7 13.39	0.753	22				
T	22	0 6 58.82	9.097	0 45 25.5	59.16	6 55.27	0.757	23				
W	23	0 10 37.11	9.094	1 9 4.7	59.09	6 37.07	0.760	24				
T	24	0 14 15.34	9.092	1 32 42.0	59.01	6 18.80	0.762	25				
F	25	0 17 53.52	9.090	1 56 17.0	58.90	6 0.48	0.764	26				
S	26	0 21 31.67	9.089	2 19 49.4	58.79	5 42.13	0.765	27				
S	27	0 25 9.81	9.089	2 43 18 8	58.65	5 23.76	0.765	28				
M	28	0 28 47.95	9.089	3 6 44.8	58.51	5 5.39	0.765	29				
T	29	0 32 26.11	9.091	3 30 7.1	58.34	4 47.05	0.764	30				
W	30	0 36 4.31	9.093	3 53 25.3	58.16	4 28.74	0.762	31				
T	31	0 39 42.57	9.096	4 16 39.0	57.97	4 10.49	0.759					
F	32	0 43 20.91	9.099	N. 4 39 48.0	57.77	3 52 33	0.755					

 Clocks of every Description at **COGSWELL'S.** 

PICKFORD & BLACK'S W. I. S. S. Line between Turk's Island & Jamaica.

1898]

NAUTICAL ALMANAC.

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S. CUNARD & CO.,

— SUPPLY AT —

WHOLESALE AND RETAIL

ALL KINDS OF —

Hard and Soft

COALS.

All COAL carefully screened and weighed.

RAILWAY TRACK AND FREIGHT STATION

— AT OUR —

NORTH-END COAL YARD,

GIVING EVERY FACILITY FOR

PROMPT SHIPMENT BY RAIL.

Residences fitted with Hot Water Heating Apparatus by Macdonald & Co., Halifax.

Pickford & Black, owners Steamers between Prince Edward Island and Halifax.

Brass Ventilators made by MACDONALD & CO.—See page 4, cover.

Macdonald & Co., Manufacturers of P...

The best place for good Chronometers—**COGSWELL'S**.
PICKFORD & BLACK. Agents Funch, Eyde & Co., New York.

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ROBERT H. COGSWELL'S

[1898

APRIL.

Chronometer of
G. M. T.

Pickford & Black, Agents Donaldson Line between Glasgow and Halifax.

Macdonald & Co, Coppersmiths and Plumbers, Halifax—See adv. page 4, cover.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be added to subtracted from Apparent Time.	Var. in 1 h'r.	Chronometer of G. M. T.				
		Apparent Right Ascension.	Var. in 1 h'r.	Apparent Declination.	Var. in 1 h'r.			H.	MIN.	S.C.	THS.	
		<i>h. m. s.</i>	<i>s</i>	<i>o / " "</i>	<i>" "</i>	<i>m. s</i>	<i>s</i>	1				
F	1	0 43 20.91	9.099	N. 4 39 48.0	57.77	3 52.33	0.755	2				
S	2	0 46 59.34	9.104	5 2 51.8	57.55	3 34.26	0.751	3				
S	3	0 50 37.89	9.109	5 25 50.2	57.31	3 16.30	0.745	4				
M	4	0 54 16.58	9.115	5 48 42.9	57.07	2 58.49	0.739	5				
T	5	0 57 55.43	9.122	6 11 29.4	56.80	2 40.83	0.732	6				
W	6	1 1 34.46	9.130	6 34 9.5	56.53	2 23.36	0.724	7				
T	7	1 5 13.69	9.139	6 56 42.9	56.25	2 6 09	0.715	8				
F	8	1 8 53.15	9.150	7 19 9.4	55.95	1 49.05	0.705	9				
S	9	1 12 32.87	9.161	7 41 28.4	55.64	1 32.26	0.694	10				
S	10	1 16 12.86	9.172	8 3 39.9	55.31	1 15.74	0.682	11				
M	11	1 19 53.14	9.185	8 25 43.5	54.97	0 59.51	0.670	12				
T	12	1 23 33.74	9.198	8 47 38.7	54.62	0 43.59	0.657	13				
W	13	1 27 14.66	9.212	9 9 25.2	54.25	0 27.99	0.643	14				
T	14	1 30 55.93	9.227	9 31 2.8	53.87	0 12.74	0.628	15				
F	15	1 34 37.57	9.242	9 52 31.1	53.47	0 2.14	0.612	16				
S	16	1 38 19.57	9.258	10 13 49.6	53.06	0 16.64	0.596	17				
S	17	1 42 1.96	9.275	10 34 58.1	52.64	0 30 76	0.580	18				
M	18	1 45 44.75	9.292	10 55 56.2	52.20	0 44.48	0.563	19				
T	19	1 49 27.95	9.309	11 16 43.5	51.74	0 57.79	0.546	20				
W	20	1 53 11.58	9.327	11 37 19.6	51.27	1 10.68	0.528	21				
T	21	1 56 55.64	9.345	11 57 44.4	50.79	1 23.14	0.510	22				
F	22	2 0 40.14	9.364	12 17 57.3	50.29	1 35.16	0.492	23				
S	23	2 4 25.09	9.383	12 37 58.1	49.77	1 46.74	0.473	24				
S	24	2 8 10.50	9.402	12 57 46.4	49.25	1 57.85	0.453	25				
M	25	2 11 56.39	9.422	13 17 21.9	48.70	2 8.49	0.434	26				
T	26	2 15 42.75	9.442	13 36 44.2	48.15	2 18.67	0.414	27				
W	27	2 19 29.59	9.462	13 55 53.1	47.58	2 28.36	0.394	28				
T	28	2 23 16.92	9.483	14 14 48.2	47.00	2 37.56	0.373	29				
F	29	2 27 4.75	9.504	14 33 29.1	46.40	2 46.26	0.352	30				
S	30	2 30 53.09	9.525	14 51 55.6	45.80	2 54.46	0.331	31				
S	31	2 34 41.93	9.546	N.15 10 7.3	45.17	3 2.14	0.309					

MACDONALD & CO., Machinists.—See adv. page 4, cover.

Chronometers and Watches repaired, at COGSWELL'S.

PICKFORD & BLACK, owners Steamers between P. E. I. and Halifax.

1898]

NAUTICAL ALMANAC.

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LIGHT HOUSES

—OF—

NOVA SCOTIA, NEW BRUNSWICK, ETC.

Arranged from the Dominion Official List.

[All bearings are *magnetic*, and are given from seaward; height of light from high water; and of building from base to vane on lantern.]

GEORGE'S ISLAND, west side of Island, Halifax Harbor, lat $44^{\circ} 38' 30''$ N., lon $63^{\circ} 33' 25''$ W., two fixed white catoptric lights, vertical, 20 feet apart, 50 and 30 feet high, drab square building, 21 feet high. Lights show both seaward on the S., and into harbor on N. side; on W. side the upper light only can be seen. Vessels going into Halifax Harbor, passing Meagher's Beach, will keep the light on starboard bow. The light is for the purpose of guiding vessels in and out of the Harbor, through the channel west of the Island. These lights open to westward of Meagher's Beach, clear the westward of Thrum Cap Shoal. A fog bell on western side lighthouse tower, strikes 7 strokes every minute.

MEAGHER'S BEACH, Sherbrook Tower, east side of entrance to Halifax Harbor, lat $44^{\circ} 36' N.$, lon $63^{\circ} 32' 5'' W.$, fixed white catoptric light, visible 12 miles, 58 feet high, building granite with red roof, circular, height 48 feet. When Sambro light bears W. S. W., this light should not be brought to the westward of north, which clears the Thrum Cap Shoal. A fog trumpet sounds blasts of 5 seconds, with intervals of 25 seconds between the blasts.

THRUM CAP BELL BUOY, red iron buoy surmounted by a bell at S. W. extremity of shoal. Eastern entrance to Halifax harbor. Lat $44^{\circ} 33' 57'' N.$, lon $63^{\circ} 29' 51'' W.$

DEVIL'S ISLAND, on south point of Island, at the eastern entrance to Halifax harbor, two fixed white catoptric lights, South Point, and W. $\frac{3}{4}$ S., 175 yards apart, visible 13 miles, the light E. 59 feet high, W. light 52 feet, both buildings white, octagonal, wood, height E. 53 feet, W. 45 feet, lat $44^{\circ} 34' 50'' N.$, lon $63^{\circ} 27' 15'' W.$ The eastern light opens to southward of western, clears to the southward of the Thrum Cap Shoal. Lifeboat stationed here.

JEDDORE ROCK, on summit of rocks about 22 miles east of Halifax, lat $44^{\circ} 39' 45''$, lon $63^{\circ} 0' 22''$ one fixed red light, visible 12 miles, white, square, wood, dwelling attached, 86 feet high.

EGG ISLAND, centre of island, lat $39^{\circ} 49' 20'' N.$, lon $62^{\circ} 49' 5'' W.$ catoptric light, a group flashing white or bright light, showing three flashes with intervals of 15 seconds between, followed by an eclipse of 30 seconds, visible 15 miles, 80 feet high, octagonal building, black and white vertical stripes on seaward side, height 45 feet. Visible around horizon. An iron can buoy, painted red, about 200 yards south of the Brig Rock, W. by S. from the light house, about 2 miles. Hand fog-trumpet answers signals.

AN automatic whistling buoy, red, is moored in 37 fathoms of water. 5 miles S Mag. from Egg Island Light, lat N. $44^{\circ} 35' 20''$, lon W. $62^{\circ} 49' 5''$.

SHIP HARBOR, on Wolf Point, west side of entrance to Ship Harbor, lat N. $44^{\circ} 44' 54''$, lon. W. $62^{\circ} 45' 4''$, fixed white dioptric light, 87 feet above the water, visible 15 miles from all points of approach by water. Tower white, square, wood with dwelling attached. Iron, lantern red..

MACDONALD & CO., Steam Wrecking Pumps.—See adv. p. 4, cover.

Vessels fitted with Plumbing Fixtures by Macdonald & Co, Halifax —See adv. page 4, cover.

Pickford & Black, Agents Funch, Eyde & Co., New York.

Macdonald & Co. Commissioners.

COGSWELL—Telescope Marine Glasses.
PICKFORD & BLACK, Agts. Donaldson Line between Glasgow & Halifax.

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ROBERT H. COGSWELL'S

[1898

MAY.

Chronometer of
G. M. T.

Pickford & Black, owners Steamers between Prince Edward Island and Halifax.

Macdonald & Co, Importers of Engineers Rubber Goods, Oils and Waste, Halifax

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from Apparent Time.		Var. in 1 h'r.	Chronometer of G. M. T.				
		Apparent Right Ascension.	Var. in 1 h'r.	Apparent Declination.	Var. in 1 h'r.	m.	s.		H.	MIN.	SEC.	THS.	
		<i>h. m. s.</i>	<i>s.</i>	<i>° ' "</i>	<i>" "</i>								
S	1	2 34 41.93	9.546	N 15 10 7.3	45.17	<i>m. s.</i>							
M	2	2 38 31.30	9.568	15 28 3.9	44.54								
T	3	2 42 21.21	9.591	15 45 45.1	43.89								
W	4	2 46 11.65	9.613	16 3 10.8	43.24								
T	5	2 50 2.65	9.636	16 20 20.5	42.56								
F	6	2 53 54.20	9.660	16 37 13.9	41.88								
S	7	2 57 46.33	9.684	16 53 50.9	41.19								
S	8	3 1 39.04	9.708	17 10 11.1	40.49								
M	9	3 5 32.33	9.733	17 26 14.3	39.77								
T	10	3 9 26.22	9.757	17 42 0.1	39.04								
W	11	3 13 20.69	9.782	17 57 28.3	38.30								
T	12	3 17 15.76	9.807	18 12 38.5	37.54								
F	13	3 21 11.43	9.832	18 27 30.4	36.78								
S	14	3 25 7.69	9.856	18 42 3.8	36.00								
S	15	3 29 4.54	9.881	18 56 18.3	35.21								
M	16	3 33 1.98	9.905	19 10 13.7	34.40								
T	17	3 36 59.99	9.929	19 23 49.6	33.58								
W	18	3 40 58.59	9.953	19 37 5.7	32.76								
T	19	3 44 57.75	9.977	19 50 1.9	31.92								
F	20	3 48 57.47	10.000	20 2 37.9	31.07								
S	21	3 52 57.74	10.022	20 14 53.3	30.21								
S	22	3 56 58.54	10.044	20 26 47.9	29.34								
M	23	4 0 59.86	10.066	20 38 21.6	28.46								
T	24	4 5 1.69	10.086	20 49 34.0	27.57								
W	25	4 9 4.01	10.107	21 0 24.9	26.67								
T	26	4 13 6.82	10.127	21 10 54.1	25.76								
F	27	4 17 10.09	10.146	21 21 1.3	24.84								
S	28	4 21 13.81	10.164	21 30 46.3	23.91								
S	29	4 25 17.96	10.182	21 40 9.0	22.97								
M	30	4 29 22.53	10.199	21 49 9.1	22.03								
T	31	4 33 27.53	10.216	21 57 46.5	21.08								
W	32	4 37 32.92	10.232	N.22 6 1.0	20.12								

MACDONALD & CO., Vessels Fastenings and Fittings.—See p. 4, cover.

If you want good articles, call at **COGSWELL'S**.
PICKFORD & BLACK, Agts. Halifax & Newfoundland Steamship Co., Ltd.

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NAUTICAL ALMANAC.

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 New Jersey Copper Paint.

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ACADIA COUGH CURE.

MACDONALD & CO., Importers Engineers' Rubber Goods.—See cover.

Macdonald & Co., Importers of T.

Macdonald & Co., Manufacturers of Brass Sliding Door Rollers, Halifax

Pickford & Black's West India Steamship Line between Halifax and Demerara.

All kinds Nautical work repaired, at COGSWELL'S.
PICKFORD & BLACK, Ship Brokers & Steamship Agents, Halifax, N. S.

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ROBERT H. COGSWELL'S

[1898

Pickford & Black's West India Steamship Line, between Halifax and Demerara.

Macdonald & Co., Manufacturers of Vessel's Fastenings and Deck Fixtures, Halifax.

JUNE.

Chronometer of
G. M. T.

Day of the Week.	Day of the Month.	THE SUN'S				Equation of Time, to be subtracted from		Var. in 1 h'r.	Chronometer of G. M. T.			
		Apparent Right Ascension.	Var. in 1 h'r.	Apparent Declination.	Var. in 1 h'r.	added to Apparent Time.	in 1 h'r.		H.	MIN.	SEC.	THS.
		<i>h. m. s.</i>	<i>s.</i>	<i>° ' "</i>	<i>"</i>	<i>m. s.</i>	<i>s.</i>					
W	1	4 37 32.92	10.232	N 22 6 1.0	20.12	2 24 50	0.375	1				
T	2	4 41 38.68	10.248	22 13 52.4	19.16	2 15 31	0.391	2				
F	3	4 45 44.82	10.264	22 21 20.6	18.19	2 5 75	0.406	3				
S	4	4 49 51.33	10.278	22 28 25.4	17.21	1 55 84	0.420	4				
S	5	4 53 58.18	10.292	22 35 6.7	16.23	1 45 58	0.434	5				
M	6	4 58 5 36	10.306	22 41 24.3	15.24	1 35 00	0.448	6				
T	7	5 2 12.86	10.319	22 47 18.2	14.25	1 24 09	0.461	7				
W	8	5 6 20.66	10.331	22 52 48.1	13.24	1 12 88	0.473	8				
T	9	5 10 28.74	10.342	22 57 53.9	12 24	1 1 39	0.484	9				
F	10	5 14 37 09	10 353	23 2 35.5	11.23	0 49.63	0.495	10				
S	11	5 18 45.68	10.363	23 6 52.8	10.21	0 37.62	0.505	11				
S	12	5 22 54.50	10.372	23 10 45.6	9 19	0 25.39	0.514	12				
M	13	5 27 3 52	10.379	23 14 13 9	8 17	0 12.96	0.522	13				
T	14	5 31 12.71	10.386	23 17 17.7	7 14	0 0 35	0.529	14				
W	15	5 35 22.06	10.392	23 19 56 8	6 11	0 12.41	0.534	15				
T	16	5 39 31.54	10.397	23 22 11.1	5 08	0 25.29	0.539	16				
F	17	5 43 41.11	10.401	23 24 0 6	4 05	0 38 27	0.543	17				
S	18	5 47 50.77	10.403	23 25 25.4	3 02	0 51.33	0.545	18				
S	19	5 52 0 47	10.404	23 26 25.4	1 98	1 4 43	0.546	19				
M	20	5 56 10.18	10.404	23 27 0 6	0 95	1 17.54	0.546	20				
T	21	6 0 19.89	10.403	23 27 10.9	0 09	1 30.64	0.545	21				
W	22	6 4 29.55	10.401	23 26 56.4	1 12	1 43.71	0.543	22				
T	23	6 8 39.15	10.398	23 26 17.2	2 15	1 56.71	0.540	23				
F	24	6 12 48.65	10.394	23 25 13.1	3 18	2 9.62	0.536	24				
S	25	6 16 58.04	10.388	23 23 44.3	4 21	2 22.42	0.530	25				
S	26	6 21 7.28	10.381	23 21 50 8	5 24	2 35.07	0.524	26				
M	27	6 25 16.35	10.347	23 19 32.7	6 27	2 47.56	0.516	27				
T	28	6 29 25.23	10.366	23 16 50 0	7 29	2 59.85	0.508	28				
W	29	6 33 33 90	10.356	23 13 43 0	8 30	3 11.93	0.498	29				
T	30	6 37 42.33	10.346	23 10 11.5	9 32	3 23.77	0.488	30				
F	31	6 41 50.52	10.336	N.23 6 15.7	10.33	3 35.37	0.478	31				

Ship Pumps, MACDONALD & CO'S.—See adv. page 4 cover.

COGSWELL—Telescope Marine Glasses.

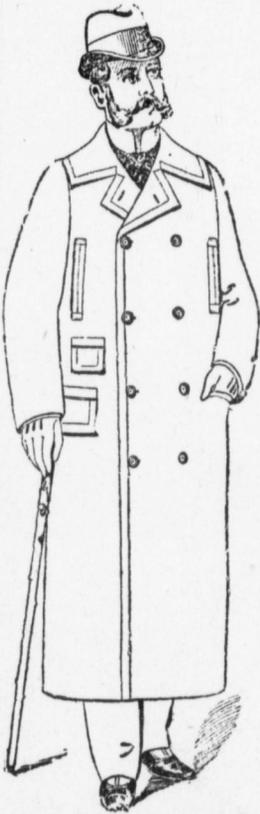
PICKFORD & BLACK, W. I. S. S. Line between Turk's Island & Jamaica.

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NAUTICAL ALMANAC.

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AT THE TOP



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157 Barrington St., HALIFAX.

AGENTS FOR OXFORD TWEEDS
AND HOMESPUNS.

Macdonald & Co., Manufacturers of Ships' Patent Water Closets, Halifax.—See adv. p. 4 cover.

Pickford & Black's West India S. S. Line between Halifax, Bermuda, Turk's Island and Jamaica.

Brass Ventilators made by MACDONALD & CO.—See adv. p. 4, cover.

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ROBERT H. COGSWELL'S

[1898

JULY.

Chronometer of G. M. T.

Pickford & Black, West India S S Line between Halifax, Bermuda, Turk's Island and Jamaica.

Macdonald & Co., Steam Wrecking Pumps for Sale or Hire.—See page 4 cover.

Day of the Week.		Day of the Month.		THE SUN'S				Equation of Time, to be added to Apparent Time.		Var. in 1 h'r.	Chronometer of G. M. T.			
		Apparent Right Ascension.	Var. in 1 h'r.	Apparent Declination.	Var. in 1 h'r.									
		<i>h. m. s.</i>	<i>s.</i>	<i>° ' "</i>	<i>" "</i>	<i>m. s.</i>	<i>s.</i>			H.	MIN.	SEC.	THS.	
F	1	6 41 50	52	10.336	N. 23 6 15	7	10.33	3 35.37	0.478	1				
S	2	6 45 58	44	10.324	23 1 55	7	11.33	3 46.70	0.466	2				
Z	3	6 50 6.07	10.311	22 57 11	7	12.33	3 57 73	0.453		3				
M	4	6 54 13.39	10.298	22 52 3.8	13.33					4				
T	5	6 58 20.40	10.285	22 46 32.0	14.32	4	8.46	6 441		5				
W	6	7 2 27.07	10.271	22 40 36.4	15.31	4	18.88	0.427		6				
T	7	7 6 33.40	10.256	22 34 17.2	16.29	4	28.97	0.413		7				
F	8	7 10 39.35	10.240	22 27 34.5	17.26	4	38.71	0.398		8				
S	9	7 14 44.93	10.224	22 20 28.5	18.24	4	48.09	0.383		9				
S	10	7 18 50.12	10.208	22 12 59.2	19.20	5	57.09	0.367		10				
M	11	7 22 54.90	10.190	22 5 7.0	20.15	5	5.70	0.350		11				
T	12	7 26 59.25	10.172	21 56 51.9	21.10	5	13.90	0.333		12				
W	13	7 31 3.16	10.153	21 48 14.1	22.04	5	21.68	0.315		13				
T	14	7 35 6.61	10.134	21 39 13.9	22.97	5	29.01	0.296		14				
F	15	7 39 9.58	10.114	21 29 51.4	23.89	5	35.88	0.276		15				
S	16	7 43 12.06	10.093	21 20 7.0	24.80	5	42.28	0.256		16				
S	17	7 47 14.04	10.071	21 10 0.8	25.71	5	48.18	0.235		17				
M	18	7 51 15.48	10.049	20 59 33.0	26.60	5	53.57	0.214		18				
T	19	7 55 16.39	10.026	20 48 44.0	27.48	5	58.45	0.192		19				
W	20	7 59 16.74	10.003	20 37 33.9	28.35	6	2.78	0.169		20				
T	21	8 3 16.53	9.979	20 26 3.0	29.22	6	6.57	0.146		21				
F	22	8 7 15.74	9.955	20 14 11.5	30.07	6	9.79	0.122		22				
S	23	8 11 14.36	9.930	20 1 59.8	30.91	6	12.44	0.098		23				
S	24	8 15 12.39	9.905	19 49 28.0	31.73	6	14.50	0.074		24				
M	25	8 19 9.80	9.880	19 36 36.6	32.55	6	15.97	0.049		25				
T	26	8 23 6.61	9.854	19 23 25.6	33.36	6	16.83	0.023		26				
W	27	8 27 2.80	9.829	19 9 55.5	34.15	6	17.09	0.002		27				
T	28	8 30 58.38	9.803	18 56 6.4	34.93	6	16.72	0.028		28				
F	29	8 34 53.33	9.777	18 41 58.8	35.70	6	15.74	0.054		29				
S	30	8 38 47.66	9.751	18 27 32.8	36.46	6	14.14	0.080		30				
S	31	8 42 41.38	9.725	18 12 48.7	37.21	6	11.92	0.106		31				
M	32	8 46 34.48	9.700	N. 17 57 46.7	37.95	6	9.07	0.131						

Macdonald & Co., Manufacturers of Brass Binnacles and Stands, Halifax.—See adv. p. 4 cover.

Pickford & Black, Agents Funch, Edge & Co., New York.

POPE'S HARBOR, on west point of Harbour Island, lat 44° 47' 40" N, lon 62° 38' 50" W., fixed red light, catoptric, visible 9 miles, 45 feet high, tower white, square, wood, with dwelling attached, height 37 feet.

SPRY BAY BELL BUOY, Fair way buoy, lat N. 44° 45' 40", long W. 62° 33' 20". Red buoy with "SPRY BAY" in white letters on the deck. Taylor's Head bears N. E. $\frac{1}{4}$ N. 2 miles, and Maloney Rock bears N. $\frac{3}{4}$ W. 2 miles. Bell rung by action of the water.

