

1881.
NEW ZEALAND.

DUNEDIN INDUSTRIAL EXHIBITION

(REPORT ON THE).

Presented to both Houses of the General Assembly by Command of His Excellency.

G. S. COOPER to Dr. HECTOR.

SIR,—

Colonial Secretary's Office, Wellington, 16th June, 1881.

I have the honor, by direction of the Colonial Secretary, to request that you will be good enough to proceed to Dunedin at your early convenience, to attend the Industrial Exhibition now being held in that city, with a view to making a report upon the exhibits to be shown there.

J. Hector, Esq.,

C.M.G., M.D., F.R.S., &c., Wellington.

I have, &c.,

G. S. COOPER.

Dr. HECTOR to the Hon. the COLONIAL SECRETARY

SIR,—

30th June, 1881.

I have the honor to report that, in accordance with your letter of the 16th instant, I proceeded to Dunedin, and, arriving there on the 21st, devoted the three following days to an examination of the Industrial Exhibition.

I have to acknowledge the cordial assistance which I received from the Secretary to the Committee, who supplied me with catalogues and other necessary papers, and introduced me to the principal exhibitors.

As the exhibits have been described with great minuteness in the local press, and as judges have been appointed by the Committee to decide on their relative merits, and a full official record is to be published by the Committee, I do not propose to refer to all the various articles in detail, but will confine my remarks to the evidence of substantial progress in the development of manufacturing industry afforded by this Exhibition.

ORIGIN AND EXTENT OF THE EXHIBITION.

From the introductory remarks prefixed to the official catalogue, it appears that the Exhibition was organized in connection with the "Dunedin National Industrial Association," which has been formed to encourage the establishment of manufactures, and as a means of stimulating an enthusiasm for the development of local industries and fostering a spirit of reliance on colonial productions.

Although termed a "Dunedin Exhibition," it has somewhat a colonial character, as there are a considerable number of articles contributed from other parts of the colony, being in most cases exhibits that have previously done duty at Sydney and Melbourne.

Taking the number of entries as a basis for comparison, we find that the present exhibition contrasts favourably with all previous efforts of the colony

	Entries.
New Zealand Exhibition, Dunedin, 1865 (exclusive of foreign exhibits)	1,685
Vienna, 1874	120
Philadelphia, 1876	346
Sydney, 1879	614
Melbourne, 1880	654
Dunedin, 1881	435

But perhaps a more satisfactory comparison can be instituted by treating it as a local exhibition, and taking the groups of manufactures alone, contrasting the position of Otago in the Exhibition of 1865 and in the present Exhibition.

On the former occasion, the entries in the catalogue were distinguished as relating to articles that had been imported, and those manufactured by the exhibitors. Among the latter there are the names of 59 Otago manufacturers in 1865; but, in most cases, these did not represent an established business, but rather trial works of individual skill and ingenuity. It is somewhat curious that, of these names, only four reappear among the 127 Otago manufacturers who exhibit on the present occasion—namely, Messrs. Robin, carriage-builders; Messrs. Burt, brass-founders; Messrs. Fergusson and Mitchell, stationers; Mr. John Hill, cabinet-maker.

GENERAL ARRANGEMENT.

The Exhibition is displayed in the large Garrison Hall, and in a temporary building erected on an adjacent area. The total floor space occupied is about 6,000 square feet, or about two-thirds of the

space occupied by the New Zealand Courts at the Sydney and Melbourne Exhibitions respectively; but, the articles not being so numerous, more space has been left for passage room. A wide passage leads from the main entrance to the platform or stage, on which there is a capital organ, built by White of Christchurch, which, though not very striking in its external fittings, is rich in tone and volume of sound. On either side of this passage bright objects such as jewellery and silver-ware are tastefully displayed, the more solid though less showy articles being ranged along lateral passages in front of the galleries. The access to the galleries is by staircases from the fine entrance hall, in which every available space is also occupied by exhibits. In the galleries, light articles such as furniture and works of skill and art have been skilfully arranged, the wall space being occupied by pictures, architectural and engineering designs, plans, and maps. A large front room at the entrance is set apart to photographs and ladies' work, of which there is an excellent display; and rather a large space, in the shape of various small rooms, has been placed at the disposal of the contractor who supplies creature comforts for the visitors. The annexe is reached by a narrow passage from the back of the platform, and is a long narrow shed, in which bulky exhibits such as blocks of coal, minerals, cements, carriages, leather, agricultural and other machinery, can be displayed with sufficient advantage. In the basement of the building one machine in motion is exhibited, and also bulky exhibits of produce.

Altogether, the exhibits have been grouped to the greatest advantage, and, by a judicious use of flags and banners, the Exhibition has a bright gala aspect that is very pleasing to the visitor.

