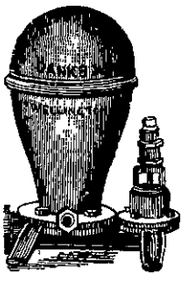

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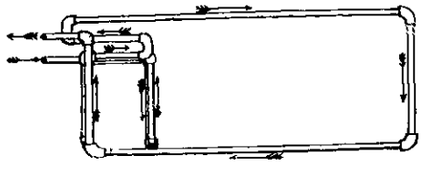

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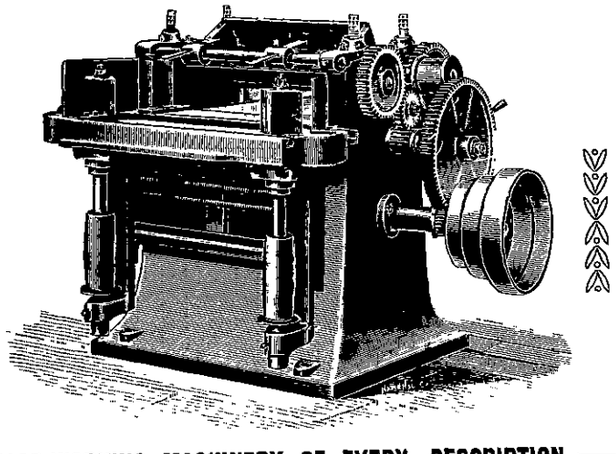

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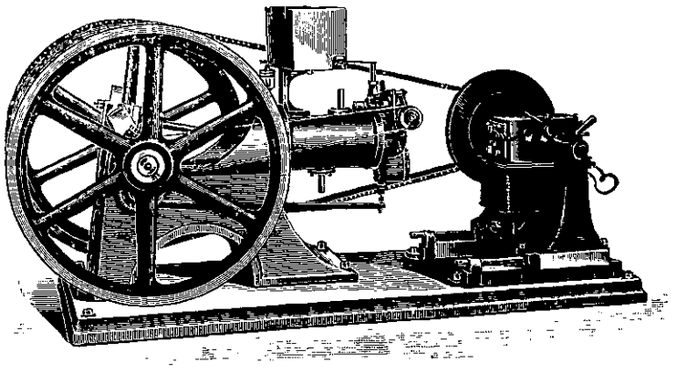

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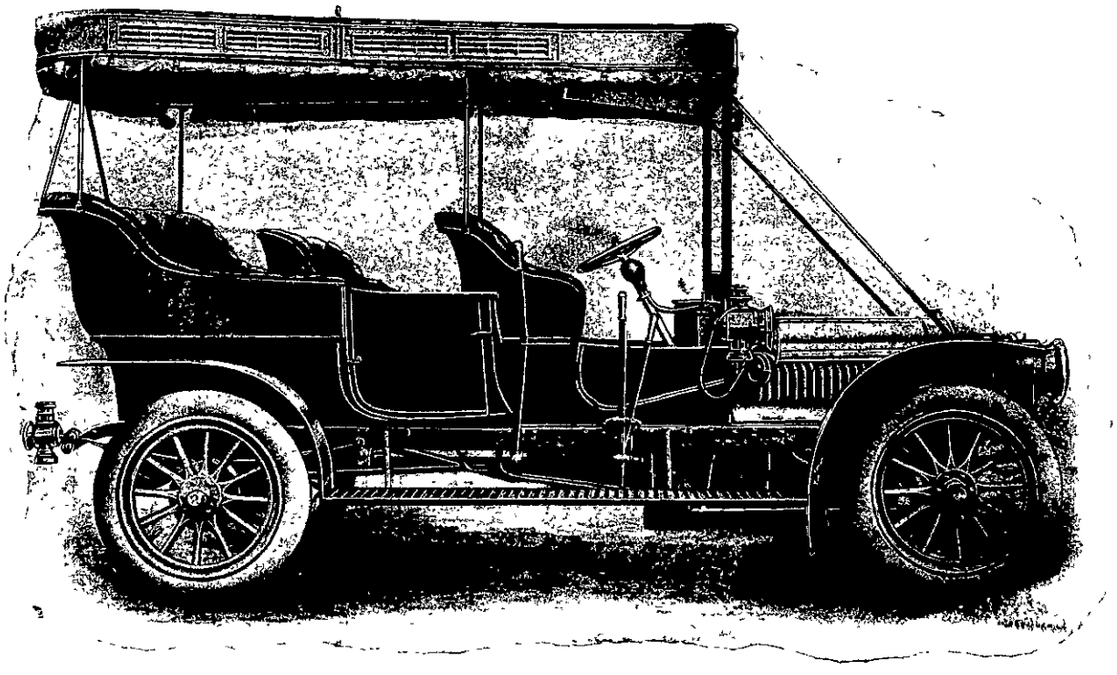

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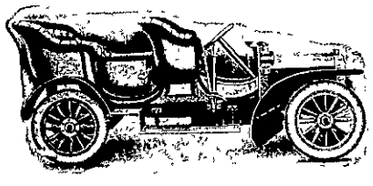

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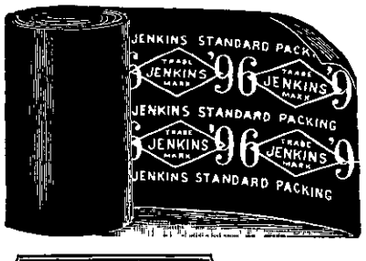

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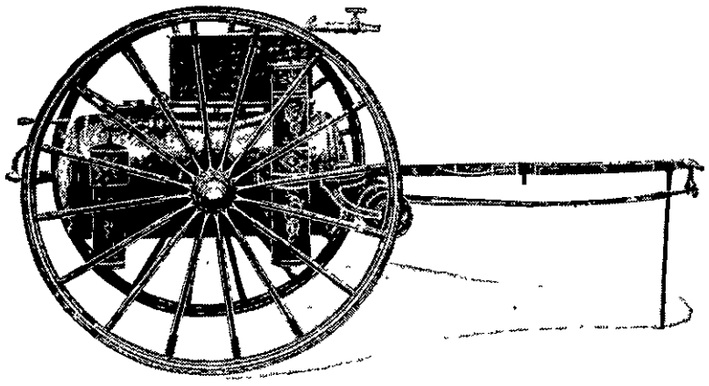

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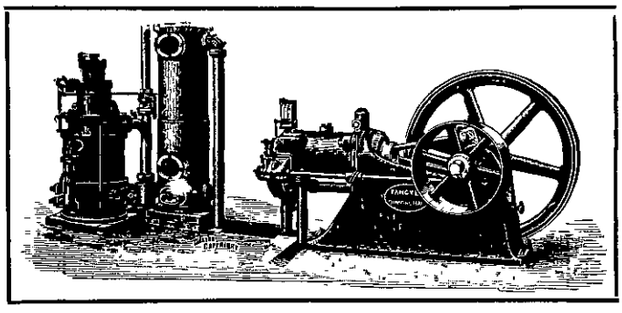

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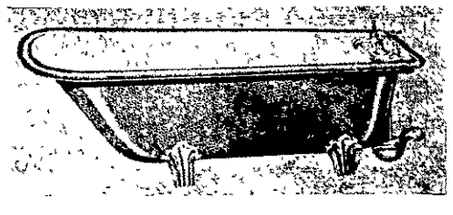

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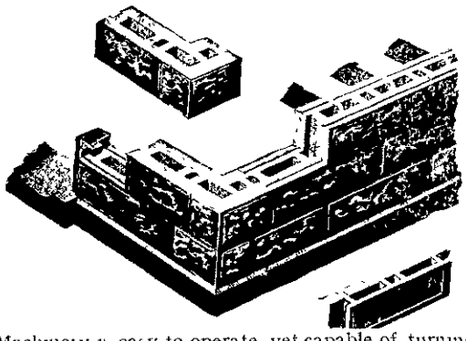

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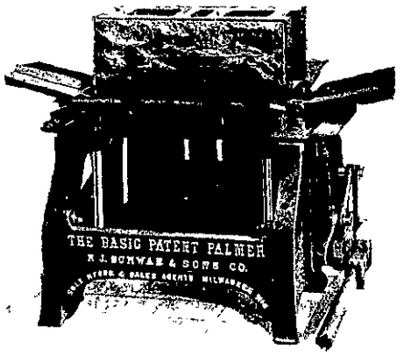

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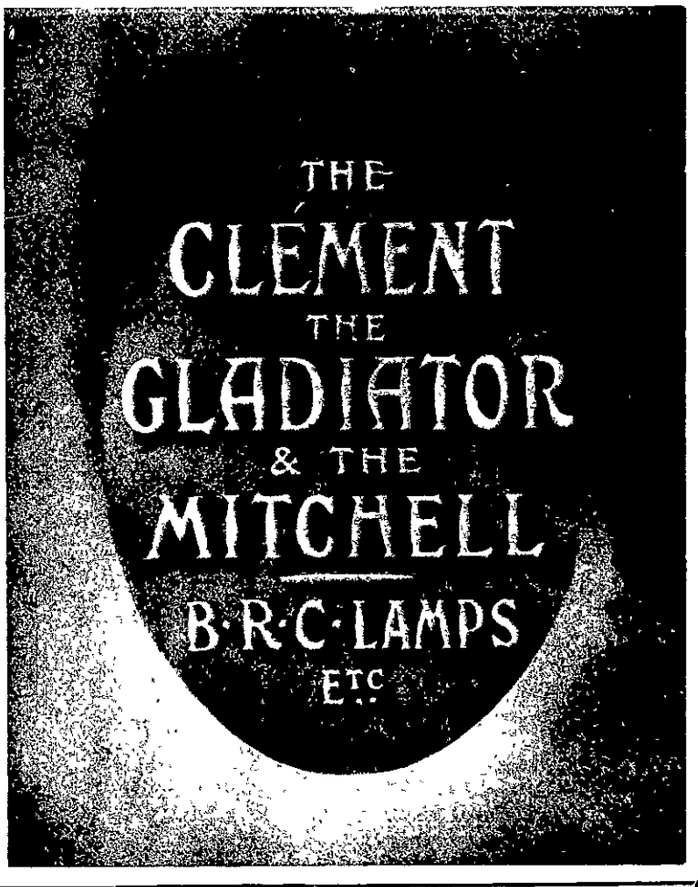

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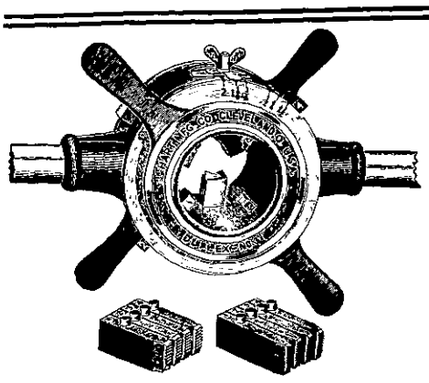

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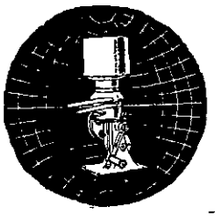

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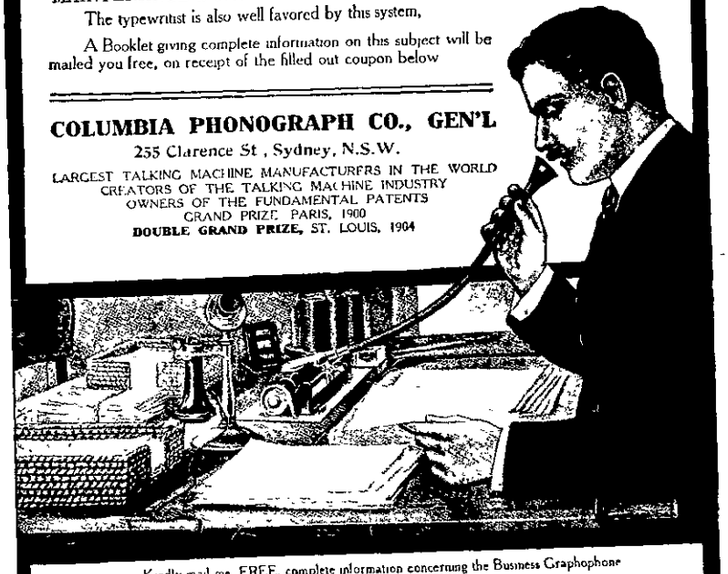

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EDITORIAL COMMENT.

The Murray Marine Structures.

SEVERAL enquiries have been addressed to us about the Murray Marine structures which were described somewhat fully in PROGRESS last month. Of these the most important is "Are there any of these in use anywhere and if so where?" So far in our reading we have not yet come across any reference to anything more than the theory. The basic principle appears to be the only thing before the public so far, and that principle has obtained the approval as we showed last month, of several distinguished authorities. When the first construction is completed, as seems a thing quite probable, and before long, PROGRESS will have an account of the same.

Another enquiry was as to the cost. About this there can be no difficulty, as the cost of building the kind of marine structure for the application of the basic principle of the invention is well known. Ships and caissons and cylinders of steel are built every day in every part of the world. The estimate of the American engineer, Mr. Schuyler, may therefore be relied on as fairly accurate. He sets it down after elaborate calculation at £94 per lineal foot. For the purpose of comparison he has given the costs of some well known breakwaters of the ordinary type as follows:—

Dover, England	per ft.	£348
Plymouth do.	,,	192
Alderney do.	,,	164
Holyhead do.	,,	160
Algiers, N. Africa	,,	116
Portland, England	,,	114
Marseilles, France	,,	106

A third enquiry regards the danger of corrosion, our correspondent being apparently under the impression that corrosion must be a fatal and rapidly acting enemy. He has not noticed the explanation of the inventor which we gave at some length in our notice of last month, that the structures can be painted at any time easily, and that below a certain depth they will not require that protection being protected by the sea growths (barnacles etc) which effectually keep the air bubbles from contact with the surface of the structure.

Lastly the enquiry is for the address of some authority who can supply information. We suggest application to the office of the *American Shipbuilder* New York.

Shaving Without Razors.

RECENTLY there appeared in that enterprising newspaper the *Daily Mail*, an account of an exhibition of "razorless shaving" in a room of the Canon Street Hotel. The victims lay back in chairs while the operator smeared their faces with "Razorless Shaving Powder.' They waited ten minutes while a photographer "took them": there was an audience of barbers. At the expiration of the ten minutes the operator used as razors a comb, a post card, and a match-box; the victims went away shaved perfectly clean, and the audience of barbers retired in gloom.

Some days later Dr. Sanctuary, M.D., of 28 Caversham Road, who had seen the paragraph, wrote to the *Mail* a note of solemn warning. He pointed out that certain salts —the sulphides of barium and potassium— when made into a paste with soap powder and starch will, after an application of a few minutes, soften and disintegrate the hair, which may then be scraped off with any blunt instrument, leaving a smooth surface. "These salts are," said the doctor, "the bases of most of the advertised depilatories, and besides being extremely poisonous in themselves are uncommonly irritating to the skin." He could not of course dogmatise with any certainty about the particular powder used at the Canon Street Hotel, but he would not be surprised if chemical analysis —which he recommended in every case to every possible victim—were to reveal a poisonous mineral irritant. He predicts crops of pimples, painful eczema, and in case of internal application—not an unlikely consequence of smearing the mouth and jaws with the stuff—death.

There are it seems two sides to every question, no matter how alluring.

The Mystery of Life.

IT is the mystery which has perplexed man since the beginning of the world. But if what was said by a lecturer at the Rooms of the Royal Society, Melbourne, a few days ago be true this mystery, dark and complex as it is, will be known thoroughly, and explainable by chemical and physical laws. The fact that Professor Osborne, who was present, agreed with this conclusion is suggestive. Medicine till the discovery of the microbe in our own time, remained where Galen left it, but surgery made leaps and bounds. The discovery of more microbes induces the belief that medicine is beginning to make up some of the lost ground. The above lecturer—Mr. A. C. H. Rothera—said "that the shrine before which the seeker of life worships is the cell. Life springs from the cell and ceases with any change in its functions. Those functions are the outcome of chemical process. Life is a chemical process, and an irreversible change in the process means death. Now if, as this seeker holds, and professor Osborne agrees, life will one day, not far off, become a knowable thing, it may be possible to control these chemical changes. When the German scientist announced that one day we shall subdue the microbe of old age he saw the day of control beginning to dawn. Already many well-known diseases have their microbes, and in some instances the right use of the microbe copes successfully with the disease. The result leaves much to be desired certainly, but the march of progress has begun, even if the progress be slow. Chemistry like electricity, is of yesterday only, and both are in their infancy. Who shall say what developments are not before us? The salutation of the East "O King live for ever!" acquires in this light a new meaning of sincerity. One likes to think that the day will come when the "Great Majority" will cease to be the majority, by reason of the abolition of all the natural causes of death. The question of burial will then have few terrors, and the idea of cremation will be shorn of most of its interest. There will be a new question more vital than either. How shall we feed the undying millions? Science will find the study of condensed foods profitable, and the drawing of substantial nutriment from the sea and the air will be pursuits comparable in emotional interest only with the search after the "Philosopher's Stone," and the "Elixir of Life." Clearly science after saving the millions from death must not let them perish from hunger. (See page 343.)

Our Industries.

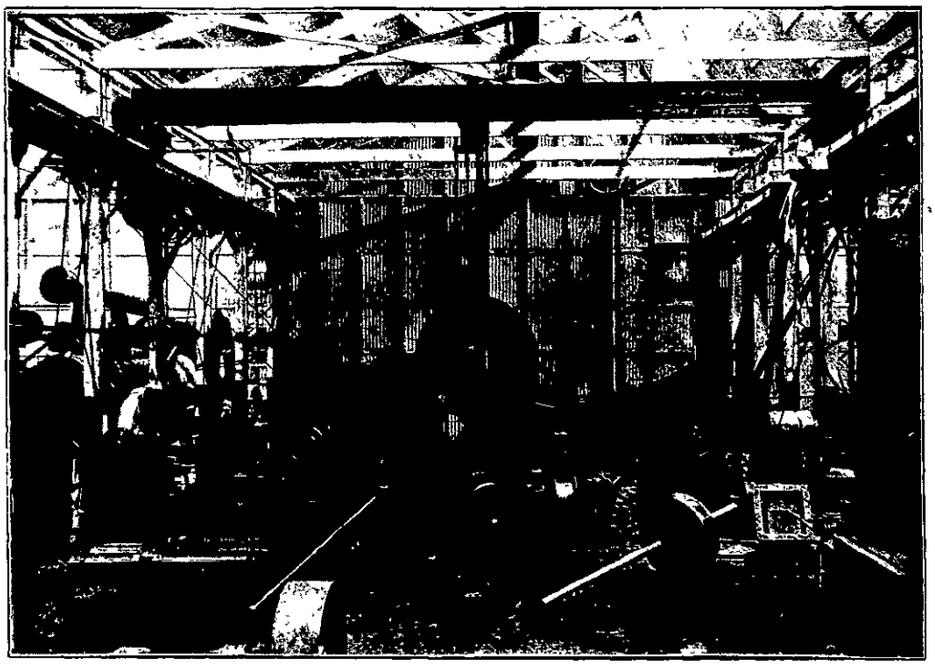
NO. XVII.

Messrs. Jas. J. Niven & Co.'s

Foundry, Napier.

People are often surprised when they learn that Hawkes Bay, that district of prosperous sheepfarmers, can boast such a complete and modern foundry as that of the Napier firm of engineers, Messrs. Jas. J. Niven and Co. The first beginnings of the business were established over twenty years ago, and since then it has steadily been making its way, until now it has attained a position of premier importance amongst the engineering firms of the Colony. The Head Office and Works are situated at Port Ahuriri adjacent to all the shipping that comes to the Napier roadstead or wharf, and the establishment is consequently able to attend promptly to their demands. The buildings forming the works comprise the following departments amongst others :—

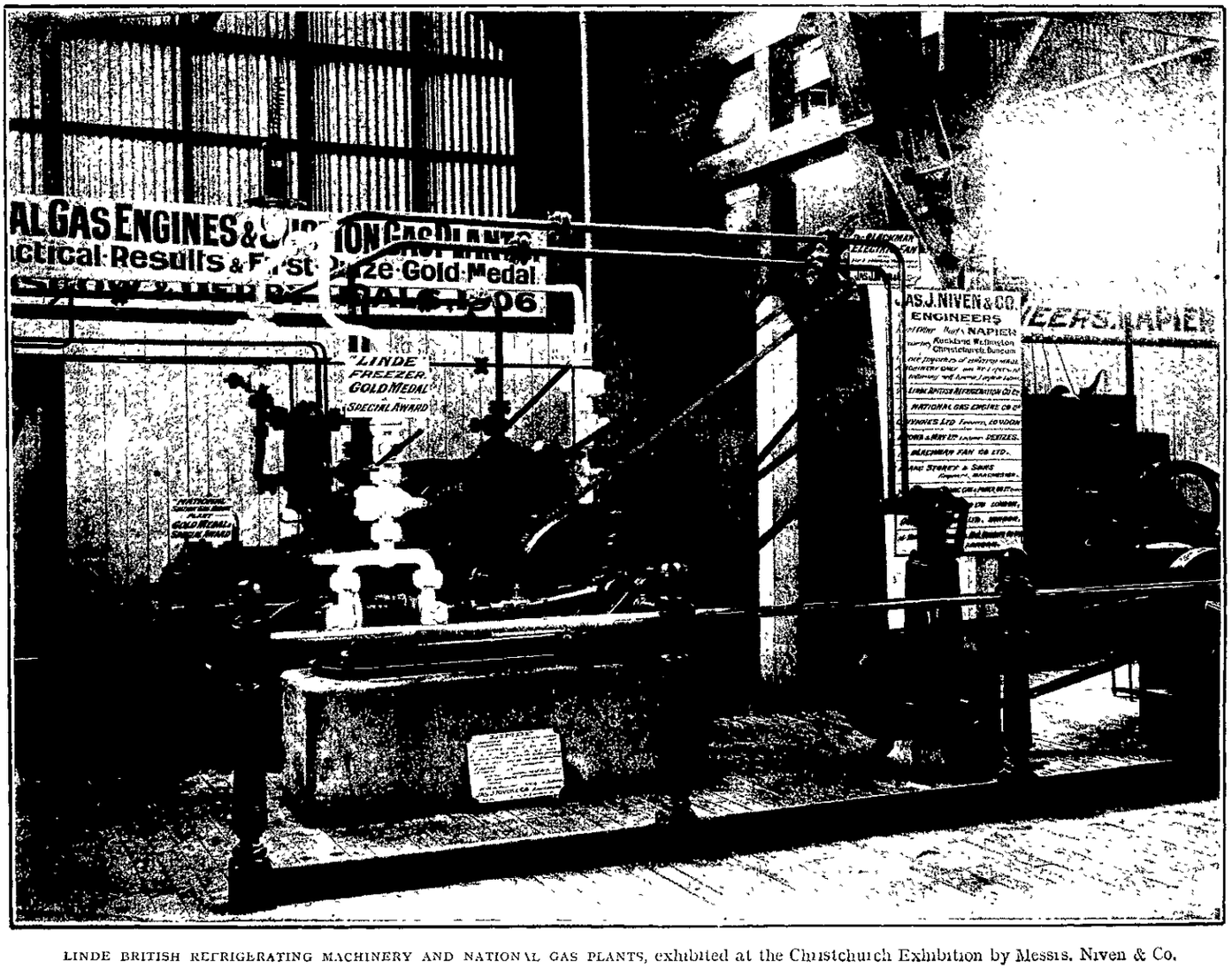
The Iron and Brass foundry and Machine shop, which, as may be seen from the accompanying photograph, will compare favourably with any in the Colony. Our representative saw also buildings devoted exclusively to boiler making, coil making for Ammonia Condensers and other refrigerating appliances. At one portion of the works they were busy with a side line in the shape of an iron fencing standard which it is confidently expected will become of almost universal benefit.