SHEET ROCK, at the entrance to Sheet Harbor, lat 44° 49' 55" N, lon 62° 29' 23" W., revolving red light every 40 seconds, visible 10 miles. White, square, wood, with dwelling attached. 75 feet above high water mark. Automatic whistling buoy in 24 fathoms water S by W $\frac{1}{2}$ W 5 and one-sixth miles from Sheet Rock light house.

SHEET HARBOUR PASSAGE, on mainland near eastern end of Sober Island, lat 44° 51' 30" N, lon 62° 26' 33" W, fixed red catoptric, visible 5 miles. Light shown from window in keeper's dwelling elevated 42 feet above high water. For benefit of vessels navigating Sheet Harbour Passage.

BEAVER ISLAND, S. E. part of East Beaver, or William Island, lat 44° 49' 34" N, lon 62° 20' 10" W, a revolving white light showing a flash every 45 seconds, visible 12 miles, 70 feet high, white building with two black balls to seaward, S. S. W., 35 feet high.

BEAVER HARBOUR, on eastern end of Beaver Point, lat 44° 52' 23" N, lon 62° 23' 40" W. A pole light red lantern on mast with white shed at base: visible 6 miles.

LISCOMB, on island, lat 44° 59' 20" N, lon 61° 57' 55" W., red and white catoptric light, alternating every two minutes visible 15 miles, 64 feet high, white square wooden tower, with dwelling attached.

WEDGE ISLAND, mouth of St. Mary's River, lat 45° 0' 35", lon 61° 52' 23", one revolving red catoptric light, shows 1 minute in 3 minutes, visible 12 miles, white, square, wood, with dwelling attached, 81 feet high.

Automatic whistling buoy off Isaac's Harbor as a fairway buoy, lat. N. 45° 2' 20", lat. W. 61° 32' 37". From the buoy Country Harbor Light, on Green Island N. E. by N. $\frac{1}{2}$ N. Distance $3\frac{3}{4}$ miles. A N. by W. course will lead from the buoy to Ragged Point, distance 9 miles. The buoy is moored in 25 fathoms water, and is painted red, with Isaac Harbor in white letters on the side. Taken up about December and laid in the spring. Lat 45° 2' 20" N; lon 61° 32' 37" W.

HOLLY POINT, west side of entrance to Isaac's Harbor, lat 45° 1' 0" N., lon 61° 39' 12" W., two fixed white catoptric lights vertically, 20 feet apart, visible 9 miles, 80 feet high, square white building, 20 feet high, with dwelling attached.

COUNTRY HARBOUR, on Green Island, Guysboro' County, lat 45° 6' 8" N., lon 61° 32' 30" W., fixed white catoptric light, visible 14 miles, 51 feet high, white square wooden building, with dwelling attached, height 28 feet. Coast light, and to guide vessels frequenting Country and Fisherman's Harbors.

TOR BAY, on eastern point of Berry Head, W. side of entrance to Bay, Guysboro' County, lat 45° 11' 37" N., lon 61° 18' 35" W., fixed catoptric light, red to seaward, white toward into Bay and towards Molasses Harbor, visible 10 miles, square wooden building, with dwelling attached, white with vertical red stripes, top of lantern painted black. Height of lantern 51 feet, tower 36 feet.

THREE TOP ISLAND, on the south-east point of Three Top Island, Whitehaven, Guysborough County, Nova Scotia, lat 45° 12' 40" N., lon 61° 9' 40" W. The light is fixed white catoptric, elevated 48 feet above high water mark, and in clear weather should be seen 11 miles. The building is a wooden one painted white, and consists of a square tower 32 feet high from base of building to vane on lantern, with keeper's dwelling attached. This light is for the purpose of guiding vessels into Whitehaven, and in order to point out the dangers on the northern side

Residences fitted with Hot Water Heating Apparatus by Macdonald & Co., Halifax.

Pickford & Black, Agents Donaldson Line between Glasgow and Halifax.

of the Western Passage is obscured when bearing to the eastward of N. E. by E. It is visible from all other points of approach except when intercepted by the high land of Whitehead Island.

WHITEHEAD ISLAND, S. W. extremity of Island, Guysboro' County, lat 45° 12' N., lon 61° 8' 15" W., white catoptric light, revolving every 20 seconds, visible 11 miles, 55 feet high, pyramidal wooden building, 35 feet high, with dwelling attached, octagonal lantern. Light not totally obscured during the eclipses; 10 seconds duration of flash, and 10 seconds eclipse.

Life boat stationed at DemingPoint.

CAPE BREAKER BELL BUOY, painted black and surmounted by a bell, is moored in 14 fathoms, 4 cables E. S. E. from the middle of the shoal. From the buoy a N. W. by N. $\frac{1}{2}$ N. course will lead up to, and about half a cable to the eastward of, Man-of-War Rock, distant 2 $\frac{1}{2}$ miles. Lat 45° 18' 20" N, lon 60° W, 54' 0".

CANSO CAPE, north part of Cranberry Island, lat 45° 19' 45" N., lon 60° 55' 25" W., two fixed white lights in one tower, vertically, 35 feet apart, upper visible 15, lower 12 miles, 89 and 54 feet respectively, high, octagonal wooden building, horizontally striped red and white, with white dwelling house attached. A steam fog whistle, near the light-house, in thick weather sounds a blast of 8 seconds in each minute.

An automatic signal buoy in 20 fathoms, $\frac{1}{2}$ miles E. S. E. of Grimes Rock, taken up about December, and replaced in the spring. Lat 45° 21' 13" N, lon 60° 50' 45" W.

CANSO HARBOR, on Hart or Cutler Island, lat 45° 20' 47" N., lon 60° 59' 5" W., fixed red catoptric light, visible 12 miles, 42 feet high, white square wooden building, with dwelling attached, height 28 ft. Hand fog horn answers signals from vessels:

CROW HARBOR, on Rook Island, Chedabucto Bay, lat 45° 21' 5" N. lon 61° 16' W., fixed white dioptric light, visible 8 miles. Square wooden tower with dwelling attached, painted white.

GUYSBORO' HARBOR, W. side of entrance, near Peart Point, Chedabucto Bay, lat 45° 22' 46" N., lon 61° 29' 4" W., fixed white catoptric light, visible 8 miles, 30 feet high, white square wooden building, height 20 feet.

SAND POINT, or Eddy Point, south entrance Gut of Canso, lat 45° 31' 30" N., lon 61° 14' 40" W., fixed white dioptric, visible 12 miles, 55 feet high, white square wooden tower, with dwelling attached, black diamond on seaward face.

POINT TUPPER, Ship Harbor or Port Hawkesbury, lat 45° 36' 30" N., lon 61° 22' W., fixed red catoptric light, visible 7 miles, 54 feet high, white square building, height 34 feet. In consequence of the intervention of the land on the south side, can only be seen three miles in that direction.

CREIGHTON'S HEAD, on the north extremity, lat 45° 30' 40" N., lon 61° 6' 0" W., white catoptric light, revolving every 40 seconds, visible 10 miles, 29 feet high, square white wooden building, height 20 feet. For guiding vessels into Little or West Arichat.

JERSEYMAN ISLAND, Arichat Harbor, lat 45° 30' 20" N., lon 61° 3' 10" W., fixed red catoptric light, visible 11 miles, 39 feet high, white square wooden building, height 28 feet. This light is for the purpose of guiding vessels through Crid Passage, in and out of Arichat Harbor. There is also a Range Beacon on the S E Point of Jerseyman's Island, that marks Hautfond Shoal, off the entrance to Arichat Harbor. When the beacon and spire of the Roman Catholic Chapel in Arichat are in range, it leads over the West Part of the shoal in 10 feet of water. Vessels bound into Arichat, Cape Breton, should pass to the west of the shoal, or bring the beacon in range of the cupola on the Convent, which stands 130 yards east of the R. C. Church, which will lead in clear of the shoal. Only those well acquainted should pass to the eastward of the shoal, or bring the beacon to bear to the N. of N. E. An Iron Can Buoy painted

Macdonald & Co., Importers of F.

The best place for good Chronometers—COGSWELL'S.
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ROBERT H. COGSWELL'S

[1898

SEPTEMBER.

Chronometer of
G. M. T.

Pickford & Black, Agents Donaldson Line between Glasgow and Halifax.

Macdonald & Co, Coppersmiths and Plumbers, Halifax—See adv. page 4, cover.

Day of the Week.		Day of the Month.		THE SUN'S				Equation of Time, to be subtracted from Apparent Time.		Var.	Chronometer of G. M. T.			
		Apparent Right Ascension	Var. in 1 h'r.	Apparent Declination		Var. in 1 h'r.			in 1 h'r.	H.	MIN.	SEC.	THS.	
		<i>h. m. s.</i>	<i>s.</i>	<i>° ' "</i>	<i>"</i>		<i>m. s.</i>	<i>s.</i>		1				
T	1	10 42 31.57	9.064	N. 8 11 15.7	54.51					2				
F	2	10 46 8 97	9.053	7 49 23.4	54.84		0 9.45	0 790		3				
S	3	10 49 46.10	9.042	7 27 23.4	55.15		0 28.55	0.801		4				
							0 47.91	0.812		5				
S	4	10 53 22.98	9.032							6				
M	5	10 56 59.64	9.023	7 5 16.0	55.45		1 7.52	0.822		7				
T	6	11 0 36.10	9.015	6 43 1.6	55 74		1 27.36	0.831		8				
				6 20 40.4	56.02		1 47.41	0.839		9				
W	7	11 4 12.37	9.008							10				
T	8	11 7 48.47	9.001	5 58 12.8	56.28		2 7.64	0.846		11				
F	9	11 11 24.42	8.995	5 35 39 2	56.52		2 28.04	0.853		12				
				5 12 59.8	56.76		2 48.59	0.859		13				
S	10	11 15 0.24	8.990							14				
S	11	11 18 35.94	8.985	4 50 14.9	56.98		3 9.28	0.864		15				
M	12	11 22 11.54	8.982	4 27 25 0	57.18		3 30.08	0.869		16				
				4 4 30.4	57 37		3 50.97	0.872		17				
T	13	11 25 47.06	8.979							18				
W	14	11 29 22.52	8.976	3 41 31.4	57.54		4 11.94	0.875		19				
T	15	11 32 57.93	8.975	3 18 28.4	57.70		4 32.98	0.877		20				
				2 55 21.7	57.85		4 54.06	0.879		21				
F	16	11 36 33.31	8.974							22				
S	17	11 40 8.68	8.974	2 32 11.7	57.98		5 15.17	0.880		23				
S	18	11 43 44.06	8.974	2 8 58.8	58.09		5 36.29	0.880		24				
				1 45 43.2	58.20		5 57.41	0.879		25				
M	19	11 47 19.45	8.976							26				
T	20	11 50 54.89	8.978	1 22 25.4	58.28		6 18.50	0.878		27				
W	21	11 54 30.39	8.981	0 59 5.7	58.35		6 39.56	0.876		28				
				0 35 44.4	58.41		7 0.56	0.874		29				
T	22	11 58 5.96	8.984							30				
F	23	12 1 41.62	8.988	N. 0 12 22.0	58.45		7 21.49	0.870		31				
S	24	12 5 17.39	8.993	S. 0 11 1.3	58.48		7 42.33	0.866						
				0 34 25.1	58.49		8 3.06	0.861						
S	25	12 8 53.30	8.999											
M	26	12 12 29.35	9.006	0 57 49.0	58.49		8 23.66	0.855						
T	27	12 16 5.59	9.014	1 21 12 8	58.48		8 44.10	0.848						
				1 44 36.1	58.45		9 4.36	0.840						
W	28	12 19 42.02	9.023											
T	29	12 23 18.68	9.033	2 7 58.5	58.41		9 24.42	0.831						
F	30	12 26 55.60	9.044	2 31 19.9	58.36		9 44.25	0.821						
				2 54 39.8	58.29		10 3.83	0.810						
S	31	12 30 52.79	9.056	S. 3 17 58.0	58.21		10 23.14	0.798						

MACDONALD & CO., Machinists.—See adv. page 4, cover.

red has been placed about one cable's length S. W. of the Hautford Shoal in six fathoms of water. The buoy will be placed on or about the 1st of May in each year, and taken up about the 10th December. Hand fog horn answers signals from vessels.

ARICHAT, Marache Point, south entrance to Arichat Harbour, lat $45^{\circ} 29' N.$, lon $61^{\circ} 1' 50'' W.$, fixed white catoptric light, visible 8 miles, 34 feet high, square white wooden building, height 25 feet. Hand fog horn answers signals from vessels.

PETITDEGRAT, on Mouse Island, south-east of Madame Island, lat $45^{\circ} 29' 54'' N.$, lon $60^{\circ} 57' 24'' W.$, fixed red catoptric light, visible 10 miles, 38 feet high, white square tower, with dwelling attached, height 31 feet.

GREEN ISLAND, summit of Island, lat $45^{\circ} 28' 50'' N.$, lon $60^{\circ} 53' 40'' W.$, red and white catoptric light, revolving alternately every 45 seconds, visible 14 miles, 70 feet high, white square wooden building, height 31 feet. Light, centre of keeper's dwelling. Visible around horizon.

CAPE LA RONDE, west side of entrance to St. Peter's Bay, lat $45^{\circ} 34' 45'' N.$, lon $60^{\circ} 53' W.$, fixed white catoptric light, visible 14 miles, 92 feet high, white square wooden building, with dwelling attached, height 28 feet. For guiding vessels into St. Peter's Bay.

GRANDE DIGUE, on beach, near wharf, Lennox Passage, lat $45^{\circ} 35' 51'' N.$, lon $61^{\circ} 1' 5'' W.$, fixed red dioptric light, 30 feet above high water mark, visible 5 miles, lantern on mast with white shed at base. Building 25 feet high. SEAL OR DOG ISLAND, Lennox Passage, lat $45^{\circ} 35' 31'' N.$, lon $61^{\circ} 4' 0'' W.$, fixed red dioptric light, 34 feet above high water mark, visible 5 miles, lantern on mast with white shed at base.

GLASGOW POINT—On N. W. extremity of Madam Island western entrance to Lennox Passage. Lat $N 45^{\circ} 34' 0''$, lon $W. 61^{\circ} 7' 50''$. Fixed red dioptric, 65 feet high visible 8 miles. Tower square white with dwelling attached. Iron lantern painted red, 32 feet base to vane.

NOTE.—The Pole Lights in St. Peter's Inlet are the same as above.

OUETIQUE ISLAND, on south point, lat $45^{\circ} 36' 40'' N.$, lon $60^{\circ} 57' 15'' W.$, fixed red catoptric light, visible 9 miles, 78 feet high, white square wooden building, with dwelling attached, height 28 feet. For guiding vessels through Lennox Passage.

JEROME POINT, east side of St. Peter's Bay, near Canal, lat $45^{\circ} 39' 5'' N.$, lon $60^{\circ} 52' W.$, a fixed red light, visible 8 miles. Square wooden tower, with dwelling attached, 40 ft. high, painted white. Hand horn answers signals from vessels.

SAINT ESPRIT ISLAND, east end, lat $45^{\circ} 36' 30'' N.$, lon $60^{\circ} 29' 10'' W.$, one revolving white catoptric light, flash at intervals of 30 seconds, building white, with two red bands, square, wood, with dwelling attached. Height of building 55 feet, of light 78 feet. Bad Neighbor Shoal, S.W. $\frac{3}{4}$ W. $\frac{1}{2}$ mile from this light is not more than 12 feet below water.

A Bell Buoy off Fourche Head; taken in about December.

GUION ISLAND, about 230 yards from west end of Island, lat $45^{\circ} 46' 10'' N.$, lon $60^{\circ} 6' 30'' W.$, red revolving light, catoptric, attains its greatest brilliancy every 30 seconds, visible 12 miles, 74 feet high, tower white, square, with dwelling attached, height 54 feet.

GABARUS, on Harbour Point, southern shore of Gabarus Bay. Lat $N.$, $45^{\circ} 59' 40''$, Lon $W 60^{\circ} 8' 30''$, fixed red dioptric, 47 ft. above water, visible 8 miles. Wooden hexagonal tower white, iron lantern red. Base to vane, 32 feet.

LOUISBURG, north side of entrance to harbor, 120 yards inshore of point, lat $45^{\circ} 54' 35'' N.$, lon $59^{\circ} 57' 15'' W.$, fixed white catoptric light, visible 16 miles, 85 feet high, building white, with a black vertical stripe on each side of dwelling, height 35 feet.

Macdonald & Co., Coppen-smiths and Fitters of Steam Heating Apparatus.

Pickford & Black, owners Steamers between Prince Edward Island and Halifax.

Chronometers and Watches repaired, at **COGSWELL'S**.
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1898]

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LOUISBURG RANGE LIGHTS—It is proposed to establish two small towers for range lights to lead in through deepest water in the channel. They will be built on the low land, N. 67° W from the entrance.

NAG ROCK, Louisburg Harbor.—A conical iron buoy, painted red, is moored in 30 feet water, on the W extremity of the shoal extending from Nag Rock to mark the turn in the deepest channel.

The two red spar buoys marking the shoal'er water channel off Nag Rock, are distinctively marked as follows:—The outer or more southerly buoy has a cone shaped top mark, and the second or more northerly buoy has a spherical top mark.

A bell buoy is placed at the entrance to Louisburg harbor; it is black with "LOUISBOURG" in white letters on the deck; moored in 13 fathoms, and is $1\frac{1}{2}$ cables east from centre of harbor shoal. Lat N. 45° 54' 13", lon W. 59° 56' 30". From the buoy, light bears N. W. by N $\frac{1}{2}$ N six-tenths of a mile. Leaving the buoy $\frac{1}{2}$ cable on the port hand, a N W by W. course will lead in through mid-channel.

LOUISBURG Automatic Whistling Buoy, in 36 fathoms water, 3 miles S. E. by S. $\frac{1}{2}$ S. from Louisburg lighthouse, lat N. 45° 52' 43", lon W. 59° 53' 44". From the buoy a N. W. by N. $\frac{1}{2}$ N. course leads direct for the lighthouse and will bring a vessel to the Bell Buoy, which she should round, leaving it on the port hand.

An Automatic Signal Buoy in 30 fathoms $1\frac{1}{2}$ miles S. E. $\frac{1}{4}$ E. from light-house. From this buoy a course N. W. by W. will clear the Broad Shoal, and lead to the fairway of Louisburg Harbor. Taken up about December.

MAINADIEU, on south side of west point of Scattered Island, lat 46° 0' 30" N., lon 59° 47' 30" W., fixed red catoptric light, 90 feet high, white square wooden building, height 40 feet, visible 10 miles.

SCATTARIE, north-east point of Trap Rock, lat 46° 2' 15" N., lon 59° 40' 15" W., white catoptric revolving light, visible a minute, eclipsed half a minute, visible 15 miles, 90 feet high, white octagonal building, height 70 feet. The light should never be brought to bear to eastward of N. N. E., or to southward of S. S. W., nor approached nearer than $1\frac{1}{2}$ mile. Life boat is stationed here.

Fog Whistle near the light-house. Sounds two blasts of 5 seconds, with interval of 10 seconds, in every minute.

COW BAY.—Light discontinued.

FLINT ISLAND, on island, lat 46° 11' N., lon 59° 45' 55 W., white, catoptric light, revolving every 15 seconds, visible 12 miles, 65 feet high, white octagonal building, height 43 feet. Visible around horizon.

LINGAN HEAD, north side of entrance to Bridgeport Harbor, lat 46, 14' 10" N., lon 60° 2' 10" W., fixed red catoptric light, visible 10 miles 50 feet high, white square wooden building, height 20 feet. For guiding vessels into Bridgeport Harbor.

LOW POINT, Flat Point, east side of Spanish Bay, Sydney Harbour, lat 46° 16' 20" N., lon 60° 7' 16" W., fixed white catoptric light, visible 14 miles, 70 feet high, building octagonal, red and white vertical stripes, height 51 feet. Marine Telegraph and Signal Station.

SYDNEY BAR, on west end of South E. Bar, lat 46° 12' 26" N., lon 60° 12' 39" W., fixed red catoptric light, visible 10 miles, 30 feet high, white square wooden building, height 20 feet.

CRANBERRY HEAD, fog horn, on northern side of Spanish Bay, entrance to Sydney Harbour, lat 46° 15' 53" N, lon 60° 12' 7" W. A steam fog trumpet sounds a blast of ten seconds duration every minute.

POINT ACONI, on high cape, north side of entrance to Little Bras d'Or, lat 46° 19' 30" N., lon 60° 17' 10" W., fixed red catoptric light, visible 11 miles, 91 feet high, square white wooden building, with dwelling attached, height 20 feet. For guiding vessels into Little Bras d'Or.

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Macdonald & Co., Manufacturers of Brass-fitters, Steam-fitters, Machinists, Brass-founders, Halifax

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 PICKFORD & BLACK, Ship Brokers and Steamship Agts., Halifax, N. S.

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ROBERT H. COGSWELL'S

[1898

NOVEMBER.

Chronometer of
G. M. T.

Pickford & Black's West India S. S. Line between Halifax, Bermuda, Turk's Island and Jamaica.

Macdonald & Co., Manufacturers of Patent Roller Bushings, Halifax

Day of the Week.		Day of the Month			Var. in 1 h'r.	THE SUN'S				Equation of Time, to be subtracted from Apparent Time.	Var. in 1 h'r.	Chronometer of G. M. T.			
		h.	m.	s.		Apparent Right Ascension.	Var. in 1 h'r.	Apparent Declination.	Var. in 1 h'r.			H.	MIN.	SEC.	TUS.
T	1	14	26	49	15	9.804	S. 14 32 11.7	47.92	16 18 97	0.053	1				
W	2	14	30	44	84	9.838	14 51 14.9	47.33	16 19.83	0.019	2				
T	3	14	34	41	36	9.872	15 10 3.7	46.72	16 19.88	0.015	3				
F	4	14	38	38	71	9.907	15 28 37.7	46 10	16 19.10	0.050	4				
S	5	14	42	36	90	9.942	15 46 56.4	45.45	16 17.47	0.086	5				
S	6	14	46	35	94	9.978	16 4 59.5	44.80	16 14.99	0.121	6				
M	7	14	50	35	83	10.013	16 22 46.6	44.12	16 11.66	0.157	7				
W	8	14	54	36	58	10.049	16 40 17.2	43 42	16 7 47	0.193	8				
W	9	14	58	38	20	10 085	16 57 30.8	42.71	16 2.42	0.228	9				
T	10	15	2	40	68	10.121	17 14 27.2	41.98	15 56.51	0.264	10				
F	11	15	6	44	03	10.157	17 31 5.9	41.23	15 49.73	0.300	11				
S	12	15	10	48	24	10.194	17 47 26.4	40.47	15 42.09	0.336	12				
S	13	15	14	53	32	10.230	18 3 28.4	39.69	15 33.59	0.372	13				
M	14	15	18	59	26	10.265	18 19 11.5	38.89	15 24.23	0.407	14				
T	15	15	23	6	04	10.300	18 34 35.1	38 07	15 14.03	0.442	15				
W	16	15	27	13	67	10.335	18 49 39 0	37 24	15 3.00	0.477	16				
T	17	15	31	22	12	10.369	19 4 22.8	36.40	14 51.14	0.511	17				
F	18	15	35	31	39	10.403	19 18 46.1	35.53	14 38.47	0.545	18				
S	19	15	39	41	47	10.436	19 32 48.4	34.65	14 24.99	0.578	19				
S	20	15	43	52	34	10 469	19 46 29.5	33.76	14 10.71	0.611	20				
M	21	15	48	4	00	10 502	19 59 48.8	32 85	13 55 65	0.644	21				
T	22	15	52	16	44	10.534	20 12 46 2	31.92	13 59.81	0.676	22				
W	23	15	56	29	64	10.566	20 25 21.2	30.99	13 23 20	0.708	23				
T	24	16	0	43	61	10 598	20 37 33 5	30.03	13 5 83	0 739	24				
F	25	16	4	58	33	10.629	20 49 22.8	29.07	12 47.71	0 770	25				
S	26	16	9	13	79	10 659	21 0 48.7	28.09	12 28 86	0 801	26				
S	27	16	13	29	98	10 689	21 11 51.1	27 10	12 9 28	0.831	27				
M	28	16	17	46	89	10.719	21 22 29.5	26.09	11 48.99	0.860	28				
F	29	16	22	4	49	10.748	21 32 43.6	25.08	11 28.00	0.889	29				
W	30	16	26	22	79	10 776	21 42 33.2	24.05	11 6.33	0.917	30				
T	31	16	30	41	75	10 804	S. 21 51 57.9	23.00	10 43 99	09 44	31				

Iron Pipe all sizes, at MACDONALD & CO'S.—See adv. page 4, cover.

