

SCIENCE.—SUPPLEMENT.

FRIDAY, OCTOBER 22, 1886.

THE PROGRESS OF NEW ZEALAND.

THE very interesting paper by Sir Robert Stout, premier of the colony of New Zealand, lately read before the Statistical society of London, and now published in the journal of that society, deserves a wide notice, not only because of the interest of the facts and figures adduced, but because of the scientific way in which they are exhibited and discussed.

New Zealand has passed through several distinct economic eras, said the speaker. In the earliest days it was looked upon as the seat of the whale-fishery in the Pacific, and whalers from all parts of the world were found in its harbors. Following the whale-fishers came traders who bartered with the Maoris. After this came the settlements founded by the New Zealand company; and the result was the active pursuit of agriculture, the products being sold to the gold-diggers of Victoria. Pastoral pursuits also became of importance, and an export trade of considerable amount sprang up. But in 1861 the gold-fields in Otago were discovered; and the rush of adventurers to New Zealand soon swelled the population to such an extent that there was a home consumption for every thing that could be raised, and not only did exports cease, but food-supplies had to be obtained from abroad; and while Chili and South Australia provided wheat and flour, England was drawn on for dairy-products, hams, etc. After 1864 agriculture in New Zealand developed much more rapidly, and more lately a number of manufacturing industries have been built up.

At the end of 1884 the colony's population was 564,304, of whom 306,667 were males, and 257,637 females. In addition, there are perhaps 45,000 Maoris. In 1881, when an accurate census was taken, 45.60 per cent of the population were born in New Zealand, and the percentage of native-born New-Zealanders goes on increasing. According to the same census, 41.5 per cent of the inhabitants belonged to the Church of England, 23.09 were Presbyterians, and 14.08 Roman Catholics. In 1884 the colony's birth-rate—proportioned to each 1,000 of the population—was 35.91; the death-rate, 10.39; the marriage-rate, 6.87. This marriage-rate is lower than that of any of the other Australasian colonies. Of those whose occupation was determined by the census enumerators,

we find that 70,926 were engaged in trade, commerce, and manufactures; 54,447 in agricultural and pastoral pursuits; 14,273 in mining; 10,233 in the educated professions; 41,635 in ordinary labor, domestic service, and miscellaneous.

Education is well cared for under the general education act of 1877. Of persons between fifteen and twenty years of age, 97.48 per cent are able both to read and write: after twenty years there is a decrease in this percentage, but it is slight. There are 24 secondary schools in operation in the colony, the number of pupils enrolled being 2,577, and the annual expenditure on secondary education 71,517 pounds sterling. New Zealand university is solely an examining body: it confers degrees, but employs no teachers. The teaching-work of the university is done by five affiliated institutions at Dunedin, Christchurch, Auckland, and Nelson. The number of university students in 1884 was 499, and the expenditure for university education £26,815. The expenditure in primary education was £363,316 (including £49,769 on buildings), the number of pupils enrolled amounting to 96,840. The colony supports one civil policeman to every 1,293 of population. The number of offences against the person was, in 1884, 871, or 1.57 per 1,000 of population; and the proportion of offences against property, 2.14 per 1,000. This is a better showing than that made by any of the neighboring colonies. The amount of juvenile crime is very small; and Sir Robert Stout attributes that to the elaboration of the industrial school system, now a permanent institution in the colony.

The government has three industrial schools under its control, and also occasionally supports children at private institutions. Children committed under the industrial school system are of three classes: 1°, those who have themselves done wrong; 2°, those who were in destitute circumstances; 3°, those whose parents have either done wrong or neglected them. The total number committed in 1884 was 313.

As to illegitimacy, — a test often applied to determine the morality of a community, — New Zealand compares favorably with other colonies, though there is an increase in illegitimate births as the colony grows older, and as the population grows more dense in the cities. In 1884 the illegitimate births averaged 2.95 for every 100.

The larger settlements are well supplied with libraries and museums, and the desire for reading-matter is increasing. In 1884 books to the

value of £115,246 were imported. This does not include magazines, newspapers, and books sent by post. There are 172 newspapers published in the colony, — 49 daily and 91 weekly, bi-weekly, and tri-weekly, — or 1 to every 3,281 inhabitants. In England and Wales the ratio of newspapers to population is 1 to 13,828; in Ireland, 1 to 32,585; in Scotland, 1 to 21,013; and in the United States, 1 to 4,656.

