

The indicator used was Richards', which is specially adapted for application to every class of engine, from the lowest to the highest pressures. Fourteen diagrams were taken—five (Nos. 1 to 5) with three machines, two of Fraser & Tinne's and one of Price's; five (Nos. 6 to 10) with two machines, one of each kind; two (Nos. 11 and 12) with Price's machine; and lastly, two with no machines running, the engine merely running on the loose pulleys. Of these latter, No. 13 has been taken to represent the power absorbed by the engine, main shaft, and loose pulleys.

The results of the whole are worked out and tabulated as under:—

No. of Diagram.	Load on Engine.	Revolutions of Engine per Minute.	Revolutions of Machines per Minute.	Indicated Horse-power.	Reduced Powers.			
					I.	II.	III.	IV.
1	Three machines ...	200	1,100	10.5	4.09	6.41	2.14	.195
2	" " ...	184	1,012	10.2	3.76	6.44	2.15	.212
3	" " ...	175	962	8.28	3.60	4.68	1.56	.162
4	" " ...	155	852	8.12	3.17	4.95	1.65	.194
5	" " ...	145	797	7.40	2.96	4.44	1.48	.186
6	Two machines, one loose pulley ...	188	1,034	8.30	3.84	4.46	2.23	.215
7	" " " ...	172	946	7.33	3.52	3.81	1.90	.201
8	" " " ...	175	962	7.33	3.60	3.73	1.86	.193
9	" " " ...	152	836	5.24	3.11	2.13	1.06	.127
10	" " " ...	150	825	5.26	3.07	2.19	1.09	.132
11	One machine, two loose pulleys...	176	968	6.06	3.60	2.46	2.46	.254
12	" " " ...	178	979	5.59	3.64	1.95	1.95	.200
13	No machine, three loose pulleys...	172	...	3.52	3.52	...	...	...
14	" " (pump full on) " ...	50	...	.90	1.02	...	...	...

The reduced column I. is the proportion of the indicated power which may, without much error, be charged to that absorbed by the engine, main shaft, and loose machine pulleys, when less than three were at work. As the basis of this calculation, diagram No. 13 is taken, and the others are worked in direct proportion to it, and their number of revolutions per minute respectively. It will be seen that the result of this calculation for No. 14 is, considering the extra work of pumping being performed, identical with the indicated power.

Column II. is the net power chargeable to the machines, found by deducting column I. from the indicated horse power.

Column III. is the power per machine, as shown in each experiment, and is seen to vary from 1.06 horse-power per machine, running at 836 revolutions, to 2.46 horse-power, at 968 revolutions. This is a good instance of the difference of power required by short and long flax.

Column IV. is the nett horse-power which each machine required in the relative experiment to run at the rate of 100 revolutions per minute, and when the experiments are taken at different rates of speed affords the only fair means of comparison.

It is natural to look for the most correct results in the experiments with three machines, being the heaviest load, and the irregularities of feeding being compensated to some extent by each other. And hence, if we accept No. 3, which was at the time marked doubtful on account of the number of revolutions being so, we find the other four, in column IV, almost identical, and closely supported by most of the remainder. Nos. 9 and 10 were taken with light flax, and No. 11 with the heaviest on the feeding platform, purposely fed in to arrive at the full power required by one machine.

The amount of flax being put through during the trials, was, according to experiment, at the rate of from 2½ tons to 3 tons of green leaves per day of ten hours.

I have only to add that the whole machinery was new, the machines and engine had only worked about one day before the experiments were made, hence the results may be taken to be somewhat in excess of the power required after the machinery has taken its proper bearings.

COPY of LETTER from the SECRETARY to Chamber of Commerce, Dundee, to the SECRETARY, Board of Trade.—Dundee, 1st May, 1871.

In reply to your letter of the 20th ultimo, I have the honor to transmit the following remarks on the Progress Report of the Flax Commissioners, (Wellington, New Zealand):—

1. It must be borne in mind that the plant named "flax" grown in New Zealand (*Phormium tenax*) and the plant named "flax" grown in Russia, Belgium, Holland, France, &c., &c., (*linum usitatissimum*) are altogether different plants, and the fibres procured from them are totally dissimilar and not at all suitable for the same purposes.

2. In appendix No. 6 it is stated that New Zealand flax was almost unknown in London till 1869, but a series of most important and careful experiments were made on it in Dundee by the first house in the Linen trade, nearly twenty years ago. It was examined chemically, and was spun both into yarns, and manufactured into cloth, and the result then arrived at was that it was quite unfit to compete with, or be suitable for such manufactures as are produced from European flax. I may state that the same firm have gone over the Progress Report, and their opinion is still the same as that arrived at when the above experiments were made.