Quadrants and Sextants, best quality, at COGSWELL'S.

PICKFORD & BLACK, owners Steamers between P. E. I. and Halifax.

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POINT ACONI BUOY, lat. N. $46^{\circ} 21' 0''$, lat. W. $60^{\circ} 16' 27''$. An iron can buoy painted black with Point Aconi in white letters on top is moored in 7 fathoms water, $\frac{3}{4}$ mile E. by N. $\frac{1}{2}$ N. from the extreme of Point Aconi.

BLACK ROCK POINT, south side of entrance to Big Bras d'Or, lat $46^{\circ} 18' 30''$ N., lon $60^{\circ} 23' 20''$ W., fixed white catoptric light, 45 feet high, white square building, height 23 feet. White cross on red ground. Visible 12 miles.

CAREY'S BEACH, N side of entrance to Big Bras d'Or, $46^{\circ} 17' 45''$ N., lon $60^{\circ} 25' 0''$ W. Pole light red. Visible 5 miles.

MCNEIL BEACH, Big Bras d'Or, a pole light. Red. Visible 5 miles.

MCKENZIE'S POINT, N. side of Bras d'Or Lake, about 2 miles S. W. of Port Bevis, lat $46^{\circ} 7' 15''$ N., lon $60^{\circ} 39' W.$, fixed white catoptric light, visible 14 miles, 95 feet high, square white wooden tower. For guiding vessels through Bras d'Or Lake.

KIDSTON ISLAND, on N. E. Point, at entrance to Baddeck Harbor, N. side of Bras d'Or Lake, lat $46^{\circ} 5' 58''$ N., lon $60^{\circ} 44' 20''$ W., fixed red catoptric light, visible 7 miles, 31 feet high, square, wooden building, white.

LITTLE NARROWS, eastern entrance, lat $46^{\circ} 0' 0''$ lon $60^{\circ} 58' 25''$ One fixed white light, visible 10 miles, white, square, wood, 35 feet high. Catoptric.

"WHYCOMAGH," on FRASER'S POINT, north side of St. Patrick's Channel, lat $45^{\circ} 57' 57''$ N., lon $61^{\circ} 4' 30''$ W., fixed red light, shown from a dioptric lantern, hoisted on a mast 25 feet high, with a shed painted white at its base, visible 5 miles.

GILLIS POINT, on N. side Little Bras d'Or Lake, and W side of entrance to Boulacut Harbour, lat $46^{\circ} 1' 32''$ N., lon $60^{\circ} 4' 18''$ W., dioptric, fixed, white, 74 feet above water, visible 12 miles, building wood, square, tower, dwelling attached.

GRAND NARROWS. Railway bridge with swing has been erected. Red light will show up and down Channel when swing is closed, green when open. Lat $45^{\circ} 57' 42''$ N, lon $60^{\circ} 47' 33''$ W.

PIPERS COVE, on western bend of Derby Point, Grand Narrows, lat $45^{\circ} 56' 30''$ N, lon $60^{\circ} 47' 46''$ W, fixed red dioptric light, 77 feet above high water mark, visible 11 miles, white square wood. Building 38 feet high.

CAMPBELL ISLAND, on east side of I. W side of entrance to McKinnon Harbour, lat $45^{\circ} 54' 46''$ N, lon $60^{\circ} 55' 54''$ W, fixed white light.

CLARK'S COVE, on side of cove, N side of West Bay, lat $45^{\circ} 49' 40''$ N, lon $61^{\circ} 1' 55''$ W, fixed red light. Lantern on mast.

RED ISLANDS, on McKenzie Point, S. shore Great Bras d'Or Lake, lat $45^{\circ} 47' 32''$ N., lon $60^{\circ} 44' 40''$ W. Fixed red dioptric light, 47 feet, visible 8 miles. White square wood tower 37 feet high.

CAPE GEORGE, south side of Bras d'Or Lake, west side of entrance to St. Peter's Inlet, lat $45^{\circ} 44' 28''$ N., lon $60^{\circ} 48' 20''$ W., fixed white catoptric light, visible 10 miles, 50 feet high, white square wooden building, height 20 feet. To guide vessels through St. Peter's Inlet. A hand fog-horn answers signals from vessels.

FRESTONE ISLET, on Gregory Island, lat $45^{\circ} 42' 50''$ N, lon $60^{\circ} 47' 50''$ W, fixed red dioptric light, 31 feet above high water, visible 5 miles, lantern on mast, 25 feet high, with white shed at base.

BEAVER ISLAND, on S. E. point of island, lat $45^{\circ} 40' 40''$ N, $60^{\circ} 49' 47''$ W, fixed red dioptric light, 30 feet above high water mark, visible 5 miles, lantern on mast, 25 feet high, with white shed at base.

MACDONALD & CO., Steam Wrecking Pumps.—See adv. p. 4, cover.

Pickford & Black, Agents Halifax and Newfoundland Steamship Company, Limited.

Residences and Public Buildings fitted with Plumbing Fixtures by Macdonald & Co.

Macdonald & Co., Manufacturers of Patent Rollers

Pickford & Black, Agents Halifax and Newfoundland Steamship Company, Limited.

Macdonald & Co., Manufacturers of Composition Butt Bolts and Spikes, Halifax.

GOOSEBERRY ISLAND OR MARJORIES ISLE, W. from Sandy's Point, lat 45° 40' 7" N, lon 60° 51' 1" W, fixed red dioptric light, 31 feet above high water mark, visible 5 miles, lantern on mast 25 feet high, with white shed at base.

CLARKE'S COVE, N. side West Bay, Bras d'Or Lake, lat 45° 49' 40" N., lon 61° 1' 55" W. Red pole light on mainland facing entrance to channel. The light run for on a N. W. course leads clear of three out-lying shoals, which are marked by spar buoys.

McKINNON'S HARBOUR, a pole light, white on Campbell's Island, western side entrance to McKinnon's Harbor.

BIRD ISLAND, Ciboux Island, $\frac{1}{2}$ mile from N. end, lat 46° 23' 10" N., lon 60° 22' 30" W., red catoptric light, revolving every minute, visible 16 miles, 77 feet high, white octagonal building, height 33 feet.

ST. ANN'S HARBOR, on south point of Beach, lat 46° 17' 45" N., lon 60° 32' 25" W., fixed white catoptric light, visible 8 miles, 41 feet high, white building, height 38 feet. The light exhibited to guide through entrance.

INGONISH HARBOUR, on beach southern side of entrance to harbour, lat 46° 38' 10" N, lon 60° 23' 12" W. Light fixed red dioptric, visible 9 miles, elevated 45 feet above high water. Building square tower, white, 38 feet from base to vane. To mark entrance.

INGONISH, on Island, lat 46° 41' 20" N., lon 60° 20' 10" W., fixed white light, visible 20 miles, 237 feet high, white square building, height 40 feet.

CAPE NORTH, on Money Point, $\frac{2}{3}$ mile S. E. from Money Point, lat 47° 1' 45" N., lon 60° 23' 15" W., red and white catoptric light, revolving every 45 seconds visible 15 miles, 74 feet high, square white wooden building, height 26 feet. Coast light makes a complete revolution every $1\frac{1}{2}$ minute.

CAPE ST. LAWRENCE—Lat N 47° 2' 55" Long W 60° 35' 10", 2 fixed white dioptric lights vertical, 42 feet apart. Upper light in lantern 137 feet above high water, visible 17 miles. Lower light on lower floor of tower, 95 feet above high water, visible 15 miles. Building square wooden tower, with dwelling attached, painted white. 56 feet from base to vane on lantern.

CIVEAU POINT RANGE LIGHTS, Eastern Harbour, Cheticamp. Two small towers for Range Lights, are in course of construction on Caveau point eastern side of entrance to Eastern Harbor. These liguts, which will be fixed white, are to be run for in range until the two range lights at head of harbour are brought in range.

CHETICAMP, Eastern Harbor, Range light, lat 46° 38' 15" N., lon 61° 0' 25" W. Front light, red, 45 feet above high water, 60 feet back from edge of land. Back light, 330 yards S by W, $\frac{3}{4}$ W from front light, 60 feet above high water; colour white. Both lights shown from white square towers, and kept in range will lead through dredged channel.

CHETICAMP, near south end Island, lat 46° 36' 20" N lon 61° 3' 10" W., white catoptric light, revolving every 45 seconds, visible 20 miles, 149 feet high, white square wooden building, height 24 feet.

ST. PAUL'S ISLAND, on rock off N. E. point of island, lat 47° 13' 55" N. lon 60° 8' 20" W., fixed white light, dioptric, third order, visible 20 miles, 140 feet high, white octagonal building, height 40 feet. Obscured between N. by E. $\frac{1}{2}$ E. and E. N. E.

ST. PAUL'S ISLAND, S. W. point of island, lat 47° 11' 20" N., lon 60° 9' 40" W., white dioptric light, third order, revolving every minute, visible 20 miles, 140 feet high, white octagonal building, 40 feet high. Obscured when bearing from S. S. E. to W. $\frac{1}{2}$ N. A fog whistle on the S. E. side of the island, S. E. of Atlantic Cove, about half a mile from the Humane Establishment, sounds once for five seconds in each minute during thick weather and storms.

MARGAREE HARBOUR, on outer end of breakwater pier, lat $46^{\circ} 26' 35''$ N., lon $61^{\circ} 6' 40''$ W., seaward light fixed red, white light eastern and western sides lantern, visible 7 miles, 29 feet high, square white building.

MARGAREE, summit or middle of Sea Wolf Island, lat $46^{\circ} 21' 30''$ N., lon $61^{\circ} 15' 30''$ W., fixed white catoptric light, visible 21 miles, 298 feet high, square white building. To vessels in dangerous proximity to the island the light may become obscured by the abrupt cliffs on the sides of the island.

MABOU, two range lights, lat $46^{\circ} 5' 30''$, lon $61^{\circ} 28' 10''$, each, small dioptric lantern, hoisted on mast, the outer, fixed, white, 25 feet high, visible 9 miles; the inner, fixed, red, visible 7 miles; lead into harbour, through dredged channel past breakwater.

PORT HOOD, S. E. side of entrance to harbor, lat 46° N., lon $61^{\circ} 31' 25''$ W., fixed catoptric light, red N., white S., visible 10 miles, 55 feet high. Square white building.

IRON CAN BUOYS have been placed at the following Shoals:—Port Hood Harbor C. B., Portsmouth Point, Spithead, Smith Spit, Dean Shoal, also one at Judique Shoal. Judique Shoal and Dean Shoal Buoys are painted red, the other three are painted black. These Buoys will be placed on or about the 1st May in each year, and taken up about the 10th November.

NORTH CANSO, north entrance, west side, 120 yards inshore, lat $45^{\circ} 41' 50''$ N., lon $61^{\circ} 29' 0''$ W., fixed white catoptric light, visible 16 miles, 110 feet high, white square wooden building, height 35 feet. There is good anchorage under the light when the wind is off shore. Lantern on dwelling.

HARBOR AU BOUCHE, two lights in separate towers, lat $45^{\circ} 41' 0''$ N., lon $61^{\circ} 31' 15''$ W., fixed white catoptric light, visible 9 miles, 36 feet high, white square wooden building, 32 feet high, 473 yards S. W. $\frac{3}{4}$ S. from front light, one fixed red catoptric light, 107 feet high. Range lights to lead through dredged channel over the bar.

POMQUET ISLAND, north east end of island in St. George's Bay, lat $45^{\circ} 39' 40''$ N., lon $61^{\circ} 44' 30''$ W., fixed red catoptric light, visible 9 miles, 50 feet high, square white building, height 23 feet. Obscured on easterly bearings.

CAPE ST. GEORGE, north side of Cape, lat $45^{\circ} 52' 50''$ N., lon $61^{\circ} 55' 0''$ W., white catoptric light, revolving every half minute, visible 25 miles, 350 feet high, white square building, height 39 feet.

PICTOU ISLAND, south-east point, lat $45^{\circ} 49' 10''$ N., lon $62^{\circ} 30' 30''$ W., fixed white catoptric light, visible 12 miles, 52 feet high, square white building. Life boat stationed at eastern end of Island.

PICTOU HARBOR, south point of entrance, lat $45^{\circ} 41' 30''$ N., lon $62^{\circ} 39' 30''$ W., two fixed catoptric lights vertical, 25 ft. apart, upper white, lower red, visible 11 miles, lantern 65 feet high, building octagonal, striped red and white vertically, height 55 feet. Lighted when navigation is open. A small red light is seen below lantern. By keeping light W. S. W. vessels clear the east reefs off Pictou Island.

In tower of new Custom House a fixed white light, in range with lights at the entrance to harbor, leads through the channel up to the bar. Lat $45^{\circ} 41' 0''$ N., lon $62^{\circ} 42' 0''$ W.

PICTOU HARBOUR RANGE.—Two lights in separate towers on northern side of entrance to harbour, inside of western end of London Beach, to guide vessels through the channel clear of the bar shoals. Lat N. $45^{\circ} 41' 50''$, lon $62^{\circ} 40' 15''$. Front light, square white tower 30 feet high, 600 feet back from the shore, fixed red catoptric, 66 feet above high water mark. The back tower is 384 feet N. W. by W. $\frac{1}{4}$ W. from the front tower, and is 38 feet high. The light is fixed red catoptric, 78 feet above high water mark, visible 8 miles. These towers have replaced the Pole Lights formerly in use. Both are painted white.

Chronometers for sale and to hire, at COGSWELL'S.

PICKFORD & BLACK'S W. I. S. S. Line between Turk's Island & Jamaica.

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NAUTICAL ALMANAC.

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Macdonald & Co., Manufacturers of Brass Binnacles and Stands, Halifax.—See adv. p. 4 cover.

Pickford & Black, Agents Funch, Edge & Co., New York.

Vessels entering keep the Pictou Bar and Custom House lights in one W. $\frac{1}{4}$ N. until reaching the alignment of Fraser's farm range which they should keep N. W. by W. $\frac{1}{4}$ W. until the Bar light is nearly abeam, when a W. $\frac{1}{2}$ S. course will lead to safe anchorage in the harbour.

CARIBOU ISLAND, north-east part of Island, lat $45^{\circ} 46' 15''$ N., lon $62^{\circ} 40' 20''$ W., white catoptric light, revolving every minute, visible 10 miles, 35 feet high, white square building, height 26 feet.

AMET ISLAND, centre of island, Northumberland Straits, lat $45^{\circ} 50' 15''$ N., lon $63^{\circ} 10' 20''$ W., fixed white catoptric light, visible 10 miles, 44 feet high, white square wooden building, height 26 feet. Visible around horizon.

MULLIN'S POINT, range lights, north side of entrance to Wallace Harbor, Cumberland County, lat $45^{\circ} 49' 45''$ N., lon $63^{\circ} 25' 5''$ W., fixed catoptric white, light visible 11 miles, 39 feet high, white square wooden building, height 25 feet. Inner red light shown from a lighthouse built summer of 1894, standing 1473 feet N. W. $\frac{3}{4}$ W. from the front range light. Two lights in one, form a range to lead across bar, and in channel up to Mullin's Point.

A can buoy marks entrance to channel, and two fairway buoys.

PUGWASH, in harbor, lat $45^{\circ} 52' 30''$ N., lon $63^{\circ} 40' 20''$ W., fixed catoptric light, red seaward, white towards harbor, visible 8 miles, 48 feet high, white square building, height 44 feet. Black buoys to be left on port hand, and red on starboard when entering the harbor.

COLD SPRING HEAD—Lat N $45^{\circ} 58' 5''$ Long $63^{\circ} 51' 50''$ white square tower, iron lantern red, height base to vane, 36 feet. Light fixed white, 60 feet, visible 13 miles, dioptric.

WEST FROM HALIFAX.

HERRING COVE, Western Head, lat N. $44^{\circ} 33' 57''$, lon W. $63^{\circ} 32' 58''$, fixed red, square white tower, 22 feet from base to vane on lantern. Fixed red 45 feet above high water. Visible 8 miles.

HERRING COVE Life boat stationed here.

CHEBUCTO HEAD, west side of entrance to Halifax Harbor, lat $44^{\circ} 30' 4''$ N., lon $63^{\circ} 30' 50''$ W., white light, revolving every minute, visible 18 miles, 132 feet high, white square wooden building, height 22 feet.

A steam fog whistle sounds blasts of 10 seconds duration, with an interval of 50 seconds between.

An Automatic Whistling Buoy, painted red, placed in lat $44^{\circ} 31' 40''$ N., lon $63^{\circ} 30' 2''$ W., in 20 fathoms of water, N. E. 1 nine-tenth miles from Chebucto Head lighthouse. From the buoy Chebucto Head light-house bears S. W. 1 mile 9 cables; Sandwich Point, bears N. $\frac{1}{2}$ W., 3 miles 8 cables; Devils Island west light-house, bears N. E. $\frac{3}{4}$ E., 3 miles $5\frac{1}{2}$ cables. Passing to the westward of the buoy at the distance of half a cable and steering a N. course magnetic, will lead up the harbor to the eastward of the Neverfail Shoal, and at a distance of two cables to the westward of Meagher's Beach light-house.

A similar buoy, painted black, in lat $44^{\circ} 28' 25''$ N., lon $63^{\circ} 22' 10''$ W., in 36 fathoms, from this buoy Sambro Island light bears W. $\frac{1}{2}$ N. $8\frac{1}{2}$ miles. Devil's Island light N. $\frac{3}{4}$ W. $7\frac{1}{2}$ miles, and the inner automatic buoy N. W. $\frac{1}{2}$ N. 6 miles.

SAMBRO AUTOMATIC WHISTLING BUOY, in 25 fathoms, near S. end of Sambro Outer Bank. Painted black, and white vertical stripes. From the buoy Pennant Point bears N. W. by N. $\frac{1}{2}$ N., $7\frac{1}{2}$ miles. Sambro Light, N. $\frac{1}{2}$ W., $5\frac{1}{2}$ miles. Chebucto Light, N. by E., $\frac{5}{8}$ E., $8\frac{1}{2}$ miles. Lat N $44^{\circ} 21' 30''$, lon W. $63^{\circ} 30' 15''$.

The Portuguese Buoy is colored red and black horizontally; the Rockhead Buoy black and white vertically. An Iron Spar Buoy painted red and black horizontal bands, $1\frac{1}{2}$ cable S. from $4\frac{1}{2}$ fathom line of Neverfail shoal. The other buoys of Halifax Harbor are colored red on the starboard hand and black on the port hand, entering the harbor.

Marine Steam Engines, at MACDONALD & CO'S.—See cover.

Pickford & Black, West India S S. Line between Halifax, Bermuda, Turk's Island and Jamaica.

DUNCAN'S COVE Life boat station near Chebucto Head Light.

SAMBRO, middle of Island, lat 41° 26' 10" N., lon 63° 33' 28" W., fixed white dioptric 2nd order, visible 16 miles, 115 feet high, building white, octagonal, 60 feet high. The steam fog whistle has been replaced since the 10th June, 1891, by explosive bombs, fired every 20 minutes.

A Bell Buoy, painted black, placed in 22 fathoms water, S. E. by E. $\frac{1}{2}$ mile from the Blind Sister.

Iron Can Buoy has been placed off the S. W. Breaker, Sambro, wooden spars on the Pollocks, on the Whippey Shoal, Stapleton, Morris Point, Bell Rock, and Duncan's Reef, near Sambro.

SHIPLEY HEAD, Terrance Bay, lat 44° 27' 40", lon 63° 42' 10", fixed red, on mast, 55 feet high, visible 7 miles.

BETTY'S ISLAND, on Brig Point, near Prospect, lat 44° 26' 22" N., lon 63° 45' 54" W., revolving red catoptric light, greatest brilliancy every two minutes, 75 feet high, visible 14 miles, building white, with two horizontal red bands, square, wood, height 54 feet, dwelling attached. Coast light.

DOVER, on southern end of Callaghan Island, lat N. 44° 29' 34". lon W. 63° 51' 33", fixed white dioptric, 50 feet high, visible 12 miles. White square tower with dwelling attached. A red can buoy on western side of Shag Bay breakers, to guide into Dover Harbor.

PEGGY POINT, east side of entrance to St. Margaret's Bay, lat 44° 29' 30" N., lon 63° 55' W., fixed red catoptric light, 65 feet high, building white, square, 26 feet high. Lantern on dwelling. Visible 8 miles.

CROUCHER'S ISLAND, on south point of island, in St. Margaret's Bay, lat 44° 38' 24", lon 63° 57' 20", fixed white light, visible 15 miles, square tower, 40 feet high, with dwelling attached, painted white.

MARGARET'S BAY, on Green Island, Lunenburg County, lat 44° 22' 57" N., lon 64° 2' 45" W., red and white catoptric light revolving alternately every one and a-half minutes, building white, square, wood, 66 feet above water, with dwelling attached. Coast light. Red 50 sec., eclipse 38 sec., white 52 sec., eclipse 38 sec.

NORTH EAST SHOAL. AUTOMATIC WHISTLING BUOY. 2 miles E. by N. $\frac{1}{2}$ N. from N. E. Shoal, off Green Island, between Margaret's Bay and Mahone Bay, lat N. 44° 25' 54", lon W. 64° 0' 2". Buoy painted black with "N. E. Shoal" in white letters; moored in 21 fathoms. From the buoy a N. W. $\frac{1}{4}$ N. course will lead into Mahone Bay, and N. E. by N. $\frac{1}{4}$ N. will lead into St. Margaret's Bay.

HUBBARD'S COVE, on Green Point, W. side of entrance, lat N. 44° 37' 14", lon W. 64° 3' 10". Fixed red dioptric, 60 feet high. Building white, square, wood, with dwelling attached.

CHESTER, E., Ironbound Island, a little to the eastward of centre of island, in Mahone Bay, lat 44° 26' 20" N., lon 64° 4' 50" W., fixed white dioptric light, visible 16 miles, 150 feet high, white oblong tower on dwelling, 46 feet high, wood, lantern. Seen from all points of approach. The lantern alone is visible, building hidden by trees.

GREEN ISLAND, off St. Margaret's and Mahone Bay, lat 44° 22' 57" N., lon 64° 2' 45", alternate red and white, white square wood with dwelling attached.

QUAKER ISLAND, on highest part of island, lat 44° 30' 55", lon 64° 13' 48", fixed red light, 109 feet high, visible 11 miles. Square tower, 35 feet high, with dwelling attached, painted white. To guide into Chester Basin. Hand fog horn answers signals from vessels.

HOBSON'S NOSE, Mahone Bay, lat 44° 24' 55" N., lon 64° 13' 46" W., red fixed dioptric light, visible 8 miles, 68 feet high, building white, square, wood, 29 feet high.

WESTHAVER'S ISLAND, Mahone Bay, lat 44° 26' 15", lon 64° 20' 12", Fixed white, dioptric 54 feet high, visible 12 miles. White square tower 27 feet high, with dwelling attached.

Macdonald & Co., Steam Wrecking Pumps for Sale or Hire.—See page 4 cover.