The scheme of classification which has been adopted is as follows:—Class 1. Works of Art, &c. Class 2. Furniture and accessories. Class 3. Textile fabrics. Class 4. Raw and manufactured products. Class 5. Alimentary products. Class 6. Agriculture and horticulture. Class 7 Machinery, and metal manufactures. Class 8. Mining industry

WORKS OF ART.

Class 1, besides pictures and works of art, comprises many miscellaneous exhibits, some of which involve industries of growing importance in the colony—such as artificial dentistry, bookbinding, typography, taxidermy, botanical preparations, fancy work in wool, and photography. The latter art appears to thrive well and to be capable of great development in all its branches, and especially in landscape work, for which the climate and bold scenery is eminently suitable. A fair field for the employment of skilled labour might be afforded by the preparation of photographic prints, and especially tinted lantern slides, for export to Europe and America, where there is a demand for such slides for educational recreative purposes. Among works of art should also be placed the beautiful specimens of free-hand engraving on glass, by Mr. Angus Milne.

MANUFACTURES.

Turning to the more important sections of the Exhibition which include manufactures, the visitor cannot avoid being impressed with the great variety of articles of ordinary use that are made in the colony, and particularly in Dunedin. Nor are these mere clumsy and imperfect imitations of imported articles, but, as a rule, these are evidently the work of as good skilled labour, and as thoroughly organized establishments, as can be found in the old country

METAL WORKERS.

To commence with workers in metals: there are thirteen exhibitors, all of whom are large employers.

Probably the most advanced industrial effort in the whole exhibition is the extensive show of brass and copper fittings, and plumbers' work, of Messrs. Burt. The immense variety of articles of admirable design and workmanship which they manufacture, has earned for this firm the highest awards that were given at Sydney and Melbourne, but, as might be expected, on this occasion their exhibit excels their previous efforts. Their resources seem capable of producing articles in every branch of the trade: such as ponderous water-engines, large refrigerators for brewers, copper boilers, tanks, and baths, ventilators, force-pumps, lead and copper piping, the former of larger diameter than is made elsewhere in the colonies; steam, water, and gas-fittings, chandeliers, ice-machines, church and fire-bells; and a multitude of other articles that display not only the greatest skill and enterprise, but sound business management, in producing what is most suitable to the requirements of the colony. This latter very essential qualification is testified by the large number of exhibits which are marked as "sold."

In the same trade, and inferior only in extent, is the display of Messrs. Anderson and Morrison. This firm has now been established for seven years, and employs forty skilled hands and apprentices. Among the exhibits is an apparatus for joining sheets of lead without soldering, which is to be used in the construction of the lead chambers for the new sulphuric acid works that are being erected near Dunedin.

Both Messrs. Burt, and Messrs. Anderson and Morrison, exhibit ventilators which deserve mention, as they might be introduced with great benefit in all the large meeting-halls in other parts of the colony. The peculiar arrangement consists in the application of a small jet of water to revolve the ordinary ventilators in calm weather, when its services are most needed.

A very striking class of exhibits in metal-work are the grates and ranges, of which there are five principal exhibitors. Each maker has his peculiar advantages; and I was especially impressed with the skill with which one maker, H. E. Shacklock, had adapted his open and close range for the consumption of brown coal, securing economy, cleanliness, and safety by several very ingenious contrivances.

In the same direction I was pleased to see a valuable improvement, illustrated by a model, which Mr. Alves has effected in the arrangement of furnace-bars, by which a great economy of fuel, amounting to more than one-fourth, is stated to be effected. It consists chiefly in an improved shape of the fire-bars, which are bevelled on the upper edge so as to reduce the proportion of dead surface on which the coal rests, and gives a corresponding increase of combustion. A modified fire-bridge, moreover, directs a draught of pure air all over the surface of the incandescent fuel, and effects the complete combustion of the volatile elements of the fuel.

I was informed that this important invention has now been applied to many of the locomotives on the Southern railways, and enables them to do as effective work with the brown coal obtained along the line as they formerly did with imported coal.

A striking object was the fine iron verandah in front of the dais, an excellent piece of workmanship in ornamental iron casting, by Messrs. Barningham, of Dunedin.

MACHINERY

Of tool- and machine-making there were some excellent examples, showing that this important branch of trade is receiving attention. I was particularly struck with the excellence of the mining tools executed by Messrs. Cutten and Co.

The show of agricultural machinery was less extensive than might have been expected, considering the enormous development in late years of agriculture in the southern districts, and the demand there must be for implements of husbandry. The explanation may, however, be that the makers are too busy supplying orders to have been able to prepare special exhibits.

