

SESS. II.—1879.
NEW ZEALAND.

ESTABLISHMENT OF A GUNPOWDER FACTORY IN NEW ZEALAND

(CORRESPONDENCE RELATIVE TO THE).

Laid upon the Table by the Hon. Mr. Hall, with the leave of the House.

No. 1.

The AGENT-GENERAL to the Hon. the COLONIAL SECRETARY.

7, Westminster Chambers, Victoria Street, Westminster, S.W.,
29th March, 1877.

SIR,—

I have the honor to forward a copy of a letter I have received from Messrs. John and Edward Hall, and of my reply thereto, and also by book post a copy of the War Office Handbook of the Manufacture and Proof of Gunpowder, by Captain Smith, R.A.

2. I think you will consider Messrs. Hall's letter of great interest. All the precautions that can be taken cannot divest of a large amount of danger the carriage of gunpowder. I find that from Great Britain 22,473 lb. of gunpowder, 323,855 lb. of blasting powder, and 1,022,638 cartridges were exported to New Zealand during the year 1875; besides that, considerable quantities of each denomination were sent from Australia. When it is remembered that the large quantity I have mentioned was divided amongst the ships sailing from here to New Zealand, it is scarcely possible to avoid thinking that they ran considerable danger. In many cases the powder in casks was mixed up with other cargo, and in one especially some of the barrels broke, and the powder was shaken about all over the hold, which contained amongst other things railway iron. One spark caused by the friction of the iron might have blown the vessel and its contents to atoms.

I append copy of a paper circulated by the Australian and New Zealand Underwriters' Association, containing extracts from the *Otago Daily Times*, and the captain's account of the shipment which I have just described. It is said that the precautions now adopted under recent legislation in this country are too stringent to permit of such improper loading again taking place. I doubt, however, if any legislative provision can do more than somewhat lessen the danger of the carriage of gunpowder.

3. If you desire me to do so, I will make inquiries into the whole subject, including the cost of an arsenal, whether a private firm could be induced to establish one and on what terms, the plan employed in India, &c.

I have, &c.,

JULIUS VOGEL,
Agent-General.

5th April, 1877.

P.S.—In the *Times* of this day there appears a very able and fully-informed letter on the risks of transporting gunpowder by sea, to which I think it well to direct your attention. I append a copy.

Enclosure 1 in No. 1.

FLOATING POWDER BARRELS.

SIR,—

St. John's Wood, 4th April, 1877.

While Parliament was sitting I refrained from asking you to allow me again to encroach upon your valuable space to expose further the monstrous manner in which gunpowder and other explosives are stowed in sea-going vessels, and to show the utter insufficiency of the law to check such reckless practices. But now I have again to ask you, in the interests of humanity, to insert this letter.

The perverseness of the Board of Trade upon this subject is so extraordinary that I think it will hardly be time and space wasted if I recapitulate the various answers of Sir C. Adderley to questions put to him in the House of Commons during the last six weeks by different members upon this subject.

On the 19th of February, in answer to Mr. Gourley, Sir C. Adderley said the law and Board of Trade instructions were amply sufficient to prevent improper loading of explosives, and that it was the duty of the Board of Trade Inspectors to inspect ships with a view to ascertain whether they were improperly loaded. He also stated that he was not aware that large quantities of gunpowder were shipped in loose kegs.

On the 22nd of February, in a letter to the *Times*, I described, in support of Mr. Gourley's statement, the mode of stowage adopted in the "Altcar," which consisted in dropping 400 barrels of gunpowder into any opening or crevice that presented itself in a general cargo of spirits, oils, paint, matches, and rod iron, with the natural consequence that at the end of the voyage, as Captain Harvey stated, the barrels were found smashed, and the powder adrift, so that the crew were compelled daily during the discharge to sweep and pack up powder from amid the iron. I pointed out the case of the "Knight of Snowdon," from London with passengers, in which the powder had been stowed in an equally dangerous way. I also gave a case in which the gunpowder had been so carelessly stowed that an action at law was brought by the consignee to recover several cases of powder undelivered, and in evidence upon the trial it was stated that 113 flasks were delivered subsequently, resulting from the sweeping-up of the ship after the cargo had been removed, but that it was very much damaged owing to the admixture of dirt and dust.