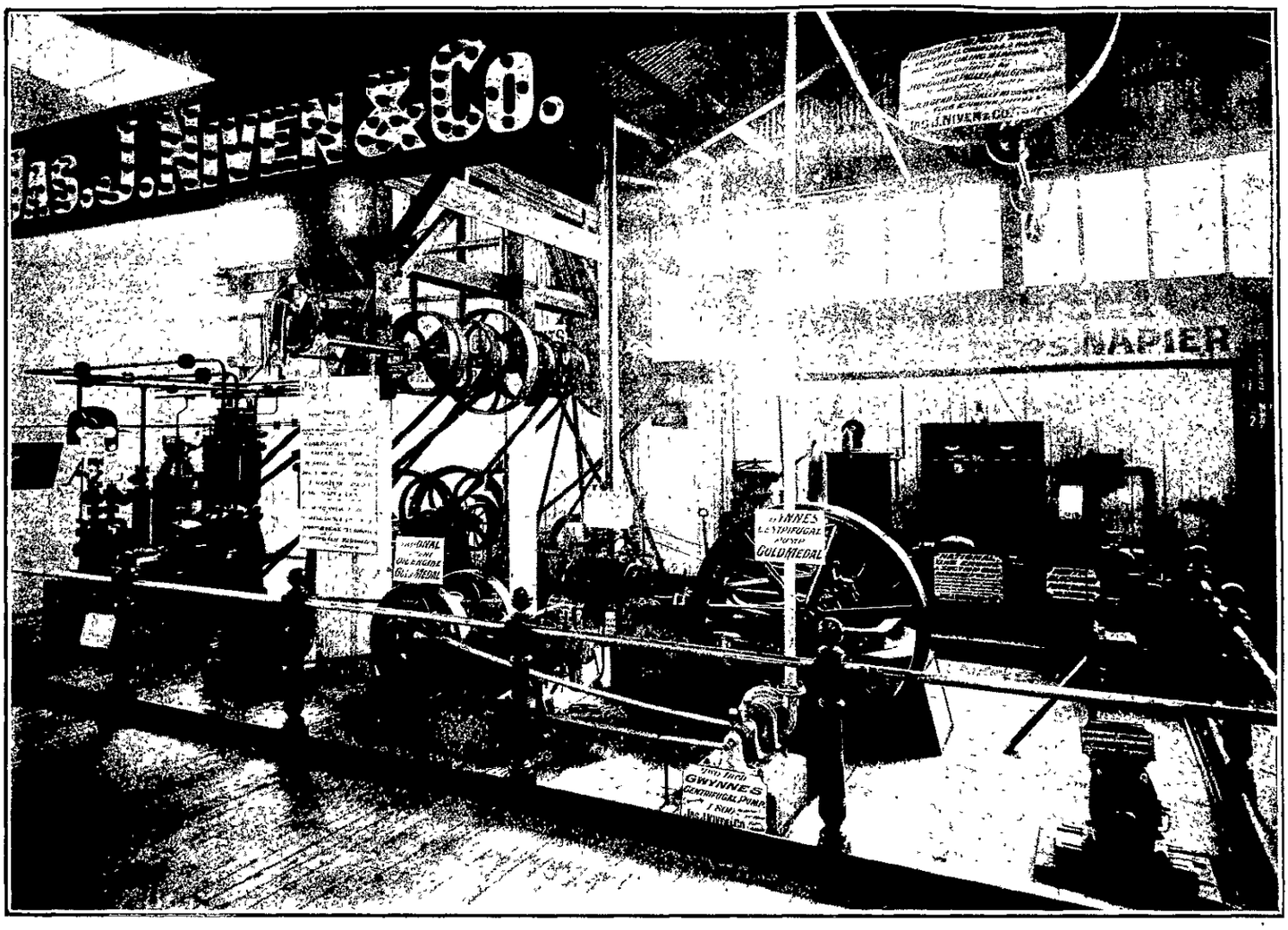
THE ERECTING DEPARTMENT.

The Pattern shop, which is an extensive two-storey fireproof brick and concrete buildling.

In these days it seems necessary to specialise, and it would appear that the principles which apply to many other professions and trades apply also to engineering, and in this respect Messrs. Jas. J. Niven & Co., are not behind the times as is shown by a glance at their warehouse, where they stock their engineering supplies. They have made it their business to meet the demands of the engineering trade and it is curious but true, that this Napier firm can supply many



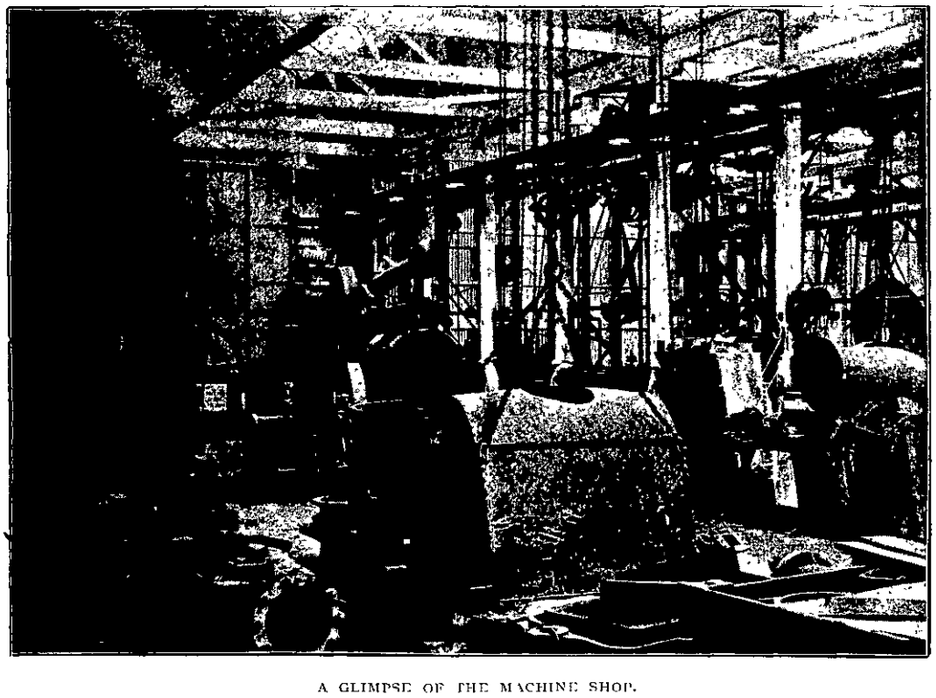
LINDE BRITISH REFRIGERATING MACHINERY AND NATIONAL GAS PLANTS, exhibited at the Christchurch Exhibition by Messrs. Niven & Co.



THE NIVEN EXHIBITS AT CHRISTCHURCH EXHIBITION—GENERAL VIEW.

demands that it might be difficult to fill in some of the larger towns.

Machinery is always an intensely interesting subject, but it may be made very much more so when one can seize an opportunity of seeing such a collection as may be found



A GLIMPSE OF THE MACHINE SHOP.

here. Amongst others will be found a variety of which the following form a few of the main types :—

Linde British Freezing Machines.
National Gas Engines and suction Gas Producer plants.
National Oil and Petrol Engines.
Gwynne Centrifugal Pumps.
Blackman Ventilating Fans.
Brown and May Steam Engines,
Electromotors Limited.
Unbreakable Pulley and Mill Gearing Co.

The foregoing names are all household words amongst engineers, and it speaks well for Messrs. Jas. J. Niven & Co's appreciation of good workmanship that they have secured the sole agencies for such well known firms.

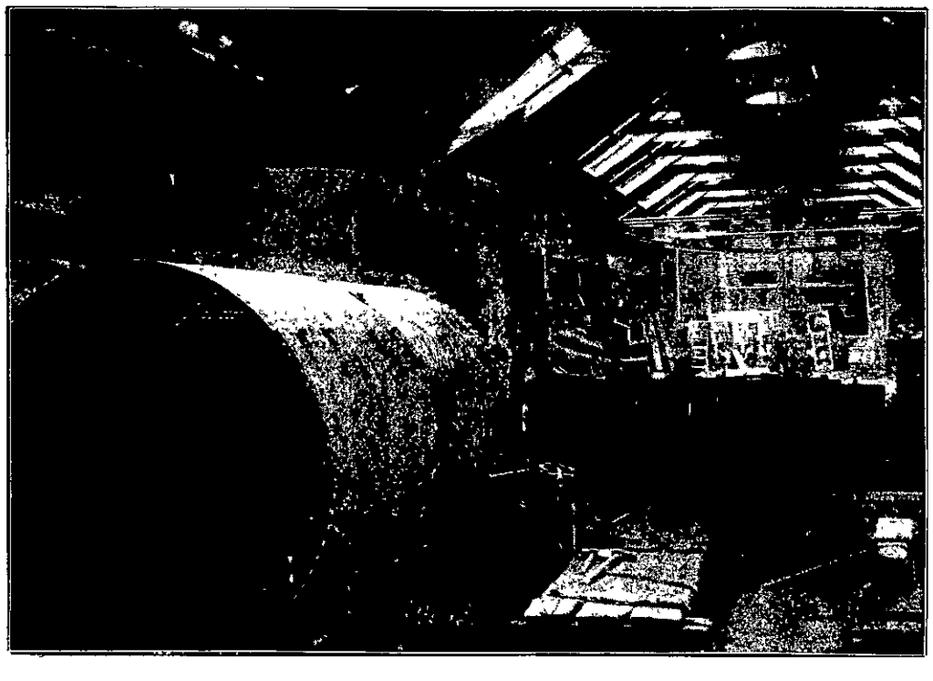
This firm deserves credit among those which recognised the value of the International Exhibition held recently in Christchurch, and did their best to obtain the full benefit of that great enterprise by contributing to its industrially representative character. The frequenters of the Exhibition have no reason to be reminded of the fine exhibit they had there. Nevertheless they deserve that their enterprise should be recorded as an example of what can be done by enterprise well directed.

One of their many exhibits was naturally the outcome of their connection with the Linde British Refrigerating Company of London of which Messrs. Niven & Co. have been for years the representatives in this State. This was housed in an elegant wooden building 42 feet long by 20 feet, with an elevation of 21 feet, coutaining five glass fronted rooms. In these the whole process of refrigerating was shown and explained for the benefit of visitors. By arrangement with the Executive Commissioners these rooms were used as the Government Frozen Produce Rooms, and in them was a thoroughly representative display of meat and poultry, and the methods of packing the same for export under refrigeration. They were kept at a temperature of from 16 to 18 degrees Fahr., for almost four months, by means of four small Linde machines running on an air cooling coil in a chamber alongside ; and a Blackman fan driven by a direct coupled electric motor,

N.Z. GOVERNMENT FROZEN PRODUCE CHAMBERS AT THE INTERNATIONAL EXHIBITION, CHRISTCHURCH, COOLED BY THE LINDE REFRIGERATING MACHINE (MESSRS. NIVEN AND CO.).

manufactured by the British Electric Company circulated the air over the coils and through the rooms.

The motive power was derived from "National" Suction Gas Engines, and that gas plant worked with complete smoothness during the whole exhibition period, for a nine hours daily average, without a single hitch of any kind, we are assured, though in the hands of a driver who was making his first acquaintance with a suction gas plant. There were two complete suction gas producer plants and engines working in this exhibit. One was a 20 B.H.P. plant and drove the four Linde freezing machines already mentioned. In addition it drove a 2-inch Gwynne centrifugal pump, raising water from a well to a height of 30ft. to supply ammonia condenser and gas plants. It also drove a 3in. and a 4-in. Gwynne centrifugal pump as exhibits, circulating water up to a tank and from it. The other plant included a 6 B.H.P. "National" engine direct coupled to a dynamo manufactured by the Electromotors, Limited, of Manchester. This supplied the current for an electrically illuminating sign of 90 lamps and two Brockie-Pell arc lamps, which most effectively illuminated the whole exhibit. We are assured that this plant did not cost more than one penny per hour for fuel. The slight attention it got and the cost of fuel were matters of general comment.



A CORNER OF THE BOILER SHOP.

The well known Gwynne centrifugal pump was another of this firm's exhibits. The type, by the way, was chosen by the advising engineers at the exhibition for fire prevention purposes, and two specimens (of 4") were installed near the river bank in front of the exhibition, with a capacity between them of 1,000 gallons per minute. At Messrs. Niven & Co's court four were shown to great advantage. The work these pumps have done in connection with many irrigation schemes throughout the world is familiar to every engineer. We understand there are Gwynne pumps working now in New Zealand which have been working for over forty years without any repairs! Messrs. Gwynne's Limited., claim to have manufactured pumps during the past fifty years of an aggregate capacity of 80 million gallons per minute!

The firm also showed a fine eight H.P. stationary engine from the works of Messrs. Brown and May, the famous engineers of Devizes; it was a highly finished specimen mounted on a concrete foundation covered

WAREHOUSE AND OFFICES, MESSRS. NIVEN AND CO, NAPIER.

by Arkilite, of a dark grey colour with a beautiful smooth polish. They had also a useful four horse traction engine from the same works in the exhibition grounds.

Another couple of their exhibits was a Blackman ventilating fan and a Keith-Blackman forge blower, which attracted considerable attention. Of these the former drew from many visitors the remark that no building need now be badly ventilated; and experts freely expressed the opinion that with the electric current now available in most of our large towns the advantages of the electric forge blower for industrial purposes wotld be incontestible. This one was exhibited in full working order, and there was a supply of descriptive pamphlets in stock, freely distributed by the exhibitors, who were always ready to give every information on the subject.

There were likewise in this court many samples of steam and water fittings from Messrs. Isaac Story and Sons (Limited) of Manchester. And one of Goodwin Barsby & Co's coke breakers was shown at work breaking coke for the gas producer plants.

Lastly there was a fine show of electrical goods manufactured by various English firms—two Brockie-Pell arc lamps and a quantity of carbons manufactured by the Brockie-Pell Company, Ltd., one 5-h.p. 220 volt B type starter, 1 motor starting panel, etc., manufactured by Brook, Hirst and Co., London, 1 black marble switch board mounted in polished teak manufactured by Nalder Bros. and Thompson, London.

All the belt drives (in all about 300 feet) were of patent Linkum belting, supplied by Messrs. Booth & Budd, of Wellington.

The background in the painting of building, signboards, etc., was white, the lettering mostly in gold, black and red. The total space occupied by building and plant was 78 feet frontage by 20 feet. The machinery space was enclosed by a two-inch polished brass rail supported by polished posts, and the whole made a very comprehensive exhibit of working machinery, well laid out and finished off in a style creditable to all concerned.

One feature much commented on was that all the exhibits in this stand were of British manufacture.

Our illustrations give a fair idea of the firm's fine up-to-date establishment at Napier. which is in touch with the various manufacturers, and of the work it does on its own account. They present various phases of an industrial enterprise very useful to the State and most creditable to its promoters.

NOTICE TO ADVERTISERS.

Change Advertisements for next issue should reach "Progress" Office not later than the 10th inst., otherwise they will have to be held over.

THE SALES DEPARTMENT

Facts and Comments.

The effect of cocaine as a drug is as much worse than morphine as morphine is worse than the excessive use of alcoholic liquors, and the man or woman who contracts the cocaine appetite, or the "coke habit," as it is commonly known among its devotees, is to all intents and purposes physically, mentally, and morally forever lost.

* * * * * *

An endless chain made at Cradley Heath, Staffordshire, no less than two and a half miles long and twenty-five tons in weight, was recently forwarded to a Leicestershire colliery. The mammoth chain was taken from the forge to canal boats on waggons drawn by a traction engine, and the sight created quite a commotion in the town.

* * * * * *

A scheme is under the consideration of the Canadian Home Secretary, submitted by Mr. R. A. M'Lennan, a Canadian farmer, of Russell, Manitoba, for changing the whole of North America "into a semi-tropical paraise." Mr. M'Lennan contends that before the flood North America enjoyed as balmy a climate as any in the world. The flood blocked up the channel between the Arctic and the Atlantic, and if the accumulated ice is torpedoed away, the warm waters of the Atlantic will once again lave the ice-locked northern shores of America, the area of habitable land in Canada will be doubled, and the climate of Greenland will become mild and equable.

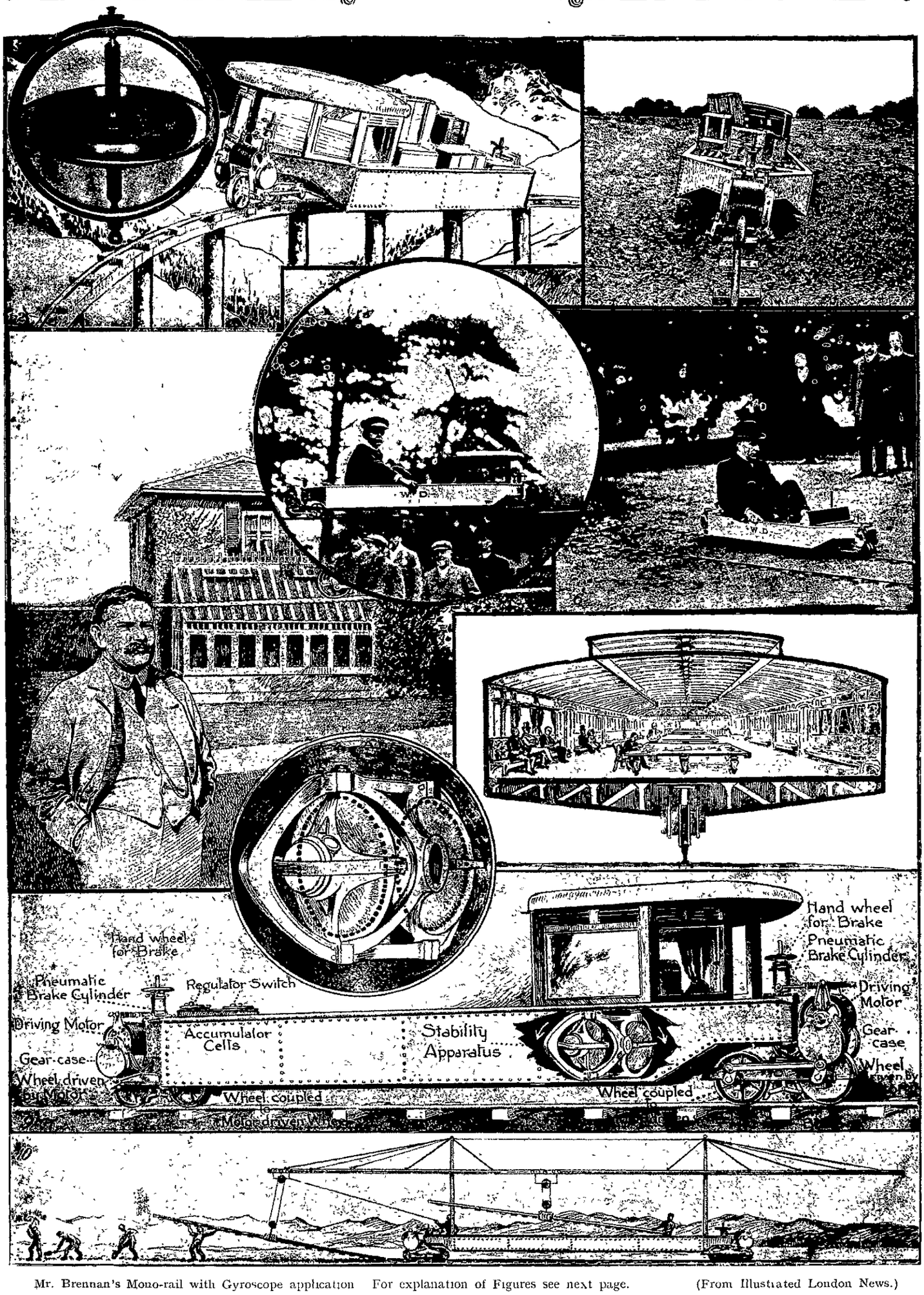
* * * * * *

There are gloomy times in store for the maker of printing ink, according to a writer in the *Strand Magazine*, for in the near future science is to place the printed word before our eyes by a process in which ink will not figure. The magazine quoted reproduces a page from a book printed in the new typography and the effect is remarkably good. The experimenter, Mr. E. K. Davenport, states that "the constituents for the blackening of the portions impressed by the metal were contained in the paper, which was made from Newfoundland pulp." Plainly, the invention is far from being perfect, from a commercial standpoint; but what a field for economy in the production of newspapers alone such a discovery opens to view! It is said that three-halfpence worth of solution will saturate a hundredweight of paper. If different solutions are found to produce different colours under the electric shock, the doom of the ink makers is amongst the portents in the sky.

* * * * * *

It sounds amazing, but actually there will be no stonemasons, no carpenters, and no bricklayers employed in the building of the vast block which is to form the General Post Office extension in London. Indeed, no skilled workmen, except the gangers and the foremen, will be necessary for the work All the rest will be labourers. The explanation of this apparently miraculous undertaking is that the great buildings are to be erected on the Hennebique Ferro-concrete system; they will be all steel and concrete. Under this novel system, as described by the *Westminister Gazette*, the whole framework of the building may be said to be steel—somewhat on the principle of and yet greatly differing in detail from the American plan—encased in concrete, which it naturally strengthens and supports, but which, when the building is finished, is quite invisible. A completed building has the appearance of being composed of Portland stone.

Engineering: Sea and Land.



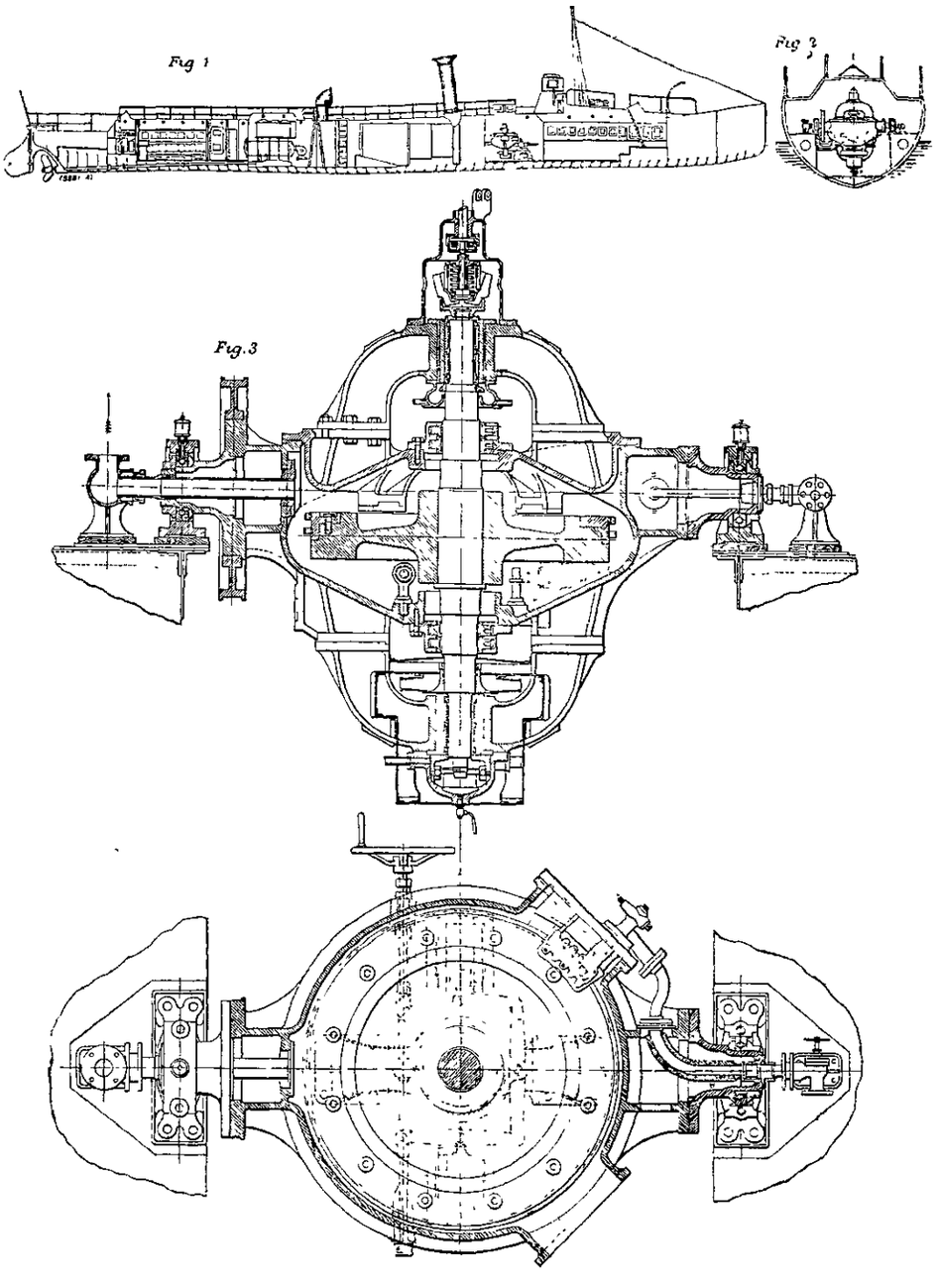
Mr. Brennan's Mono-rail with Gyroscope application For explanation of Figures see next page. (From Illustrated London News.)

