

THE MAGNETIC SURVEY OF NEW ZEALAND.

(Specially written for PROGRESS).

ANYONE making a tour of the scattered groups of islands lying to the south of New Zealand, will learn of the numbers of vessels that have gone to pieces on their rugged shores. They will, however, find that the government is fully aware of the dangers to which mariners are exposed in regard to these islands; a fact evidenced by the various depots established. All the principal islands are provided with supplies of food for use of unfortunate castaways, and finger posts erected in conspicuous places indicate the direction in which the nearest depot lies. Not only this much, but boats are stationed at certain points so that depots otherwise inaccessible may be reached.

If then these dangers exist, and have proved so disastrous in the past, it is but reasonable to argue that with the increasing prosperity of New Zealand, the shipping industry will also increase. More ships and larger ships with augmented speed will be demanded and these, be it noted, will all be of iron.

Everyone knows the necessity of the compass in navigation, but few are aware of the complicated corrections required on an iron ship. Bars of iron, and large balls like heavy shot are disposed around the compass, all requiring to be placed with the greatest accuracy. Given perfection in this respect, corrections have to be applied according to locality, and these are calculated by means of charts. The charts, therefore, must also be accurately prepared and the larger the number of observations made at different stations the lower the percentage of error.

The recently completed magnetic survey of New Zealand shows that an error of three-quarters of a degree exists in the present charts; and this, though perhaps not very serious, is, from a scientific point of view, distinctly inaccurate.

The Magnetic Survey of New Zealand was first mooted in 1897, and became an established work by a resolution passed at the Sydney meeting of the Australian Association for the Advancement of Science in 1898. This resolution was supported in New Zealand, by the Shipping Master at Wellington, and the Chamber of Commerce in Christchurch. The Royal Society of London gave evidence of practical support by the offer of the necessary instruments, and this offer being gratefully accepted, operations were begun in 1899 under the control of Dr. Coleridge Farr, of Canterbury College, Christchurch, and were continued as opportunity occurred until their completion last year.

This undertaking will prove of great scientific import, and the value of the work achieved resulted in the equipment of the "Discovery," which recently visited the Antarctic as a magnetic survey ship. The work also induced Mr. G. Heimbrod to visit New Zealand in magnetic survey interests; and it is likely that the American ship "Galilee" engaged in the magnetic survey of the Pacific, will voyage to New Zealand this year for the comparison of instruments.

A few years ago, the International Magnetic Conference decided that it was most desirable that a complete magnetic survey of the Globe should be undertaken and completed, if possible, within fifteen years. As before mentioned, the survey of New Zealand was concluded last year and the reductions are now in progress. The American authorities, under the presidency of Dr. L. A. Bower,

though fully recognising the value of the admirable work already accomplished, have made a request that the work should be extended to the outlying islands of New Zealand also, and, further, that Macquarie Island should be included. This island though politically under the jurisdiction of the Commonwealth is physically of interest to New Zealand, and it is highly desirable therefore, that its magnetic position should be accurately determined.

The New Telegraphy.

THE close of the past year saw the publication of a most important discovery which promises to revolutionize methods of telegraphy and telephony. The Poulsen wireless system was described in full in our notice of the inventor, Mr. Valdemar Poulsen, and of his colleague, Mr. P. O. Pedersen; and also the finished apparatus maintaining communication between this country and Denmark. The principle employed is that of using undamped electrical oscillations for the transmission of signals, the result being extreme economy of power over the longest distances, and a very high degree of tuning or selectivity. The source of the oscillating current is a simple electric arc adapted and arranged in circuit, as for producing the well known phenomenon of the "singing" arc.



P. O. PEDERSEN, COLLABORATOR OF VALDEMAR POULSEN IN WIRELESS TELEGRAPHY.

The transmission and reception is, of course, a matter of resonance, and the degree of fineness in tuning, obtained between one instrument and another without mutual influence occurring, is in practice represented by one per cent. difference in the respective wave lengths of their circuits. The communicating stations at Copenhagen and North Shields are about 350 miles apart, and a perfect interchange of messages is kept up continuously with a power of about 7kw. and masts about 100ft. high.