Residences and Public Buildings fitted with Plumbing Fixtures by Macdonald & Co.

Pickford & Black, Agents Halifax and Newfoundland Steamship Company, Limited.

CROSS ISLAND, east point Lunenburg Bay, lat 44° 18' 45" N., lon 64° 9' 57" W., 2 white catoptric lights vertical, 35 feet apart, upper intermittent revolving every minute, and visible 14 miles, 100 feet high, lower fixed, visible 6 miles, and 65 feet high, building red, octagonal base, height 58 feet. Pilots resort here, and vessels may take refuge in case of necessity. Upper bright 45 seconds, dark 15 seconds. A fog rumpet sounds 10 seconds every 1½ minutes.

BATTERY POINT, Lunenburg, lat 44° 21' 45" N., lon 64° 17' 35" W., fixed red catoptric light, visible 8 miles, 50 feet high, white, square tower on dwelling, height 24 feet. This harbor is easy of access, buoys are placed in the bay and entrance to harbor on Ovens Reef, Sculpin Rock, Haddock Shoal, Battery Point Shoal, and Head Shoal. Hand fog trumpet answers signals from vessels.

LUNENBURG FAIRWAY AUTOMATIC WHISTLING BUOY, off western entrance to Lunenburg Bay. Red and black horizontal stripes. From the buoy Battery Point Light bears N. W. by N. ¾ N. 6½ miles; Cross Island Light N. E. ¾ E., 2 miles; West Ironbound Light, S. W. by W. ¾ W. 4½ miles; and Rose Point N. W. ½ W., 1¾ miles; lat N. 44° 17' 0", lon W. 64° 11' 25"

WEST IRONBOUND ISLAND, near Cape LaHave, mouth of LaHave River, lat 44° 13' 42" N., lon 64° 16' 20" W., white catoptric light, revolving every 30 seconds, visible 13 miles, 72 feet high, building white, square, with dwelling attached, height 29 feet. Near edge of cliff 40 feet high.

LAHAVE BELL BUOY, painted red, off LaHave River, in 22 fathoms water. 3 miles S. by E. from Moser's Island Light, and 2½ miles S. S. W. from Ironbound Light; lat 44° 17' 16" N., lon 64° 20' 55" W.

LAHAVE, on Fort Point, lat 44° 16' 55" N., lon 64° 21' W., fixed red catoptric light, visible 8 miles, 48 feet high, building white, square, wood, with dwelling attached, height 35 feet.

MOSHER'S ISLAND, on island, west side of entrance to LaHave River, lat 44° 14' 15" N., lon 64° 18' 50" W., fixed red catoptric light, visible 8 miles, 55 feet high, building white, square, height 26 feet. Hand fog-trumpet answers signals.

MIDWAY HEAD, Port Medway, west side of entrance, lat 44° 6' 10" N., lon 64° 32' 15" W., fixed white catoptric light, visible 10 miles, 44 feet high, building white, square, with black square seaward, height 23 feet. Like a dwelling house. Spar Buoys are placed in the channel to Port Medway Harbor, on the breaking ledges, Nautilus Rock, corner ground and edge of flats off Bang's Point. In passing in from seaward the red buoys must be left on the starboard, and the black buoys on the port hand.

A Bell Buoy, ¼ mile S. W. of the S. W. Breaker, to be left on starboard hand entering. A N. ¼ E. course leads up to Can Buoy off eastern point of flats inside McNeill's Point, distant 2½ miles. Lat. N. 44° 5' 0", lon W. 64° 31' 15".

COFFIN'S ISLAND, south point Liverpool Bay, lat 44° 1' 55" N., lon 64° 37' 32" W., white catoptric light, revolving every two minutes, light 30 seconds, dark 90 seconds, visible 16 miles, 65 feet high, building octagonal, horizontal stripes, red and white, eight in number, height 50 feet.

An Automatic Buoy, in 20 fathoms, striped vertically black and white, S. ¼ W., 1 11-16 miles from Coffin's Island light-house. Lat N. 44° 0' 26", lon W. 64° 36' 55".

BROOKLYN PIER, Pole light, green on outer end of wrecked pier, 30 feet above high water, visible 4 miles, 220 feet from shore and 500 feet from submerged extremity of pier; lat 44° 2' 45" N., lon 64° 41' 20" W.

LIVERPOOL WHISTLING BUOY, lat 44° 0' 20" N., lon 64° 36' 55" W., iron buoy painted white and black, vertical strips, surmounted by 10-in. fog signal whistle, whistle sounded by action of waves. From the buoy Coffin Island Light bears N. ¼ E. 1 11/16 miles. Fort Point light N.

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ROBERT H. COGSWELL'S

[1898

Vessels fitted with Plumbing Fixtures by Macdonald & Co, Halifax—See adv. page 4, cover.

Pickford & Black, Ship Brokers and Steamship Agents, Halifax, N. S.

W. $\frac{1}{4}$ N., and Western Head W. $\frac{3}{4}$ S., $2\frac{1}{2}$ miles. From buoy a course N. W. $\frac{3}{4}$ N. for 4 miles clears all danger to anchorage off Brooklyn Pier. An iron can buoy, red, has been moored outside of submerged end of pier.

FORT POINT, Liverpool Bay, south entrance, lat $44^{\circ} 2' 35''$ N., lon $64^{\circ} 42' 20''$ W., fixed red catoptric light, visible 7 miles, 30 feet high, building white, square, height 17 feet. Left on port side when entering the harbor.

PORT MOUTON, north-east point of Spectacle Island, Queen's County, lat $43^{\circ} 55' 5''$ N., lon $64^{\circ} 48' 5''$ W., fixed red catoptric light, visible 11 miles, 47 feet high, square wooden building, height 20 feet. For guiding vessels into harbor.

PORT MOUTON ISLAND, Life boat stationed at eastern end.

LITTLE HOPE, Queen's Co., nearly on centre of island, lat $43^{\circ} 48' 30''$ N., lon $64^{\circ} 47' 15''$ W., white catoptric light, showing three flashes, with intervals of 10 seconds between their points of greatest brilliancy, followed by an interval of 30 seconds, complete revolution in 50 seconds, visible 12 miles, 43 feet high, square white building, height 26 feet. Centre of keeper's dwelling, visible around horizon. A mechanical hand fog trumpet will be sounded in answer to a steamer's whistle or vessel's fog trumpet in thick weather.

SHINGLE POINT, east side of Port L'Hebert Harbor, lat $43^{\circ} 48' 40''$ N., lon $64^{\circ} 55' 23''$ W., fixed red catoptric light, visible 10 miles, 33 feet high, white square wooden building, height 29 feet.

CARTER'S ISLAND, Ragged Island Harbor, lat $43^{\circ} 42' 15''$ N., lon $65^{\circ} 6' 00''$ W., fixed red light dioptric, visible 11 miles, 66 feet high, white wooden building, height 29 feet.

RAGGED ISLAND, Gull Rock, lat $43^{\circ} 39' 12''$ N., lon $65^{\circ} 5' 50''$ W., fixed white catoptric light, visible 10 miles, 56 feet high, white square wooden building, height 31 feet. Hand fog trumpet answers signals.

An Automatic Whistling Buoy, as a Fairway Buoy, is moored off the approach to Ragged Island harbor, lat. N. $43^{\circ} 37' 28''$, lon. W $65^{\circ} 1' 44''$. From the buoy a N. N. W. course will lead about midway between the $4\frac{1}{2}$ fathom patch and the Blow Breaker up to the southern end of Cranberry Island. The buoy is painted red with letter L in white.

BULL ROCK, an Iron Can Buoy with cage, painted black, has been placed in 10 fathoms water S. S. W. $\frac{1}{2}$ W., about 150 yards from the Bull Rock, off Western Head, Shelburne County.

FARM LEDGE, Iron can buoy, red, 200 yards S of Ledge.

EASTERN BULL, red spar buoy.

BLACK POINT BREAKER, red spar buoy.

SAND SPIT, at east side of entrance to Shelburne Harbor, lat $43^{\circ} 41' 25''$ N., lon $65^{\circ} 19' 28''$ W., fixed red catoptric light, visible 11 miles, 47 feet high, white square wooden building, height 44 feet. Built on a pier.

SHELBURNE HARBOR.—A red Iron Can Buoy has been placed in $4\frac{1}{2}$ fathoms, on west side of Middle Rock Shoal; a red Can Buoy off extreme of Sand Spit, in four fathoms, and a black Spar Buoy on east end of Adamant Shoal.

CAPE ROSEWAY, near south-east point of MacNutt's Island, Shelburne harbor, lat $43^{\circ} 37' 15''$ N., lon $65^{\circ} 15' 45''$ W., two white catoptric lights, vertical, 55 feet apart, upper light visible 18 miles, and 120 feet high, lower 65 feet and visible 12 miles, octagonal building, vertical black and white stripes, height 77 feet.

CAPE ROSEWAY, fog trumpet near the light house sounds a blast of 10 seconds duration with an interval of 110 seconds between the blasts.

A black Can Buoy S. S. E. from the Jig Rocks, in 9 fathoms water.

MACDONALD & CO., Steam Sirens.—See adv. page 4 cover.

NEGRO ISLAND, on north side lat $43^{\circ} 30' 54''$ N., lon $65^{\circ} 20' 58''$ W., red and white catoptric light, revolving every minute, visible 12 miles, 60 feet high, white square wooden tower with keeper's dwelling attached, height 44 feet. For guiding vessels in and out of Clyde River or Negro Harbor.

BLANCHE, Life boat station.

PORT LA TOUR, eastern end Page's Island, Lat N $43^{\circ} 29' 27''$, lon W $65^{\circ} 27' 04''$. Fixed white light, dioptric, 46 feet high, visible 12 miles. Tower square, wood, with kitchen, all white, iron lantern, red. Tower, base to vane 34 feet.

BACCARO, on east side of entrance to Barrington Harbor, lat $43^{\circ} 26' 54''$ N., lon $65^{\circ} 28' 12''$ W., fixed red catoptric light, visible 10 miles, 49 feet high, white square building, with black ball seaward, height 35 feet. An automatic Whistling Buoy red is placed off the "Bantam," $\frac{1}{4}$ mile S. W. of ledge.

BARRINGTON E. BAY LIGHTSHIP, at $43^{\circ} 31' 5''$ N., lon $65^{\circ} 34' 25''$ W., two lights vertical, 20 feet apart, upper white, visible 12 miles, lower red, visible 6 miles, hull and spars painted red, with word "Barrington" in white letters on both sides. Height, white 41 feet, red 20 feet. Moored in 6 fathoms at low water. Wessex' Ledge bearing S. W. by W. $\frac{1}{2}$ W., distant $\frac{3}{4}$ mile, Baccaro Light bearing S. S. E. $\frac{3}{4}$ E., distant 6 and 3-16 miles, and Bantam Rocks, bearing S. by E. $\frac{3}{4}$ E., distant $6\frac{1}{2}$ miles. To guide vessels into Barrington East Bay, and through Barrington Passage. A hand fog trumpet sounded in answer to signals.

In passing through Barrington Pass to the westward, the dangers to be left on starboard hand are marked by red buoys, those to be left on port hand by black buoys.

LOCKPORT WHISTLING BUOY, lat $43^{\circ} 37' 28''$ N., lon $65^{\circ} 1' 44''$ W., off the approach to Ragged Island Harbour; red iron buoy with letter L. in white, surmounted by 10 inch whistle; whistle sounded by the motion of the waves. From the buoy Carter's Island light bears N. by W. $\frac{1}{2}$ W. $5\frac{1}{2}$ miles. Gull Rock Light, N. W. $\frac{1}{4}$ N. $3\frac{3}{4}$ miles, and a N. N. W. course leads about midway between the $4\frac{1}{2}$ fathom patch and the blow breaker up to S. end of Cranberry Island.

CAPE SABLE, on Cape, lat $43^{\circ} 23' 19''$ N., lon. $65^{\circ} 37' 15''$ W., white catoptric revolving light, bright 15 seconds, dark 25 seconds, visible 12 miles, 53 feet high, white octagonal building, 50 feet high. A steam fog whistle on Cape, elevated about 40 feet above high water, sounds in thick weather, fogs and snow storms, a blast of ten seconds' duration each minute, with an interval of 50 seconds between each blast.

BRAZIL ROCK.—A Bell Buoy marks this danger, painted red and black horizontal stripes, moored in about 22 fathoms $\frac{1}{2}$ mile S. by W. from Rock.

WEST HEAD, Cape Sable Island, lat N. $43^{\circ} 27' 17''$, lon. W. $65^{\circ} 39' 10''$. Fixed white, dioptric, visible 10 miles. White square tower 36 feet high. Light 42 feet above high water. Hand fog-trumpet answers signals.

STODDART ISLAND, on N. W. point of island, lat $43^{\circ} 28' 26''$ N., lon $65^{\circ} 43' 7''$ W., fixed red catoptric light, visible 9 miles, 22 feet high, white small square tower. To guide vessels into the anchorage of Stoddart Harbor and Shag Harbor Sound. Hand fog horn answers signals.

BON PORTAGE ISLAND, on south point, lat $43^{\circ} 27' 14''$ N., lon $65^{\circ} 44' 44''$ W., red catoptric light, revolving every minute, visible 12 miles, 46 feet high, white square wooden building, with dwelling attached, height 28 feet. For guiding vessels into Barrington West Bay and Shag Harbor. Hand fog-trumpet answers signals.

PUBNICO HARBOR, Beach Point, east side of entrance, 120 yards from low water mark, lat $43^{\circ} 35' 45''$ N., lon $65^{\circ} 46' 54''$ W., fixed white dioptric light, visible 11 miles, 40 feet high, square white building,

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with dwelling attached, surmounted by iron lantern 40 feet high. Open westward of St. John's Island, bearing N. E. by N., clears the ledge; in making harbor from any other direction, the light must be brought to the northward of E. N. E. before it can be steered for to avoid shoal spot off St. Ann's Point. Spar buoys mark the channel. Black left on port hand, red on starboard in approaching the harbor.

ST. JOHN LEDGE BELL BUOY, in 22 fathoms, $1\frac{1}{4}$ miles S. W. by W. $\frac{3}{4}$ W. from the middle of the ledge. Red iron buoy with "J. Ledge" in white letters. From buoy Pubnico light is open to westward off St. John's Island N E by N $6\frac{1}{4}$ miles. Lat $43^{\circ} 29' 50''$ N., lon $65^{\circ} 49' 30''$ W.

ABBOTT HARBOR—On mainland 1.5 mile east of southern extremity of Abbott Island, lat N. $43^{\circ} 39' 35''$, lon W. $65^{\circ} 49' 15''$. In operation during the fishing and lobster season. Lantern on mast, with white shed at base. Shows a white light. Height 40 ft., visible 8 miles.

ARGYLE, on south point of Whitehead Island, Yarmouth County, lat $43^{\circ} 39' 40''$ N., lon $65^{\circ} 52' 4''$ W., fixed red and white catoptric light, visible 12 miles, 115 feet high, building white, square, wood, with dwelling attached, height 28 feet. For guiding vessels into Argyle Harbor. Shows a white light towards harbour; red seaward.

TUSKET RIVER, Big Fish Island, south-west point, lat $43^{\circ} 42' 10''$ N. lon $65^{\circ} 57' 10''$ W., two fixed white catoptric lights, horizontal, 8 yards apart, visible 12 miles, 50 feet high, white square wooden building, height 23 feet. Visible seaward; in windows each end of a dwelling house.

SEAL ISLAND, south point, $\frac{1}{2}$ mile from shore lat $43^{\circ} 23' 34''$ N., lon $66^{\circ} 0' 52''$ W., fixed white light, dioptric, 2nd order, visible 18 miles, 98 feet high, white octagonal building, height 60 feet. The Blonde Rock lies S. by W. $3\frac{3}{4}$ miles from light house. Between this Rock and the Island there are some dangers, the ground is rocky throughout, and large vessels ought not to attempt passing between them. A fog whistle near light house, during fogs and snow storms, sounds in each minute a blast of 5 seconds duration, and after an interval of 5 seconds gives another blast of 5 seconds, with an interval of 45 seconds. Life-boat station.

BLONDE ROCK, an automatic whistling buoy has been placed in 16 fathoms water about $\frac{1}{2}$ mile S $\frac{1}{4}$ E from the Rock. Black iron buoy, 10 inch whistle.

PEASE'S ISLAND, on the south point of Pease's Island, one of the Tusket Islands, Yarmouth County, Nova Scotia, lat $43^{\circ} 37' 35''$ N., lon $66^{\circ} 1' 40''$ W. The main or sea light is revolving catoptric, showing alternately red and white, each color visible for 15 seconds, with intervals of 45 seconds between the flashes. It is elevated 56 feet above high water mark, and in clear weather should be seen 12 miles from all points of approach from the southward, and also through the Schooner and Ellenwood Passages. A fixed red catoptric light is shown from a window in the tower, 16 feet below the main light. It is intended to mark the channel between the two dangers known as the Old Man and Old Woman Rocks, and is, therefore, visible between the bearings W. by N. $\frac{1}{2}$ N., and N. W. by W., and in no other directions. It should be visible 4 miles. The tower is a wooden building, painted white, and consists of a square tower 42 feet high from base to vane on lantern, with a keeper's dwelling attached. Hand horn answers signals from vessels.

CANDLEBOX ISLAND, N entrance to Schooner Passage, lat N. $43^{\circ} 39' 34''$, lon W. $66^{\circ} 2' 45''$, fixed red, dioptric, elevated 56 feet, visible 8 miles, white, square tower, with dwelling attached.

WHISTLING BUOYS OFF YARMOUTH.—1st. Cape Forchu automatic, red, in 22 fathoms, 5 miles N. W. by W. from Cape Forchu light. 2nd, Yarmouth Fairway automatic, black and white vertical stripes, in 34 fathoms, 10 miles S. W. by W. $\frac{1}{2}$ W. from Cape Forchu light; lat $43^{\circ} 48' 50''$ N., lon $66^{\circ} 16' 1''$ W.

Ships Deck Pumps, **MACDONALD & CO'S.**—See adv. page 4 cover.

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YARMOUTH OR CAPE FORCHU, east cape, south point, lat $43^{\circ} 47' 28''$, N., lon $66^{\circ} 9' 20''$ W., white catoptric light, revolving, showing three bright flashes with intervals of 20 seconds between their points of greatest brilliancy followed by an interval of 40 seconds. 18 miles, 117 feet high, octagonal tower, vertical stripes, red and white, height 59 feet. Fog whistle on west side, sounds in fogs and snow storms, 10 seconds in every minute.

CAT ROCK BELL BUOY.—In 12 fathoms water 3 cables S. S. W. from Cat Rock off the southern extremity of East Cape, on the western side of entrance to Yarmouth Harbor, lat N $43^{\circ} 47' 2''$, lon W. $66^{\circ} 9' 26''$. The buoy is painted black, with Cat Rock in white letters on top.

YARMOUTH Bell Buoy, moored in 10 fathoms water, off Yarmouth Sound. From the buoy the Roaring Bull bears E N E, distant $1\frac{1}{2}$ miles, and Cape Forchu light bears N E by N, distant $3\frac{3}{8}$ miles; lat $43^{\circ} 44' 0''$ N., lon $66^{\circ} 10' 47''$ W.

An Automatic Buoy, painted red and black horizontal bands, with "Lurcher Shoal" in white letters, has been placed in 18 fathoms of water, about $\frac{1}{2}$ mile W. by N. from the Lurcher shoal, which lies 15 miles N. W. by W. $\frac{1}{2}$ W. from Cape Fourchu light.

BAKER'S COVE, Life boat stationed.

BUNKER'S ISLAND, on end of reef, off S. W. point of Island, east side of entrance to Yarmouth Harbor, lat $43^{\circ} 48' 36''$ N., lon $66^{\circ} 8' 42''$ W., fixed red catoptric light, visible 10 miles, 27 feet high, the lantern on a dwelling house, built on a steel and concrete pier. A red beacon light for the purpose of guiding vessels into the harbor. Visible from the southward between the bearings of N. E. by N. and N. $\frac{3}{4}$ E. It can also be seen over Stanwood's Beech, when bearing from S. $\frac{1}{2}$ E. to S. E. $\frac{1}{2}$ E., but cannot be run for on these bearings, the only entrance to the harbor being through Yarmouth Sound and round East Cape. Fog Bell at light gives one stroke every 15 seconds.

GREEN COVE, or Maitland, Lat N $43^{\circ} 59' 5''$ Long W $66^{\circ} 9' 30''$, a red pole light, on outer end of westerly breakwater. 33 ft. high, visible 7 miles. Is being replaced by a square white tower.

TRINITY LEDGE, an Iron Bell Buoy, painted red, moored in 8 fathoms, W by N $\frac{1}{2}$ N, 600 feet from Trinity Ledge.

N. W. LEDGE, BRIER ISLAND.—A bell buoy is moored N. N. W. $\frac{1}{2}$ W., 400 yards from the N. W. rock, in 15 fathoms.

CAPE ST. MARY, east side of Bay, lat $44^{\circ} 5' 10''$ N., lon $66^{\circ} 12' 40''$ W., red and white catoptric light, revolving alternately every 30 seconds, visible 17 miles, 103 feet high, octagonal white building, height 43 feet.

METEGHAN RIVER, at extreme end of Breakwater, lat $44^{\circ} 13' 10''$ N. lon $66^{\circ} 8' 42''$ W., fixed green dioptric light, visible 6 miles, 23 feet high, building vertical, red stripes on seaward side, 21 feet high, lantern painted black. Beacon for guiding vessels into river. Must be left on starboard hand and passed close aboard. Tide leaves breakwaterone, hour before low water.

CHURCH POINT, east side of St. Mary's Bay, Digby County, lat $44^{\circ} 19' 55''$ N., lon $66^{\circ} 7' 35''$ W., fixed red catoptric light, visible ten miles, 36 feet high, square white wooden building, with dwelling attached, height 20 feet.

BELLIVEAU COVE, lat N $44^{\circ} 24' 20''$, long W $66^{\circ} 3' 10''$. Fixed green light, shown from a square tower painted white, 22 feet high, on outer end of eastern pier. Light is elevated 24 feet above high water mark, visible 4 miles.

SISSIBOO, south side of entrance to river, lat $44^{\circ} 26' 25''$ N., lon $66^{\circ} 1' 00''$ W., fixed white catoptric light, visible 8 miles, 36 feet high, white wooden building, pyramidal, height 33 feet.

WESTPORT, Peter's Island, entrance to Grand Passage, lat $44^{\circ} 15' 27''$ N., lon $66^{\circ} 20' 21''$ W., 2 fixed white catoptric lights, horizontal, 24 feet apart visible 10 miles, each 46 feet high, square white building, height

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MACDONALD & CO., Ship's Binnacles.—See adv. p. 4, cover.

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15 feet. Visible from the northward between the bearings of S. by W. and S. S. W., and from the southward between the bearings, of N. E., by E., and N. N. W. $\frac{1}{4}$ W. Hand fog-trumpet answers signals.

A red and black Can on Passage Shoal, and a black Can Buoy off Cow Ledge, and a red can buoy off Dartmouth Point.

A red beacon on Cow Ledge.

BRIER ISLAND, north-west Point, lat $44^{\circ} 15' 57''$ N., lon $66^{\circ} 23' 38''$ W., fixed white catoptric light, visible 13 miles, 92 feet high, white octagonal building, height 55 feet. A steam fog whistle on N. W. of Brier Island, south side of light house, sounds during thick and foggy weather and snow storms as follows:—Blast of four seconds, interval four seconds, blast of four seconds, interval of four seconds, blast of four seconds, interval of forty seconds—making sixty seconds.

BOAR'S HEAD, 17 yards from edge of cliff, on W. side of N. entrance to Petit Passage, lat $44^{\circ} 24' 10''$ N., lon $66^{\circ} 15' 3''$ W., red and white catoptric light, revolving alternately every minute, visible 14 miles 70 feet high, white square building.