THE MARVELLOUS GYROSCOPE.

EXPLANATION: Fig. 1—The Gyroscope; 2—Car leaning over in crossing mono-rail bridge; 3—Car on curve; 4—Mr Brennan at home; 5—Car balanced after stopping; 6—Car balanced, at rest; 7—The stability apparatus; 8—A roomy car of the future; 9—The model, with all particulars; 10—A prophetic dream.

Last month we dealt with the Gyroscope generally, making demonstration clearer with the aid of illustration. To-day we deal with the two particular applications of the principle now before the public. These are the application of Dr. Otto Schlick to marine constructions, and the application of Mr. Brennan (of torpedo fame) to the steadying of railway traffic carried on a single rail. The two applications seem, so far as the evidence which has reached this country enables us to judge, to have been thought out by their respective inventors on separate lines quite independently of one another. The announcement of the first mentioned to the world preceded the announcement of the second, it is true. But the second was in preparation long before anything was known of its predecessor in publicity. Mr. Brennan's main patent was taken out in 1903.

Dr. Schlick's, which was described by Sir W. H. White, late constructor to the Navy in a paper read before the Institution of Naval Architects last March—"On the Gyroscopic Effect of Fly-wheels on Board Ships,"—consists of a wheel revolving horizontally in an air tight case of iron, as shown in the illustration on this page. Figure 1 shows a longitudinal section of the See-bar, an ex-torpedo boat of the German Navy, with the "Gyroscopic steadying apparatus" mounted and in position: Figure 2 is a cross section of the same: Figure 3 is a vertical section of the Gryoscope or fly-wheel and attachments inside the case: and Figure 4 is a horizontal section of the same. The outside diameter of the wheel is 1 metre: weight 1106lb, peripheral velocity per second 274.8ft: number of revolutions p.m. 1600. The fly-wheel is of forged steel in one piece, and the cast iron casing containing the wheel is carried on two horizontal trunnions. When the vessel is at rest in an upright position the spindle of the fly-wheel will be vertical. When the vessel is set rolling, the spindle of the fly-wheel is free to become inclined to the vertical in the fore and aft direction. As rolling proceeds the gyroscopic effect of the fly-wheel produces longitudinal oscillations of the apparatus. "The observer may be standing" remarks Sir W. White, "upon the deck that maintains a practically horizontal position as the vessel performs vertical heaving oscillations, but the gyroscope meantime may be oscillating violently to and fro in the longitudinal sense and the observer watching it may have the impression that the vessel herself is moving." At sea, during the experiments the fly-wheel was set in motion while the casting was kept fast. Under that condition the gyroscope had no effect, and the observer measured the rolling of the ship in the trough of the sea. That done, the casting was set free and the gyroscopic action come into play at once. In the words of the inventor, "The waves seemed to disappear under the ship, and as was to be expected, she rose with a gentle motion vertically upwards and sank again just as gently into the trough of the sea, without even spray coming on board to any extent worth mentioning." This Sir W. White confirmed by stating as the result of his observation on board that the angle of rolling of 30 degrees was reduced to one, almost



DR. SCHLICK'S GYROSCOPE IN THE SEE-BAR.

immediately after the casting of the spinning wheel had been set free. His verdict was that for vessels of the class of the See-bar the use of the gyroscope is a proved success, that with all Channel passenger boats exposed to high seas it will be most useful, that with large ocean liners, gyroscopic effect, now but little wanted owing to their steadiness can in all probability be very simply applied, and that for the more modern warships in which the design involves short periods of oscillation and frequent rolling, the securing of a stable firing platform will require "the installation of large and powerful gyroscopes to secure adequate extinction."

In the experiment on the See-bar it was proved that reduction of the speed from 1600 revolutions, which was the normal speed maintained, lessened the effect on the rolling; and it was concluded by the experts present that with wheels of smaller diameter driven at higher speeds much economy in construction and driving power could be secured. As a matter of fact all agreed that the one metre of diameter installed was too much. Finally, it is Sir W. White's opinion that there must be a great deal of careful experiment before the application to large ships of the gyroscope.

The Brennan Mono-rail.

Mr. Brennan employs two gyroscopes, or to use Lord Kelvin's word gyrostats. These are in every respect similar except that they rotate in opposite directions. They are supported on carriers which are pivoted on parallel axes. The carriers are connected by means of links or gearing, so that the rotation of the one carrier in one direction insures a corresponding rotation of the other carrier in the opposite direction. The axes of the gyrostats are horizontal, and are at right angles to the longitudinal axis of the vehicle.

"The essence of the invention" we quote from the report of a writer fresh from an interview with Mr. Brennan, after a trial of the model car in Mr. Brennan's grounds, "is the introduction of means by which any disturbance of equilibrium, or change of direction of the vehicle, automatically controls the precession of the gyrostats, together with an automatic means of accelerating or retaining such precession. Thus the vehicle is rapidly brought back to a middle or normal position of maximum stability, and the action is so controlled that there is no tendency of any gyroscopic effect to persist and thereby to produce oscillations of increasing amplitude. One of each pair of gyrostats is

termed by its inventor the actuating gyrostat, and it is provided with automatic means of accelerating the precession when the equilibrium is disturbed, so that the connection between the two invariably must bring about equal but opposite movements of precession in the second one when the actuating gyrostat is operated. It will be realised, therefore, that equal movements of both the gyrostats about their horizontal axes will take place, and that the second gyrostat will assist in controlling the balance of the car."

The gyrostats can be enclosed in air-tight castings; they may be at long distances apart in the structure; the model was driven up to 7000 revolutions; in the design for the full-size railway car, carrying a couple of hundred passengers, the speed intended of revolution is 3000: for that vehicle the total weight of each gyrostat will be 1,500lb, and the car with fittings complete will weigh, empty, twenty tons: as stability continues only so long as the gyrostats are revolving, the cars are to be provided with supporting "legs" to be dropped into position on each side on the stoppage of the machinery: the diameter of each ring in the full sized car will be 42 inches, and the power required for the stability apparatus will be not more than 2 h.p.

For ordinary slow work rails are not necessary, but the tendency to side slip makes them imperative at high speeds.

The trials demonstrated the stability of the system on sharp curves, both horizontal and vertical. This will be easily gathered from our illustrations (page 324), which speak for themselves. Further there was one test in which the stability was tried by placing on one side of the model car a weight corresponding to five tons in a full sized car, with the result that the side of the car instead of being lowered was actually raised; and another in which the car mounted very steep gradients with ease and certainty.

Mr. Brennan claims that his mono-rail will cheapen railway construction, by doing largely away with embankments and cuttings as well as one of the rails of each track, and by laying its own rails, and that promises increased speeds as well as increased comforts of travelling from the absence of vibration and oscillation. On the whole, though the invention has not yet passed out of the model stage—and often the promises of models are not carried out when inventions come to the working stage—the invention should have the earnest attention of the Public Works Department of this State.

Mr. Brennan Interviewed.

Fresh from his triumph at the Royal Society demonstration of his gyroscopic mono-railway, Mr. Louis Brennan, C.B., the inventor, was seen by a Westminster representative with respect to the future possibilities of his mechanicsm.

"I have already been so overwhelmed with congratulations," he said, "concerning last night's exhibition that I am quite unequal to the task of making suitable acknowledgment. As to the application of my system of gyroscopes to flying machines, I think it will do much towards solving the problem of aerial flight. Certainly a stability would be imparted to the machine which could not be secured by any other known means. The machinery could be so adjusted that the strongest wind would be powerless to set up an angular movement. Complete control in all directions would be in the hands of the aeronaut. He could tilt his machine to any angle and be assured that nothing could shift it from the desired position. In a word, so far as steadiness is concerned, the aeronaut would be as much master of the situation as if he had a cigar box under his arm."

"Would there be any difficulty as regards the weight of the apparatus?"

"None at all. The mechanism in the case of flying machines would be extremely light. The tilting effect of the air is so slow that it requires very little power to counteract it. Once you are in the air you become part and parcel of the hurricane, and are yourself enjoying, almost absolute calm. There is no such thing as a wind rushing against you. If you are in the hurricane you move bodily with it, and with the gyroscopes at work your flying machines would not be able to play any pranks, but remain perfectly steady. And, so far as leaving the earth is concerned, a machine fitted with this mechanism should possess an ability to rise which would not otherwise exist."

Mr. Brennan pointed out the essential difference between the recent application of the gyroscope to steady ships at sea and his own adaptation of the same principle.

"Of course," he said, "I am fully aware that the celebrated German engineer has met with great success in his attempt to impart stability to a torpedo-boat by means of the gyroscope, and that it is now being applied to larger vessels. But in these cases it is the rolling of an already stable vessel that is being retarded. The angular movement is reduced by one half by the gyroscope acting as a brake upon the roll. My mechanism would be of no use on ships that would maintain their equilibrium at all without its aid. The ship that is to benefit in rough seas by the Brennan gyroscope must be so circumstanced or constructed that it would turn turtle if the action of the mechanism ceased. The reverse action would be set up in the case of a stable vessel; the gyroscope would be ceaselessly endeavouring to capsize her"

"As everything depends upon the reliability of the gyroscope machinery, its liability to break down must, of course, be very slight?"

"With well constructed bearings and a thorough system of lubrication, the chances of mishaps are even more remote than the bursting of a boiler on a Brighton express. Liability to break down is reduced to vanishing point."

The Gyroscope Railway in Warfare.

"And what is the immediate future likely to see in the way of developments with this mechanicsm?"

"One of its first uses will be in connection with pioneer railways in the colonies, where there are sparse populations on the fringe of large towns, and the quick marketing of produce is a prime necessity. The Indian Government has lately voted me a grant of £5,000 to prosecute my investigations, with the view to the employment of the mechanism in civil life and military operations. I have already expended a further sum of £2000 granted me by the Army Council in constructing stability mechanicsm for a vehicle 40ft long by 12ft wide, and capable of carrying, in addition to its own motive power machinery, a load of twenty tons. This vehicle could travel on a single track, in any direction required, in the enemy's country; and on its return to friendly territory it could utilise power from an electric trolly and shut off its own petrol. Military railways on this system by the aid of the special machinery I am constructing, could be constructed over the roughest country at the rate of from ten to twenty miles a day. An up and down line could also be built, which would not only vastly faciliate the construction of the railway, but also allow of the troops being supplied with all their necessary requirements while on the march. The steepest hills could be fitted with these railways, and the heaviest guns quickly brought up to the desired elevations."

Mr. Brennans' final vision is of railway and motor car travel under the most perfect conditions. "Instead of being tired out with the strain of long journeys," he said in conclusion, "the traveller will arrive at his destination quite fresh through the total absence of jolting en route. All these jolts, too, represent a considerable loss of power, and must mean reduced speed to all traction systems subjected to them. As for motor-car developments when the gyroscope mechanism is applied, it is safe to perdict that they will be revolutionary in their character. With wheels in single line, like those of a bicycle, the pick of the surface will be at the disposal of the motorist, as well as many other obvious advantages."

Apropos, here is a suggestive letter we have received from a correspondent whose vigilance in the public interest does him great credit.

To the Editor.

Sir,—The following has occurred to me and may be useful for publication:—

Brennan's experiments with the gyroscopic mono-rail seem to open up vast possibilities as regards high speed passenger trains on our narrow gauge railways; these railways being more or less a compromise between a broad gauge and a mono-rail, and until now we have had to sacrifice speed for the economy of construction. If, however, the gyroscopic condition is going to provide high speeds on the mono-rail it should also provide at least as high a speed on our narrow gauge, and some future generation instead of being involved in a costly re-construction scheme, and cursing their fore-fathers for endowing their nation with an obsolete railway track will be blessing them as far-seeing wiseheads who knew what was coming.

The gyroscopic system need not be applied to goods or mineral loads, but to passenger and mail trains where the time element is all important.

If Brennan can get over the difficulty of negotiating a curve (and all moving bodies object to curved courses unless a superior condition is brought to influence them), high speeds upon our railways will be easily accomplished.

It is an insult to find in a country boasting of its most progressive laws, which include State ownership of railways that these same railways are the least progressive in the world. To wit—Auckland to Hellensville, 38 miles in three hours! J. B.

Cut this out and return with Five Shillings.

The Editor, "Progress,"
71 Lambton Quay,
Wellington.

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NOTES.

BY "ACCUMULATOR."

The Reasonable Rate of Speed.

A great feature of the Royal Commission set up in England on motor traffic is the recommendation of the plan of abolishing speed limits and relying on the authorities throughout the country to insist on a "reasonable rate under the immediate conditions"—this is practically falling into line with the New Zealand law on the subject.

Nautical Mile Record.

The world's record for the Nauticial mile, standing start, was beaten at Palm Beach on the 3rd February—the name of the boat is the "Dixie" and she covered the distance in 2m. 20s. officially timed: the record for this distance was previously held by a boat fitted with a Fiat motor; time 2m. 25s.

A New Zealand Carburetter.

I have examined the Suckling Carburetter—the invention of a Christchurch Motor expert of that name—it has many good points in its favour—notably the absolutely automatic variation of the air supply for various speeds of the engine—thus giving correct mixtures. Apart from the principle of the invention, it is well designed and easily adaptable to any car. Messrs. Holmes & Allen I believe, are intrusted with introducing it to Wellington motorists and announce most satisfactory progress.

Absolutely Necessary Information.

It would be a very acceptable plan if there were some way by which motorists could learn of the state of the roads throughout the Colony and on any route they intended to take. It is at present most difficult for a tourist to know, whether a contemplated trip is feasible and does not include some fancy items, such as being stuck in some Slough of Despond, unfordable rivers, slips. etc.

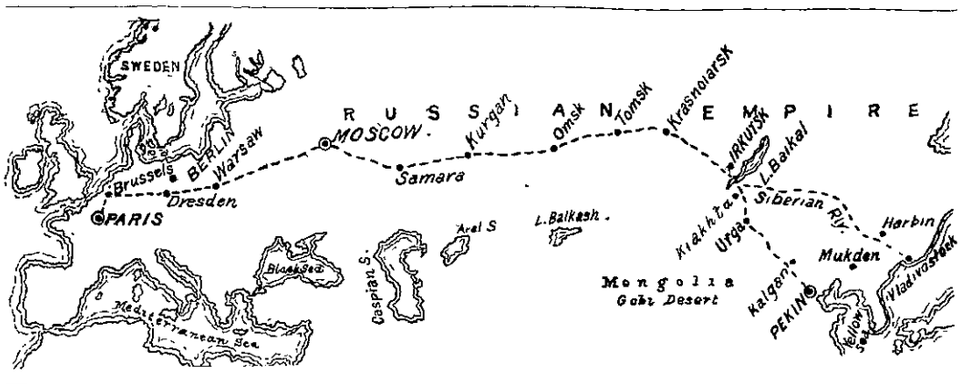
We suggest that motorists might send us such particulars from time to time which we will be pleased to disseminate per medium of our columns.

Following up this subject, we have heard from Mr. Garnet B. Holmes a few particulars of his attempted trip from Napier to Rotorua. After leaving Napier and for about 21 odd miles the road was good, but shortly after that part of it which is under the Government control was reached the trouble began—thick, greasy clay mud up to the running boards which rapidly became so hard that the car was literally riding on the bottom of the chassis—digging out and road making was the only course open, while it took a team of six bullocks to effect the release of the party.

We are surmising what would happen should it ever be necessary to use this *Mann* road for military transport!

The Fairbanks' Engine.

The wonderful success of the Fairbanks motor boat in Sydney lately is the particular item of motor talk just now. The event was a championship race of N.S.W. in which there were only two contestants—the "Invincible" 60-70 h.p. built and owned by Mr. Relph, and the Fairbanks 15-20 h.p. belonging to Mr. L. Davies. The latter covered the eleven miles in 31 min 24 se. averagaing 21.11 miles an hour while the former champion averaged 19 miles



PEKIN TO PARIS. CHART OF THE ROUTE.

The performance of Fairbanks engine is nothing short of marvellous and shows what wonderful reserve power it possesses—the hulls of both boats are of similar dimensions so that this race was really a test of the relative efficiency of the motors.

Reserve Fuel.

It is a wise plan to carry a few gallons of petrol as a reserve—this should be kept in a special tin with good screw cap, and this is the point—never on any account use or even rely on it—same should be absolutely ignored. Should you be going out for a day's run see what petrol is in your tank and if necessary take a spare tin, but don't take the "special reserve" supply into account. If motorists adopt this scheme we would seldom see a car stalled for fuel.

The Acetylene Head Lamp.

The B.R.C. Acetylene Head lamps are well known here, and are easily the most popular in this country—we learn that Messrs. Holmes & Allen have signed a contract giving them the sole agency of the B.R.C. They announce that they are landing a large assortment of these to suit all classes of cars from the runabout to the luxurious touring car.

Paris to Pekin.

At the present moment the most important race ever run on land is occupying the attention of the civilised world. It owes its origin to the enterprise of a newspaper, the *Matin* of Paris. On the tenth of June five motors, three French, one Dutch and one Italian, started from Pekin in the presence of the French, Italian, and Russian ministers acting for the occasion as an honorary committee, on their journey of some seven thousand miles. They are not following the railway line all the way—a course easily adopted, for it is easy to strike the Manchurian railway at Liaotung or Mukden, and follow the same to Harbin through the historic campaign country of 1905, keeping thereafter to the line of the Siberian railway. But these venturesome motorists determined to cross the desert of Gobi in Mongolia, and strike for the Siberian line at Lake Baikal.

Starting from Pekin the competitors will make for Kalgan, about 125 miles from the former town, and then on to Urga. From Kalgan to Urga there are two roads running parallel to each other. One is the caravan route and the other the "Imperial" road. The latter is a beautiful tract of land about one hundred miles in length. Mme. Massieu, a few years ago, drove across this road in seven days. At Urga there is a postal service, and a rich Urgan and two officers control the caravans. With the help of the Russian Government, the motorists will be able to give the password, which consists in uttering the break-jaw names of the two officers.

From Urga the run to Kiakhta on Lake Baikal is easy. Urga is a large centre where the competitors are sure of receiving a warm welcome from the Russian Vice-Consul and Dr. Grinscwitch, a member of the touring club of France. These gentlemen are entrusted with the arrangement of all details connected with the route between Urga and Kiakhta. From Kiakhta to Missoya the motors will be put over the lake by ferry-boats. Here a question arises as to whether arrangements have been made separately for each of the competitors, or whether they will each have the disadvantage or the advantage of the regular boat, as the case may be.

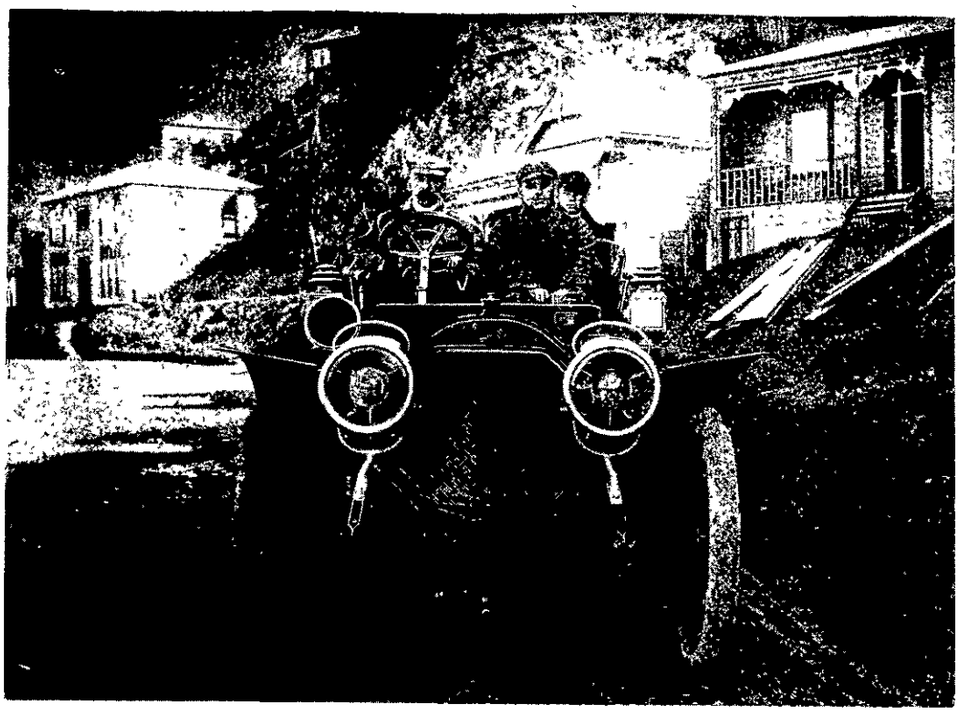
The pace seems to have been very hot through Mongolia, for one car only had got to Lake Baikal at latest advices, one was a hopeless wreck, and the rest had made no sign.

As to results to the world in general, it is expected by Prince Khilkoff, who made with his management of the Siberian line the one Russian success of the late war, that the race ought to stimulate motoring in China, for the purpose of improving the antediluvian communications of that country.

The famous motorist M. Cormier has been selected to accompany the camel caravan from Pekin which is carrying the petrol supplies (about 400lb weight), equal to about 50 gallons. The supply will be distributed along every 60 miles of route. Every attention has been paid to securing the comfort of the travellers and they will be in telegraph communication with their friends every step of the long weary way.

The leading points of the itinerary are Kalgan, 125 miles from Pekin, Urga towards the far side of the desert of Gobi Irkutsk on the Russian side of Lake Baikal, Krasnoiarsk, Tomsk, Omsk, Kurgan and Samara to Moscow: thence by Warsaw, Dresden and Brussels to Paris. The route is shown on the accompanying map

ACETYLENE HEAD LAMP.



THE GLADIATOR, WHICH MADE THE RECORD TRIP TO NAPIER AND BACK

The Gladiator — Return Journey from Napier.

Readers will remember that a week or so ago Mr. James Wilkinson, the Company's representative, in company with Mr. Oswald Cleland and Messrs. Holmes and Allen succeeded in lowering the record for the trip from Napier to Wellington. This successful attempt was made as the result of the fast time Mr. Wilkinson made on the up journey, which was received in the Hawkes Bay motoring circles almost with incredulity. The time on that trip was 10 hours 20 mins. running time, and when the party declared that they felt confident that they could make the return trip very much faster they were challenged on all sides in Napier to do the journey within 11 hours and we know the result of the challenge.

Mr. Cleland was given a place on board the Gladiator Car for the return journey to act as official timekeeper.

Leaving Napier at 6. 25 a.m. on a bright keen morning the 18.28 h.p. Gladiator Car, on which so much depended, began to show her good paces, and put mile after mile behind her in very fast time. By the time Hastings was reached, an average of close on 40 miles an hour had been maintained. Shortly after leaving Hastings the party had the ill fortune to miss the road, and coming round a corner found themselves in a cul-de-sac. There was nothing for it but to 'bout-ship and retrace their steps. By the time they struck the main road again they had added 15 miles on to the contract they had in hand. Nothing daunted, Mr. Wilkinson opened out again on the fine level roads there are about there. After leaving Waipukurau they started along the tortuous road to Masterton. On leaving Masterton a mishap occurred which nearly terminated the trip. A cart was drawn to one side to let the car pass, and for some inexplicable reason the driver started backing across the road just at the moment that the Gladiator was coming up. With a bare four feet of road free it seemed impossible that the car could get through. One thing only was possible and that was to keep the two front wheels on the formation at any cost. The car did it, and after a few crab like manoeuvres managed to climb back to the road again. From Greytown to Featherston the road is intersected with water-races which had to be negotiated slowly, and no sooner is Featherston passed than the Rimutaka climb is ahead, and they did make good time over the hill—45 minutes from Featherston to Kaitoke. On leaving Kaitoke the Mungaroa had to be climbed and the Gladiator and Company had the ill-luck to meet a drover with a couple of hundred cattle. This meant pulling up for twenty minutes; but in spite of these delays Wellington was made well within the guaranteed time. Mr. Wilkinson and party have been the recipients of congratulations from all sides. Two hundred and fifty miles, with two mountain ranges, in nine hours, at nearly 28 miles per hour—a very fine performance.

