inquirer in his report of 1904. There is plenty of power, therefore. As to the processes of manufacture, the report of the engineers says nothing in detail. But it says that much information has been supplied through the High Commissioner's office from Sweden about the process now at work for the manufacture of nitrate of lime fertilisers. The information they had was got direct from the inventor himself, Professor Birkeland. The inventor's claim is that about 0.4 of a ton of nitric acid may be got per horse power year, giving about 0.52 of a ton of nitrate of lime per horse power year.

It is perhaps true that the nitrates would not be required in the Dominion, and that the demand in Australia would be but small. But the demand elsewhere in older countries where these fertilisers are in great demand would be very great.

Everything, of course, depends on the cost of production and conveyance. Of the latter it may be said that the sea is open to all, the sea which carries the nitrates of Chili to all parts of the globe can do the same for the nitrates of New Zealand. As for the process, Mr. Thomson said nothing definite. The engineer (Mr. Hay) estimated the cost at ten millions of a scheme at Manapouri capable of turning out 600,000 tons of nitrates a year, selling at six millions sterling, or ten pounds a ton. He mentioned that four thousand men would be thus employed, and he added that several similar establishments might be maintained at other places where the water power abounds. With these figures verified it would be easy to calculate how soon the nitrates would pay off our national debt. Prudence and caution should be used by all means. That we take to be the scope of Mr. Thomson's advice to the Government during the debate aforesaid. For the rest he spoke as an authority without advancing anything authoritative against the scheme.

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The arrival of the new head of the water service has put a new complexion on the whole scheme of the North Island water power as it stood in the programme laid down, debated and accepted in the session of 1910. This expert has made a statement to the effect that it is possible now to transmit electric power by wire to distances of 500 miles without loss of more than five per cent. Now it will be remembered that this question of transmission was supposed last year to be the weak point in the scheme. Since then the Waihi mining company have determined to establish a scheme of water generated electric power for their machinery at their mine of Waihi. It is understood that if they can utilise 6500 of every 10,000 horse-power under the scheme the company will be quite satisfied. The discrepancy is serious between this deficiency of over thirty per cent. and the five per cent. loss estimated by the Government expert for distances up to five hundred miles. The distance of Hora Hora, the company's power station, from Waihi is under 100. If the new expert cannot prove that his statement is founded on some new discovery by which the transmission problem is made easy, there cannot be much in that statement. We understand that this is the very thing which the statement of the expert represents. It will be for him to prove the truth of the matter. There will be much careful scanning of the proofs he gives, for there are many expert electric engineers in the Dominion who will not be lightly satisfied.

Assume that this point of transmission is fairly established, it becomes necessary to review the scheme for the North Island. The various stations proposed by the Government, as stated by the Prime Minister in moving the Aid to Electric Power Bill (second reading) last session are as follows:—

Kaituna	...	10,000 H.P.	costing	£320,000
Akatarawa	...	10,000 ,,	,,	300,000
Makuri	...	6,000 ,,	,,	200,000
Wairua	...	3,000 ,,	,,	100,000
Totals estimated		29,000 ,,	,,	£920,000

There was some other station in the proposal, to be located, according to subsequent information, either at Lake Waikaremoana, or Te Reinga Falls some few miles further towards Gisborne. Now Waikaremoana is of all the North Island sources of power enumerated in the lists of the engineers who reported some years back on the powers of the Dominion, the largest. The estimate made by Mr. Hay in 1906 of the powers and their cost at this place was as follows:—

At 1½ miles from Lake		24,200 gals.	£105,000
,, 2 ,,	,, ...	44,900 ,,	264,000
,, 4 ,,	,, ...	67,700 ,,	486,000

The estimate of the four quoted proposals includes the cost of transmission to the centres to be served by the power. The above estimates for Waikaremoana do not. The question is whether it will pay to stop the four schemes, saving the cost of head works in four places, with dams, tunnels, dynamos, stations and the rest, and build one power station at Waikaremoana, where all the power needed is obtainable for the North Island. In other words, will the transmissions from Waikaremoana cost less than the saving on the four head works. It is a question for the engineers to answer.