On the 24th of February the right honorable gentleman, in answering Lord Eslington, said he adhered to his former answer as to the sufficiency of the law and the Board of Trade instructions to deal with all questions of stowage; and that the cases cited by me had occurred before the law came into operation. This answer somewhat surprised me, as I had in the same letter referred to the "Great Queensland," which left London so recently as August last. As an investigation into the circumstances surrounding this case has been now ordered, and will be made by the Wreck Commissioner early in next week, it would be improper for me to say anything more upon this case. I merely cite it to show that when the law was in full operation a vessel with seventy souls on board did leave the Port of London with a mixed cargo of brimstone, saltpetre, cartridges, spirits, iron, and from 50 to 100 tons of gunpowder.

Finding, then, that Sir C. Adderley was still evidently incredulous, I ventured again to trouble you on the 3rd of March to bring to your notice the case of the "No Name," which left Liverpool bound for Africa so late even as the 15th of February last, and therefore, I should imagine, well within the scope, as regards time, of all the Acts referred to by Sir C. Adderley, extending from 1855 to 1876, and of the Board of Trade instructions. I pointed out that it was owing to the mere accident of the crew mutinying and refusing to work the ship, and the captain having consequently to turn the vessel into the Bristol Channel, that the circumstances in which she had left the important port of Liverpool were brought to light. And then, only upon the crew being charged with neglect of duty, was a survey ordered at the request of the men by the Cardiff Bench. The report of the Board of Trade surveyors showed that the cargo, consisting of 1,000 kegs of gunpowder, 1,000 cases of spirits, paraffin oil in tins, coal, and iron, was found mixed together in the hold in a highly dangerous manner, and that in the four-foot, a place to which the cook must have access every few hours, kegs of gunpowder and tins of paraffin were rolling about at every lurch of the vessel, and that in the event of a light being taken there the result would probably have been the destruction of the ship and all on board.

Can the law and regulations which permit a ship to put to sea under conditions which practically render the blowing-up of her crew a matter of almost absolute certainty be, as Sir C. Adderley says, amply sufficient?

Had the "No Name" and her cargo been handed over to our London *gamins* on Guy Fawkes' Day, it would have been utterly impossible for them to have made more effectual arrangements for the sure blowing-up of their Guys than were made for the blowing into eternity of these poor sailors. Your correspondent, "H.K.," showed that the same reckless mode of stowage was adopted in the "Thomasina MacLellan," a large ship carrying passengers, which sailed in June last from London, with a cargo of coals and 800 kegs of gunpowder, cases of matches, and turpentine, all stowed in close proximity to the coals.

This case, perhaps, more than any other, shows the urgent need of stringent legislation, as it shows only too plainly the little protection passengers and crew have to expect from the officers in command. On the 17th of July the coals on board this vessel were found to be in a very heated condition. On the 19th they were more so, attended by a strong smell of sulphur. On the 20th and 21st their heat increased, and great fear was entertained of spontaneous combustion. One would have thought that a person having charge of the lives of passengers and crew would not have allowed five hours, let alone five days and nights, to elapse, with the cargo of coals momentarily rising in temperature, before throwing all gunpowder and matches overboard. Captain Gibb, however, thought otherwise, as it was not until late in the afternoon of the fifth day, fearing spontaneous combustion, and seeing that part of the cargo stowed near these heated coals consisted of lucifer matches and 800 kegs of gunpowder, that he thought it advisable (—to throw the gunpowder overboard? No—) to make preparations for doing so, and to tack the ship and bear away for Rio de Janeiro. It was not until the 23rd, or seven days after the first warning, that the captain, finding the heat of the coals greatly increased, and smoke issuing from the fore hatch, thought it necessary to throw the gunpowder overboard.

It appears that on the following day, when the vessel brought up in the harbour of Rio, it was found "that the coals were on fire all through."

Upon this case being brought to the notice of Sir C. Adderley by Mr. Ashley, the right honorable gentleman said that—

"The ship not being an emigrant vessel, the case did not come under the Passengers Act, and therefore she was not altogether prohibited from carrying explosives. The shippers, however, had certainly violated in substance the Act of 1875. The Merchant Shipping Act of last year required the Board of Trade to detain any ship improperly loaded, and it was not impossible that such a case might be brought under the Act."