With a little familiarity with the road Mr. Wilkinson is convinced he could easily cover the distance within the eight hours. This is truly a remarkable performance and one calculated to test a car in every way. The grades are steep, and there is every sort of obstacle to meet. The trip was made on the 18-28 h.p. Gladiator Car which had only just been freshly taken out of the case from France, and it is a striking testimony of the substantial nature and careful assembling of parts by the makers that a new car could run this distance of 500 miles without shaking a single nut or bolt loose, or without the necessity of stopping the engine for a moment.

The Clement & Gladiator Cars are recognised at Home as being well in the forefront—as witness the following letter by Colonel W. J. Bosworth, who is chairman of the Automobile Association of Great Britain, (and he always invests in Clement Cars). He says: "I am often asked by my friends why, when requiring a car, I select the Clement, and my reply is as follows:—Because I drove a Clement car fifty thousand miles (a distance approximately equivalent to twice round the world) without the slightest mishap except a broken wheel, the consequence of severe impact with a spur-stone occasioned by a bad side-slip. The last time I sat in her she went as well as ever she did, and showed a clean pair of heels to a friend of mine who was driving a costly vehicle of very well known make and of considerably higher power; moreover, our relations terminated most satisfactorily, for I sold her exceedingly well. On the principle then that 'one thinks highly of the bridge that carried him over' I ordered another Clement." 50,000 miles is fairly convincing. Turning next to the technical side of these cars one description will suffice for both, as their construction is the same.

With the 18-28 horse power model the engine is of 4 cylinders, cast separately 95m. m. x 130 m.m. with two inspection plates to each water jacket—five bearings are employed to the crank shaft; which latter is the finest grade steel.

The ignition consists of high-tension magneto and synchronized trembler-coil as well.

The Carburetter is one of the most striking parts of the machine — for economy of fuel: the results of tests in this department in France have demonstrated that the Clement and Gladiator Cars cover 30 miles to the gallon of petrol.

For speed control there are 4 gear ratios forward and one reverse; so that any speed up to 50-55 miles an hour is easily obtained.

The Clutch is of the special design of this firm—and shows a novel departure from the standard article. It consists of laminations of discs which engage with one another in such a way as to absolutely prevent that horribly fierce engagement now so common.

While the whole finish of the car is luxurious in the extreme, the careful way in which the makers have assembled the whole—every nut and bolt easily got at if necessary—is most satisfactory.

The running of the engine is so even and vibrationless that one could balance a glass

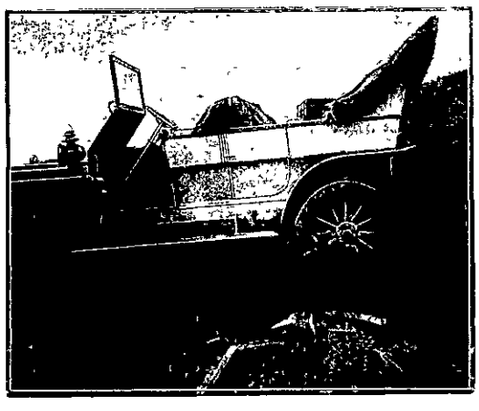
TWO CARS—THE CLEMENT (LEFT) AND THE GLADIATOR (RIGHT).

brimful of water on the radiator with engine running and yet not spill a drop—this is a test actually indulged in by the makers and is evidence of the perfect balance of the motor.

The party in the photos are—Mr. James Wilkinson, driving; Mr. O. Cleland beside him—a participant in the "All-Black" tour: while the tonneau holds Messrs Garnet B. Holmes (left), and Arthur D. Allen (right) the inventors of the well-known "Trolly-head," and agents for these cars.

A Cheap Trailer.

Luggage difficulties are sometimes very severe. A man of enterprise and independence recently got over them, thus telling his story:—I may say I have used a trailer successfully for several years. For me it has solved the difficulty of luggage transport between a country house and the railway station. The only disadvantages are that one cannot back the car without unhooking the trailer, and in wet weather the latter is exposed to a considerable amount of flying mud, and the baggage must be carefully covered. As far as driving is concerned I pay no extra attention to the trailer, as I always negotiate corners with care. The body is simply a flat open box with open rail sides lined with Willisden canvas. Dimensions, say, 5 by 4 by 1. The two wheels are 30in., strong wire spokes, 1½ in. solid tyres—very similar to those on Coupé broughams in



A BREAKDOWN. (*See page* 327)

London. The body rests on a pair of light elliptic springs. The attachment to car is by hook and eye, like a field gun to its limber. This trailer carries quite a fair amount of luggage, and on a dry road does not slow the car (15 h.p.) appreciably, though it does so on heavy roads. I use it constantly for station work (ten miles) and it is most useful for paying short visits within the radius of a day's run. I have never used it for touring, but I see no reason against such employment. I enclose a photograph showing trailer hooked on behind car, and I shall be very pleased to give fuller particulars to any enquirer. It weighs 1¾ cwt. I designed it myself and had it made by a local coachbuilder.

The Six-Cylinder Type.

The smoothness of working, otherwise freedom from vibration is the leading feature of this type. A recent experiment settled that conclusively the other day. It was on a day in April last that Mr. Claude Johnson made his experiment in London in the presence of Captain Lord Herbert Scott of the Irish Guards and other fervent and critical motorists. Now this was the experiment.

CAR, WITH TRAILER FOR LUGGAGE.

One side of the bonnet of a 40-50 h.p. six-cylinder Rolls-Royce car was raised so as to make a level table. On the horizontal face of the bonnet a plank was laid, and on the plank were placed three tumblers filled to the utmost with water coloured with red, green, and black ink respectively. The starting handle was removed, and a revolution counter fixed on the front end of the crankshaft. The engine was then started, and a photograph taken necessitating an exposure of exactly four minutes on account of the light. During this period the engine revolved 4,600 times, that is at the rate of 1,150 r.p.m. The result proved successful, as not a drop of the liquid was spilt. In addition the photograph shows by the sharpness of the outlines of the tumblers that vibration was practically absent.

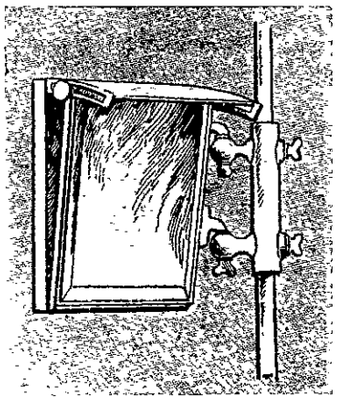
The experiment answers the theoretical demand for striving to perfect the six-cylinder in the direction of further smooth running. In theory the type, being an internal combustion type is inferior to the steam engine, for the simple reason that whereas the throttle in the latter passes valid steam all the time no matter how much it may be reduced, and so ensures smooth working, in the former the start depends on an explosion and there must therefore be a jerk, no matter how close the reduction. It is contended, therefore that some other things must be done, to which it is replied that these will be not worth while, because "sympathetic" use of the throttle gear can do all that is practically required. The above experiment seems to decide the question.

At the present moment the six-cylinder car is not looked upon seriously by our American cousins—in fact, they do not understand it. Whatever might be said to the contrary, there is no doubt that the building of a six-cylinder car is quite another problem to the construction of one driven by a four cylinder engine. Experience of a special kind is necessary to its success, and this the Americans have not yet acquired.

THE NAPIER SIX-CYLINDER CAR—THE CONSTRUCTION SHOP.

Elsewhere it is different. There is the case of the Rolls-Royce car as above narrated. The Duke of Westminster, K.G., has lately became possessed of the first six-cylinder 75 h.p. Mercedes to reach England, the car having been supplied to his Grace by Messrs. J. A. Lawton and Co., the well known coach builders and motor agents of Liverpool.

The Nizam of Hyderabad, after testing many of the leading British and Foreign motor cars, selected the six-cylinder Napier as being most satisfactory in every respect. One Napier Limousine for His Highness's personal use, two Zenana Napier Carriages for his ladies, and three Napier touring cars for his staff have been already delivered, and further cars are in the course of construction.



THE STEERING MIRROR.

On the merits of the Napier however, Mr. Edge indefatigably embraces every opportunity of bringing them before the public, and his repeated challenges have the effect of keeping alive the merits of the others whose representatives do not hide their lights under bushels.

A Useful Mirror.

The Chaufteur requires to see what is behind him, without turning his head and losing sight of his front and endangering his steering. The mirror in our illustration supplies the want. It is easily set up.

Building and Architecture

The Architectural Editor will be glad to receive suggestions or matter from those interested in this section Address Architectural Editor, Progress, Progress Buildings, Cuba Street, Wellington.

NOTES.

Additions to Mr. Minson's private residence at Opawa are in course of erection. Architect, W. V. Wilson.

* * * * *

A residence in Fitzgerald avenue, Christchurch, is in course of erection for Mr. Oscar Möller. Architect, W. V. Wilson.

* * * * *

Tenders are being called for the erection of buildings for the Miramar Wonderland, tea kiosk and grand stand. Architect, J. S. Swan.

* * * * *

The contract has been signed for a residence at Hataitai for Mr. J. W. Fleming, the price being £625. Architect, J. S. Swan; contractor, J. Moffat.

* * * * *

The contract for the erection of a residence at Kelburne for Mr. C. H. Diamond, has been let at £600. Architect, J. S. Swan; contractors, Jorgensen Bros.

* * * * *

The natives of Otaki have decided to have their ancient church repaired to perfect order, and the work will be proceeded with at once. Architect, L. G. West.

* * * * *

A two-storied house is being erected at Hereford street, Christchurch, for Mr. T. Priesnall. Architect, Fred J. Barlow, A.R.V.I.A; contractors, May, Lyons & Co.

* * * * *

A two storey brick warehouse and storerooms are being erected in Gloucester street, Christchurch, for Minson & Co., of Colombo street Christchurch. Architect, W. V. Wilson

* * * * *

The extensive alterations and additions to the North Canterbury Farmers' Co-operative premises, Rangiora, have been completed. Architect, Fred J. Barlow, A.R.V.I.A.; contractor C. Calvert, of Christchurch.

* * * * *

The new municipal buildings, Rangiora, are just completed and have been handed over to the Council. Architect, Fred J. Barlow, A.R.V.I.A. Christchurch; Contractors, Vincent & Golding, Rangiora.

* * * * *

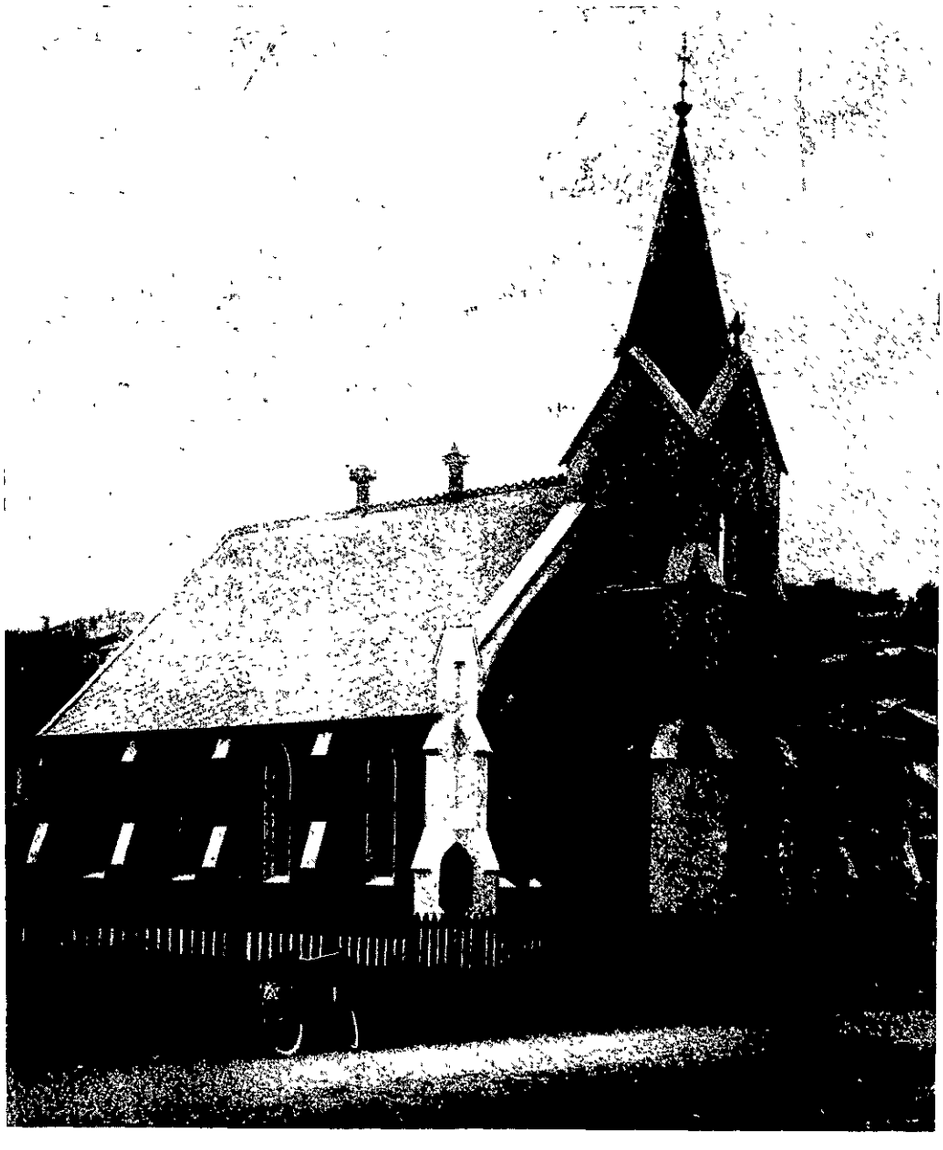
In Hastings a new brick building containing show room, work shop and offices, with a frontage of 30ft., is being erected for Mr. Joseph Eddy, plumber, of Napier and Hastings. Architect, C. Tilleard Natusch.

* * * * *

The tender of Messrs. James Trevor & Sons, Ltd., has been accepted by Messrs. Penty & Blake, architects, for the erection of a new four-storey building for the Wellington Trust and Loan Company, whose premises were destroyed by fire in October last. The new offices will have a frontage of 29ft. 6in and a depth of 45ft, will be of pressed brick, with cement facings, and will cost £4990.

RESIDENCE OF DR BURT, LOWER LONDON STREET, DUNEDIN. COVERED WITH "FIBRO CIMENT" ASBESTOS SLATES. [*J. A. Salmond, Architect.*]

Instructions have been given Messrs Penty & Blake, architects, by the Wellington College Governors to call for tenders for the erection of a new building in the college grounds to provide accommodation for those pupils who have qualificd for free places. The new structure will be 70ft by 100ft, and will contain six class-rooms, three on each of the two floors, as well as masters' rooms, library, etc.



WESLEY CHURCH, GLENAVON, N. E. VALLEY, DUNEDIN. COVERED WITH "FIBRO CIMENT" ASBESTOS SLATES.

Tenders are being called by Mr. J. S. Swan, architect, for the erection of two buildings at St. Patrick's College, Wellington. One building will contain all conveniences, while the other will contain six large class rooms.

* * * * *

Tenders will shortly be called for the additions to wool stores on West Quay, Port Ahuriri, for Messrs. Dalgety & Co., Ltd. The plans show an extension of 75 feet to West Quay, making a total frontage of 151 feet, by a depth of 150 feet. The same firm's new brick wool store and offices at Dannevirke and the additions to wool store at Gisborne, have now been completed at the cost of about £2,600 and £1,900 respectively. The architect has also in hand the alterations for this firms' offices at Port Ahuriri.

* * * * *

The new Presbyterian Church at Hastings has been erected after the old English style of atchitecture and presents a quaint and restful appearance. In the lofty spire of 130 feet there is accommodation for two classrooms, each 11ft. 6 inches square. Some of the chief dimensions of the building at present are :—length 55ft. by width of 49ft., with a total height from floor to roof of 35ft. The vestibule measures 11ft. square, but the main body of the church is 40 ft. long by 48ft. wide with a seating accommodation, including that provided by the galleries which run down the length of the building on either side, for about 500 people. The church is lit by two 3-light and four 2-light windows on each side, and one large 3-light window in the south wall. All the windows are glazed with leadlights manufactured by R. Martin of Wellington.

The building was erected at a total cost of £1,836, including the seats, pulpit, etc. It is anticipated that at an early date an additional bay or two for which provision has been made, will shortly be needed for the increasing congregation. Architect, C. Tilleard Natusch.

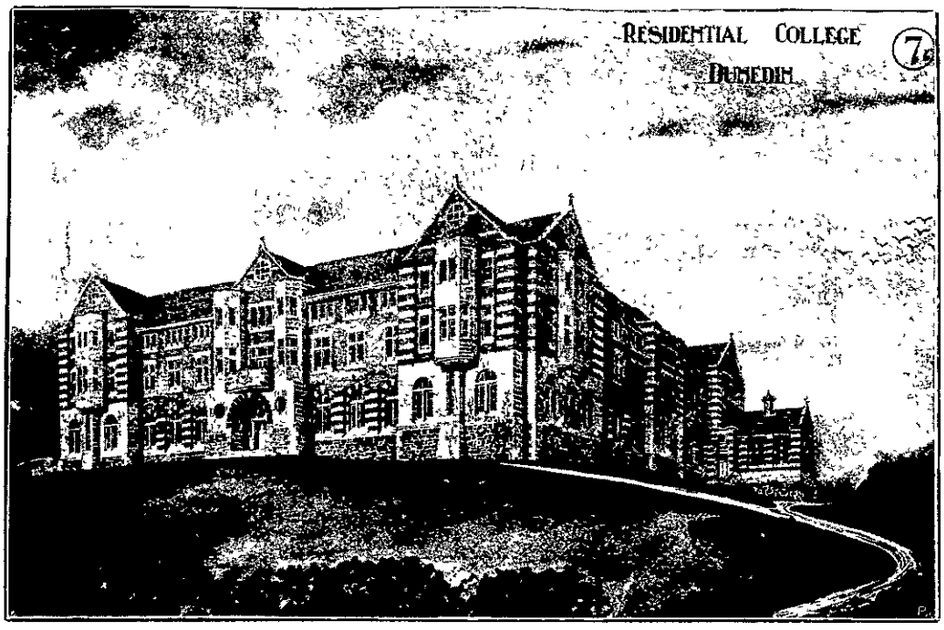
* * * * *

Messrs. England Bros. report the following contracts as being completed in Christchurch : —N.Z. Insurance Co. (additions) Hereford street, contractor J. Hammett ; T. Crompton & Sons, Tuam street, (two-story show room and factory), contractors, D. Scott & Son ; Two houses Tai Tapu, contractors, A. G. Munns & Taylor Bros.; nine roomed residence, Dunsandel, contractors, Beanland & Keates ; Grand Stand, Ashburton, Ashburton County Racing Club, contractors, J.Smith & Sons ; shops, Colombo street, contractor, J. Hammet.

The tenders of the following have been accepted :—House, Fisher street, contractor, S. Butler & Son ; residence, St. Albans, contractors, S. Butler & Sons ; shop, (T. Gapes & Coy.), Victoria street, contractor, A. Gee ; premises (Dalgety & Coy.) Cathedral square, contractors, Graham & Greig ; premises (Bank of New Zealand), Leeston, contractor W. T. Maher ; residence, Cashel street, contractor, G. Petrie ; residence, Rakaia, contractor, W. T. Maher ; residence, (H. White), Gisborne, contractors, Rupas & Neville ; residence, Wakanui, contractor, P. Gourdie ; Farmers' Co-operative Stores. Cashel street, contractors, D. Scott & Son ; residence, Springfield road, contractor, P. Wilkinson ; Wesleyan Church, Opawa, contractors, Robinson & Sons.

* * * * *

Plans have been passed by the Onslow Borough Council authorising the construction of a bridge at Khandallah about 92ft. long, 32ft. high, and 12ft. wide. The bridge, an overhead one, is to carry traffic over the Manawatu Railway Company's line, and is to be erected on the Sunny Bank estate by that estate company. The designer is Mr. Rounthwaite.

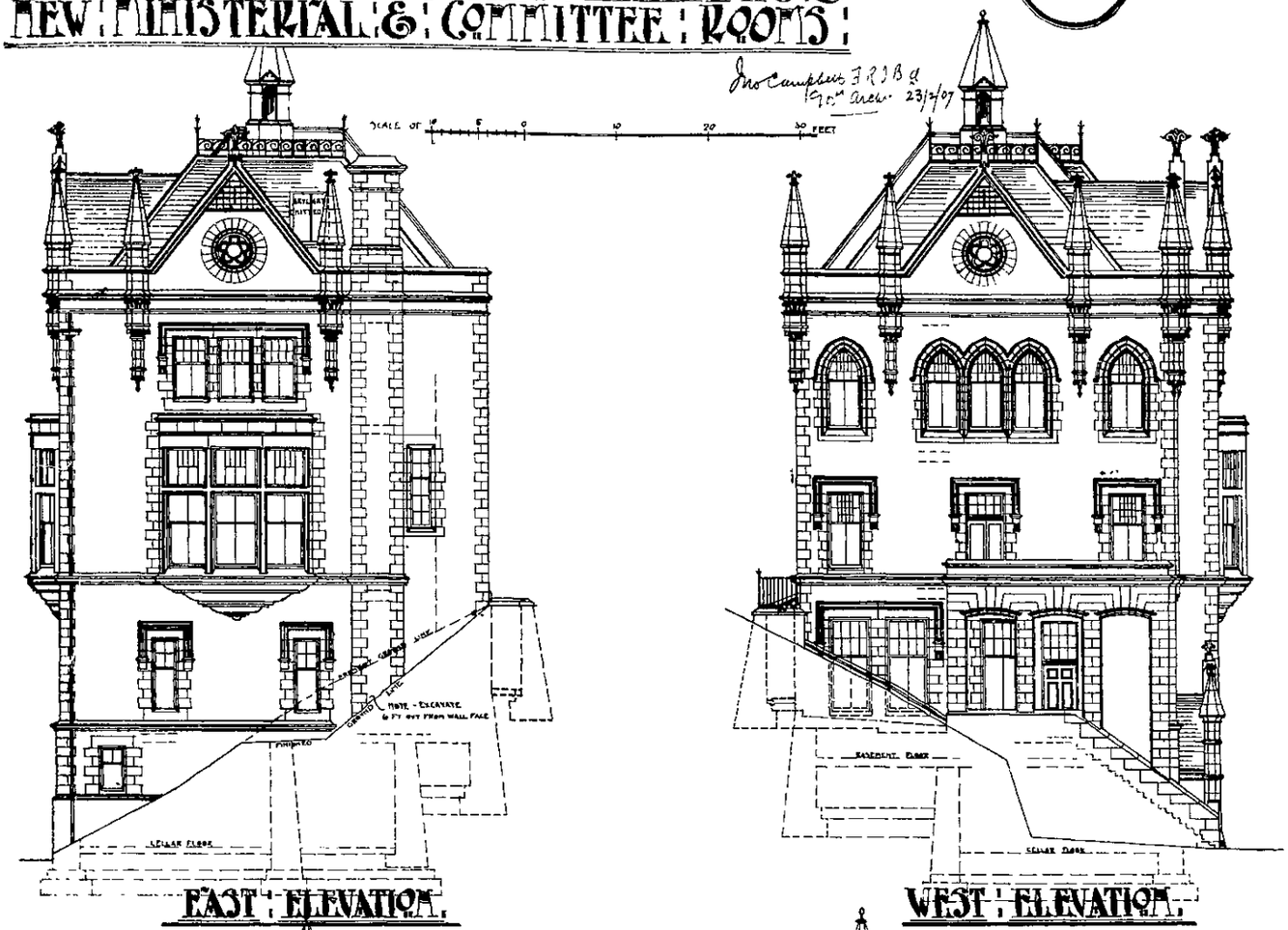


PRESBYTERIAN RESIDENTAL COLLEGE, DUNEDIN. [*Designed by B. Hooper, Architect.*] (*Second*)

ENTRANCE OF A TYPICAL NEW YORK MANSION.

