

The foregoing experimental results demonstrate that the foreign lighthouse oil, when consumed in the Doty lighthouse lamps, yields the maximum amount of light which has as yet been obtained from any kind of paraffin burning oil. In each experiment, the oil burned with a clear white light, and had no tendency to smoke. After trials stretching over ten hours' time, the wicks of the lamps consuming the foreign lighthouse oil were found clean and uncrusted, so that the oil is remarkably pure and free from foreign substances.

The candle power of the foreign lighthouse oil was 19·78 in the one-inch Argand, as compared with colza oil 11·33 in the same size of Argand, and these candle powers calculated to percentage, and taking the colza lamp as unity, give 74·6 per cent. more light from the paraffin lamp. If the larger-sized Doty argand lamp of one and one-eighth inch wick is placed against the colza lamp, the candle powers are respectively 23·55 and 11·33, or 108 per cent. in favour of the foreign lighthouse oil.

The total amount of light capable of being yielded from a gallon of the respective oils brings out also a very favourable result in favour of the foreign lighthouse oil, which gives 88 per cent. more light than the colza oil—gallon of oil for gallon of oil.

Taking all these experimental observations into full consideration, I am decidedly of opinion that the foreign lighthouse oil now under examination is superior to other paraffin burning oils in high flashing and firing points, and, when consumed in proper lamps, is not excelled in whiteness and purity of flame, or in the photogenic or illuminating value of the light obtained therefrom.

STEVENSON MACADAM, Ph.D., &c.,  
Lecturer on Chemistry, and Consulting Analytical Chemist.

## No. 4.

Mr. W. SEED to Mr. J. FIFE.

Customs Department (Marine Branch), Wellington,  
20th July, 1876.

SIR,—

I have to acknowledge the receipt of, and to thank you for the information conveyed in your letters of the 16th March and 29th May last, and especially for the trouble you have taken to procure and forward to me the report on the paraffin oil of your Company, by Dr. Stevenson Macadam, which not only demonstrates the high value of this oil as a lighthouse illuminant, but shows that it may be confidently carried below hatches on board ship with perfect safety. I trust that the promulgation of this latter information may have the effect of removing the objections entertained by the shipping firms by whose vessels the oil has to be conveyed to this colony against carrying it in the same way and at the same rate of freight as other oil is carried.

I have, &amp;c.,

WILLIAM SEED,  
Secretary of Customs.

The General Manager,  
Young's Paraffin Light and Mineral Oil Company,  
13, Dundas Street, Glasgow.

## No. 5.

Mr. J. FIFE to Mr. W. SEED.

*Foreign Lighthouse Oil.*

General Manager's Office, 13, Dundas Street, Glasgow,  
26th June, 1876.

SIR,—

Reverting to former correspondence with you in regard to the carriage of this Company's lighthouse oil, I now beg to annex copy of communication received from Messrs. P. Henderson and Co., who own the line of packets from the Clyde to New Zealand, from which you will observe that they are satisfied there is no danger in the conveyance of the oil, and they will be happy to take shipments thereof.

The recommendation which they make will be attended to; but in the meantime, as this removes the objection to which your letter of 11th January last directed my attention, I trust you will now be enabled to adopt our oil for the New Zealand lighthouses.

I am, &amp;c.,

JOHN FIFE,  
General Manager.

W. Seed, Esq., Secretary of Customs,  
(Marine Branch,) Wellington, New Zealand.

## Enclosure in No. 5.

Mr. J. GALBRAITH to Mr. J. ARTHUR.

SIR,—

15, St. Vincent Place, Glasgow, 8th June, 1876.

I have perused the communication you left with me in regard to Young's paraffin oil, and the accompanying report by Dr. Stevenson Macadam, M.A.C., from which I am satisfied that there would be no danger in the conveyance of this article by our line of ships to New Zealand.

I will therefore be glad to take shipments by those vessels that do not come under the Emigration Act; but with the ships conveying emigrants, the Emigration Officers will not allow mineral oils to be carried, and most of our ships have emigrants from Clyde.

I would suggest your memorializing the Board of Trade (Emigration Department) on this matter,