POINT PRIM, south point of entrance to Annapolis Basin, lat $43^{\circ} 41' 30''$ N., lon $65^{\circ} 47' 10''$ W., fixed white catoptric light, visible 13 miles, 76 feet high, square tower, vertical red and white stripes, height 22 feet. Fog whistle on Prim Point sounds in snow storms and in thick or foggy weather 8 seconds in each minute, making an interval of 52 seconds between each blast.

DIGBY PIER, Red Pole Light on outer end of pier.

SHAFNER'S POINT, on N. side of Annapolis River, lat $44^{\circ} 42' 40''$, lon W. $65^{\circ} 37' 12''$. Fixed white dioptric, 55 feet high, visible 8 miles. Building white, square, wood. Indicates Goat Island Shoals.

ANNAPOLIS, on "Engineer's Lot" in Annapolis town, lat N $44^{\circ} 44' 51''$, long $65^{\circ} 31' 06''$. Fixed red light, dioptric, visible 8 miles. Square tower, painted white. After passing the black spar buoy off Marsh Point, this light affords a direct course E by N $\frac{1}{4}$ N clear of shoal ground. It must not be shut in to the southward.

MARSHALL COVE or PORT WILLIAMS, south shore, Bay of Fundy. lat $44^{\circ} 56' 53''$ N., lon $65^{\circ} 15' 56''$ W., 2 fixed white catoptric lights, vertical, 22 feet apart, upper 92 feet high, lower 70 feet. visible 10 miles, white square building, height 22 feet. Lantern on top of dwelling; lower light in bow window, visible from seaward from E. by S. through S. to W. S. W. $\frac{1}{4}$ W.

PORT GEORGE, on outer end of Eastern Pier, lat. N. $45^{\circ} 0' 25''$, lon. W. $65^{\circ} 9' 25''$. Fixed green catoptric, 25 feet high, visible 7 miles, square white tower, 21 feet high.

MARGARETVILLE, on extremity of point, south shore, lat $45^{\circ} 3' 20''$ N., lon $65^{\circ} 4' 0''$ W., two fixed red catoptric lights, 30 and 27 feet high, visible 8 miles, square building, horizontal white and black stripes, height 22 feet. Visible from seaward from S. E. by E. $\frac{3}{4}$ E., through north to W. by S. $\frac{1}{4}$ S.

ISLE HAUTE, on highest point, lat $45^{\circ} 14' 55''$ N., lon $65^{\circ} 0' 45''$ W., white revolving catoptric light, 365 feet high, shows 40 seconds in every minute, visible 20 miles, white square wooden building, dwelling attached, almost hidden by trees; height 53 feet.

BLACK ROCK, south shore, Bay of Fundy. lat $45^{\circ} 10' 5''$ N., lon $64^{\circ} 45' 50''$ W., fixed white catoptric light, visible 12 miles, 45 feet high, square, white building, height 35 feet. Light on top of dwelling, visible from all points of approach.

ADVOCATE HARBOR, southern side of entrance, lat $45^{\circ} 19' 30''$ N., lon $64^{\circ} 47' 30''$ W., fixed red dioptric light, 36 feet high, visible 7 miles, square white tower with dwelling attached, 27 feet high. Coast light, and to indicate entrance to harbor, over the bar.

MACDONALD & CO., Steam Whistles.—See page 4, cover.

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KINGSFORT, on Oak Point Pier, lat 45° 9' 35" N., lon 64° 21' 30" W. fixed white dioptric light, height, 27 feet. White ower, 23 feet high, visible 10 mlies from S. W. $\frac{1}{2}$ W. round by E. to N. W. by W. $\frac{3}{4}$ W.

HORTON, on bluff, west side of Avon River, lat 45° 6' 30" N., lon 64° 13' 20" W., fixed white catoptric light, 100 feet, visible 20 miles. Square tower with dwelling attached, 33 feet high.

WALTON HARBOR, Basin of Minas, Hants County, E side of meuth of La'iete River, lat 45° 14' N., lon 64° 0' 45" W., fixed red catoptric light, visible 10 miles, 60 feet high, square white wooden building, height 20 feet. For guiding vessels into Walton harbor.

BURNTCOAT, Basin of Minas, north-west extremity of head, S. shore: lat 45° 18' 40" N., lon 63° 48' 30" W., fixed white catoptric light: visible 13 miles, 75 feet high, square white building, height 35 feet On dwelling. Visible from all points of approach.

SALTER'S HEAD on the shore of Minas Basin, lat. N. 45° 20' 10", lon. W. 63° 32' 10". Pole light fixed, red, shown from lantern hoisted on mast 20 feet high, with small shed at its base. Light 60 feet above high water, visible 5 miles.

MASSTOWN or **DEBERT**, on eastern head entrance to Moss Creek. Red lantern; lat 45° 22' 45" N., lon 63° 29' 6" W.

LITTLE DYKE, on western head entrance Folly River. Red lantern; lat 45° 22' 45" N., lon 63° 33' 20" W.

PORTAUIQUE, western head entrance to Portauisque River. Red lantern; lat 45° 23' 35" N., lon 63° 43' 30" W.

ECONOMY, on point of bar running out from N. side of entrance to Economy River. Red lantern; lat 45° 22' 45" N., lon 63° 55' 00" W.

The above four lights are only kept in operation during the fishing season.

CAPE D'OR. A steam whistle on extreme point, opposite side of channel from Black Rock, sounds 6 seconds in every 30 seconds; lat 45° 17' 25" N., lon 64° 46' 40" W.

CAPE SHARP, on southern extremity of Cape, lat N. 45° 21' 55", lon W. 64° 23' 20". Fixed red dioptric light, 60 feet high, visible 10 miles. Square white tower, with dwelling attached.

PARRSBORO', or Partridge Island, west side of river, lat 45° 23' N., lon 64° 19' 5" W., fixed white catoptric light, visible 9 miles, 37 feet high, white square building, height 32 feet. Lantern on dwelling.

SPENCER POINT, on north shore, Cobequid Bay, at mouth of Great Village river, lat 45° 23' 30" N., lon 63° 37' W., fixed white catoptric light, visible 6 miles, 35 feet high, window in building 20 feet high.

APPLE RIVER, on Cape Capston on Hetty Point, north entrance, lat 45° 28' 20" N., lon 64° 51' 50" W., fixed white catoptric light, visible 12 miles, 64 feet high, building white, oblong, with tower, height 45 feet. A fog trumpet, immediately E. of tower, sounds blasts of 14 seconds, with intervals of 46 seconds.

NEW BRUNSWICK—BAY OF FUNDY.

HILLSBORO' WHARF, Petitecodiac River, lat 45° 55' 15" N., lon 64° 37' 45" W., fixed white catoptric light, visible 5 miles, 24 feet high, structure open frame, height 22 feet. To guide vessels going up the river and to the coal and plaster wharves. Discontinued Oct. 1896, until further notice.

FORT FOLLY POINT, on extreme point, lat 45° 52' 5" N., lon 64° 33' 55" W. Fixed white dioptric light, visible 14 miles, 77 feet high. White, with iron lantern red, square wood, with dwelling attached. At junction of Petitecodiac and Memramcook Rivers.

GRINDSTONE, west point of island, lat 45° 43' 16" N, lon 64° 37' 24" W., fixed white catoptric light, visible 12 miles, 79 feet high, octagonal

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white tower. Visible over 315° from S. W. by W. through N. to W. by N. In thick weather a steam horn sounds blasts of 15 seconds with intervals of 30 seconds.

WARD'S POINT, ROCKPORT — Lat $45^\circ 43' 35''$ N., lon $64^\circ 29' 40''$ W. Fixed white dioptric light, visible 10 miles, 72 feet high. Building white square wood. Visible from E. N. E. through N. to S. W. $\frac{1}{2}$ W.

CAPE ENRAGE, on pitch of Cape, lat $45^\circ 35' 40''$ N., lon $64^\circ 47' 0''$ W., one fixed white light, visible 15 miles, 120 feet high. Visible between bearings N. W. round S. to N. E. A steam fog horn, 130 feet S. W. from the light house, at an elevation of 100 feet, sounds blast of 8 seconds with intervals of 20 seconds.

ANDERSON'S HOLLOW, on eastern end Government breakwater, lat $45^\circ 37' 30''$ N., long $64^\circ 49' 45''$ W. Fixed red dioptric light 25 feet high, square white wood, with red roof, 20 feet. Visible 6 miles over an arc of $56\frac{1}{4}^\circ$ between bearings of N. E. $\frac{1}{2}$ E., and N. by W. $\frac{1}{2}$ W. Vessels may run for harbor one hour before high water, giving the light 50 feet of a berth on port hand.

QUACO PIER, on outer end of E. breakwater pier, lat $45^\circ 21' 20''$ N., long $65^\circ 31' 55''$ W. Fixed red dioptric light, 20 feet high, white square wood structure, visible 6 miles, between W. by N. $\frac{1}{2}$ W. and N. W., and between N. $\frac{1}{2}$ E. and N. E. by E. The deepest water on entering the harbor is close to the light. Obscured from N. $\frac{1}{2}$ W. to N. $\frac{1}{2}$ E.

QUACO WEST HEAD, on pitch of Cape St. Martin's, lat $45^\circ 19' 30''$ N., long $65^\circ 32' 10''$ W. Revolving white catoptric light, 20 seconds interval, visible 16 miles, 110 feet high, building white square wood with dwelling attached. General coast light to guide to St. Martin's Harbor. Steam fog horn, 70 feet from lighthouse, gives blasts of 9 seconds with intervals of 30 seconds.

QUACO BELL BUOY, black iron buoy, surmounted by bell, off reef at west head, in 14 fathoms, $\frac{1}{2}$ mile S. S. E. from light; lat $45^\circ 14' 35''$ N., lon $65^\circ 22' 40''$ W.

QUACO LEDGE BELL BUOY, red iron buoy, surmounted by bell in 10 fathoms, N. W. of ledge. Lat $45^\circ 14' 35''$ N., long $65^\circ 22' 40''$ W.

CAPE SPENCER, pitch of Cape, lat $45^\circ 12' 5''$ N., lon $65^\circ 54' 35''$ W., red and white catoptric light, alternating every 45 seconds, visible 20 miles, 207 feet high, white square building, with tower, height 35 feet. Visible between the bearings from E. S. E. round by S. to W. N. W., Partridge Island light bearing by compass N. W. by W. $\frac{1}{2}$ W. northerly, distant $6\frac{1}{2}$ miles.

BLACK POINT WHISTLING BUOY, black iron buoy, surmounted by a 10 inch whistle, in 16 fathoms, outside entrance of St John harbor. Lat $45^\circ 11' 30''$ N., long $66^\circ 1' 0''$ W. From the buoy Partridge Island light bears N. $\frac{1}{2}$ W. $3\frac{1}{4}$ miles; Mispeck Point E. $\frac{1}{4}$ N. $1\frac{1}{2}$ miles, south west end of Meogenes Island N. W. by W. $3\frac{3}{4}$ miles.

PARTRIDGE ISLAND, St. John harbor, lat $45^\circ 14' 3''$ N., lon $66^\circ 3' 5''$ W., fixed white dioptric light, visible 17 miles, 119 feet high, building red and white in vertical stripes, height 40 feet. In foggy weather a steam whistle sounds for 10 seconds every minute. A bell boat near E. side of Partridge Island Reef.

NEGRO POINT, on end of Government breakwater W. entrance to port of St. John, lat $45^\circ 14' 13''$ N., long $66^\circ 3' 19''$ W. Fixed red dioptric light, 40 feet high, visible 8 miles, white with red lantern, open framed hexagonal tower on circular stone foundation. 35 feet high.

ST. JOHN HARBOR, on pier on W. side of channel, lat $45^\circ 14' 58''$ N., lon $66^\circ 3' 12''$ W. Fixed red dioptric light, 35 feet high, visible 10 miles, building 15 feet, vertical black and white stripes.

REID'S POINT, on Prince William Street foot of St. James Street, St. John city. Lat $45^\circ 15' 41''$ N., long $66^\circ 3' 28''$ W. Fixed red and white electric light, 64 c. p. incandescent lamps on a three branched

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Macdonald & Co., Manufacturers of Brass Sliding Door Rollers, Halifax.

Pickford & Black's West India Steamship Line between Halifax and Demerara.

lamp post, 42 feet high above high water, shows red to seaward, over an arc of $67\frac{1}{2}^{\circ}$ from N. E. to N. N. W., white on other bearings.

MUSQUASH LIGHT, lat $45^{\circ} 8' 35''$ N., long $66^{\circ} 14' 30''$ W., fixed green, seaward, fixed white towards harbor, 112 feet high, visible 10 miles, White, square, wood, 40 feet high, dwelling attached, catoptric.

SPLIT ROCK WHISTLING BUOY, in 30 fathoms, off Split Rock. Lat $45^{\circ} 7' 10''$ N., long $66^{\circ} 14' 0''$ W. Iron buoy, surmounted by a 10 inch whistle. Location S. W. by S. $\frac{3}{4}$ S. from Musquash light, S. $\frac{1}{4}$ W. from western head of Musquash, and W. S. W. from Partridge Island.

DIPPER HARBOR, on S. point of Campbell's Island. Lat $45^{\circ} 5' 30''$ N., long. $66^{\circ} 25' 0''$ W. Fixed red light, 30 feet high, visible 6 miles. Building white square wood with red roof. Visible seaward and in the harbor when bearing from S by W to S. E.

LEPREAU, on point, lat $45^{\circ} 3' 32''$, long $66^{\circ} 27' 45''$ W. Fixed white catoptric light, 80 feet high, visible 14 miles from all points seaward. Octagonal wooden building, 48 feet, striped horizontally red and white, lantern roof red. Steam fog horn gives blasts of 5 seconds duration, with intervals of 2 $\frac{1}{2}$ seconds. Should the horn get out of order a whistle will sound two blasts of 5 seconds duration, with an interval of 5 seconds between, in every minute.

LEPREAU WHISTLING BUOY, in 23 fathoms, 1 mile S. S. W. from light. Lat $45^{\circ} 2' 31''$ N., lon $66^{\circ} 27' 50''$ W.

DREW'S HEAD, on W. side of Beaver Harbor, Charlotte County, lat $45^{\circ} 3' 45''$ N., lon $66^{\circ} 44' W.$, fixed white catoptric light, visible 10 miles, 45 feet high, white, square, wooden building, height 36 feet. Seen at all points between eastern and western heads of harbor.

PEA POINT, lat $45^{\circ} 2' 20''$ N., lon $66^{\circ} 48' 40''$ W., east side of entrance to LeEtang Harbor, fixed green light, visible 10 miles. White, square, wood building, dwelling attached. Visible from seaward from W. through N. to S. An iron spindle painted black on the Grey Mare Ledge, marks the W. side of entrance.

BLISS ISLAND, W. end of Island, S. side of western entrance to Bliss Harbor, lat $45^{\circ} 1' 15''$ N., lon $66^{\circ} 51' W.$, fixed red catoptric light, visible 16 miles, 45 feet high, white, square, wooden building, height 30 feet.

LATITE PASSAGE, on Mascabin Point, lat $45^{\circ} 2' 20''$ N., lon $66^{\circ} 53' 30''$ W. A fog trumpet has been erected on Mascabin Point, south entrance to Latite Passage, sounds blasts of 7 seconds, with an interval of 30 seconds between each.

MIDJIC BLUFF, Passamaquoddy Bay, Charlotte County, lat $45^{\circ} 6' 53''$ N., lon $66^{\circ} 54' 30''$ W., fixed white catoptric light, visible 15 miles, 130 feet high, building white, square, wood, height 29 feet, lantern brown. A bar extends E. N. E. from light house, and vessels require to keep off a distance of 260 yards to clear it at low water.

PORT ST. ANDREW'S, on sand reef at E. entrance, lat $45^{\circ} 3' 45''$ N., lon $67^{\circ} 0' 50''$ W., fixed white catoptric light, visible 10 miles, 40 feet high, structure white, square, wood, on a framed pier, height 10 feet. To guide to all ports in inner bay, and to vessels going up the River St. Croix from Letete Passage or West Quoddy. There is only a depth of 4 feet of water on the N. W. extension of the reef towards mainland.

PORT ST. ANDREWS, N. point of entrance, lat $45^{\circ} 4' 0''$ N., lon $67^{\circ} 3' 0''$ W., fixed white catoptric light, 42 feet high, visible 10 miles, white octagonal building, height 22 feet. Visible between the bearings of N. W. by N. and S. E. by S.

SPRUCE POINT, St Croix River, Charlotte County, lat $45^{\circ} 10' N.$, lon $10^{\circ} 25' W.$, fixed white catoptric light, 32 feet high, white square building, height 28 feet, visible 10 miles. The course from Spruce Point to ballast ground is E. by S. $\frac{3}{4}$ S., distance 2 miles. From Spruce Point to Mark Point W. N. W., distance 2 miles. A vessel after leaving Doucet Island, to clear the reef, should steer N. until the Spruce Point light bears N. W. by W., and thence take a W. N. W. course.

MARK POINT, St Croix River, Charlotte County, lat 45° 10' 10" N., lon 67° 12' 30" W., fixed white catoptric light 32 feet high, visible 10 miles, square white building, height 28 feet.

HEAD HARBOR, E. Quoddy Head, N point of Campobello Island, lat 44° 57' 30" N., long 66° 54' 10" W. Fixed white light, dioptric, 64 feet high, visible 13 miles. Octagonal building, 34 feet, white with red cross, dwelling attached, iron lantern red. Fog trumpet sounds blast of 8 seconds duration, with intervals of 35 seconds between them.

MULLHOLLAND POINT, on E. side Lubec Narrows, Campobello Island, lat 44° 51' 40" N., long 66° 58' 50" W. Fixed white light, dioptric, 60 feet high, visible 13 miles from N. N. W. through E. to S. S. W. Building white octagonal wood, 44 feet.

SOUTH WEST WOLF ISLAND, on S. E. point of the island, lat 44° 56' 30" N., lon 66° 44' 00" W., white catoptric light, revolving every 1½ minute, visible 17 miles, 111 feet high, building white, square, wood, height 35 feet. Lantern on dwelling; visible from all points of approach. An automatic whistling buoy is moored in 52 fathoms, 1½ miles S. S. E. from Wolf Island light.

SWALLOW TAIL, N. E. part of Grand Manan, lat 44° 45' 46" N., lon 66° 44' 2" W., fixed white dioptric light, visible 17 miles, 148 feet high, white octagonal wooden building, height 50 feet. Visible between the bearings of S. W. round by S. to N. W.

LONG EDDY POINT FOG WHISTLE, extreme N. W. head of Grand Manan, 80 feet above high water, sounds blasts of 4 seconds duration, with intervals of 16 seconds; lat 44° 48' 0" N., lon 66° 47' 15" W.

GRAND HARBOR, Grand Manan, on Fish Fluke Point, lat 44° 40' 2" N., lon 66° 45' 8" W., fixed white catoptric light, visible 11 miles, 40 feet high, white, square wooden building, with dwelling attached, height 32 feet. Visible from all points seaward.

BIG DUCK ISLAND FOG HORN, S. end of Island, lat 44° 41' 5" N., long 66° 41' 40" W. Sounds blasts of 6 seconds duration, with intervals of 35 seconds.

SOUTH-WEST HEAD, Grand Manan, bridge of cliff, S. extremity of head, lat 44° 36' 0" N., lon 66° 54' 16" W., revolving red and white catoptric light; visible 20 miles, three red flashes 40 seconds, eclipse 20 seconds, 3 white flashes 40 seconds, eclipse 20 seconds, 200 feet high; white, square wooden building, with dwelling attached, height 43 feet.

GANNET ROCK, S. of Grand Manan, lat 44° 30' 38" N., lon 66° 6' 57" W., intermittent white light, 45 seconds, eclipse 5½ flash 4½, eclipse 5½ in every 60. Visible 12 miles. Vertical black and white stripes, octagonal, wood, 41 feet high. Cotton powder bombs exploded every 20 minutes. Dangerous rocks extend 4 miles eastward of the light house.

MACHIAS SEAL ISLAND, near middle of island, lat 44° 30' 7" N., lon 67° 6' 13" W. Fixed white light, dioptric, 54 feet high, visible 12 miles. Also, 64 yards S. E. from westerly light, fixed white light, dioptric, 66 feet high. Both buildings white, octagonal wood. In range N. W. will lead 4½ miles S. of Murr Ledges. A fog whistle sounds 5 seconds in each half minute.

SABLE ISLAND.

SABLE ISLAND, west end light house, lat 43° 56' 40" N., lon 60° 6' 0" W. A revolving white light, giving three flashes at intervals of half a minute, then a cessation of light during one and a-half minutes; visible 17 miles. White octagonal tower, 98 feet high. 2½ miles W. of Main Station.

SABLE ISLAND, 6 miles from east end, lat 43° 58' 10" N., lon 59° 46' 20" W., fixed white dioptric light, 2nd order, visible 18 miles, 128 feet high, octagonal building, white and brown alternately, height 86 feet. Telephone connects the two lights and four residential stations.

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1898]

NAUTICAL ALMANAC.

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NEW BRUNSWICK—GULF OF ST. LAWRENCE.

TRACADIE.—On beach or side of entrance, 800 feet back from shore line. Back tower 750 feet from front, lat $46^{\circ} 25' 20''$ N, lon $63^{\circ} 2' 50''$ W, 2 fixed red lights, open, square, frame, 8 miles seen in clear weather. Height of light house 40 and 70, height of building 21 and 32. In one lead in S W by W past the buoys, leaving buoy outside bar on starboard, buoy inside bar on port hand. Not more than 5 feet of water on bar. Position of both towers liable to be changed to suit shifting of the channel.

BIRD ROCKS.—On summit of great bird rock, Magdalen Islands, lat $47^{\circ} 50' 40''$ N, lon $61^{\circ} 8' 20''$ W. one fixed white light, 140 feet, white, hexagonal, wood, with white dwelling near tower 30 feet high. A fog gun is fired every half hour. International Code flags kept here.

ENTRY ISLAND.—On south side of Island, Magdalen Islands, lat $47^{\circ} 16' 30''$ N, lon $61^{\circ} 42' 20''$ W, one fixed white light, 93 feet high, white, square, wood, with dwelling attached, 42 feet high. Light visible from W N W through N and E to S.

AMHERST ISLAND.—S. point of island, Magdalen Islands, lat $47^{\circ} 13' 0''$ N, lon $61^{\circ} 58' 0''$ W. One alternate red and white light every 30 seconds, 107 feet high, white, hexagonal, wood, 54 feet high. Visible over an arc of 198° from W by N $\frac{1}{2}$ N, round through N to S E $\frac{1}{2}$ E. Marine telegraph and signal and ice report station.

ETANG DU NORD.—W. side of Grindstone Island, Magdalen Island, lat $47^{\circ} 23' 30''$ N, lon. $61^{\circ} 57' 0''$ W. One revolving white light every $\frac{1}{2}$ minutes, 97 feet high. White, square, wood, 42 feet high.

CAMPBELLTON RANGE LIGHTS.—Pier beside Railway Wharf, Restigouche River, lat $48^{\circ} 0' 50''$ N, lon $66^{\circ} 39' 55''$ W, fixed white light, visible 9 miles, white square wood, height 24 feet, building 22 feet. On Moffatt's wharf, fixed white light, visible 9 miles, white, square, wood, height 24 feet, building 22 feet.

DALHOUSIE RANGE—FRONT RANGE.—On wharf at Railway terminus, 29 feet from outer end, and 33 feet from front edge, lat $48^{\circ} 4' 25''$, W $66^{\circ} 22' 25''$. Fixed white, visible 9 miles in line of range. Square white lantern projecting through roof of railway wooden freight shed.

BACK RANGE.—On summit of Montgomery Island, 296 feet, S E $\frac{3}{4}$ E from front light. Fixed white, 34 feet high. White square wood, 22 feet.