PARLIAMENT BUILDINGS PROPOSED ADDITIONS NEW BELLAMYS & NEW MINISTERIAL & COMMITTEE ROOMS

No. 6



EAST ELEVATION.

WEST ELEVATION.

ELEVATION TO SYDNEY STREET.

PARLIAMENT HOUSE—THE NEW ADDITION IN SYDNEY STREET NOW BUILDING. [*J. Campbell, Government Architect*

Applications for Patents.

THE following list of applications for Patents filed in New Zealand during the month ending 15th June, has been specially prepared for PROGRESS.

22823—E. N. Murray, Sydney. N.S.W.; Combination shirt and tunic.
22824—E. N. Waters, Melbourne, Vic.. Wireless transmission of sonorous vibrations.
22825—G. Harker, Petersham, N.S.W.: Means of extinguishing fire and destroying vermin in ships, &c.
22826—W. H. Bryant, Wellington coal carrier.
22827—F. G. Browne and C. F. Lungley, Melbourne, Vic.: Treatment of hides, leather &c.
22828—D. McKenzie, Auckland. Combination ottoman, bed, and couch.
22829—A. and F. McLeod, Auckland Method of procuring kauri gum from swamps.
22830—J. Gallagher and W, H. Woollams, Auckland: Ointment.
22831—A. Jarrett, Glebe, N.S.W.. Liquid-delivering device.
22832—J. I. Watson, Brighton Beach, Vic. Tyre-pump for motor cars.
22833—G. Hutchinson, Christchurch Pneumatic valve cap holder,
22834—T. R. Hogg, Christchurch. Attachment to plough for feeding potatoes, &c.
22835—M. Moore and T. J. Heskett, Melbourne, Vic.: Reducing iron-ore.
22836—G. E. Noonan, A. P. F. Watson, and G. D. Watson, Christchurch. Attaching weights to trotting horses' hoofs.
22837—T, Mitchell, Southbridge: Window frame.
22838—W. Edgar, Dannevirke: Wire strainer.
22839—J. W. Wood and C. J. Ward, Christchurch. Operating tramway points from moving car.
22840—G. S. Willden, Dunedin. Concrete blocks.
22841—H. J. Haywood, Aramoho. Floor polishing apparatus.
22842—P. Rabbidge, Neutral Bay, N.S.W... Moist electrolyte for primary and secondary battery.
22843—H. Weatherall, Roxburgh: Water-lifting.
22844—F. W. B. Greville, Wellington: Milk-preserving.
22845—A. C. Idiens, Christchurch: Removing lead-headed nails from corrugated iron.
22846—F. Roberts, Auckland. Oil-feeder.
22847—J. J. Cronin, Wellington Tea compound.
22848—G. Robinson, Eltham Horse shoe.
22849—C. H. Hulme, Christchurch Billy-can.
22850—W. Brighton, Invercargill. Reserving gear for engines.
22851—H. G. Bedell, Westport Skylight.
22852—T C. McLennan, Dunedin Lock-fastening
22853—W. Beamish Dunedin Self-setting animal trap.
44854—H Hamilton, Kurow · Means for securing horse cover in position
22855—B. E. Colson, Auckland Hat-fastener.
22856—A. W. Smith, Christchurch Tyre.
22857—H. Childs, Ashburton Swingletree and pulley frame.
22858—L. W. Harris, and L. Morris, Dunedin Measuring wearers for garments.
22859—G. E. Spooner, Tauranga Vehicle-shaft coupling
22860—E. Hayes, Rough Ridge Wire-coiling machine.
22861—W. W. Pearce, Wellington Travelling-trunk.
22862—J. Wilson, Christchurch Duplicating letter and account books.
22863—R Murray, Balclutha Water-tap
22864—F. C. Brown, Kotata Lining for tube mills and ball mills, &c.
22865—A. Crook, Chritschurch Punching and milling machine.
22866—B. W. Benn Meemyan, Vic Teat-cup
22867—G. P. Jenkins, Ayr, Q Means for storing cold.
22868—S C. Lee, N. A Morkill, and Checkogram, Limited, London, Eng Counting and registering apparatus for turnstiles
22869—G. P. Jenkins Ayr, Q. Cooling brine for dairy purposes
22870—W. P West and A Rodger, Shepperton Vic Computing amount of butter fat in milk or cream.
22871—F. W. Ison Wentworthville, N S W Slicer for cutting animal feed.
22872—W. Tyree, Nelson concrete building
22873—T. Gare, New Brighton, Eng Manufacture and repairing indiarubber goods.
22874—F. Russell, Lismore, N.S.W.· Field gate
22875—J. Nerén, Orebro, Sweden, and Rhedin Goldkuhl and Co. (the firm consisting of A M. Goldkuhl and H J. Josephson,) Sothenburg, Sweden · Balance for sashes
22876—G. Clark, Melbourne, Vic.: Constructing walls and buildings with interlocking parts.
22877—W. H. Carter, junr, Wellington · Pin.
22878—F. L Fortescue, Arncliffe, N S W Ends-connector for metal tyres of wheels.
22879—A Cometti, Petone Potato digger and harvester.
22880—S. T. Beatie and W J Chapman, Sydney, N S W Method of marking race competitors
22881—W. G Richardson and M H. Scott, Auckland Drying New Zealand hemp
22882—T. E Carter, Auckland Window sash lifter and lock.
22883—J. P Lynn, Kalgoorlie, W.A Electro-magnetic stamp battery
22884—G W Hopkins, Cleveland U S A Acetylene blowpipes.
22885—J. B. and J. J Salmon, Dunedin Tyre protector
22886—H W Lach, Cleveland U S A Process of reducing iron-oxides
22887—C Chambers, junr, Overbrook, U S A Dough-mixing machine
22888—C. Chambers, junr. Overbrook, U S A. Dough-mixing process.
22889—T. C. Durham, New York. U S A Razor
22890—C. Kendrick, Tariki Unwinding barbed wire off spool
22891—J Walden, Matakana Detection of heat in bales of wool
22892—W Sim, Underwood Milking machinery
22893—W. Hamer, Devonport Portable boiler.
22894—G. W. Batcheler, Orepuki and A Tecofsky, Pahia Stump extractor.
22895—R. A. Fessenden, Washington, U S.A Electric signalling.
22896—M. Moloney, Christchurch Telephone transmitter.
22897—P. E. and A. G. Reid and J. G. Kosseck, Wellington Rat stop for drains.
22898—E. H. Smith, Otawhao Garment-stretcher.
22899—M. P. Coffey, South Melbourne, Vic.. Means for drawing off liquids.
22900—J. T. Benfell, Dunedin Embrocation
22901—W. Morton, Dunedin Water-wheel.
22902—G. E. Smith, Christchurch. Rubber over-shoes.
22903—G. Parrish, Chertsey; Telegraph wire insulator.
22904—H. M. Levinge, Okato · Altazimuth instrument.
22905—J C. and O H. Drewet, Auckland India-rubber concrete.
22906—J. H. Adams, Auckland Ferro-concrete former.
22907—W G Richardson, Auckland Flax-waste as cattle-food
22908—F W. Munt, Wellington Stamp affixing machine.
22909—M. Donaldson and G W. Williams Johannesburg, Transvaal Totalisator apparatus.
22910—J Macdonald Croydon Oil engine
22911—L T. Chambers and W E Thompson, Melbourne, Vic Fence-making machine
22912—T Robson, Wellington Carpenters' bench stop
22913—W. Maud, Lower Hutt Draught, ram and dust excluder.
22914—J B MacEwan and Co, Limited, Wellington: Cream-vat, cold-water tank, and cool-chamber
22915—J Henderson, Sydney, N S W Receptacle for small goods
22916—J. Budge and W Booth, Sydney, N S W. Butter cutter
22917—C Colpus Wellington Trolly-pole
22918—A Petersson, Alby, Sweden Charging electric furnaces for producing carbide
22919—A Petersson, Alby, Sweden Producing carbide from lime and carbon,
22920—United Shoe Machinery Company, Paterson, U S A Method and apparatus for making shoes
22921—O G Diefendorf, Binghampton, U S A · Brick machine
22922—W Foord, Macksville, N S W. Milk and cream cooler
22923—Massey-Harris Company, Limited, Toronto, Canada Conveyor for harvester-binder
22924—H N Bell, Invercargill Soldering of cans, &c
22925—T Poljakoff-Kowtunoff, Tjora, Russia Excavator
22926—M D Phelan, Boston, U S A Heel-seat rough rounding machine for boots and shoes
22927—A H Handley, Montclair U S A Sole-rounding machine
22928—G W E Broome, Auckland Hair pin
22929—W. E Hunter, Maungakaramea Wire-strainer.
22930—H. Donnelly, Roxburgh · Lamp-wick.
22931—R K. Donald Loch, Vic.· Cradle-crusher.
22932—Q Marion and W E Barton-Wright, London, Eng · Agglutinant for consolidating the active material for electric accumulators.
22933—J. C. C. Pearson, Auckland: Sleeper.
22934—W. M. H. M. Peacock, Christchurch:, Internal combustion engine.
22935—G. A. Maunsell, Remuera Smoke-preventing mixture.
22936—A. V. Davis, Auckland. Electrical re-toucher.
22937—D. Mulcahy, Freemantle, W.A.. Sash-fastener.
22938—G. Johnson, and F. J McLaren, Fremantle W.A. Safety guard for razors.
22939—A. Gillies, Heidelberg, Vic.: Pulsating teat-cups.
22940—W. Turnbull, Wellington Chimney-pot.
22941—H. R. Lees, Daylesford, Vic.. Potato &c., grading machine
22942—J. L. Thompson, Wellington: Securing blinds by spring rollers.
22943—A. H. Borgstrom, Hango, Finland: Manufacture of butter.
22944—L. H. R. Wiggs, Christchurch. Composition for closing punctures in tyres.
22945—T. Parker, London, Eng.: Fuel.
22946—C. L. Russell, Melbourne, Vic.: Collecting and removing dust from floors.
22947—T. J. McBride, Christchurch: Resilient wheel for vehicles.
22948—J H Krause, Nightcaps. Apparatus for preventing horses from running away.
22949—A. E. Davis, R Meyer, F. H. Medhurst, and J. E. Ferrar, Johannesberg, Transvaal: Transporting-apparatus for mines.
22950—G. Hyde, Masterton: Extension dining-table.
22951—G. G. Turri, Melbourne, Vic.. Procuring textile fibre from certain plants.
22952—W. H. de Baugh, Auckland: Heating arrangement for boilers.
22953—C. W. Ziele, Christchurch: Match striker for lamps, &c.
22954—E. J. Keogh, South Yarra, Vic.. Cleansing carpets, floors, ceilings, &c.
22955—J. M. Bawden, Traralgon, Vic.: Split link.
22956—J. W. M. Harrison, Wellington: Ventilator for windows.
22957—J. J. Clark, Kenniston, Vic.: Teat-cup.
22958—J. G. Maardt, Copenhagen, Denmark; Manufacture of beer-wort in dry state.
22959—Q. Marino and E. W. Barton-Wright, London, Eng.: Construction of electric accumulators.
22960—H. L. Barker and G. W. Westropp, Ashburton · Tyre-cover.
22961—G. C. W. Morris, Auckland: Water-jacketed flue for stoves, &c.
22962—T. Cahill, Auckland: Fire-alarm.
22963—W. S. Gardner, Palmerston North: Hinged keel for boats, &c.
22964—A Storrie, Invercargill Teat-cup.
22965—W. Davidson Clinton · Plough.
22966—R Glendinning and G. Beaumont, Dunedin; Loom
22967—P Ellis, Wellington Rotary motor.
22968—C. Tandy, Wellington. Boot-protector or sole stud.
22969—F T Boys, Napier · Iron fencing standard.
22970—H C Green, Napier Electric-indicator lock
22971—J. P. Belcher, Wanganui Hurdle.
22972—J. Burns Christchurch: Teat-cup pulsating device.
22973—W. E. Martin, Stamford, Eng.· Side-delivery rake swath-turner, &c.
22974—A Malden St Margarets, Eng, and W J. Malden, Surbiton, Eng.: Consolidating finely divided ore-materials.
22975—H P Lovatt, Todmorden, Eng. Composition and process for treating turnips, &c.
22976—R. J Coomber, Northcote, Vic. Flaying-knife
22977—H. Owen, Kilbirnie Trolly-hole retriever.

Full particulars and copies of the drawings and specifications in connection with the above applications, which have been completed and accepted, can be obtained from Baldwin & Rayward, Patent Attorneys, Wellington, Auckland, Christchurch Dunedin, etc

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James I Niven and Co., the Napier firm of engineers, who have recently opened an office in London, are making one of the largest shipments of cast-iron pipes which has left Britain, to the order of the Christchurch Drainage Board. It required no less than three steamers to deal with the shipment, the boats being the Star of New Zealand, the Arawa, and the Suffolk. We understand that the price of these pipes was cabled out from London, and the order cabled back. The ironworks in which the pipes were cast worked day and night to fulfil the order in the specified time and all the pipes were safely on board within twelve weeks of the order being placed.

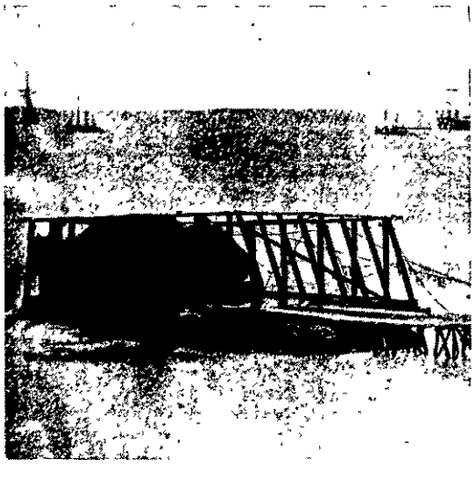
TIMARU: The Breakwater City.

A Wonderful Success.

Photographs for the illustrations of this article, from the studios of Messrs A Hardy and W. Ferrier.

The remarkable growth of the trade of South Canterbury during the past decade cannot fail to arouse the interest of New Zealanders. Timaru, the capital of the "garden of New Zealand" has in that time doubled its trade The revenue of the port shows four remarkable mile stones on the road to progress: viz., 1877, £1,798; 1886, £11,143; 1896, £19 024; 1906, £36,053. *The export of frozen meat from Timaru holds third position in last years record.*

Timaru supplies one of the many object lessons which the British race is always giving to the world in the art of self reliance, that quality for which the race is supreme, to which it owes its striking success as a coloniser. Lyttelton supplies another, and the people of Timaru took their full share in that great effort of colonising, self-reliant, enterprise. But when the passion for local government came upon them in due course, as it always does to the Anglo-Celt, they had to play a lone hand. This they did with all the energy and determined common sense which is the heritage of the race. The success of the two sections of the Canterbury population combined in the construction of the Lyttelton tunnel was immense. But the successful creation by the smaller section of South Canterbury of a port of refuge and working commerce on the open beach of Timaru is nothing short of amazing. The older enterprise proceeded on beaten lines, with every foot of which, and at every turn, the practical skill of the world was familiar. But at Timaru the task before the smaller section of the population was a struggle with the ocean, presenting many points of dis-



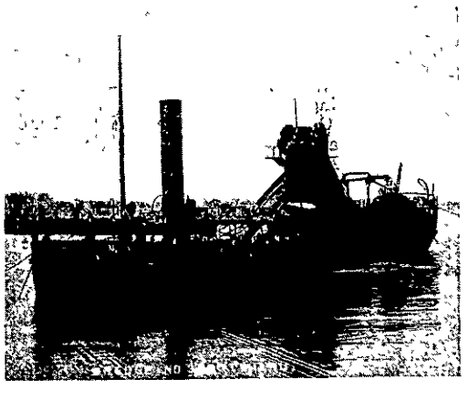
THE FIRST BLOCK OF CEMENT, 1882

agreement to the engineers of the day, and was generally considered by the experts to be beyond the reach of the most determined enterprise. The verdict of the engineering world was that the Timaru men were proposing to throw their money into the sea.

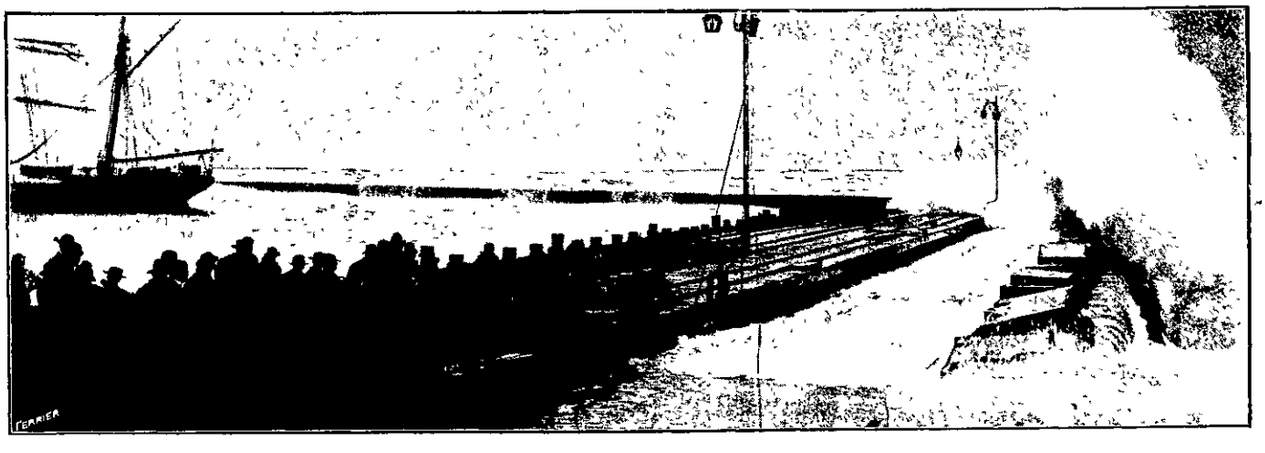
Timaru and South Canterbury generally however, determined to persevere, and persevere they did in the face of active opposition and veiled contempt from all quarters. In their tremendous fight they were not sustained by a single friendly hand. They got what money they wanted, it is true, and plenty of it. But they owed it to the security they had to offer, not at all to the proved merits of their scheme. Their security was the finest district in Canterbury, at that time the most forward Province on the list of the Provinces of the Britain of the South. The public creditor cared little whether they threw the money he lent them into the ocean. He knew that in the event of the worst they could pay him, and that, come what might, they would pay to the last fraction.

So they started their breakwater. They were far from any practicable harbour, they knew that if they did not improve their roadstead they would be handicapped for all time with a heavy impost on their produce. Therefore they had determined to have a port of their own.

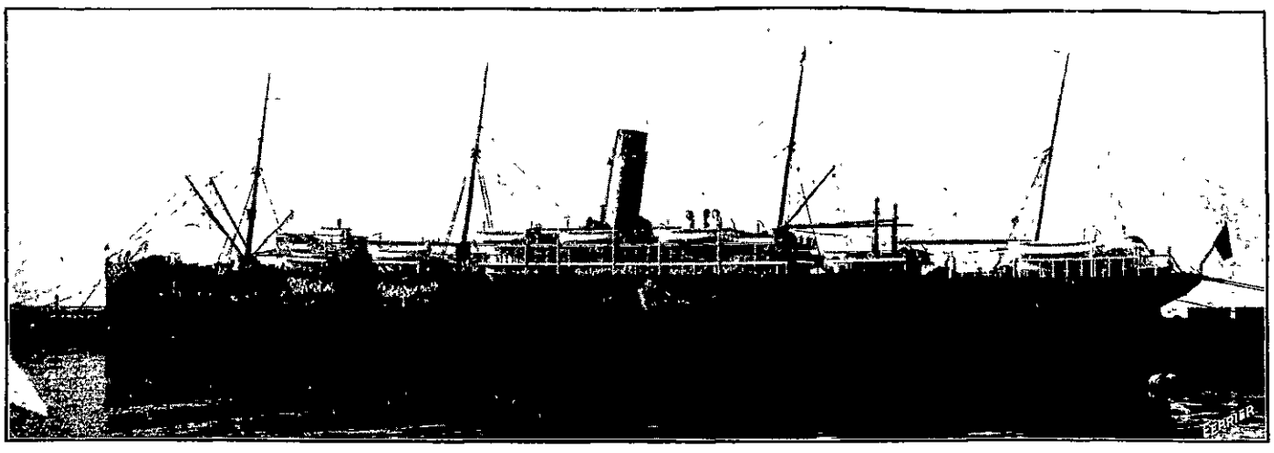
They set about the work cannily. In the beginning they obtained the advice of an engineer of great eminence in the work of breakwater construction, Sir John Coode. From him they got a plan beyond their means, and the plan they saw at a glance was not likely when complete to supply their needs. Therefore they fell back on what talent the colony afforded, and in Mr. Goodall, their first engineer, they got a man in every way qualified to lead them in their fight with the sea. The travelling shingle, so admirably described by the late Sir Julius Von Haast, was the chief enemy they had to deal with. Their engineer persuaded them to meet that enemy fair and square. They met him accordingly and the fight was very keen, and the enemy nearly beat them. As their breakwater proceeded the enemy followed the line outwards, threatening to choke up the harbour they were forming. The engineer had conquered the violence of the ocean, for his structure had withstood some of the heaviest seas in the experience of man. But the shingle was a worse enemy. That enemy he tackled with resource. In the event of the worst he calculated that with an expenditure of £1,000 a year he would dredge out every year as much shingle as the sea chose to drive inside the boundaries of his harbour. When Mr. Maxwell succeeded to the position of engineer he obtained data which showed that the calculations of his predecessor were far below the mark. But this only served to



THE DREDGE.



BEFORE THE CONSTRUCTION OF THE EASTERN MOLE.



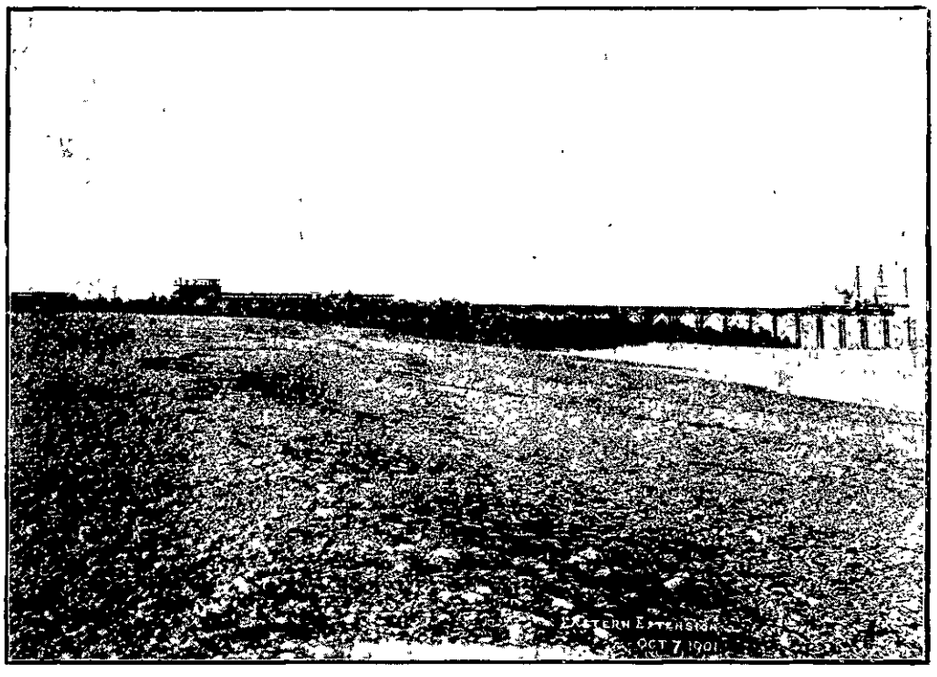
AFTER THE CONSTRUCTION OF THE EASTERN MOLE S.S. "ATHENIC," 12,224 TONS, AT THE MAIN WHARF. THE "ATHENIC" IS THE LARGEST VESSEL TRADING TO THE COLONY, AND IS OCCUPYING THE BERTH WHICH IS VACANT IN THE PRECEEDING VIEW.

better measure the enemy's strength, not as an inducement to surrender at his dictation. It is not necessary to go into the details of the long struggle that ensued, during which the sea poured the shingle over the breakwater at the rate of thousands of tons through the year, and the Board dredged it out as fast as it came in. The Board however, soon discerned that the price of its victories was too great, and it determined at last to extend its lines further out into the ocean.