Now, Sir, have the words in the foregoing answer—*i.e.*, “not altogether,” “in substance,” “not impossible,” and “might,” an imperative sound? Do they not rather tend to show that the same doubt appears to exist in the mind of Sir C. Adderley that is to be found in ninety-nine minds out of a hundred that attempt to get at the meaning of the several Acts so often cited by the President of the Board of Trade as being amply sufficient to prevent improper stowage of explosives—namely, the Passengers Act of 1855, the Act of 1873, the Explosive Act of 1875, and the Merchant Shipping Act of last session?

The efficacy of an Act of Parliament should be judged by the power it has shown to produce the effects intended; and I am at a loss to understand how Sir C. Adderley, in the face of the gross cases cited, can still persistently adhere to his first statement, that the law is efficacious.

The first thought that must strike all with amazement, is how these vessels could have cleared and put to sea in the teeth of these four Acts of Parliament and of the Board of Trade instructions. If the law is sufficient to prevent such a monstrously outrageous state of things, it is high time that the public take the matter up and bring those whose duty it is to prevent these outrages upon common sense to a proper sense of their duty.

In his answer to Mr. McLagan on the 23rd of March, Sir C. Adderley stated that “one hundred and forty-eight harbour authorities had applied for confirmation of their by-laws; of these only eighty-six had had them confirmed, and in thirty-four of these the loading and unloading of explosives in harbour were prohibited. There were fifty-two codes still under consideration.” What has been the fate of the remaining ten the right honorable gentleman did not say. Pending the settlement of the fifty-two codes still under consideration, it would be interesting to know what is being done at these fifty-two harbours for the protection of passengers and seamen. He further stated “there was no power to compel harbour authorities to issue these codes, and he was not prepared to bring in a measure containing a general code for adoption by all harbour authorities.”

As the Explosive Act of 1875 is simply so much waste-paper, so far as the stowage of explosives in vessels is concerned, without these by-laws, I fail utterly to comprehend how Sir Charles Adderley can say the Act is effective.

The plain fact of the matter is, the whole law upon the subject is nothing more nor less than a jumbled mass of contradictions and absurdities that no one can understand or work.

One Act would seem to give power to an owner to crowd any quantity and variety of explosives in his hold with impunity. Another, the Passengers Act of 1855, limits the number of passengers that may be blown up at any one time to “not more than thirty persons or a greater number than in the proportion of one to every fifty tons of the registered tonnage of a sailing ship or to every twenty-five tons of a steamer.” This Act, however, only extends its protection to passengers on ships bound to some place out of Europe, and not bound to any port in the Mediterranean; in such cases the number is not limited.

The Act of 1873, as I have before stated, provides in no way for the safe stowage of explosives. “The Explosive Substances Act, 1875,” is abortive, for the reasons I have given. But, even were there power to compel harbour authorities to issue codes, it is quite possible some might consider, with the Liverpool authorities—judging from the “No Name”—loose kegs of powder dropped indiscriminately into a hold with coal and paraffin oil a proper and safe mode of stowage; whereas another might require that the explosive should be separated from the remaining portion of the cargo by means of a well-worn sail or some such sieve-like arrangement.

In short, this ponderous Act leaves it entirely to harbour and local authorities to decide (or not decide) what is a proper mode of stowage.

Finally we come to the Merchant Shipping Act of last session, which, to quote Sir C. Adderley’s answer to Mr. Ashley, “requires the Board of Trade to detain any ship improperly loaded,” and it gives power to the Board to issue instructions to their officials at the different ports for the purpose.

It would be manifestly unfair to assume for one moment that the Board would allow so long a time to elapse as from the passing of the act to the 15th February last (the date of the sailing of the “No Name”) without issuing the instructions in question; and therefore we are reduced to the choice of three surmises: (1) That the instructions favour the indiscriminate huddling of paraffin, spirits, coal, iron, and gunpowder as a proper mode of stowage; (2) that, if the instructions do not favour this system, the officials at Liverpool have been guilty of the grossest neglect of duty; or (3), if the instructions leave it to the discretion of the officials to decide what is a proper mode of stowage, then the wide divergence of opinion between the Liverpool Board of Trade official who allowed the “No Name” to proceed to sea and the Cardiff official who detained her on the ground that a light being taken into the four-foot would probably have caused the destruction of the ship and all on board, shows how necessary it is that imperative and distinct regulations should be issued to all Board of Trade officials, instead of long unintelligible and contradictory quotations of certain clauses of the various Acts in question, and which tend only to leave the poor official after reading them in a sea of doubt and bewilderment, hardly knowing, unless he be an analytical chemist, whether a loaf of bread may not contain one of the prohibited constituents of the various compounds classified under the Explosive Act.