To the lay mind it seems that the margin is large. If the Waikaremoana estimate of cost is to be relied on, enough power can be generated at Waikaremoana for the other four districts plus 15,900 for the Napier-Gisborne districts, (or 44,900 in all), or £264,000, leaving for transmission of the power £656,000. It is a large sum. The engineers ought to be able to tell us easily how many miles of transmission can be erected for this sum. They will also have to examine the estimates of the Hay report of the cost at Waikaremoana. The expert who reported that power can be transmitted 500 miles with loss limited to five per cent. in the longer distances ought to be able to answer the mileage question readily, and he should not find much difficulty in overhauling the other estimates of cost.

There is in addition, it may be said, the difficulty of the outlets. There are at Waikaremoana several outlets underground. But they do not affect the sources of supply covered by Mr. Hay's estimate, which are the streams issuing from the lake, to be tapped at their junction two miles from the lake. The outlets come into the calculation when the lake itself is tapped for an increase of the supply. But for the power to be obtained from the issuing streams the outlets are to be negligible quantities.

In the Budget, we observe, it is announced that this course of examining the Waikaremoana problem is to be at once determined. It is the logical conclusion from the statement of the new expert.

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Photography, as its name implies, consists of drawing by the aid of light, and is based upon the fact that various substances undergo such changes in their condition as to exhibit new properties under the action of light. This new property, generally speaking, consists of change of colour to a darker shade when exposed to light.

The progress of photography during recent years has been rapid and phenomenal. New fields of usefulness have been discovered, involving fresh and novel applications of the art or science to the increasingly exacting demands of modern life. Its use has become familiar to all, in magazine and book illustrations, and the many beautiful protogravures and tri-colour reproductions of the works of famous artists. Physicians and surgeons have gathered wider knowledge of the complicated human system by means of photomicrography and the use of the Rontgen Rays; the astronomer has discovered, as will be read in our Astronomical Notes, by means of the sensitive plate, stellar systems otherwise imperceivable, even with the aid of a telescope. One great boon which thousands daily enjoy is the reproduction of pictures of events occurring all over the world, by the Cinematograph. The criminal has a fresh deterrent in his course of crime, numerous pictures of him and his physical peculiarities being taken and filed by the Police Department for use in the detection of his future delinquencies.

Photography originated with the Camera Obscura (Latin—dark chamber), said to be invented by one Baptista Porta, of Padua, in 1569, although there is evidence of an even earlier knowledge of its principle and properties.

The earliest known discovery of the actinic action of light seems to have been made by Fabricius in 1556. He observed that the sun's rays had a blackening effect on silver chloride. In 1802 Thomas Wedgewood, son of the famous potter, discovered a method of copying paintings upon glass and making profiles by the agency of light on nitrate of silver. Attempts were made by both Wedgewood and Sir Humphrey Davey, without success, to secure a reproduction of the image formed by the Camera Obscura. Soon after this, however, two men, Niepce and Daguerre, notably the latter, were successful in fixing the image cast by the camera. This, however, was a positive and could not be reproduced, and it remained for an Englishman, Henry Fox-Talbot, in 1841, to discover the negative process. This he patented under the name of Calotype. After his process followed the Cullodion, and finally the Gelatine plate which we use to-day. Many different processes have been evolved, not the least beautiful among which is the oil-pigment process. A description of this appears later in our columns from the pen of Mr. E. Warner.

Apart from the commercial and scientific uses of the art, it has given pleasure and relaxation to thousands of workers, and no more enjoyable way of spending a holiday can be had than wandering over the country looking for choice bits, with the camera, or the "one-eyed friend," as Mr. A. E. Gifford calls it in his pleasing little allegory.