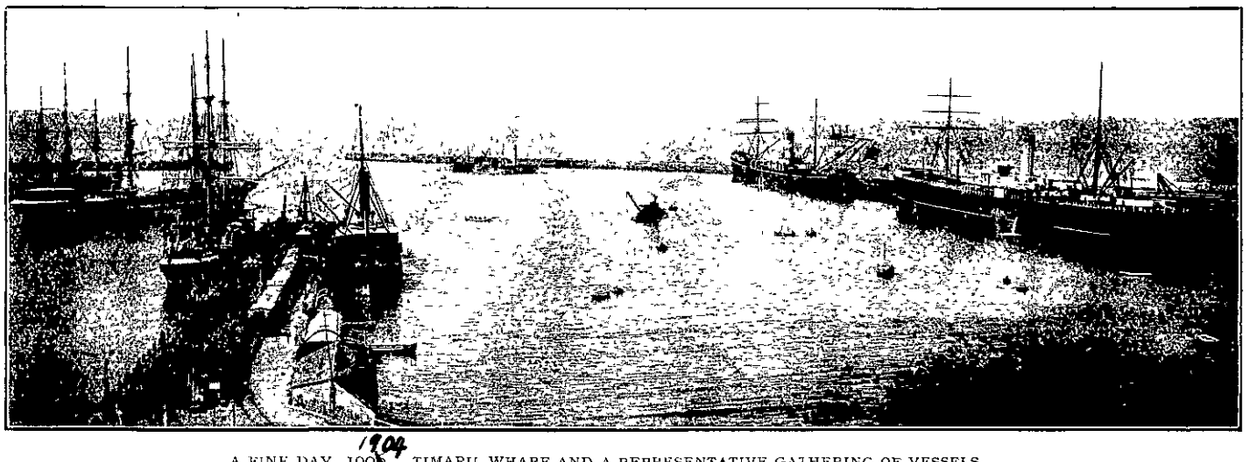
Before reaching this point the harbour was brought into use, and shipping came from all sides. It was found however, that the conditions were such that on the approach of bad weather the shipping had sometimes to put to sea in a hurry, thus reversing the position of all harbours, which offer refuge to the mariner, when the elements are rough. Moreover, the working time while the shipping remained in the harbour was greatly encroached upon by the "range" of the sea, which had a trick of sweeping into the port and knocking the shipping about in the most tremendous manner. To lessen this rough horseplay, the northern mole was built, but the result was not as satisfactory as expected, and it was not until the extension of the eastern mole outward provided more shelter for the port that the difficulty of the range was eliminated.

The extension cost £130,000. The Board spent the money in pitching something like half a million tons of rock from its quarry into the sea on the line of the eastern extention, out seaward and then curving coastwise towards the north as shown in our illustration. Thus the Board made an outer harbour round an inner dock, so to speak. The shingle ceased to enter, nay more, it grew into a bank protecting the wharves from the sea; and the "range" was no more. The result is that the largest vessels in the trade of these seas find no difficulty in entering the port of Timaru: they lie there snug in the very worst gales, and it is a country of great gales. They get swift despatch, and there is no danger whatever to disturb the peace of mind either of their owners, or underwriters. A glance at our illustrations shows the full force of the position conquered from the sea in spite of its very worst moods. One of these depicts the Athenic lying peacefully at the wharf just as snug as it is possible for a ship to be. Another shows the laying of the first big concrete block of the first structure attempted by the Board. It shows also the shipping in the roadstead under the old conditions. In the interval of thirty years between the two lies the story of one of the most indomitable and most successful fights with the ocean in the records of Australasia. The old order depicted recalls the heroic spirit of early colonisation. The new breakwater is one of the most striking monuments to the success of the mightiest effort ever put forth by that spirit in these seas. In the year 1882 the Board's people berthed a ketch carrying a few thousand feet of timber, and with her despatch opened the breakwater to commerce. The whole country side went wild with enthusiasm and voted every time for the breakwater. To what degree of practical determination will not the sight of the majestic twelve thousand tonner Athenic, one of the greatest achievements of the hand of man, nerve this splendid people?

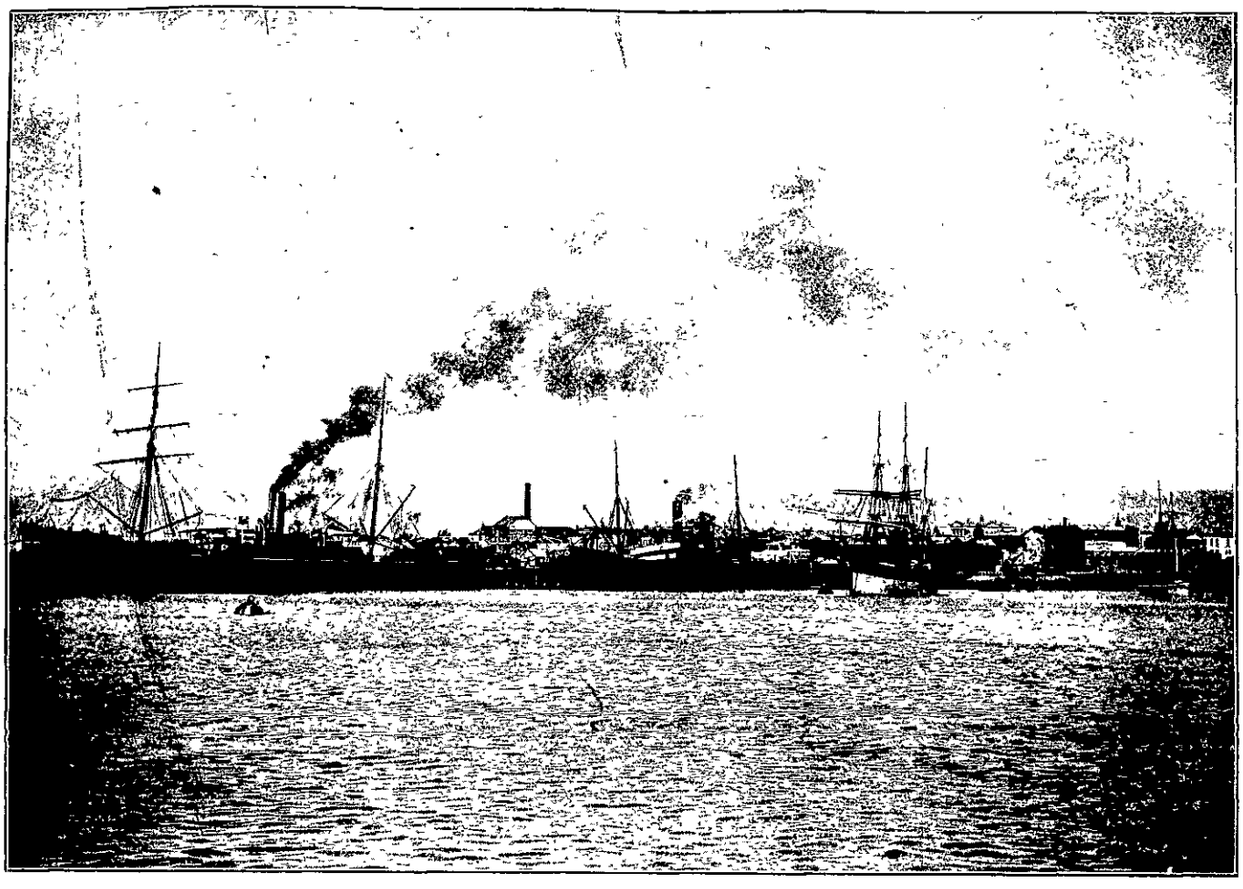
In presence of this great success it is interesting and even amusing to note that the distrust of the early days, that quality which was indulged as a neighbourly luxury from the



ERECTING THE BREAKWATER.



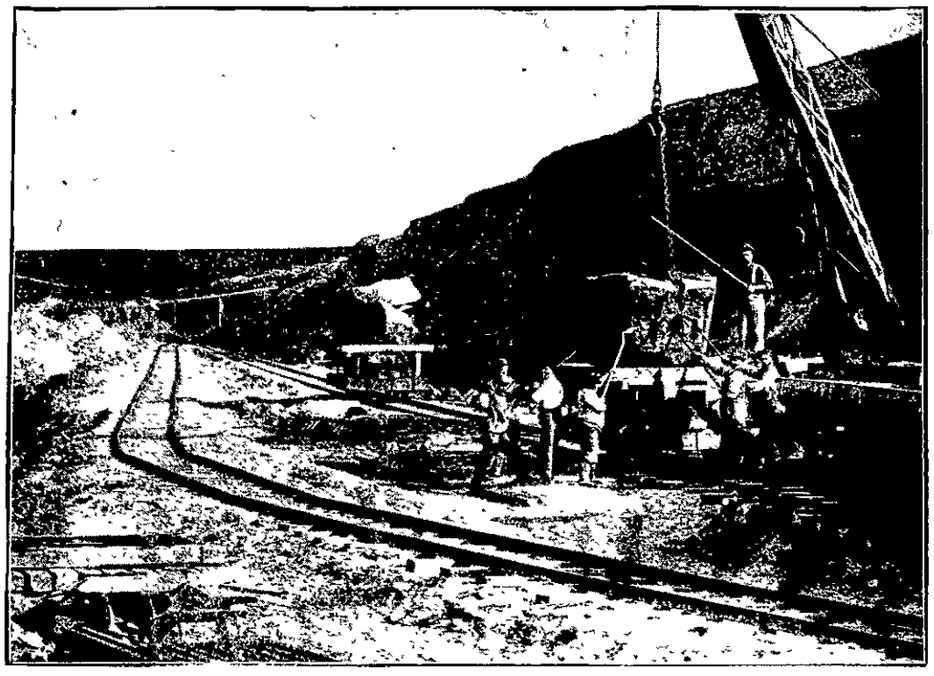
A FINE DAY, 1904. TIMARU WHARF AND A REPRESENTATIVE GATHERING OF VESSELS.



THE HARBOUR (FROM THE SEA)

TIMARU HARBOUR BOARD

Back Row (from left to right)—C. E. Wightman (clerk), Captain T. N. Clarkson (harbourmaster), C. N. Orbell, W. Hayman, R. Thew, C. H. Besley.
Middle Row—Press Reporter, J. H. Baynes (resident engineer), J. Chisholm, F. J. Rolleston, F. H. Smith (junior).
Front Row—W. J. Bardsley (secretary), R. Skinner, J. Fraser, J. Craigie (chairman), C. Bowker, J. Manchester, T. D. Young.



GETTING OUT THE STONE.

time of the old local government of South Canterbury (the S. C. Board of Works), is still to the fore. Not long ago an eminent naval authority wired from the Bluff "Is it possible to berth my ship comfortably?" the said ship being an 800 ton sloop. A more serious instance is the story of a careful owner who, hearing in some benighted quarter that Timaru was hardly safe, declined to permit his barque of 750 tons to go there to take up a wheat cargo which he had secured for that extensive craft. This wonderful decision was made at the very moment when three steamers of an aggregate tonnage of 25,000 tons—one of them the Athenic of twelve thousand aforesaid—were lying at the wharves; to say nothing of a fleet of smaller craft in the basin.

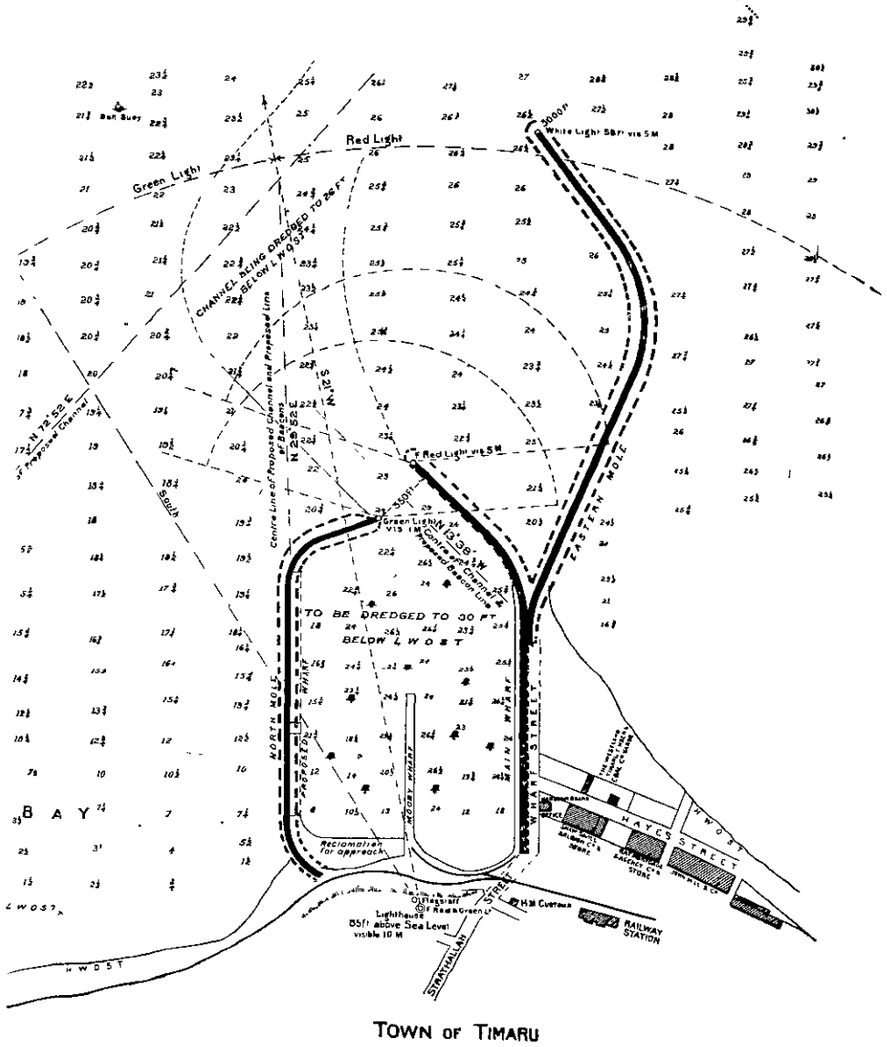
But these are pinpricks, merely. South Canterbury has the most solid ground of satisfaction with the harbour wrenched from the sea. It is not only that the biggest of ships come there. The great fact is that their presence means a striking financial success for the district. In 1899 the Board measured that success clearly:—

"The dead weight of cargo handled at the port of Timaru since and including 1883, the date of the first loan, up to 31st December, 1898, has been 1,243,415 tons. The cost of railing this cargo to Lyttelton at say 15s. per ton would have been £932,561, or, in other words, the district has been benefited by the Harbour Works to the extent of £883,597, since 1883, an amount which exceeds very greatly the whole cost of the Harbour Works, with the harbour rate included The saving to the district for the current year will not be less than £70,000. If there were no harbour to compete with the railway, the railway rates would be for merchandise, according to class 27/6, 34/7, 42/10, 51/4, per ton, grain 11/11, wool 13/3 for a double dump, timber 3/3 per hundred feet super, coal 10/5 and 13/4 per ton, so that it will readily be seen that the actual loss to the district if the harbour were closed, would be very much greater than the present saving as stated above. The coastal trade is very large in addition."

Since these words were penned there has been a great development in Timaru. The exports, foreign and intercolonial, went from £475,000 in 1895, to £1,042,000 in 1905 and the imports rose from £75,000 to £227,000. With these figures of value as a guide to the tonnage handled, it is a safe surmise that the £883,000 of profit shown in 1898, has grown to something like a million and a half by the present date. On the other hand the harbour which has saved the country that large amount has not cost half a million all told. A whole million sterling has, in consequence of the harbour, remained in the pockets of the producers of South Canterbury as clear gain, after paying for their famous breakwater. They can afford to laugh at the ancient sneer at their "Bill of Rights," as the proposed breakwater used to be termed in old days. As time goes on, these gains will increase, for the days of close settlement are come in South Canterbury, and the productiveness of the fine soil of the country may be relied on to largely increase the tonnage handled by the harbour people, with corresponding increase to the profits of the producers. At the same time the energy, sagacity and courage of the past are guarantees that whatever devices the ocean may, in the future, develop against the southern breakwater, they will be met and conquered in the best manner, for which the large and increasing producing power of the district will assuredly supply the means.

Asbestos.

Taking into consideration the fact that asbestos is absolutely as "old as the hills," it seems almost incredible—when one glances around at this twentieth century world of ours, with its numerous signs of discovery and progress in all directions, its scientific wonders, and ingenuity so conspicuously stamped on everything—that this particular mineral should remain so little understood and practically unknown outside expert circles. Yet that is the case, unfortunately for the public at large, who, it is obvious from reports of the all too many disastrous fires we so frequently read, are sometimes called upon to pay the penalty for their ignorance—or neglect?—with their lives. Undoubtedly many individual lives that have been thus awfully lost, and probably more than half of the buildings, might have been spared to the world were this great natural fire-fighter, asbestos, only more generally in use and universally adopted.



TOWN OF TIMARU

PLAN OF THE HARBOUR WITH SOUNDINGS.

The Race for Progress.

In face of the vast improvements in speed reliability, etc., of autocars, it seems ungracious for people to complain. Yet they do. For example, here is a complaint voiced in a journal of the trade :—"No one seems to care to standardise a car, and, as soon as you have bought one, it is practically out of date. Increase of h.p., weight, size, upkeep, and gearing, are the present manias of manufacturers, and soon the poor men of small means will have to return to their cobs and groom-gardeners." Upkeep and initial expenses of the higher power (from 5 to 8) he says have knocked him out, and he is an enthusiastic motorist, if chained to the inexpensive side. The Editor condoled thus :—

We think our correspondent overlooks the fact that the increase in power which he laments is usually due to pressure from users of a car. They have, say, an 8-10 h.p., and like it. They beg the maker to make it more powerful, or more roomy, but no slower, and, if enough of them beg, he does as they desire.

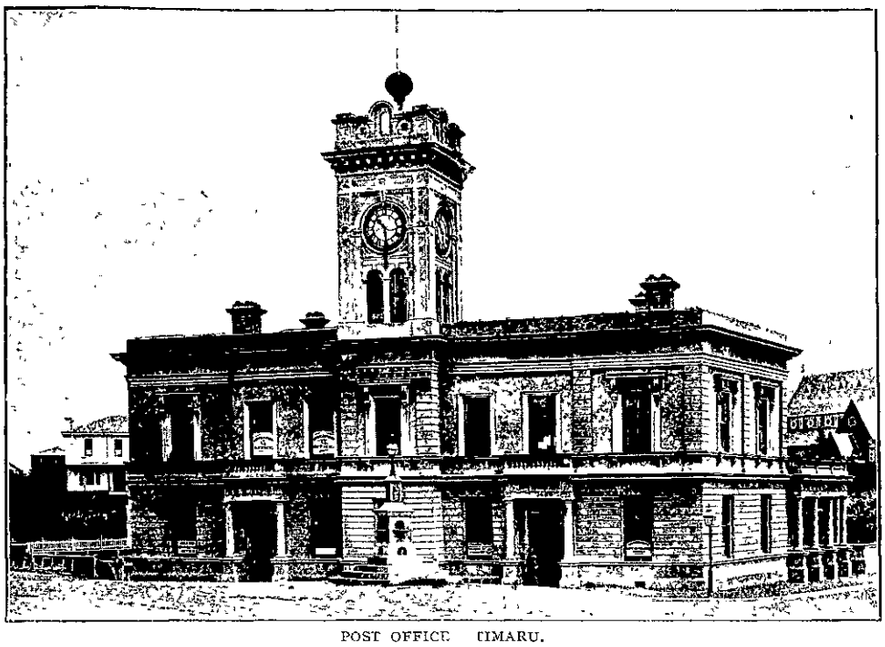
Neat and not without reason doubtless, still there is something in the complaint. In the old sarcastic ballad we read that "Moderate men looked big, Sir." Nevertheless there is reason why the moderate man should be catered for. The pence of the poor have built big churches ; in like manner the small cheques of the moderate men may build up a big share of the business of motor factories.

Birmingham.

Before the Norman Conquest Birmingham was already a market town; indeed, some affirm, a centre for hardware. This early date for the origin of the towns' great manufacture is, however, not authentic. The first reliable reference seems to be in Leland's "Itinerary," published in the reign of Henry VIII This writer observes "The beauty of Birmingham, a good market towne in the extreame parts of Warwickshire, is one street going up alonge almost from the left ripe of the brooke, up a meane hill by the length of a quarter of a mile. I saw but one Paroch Church in the towne. There be many smiths in the towne, that use to make knives, and all manner of cutting tooles, and many lorimers that make bittes, and a great part of the towne is maintained by —smithes, whoe have their iron and sea-cole out of Straffordshire."

Telluride.

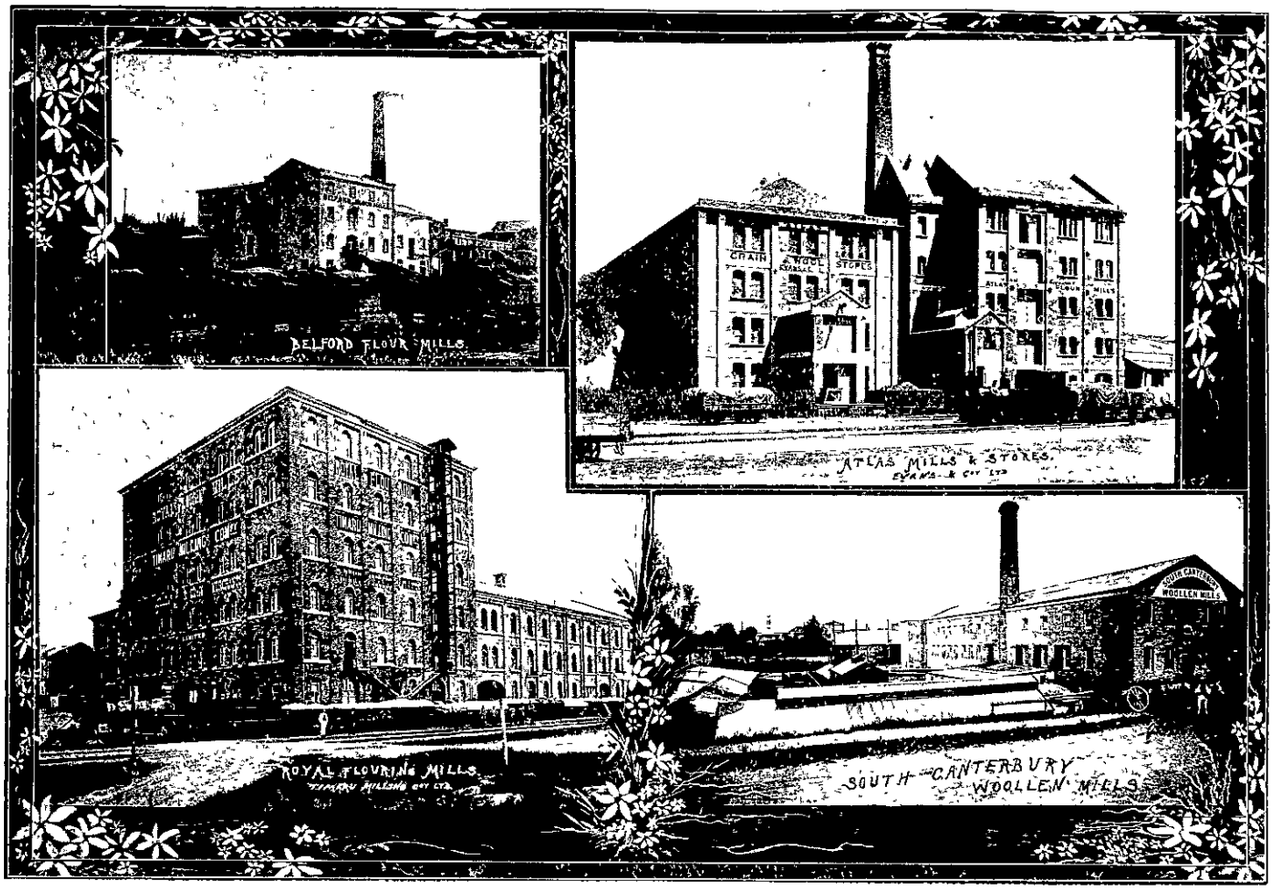
The successful treatment of gold and silver ores of a refractory nature, such as telluride arsenical, and pyritical ores is of great interest to the mining industry in general, and the Mount Zeehan mine is to be worked by the above process Mr. A. T. Firth mining and metallurgical engineer, who lately visited Wellington in connection with this company, recently received the following wire from the secretary (Mr. A. E. Bucher), Auckland :—"Pond's assay, new reefs average £20 1s. 9d. per ton" This refers to three new reefs discovered just prior to the date Mr. Firth left Auckland. Owing to the successful treatment of refractory ores by the above process, Mr Firth states that over 100 square miles, containing millions of tons of refractory ore in the Waiomo district, to the north of the Thames goldfields can now be successfully treated —(*N Z Times*)



POST OFFICE TIMARU.