It is said that the inventor is now perfecting a similar system of wireless telephony, and we may expect to hear of something very startling and of the greatest value in this branch of electricity in the near future.

Wireless for Railways.

The Midland Railway, England, of which Mr. John Mathieson, ex-Victorian Railway Commissioner, is manager, is experimenting at Derby with wireless telegraphy for trains. Tests with trains running up to 40 miles an hour have been made, with remarkably successful results.

The Curtis Turbine.

The new 500 kilowatt Curtis turbine that is being installed by the Wellington Electrical Syndicate will be in working order in about a fortnight. It has been erected on a concrete base, built on a solid bottom, and as it can be worked at option on the three-phase or single-phase principle, the engine will be a very useful one for the city when the works are taken over from the syndicate. The turbine has been erected under the supervision of Mr. G. S. Maben, engineer and manager for the syndicate. A new Babcock boiler has arrived, and a start will be made with its foundations in the immediate future.

Legal—Recent Decisions.

THE LOAN OF A SERVANT. NEGLIGENCE OF THE SERVANT. WHOSE LIABILITY?—Tasker & Sons, Ltd., hired out an engine to the Subsoil Removal Company and supplied a driver and paid him. The driver, however, took his orders from the Subsoil Company which directed where the engine was to go and what it was to carry. Mr. Dewar was injured by the negligence of the driver, sued Tasker & Sons, and was awarded £10 10/- damages by the County Court Judge. Held by the Court of Appeal that the County Court judge was right, and that, as Tasker & Sons appointed the driver, paid him and could dismiss him, they had control over him and were liable for his negligence.

MASTER & SERVANT. SERVANT'S ILLNESS. RIGHT OF MASTER TO DISMISS.—The Fulham Steel Works Company in 1903 agreed to employ Mr. Storey as works manager at a yearly salary of £400 for five years, but the agreement said nothing about its termination before the end of that time. In 1905 Mr. Storey was ill and absent from work from time to time. In January 1906 he was seriously ill through overwork, paralysis was suspected, and his doctor said that he must have a considerable amount of rest in bed. In consequence, he continued to be absent from work, and in April 1906 the Company terminated his agreement. In May 1906, however, he recovered and, being ready for work again, sued the Company for damages.

Held by Channell, J., that the agreement was an absolute contract for a number of years and that as it contained no provision for putting an end to it if the servant was absent from time to time through temporary illness, the loss fell upon the employer; but that if the illness were permanent, the employer could give the servant notice there and then; that here the circumstances did not justify the Company in thinking that Mr. Storey would never be able to perform the remainder of the agreement and that as he might be expected to earn £250 a year, he had sustained a loss of £150 a year which for two years and four months came to £350 in all. For that amount Mr. Storey got judgment.

The moral is, see that agreements with employees contain a clause enabling the employer to put an end to them (the agreements not the employees). *Storey v Fulham Steel Works Company*. 23 *Times L.R.* 306.

Australasian Wools.

The following figures show the number of Australasian bales of wool imported into Great Britain from 1891 to 1906:—1891, 1,683,000; 1892, 1,835,000; 1893, 1,775,000; 1894, 1,896,000; 1895, 2,001,000; 1896, 1,846,000; 1897, 1,834,000; 1898, 1,703,000; 1899, 1,641,000; 1900, 1,456,000; 1901, 1,745,000; 1902, 1,699,000; 1903, 1,451,000; 1904, 1,371,000; 1905, 1,633,000; 1906, 1,833,000. While the Australasian shipments have increased during the past few years, those from the Argentine show a decline. The largest quantity shipped from the Argentine was 558,000, in 1903, and the exports since then are as follows:—1904, 476,000; 1905, 488,000; 1906, 487,000.