Messrs. Reid and Gray show admirable samples of workmanship, which establish their superiority over other colonial implement makers at Sydney and Melbourne. It may be mentioned, as a satisfactory tribute to the excellence of their patterns, that animated discussions took place almost every day at Melbourne over their ploughs, and experts were continually taking drawings and measurements of them.

A novel and ingenious form of harrow, by Messrs. Haxter and Beattie, attracted a good deal of attention. It is made by binding together the tines, so that the whole is flexible, and may be altered to any dimension or form required for the particular purpose. These harrows seem to combine the requisites of strength, lightness of traction, and portability, with the novel feature of the machine adapting itself to irregularities in the surface of the ground.

An important mechanical exhibit, which was shown in operation to interested crowds, was Mr. Ashcroft's Pulverizer, a modification of the Berdan, which the inventor has perfected, as the result of extensive experimental trials. The essential feature is the production of a bruising action, in addition to the grinding of the ordinary Berdan. This is effected by driving the balls with cones, which impart a motion to them on a vertical as well as a horizontal axis, similar to the operation of a pestle and mortar in skilful hands. By a screw motion the pressure is brought to bear above or below the centre of the balls, thereby controlling the amount of force exerted on the material that is being crushed. Although principally intended as a crusher for auriferous quartz, this machine may be adapted to a variety of purposes. It does its work in a remarkably short time, and with a minimum of power. Being very portable, it should come into use for prospecting purposes in remote districts, inaccessible to ordinary mining machinery. Moreover, many mining enterprises that have failed with ordinary stamping machinery would have recovered gold in payable quantity with an apparatus on this principle; especially when the gangue consists of small friable quartz veins, intermixed with a large proportion of soft decomposed rock—as for instance, in the case of the reefs at the Longwood Hills, near Riverton.

The above are a few selections from the many objects in the Exhibition which are at present manufactured from imported materials, although the time is not far distant when we may see our native ores turned to account in the production of the iron, brass, and lead required for such products. Most of the other striking exhibits were made from the raw materials produced in the colony.

WOOLLEN GOODS.

Taking, in the first, manufactures from animal products, the woollen cloths of the Mosgiel Company take the first rank as an instance of the successful establishment of a most important industry, relying, for its successful competition with imported goods, entirely on the intrinsic merit of its products. The Company well deserve the favourable notice they received at Sydney and Melbourne, and, as this is an unlimited field for the employment of labour, it is to be hoped that like success will attend the opening of numerous woollen mills in other parts of the colony. The profitable consumption of even a very small proportion of the wool, at present exported from the colony in the raw state, would be sufficient to employ enough hands to consume all the anticipated excess of animal food, and obviate the necessity of resorting to expensive expedients for its shipment to other countries.

The tanning trade, which is of scarcely less importance to a country as a means of converting abundant raw material into a valuable commodity, was represented by eleven exhibitors, showing all the various kinds of leather used for boot-making, harness-making, and ornamental furnishings, of the best quality.

The trades for the making up of articles of clothing, including apparel, boots and shoes, sheeting, hosiery, hats and caps, from the foregoing materials, were all well represented, and indicate a healthy activity in the application of industry, and that a market for such colonial-made articles is thoroughly established.

OTHER ANIMAL PRODUCTS.

Of soap and candles there are three principal exhibitors, Messrs. McLeod Brothers having the most extensive display, showing their thorough mastery of the details of this important industry, the successful establishment of which requires no mean scientific and technical acquirements.

WOODWARE.

From the vegetable kingdom a large number of products are also successfully utilized. The wood-ware and inlaid furniture offers the most striking objects; and they display great taste in design and perfection of workmanship, in the adaptation of the various excellent and beautiful timbers which are indigenous to New Zealand, the peculiar excellence of which for such purposes lies in their having close grain and strength of hard-woods, while at the same time they are free working, and can be treated by modern improvements in machinery as successfully as the soft-grained woods of Europe and America. In addition, they present such a variety of colour and natural marking as to enable the production of highly ornamental work at a low cost.

For variety of objects, the exhibits of Messrs. Guthrie and Larnach are very remarkable, showing the complete appliances with which this extensive establishment is equipped.

For elegance of design, as far as I could judge, the dining and drawing room furniture manufactured by Mr. White, of Christchurch, was not inferior to similar exhibits in the British Courts at Sydney and Melbourne.

The business of carriage-building in the colony seems to have reached great perfection, the exhibits showing vehicles of graceful models, without sacrificing the strength that is required for the rough wants of the country.

Basket-making was not largely represented, but that exhibited appeared to be remarkably good. Sufficient attention has not yet been paid in this colony to the cultivation of the osier required for this industry, as large quantities are imported from Tasmania, where the character of the soil and climate is not nearly so favourable for their growth as in New Zealand. Moreover, the cultivation of the osier willow along the banks of streams would afford great indirect benefits in restraining the rivers, and obviating the evils arising from the periodical floods.