These two in range lead to the railway wharf clear of all shoals.

DOUGLAS ISLAND, OR DALHOUSIE ISLAND.—On E end of Island lat N $48^{\circ} 4' 25''$, lon W $66^{\circ} 21' 30''$. Fixed white, 30 feet, visible 6 miles easterly and north-westerly. White square wood, 22 feet.

DALHOUSIE.—South side of entrance to harbor, lat N $48^{\circ} 3' 45''$ lon W $66^{\circ} 20' 50''$. Fixed white, 49 feet, visible 13 miles from all points of approach. White, square, wood, 33 feet.

HERON ISLAND, Chaleur Bay, lat 48° N, lon $66^{\circ} 8'$ W, fixed white light visible $\frac{1}{2}$ miles, 66 feet high, building white, square, wood, height 20 feet. Visible from all points seaward.

LITTLE BELLEDUNE.—Fixed white, visible 11 miles. Mast with white shed at base, 28 feet. Height of light, 33 feet; lat $47^{\circ} 55' 10''$ N., lon $65^{\circ} 33' 25''$ W.

PETIT ROCHER, on Elm Tree Point, lat $47^{\circ} 48' 39''$ N, lon $65^{\circ} 43' 13''$ W, fixed white light, visible 12 miles, 36 feet high, building white, square, wood, 31 feet high.

BTHURST, on Carron's Point, lat $47^{\circ} 39' 20''$ N, lon $65^{\circ} 36' 40''$ W., fixed lights, one white, visible 10 miles, building white. One red, visible 14 miles, 14 feet high, tower red and white striped, square wood. Range lights to guide vessels in the harbor.

BELLONI POINT, on E side entrance to Bathurst harbor, lat $47^{\circ} 40' 21''$, lon W $65^{\circ} 33' 18''$. Fixed white, 30 feet, visible from E through S to W,

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MACDONALD & CO., Pontoons for Hire.—See adv. page 4 cover.

10 miles, white, square, wood, 22 feet. Indicates outside limit of shoal off mouth of Bathurst Harbor.

CLIFTON, at head of pier, lat 47 45 30 N, lon 65 0 50 W. fixed red light, visible 15 miles, 88 feet high, white square, wood building, 37 feet high.

CARAQUET on I-land, Bay Chaleur, lat 47 49 30 N, lon 64 54 W. fixed white light, visible 14 miles, 49 feet high white, square tower on dwelling, height 43 feet.

POKESUDIE, N E point of Island, lat 47 49 10 N, lon 64 44 40 W, fixed white light, visible 11 miles, 41 feet high, building white, square, wood, 34 feet high.

HARPER'S POINT, at western entrance of Little Shippegan lat 47 54 0 N, lon 64 35 0 W, one fixed white light, lantern on mast, with white shed at base, standing on a crib. Visible 16 miles, 38 feet high.

GOOSE LAKE, W side of Miscou Island, lat 47 55 40 N, lon 64 35 40 W, white light, revolving every minute, visible 10 miles, 40 feet high, building white, square, wood, height 28 feet.

MISCOU ISLAND, Birch Point, lat 48 1 N, lon 64 29 25 W, Gp. rev. white, 4 flashes at intervals of 15 seconds followed by eclipse of 30 seconds, complete revolution in 1½ minute, light, visible 12 miles, 79 feet high, building white, octagonal, wood, height 74 feet. A steam fog whistle, placed in 1875, and situated 107 yards east from the lighthouse, sounds in thick weather, fogs and storms, blasts of five seconds duration every half minute.

MISCOU GULLY, on N side of east entrance to Little Shippegan, lat N 47 55 5, lon W 64 29 30. Fixed white, 45 feet, visible 7 miles. Lantern on a mast 25 ft. with white shed at base, standing on a crib to mark entrance from the Gully to the Gulf.

BIG SHIPPEGAN, on Alexander Point, N E of entrance to gully, lat 47 43 30 N, lon 64 39 10 W, fixed white light, visible 11 miles, white, square, wood, 32 feet high, height 30 feet.

INDIAN POINT—RANGE, near extremity of point, S side Big Shippegan Gully, lat N 47 43 40, lon W 64 40 20. Fixed red, 28 feet, visible 4 miles. Lantern on a mast, with small shed at base. Visible in the line of range. Fixed white, visible 11 miles. Lantern on a mast with small shed at base. Alignment indicates best water over the bar. A mid-channel being in the alignment outside the bar. After passing it vessels entering should keep the alignment until nearing black can buoy inside bar, whence channel is marked by harbor buoys.

POKEMOUCHE, on beach, N side of gully, lat 47 40 10 N, lon 64 46 0 W, fixed green light, visible eight miles, white, square, wood, dwelling attached, light 35 feet high, building 25 feet; lantern on a pole travelling on a tramway to suit changes in channel. Range to guide to Can Buoy at passage over bar.

NORTH TRACADIE, one on north side of gully, the other outside of bar, lat 47 33 00 N, lon 64 51 35 W, 2 fixed white lights, visible 12 miles, 32 and 17 feet high, structures white, square, wood, one 30 feet high, and the other 14 feet high. Coast and harbor range lights.

SOUTH TRACADIE, N side of gully, lat 47 30 N, lon 64 52 10 W, visible 8 miles, back light red, 26 feet high, 166 yards north from front one, front light white, 20 feet high, front building an open framed white tower, 19 feet high backed building, height 26 feet, an enclosed square tower painted red. Vessels crossing the bar from sea should steer N, keeping the lights in range. Width of bar, 2 cable lengths.

NEGUAC, lat 47 14 40 N, lon 65 0 22 W, fixed white light, visible 11 miles, 32 feet high, white square wooden building, height 30 feet. Coast light situated N E side of gully.

HAY ISLAND, lat 47 13 54 N, lon 65 3 46 W, two fixed white lights front light near east end of Island, visible 10 miles, height 23 feet, lantern on mast with red shed at base, 210 feet west ¼ N from front light, 30 feet high—white square wood. Range lights to enable vessels

Macdonald & Co., Manufacturers of Ships' Patent Water Closets, Halifax.—See adv. p. 4 cover.

Pickford & Black's West India S. S. Line between Halifax, Bermuda, Turk's Island and Jamaica.

seeking shelter to clear the point of the shoal off the east end of the Island.

POTAGE ISLAND, near S point of Island, lat 47 9 49 N, lon 65 2 38 W, fixed white light, visible 12 miles, 46 feet high, building white, wood, height 42 feet.

OAK POINT, Front, on the Point. Miramichi, lat 47 7 22 N, lon 65 15 42 W, one fixed white light, visible 10 miles, 43 feet high, lantern hoisted on a mast, with white shed at base, all supported on trestlework, height 28 feet.

OAK POINT, Back, 1800 feet N E by E from front light, fixed white, visible 10 miles, 43 feet high, same as front light. In one lead to red buoy in river above.

SHELDRAKE ISLAND, Miramichi Bay, lat 47 5 37 N, lon 65 10 5 W, two fixed white lights, quarter of a mile apart, visible 9 miles, 48 feet high. Range lights. Mast with sheds at base.

GRANT'S BEACH, Front, Miramichi Bay, lat 47 5 10 N, lon 65 23 15, W, fixed white light, visible 10 miles, 120 feet high; also Grant's Beach, Back, 1300 feet N, 66 W, from front, fixed white light, visible 10 miles, 140 feet high, building same as Oak Point, height 34 feet. In one lead to Nappan black buoy.

MIDDLE ISLAND, Miramichi Bay, lat 47 3 28 N, lon 65 27 0 W, fixed white light, 45 feet high.

NEWCASTLE, on lime kiln bank, N side of river below the town lat 47 0 45 N, lon 65 33 40 W, fixed red light, visible 9 miles, 87 feet high, white, square, wood, with red roof, height 23 feet.

BAY DU VIN ISLAND, from light on west end of Island, lat 47 5 7 N, lon 65 6 56 W, 1 fixed white light, visible 10 miles. Lantern on mast, red shade at base, 30 feet high. Back light, 1222 feet N E by E from front light, visible 11 miles, lantern on mast, red shed at base, 42 feet high. Range lights.

FOX ISLAND, N W Point, lat 47 7 52 N, lon 65 2 6 W, 3 fixed white lights, visible 8 miles. No. 1, 57, No. 2, 46, and No. 3, 36 feet high; all lanterns on masts, with white shed at base, height, 46, 38 and 28 feet. No. 1, 100 feet from northernmost point of Island. No. 2, 1051 feet S D $\frac{1}{2}$ E from No. 1. No. 3, 954 feet S W by W, $\frac{1}{2}$ W from No. 1. Nos. 1 and 2 in line range N W $\frac{1}{2}$ N into Horseshoe Channel. Nos. 1 and 3 in line, range N. E. through Portage Island Channel. Nos. 2 and 3 in line, range W by N, $\frac{1}{2}$ N by E $\frac{7}{8}$ E, to the upper buoy of Horseshoe Shoals.

FOX ISLAND, East end, lat 47 6 46 N, lon 64 59 50 W, 2 fixed white lights, visible 10 miles, 30 feet high, white wooden building. Range lights to guide vessels through the Swashway Channel.

MIRAMICHI BAY LIGHTSHIP, Horseshoe Bar, between Fox and Portage Islands, lat 47 8 19 N, lon 65 4 2 W, fixed red light, visible 8 miles, 35 feet high. A schooner rigged ship.

PRESTON BEACH, Miramichi Bay, lat 47 4 47 N, lon 65 54 58 W, 2 fixed white lights, visible 10 miles, 55 and 64 feet high. Range lights.

ESCUMINAC on point, lat 47 4 52 N, lon 66 47 33 W, fixed white light, visible 14 miles, 70 feet high, white wooden building, height 58 feet. A steam fog whistle situated 100 yards west of the light house, sounds in thick weather, fogs and snow storms, 6 seconds in each minute, with an interval of 35 seconds between each blast. It should be heard from 3 to 11 miles, according to the state of the weather.

RICHIBUCTO HARBOR, on outside of bank, S beach, lat 46 42 5 N, lon 64 46 10 W., fixed white light, visible 12 miles, 40 feet high, tower white, square, wood, dwelling attached, height 33 feet. Also 102 yards W by S $\frac{1}{2}$ S from front light, fixed red light, visible 12 miles, 44 feet high, white square open framed tower, height, 43 feet. To rep ace day beacons and lead through channel over bar at entrance to river.

RICHIBUCTO HEAD, on headland, lat 46 39 40 N, lon 64 42 30 W, fixed white light, visible 14 miles, 70 feet high, white square building, height 50 feet.

BUCTOUCHE INNER LIGHTS. 2 fixed white lights front light close to shore road on Indian or Church Point, lat 46 29 35 N, visible 9 miles, 23 feet high, building white, square, wood, with red roof, 23 feet high. Back light, 1,980 feet N N W $\frac{1}{4}$ W from front one, visible 12 miles, 53 feet high, building white, square, wood, with red roof, 23 feet high. Range lights, visible in direction of range replacing former day beacons. Lead into harbor through deepest channel clear of all obstructions from wne range of Dixon's Point lights to where channel turns abruptly to westward to enter Buctouche River.

BUCTOUCHE, on Dixon's Point, lat 46 27 40 N, lon 64 38 50 W, 2 fixed white lights, N W by W, 1050 feet apart, visible 11 and 12 miles, square white towers, 36 and 41 feet high. Range lights built on line of former by beacons, to guide into Buctouche Harbor.

CASSIA'S POINT, on Point, lat 46 19 24 N, lon 64 30 40 W, white light revolving every half minute, visible 14 miles, 40 feet high, white, square, wooden building, height 27 feet.

SHEDIAC ISLAND, lat 46 15 20 N, lon 64 31 50 W 2 fixed white lights, visible 10 miles, 48 and 56 feet high. White masts with elevated platform. Range lights.

SHEDIAC HARBOR, Duchene wharf, lat 46 14 32 N, lon 64 31 56 W, 2 fixed white lights, visible 6 miles, 15 feet high, on iron masts, with shed, at base.

JOURMAIN, on east end of Island, lat 46 9 42 N, lon 63 48 20 W, flash white light, 10 seconds, visible 14 miles, 72 feet high, white octagonal tower, height 45 feet. Visible over an arc of 229° 47' from S 54° 47' E round by W to N 5° W.

PRINCE EDWARD ISLAND.

STRAIT OF NORTHUMBERLAND SIDE.

EAST POINT, 250 feet from S. shore of point, lat N. 46° 27' 10", lon W. 61° 58' 10". White catoptric light, revolving every 3 minutes, visible 15 miles, 100 feet high. White, octagonal, wood, drab fog-alarm building in front of tower, white dwelling near by. Light visible from S. E. by S. through W. to E. by N. $\frac{1}{2}$ N.

Fog-alarm building stands 100 feet eastward of lighthouse, and in line with tower roughly indicates range of outer point of reef. Steam horn gives a blast of 8 seconds every $\frac{1}{2}$ minute.

SOURIS, EAST, Knights Point, 300 feet S. E. of breakwater, lat N. 46° 20' 50", lon 62° 14' 30" W., fixed white dioptric; height 85 feet, visible 15 miles. White, square, wood with dwelling attached. Visible from all points seaward.

SOURIS EAST BREAKWATER, on outer end of breakwater, lat 46° 20' 50" N., lon 62° 15' W., fixed red catoptric, 40 feet high, visible 2 miles from all points of approach seaward. Lantern on a mast, 34 feet high, with a hexagonal shed at base. It may be impossible to keep this light in operation in very heavy weather.

CARDIGAN RIVER, between Ferry Wharf and Morrison's Beach, west hore of river, lat N. 46° 12' 50", lon 62° 31' 45" W.; fixed catoptric, green to seaward, white across the river to N.E. ward, 43 feet high, visible 8 miles, white, square, wood building 32 feet high. In entering river vessels should stand northward inside Boughton Island until Panmure Island Light bears S. by W., and Cardigan River Light N. W. when they can stand in keeping light open on port bow. When white light is opened safe anchorage has been reached.

PANMURE HEAD, S. E. extremity of Cardigan Bay, lat N. 46° 9', lon 62° 27' 35" W., fixed white dioptric, 96 feet high, visible 16 miles. White octagonal, wood dwelling near by. This light should be kept open off Terras Point to clear reef off Cape Bear.

GEORGETOWN, on St. Andrews Point, S. W. side of entrance, lat 46° 9' 57" N, lon 62° 31' 30" W., fixed catoptric, red seaward, white across

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Pickford & Black, Brokers and Steamship Agents, Halifax, N. S.

the harbor, between N. E. and N. W., visible 10 miles. White, square, wood, 32 feet high with iron lantern rising from middle of roof.

On Westaway's farm, $\frac{1}{2}$ mile N. W. by W. $\frac{1}{2}$ W. from front light; fixed white catoptric, 62 feet high, visible 12 miles; white, square, wood building, 46 feet high. The two in range lead in N. W. by W. $\frac{1}{2}$ W. to the point clear of obstructions.

MURRAY HARBOUR, on Beach Point, S. side of harbour, lat N. $46^{\circ} 1' 28''$, lon $62^{\circ} 28' 30''$ W., fixed white catoptric light, 33 feet high, visible 8 miles; white, square wood building, 30 feet high.

On mainland, about a mile W. by S. from front light; fixed white catoptric, 57 feet high, visible 10 miles; white, square wood building, 40 feet high. In one, these range lights show the channel to the outer buoy.

CAPE BEAR, on the headland, lat $46^{\circ} 0' 45''$ N., lon W. $62^{\circ} 27' 15''$, red catoptric, revolving 30 seconds; 74 feet high, visible 12 miles. White square wood building with dwelling attached.

WOOD ISLAND, off south point, lat $45^{\circ} 57' 22''$ N., lon W. $62^{\circ} 44' 10''$, fixed white dioptric, 80 feet high, visible 15 miles; white, square wood building with dwelling attached.

INDIAN ROCKS WHISTLING BUOY, in 9 fathoms S westward of rocks, lat $45^{\circ} 56' 10''$ N., lon W. $62^{\circ} 49' 10''$. Red iron buoy surmounted by a 10 inch whistle. Whistle sounded by action of the waves. From the buoy, Bell Point bears N. by E. $\frac{3}{4}$ E., and Wood Island Light E $\frac{1}{2}$ S.

POINT PRIM, S. E. extremity of Hillsborough Bay, 100 yards from the point, lat N. $46^{\circ} 3' 10''$, lon $63^{\circ} 2' W.$; fixed white catoptric light, 68 feet high, visible 12 miles. White, circular brick building, covered with shingles, white dwelling near by. Bell-buoy on E. side of channel, black buoy on W. side $2\frac{1}{4}$ miles N. by E. $\frac{3}{4}$ E. from bell buoy, harbourward.

ORWELL HARBOUR, at Brush Wharf, lat $46^{\circ} 9' 6''$ N., lon W. $62^{\circ} 52' 50''$, fixed red catoptric, 28 feet high, visible 8 miles. White, square wood building, 22 feet high. Light shows S. W.

FITZROY ROCK BELL-BUOY, in $4\frac{1}{2}$ fathoms, west of shoalest part, lat N. $46^{\circ} 7' 17''$, lon $63^{\circ} 6' 8''$ W. Red iron buoy surmounted by bell. This buoy is $4\frac{1}{2}$ miles N. N. E. from Point Prim can buoy.

HASZARD POINT, front range, on the point, Bellevue farm, 35 feet back from shore, E. side of entrance to Charlottetown Harbour. Lat N. $46^{\circ} 11' 50''$, lon $63^{\circ} 4' 5''$ W., fixed red catoptric light, 45 feet high, visible 8 miles. White, with brown roof, square, wood building, 47 feet high. Maintained during general navigation and whenever winter steamer is running to Charlottetown.

BACK range, in rear of Bellevue farm buildings, 2,244 feet N. E. $\frac{1}{4}$ N. from front light; fixed red catoptric light, 125 feet high, visible 12 miles; white, with brown roof, square wood building, 47 feet high. Lights visible over a small arc on each side of alignment. Alignment can be taken off Point Prim and followed in N E $\frac{1}{4}$ N with nowhere less than 5 fathoms, passing W. of Fitzroy Rock bell buoy and E. of St. Peters spit buoy until Brighton Beach range lights are brought into one.

BLOCKHOUSE POINT, at W. side of entrance to Charlottetown Harbour. Lat $46^{\circ} 11' 36''$ N., lon $63^{\circ} 7' 28''$ W.; fixed white catoptric light, 56 feet high, visible 12 miles; white, square wood building, with dwelling attached.

BRIGHTON BEACH, front range, on N. W. extremity of Hon. G. W. Howlan's property, E. side of N. river. Lat. $46^{\circ} 14' N.$, lon W. $63^{\circ} 8' 20''$, fixed red catoptric light, 41 feet high, visible 7 miles. White' skeleton tower with slatted face, brown iron lantern, red diamond inside facing channel. Maintained during navigation and whenever winter steamer is running to Charlottetown.

BACK range, on old Asylum grounds, 1275 feet N. from front. Fixed red catoptric, 77 feet high, visible 9 miles. White, skeleton tower with slatted face, brown iron lantern, red diamond inside facing channel. Lights visible over a small arc on each side of alignment.

Alignment to be taken where it intersect Haszard's Point alignment,

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[1898

about $\frac{1}{2}$ mile S. of St. Peter's Spit Buoy, and followed due north to Causeway Point, where the course up the harbour can be judged by the town lights.

ST. PETERS ISLAND, on S. side of Island, Hillsborough Bay. Lat N. $46^{\circ} 7' 20''$, lon $63^{\circ} 11' 35''$ W., fixed red dioptric light, 70 feet high, visible 10 miles. White, square wood building 38 feet high. Shows between W. $\frac{1}{2}$ S. and S. E. by S. over an arc of 240° . To be changed to an occulting white light

LEARD'S RANGE, CRAPAUD, west end of bridge, at head of harbour. Lat. N. $46^{\circ} 13' 15''$, lon. $63^{\circ} 29' 10''$ W. Fixed white catoptric light, 41 feet high, visible 6 miles. White, with red diamond on side facing channel, square, wood building, 38 feet high. Light visible from all points of approach.

Inner range light, about $\frac{1}{2}$ mile N. from outer one. Fixed white catoptric light, 60 feet high, visible 6 miles. Shown from dormer window of a house. Day beacon of slatwork, 20 ft. high by 12 wide, painted white, shows above ridge of house. To enter Crapaud Harbour from the Strait of Northumberland vessels should bring the Leard's range lights into alignment and keep them in one on a N. course until the lights of Wright's range are in alignment, when they should follow this range N. W. $\frac{1}{4}$ N. until the red light in Palmer's wharf is in alignment with the front light of Leard's range. These two in one will lead in from the black buoy at the entrance to the dredged cut, through the cut to the wharves N N E, but strangers entering at night are advised to anchor in the road at this last described turning point near the black buoy, as they will be in good anchorage inside Tryon Shoals, while it is not safe to attempt the dredged cut at night.

TRYON SHOAL WHISTLING BUOY, in $5\frac{1}{2}$ fathoms, off south extremity. Lat. N. $46^{\circ} 8' 55''$, lon. $63^{\circ} 31' 48''$ W. B own iron buoy with "Tryon Shoal Buoy" in white; surmounted by 10 inch whistle. Left to starboard going up strait to North Westward.

From the buoy Crapaud Chapel N. E. $\frac{1}{4}$ E. $5\frac{1}{2}$ miles, just open of range light on point and Carleton Point N. N. W. $\frac{1}{2}$ W. $9\frac{3}{4}$ miles just open of C. Traverse.

SEA COW HEAD, lat. N. $46^{\circ} 19' 10''$, lon. $63^{\circ} 48' 25''$ W. Fixed white catoptric, visible 15 miles. White, octagonal, wood building, white dwelling near by.

INDIAN POINT, E. edge of shoal, on S. side of channel, in Bedeque Bay. Lat. $46^{\circ} 22' 50''$ N. lon. $63^{\circ} 48' 45''$ W. Fixed white catoptric with green sector, 48 feet high, visible 13 miles. White octagonal wood building on a circular stone pier. Green between E. by N. $\frac{1}{2}$ N. and E. S. E. over Miscouche Shoals only.

SUMMERSIDE, railway wharf, Bedeque Bay, fixed red in line of range, white in harbour, square tower on roof of railway freight shed.

Back range, $\frac{3}{4}$ mile E $\frac{1}{4}$ S from front light, fixed red, 65 feet high, white square wood, open frame work, boarded in front and surmounted by a red lantern.

After Indian Point light is abeam, haul in E. by S. until range lights are in one, and keep alignment up to railway wharf.

CAPE EGMONT, on point, lat. $46^{\circ} 24' 20''$ N., lon. W. $64^{\circ} 7' 45''$; fixed red catoptric, 72 feet high, visible 10 miles. White square wood building, 45 feet high, with dwelling attached.

WEST POINT, on Sand Beach, lat. $46^{\circ} 37' 30''$ N., lon. $64^{\circ} 23' 20''$ W, Red and white catoptric light, revolving $22\frac{1}{2}$ secs. One red and three white flashes in $1\frac{1}{2}$ minutes. Visible 13 miles. Broad red and white horizontal bands, square, wood with dwelling attached, 67 feet high.

West Point whistling buoy, painted red, in 13 fathoms water $\frac{3}{4}$ mile W. of the middle of the outer shoal. From the buoy West Point light bears S. E. by S. $5\frac{3}{4}$ miles, and Wolfe Point E. by S. 5 miles.

Pickford & Black, West India S. S. Line between Halifax, Bermuda, Turk's Island and Jamaica.

Macdonald & Co., Steam Wrecking Pumps for Sale or Hire.—See page 4 cover.

Ships Deck Pumps, MACDONALD & CO'S.—See adv. page 4 cover.