It would be an easy matter to appoint a Committee of scientific men to inquire into the different modes of stowage, and to select the best. A short Act would then be all that would be necessary to settle once and for all upon some uniform system of stowage, instead of leaving it to harbour, local, and Board of Trade authorities.

Surely the inventive genius of the country cannot have fallen so low that no better plan of stowage can be devised than that adopted in the hold and four-foot of the “No Name.”

I had just finished this letter when my attention was drawn to the account in your Saturday’s edition, under the head of “Disasters at Sea,” of the supposed loss of the “Cairo,” and of some wreckage seen by the master of the “Strathdon,” and supposed by him to belong to her. The impression seems to prevail that she has stranded on one of the Tristan d’Acunha group of islands, as the risk of loss by collision in that quarter is infinitesimal.

May I be permitted to add to the information you have already received, that the "Cairo," which left London for Port Phillip on the 17th November last, in addition to her crew of 27 persons and 16 passengers, had on board a general cargo, comprising a large quantity of Manchester goods, 200 tons of bar and pig iron, 4,000 cases and 200 casks of spirits, 170 kegs of saltpetre, and about 30 tons of gunpowder, packed in small casks?

The Editor of the *Times*.

I have, &c.,

M.

Enclosure 2 in No. 1.

Messrs. J. and E. HALL to the AGENT-GENERAL.

SIR,—

21, St. Swithin's Lane, London, March 17, 1877.

The discussions which have of late taken place in Parliament, and the correspondence which has appeared in the Press, on the subject of the conveyance of gunpowder by vessels carrying passengers have doubtless attracted your attention.

The best mode of transporting this necessary but very dangerous product from place to place has long engaged the serious attention of those connected with its manufacture. Amongst these, we are admittedly one of the oldest established houses, our province being the making of the machinery by which gunpowder is manufactured.

It was our intention to have designed a new and improved form of package to which we hoped to call your attention, but it has since occurred to us that in the case of so important a country as New Zealand, the simplest remedy would be to set up an arsenal and manufacture its own powder.

The expense of erection is comparatively trifling, the process of making by no means difficult, the danger (where care is taken) almost nominal, and in the event of the supply exceeding the demand the surplus would, we imagine, always find a ready sale.

On the other hand, the advantages are, we venture to suggest, really important. A certainty of good quality is insured. Every description of powder can be made as required, either for war or mining purposes, and all kinds in store that may have become obsolete or damaged can be remade and worked into more suitable sizes. A stop is at once put to the necessity of conveying gunpowder in passenger or other ships, the public knowledge of which would certainly be an encouragement to emigration. And in the event of war, New Zealand would possess within herself the means not only of creating all the powder she might require, but would also be able to furnish assistance if needed to the mother-country, should her ships in those seas run short of ammunition.

If you think, Sir, that the subject is of sufficient importance to interest your Government, may we ask you to bring the matter before them when next you send out any despatches. And, descending from generalities to personal matters, may we trouble you with the information that for many years we have enjoyed the confidence of this Government, that we have fitted up an arsenal for them in each of the three Indian dependencies; and we shall be happy to furnish you with every information necessary to the subject.

Sir Julius Vogel.

We are, &c.,

JOHN and EDWARD HALL.

The cost of an arsenal varies, according to its producing powers, from £15,000 to £25,000.

Enclosure 3 in No. 1.

The AGENT-GENERAL to Messrs. J. and E. HALL.

7, Westminster Chambers, Victoria Street, Westminster, S.W.,

29th March, 1877.

GENTLEMEN,—

I have the honor to acknowledge the receipt of your letter of the 17th instant, containing suggestions relating to the manufacture and storage of gunpowder in New Zealand.

In reply I have to inform you that I will communicate a copy of your letter to the Government of the colony by the first outgoing mail, and, at the same time, call their attention to the subject.

I have, &c.,

Messrs. J. and E. Hall,

JULIUS VOGEL,

21, St. Swithin's Lane, London, E.C.

Agent-General for New Zealand.

Enclosure 4 in No. 1.

[Extract from the *Otago Daily Times* of 24th September, 1875.]

STOWAGE OF GUNPOWDER.

THE following correspondence on this subject has been placed at our disposal for publication:—

Mr. J. W. RUSSELL to Captain CUMMING.