FIBRES.

Rope, line, and twine, from Phormium hemp, together with the manufactures from it, had several representatives. The quality appeared excellent; and it is satisfactory to find that, although all the sanguine anticipations respecting this material have not been fulfilled, it is yet becoming thoroughly established for useful employment of industry.

The manufacture of fishing-nets, as an employment for light labour, is suggested by the excellent exhibits of Mr. Every, who illustrates by model specimens the various kinds that are used by fishermen in the sea and rivers. The arrangement of some of these nets is highly ingenious.

MINERAL PRODUCTS.

The exhibits derived from the mineral kingdom have considerable interest. Among the natural products, the fine blocks of coal are the most conspicuous exhibits; and I was much interested at the very marked improvement in the quality of the coal from the Kaitangata seam since I first examined it in 1862, due, no doubt, to its being now excavated from under a better class of roof. In appearance it now approaches some varieties of the West Coast coal; and recent analyses of this coal, from the deepest levels, prove that it contains a less percentage of constitutional water as it is followed to the dip. Another coal, that has changed for the better since the first outcrop sample was examined, is that from the Nightcaps, the block exhibited being nearly equal in quality to the Kaitangata coal.

No important additions appear to have been made to the list of minerals found in Otago as exhibited in 1865; but several lodes, only known then from hand specimens, have been partially opened up, and a few new localities discovered. The work of the real miner, except for gold, has still to be commenced, not only in Otago but in other parts of New Zealand, and the field that it offers for skilled labour is a most promising one.

The exhibit which most attracted my attention was that of the patent artificial stone made by Messrs. Hibberd and Co. It seemed to afford a material so well adapted for building purposes, especially in those parts of the colony where no natural building-stones are available, that I visited the works at Green Island for the purpose of inspecting the works. Although the machinery employed is still in a rudimentary stage, it has great capabilities for improvement in detail, and appears to me to have achieved the principle upon which the process must be based. The stone is made by compressing by percussion a mixture of Portland cement and sharp sand, in proper proportions for the work intended, in moulds, which are very ingeniously contrived. The blocks are cast hollow, so as to give a maximum of strength for the material used, and are so formed that they can be readily keyed and dovetailed. The result is that buildings can be constructed with greater facility than ordinary concrete, which are very light on the foundation, and yet have every element of stability. By adopting very simple contrivances as safeguards, I see no reason why large structures built of this material should not be made almost earthquake-proof. From inquiries which I made, respecting the actual cost of houses which have been built of Mr. Hibberd's patent stone, I find that the cost hardly, if at all, exceeds that of a substantial building in timber, such as rimu—or about £100 a room for a first-class dwelling-house. Many other articles, such as drain-pipes and kerbing-blocks, are made by the same process; and Mr. Hibberd hopes, before long, to be able to use cement of his own manufacture from locally-obtained material, in place of the imported Portland cement.

POTTERY

There are four entries of pottery in the catalogue—from Auckland, Christchurch, Dunedin, and Milton in Otago. These comprise drain-pipes, from the smallest to the largest size that are used for agricultural or sanitary purposes; chimney-pots, ornamental vases and flower-pots, and crockeryware of every description. The articles exhibited by the Milton works comprise dinner- and breakfast-services, teapots, and other articles of common domestic use of very good shapes and patterns, and afford proof that excellent materials exist in the locality for the development of this industry. Both at Sydney and Melbourne the New Zealand pottery attracted much attention, and great surprise was expressed at the advanced state to which this industry had already reached.

A most interesting series of exhibits were the mechanical appliances made by Messrs. Watt and Co., of Dunedin, including all the most modern form of electric communicators, and philosophical apparatus, such as telephones, alarms, signals, tide gauges, and a great variety of galvanic batteries, all of which showed excellent workmanship and thorough knowledge of the principles involved.

Of alimentary products there were 71 exhibits, showing grains of all kinds grown in the district; meal, flour, and starch, biscuits, confectionery, cheese, preserved meats, hams and bacon, groceries, ale, stout, liqueurs, fruits, and even grape wines—all produced or manufactured in the colony,—proving the immense variety of directions in which skilled labour and capital are finding profitable employment.

In concluding this brief sketch of the impression I received from what was necessarily a cursory examination of the Exhibition, I must bear testimony to the great enthusiasm which it appears to have evoked among the exhibitors, and to the untiring zeal with which its promoters and managers carried out their programme. The success of the Exhibition, as a means of enlightening and assuring the crowds of visitors who thronged it as to the substantial and various resources of the colony, is beyond all doubt, and its influence in guiding and strengthening future efforts will have a beneficial effect for long after its close.

The Hon. the Colonial Secretary, Wellington.

I have, &c.,

JAMES HECTOR.