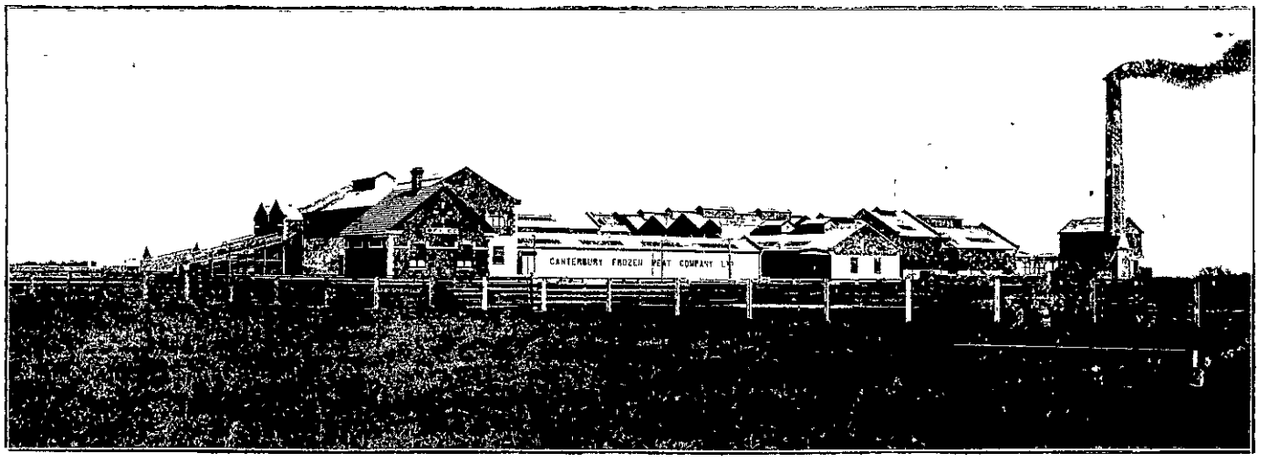
Late files of Canadian papers give details of a remarkable "ash-burning secret," discovered by an Altoona cobler. This is how heat is said to be obtained from ashes :—Moisten with either salt water or salt water in which oxalic acid has been dissolved a mixture containing one part coal and three parts ashes, and a better fuel than pure coal is obtained. The ashes of anthracite coal burn as readily as those of bituminous coal. This mixture will, upon being placed upon a burning fire fuse into a coke like mass and deposit but little residue. The salt water may be obtained by the dissolution of common salt in water. The chemical action of this compound is thus explained :—When an aqueous solution of an alkaline salt, such as common salt is mixed with coal ash the result is that a mild lye is formed, which, when mixed with any combustable material such as coal, and upon the application of heat, gives off oxygen gas, thus promoting rapid combustion. The addition of oxalic acid causes a chemical change of greater value than the first, for the reason that second chemical breakdown results in the formation of a carbide, which in turn gives off acetylene gas, thus adding to the intensity of the heat and facilitating complete combustion. Many large industrial places in Altoona are said to be profiting by this invention.

STAFFORD STREET, TIMARU.



SOME INDUSTRIES OF TIMARU.

SMITHFIELD FREEZING WORKS (CHRISTCHURCH MEAT EXPORT CO.).



PAREORA FREEZING WORKS (CANTERBURY FROZEN MEAT COMPANY).

ELECTRICITY.

The Borough of Timaru has entered into a contract with Messrs. Scott Brothers to do the public lighting of the town for a period of 21 years, and have given the company the sole right to distribute electric current within the borough for the same period, reserving to themselves the right to purchase the installation at any time during that period.

Messrs. Scott Brothers are at present erecting the generating station on a site on the railway siding and near to the premises of the Timaru Milling Co. It is proposed to instal to begin with two sets — one a direct coupled set with Belliss & Morcom quick-speed compound engine coupled to a 70 killowatt generator.

The other set is composed of a 110 kilowatt generator driven by a horizontal cross compound steam engine of 150 horse power.

The installation is to be on the three wire system with a voltage of 440 between the outers, the current being distributed to consumers at a pressure of 220 volts.

It is expected that one of the generating sets will provide sufficient current for some time, but Messrs. Scott Brothers are installing 450 horse power in boiler capacity in 3 units so that the two sets may be run at once, if necessary, still leaving one spare boiler in case of breakdown or repairs.

It is expected that the whole system will be running in about four months from the present date.

"PROGRESS."

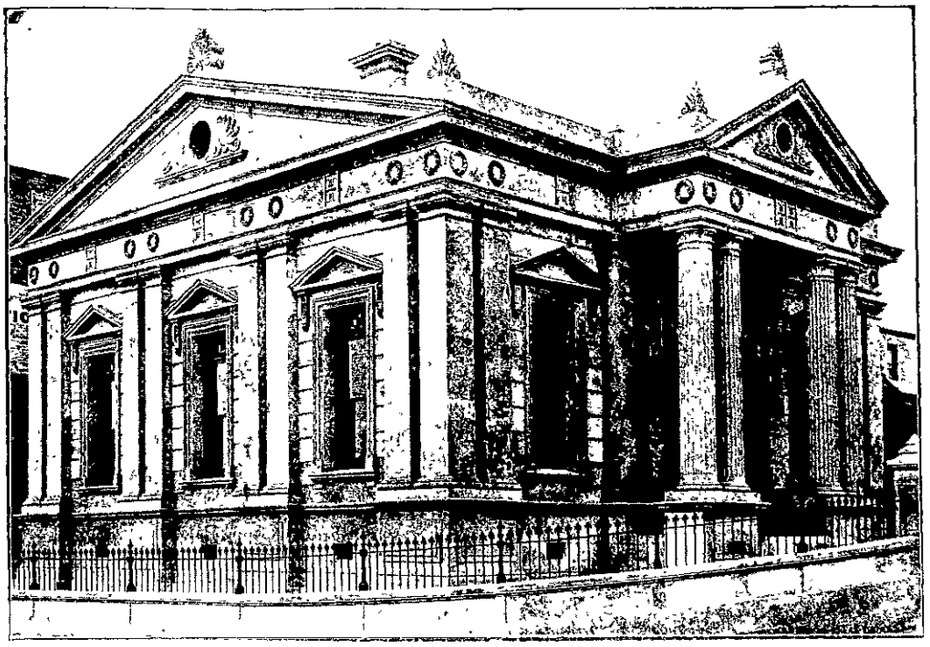
Enclose Postal Note for five shillings, and you get the best monthly in the Colony.

No. 2, Chancery Lane, Christchurch.

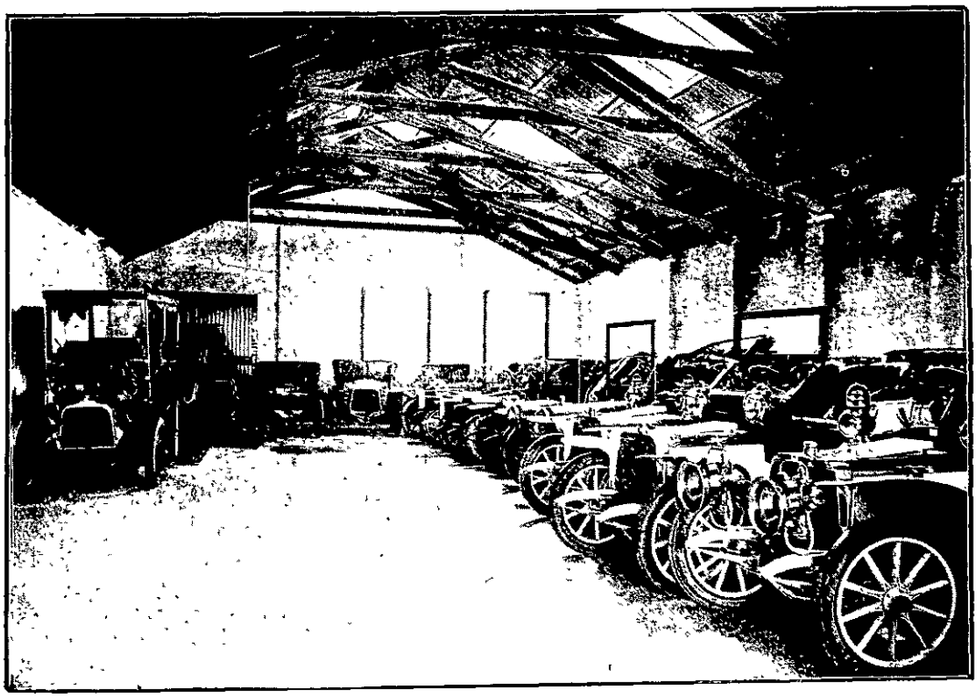
J. G. Jarrett,
Consulting and Inspecting Engineer.
Machinery Valuator.
Reports prepared, reliable and confidential.

The Great New Industry.

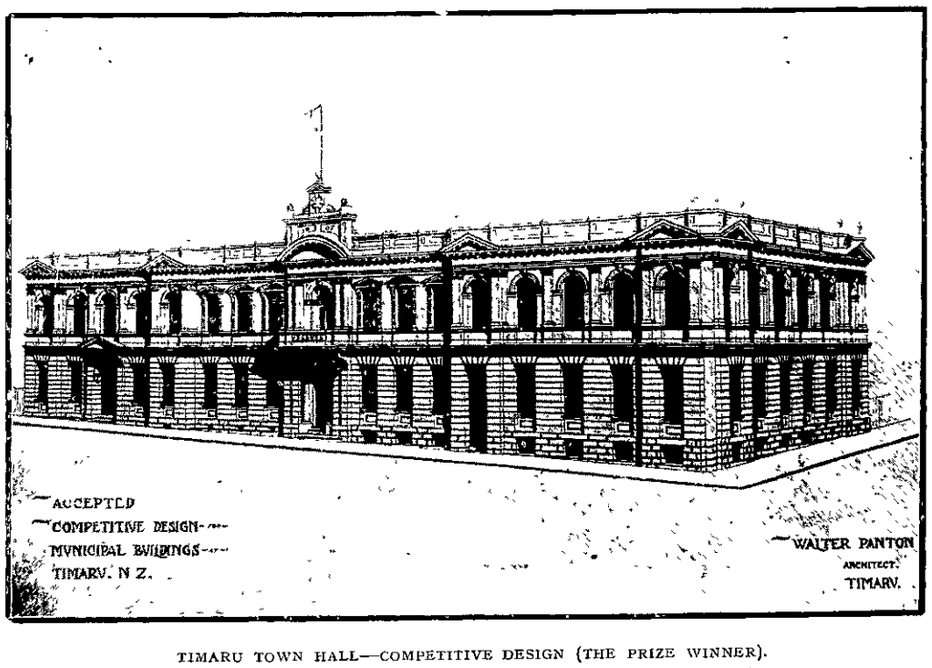
MIRACLE BLOCKS.
BEST ON EARTH.
Machines etc., for everything in the Concrete Line manufactured by the
Miracle Pressed Stone Co., U.S.A.
SOLE AGENTS
C. A. HAMLIN & CO.,
AUCKLAND, and CHRISTCHURCH EXHIBITION.



CUSTOM HOUSE TIMARU.



MESSRS SKEATES AND BOCKAERT'S MOTOR GARAGE.
The Cars for the Mt Cook Motor Service were supplied by this firm.



TIMARU TOWN HALL—COMPETITIVE DESIGN (THE PRIZE WINNER).

TYPICAL TIMARU HOMES—RESIDENCE OF MR. W. R. MCLAREN. [*Jas. S. Turnbull, Architect*]

Motoring to Mount Cook.

A CLEAR DAY SAVED—MUCH COMFORT GAINED.

"All aboard for the Hermitage!" It is a familiar cry that "All aboard." How many of us there were who used to feel it like the crack of a whip on our backs as we bent over a hurried choking, scalding breakfast! How few of the present generation know anything about it! At Fairlie, in South Canterbury the old cry is heard, with so to speak a new face. In the old days, it meant Cobb & Co. and five horses, sometimes six. To-day it meaus motor-cars and twenty to sixty horse power.

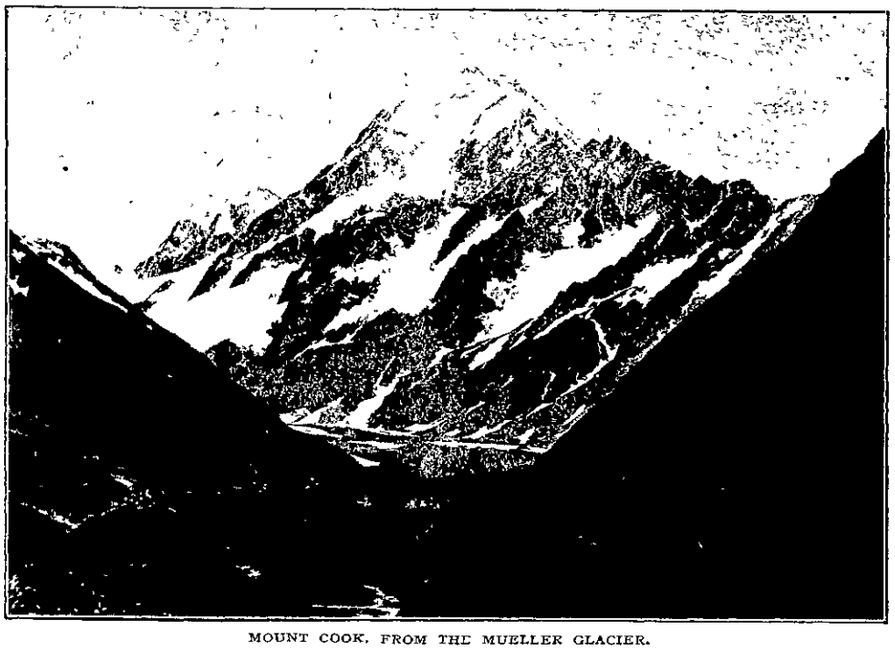
That is why the journey from Fairlie to the Hermitage, *via* Burke's Pass, which used to take two days is now done in one. From the pass the road drops easily into the Mackenzie Plain, a large yellow oval in the setting of tussock hills of bold outline. Across it goes to the great lake of Te Kapo; then it sweeps southward and westward to the lake of Pukaki. Before reaching the Southern shore thereof you go over Dover's Pass, and you have your first view of Mount Cook, and the tallest captains of his Alpine staff. You linger a while to become impressed with the fact that there is no mountain like Mount Cook.

From the hostelry of Pukaki the road goes round the Rhoboro Downs, comes out on the Western side of the Lake, and lies in the valley of the Tasman till the junction of the Hooker, which stream it follows to the Hermitage. All this in a day, partly due to the motoring enterprise of Messrs. Wigley and Thornley and partly to the action of the Government in bridging the streams, and making new roads and keeping them in good state of repair. The car service performs the journey from Fairlie to the Hermitage, a distance of 96 miles, in ten hours, with stoppages at Burke's Pass, Lakes Tekapo and Pukaki, and other smaller settlements, to pick up and deliver mails and to allow the passengers ample time to get refreshments. The return journey is made in the same time.

The Mount Cook Hermitage, which is the base of operations for peak climbers and less ambitious ice excursion parties, is favourably situated in the Hooker Valley under the steep bush-covered face of the Mueller lateral moraine. Directly in front, the Sealey range raises its huge bulk, while to the right Mount Sefton, with its mantle of perpetual snow and ice, stands out in bold relief. Behind, overlooking Mount Wakefeld, Aorangi lifts his ice covered pinnacles far into the blue sky. The old part of the house is built of glacial clay, while later additions are of wood and iron. There is accommodation for about forty visitors, who can rely on getting all the comforts and conveniences of a first class hotel. To visit the immediate surroundings of the Hermitage is all that can be attempted in the sojourn of one day, and it is to those who have such short time at their disposal that these lines are addressed.

GLADSTONE HOTEL, FAIRLIE—THE CARS READY TO START.

A favourite one day excursion is across Mueller glacier to the base of Mount Sefton, the return journey being made by climbing Mount Sealey, which is over 8,000 feet high. The route lies up the Mokomoko valley to Kea Point, whence the descent into the Mueller glacier is made. In this valley many species of alpine plants and shrubs grow in luxuriance. The snow white gentian, celmesias (mountain daisy) Mount Cook lilies, Alpine forget-me-nots, and other flowers thrive in their native air. The shrubs bear various coloured berries, and the white broom blossoms profusely. From Kea Point the descent is made to the glacier with its chaotic mass of moraine. On reaching the



MOUNT COOK, FROM THE MUELLER GLACIER.

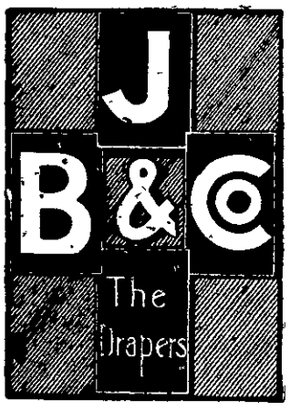
centre of the glacier the ice is met with, cropping out from under its covering of stones like quartz reefs in rocky country. Once free of the moraine hazardous descents have to be made down ice faces, and unless due care is exercised, one is apt to reach the bottom of the ledge in a position the reverse of dignified. The ice is full of great fissures, called crevasses, some of which are hundreds of feet in depth. From this point the avalanches, which are almost continuously thundering down the glistening sides of Sefton, can be plainly seen. Pushing on, the balance of the ice may be negotiated, and the base of Mount Sealey reached. Ascending Sealey from the West, all the giant peaks in the district are seen in a panorama, the magnificence of which cannot be excelled in any mountain region in the world. From this vantage ground Mount Sefton and the Footstool, St. David's Dome, the Minarets, Tasman, Haidinger, De la Beche, and other giant peaks can be seen with Cook standing high above and dominating the whole group. After viewing this scene of wondrous beauty, the descent of Sealey is made, and the Hermitage reached in time for dinner.

Another popular excursion, which occupies a day, is the journey to the Alpine Garden in the Upper Hooker Valley. After a three hour's walk up the valley a halt is made at the twin mounts, Rosa and Mabel. The prospect is a charming one, having immediately in front the Moorhouse range, while to the right Mounts Cook and Stokes, separated by a half mile of white ice-glacier, rear their crystal peaks into the ethereal blue. Growing among the turf which carpets the valley are to be found white snow and coral berries. In crannies of the rocks, away up towards the snow line, the edelweiss thrives, and the Mount Cook lily makes its home under the patronage, so to speak, of his great name-sake. A great peace seems to permeate the valley, yet mutation is going on continuously.

TYPICAL TIMARU HOMES—RESIDENCE OF MR GLADSTONE ROBINSON. [*Jas. S. Turnbull, Architect.*]

Timaru Town Hall.

The accompanying illustrations of the four competitive designs sent in for the new Timaru Town Hall, together with the accepted design, will serve to demonstrate the material progress which the South Canterbury centre is making. It is proposed to combine in the new building a Carnegie library, municipal offices and town hall, the latter with a seating accommodation for over 1,000 people, and the building as a whole should prove of great benefit to the town. Messrs James S. Turnbull and Meason & Marchant did not enter the competition.



J. Ballantyne & Co.,

THE

DRAPERS AND GENTLEMEN'S OUTFITTERS,

TIMARU.

Our Progress attained through Merit,

AND MAINTAINED TO-DAY BY

Sterling Honesty of Purpose

IN SUBMITTING THE LATEST AND BEST AT MODERATE COST.

OUR STOCKS are always interesting, being constantly replenished with Novelties from the

CHIEF CENTRES OF FASHION.

"OUR GOODS APPEAL TO YOUR TASTE." "OUR AIM IS TO PLEASE."

Typical Homes.

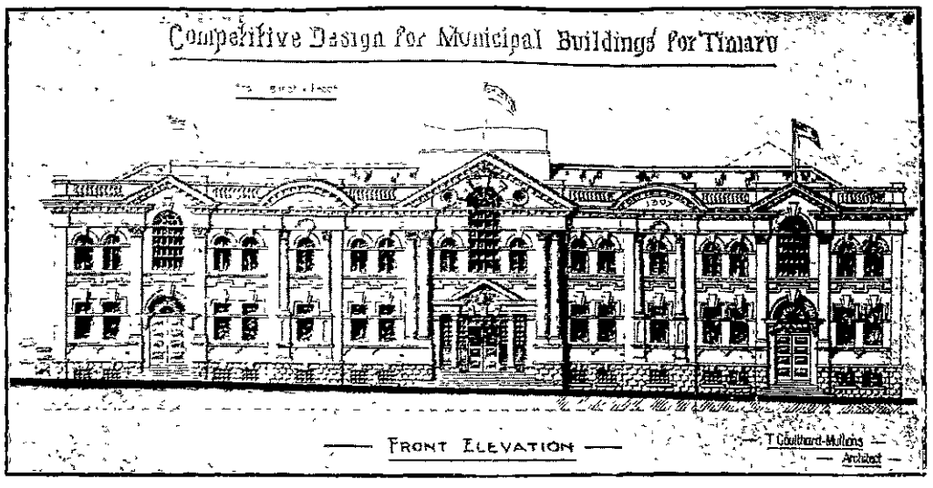
Just as Timaru is showing improvements in her civic buildings, so the residential portion of the community is establishing a claim to having some of the prettiest homes in Canterbury. The elevation and plan of Mr. McLaren's residence shown herewith will amply justify this opinion, as also will the elevation and plan of Mr. Gladstone Robinson's house. Both these residences were erected under the supervision of the architect, Mr. James S. Turnbull. (See page 341.)

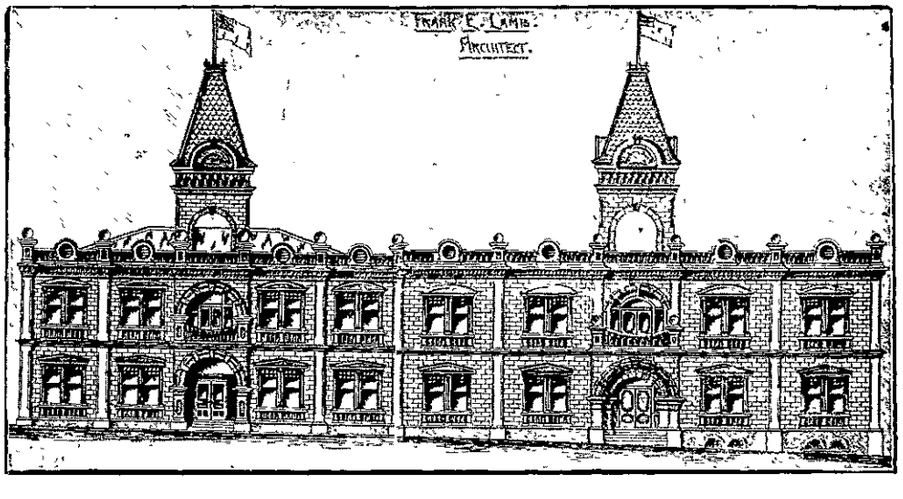
Odds and Ends.