New Zealand now enjoys direct steam-communication with England by two lines, and there is a fine mail-service running monthly to San Francisco. In 1884 the number of ships entered inwards was 852 vessels of 529,188 tons: of these, the United States was represented by 23 vessels of 10,935 tons. The shipping outwards was 872 vessels of 534,242 tons; of these, 9 vessels of 4,086 tons belonged to the United States. The value of the exports was 7,091,667 pounds sterling, and that of the imports 7,663,888 pounds sterling.

The mining interests will probably increase as new capital flows in to enable the fields — other than the shallow alluvial deposits — to be worked. The value of the gold product since the opening of the mines has been £42,368,192; the amount exported in 1884 was £988,953. The fall in copper has had an injurious effect upon the copper-mines, and their production has been very large. The main development of the past twenty years in mining has been the production of coal. In almost every province of the colony are to be found extensive brown coal deposits. In 1884 the number of tons produced was 480,831. There is a strong probability that early attention will be paid to silver, shale, tin, and the other mineral developments of the colony.

In 1864 New Zealand exported 16,691,666 pounds of wool: in 1884 this had increased to 81,139,018 pounds. In the same time the number of sheep had increased from 4,937,273 to 14,056,266; the number of cattle, from 249,760 to 700,000; of horses, from 49,409 to 170,000; of pigs, from 61,276 to over 200,000. In connection both with pastoral and agricultural pursuits, there has grown up the exporting of frozen meats, and this has encouraged the rearing of sheep on lands formerly used for grain-raising.

The area of land alienated from the crown was, in 1864, only 7,759,954 acres: in 1884 it amounted to 17,692,511 acres. In 1884 no fewer than 6,391,075 acres were under crop and sown grasses. In 1864, as was stated above, New Zealand not only exported almost no agricultural products, but drew its food-supplies largely from abroad. But in 1884 the exports included, wheat, 2,706,775 bushels, valued at £436,728; barley, 128,450 bushels, worth £25,138; malt, 51,311 bushels, worth £14,-

665; and oats, 2,474,613 bushels, worth £267,286. The exports also included £33,324 worth of flour, £53,536 worth of potatoes, and 254,069 hundred-weight of frozen meat, valued at £345,090.

Agriculture is now seeking other outlets: orchards are being planted, tobacco is raised, and linseed is now produced. The area of forest-lands is 20,000,000 acres, and of this area 9,000,000 acres contain useful timber-trees.

The manufacturing establishments are of so recent a date that statistics have not been obtained concerning them; but during this year it is proposed to determine accurately their number, the amount and value of the goods produced, and the number of workmen employed. For manufacturing purposes, New Zealand has the unusual advantages of a moderate climate, a large coal-deposit, and ample water-supply in almost any part of the colony.

The wealth and material prosperity of the colony are rapidly increasing. In 1881 there were, in all, 103,335 houses, of which 87,646 were wooden. In 1884 the savings banks had on deposit £1,926,005, and the ordinary banks £9,372,004. One person in every seven holds a life-assurance policy, — a larger percentage, probably, than obtains in any other country. The value of the personal property that is taxed is 40,000,000 pounds sterling, and the value of the real property held by the colonists is 75,000,000 pounds sterling. 1,527 miles of railway are in operation, and 10,474 miles of telegraph-wires; and 1,961 telephones are in use. The number of letters carried in 1884 was 16,611,959, and the number of telegrams sent 1,654,305. Gas is used in 27 incorporated towns. The colony's revenue in 1884 was £3,955,188, and its expenditure £4,101,318. The large expenditure was due to the fact that large sums were borrowed for the prosecution of public works. The total public debt is £30,649,099, but of this a large proportion has been spent on public works which are now returning a good interest.

Sir Robert Stout predicts that this splendid progress will be maintained, and that population will rapidly increase. Agriculture will become more varied and be diligently prosecuted, dairy farming will come into prominence, and mining will increase. He thinks, too, that the record of the next twenty years will show an advance rather greater than less than that which his valuable paper describes.

DISTRIBUTION OF POWER BY COMPRESSED AIR.

AIR at a pressure of forty-five pounds to the square inch will, in the near future, displace steam as a motive power in many of the smaller manu-