BIG MIMINEGASH, 500 feet south of breakwater, lat $46^{\circ} 53' N.$, lon $W.$ $64^{\circ} 13'$. Fixed red and white catoptric light; 30 feet high, visible 5 miles. Lantern on a mast with white shed at base. Shows red from N. E. round through E. to S. covering Miminegash Reef, and white from S. to S. W. by W. which includes line of range. Vessels N. of reef bearing westward will be clear of it when red disappears.

Rix's Point, 1 mile S. $\frac{1}{2}$ W. from front light; fixed white catoptric light, 45 feet high. Lantern on a mast with white shed at base. Shows over a small arc on each side of the line of range. These lights in line lead to the outer end of N. breakwater.

NORTH POINT, on point, lat $N.$ $47^{\circ} 3' 46''$, lon $W.$ $63^{\circ} 59' 10''$, white catoptric, revolving one minute; height 80 feet, visible 14 miles. White octagonal, wood, surmounted by a red iron lantern, dwelling near by.

ST. PETERS.—Two range lights, white, catoptric. Buildings white square wood. Outer 18 feet S. W. from outer end of breakwater. The back range light 1458 feet S. by W. from the front light. Buoys indicate best channel. Lat $N.$ $46^{\circ} 26' 40''$, lon $W.$ $62^{\circ} 44' 50''$.

SAVAGE HARBOUR.—Two range lights, white catoptric, shown from lanterns on masts with brown sheds at base. Outer light on McEachren's farm on inner shore of harbour, lat $N.$ $46^{\circ} 25' 40''$, lon $W.$ $62^{\circ} 48' 30''$. Lights in range lead to mid-channel buoy outside bar. Vessels open the lights on starboard bow, after passing buoy, until inner fairway buoy is reached, where channel leaves range. Only 5 feet water on bar at low tide. Outer light liable to be moved.

COVE HEAD.—Two range lights, showing white lights from lanterns hoisted on masts, lat $N.$ $46^{\circ} 26' 10''$, lon $W.$ $63^{\circ} 8' 45''$. Front light close to edge of sand beach at entrance to harbour. Back light 600 feet from front.

NORTH OR GRAND RUSTICO.—Two range lights. Back light, west side of entrance to harbour, lat $N.$ $46^{\circ} 27' 42''$, lon $W.$ $63^{\circ} 17' 15''$, white square wood with dwelling attached, 35 feet high, shows fixed white light, catoptric, 40 feet above high water mark. Front range light 225 feet from main light, shows fixed red light from lantern hoisted on mast, 22 feet above high water. The alignment leads to black can buoy outside bar in 13 feet water, after passing which vessels must open lights leaving them on starboard side to clear breakwater on N. side of entrance to harbour. A small spar buoy marks outer extremity of breakwater, of which the part above water has been carried away. Outer light liable to be moved to suit channel.

NEW LONDON.—Two range lights visible over 110° between Sim's Point and sand hills on E. side of harbour. In range they show the entrance to the harbor. Outer range light liable to be moved to suit shifting of the channel. The outer light is a white square wood, open framework below, brown 21 feet high, showing a white catoptric light, elevated 24 feet above water. The back light is on beach 1500 feet S. W. of main light, building white square wood with dwelling attached. Iron lantern brown, height 35 feet from base to vane. Shows a fixed red catoptric light, elevated 45 feet above high water. Lat $N.$ $46^{\circ} 31' 10''$, lon $W.$ $63^{\circ} 28' 52''$.

DARNLEY POINT, lat $N.$ $46^{\circ} 34' 0''$, lon $W.$ $63^{\circ} 39' 0''$. Two range lights, red, lanterns on masts with white shed at base. Diamond beacon extends from top of mast to roof of shed. Front range near shore line $6\frac{1}{2}$ cables south-easterly from C. Aylesbury. Back range 1341 feet S. W. by W. from front range light. Alignment leads to black can buoy at Eastern Passage over bar at entrance to Malpeque harbor. Vessels entering keep the alignment until they bring the Fish Island lights in one.

FISH ISLAND, lat $N.$ $46^{\circ} 34' 52''$, lon $W.$ $63^{\circ} 42' 17''$. Entrance to Malpeque or Richmond Bay, white square wood with dwelling attached,

on inside of island, 46 feet base to vane, fixed white catoptric light, 50 feet high. Front range 1200 feet S. E. by E $\frac{1}{2}$ E. from main light, open frame work, lantern white, fixed white light 18 feet high.

Darnley Basin range, 400 feet S. by E. $\frac{1}{2}$ E. from main light. Fixed red light, shown from lantern on mast, 18 feet high. The main light is a sea light, the smaller one in range with it shows the channel over the bar with 15 feet, and ranging with the fairway buoy inside the bar, whence the channel is marked by the harbour buoys. There is a 13 foot spot between the Eastern Passage buoy and the fairway buoy.

LITTLE CHANNEL.—Two range lights, fixed white, lat N. $46^{\circ} 40' 0''$, lon. W. $63^{\circ} 52' 40''$. Outer light on Conway Inlet, N. side, white square wood, with kitchen attached 30 feet base to vane, light fixed white catoptric 26 feet above water. Front range 200 feet from main light, open framework, lantern white, fixed white light, catoptric, 16 feet high. In one, lead through channel with 5 feet at entrance to harbour. There is a ballast heap in the alignment at the point of the S. sand hill, to pass this the front light must be opened to N. Outer light liable to be moved to suit the change in the channel.

SANDY ISLAND.—Coast light S. W. part of island, entrance to Cascumpec, lat N. $46^{\circ} 48' 22''$, lon W. $64^{\circ} 2' 20''$. White square wood with dwelling attached, 41 feet base to vane, fixed white catoptric light, 45 feet above high water, visible 12 miles.

Northport Range Lights. The masts heretofore in use have been substituted by two open skeleton lighthouse towers. Each tower is an open framed wooden building surmounted by a square wooden lantern. and has its side facing the channel slatted to make it a more conspicuous leading mark. The whole building is painted white. Both lights are fixed red and should be visible 3 miles on the line of range. The front tower stands on a bank 990 feet W. $\frac{1}{2}$ N. from the position formerly occupied by the front range mast near the outer end of the Queen's wharf. It is 29 feet high from the ground to the vane of the lantern. The light is 31 feet above high water. Lat N. $46^{\circ} 48' 16''$, lon W. $64^{\circ} 2' 6''$. The back range tower stands 1125 feet W. $\frac{1}{2}$ N. from the front one and is 41 feet high and the light is elevated 42 feet above high water mark.

Vessels entering Cascumpec harbour keep the Savage Island range lights in one until the Northport range lights are nearly closed when they should change their course for the Northport range, being careful not to overrun the line of range, as the channel at the point of intersection is narrow and the tide strong. The Northport range leads in to the wharf clear of all obstructions.

BIG TIGNISH.—Two range lights. Back range light on beach at inner end of N. breakwater pier. Lat N. $46^{\circ} 57' 35''$, lon W. $63^{\circ} 59' 20''$. Building white square wood, with a black horizontal band 33 feet high. Fixed white catoptric 35 feet high, visible 11 miles. Front light on outer end of N. breakwater pier 620 feet S. E. $\frac{1}{2}$ E. from main light. Fixed red light is shown from a lantern on a mast with white shed at base. Light elevated 18 feet above high water mark, and visible 5 miles. These two lights in range guide N. W. $\frac{1}{2}$ W. between the breakwaters.

BERMUDA.

GIBBS HILL, on summit, lat $32 15 4$ N, lon $64 51 36$ W, revolving white light every minute, 362 feet high, visible 24 miles. Seen around horizon except between the bearings S 50° W, and S 54° W, also 55° W to S. Building circular, iron, white.

MOUNT HILL, near St. David's Head, lat $32 22$ N, lon $54 41$ W, fixed white, 208 feet high, visible over 270° from N E $\frac{1}{2}$ E to S E $\frac{1}{2}$ S, bearing S E by S. The light is hidden by St. George's Island.

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NAUTICAL ALMANAC.

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GULF OF ST. LAWRENCE.

ST. PAUL'S ISLAND, on rock of N E point of Island, lat 47 13 55 N, lon 60 8 20 W, fixed white, visible 20 miles, 140 feet high, white octagonal wood building, height 40 feet. Obscured between N by E $\frac{1}{2}$ E and E N E. Not lit from Dec. 31st to April 1st, unless open water is visible.

ST. PAUL'S ISLAND, S W point of Island, lat 47 11 48 N, lon 60 8 45 W, white revolving light every minute, visible 20 miles, 140 feet high, white octagonal wood building, height 40 feet. Obscured on bearings from S S E to W $\frac{1}{2}$ N. Not lit from the 31st December to 1st April, unless open water is visible. A fog whistle on the S side of the Island, S W of Atlantic Cove, about $\frac{1}{2}$ mile from the Humane Establishment, sounds for 5 seconds in each minute.

CARLETON POINT, Bay Chaleur, lat 48 5 15 N, lon 66 7 0 W, fixed white light, visible 12 miles, 32 feet high, white wood building, height 28 feet. Hand horn answer signal.

PASPEDIAC, near extremity of Spit, lat 48 1 2 N, lon 65 14 20 W, fixed white light, visible 13 miles, 55 feet high, white square wooden building, height 54 feet. In running into the harbor the light changes to red, covering the anchorage.

MASQUEREAU POINT, Bay Chaleur, lat 48 12 30 N, 64 46 25 W, alternate red and white every minute, visible 12 miles, 56 feet high, white square building, height 27 feet. Marine telegraph and signal station. Hand horn answer signal.

GRAND RIVER, mouth of River, coast of Gaspé, lat 48 24 35 N, lon 64 28 35 W, fixed red, visible 8 miles, 52 feet high, white hexagonal, wood, with red iron lantern, height 43 feet. Hand horn answer signal.

CAPE DESPAIR, Bay Chaleur, lat 48 25 40 N, lon 64 18 30 W, revolving white light every half minute visible 15 miles, 90 feet high, white, square, wood, with red roof, height 43 feet. Marine telegraph and signal station. Hand fog horn answer signal station.

PEARCE, on Whitehead Cape, lat 48 30 30 N, lon 64 12 40 W, fixed white light, visible 13 miles, 149 feet high, white, square, wooden building, height 29 feet. Hand horn answer signal.

POINT PETER, on flat rock or plateau off the point, lat 48 37 50 N, lon 64 9 0 W, revolving red light every 30 seconds, visible 10 miles, 77 feet high, white, square, wood, with dwelling attached, height 50 feet, visible from all points seaward. Hand horn answer signal from vessel.

GASPE, O'Hara Point Wharf Basin, lat 48 49 45 N, lon 64 28 45 W, fixed red, visible 7 miles, 30 feet high, white light, with red roof, square wood.

GASPE BAY LIGHTSHIP at Sandy Beach Point, moored off extreme of Spit, lat 48 50 35 N, lon 64 24 30 W, to red 29, white 37 from deck, fixed lights, painted red, with "light ship" on her side. Red on fore, and white on mainmast. Hand fog horn answers signals from vessels.

GASPE CAPE, lat 48 45 15 N, lon 64 9 35 W, revolving white, 3 flashes, 15 seconds apart, followed by eclipse of 30 seconds, complete revolution one minute, visible 12 miles, square, wood, with dwelling attached, light 350 feet high, building 30 feet. A fog gun is fired every half hour. Hand fog horn answers signal.

CAPE ROSIER, on Cape, lat 48 51 38 N, lon 64 11 50 W, fixed white, visible 16 miles, white, circular, clapboarded, light, 136 feet high, building 112 feet. A steam fog whistle sounds a blast of ten seconds every minute. Marine telegraph and signal station. If the whistle is out of order, a horn will sound similar blasts.

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- HEATH POINT**, east end of Anticosti Island, lat 45 5 20 N, lon 61 42 16 W, fixed white light visible 15 miles, white, with a red horizontal band, circular, faced and clapboarded, light 110 feet high, building 90 feet. The lighthouse is always kept open to the southward of Cormorant Point; visible between the bearings S W by N W and E. Depot of provisions here for shipwrecks. A fog gun is fired every half hour. Marine telegraph and signal and ice report station.
- BAGOT'S BLUFF**, $\frac{3}{4}$ mile W from S point Anticosti Island, lat 49 3 50 N, lon 62 15 50 W, flash white light every 20 seconds, visible 14 miles, white with a red vertical stripe, hexagonal, light 75 feet high, building 54 feet. A fog whistle 100 yards E of lighthouse, sounds every 10 seconds in every minute. Marine telegraph and signal station, and ice report station.
- SOUTH-WEST POINT**, Anticosti Island, lat 49 23 45 N, lon 63 35 46 W, revolving white light every minute, visible 15 miles, white, with two red horizontal bands, circular, clapboarded, light 100 feet high, building 75 feet, visible between bearings of N N W, round by southward to SE by E. Marine telegraph and signal station, and ice report station.
- WEST POINT**, extreme W point, Anticosti Island, lat 49 52 30 N, lon 64 31 40 W, fixed white light, visible 15 miles, with two red vertical stripes, circular, clapboarded, light 112 feet high, building 109 feet. A fog gun is fired every half hour. Marine telegraph and signal, and ice report station.
- FAME POINT** County of Gaspé, South Coast, lat 49 6 48 N, lon 64 36 20 W, fixed and flash light, white, with red flashes every 20 seconds, visible 20 miles, white, with a black horizontal band, square wood, light 200 feet high, building 50 feet. Marine telegraph and signal station.
- CAPE MAGDALEN**, on Cape, lat 49 15 30 N, lon 65 19 15 W, alternating red and white light, visible every two minutes, visible red 15, white 20 miles, white with a black vertical stripe, hexagonal, light 147 feet high, building 54 feet. Marine telegraph and signal station.
- MARTIN RIVER**, on S shore Gaspé County, lat 49 13 20 N, lon 66 9 0 W, fixed white light, visible 17 miles, white, with two black horizontal bands, square, wood, with dwelling attached, light 125 feet high, building 54 feet. Marine telegraph and signal station.
- SEVEN ISLANDS**, on Carousal Island, lat 50 5 25 N, lon 66 23 5 W, fixed white light, visible 20 miles, white with red horizontal band, square, wood, with dwelling attached, light 200 feet high, building 39 feet. Powder cotton charges fired every 20 minutes.
- CAPE CHATTE**, N E point of Cape, lat 49 5 55 N, lon 66 45 29 W, revolving white light every 30 seconds, visible 18 miles, white, with two black vertical stripes, square, wood, light 120 feet high, building 26 feet, visible from all points of approach seaward. Marine telegraph and signal station.
- EGG ISLAND**, 200 yards from S end of the Island, lat 49 38 0 N, lon 67 10 0 W, revolving white light every $1\frac{1}{2}$ minutes, visible 15 miles, white, with a red vertical stripe, octagonal, surmounting dwelling, light 48 feet high.
- POINTLESS MONTS** about $1\frac{1}{4}$ mile N E of Point, lat 49 19 35 N, lon 67 21 0 W, fixed white light, visible 15 miles, white, with two red horizontal bands, circular, clapboarded, light 100 feet high, building 90 feet. A fog gun is fired every half hour. Marine telegraph and signal station.

NEWFOUNDLAND.

- CAPE BAULD**, on high ground near extremity, lat 51 38 50 N, lon 55 25 W, red and white, alternate 45 seconds, 154 feet high, building white, square, 54 feet high, visible 18 miles. Fog horn in thick weather sounds 10 seconds in every minute.

- CAPE NORMAN, Straits of Belle Isle, lat 51 38 7 N, lon 55 54 6 W, white light revolving every two minutes, visible 20 miles, 116 feet high, white hexagonal tower, height 55 feet. Visible from all points of approach seaward. Fog horn 67 feet above high water mark, 212 feet E of light, gives blast of 5 seconds every 35 seconds.
- POINT RICH, Straits of Belle Isle, lat 50 42 0 N, lon 57 24 30 W, flash white light every 15 seconds visible 18 miles, 130 feet high, white hexagonal tower, height 40 feet. Visible from all points of approach seaward. A fog horn giving a blast of 5 seconds every 35 seconds, has been established here.
- CAPE RAY, on west side of Cape, 650 feet from shore, lat 47 37 0 N, lon 59 18 0 W, revolving white light every 20 seconds, visible 17 miles, white octagonal building, white outbuildings, red roofs, 75 feet high, height of light 127 feet. Fog horn blasts 10 seconds in each minute.
- GULL ISLAND, on Summit lat 50 0 N, lon 55 22 W, one white light, occulting every 20 seconds, building circular, red and white stripes, 43 feet high.
- LONG POINT, Toulungate, lat 49 41 N, lon 54 49 W, revolving white light every 30 seconds, visible 27 miles, 331 feet high, tower red, keeper's dwelling attached, white with red roof.
- CAN ISLAND, Seldom-come-by, lat 49 25 5 N, lon 44 10 35 W, fixed white light, 85 feet high, visible 10½ miles, tower and dwelling of wood attached. The light illuminates an arc of the horizon of 270°.
- OFFER WADHAM ISLAND, lat 46 16 N, lon 53 45 W, fixed white light, 100 feet high, visible 10 miles, circular brick tower, dwelling white and detached.
- CABOT, Stinking Island, Bonavista Bay, lat 49 10 26 N lon 53 21 21 W, white, light making one complete revolution in a minute, appearing about 11 seconds and 9 seconds dark. Iron light tower in centre of square wooden building. Roofs flat; sides banded horizontally red and white alternately.
- PUFFIN ISLAND, Greenspond, lat 49 3 37 N, lon 53 37 27 W, fixed red light, 85 feet high visible 10½ miles, lighthouse granite, with dwelling attached. The light is visible N by E through S to W by N by compass.
- CAPE BONAVISTA, lat 48 41 50 N, lon 53 5 20 W, revolving light, alternately, white and red every 1 minute and 30 seconds, 50 feet high, visible 15 miles. By keeping this light open with Cape L'Argent, it will carry you clear of the Flower Rocks.
- GREEN ISLAND, at the entrance of Catalina Harbor, Trinity Bay, lat 48 30 16 N, lon 53 2 40 W, fixed white light, 92 feet above high water, visible from E N E seaward to S W 11 miles. Vessels bound northward by keeping this light open with the North Head of Catalina, until Bonavista light opens with Cape LeJean, will give the Flower Rocks an ample berth; or when coming from northward and bound for Catalina, by giving the N Head a moderate berth, will clear the Brandies Rocks by steering from Green Island light.
- FORT POINT, Trinity, lat 48 21 55 N, lon 53 20 21 W, fixed white light visible 11 miles, upon a wooden tower painted white, 75 feet high. This light illuminates the arc of the horizon of 320°. In entering the harbor the light must be kept on the port hand.
- BACCALIEU ISLAND, northern end, lat 48 8 51 N, lon 52 47 50 W, white revolving light, showing a flash every 20 seconds, height 443 feet above high water, visible 24 miles, brick tower, dwelling white with red roof detached from the tower. When the southern end of the island bears N N E, the light will not be visible when nearer the island than 8 miles.
- CARBONEAR ISLAND, lat 47 44 24 N, lon 59 9 22 W, fixed white light, 195 feet high, visible 16 miles, tower and dwelling in one building; the whole horizon is illuminated.

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Pickford & Black's West India Steamship Line, between Halifax and Demerara.

Macdonald & Co., Machinists, Steam-fitters, Brass-founders, Halifax.

- HARBOR GRACE ISLAND, lat 47 42 45 N, lon 13 8 15 W, revolving light, 2 white flashes followed by 1 red, each attains its greatest brilliancy every 30 seconds, visible 15 miles.
- HARBOR GRACE BEACH BEACON and LIGHT, lat 47 41 28 N, lon 53 12 35 W, fixed white light, 40 feet high in a white tower on the point of beach at the entrance of Harbor Grace, visible $7\frac{1}{2}$ miles. Entering it with a fair or leading wind, bring it to bear W or S W, and by keeping the light or building a little on the starboard bow, it will bring you clear of the bar on which at low water there is not more than eight feet of water.
- GREEN POINT, Bay Roberts, on Point, lat 47 37 N, lon 53 10 W, one white light fixed, visible 8 miles. Building circular, red and white bands. Immediately beneath the principal light is a projecting lantern from which 3 lights are exhibited. The two outer lights show white, and the centre light in line with Southern Rocks bearing on S W $\frac{1}{2}$ W, show red.
- CAPE ST. FRANCIS, lat 47 48 30 N, lon 52 46 50 W, fixed red light, 123 feet high, visible 12 miles.
- CAPE ST. FRANCIS FOG ALARM.—During thick weather and snow storms a powerful Siren Trumpet will be sounded 5 seconds—5 seconds and silent 45 seconds in each minute. The buildings are of wood, painted white, the roofs flat, lantern on higher roof elevated above it on a square block; the tower building is the fog alarm house.
- FORT AMHERST, at the entrance of St. John's, lat 47 35 54 N, lon 52 40 18 W, fixed white light, 114 feet high, visible 12 miles. When Cape Spear is enveloped in fog, a heavy piece of ordnance is also discharged at this fort every hour during daylight to assist vessels in making the harbor.
- ST JOHN'S, a diamond-shaped mark, painted black, has been erected close to the sight of the gable of S. March & Sons store, and a large placard is placed behind it with the words "Leading Mark" painted on it. The diamond on with centre cross of R. C. Cathedral is the temporary day mark. A red light is shown from a pole a few yards eastward of site of Custom House. Leading light in line N W $\frac{3}{4}$ W.
- CAPE SPEAR, lat 47 31 11 N, lon 52 36 59 W, white light revolving every minute, visible 22 miles, 264 feet high.
- CAPE SPEAR ALARM.—A trumpet, sounded by the escape of compressed air, was placed in 1878 at this station, in a wooden building on the Bill of the Cape, nearly 600 yards N N E from the light house. It will be sounded for 7 seconds of each minute during thick weather or snow storms. The range of sound will probably be from $\frac{1}{2}$ to 10, according to the direction and intensity of the wind or other atmospheric disturbance.
- FERRYLAND HEAD, lat 47 0 58 N, lon 52 51 7 W, fixed white light, 200 feet high, visible 16 miles, red brick tower, dwelling white with red roof, detached from the tower.
- CAPE RACE, on the Cape, lat 46 39 24 N, lon 53 4 17 W, white light revolving every 30 seconds, visible 30 miles. 180 feet high, circular, S E face striped red and white vertically, height 40 feet. Whistle sounds 10 seconds in every minute, and heard from ten to thirty miles, according to wind and weather.
- CAPE PINE, lat 46 37 4 N, lon 53 31 45 W, fixed white light, 314 feet high, visible 20 miles, iron tower.
- LAHAVE, on Point, lat 46 54 N, lon 53 37 W, 1 fixed white light, visible 9 miles. Building circular, red and white bands.
- CAPE ST. MARY'S, lat 46 49 34 N, lon 51 11 34 W, revolving light, producing alternately every minute a brilliant red and white light, 390 feet high, visible 23 miles, brick tower, with dwelling on each side, roof red.

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Pickford & Black's West India Steamship Line between Halifax and Demerara.