DEAR SIR,—

I have been informed that in many of the ships in which gunpowder has been imported from England to this port during the last two years, the necessary precautions have not been adopted in the stowage of such very dangerous cargo. As you are in the daily habit of inspecting the stowage of cargo while being discharged, would you be kind enough to furnish me with a report on this matter for the use of the Underwriters' Association here, stating whether, according to your judgment and experience as a surveyor, proper means have been taken for the safety of the ship and prevention of accidents?

I have, &c.,

Captain Cumming,

JAMES W. RUSSELL,

Marine Surveyor, Port Chalmers.

Surveyor to Association.

Mr. J. W. CUMMING, Marine Surveyor, to Captain RUSSELL.

SIR,—

Port Chalmers, 8th September.

At your request I furnish you with a report of the stowage of gunpowder on board the last vessels that arrived here, and my experience as a marine surveyor of stowing of gunpowder on board vessels arrived at this port the last two years.

On the 19th August, 1875, I surveyed the main hatches of the ship "Knight of Snowdon," Captain Richardson, from London, with 200 kegs of gunpowder on board, and found the kegs in good order, and stowed against a plain $\frac{3}{4}$ -inch bulkhead that divided off the passengers' berths from the cargo, being about twenty feet aft the main hatch, stowed on top of case goods, without any old sail under or over the kegs.

On the 30th August, 1875, I surveyed the main hatches of the ship "Altcar," Captain Harvey, from London, with 400 kegs of blasting powder and twenty cases of canister powder on board. Found the kegs and cases of powder stowed in and around the main hatchway in separate lots. Some packages of other cargo, having got adrift on the passage, broke nine kegs and two cases of powder, completely smashing four of the kegs, and allowing the contents of the whole nine kegs to get mixed with the cargo, and find its way down into the lower hold, there being no old sail under or over the kegs to save or protect the powder.

Some time in 1874—(I forget the name of the vessel) had four kegs smashed, the contents getting down the lower hold for want of an old sail under the kegs; and only in one instance have I seen that precaution taken, but never found them covered over or stowed in a bin.

I have, &c.,

JNO. W. CUMMING,

Marine Surveyor.

Captain Russell.

Captain HARVEY to the SECRETARY, Underwriters' Association.

SIR,—

Ship "Altcar," Port Chalmers, September 17th, 1877.

I deem it my duty to inform you, for the information of the local insurance offices, of the dangerous manner in which gunpowder is put on board and (so called) stowed in London.

It is brought alongside, taken in, and stowed by the shipper's agents, the master and crew of the vessel having no control over it in any way.

Now, the stowing of these parties consists in dropping the various packages into any opening or crevice that presents itself. The powder in my vessel consisted of 400 barrels and twenty-four cases, and was placed in main hatchway and on both sides of same, amongst a general cargo consisting of wines, spirits, oils, paints, matches, rod and bar iron, &c., &c. The hatches were then secured, and nothing more was seen until arrival. We had the usual amount of heavy weather during the voyage. Upon opening hatches in presence of surveyor we found the powder adrift, and some eight barrels and three cases smashed. In consequence, daily during our discharge we have been sweeping and packing up powder from amongst the iron, &c., it (the loose powder) having reached down even to the skin of the ship. Now, any practical man will perceive we have been momentarily exposed to explosion, more especially from the friction of the iron, and have been most mercifully spared from an imminent and deadly peril. In carrying powder for the Government it is placed in a magazine specially prepared, into which not a particle of iron is allowed to enter. I begged for one in London, but was not listened to by the charterers. Powder is not allowed to be carried at all in emigrant vessels, but it is allowed, it seems, to be put on board passenger ships. Surely the lives of these, and of myself, wife, and crew, are as dear to us as to emigrants.

As the Government appear to take no cognizance of these matters, but confine their attention to frivolous and vexatious rules and regulations, my object is to persuade the insurance offices to refuse to underwrite a single package in vessels carrying powder, unless in a proper magazine, which for a few pounds could be erected.

While I am writing we all regret the non-appearance of the "Strathmore," a new vessel, with some ninety souls on board. Being informed she carried thirty tons of powder, and judging from my experience, I (and I shall rejoice to find I am wrong) never expect to see her.

