The last place visited is the lead and compound gas-pipe manufacturing shop. The machine used for this purpose is driven by special hydraulic engines, and all sizes of lead pipes for plumbers' and ships' use, together with composition gas pipes are made. As there are a number of organ builders in the colony the firm took up, some time ago, the manufacture of special organ composition pipes.

The Wellington business of the firm of Messrs. Burt, like that of the head-quarters in Dunedin, progresses very rapidly—so rapidly that it was found necessary some time ago to transfer the Wellington branch into new and more extensive premises. This is a suitable building, of two stories in the front portion, with a frontage of 72 feet to Courtenay place by a depth of 42 feet, the depth of the section being 132 feet. The ground floor is devoted to the shop and spacious show-room, and to office accommodation, part of the space having been cut off for a cartway leading to the back of the building, where there is a large store, 80 feet long by 26 feet wide, supplied with a travelling crane, and used for the storing of pipes and heavy goods. The first floor is laid out as one large room, divided for the storing of the firm's extensive and varied stock. The new building, of which Mr. Wm. Turnbull was the architect, is so constructed that the foundations will be able to carry a third story, should this be added at some future time. The front is surmounted by a lettered grille bearing the name of the firm, and running the whole length of the parapet; the letters, which are on a large and striking scale, are in wire netting, this material having been chosen because of the reduced wind resistance

It is a far cry from Messrs. Burt's first office in Wellington to the large and spacious building which is now occupied in Courtenay place, for the first office was a diminutive gabled structure near the Theatre Royal, apparently of one room.

In this modest way the Wellington branch was established in 1895 by the late Mr. Simpkins. Later on the shop in Manners street was opened, but with the steady growth of the business, co-incidently with the prosperity of Wellington, this place was soon found to be too small, and hence the firm has built the new premises in Courtenay place; and under the direction of Mr. Robt. Johnson, the Wellington manager, the business is increasing very rapidly

The Christchurch branch of the firm is situated at 211 Tuam street, and is under the managership of Mr. J. Corbett. Here the firm stocks a general assortment of the commodities held at the larger warehouses, for prompt delivery in and around Christchurch.

Invercargill branch is situated in Tay street, and is under the charge of Mr. S. G. Remington. A large show room was opened some little time ago, and here the firm's numerous customers can be shown samples of the various lines manufactured and stocked.

The firm also has a Marine branch established at Port Chalmers under the charge of Mr. W. T. Ross. Here all classes of ship work and repairs are undertaken. A full coppersmith's plant and several lathes are in readiness for the completion of any urgent orders.

Mirror Serves as Lighthouse.

The most extraordinary of all British lighthouses is to be found on Arnish Rock, Stornoway bay—a rock which is separated from the island of Lewis by a channel over 500 feet wide. On this rock a conical beacon is erected, and on its summit a lantern is fixed, from which, night after night, shines a light which is seen by the fishermen far and wide. The way in which this lighthouse is illuminated is this: On the island of Lewis is a lighthouse, and from a window in the tower a stream of light is projected on to a mirror in the lantern on the summit of Arnish Rock.

FERRO-CONCRETE WORK IN NEW ZEALAND.

MR. Samuel Brown, of Wellington, read an interesting paper before the Wellington Industrial Association recently explaining to members what is being done in Auckland and other places with regard to re-inforced concrete. There is no difficulty in driving the piles for the new wharves at Auckland. The piles are made long enough to come to about low-water mark. A frame is then made, and the pile made up with steel and concrete to the height required in the same manner as the pile itself Temporary staging is then made and the whole boarded over. The longitudinal girders have framing of deep boxes. In these boxes are placed mild steel frames, about three in each box. These frames, where they rest upon the pile, are about 6ft. deep at each end, and taper off to about 2ft., the middle of the girder being about 2ft. deep and somewhat the same as the ordinary beam with brackets underneath at each end. The bottom chord, which gives the shape to the beam, is 1½in. round mild steel. The top one is small section, and between the top and bottom chords are upright rods of steel, about ½in. thick and about 6in. apart. The whole is wired together with steel wire. Wherever a cross girder meets a longitudinal girder there are three steel bars 1½in. bent over so as to tie both together, that is to say, the cross girders to the longitudinal girders. These boxes are filled with concrete rammed in a similar manner to the piles

A. AND T. BURT, LTD.' THE DIRECTORATE.
FRONT ROW JAS. A. BURT, A BURT (MANAGING DIRECTOR), W C. BURT. BACK ROW: T. R. BURT, A. T. BLYTH (SECRETARY).