- DODDING HEAD**, Great Bruin Island, lat 47 0 26 N, 55 4 0 W, revolving light, producing a brilliant white light every minute, 430 feet high, visible 24 miles.
- ALLAN ISLAND**, Lamsline lat 46 51 0 N, lon 55 57 50 W, (both approx.) fixed white light, 64 feet high, visible 9 miles, illuminated arc 270°, wood octagonal tower, red and white on alternate sides.
- BRUNET ISLAND**, Mercher's Head, Fortune Bay, lat 56 59 30 N, lon 47 16 W, flashing white light, greatest brilliancy every 10 seconds, 408 feet high, visible 35 miles in every direction from N round E and S to W N W.
- GARNISH**, Fortune Bay, lat 47 14 N, lon 55 24 W, a beacon tower of wood, carrying an octagon and lantern, in which a red light is exhibited.
- BELLOROM**, Fortune Bay, lat 47 29 N, lon 55 27 15 W, fixed white light, 25 feet high, visible 7 miles, white wooden tower. In entering the harbor the light must be kept on the port hand.
- ROCKY POINT**, Harbor Breton. Fortune Bay, lat 47 27 30 N, lon 55 47 45 W, a square wooden tower, carrying an octagon and lantern in which a fixed white light will be exhibited. The apparatus is a simple argand burner, with a red light to mark the Harbor Rock.
- PASS ISLAND**, entrance to Hermitage Bay, lat 47 29 15 N, lon 56 12 2 W, fixed white. A fixed red light is placed below the white light to distinguish the rocks and reefs extending from the Wolf Rocks, bearing (from the light house) S 74 47 W, to Bessertere Point S. 61, 33 E. The reef over the Wolf Rock is about 1½ miles from the island. At a distance of about 4 miles the two lights merge into one, 281 feet high, visible 19 miles, illuminated arc 360°. Wood house, sides painted white, flat roof, on which the principal lantern stands. The one showing red light is 14 feet lower and at the angle of the building.
- BEACON**, Ireland's Eye, entrance to LaPoil Bay, a square white building with three black bands has been erected on the island; it is 76 feet high and supported on chains.
- BOAR ISLAND**, Burges lat 47 36 10 N, lon 57 35 10 W, fixed red light, 240 feet high, visible 17 miles, tower wood, on dwelling.
- ROSE BLANCHE POINT**, lat 47 35 48 N, lon 58 41 31 W, fixed white, 95 feet high, visible 11 miles, granite light house, upon the eastern head, dwelling and tower attached. The light illuminates the horizon from E by S through S to W by compass, Shag Island Black Rock bears W, from the light, and distant about a mile. Rose Blanch Shoals W S W half a mile, and Petitas Black Rock E by S 3 miles.
- CHANNEL HEAD**, Port au Pasque lat 47 33 47 N, lon 59 7 10 W, fixed red light, 90 feet high, visible 7 miles, square light, tower and keeper's dwelling are detached wooden buildings.
- GALLANTRY HEAD**, Island of St. Peter's, lat 46 45 30 N, lon 58 27 W, flash light, one red after two white flashes, with interval of 20 seconds, about 100 feet high, visible 18 miles. The light is hidden at the northward by the high land of St. Peter's.
- GALLANTRY HEAD**, Fog Signal Steam Whistle, sounded from periods of 6 seconds, at intervals of 1 minute, 1st March to 1st December.
- SOUTH ENTRANCE OF ST. PETER'S**—The entrance of the Harbor of St. Peter's called South Channel, is marked by two small fixed lights—one white illuminating ¾ of the horizon, and placed on the Battery; the other red on the plain at the N of the town—white lights, eleven metres high, visible 3 miles, red, 19 metres high, visible 3 miles. The line connecting these two lights indicates the middle channel. As soon as the red light is seen on the left of Cape Eagle, vessels coming from Columbiar in beating into the N E entrance will have nothing to fear from the shoals off Cape Rogers.

POINT VERB. Great Placentia, lat 47 14 11 N, lon 54 1 19 W, a fixed white light will be exhibited nightly, from sunset to sunrise, 98 feet above the level of the sea, and should be visible in clear weather 17 miles. The tower and dwellings are of wood and attached, the vertical parts of the building are painted white, the roof of the dwelling is flat. The illuminating apparatus is dioptric, of the 5th order, with a single argand burner. The whole water horizon is illuminated.

ISLAND OF DOGS, called Point a Leconte—A light is exhibited on the S W point of this Island, at a place called Point a Leconte, 437 feet high, visible 7 miles; the extent of the light is circumscribed in a sector of 163° presenting two cones of light, on white 40° will light the passage to the S E so as to permit vessels which remain in position within this cone to avoid at the right the shoal Betaille, and to the left the rock of Cape Noir and the rock Bertrand. The second cone is red of 123°; it should be avoided by vessels entering S E passage and will enable them when they have quitted the white cone to come to anchor in the roadstead, or in the Barachois, in following the line of the white light from Point aux Canons, and of the red light from the interior of the city.

INTERNATIONAL STEERING and SAILING RULES.

From the Order-in-Council dated 1897.

REGULATIONS FOR PREVENTING COLLISIONS AT SEA.

PRELIMINARY.

ART. 1.—In the following rules every steam ship which is under sail and not under steam is to be considered a sailing ship; and every steam ship which is under steam, whether under sail or not, is to be considered a ship under steam.

RULES CONCERNING LIGHTS.

The lights mentioned in the following articles, numbered 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11, and no others, shall be carried in all weather, from sunset to sunrise:

ART. 2.—A steamship when under weigh shall carry,—

(a) **ON OR IN FRONT OF THE FOREMAST,** or if a vessel without a foremast, then in the forepart of the vessel, at a height above the hull of not less than 20 feet, and if the breadth of the ship exceeds 20 feet, then at a height above the hull not less than such breadth, so, however, that the light need not be carried at a greater height above the hull than 40 feet, a bright white light so constructed as to show an unbroken light over an arc of the horizon of 20 points of the compass, so fixed as to throw the light 10 points on each side of the ship, viz., from right ahead to 2 points abaft the beam on either side; and of such a character as to be visible at a distance of at least 5 miles.

(b) **ON THE STARBOARD SIDE,** a green light, so constructed as to show an unbroken light over an arc of the horizon of 10 points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the starboard side, and of such a character as to be visible at a distance of at least 2 miles

(c) **ON THE PORT SIDE,** a red light so constructed as to show an unbroken light over an arc of the horizon of 10 points of the compass, so fixed as to throw the light from right ahead to two points abaft the beam on the port side, and of such a character as to be visible at a distance of at least 2 miles.

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(d) The said Green and Red side-lights shall be fitted with inboard screens projecting at least 3 feet forward from light, so as to prevent these lights from being seen across the bow.

(e) A steam vessel when under way may carry an additional white light similar in construction to the light mentioned in subdivision (a). These two lights shall be so placed in line with the keel that one shall be at least 15 feet higher than the other, and in such a position with reference to each other that the lower light shall be forward of the upper one. The vertical distance between these lights shall be less than the horizontal distance.

ART. 3.—A STEAM SHIP when towing another ship, shall, in addition to her side lights, carry two bright white lights in a vertical line one over the other, not less than 6 feet apart, and when towing more than one vessel shall carry an additional bright white light 6 feet above or below such lights, if the length of the tow, measuring from the stern of the towing vessel to the stern of the last vessel towed, exceeds 600 feet. Each of these lights shall be of the same construction and character, and shall be carried in the same position as the white light mentioned in article 2 (a), except the additional light, which may be carried at a height of not less than 14 feet above the hull. Such steam vessel may carry a small white light abaft the funnel or aftermast for the vessel towed to steer by, but such light shall not be visible forward of the beam.

ART. 4.—(a) A VESSEL which from any accident is not under command shall carry at the same height as the white light mentioned in article 2 (a), where they can best be seen, and, if a steam vessel, in lieu of that light, two red lights, in a vertical line one over the other, not less than 6 feet apart, and of such a character as to be visible all around the horizon at a distance of at least 2 miles; and shall by day carry in a vertical line one over the other, not less than 6 feet apart, where they can best be seen, two black balls or shapes each 2 feet in diameter.

(b) A vessel employed in laying or in picking up a telegraph cable shall carry in the same position as the white light, mentioned in article 2 (a), and if a steam vessel, in lieu of that light, three lights in a vertical line one over the other, not less than 6 feet apart. The highest and lowest of these lights shall be red, and the middle light shall be the white, and they shall be of such a character as to be visible all around the horizon, at a distance of at least two miles. By day she shall carry in a vertical line one over the other, not less than 6 feet apart, where they can best be seen, three shapes not less than two feet in diameter, of which top and bottom shall be globular in shape and red in colour, and the middle one diamond in shape and white.

(c) The ships referred to in this article, when not making way through the water, shall not carry the side lights, but when making way shall carry them.

(d) The lights and shapes required to be shown by this article are to be taken by other ships as signals that the ship showing them is not under command, and cannot, therefore, get out of the way. These signals are not signals of vessels in distress and requiring assistance. Such signals are contained in article 31.

ART. 5.—A SAILING VESSEL UNDER WAY, or being towed, shall carry the same lights as are provided by Article 2 for a steamship under way, with the exception of the white light, which she shall never carry.

ART. 6.—Whenever, as in the case of small vessels during bad weather, the green and red side-lights cannot be fixed, these lights shall be kept ready for use; and shall, on the approach of or to other vessels, be exhibited on their respective sides in sufficient time to prevent collision, in such manner as to make them most visible, and so that the green light shall not be visible on the port side, nor the red light on the starboard side, nor, if practicable, more than two points abaft the beam on their respective sides.

Pickford & Black, Agents Funch, Eyde & Co, New York.

Macdonald & Co., Manufacturers of Ships' Patent Water Closets, Halifax.—See adv. p. 4 cover.

Ventilators made by MACDONALD & CO.—See adv. p. 4, cover.

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To make the use of these portable lights more certain and easy, the lanterns containing them shall each be painted outside with the color of the light they respectively contain, and shall be provided with proper screens.

ART. 7.—(1) Steam vessels of less than 40 tons shall carry,—

(a) In the forepart of the vessel or on or in front of the funnel, where it can best be seen, and at a height above the gunwale of not less than 9 feet, a bright white light constructed and fixed as prescribed in article 2 (a), and of such a character as to be visible at a distance of at least 2 miles.

(b) Green and red side-lights constructed and fixed as prescribed in article 2 (b) and (c), and of such a character as to be visible at a distance of at least 1 mile, or a combined lantern, showing a green light and a red light from right ahead to 2 points abaft the beam on their respective sides. Such lantern shall be carried not less than 3 feet below the white light.

(2) Small steamboats, such as are carried by sea-going vessels, may carry the white light at a less height than 9 feet above the gunwale, but it shall be carried above the combined lantern, mentioned in subdivision 1 (b).

(3) Vessels under oars or sails, of less than 20 tons, shall have ready at hand a lantern with a green glass on one side and a red glass on the other, which, on the approach of or to the other vessels, shall be exhibited in sufficient time to prevent collision, so that the green light shall not be seen on the port side nor the red light on the starboard side.

(4) Rowing boats, whether under oars or sails, shall have ready at hand a lantern showing a white light which shall be temporarily exhibited in sufficient time to prevent collision.

The vessels referred to in this article shall not be obliged to carry the lights prescribed by article 4 (a) and article 11, last paragraph.

ART. 8.—A pilot vessel when engaged on her station on pilotage duty, shall not carry the lights required by other vessels, but shall carry a white light at the masthead, visible all around the horizon, and shall also exhibit a flare-up light or flare-up lights at short intervals, which shall never exceed 15 minutes. On the near approach of or to other vessels they shall have their side-lights lighted, ready for use, and shall flash or show them at short intervals, to indicate the direction in which they are heading, but the green light shall not be shown on the port side, nor the red light on the starboard side.

A pilot vessel of such a class as to be obliged to go alongside of a vessel to put a pilot on board, may show a white light instead of carrying it at the masthead, and may, instead of the coloured lights above mentioned, have at hand ready for use a lantern with a green glass on one side and a red glass on the other, to be used as prescribed above.

Pilot vessels when not engaged on their station on pilotage duty, shall carry lights similar to those of other vessels of their tonnage.

ART. 9.—Fishing boats shall show such lights as are prescribed for vessels of their tonnage, and shall be under such further regulations as may be adopted for their protection.

ART. 10.—A vessel which is being overtaken by another shall show from her stern to such last mentioned vessel a white light or a flare-up light

The white light required to be shown by this article may be fixed and carried in a lantern, but in such case the lantern shall be so constructed, fitted and screened that it shall throw an unbroken light over an arc of the horizon of 12 points of the compass, viz, for 6 points from right aft on each side of the vessel, so as to be visible at a distance of at least 1 mile. Such light shall be carried as nearly as practicable on the same level as the side-lights

ART. 11.—A vessel under 150 feet in length, when at anchor, shall carry forward, where it can best be seen, but at a height not exceeding 20 feet above the hull, a white light in a lantern so constructed as to show a clear, uniform, and unbroken light visible all around the horizon, at a distance of at least one mile.

Macdonald & Co., Importer of Steam Pumps, &c., Barrington Street, Halifax.—See adv. p. 4, cover.

Pickford & Black's West India S. S. Line between Halifax, Bermuda, Turk's Island and Jamaica.

Brass Hinges, Hasps and Locks, at MACDONALD & CO'S.—See cover.

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A vessel of 150 feet or upwards in length, when at anchor, shall carry in the forward part of the vessel, at a height of not less than 20, and not exceeding 40 feet above the hull, one such light, and at or near the stern of the vessel, and at such a height that it shall not be less than 15 feet lower than the forward light, another such light.

The length of a vessel shall be deemed to be the length appearing on her certificate of registry.

A vessel aground in or near a fairway shall carry the above light or lights and the two red lights prescribed by article 4 (a).

ART. 12.—Every vessel may, if necessary, in order to attract attention, in addition to the lights which she is by these rules required to carry, show a flare-up light or use any detonating signal that cannot be mistaken for a distress signal.

ART. 13.—Nothing in these rules shall interfere with the operation of any special rules made by the government of any nation with respect to additional station and signal lights for two or more ships of war or for vessels sailing under convoy, or with the exhibition or recognition signals adopted by ship-owners, which have been authorized by their respective governments and duly registered and published.

ART. 14.—A steam vessel proceeding under sail only, but having her funnel up, shall carry in day-time, forward, where it can best be seen, one black ball or shape 2 feet in diameter.

SOUND SIGNALS FOR FOG, & C

ART. 15.—A steam vessel shall be provided with an efficient whistle or siren, sounded by steam, or some substitute for steam, so placed that the sound may not be intercepted by any obstruction, and with an efficient fog-horn, to be sounded by mechanical means, and also with an efficient bell. A sailing vessel of 20 tons gross tonnage or upwards shall be provided with a similar fog-horn and bell. In fog, mist, falling snow, or heavy rain storms, whether by day or night, the signals described in this article shall be used as follows viz:—

(a) A steam vessel having way upon her shall sound, at intervals of not more than 2 minutes, a prolonged blast.

(b) A steam vessel under way, but stopped and having no way upon her, shall sound at intervals of not more than two minutes, 2 prolonged blasts, with an interval of about one second between them.

(c) A sailing vessel under way shall sound, at intervals of not more than one minute, when on the starboard tack, one blast, when on the port tack two blasts in succession, and when with the wind abaft the beam, three blasts in succession.

(d) A vessel when at anchor shall, at intervals of not more than 1 minute, ring the bell rapidly for about five seconds.

(e) A vessel, when towing a vessel employed in laying or in picking up a telegraph cable, and a vessel under way, which is unable to get out of the way of an approaching vessel through being not under command, or unable to manœuvre as required by these rules, shall, instead of the signals prescribed in sub-divisions (a) and (c) of this article, at intervals of not more than 2 minutes, sound three blasts in succession, viz: one prolonged blast, followed by two short blasts. A vessel towed may give this signal and she shall not give any other.

Sailing vessels and boats of less than 20 tons gross tonnage shall not be obliged to give the above-mentioned signals, but if they do not, they shall make some other efficient sound-signal at intervals of not more than 1 minute.

SPEED OF SHIPS TO BE MODERATE IN FOG, & C

ART. 16.—Every vessel shall, in a fog, mist, falling snow, or heavy rain-storms, go at a moderate speed, having careful regard to the existing circumstances and conditions.

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A steam vessel hearing, apparently forward of her beam, the fog-signal of a vessel, the position of which is not ascertained, shall, so far as the circumstances of the case admit, stop her engines, and then navigate with caution until danger of collision is over.

STEERING AND SAILING RULES.

ART. 17.—When two sailing ships are approaching one another, so as to involve risk of collision, one of them shall keep out of the way of the other as follows, viz :—

(a) A ship which is running free shall keep out of the way of a ship which is close hauled.

(b) A ship which is close hauled on the port tack shall keep out of the way of a ship which is close hauled on the starboard tack.

(c) When both are running free with the wind on different sides, the ship which has the wind on the port side shall keep out of the way of the other.

(d) When both are running free with the wind on the same side, the ship which is to windward shall keep out of the way of the ship which is to leeward.

(e) A ship which has the wind aft shall keep out of the way of the other ship.

ART. 18.—If two ships under steam are meeting end on, or nearly end on, so as to involve risk of collision, each shall alter her course to starboard, so that each may pass on the port side of the other.

This article only applies to cases where vessels are meeting end on, or nearly on in such a manner as to involve risk of collision, and does not apply to two vessels which must, if both kept on their respective courses, pass clear of each other.

The only cases to which it does apply are, when each of the two vessels are end on, or nearly end on to each other ; in other words, to cases in which, by day, each vessel sees the masts of the other in a line, or nearly in a line, with her own ; and by night to cases in which each vessel is in such a position as to see both the side lights of the other.

It does not apply by day to cases in which a vessel sees another head crossing her own course ; or by night to cases where the red light of one vessel is opposed to the red light of the other, or where the green light of one vessel is opposed to the green light of the other, or where a red light without a green light, or a green light without a red light is seen ahead, or where both green and red lights are seen anywhere but ahead.

ART. 19.—If two vessels under steam are crossing, so as to involve risk of collision, the ship which has the other on her own starboard side shall keep out of the way of the sailing ship.

ART. 20.—When a steam vessel and a sailing vessel are proceeding in such directions as to involve risk of collision, the steam vessel shall keep out of the way of the sailing vessel.

ART. 21.—Where by any of these rules one or two vessels is to keep out of the way, the other shall keep her course and speed.

NOTE.—When, in consequence of thick weather or other causes, such vessels finds herself so close that collision cannot be avoided by the action of the giving-way vessel alone, she also shall take such action as will best aid to avert the collision. (See articles 27 and 29)

ART. 22.—Every vessel which is directed by these rules to keep out of the way of another vessel, shall, if the circumstances of the case admit, avoid crossing ahead of the other.

ART. 23.—Every steam vessel which is directed by these rules to keep out of the way of another vessel, shall, on approaching her, if necessary, slacken her speed or stop and reverse.

ART. 24.—Notwithstanding anything contained in these rules, every vessel, overtaking any other, shall keep out of the way of the overtaken vessel.

Every vessel coming up with another vessel from any direction more than two points abaft her beam, *i. e.*, in such a position, in reference to the vessel

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which she is overtaking, that at night she would be unable to see either of that's vessel's side-lights, shall be deemed to be an overtaking vessel, and no subsequent alteration of the bearing between the two vessels shall make the overtaking vessel a crossing vessel within the meaning of these rules, or relieve her of the duty of keeping clear of the overtaken vessel until she is finally past and clear.

As by day the overtaking vessel cannot always know with certainty whether she is forward of or abaft this direction from the other vessel, she should, if in doubt, assume that she is an overtaking vessel, and keep out of the way.

ART. 25.—In narrow channels every steam vessel shall, when it is safe and practicable, keep to that side of the fairway or mid-channel which lies on the starboard side of such vessel.

ART. 26.—Sailing vessels under way shall keep out of the way of sailing vessels or boats fishing with nets, or lines, or trawls. This rule shall not give to any vessel or boat engaged in fishing the right of obstructing a fairway used by vessels other than fishing vessels or boats

ART. 27.—In obeying and construing these rules, due regard shall be had to all dangers of navigation and collision, and to any special circumstances which may render a departure from the above rules necessary in order to avoid immediate danger.

SOUND SIGNALS FOR VESSELS IN SIGHT OF ONE ANOTHER.

ART. 28.—The word "short blast" used in this article shall mean a blast of about one second's duration.

When vessels are in sight of one another, a steam vessel under way, in taking any course authorized or required by these rules shall indicate that course by the following signals on her whistle or siren, viz :

One short blast to mean : " I am directing my course to starboard."

Two short blasts to mean : " I am directing my course to port."

Three short blasts to mean : " My engines are going full speed astern."

NO VESSEL UNDER ANY CIRCUMSTANCES TO NEGLECT PROPER PRECAUTIONS.

ART. 29.—Nothing in these rules shall exonerate any vessel, owner, or master, or crew thereof, from the consequences of any neglect to carry lights or signals, or of any neglect to keep a proper look-out or of the neglect of any precaution which may be required by the ordinary practice of seamen, or by the special circumstances of the case.

RESERVATION OF RULES FOR HARBOURS AND INLAND NAVIGATION.

ART. 30.—Nothing in these rules shall interfere with the operation of a special rule, duly made by local authority, relative to the navigation of any harbour, river, or inland waters.

DISTRESS SIGNALS.

ART. 31.—When a vessel is in distress and requires assistance from other vessels or from shore, the following shall be the signals to be used or displayed by her, either together or separately, that is to say :—

In the daytime—

1. A gun or other explosive signal fired at intervals of about a minute.
2. The International Code signals of distress indicated by N. C.
3. The distant signal, consisting of a square flag, having either above or below it a ball, or anything resembling a ball.
4. A continuous sounding with any fog-signal apparatus.

At night—

1. A gun or other explosive signal fired at intervals of about a minute.
2. Flames on a vessel (as from a flaming tar-barrel, oil barrel, &c.)
3. Rockets or shells, throwing stars of any color or description, fired one at a time at short intervals.
4. A continuous sounding with any fog-signal apparatus.

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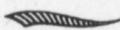
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I.—Cone, hoisted with the apex downwards, indicates "moderate gale is expected," probably at first from an easterly direction.

II.—Cone, with apex pointing upwards, indicates "moderate gale is expected," probably at first from a westerly direction.

III.—Drum, with Cone underneath, the apex pointing downwards, indicates fresh to heavy gale is expected, probably at first from a easterly direction.

IV.—Drum, with Cone above, the apex pointing upwards, indicates fresh to heavy gale is expected, probably at first from a westerly direction.

The Cone, when hoisted by itself, indicates that it is expected that the wind will obtain a velocity of 30 miles an hour, but will not exceed 40 miles; and it is not intended that an ordinary well found vessel should stay in port, but simply as a warning to mariners that strong winds are expected from the quarter indicated.

The Drum will always be hoisted when the velocity of the wind is expected to exceed 40 miles an hour.

The night signal, corresponding to Nos. 1 and 3, is two white lanterns hanging perpendicular.

The night signal, corresponding to Nos. 2 and 4, is two white lanterns hanging horizontally.

NOTES.—Mariners will be able to obtain further information from Drum Agents or by consulting the daily probabilities. Mariners should always bear in mind that the storm signals are merely cautionary, and do not necessarily mean that a storm will occur at the place where the signal is displayed, but that one is expected either there or within such a distance that vessels leaving port would be liable to be caught in it.

The storm warnings issued for Nova Scotia, are received from the Central Office, Toronto, Ont.

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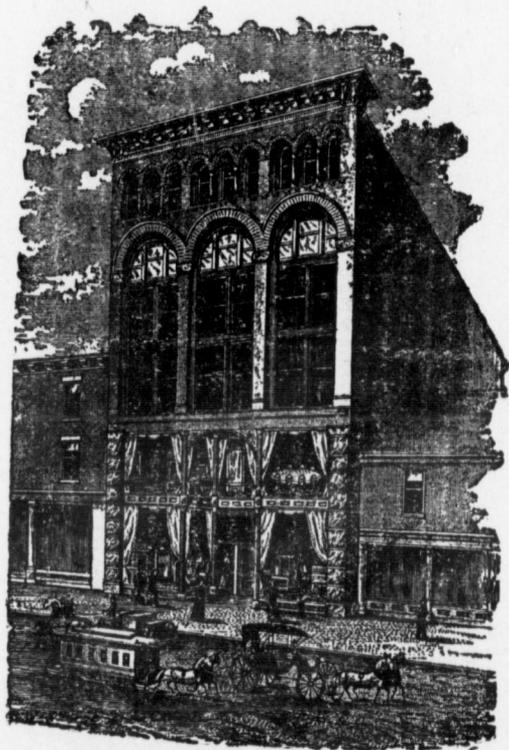
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