Surely, Sir, under these circumstances the insurance offices will not hesitate a moment to put a stop (as far as is in their power) to this disgraceful and wanton practice, whereby most valuable vessels, their cargoes, and the lives of all on board, are so manifestly imperilled.

I have, &c.,

J. W. HARVEY,

Master of ship "Altcar."

The Secretary, Underwriters' Association.

No. 2.

The Hon. the COLONIAL SECRETARY to the AGENT-GENERAL.

SIR,—

Colonial Secretary's Office, Wellington, 15th June, 1877.

I have the honor to acknowledge the receipt of your letter of the 29th March, No. 326, on the subject of the manufacture of gunpowder, and to thank you for the information it contains.

I should feel obliged by your making inquiries into the whole subject, as suggested in the third paragraph of your letter, and reporting the result to the Government.

I have, &c.,

DANIEL POLLEN.

The Agent-General for New Zealand, London.

No. 3.

The AGENT-GENERAL to the Hon. the COLONIAL SECRETARY.

SIR,—

7, Westminster Chambers, London, S.W., 21st November, 1877.

In accordance with your letter of 15th June, in which you directed me to make further inquiries on the subject of the manufacture of gunpowder, and to report the result, I at once placed myself in communication with Messrs. J. and E. Hall, and had a long conversation with Mr. Beckwith, of that firm.

2. After a considerable interval I received from them the letter of which I enclose a copy. You will see by it the cost of a complete factory, such as I think would suit the requirements of the colony.

3. Through an introduction obtained from the India Office, I also had a lengthened interview on the same subject with Colonel Childers, Superintendent of the Madras Government Powder Factory, who happened to be in London on leave.

4. Colonel Childers was most kind in his desire to furnish me with information, and in his assurances that he would be happy to give any further information or render any assistance in his power.

5. I learnt from Colonel Childers that there are three factories in India, one in each Presidency, and that all are being increased. The Madras factory turns out from four to five thousand barrels of powder yearly, and its capabilities are being enlarged fifty per cent. In Great Britain the Government have only one factory, but powder is obtained largely from private makers. The manufacture of gun-cotton can be carried on at a powder factory. The machinery for making gun-cotton, Colonel Childers said, would not be expensive. Colonel Childers expressed a high opinion of Messrs. J. and E. Hall. They have supplied the factories for India, and he has not known any complaint concerning their work. He thinks that for the head of the factory, if carried out by the Government, it would be desirable to obtain the services of an officer of Royal Artillery, used to the work of managing a powder factory. He is of opinion that such an officer could be obtained for from £700 to £800 a year.

6. Colonel Childers is strongly of opinion that a powder factory would be safer and better in Government hands. He thinks that in countries where there are Native races it is inexpedient to encourage the private manufacture of powder. I am inclined to think that for many reasons it would be better the Government should undertake the manufactory itself. I think there would not be enough competition if left in private hands to insure the manufacture of a good and safe article; whilst, in order to procure private manufacture, some specific encouragement would have to be given. It seems to me that gunpowder and other explosives are best made under Government supervision.

7. I enclose also the copy of a correspondence with Captain Campbell-Walker concerning wood for charcoal.

8. Let me add, in conclusion, that should you require further information, I will willingly endeavour to obtain it.

I have, &c.,

JULIUS VOGEL,
Agent-General.

The Hon. the Colonial Secretary, Wellington.

Enclosure 1 in No. 3.

Messrs. JOHN and EDWARD HALL to the AGENT-GENERAL.

SIR,—

Dartford Iron Works, Dartford, 16th October, 1877.

Agreeably with your request, we have now the honor to submit our views on the various subjects to which you drew Mr. Beckwith's attention at his last interview with you.

From what we can gather amongst those in the trade of gunpowder manufacturing with whom we are acquainted, and to whom similar offers have been previously made, we do not anticipate that any firm who could spare sufficient capital from their already existing business here, would care to invest it in a similar undertaking in the colonies; but we should imagine that, were the factory once established by the Government in New Zealand, there would be little difficulty in transferring it into private hands there; and as the object of your Government is, we presume, to have the power of making gunpowder within its own territory, and so obviate the possibility of accident on board ship by explosion during transit from England or elsewhere, rather than—as in the case with some foreign Governments—to make a profit out of the monopoly, there would be no objection to such a transfer.