Mr. Brown also minutely described the deck-work being carried out on the contract. In Auckland they have built a very large wharf, and are spending altogether about £250,000. In addition there is a wharf and foundation for a crane at the Calliope Dock, costing about £40,000. The first process is making the piles. Four rods of 1½in. round mild steel are formed into a square 2in. smaller than the pile, so that there is 2in. concrete outside; that is to say, if the pile was 14in. square when finished, the square of steel rods would be 12in. These rods are made into a square by having light cast frames fixed at certain distances apart. They are bound together by steel wire every few inches right round, also diagonally. The ends of the four steel rods are bent at the end in the same shape as a pile when it is pointed. This frame is placed in a box, which is 2in. larger every way, so that when it is filled there is 2in. of concrete outside of the steel frame. There is also the ordinary pile shoe placed in the box and the whole filled with concrete. This concrete is well rammed with iron rammers, the concrete being made pretty fine—no stones larger than a walnut. The result of careful ramming is that when the frame is taken off, the pile is as smooth as if it had been plastered over. Extra long piles, say 40ft., have hollow pieces of wood placed in the centre; these are about 6in. diameter and are placed about 11t apart. This is to lighten the pile, and is claimed by the engineer to be equally as strong.

"It would seem," said Mr. Brown, "that in San Francisco steel frame buildings stood the earthquake well. These, as far as can be gathered, were frame structures with the panels filled in with brick, stone, or marble. Although the frames stood well, it would seem that the panels in cases came out. The difference between this and the system that I have been trying to describe is that in one a whole panel may be shaken out, but the other is a complete network of steel interwoven in the concrete and which adheres to the steel so closely that it never rusts. It is said that reinforced beams for floors are now made for spans of 100ft. In addition to being the best style of construction to resist earthquakes, it is said to be also equally valuable as a fire-proof construction. The personal opinion I have formed of it is that in Wellington it would be as safe as a wooden building for earthquakes and more fire-proof than any other mode of construction."

Great Britain's Wealth.

£1,548,183,918 FOR THE EXCHEQUER IN FIFTEEN YEARS.

The total sum paid by the inhabitants of the United Kingdom into the Exchequer during the last fifteen years reaches the enormous amount of £1,548,183,918.

The Exchequer received as revenue in 1891–92 the sum of £79,125,686. The speed at which Britain increases its wealth may be gathered from the fact that this year the Exchequer will receive £126,870,474. The expenditure in the same years was £78,058,673 and £123,404,854 respectively.

The following table of incomes will show how the annual payments into the Exchequer are increasing —

1894–95	£82,551,191 ..	1901–2	£127,152,614
1898–99	£94,301,391 ..	1902–3	£135 372,762

There has been a deficit in the Exchequer six times in the last fifteen years, and the largest was in 1900–01, when it amounted to £53,207,580.

The cost of the sea and land forces of Britain has almost doubled since 1891, when the amount under the naval and military expenditure was £33,162,789. This year the figures are £60,302 477.

In 1900-01 the naval and military expenditure was £121,767,790, the next year it had increased by nearly nine millions, and the following year—the last of the Boer war—it was £110,844.488.

The total revenue derived from taxes this year is estimated at £119,875,000, an increase of £34,-759,000 since 1891.

The Best Form of Windmill.

Sourensen, the Danish builder of windmills, recently discovered, through an accident, a form of windmill which tests show to develop more power than any other form heretofore tested. He had been running an old mill bearing ten wooden vanes. In a storm, four of these vanes were carried away, when, to the wonder of its proprietor, the old mill worked better than before. Inspired by this demonstration, he made some further experiments, and perfected a wind motor of conical form, having six vanes, the ends of which curved toward the summit of the cone. Prof. P. LaCour, who has established, by authority of the Danish Government, an observatory for the study of wind power, showed that the new conical aeromotor developed more power by nearly five per cent. than that of the "Ventocrat" type, whose surface is seven times as great; and thirty-one per cent. more than the "Rose of the Winds" type, with a surface three times as great; and twenty-nine per cent more than that of the old Sourensen type. It is predicted that the discovery of this new form of wind engine will go far towards making wind power, which is now largely lost, available for general use.

The Handcross Disaster.

The verdict at the inquiry into the Vanguard disaster, by which ten men lost their lives at Handcross, Eng., on July 12, was returned as follows: The jury found that the accident was caused by a breakage of the machinery brought on by the efforts of the driver to check the speed of the omnibus when he found that it was going too fast.

They considered that the driver committed an error of judgment in allowing the omnibus to go at too high a speed.

They held no one criminally responsible, but were strongly of opinion that this type of omnibus was unsuitable for use on country roads.