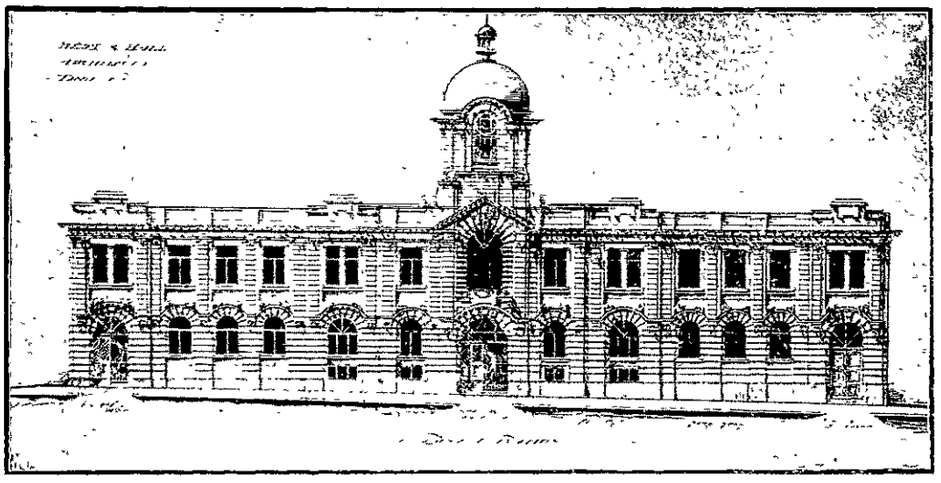
It has been for many years a hidden secret from builders how masons hundreds and thousands of years ago managed to make mortar which practically defied the ravages of time. In the ruins of old castles, churches, etc., one will frequently see an overhanging arch the other side of which has been battered down, perhaps by cannon balls years ago. This fragment seems to defy the laws of gravitation, owing to the excellent binding of the mortar. It is now stated that the Hungarian chemist, Brunn, has discovered the secret of this, having compounded a liquid chemical which renders certain kinds of matter proof against the effects of time. Professor Brunn asserts that it doubles the density of nearly every kind of stone and renders it waterproof. It imparts to all materials qualities which defy oxygen and rust.

* * * * * *

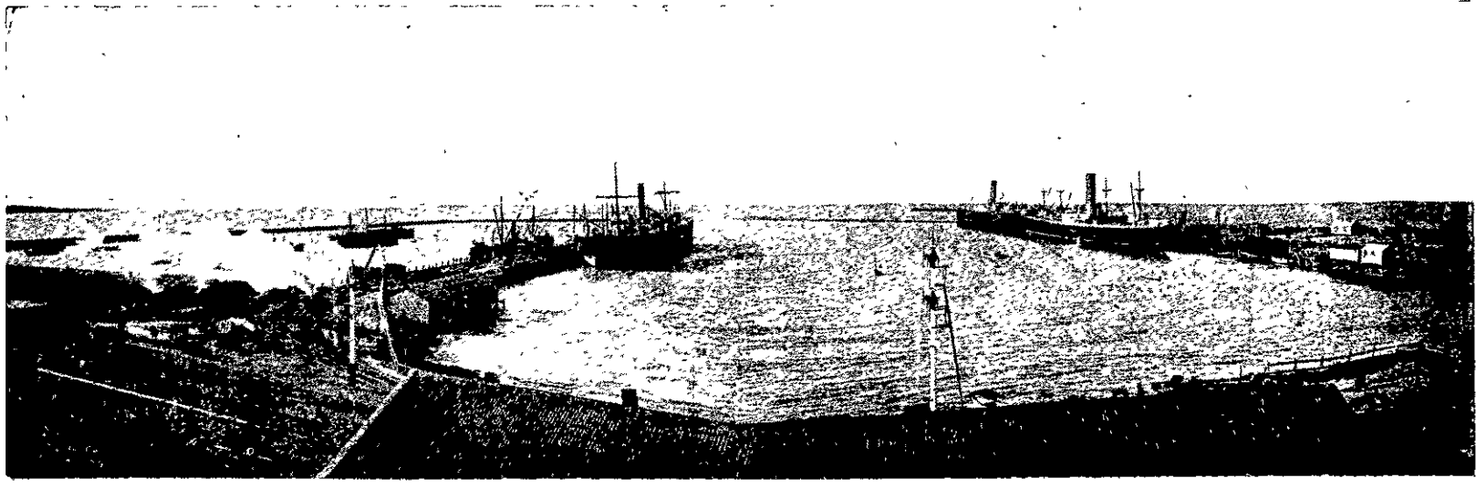
Some years ago M. Berthelot, the great French scientist, whose death occurred in March, made a remarkable speech at the banquet of the Syndical Chamber of Chemical Product Manufacturers, taking for his subject "The World in the Year 2000." Here is an extract:—When energy can be cheaply obtained, food can be made from carbon taken from carbonic acid, hydrogen taken from water, and nitrogen taken from the air. What work the vegetables have so far done science will soon be able to do better, and with far greater profusion and independently of seasons or evil microbes or insects. There will then be no passion to own land, beasts need not be bred for slaughter, man will be milder and more moral, and barren regions may be preferable to fertile as habitable places, because they will not be pestiferous from ages of manuring. The reign of chemistry will beautify the planet. There will under it be no need to disfigure it with geometrical works of the agriculturist, or with the grime of factories and chimneys. It will recover its verdure and flora. The earth, in fact, M. Berthelot added, "will be a vast pleasure garden, and the human race will live in peace and plenty."







TIMARU TOWN HALL—COMPETITIVE DESIGNS (THE UNSUCCESSFUL).



GENERAL VIEW OF TIMARU HARBOUR, 1907.

STANDS TO REASON

that in

THE MOST PROGRESSIVE CENTRE

in New Zealand there should be the most UP-TO-DATE GARAGE, where the best collection of the latest world-renowned

DE DION and DARRACQ CARS

from 6 h.p. up to 40 h.p., can always be seen and tried.

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The Canterbury Farmers' Co-operative Association Ltd., - - - Timaru.

Subscribed Capital £150,000 Reserve Fund £42,972

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THE Association supplies every description of Farmers' Requisites, including Agricultural Machinery and Implements, Cornsacks, Woolpacks, Binder Twine, Superphosphates, and other Fertilizers, Agricultural Seeds, Flower and Vegetable Seeds, and all descriptions of General Merchandise.

Buyers of all descriptions of Grain and Farm Produce.

Our Auctioneers and Stock Agents attend all Stock Sales in South Canterbury.

Horse Sales every Saturday at our "Tattersall's" Sale Yard

Correspondence Invited.

P. W. NEWMAN,
General Manager.

BY SPECIAL APPOINTMENT.

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PHOTOGRAPHER,
STAFFORD STREET, - - - - TIMARU.

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SOUTH CANTERBURY PAINTS, GLASS AND PAPERHANGINGS WAREHOUSE.

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ONLY EXPERIENCED TRADESMEN EMPLOYED.

PRIEST & HOLDGATE,

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WE LIVE HERE. Our aim is to retain the goodwill of our PRESENT CUSTOMERS, and Secure the goodwill of our FUTURE CUSTOMERS.

WE hold the Largest Stocks of Hardware in South Canterbury, and have the Best Selection of Builders' and Household Requisites in this line.

Ranges, Grates, Mantlepieces, Wringers, Mangles, Hollow Ware and Enamel Ware.

Uniform Excellence.

Splendid Values.

Plenty of Goods.

T. & J. THOMSON,

DRAPERS, SILK MERCERS, OUTFITTERS AND FURNISHERS.

The Sign of the Crown, TIMARU.

National Mortgage & Agency Company of New Zealand, Limited,

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DOORS, SASHES, CASEMENTS, MANTLEPIECES, WINDOW FRAMES, DOOR FRAMES & JOINERY STOCKED AND MADE TO ORDER.

IN STOCK—Fencing Posts, Fencing Wire, Cement, Drain Pipes, Corrugated Iron, and all Builders' Requisites

AT LOWEST CURRENT RATES.

MOUNT COOK,

The Southern Alps.

Said by many to be the finest Alpine Scenery in the World.

THERE IS SPLENDID ACCOMMODATION

—AT—

THE HERMITAGE,

The journey to which is now accomplished in One Day by

Fast Motor Service,

Running thrice weekly, November to April.

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TIMARU.

DALGETY & COMPANY,

LIMITED,

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Head Office: 96 Bishopsgate Street Within, London, E.C.

Capital (Fully Subscribed) - -	**£4,000,000**
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Reserve - - - - - - - - -	**£200,000**

Merchants: Wool, Grain & Produce Brokers,

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Regular Sales of Stock held at Albury, Fairlie, Geraldine, Pleasant Point, St. Andrews, Studholme, Temuka, Waihao Forks and Washdyke Yards.

Stocks of Cornsacks, Woolpacks, Twine, Branding Oils and all Station Requisites at Lowest Current Rates

The Panama Canal by Contract.

The decision of the United States to build the Panama Canal by contract is applauded in almost every quarter, and seems sound.

The Government has no equipment nor experience nor permanent body of fit men for construction work of this kind. It ought to be done under proper contracts with companies that have all these.

One of the strongest points in favour of this plan is the more probable withdrawal of the Canal from politics during the work of construction. Of course, the awarding of the contracts will be watched with vigilance by the people. But the awarding of large contracts even to a syndicate will meet no opposition, of course, if its bid be the best.

Under one contract, the work, including the profits of the contractors and of the syndicate, if there be one, will probably cost £40,000,000. If the work be well done for that sum and done honestly, the United States will have the worth of their money. Financially, it is not a gigantic undertaking for that government. They have eighty millions of people, most of them prosperous. In America they are well accustomed to a big way of doing things. Canada with its six millions, has within the past year placed contracts for the building of a railroad to cost about £16,000,000, for which the Government may ultimately be alone responsible.

These are, by the way, inspiring spectacles for us in the Old World—the use of Government money, not for battleships and armies, but for the extension of commerce and industry

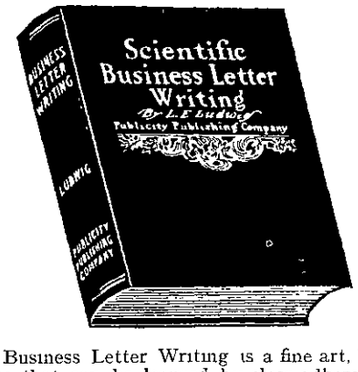
Massey Harris, Imperial Rover, New Hudson and Crown Cycles.

THE LEADING CYCLE DEALER IN TIMARU.

MARK HIGGINS,

THE BEST SHOP IN TIMARU FOR CYCLE OR ANY OTHER MACHINE REPAIRS

Up-to-date Go-Carts. | **Wertheim & Sterling Sewing Machines.**



Business Letter Writing is a fine art, but one that can be learned by close adherence to principles which have proved sound through the test of experience.

If you want to write letters full of "ginger" and "snap," letters that will convince the most sceptical; letters that can supplement the travelling salesman, letters that will please by their tactfulness, strong follow-up letters; business-getting circular letters, letters that will turn a large majority of your enquirers into customers, get "Scientific Business Letter Writing" and use it every day. You will get a new money-making idea every time you open it.

This book is written in a concise but fascinating style, and there is not a superfluous line from beginning to end. It is attractively bound in cloth, and contains 219 pages

You will find it invaluable in **your** business.

Pin 4/6 in Postal Notes or Stamps to this Advertisement and post to-night. The book will reach you by return mail, postage prepaid.

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Sporting Goods

FOR **Quality, Finish and Price,**

Our Golf, Bat, and Tennis Racquet Grips, Football Bladders, etc. etc. ARE ABSOLUTELY THE

Finest on the Market.

OBTAINABLE ALL LEADING STORES AND SPORTS DEPOTS.

Specify Dunlop Brand

Invest in Real Estate

MONEY MAKES MONEY.

Don't let your money have an idle moment.

Don't look idly on while the chance of a lifetime slips by.

We'd like you to call round and have a chat with us on REAL ESTATE.

We'd like you to pick any six of the most successful and prosperous business men in Wellington, investigate and find how many of them are interested in REAL ESTATE.

We'd like you to tell us of a single large Financial Firm (Banks and Insurance Companies included) the major part of whose investments are not in Real Estate.

Wouldn't it pay you to do likewise?

Call round and get particulars of several thoroughly reliable and good land propositions we are at present making.

Remember! We investigate every proposition.

WRITE OR CALL TO-DAY.

This is certainly an opportunity in a thousand.

REMEMBER! East & East thoroughly investigate the reliability of every proposition before advising clients.

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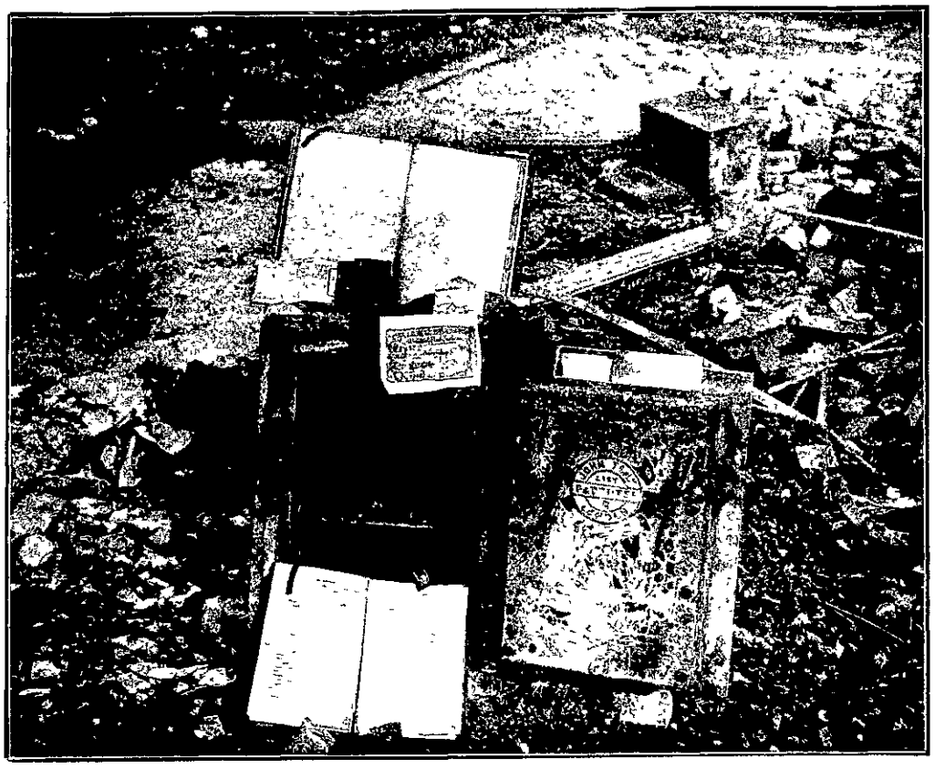
And Hereford Street, CHRISTCHURCH.



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JOHN TANN'S SAFE

which saved the contents intact in the

BIG WELLINGTON FIRE,

including a £20 Bank of New Zealand note, which is shown in the picture.

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&c., WANTED AND FOR SALE.

FOR SALE — Two Astronomical Telescopes One 3½ in and one 6in. (Cook & Son). Apply to F. Hitchings, Sydenham Observatory.

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WANTED KNOWN—All Classes of Electro-Plating and Engraving executed at Chas. H. Williams & Sons, 85 Willis street, Wellington. We are not experimenters but have been established over 30 years. Write for Price List.

WANTED—Everyone to know that they can have their old electroplate ware made equal to new ; Bedsteads relacquered, Fenders, Lamps, Screens, etc , antique coppered ; Bicycle and Coach-builder's work, Nickel or Brass Plated ; Electro-plating of all descriptions executed at the Sterling Electro-Plating Co., 34 Lower Cuba street, Wellington.

Canterbury Builders

If you require New Zealand or Foreign Timbers in any quantity, Picton Cement, Stone or Hydraulic Lime, T.T. or O.K. Stone, Fancy, or other Bricks, Pipes, etc., let us quote you.

We will undertake to deliver with the least possible delay, and furnish only the best obtainable always.

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T. Coulthard-Mullions,
Architect,

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W. FERRIER,

Photographer

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DURING the month of July W. FERRIER will Give an Enlargement with each Dozen Cabinets for Cash with Order.

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Levels County Offices,
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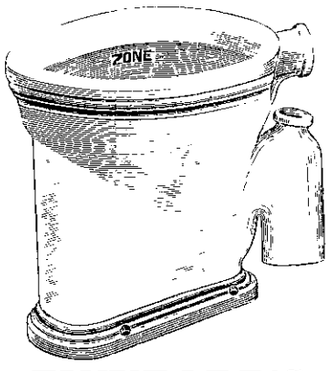

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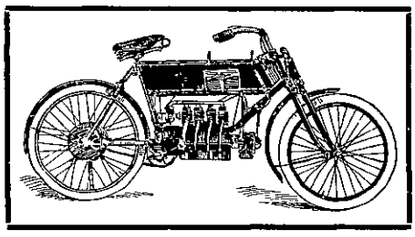

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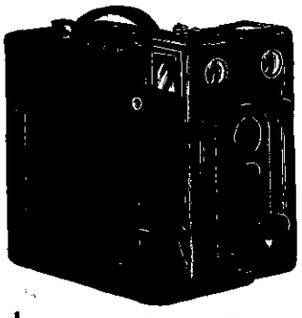

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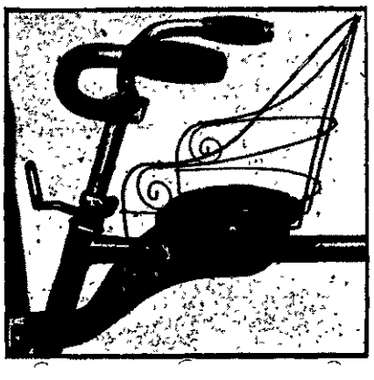

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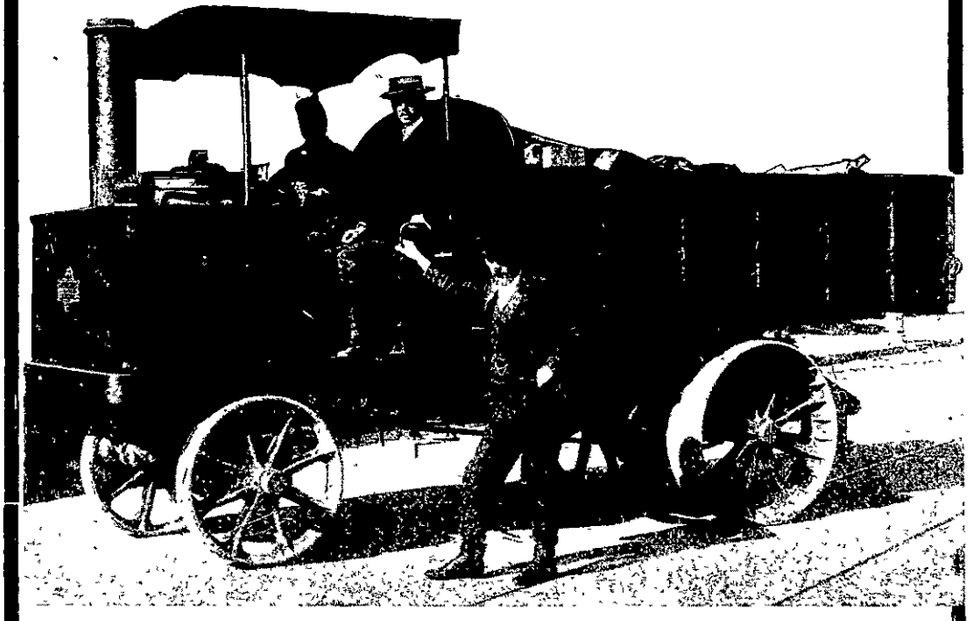

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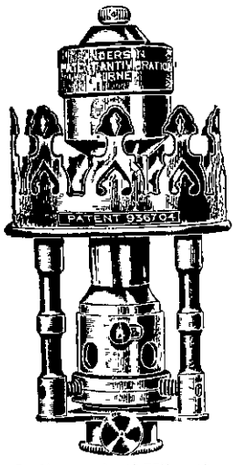

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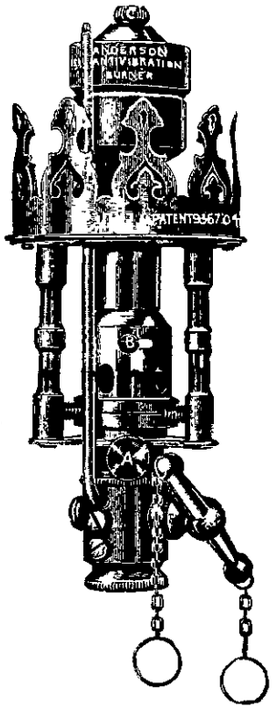

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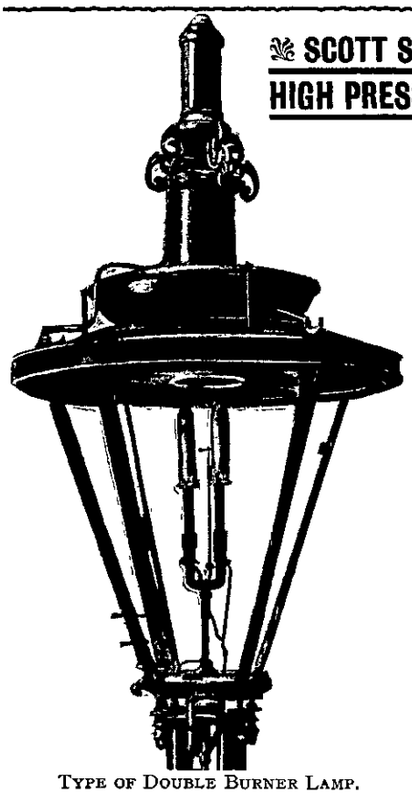

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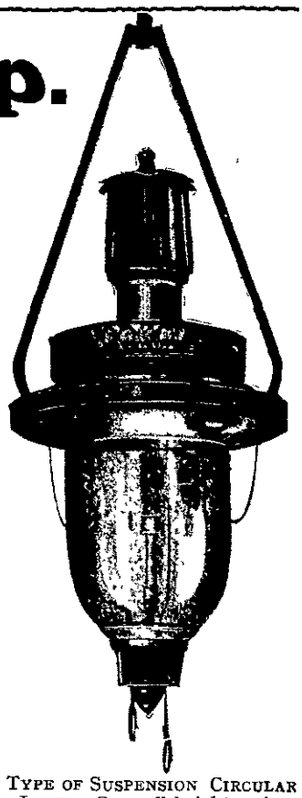

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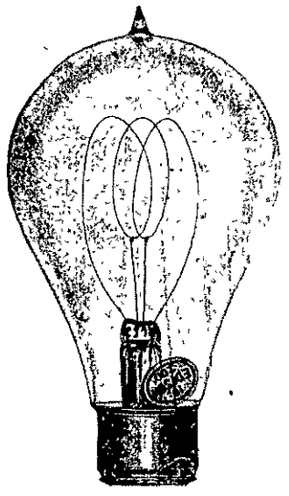

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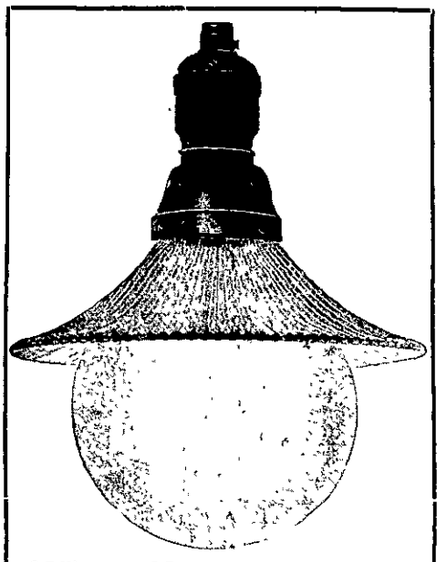

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