Cost of a Factory.—The extent, and consequently the cost, of a factory is regulated by the number of mills at work. To produce with certainty the quantity now required by the colony, it would be advisable to erect eight mills. These, with the other necessary machinery, would cost here about £15,000, present requirements being—22,000 lb. gunpowder (sporting), 324,000 lb. gunpowder (blasting), and 1,000,000 cartridges, equivalent to 13,400 lb. powder. If the motive-power be all steam, necessitating the employment of four engines, the additional outlay of about £6,000 will be necessary; but, doubtless, with the water facilities in New Zealand, a considerable portion—say, one-third—of this expense may be avoided. Working the hours you gave us—*e.g.*, eight per diem—a factory of eight mills would yield annually—say, 40,000 lb. sporting powder, 380,000 lb. blasting powder, and 20,000 lb. powder for cartridges. These would cost about £12,000—tools, rails, and trucks for factory.

Freight.—The total weight would be about 500 tons, and would cost—say, £2 per ton in all—about £1,000.

The above constitutes what would be generally considered as a complete gunpowder factory; but as, in addition thereto, you required further information, we beg to furnish you with the following particulars:—

Tin Powder-flasks.—Machinery for making the tin powder-flasks capable of producing eight per minute, £400.

Cartridge Machinery.—Empty cartridges, of best make, to be imported at 30s. to 65s. per thousand.

Gunpowder Materials.—The cost of materials used in the manufacture of gunpowder is as follows:—Refined saltpetre, about £26 per ton; sulphur, about £13 per ton, at the Thames; charcoal—this would be so cheap in New Zealand that we do not name a price.

With regard to the factories where our machinery is employed, we may mention the Royal Gunpowder Factories at Waltham Abbey, at Ishapore, Madras, and Kirkee, at each of which we are at present erecting a new set of mills. Amongst the private makers in England who employ us are Messrs. Hall, of Faversham; Messrs. Curtis and Harvey, of Hounslow; Messrs. Pigou and Co., of Dartford; Messrs. Sharp, of Guildford; Messrs. Hay, Merricks, and Co., of Edinburgh; and others. We have erected two entire factories in China, for the Government there; and have supplied machinery to several works on the Continent, to all or any of whom we should be pleased to refer you.

In conclusion, we trust that the information we have had the pleasure to furnish to you, though not very voluminous, may be sufficiently so as to enable you to form an opinion on the subject, and, always at your service.

Sir Julius Vogel, Agent-General for New Zealand.

We have, &c.,

JOHN and EDWARD HALL.

Enclosure 2 in No. 3.

The AGENT-GENERAL to Captain CAMPBELL-WALKER.

SIR,—

7, Westminster Chambers, London, S.W., 5th September, 1877.

I have the honor to inform you that I have been instructed by my Government to make inquiries with regard to the establishment of a factory for the manufacture of gunpowder in New Zealand. With this view, I am anxious to know whether any, and, if so, which, of the woods now grown in the colony would be suitable for making charcoal. Colonel Childers, Superintendent of the Madras Powder Factory, with whom I have been in communication on the subject, informs me that you know the wood which is used for gunpowder charcoal in India, and will be able to tell me if suitable wood is to be found in New Zealand in sufficient quantity. I am under the impression that the willow, which is commonly used in this country, is not plentiful enough in the colony. I shall also be glad to learn if there is any wood suitable for making powder-barrels to be found in sufficient quantity in New Zealand. I shall be obliged to you for any information on the whole subject you are able to give me.

Captain Campbell-Walker,
Raleigh Club, Regent Street, S.W.

I have, &c.,

JULIUS VOGEL,
Agent-General for New Zealand.

Enclosure 3 in No. 3.

Captain CAMPBELL-WALKER to the AGENT-GENERAL.

SIR,—

22, King Street, St. James's, London, S.W., 20th September, 1877.

I have the honor to acknowledge receipt of your letter dated the 5th instant, and to inform you that the wood of several species of New Zealand trees would doubtless be found suitable for the manufacture of gunpowder charcoal.

2. In Madras those found best are the *Vitex negundo*, *Capairus indicus*, *Calotropis gigantea*, and *Parkinsonia aculeata*, akin or nearly allied to the New Zealand *Vitex littoralis* (puriri), *Nesodaphne* (tawa and taraire), *Olea apetala*, *lanceolata*, and *cunninghamii* (maire), &c.; besides which I would specify the *Knightia excelsa* (rewarewa), which will, however, I believe, prove eventually too valuable for veneration to be used for charcoal.

3. Experiment alone can determine which are the most suitable descriptions; but I have no doubt that they exist, and in sufficient quantity.

4. I may mention that great improvement and economy in the manufacture of wood charcoal has recently been effected in Madras by the introduction of portable iron kilns, a French patent, I believe, with regard to which I can readily obtain information if required.

5. As to staves for the powder-barrels, I am not certain if any of the New Zealand timbers would prove suitable, and do not like to hazard an opinion without more information than I can at present command. Oak is the description preferred by coopers in this country, but I have little doubt that descriptions equally suitable can be found, if not in New Zealand itself, in one of the neighbouring colonies.

Sir Julius Vogel, K.C.M.G.,
Agent-General for New Zealand.

I have, &c.,

J. CAMPBELL-WALKER,
Captain Staff Corps.

No. 4.

The AGENT-GENERAL to the Hon. the COLONIAL SECRETARY.

SIR,—

7, Westminster Chambers, London, S.W., 11th September, 1878.

I have the honor to inform you that I have forwarded to you a complete set of tracings of a gunpowder factory, which Messrs. J. and E. Hall have had the goodness to furnish me. They may be of assistance to you in considering the former correspondence in reference to the establishment of a powder factory in the colony.

The tracings are enclosed in a tin case, with padlock, which is forwarded, by special permission of the Post Office authorities, by the present mail. I enclose you the key.

I have, &c.,

JULIUS VOGEL,

Agent-General.

The Hon. the Colonial Secretary, Wellington.

No. 5.

The AGENT-GENERAL to the Hon. the COLONIAL SECRETARY.

SIR,—

7, Westminster Chambers, London, S.W., 18th June, 1879.

I have the honor to enclose the copy of a letter received from Messrs. J. and E. Hall in continuance of previous correspondence.

I shall be glad to be able to give them some reply. No acknowledgment has yet, I think, been received of the plans they sent out, which must have cost them a great deal of trouble.

I may, perhaps, be allowed to say that I am still of opinion that the large quantity of gunpowder and explosives in various shapes which find their way to the colony in passenger ships, constitute an element of danger which, if possible, it would be well to avoid.

I have, &c.,

JULIUS VOGEL,

Agent-General.

The Hon. the Colonial Secretary, Wellington.

Enclosure in No. 5.

MESSRS. JOHN and EDWARD HALL to the AGENT-GENERAL.

SIR,—

21, St. Swithin's Lane, London, 17th June, 1879.

On the 21st of August last we had the pleasure of transmitting, through you, to the Ministry in New Zealand, a complete set of drawings of a gunpowder factory, such as we have erected in each of the Presidencies of India.

Owing, probably, to the pressure of other business, we have up to the present heard nothing from your Government; but it certainly seems to us that there are few matters which more urgently demand the attention of a Government like that of New Zealand than the creation of a gunpowder factory within its own domains.

Not only is it a necessity in time of war to have within an island the means of producing what gunpowder may be required, but it is also greatly to be desired in time of peace, because the numerous emigrants to the island must be more or less subject to danger, owing to the frequent carriage of combustible materials.

We shall esteem it a great favour if you will be good enough to communicate to your Government the contents of this letter; and, should they be disposed, as we trust they may be, to entertain the idea of shortly erecting a gunpowder factory, we hope the reference which we gave you on a former occasion to the Council of India will be sufficient assurance that any work which may be intrusted to us will be promptly and honorably executed in a proper manner.

Sir Julius Vogel, K.C.M.G.,
New Zealand Agency, Westminster.

We have, &c.,

JOHN and EDWARD HALL.

No. 6.

The Hon. the COLONIAL SECRETARY to the AGENT-GENERAL.

SIR,—

Colonial Secretary's Office, Wellington, 2nd August, 1879.

I have the honor to acknowledge the receipt of your letter No. 513, of the 18th June, enclosing copy of one from Messrs. J. and E. Hall, in continuance of previous correspondence on the subject of the establishment of a powder factory in this colony, and, in reply, to inform you that the Government does not at present see its way to carry out this proposal.

I should feel obliged if you would express to Messrs. Hall the thanks of the Government for the trouble they have taken in bringing this matter under notice.

The Agent-General for New Zealand, London.

I have, &c.,

G. S. WHITMORE.

By Authority: GEORGE DIDSBURY, Government Printer, Wellington.—1879.