

**Appendix A**  
**Evidence to the Napier Commission by Edward Charles STANFORD,**  
**Manufacturing Chemist, Dalmuir**

Transcribed by Billy Clelland

*The Chairman.*—Have you got a statement you wish to read? — I have. The question of kelp, and the value of the shores of the Outer Hebrides, has been often alluded to at the meetings of the Royal Commission. It may be desirable, therefore, to place on record some authentic information on this subject. It may not be uninteresting if I attempt also to give a short description of the introduction of a new industry in this direction in one of these islands, over twenty years ago, — especially as in the recent conduct of this work I have some charges to refute; and I would here premise that the whole responsibility rests with me, and if blame can be laid on any one, I must bear it. The difficulties met with, may give a good idea of the position of the crofters and cottars of that time. I shall speak more particularly of the island of Tiree, where this undertaking was first carried out; but other islands, particularly North and South Uist, will be referred to. It is impossible to cultivate an acquaintance with sea-weed without becoming familiar with our wildest shores. My experience of the outer islands is considerable, for it includes them all, from Ireland to the Channel Islands. It is also unusual, extending from a night in the shipwrecked mariners' bed in Shillay Lighthouse, within sight of St Kilda, to a compulsory residence of several winter days in the little island of Sark, off Guernsey. Indeed, I scarcely like to remember how much of my time has been occupied in waiting the will of the winds and waves in one or other of these stormbound islands. I claim therefore over twenty years of somewhat exceptional experience. KELP — In the early part of this century, kelp formed a most important addition to the income of many of the Highland lairds, in some islands far exceeding the rental from all other sources. The kelp then realised £20 to £22 per ton. McCulloch states that the shores of North Uist alone let for £7,000 per annum; that the Hebrides yielded 6,000 tons per annum, and the total produce of Scotland was 20,000 tons. It was then employed in making carbonate of soda, for use in soap-making. It soon had a competitor, however, in imported barilla, and during the twenty-two years ending 1822, the average price was only £10, 10s. The duty was then taken off barilla, and kelp fell to £8, 10s. per ton. The discovery of the Le Blanc process, for the manufacture of carbonate of soda from salt, because [became], however, a far more formidable opposition, and in 1823, on the removal of the salt duty, kelp fell to £3 per ton, and in 1831 to £2 per ton. From then till 1845, the small quantity made was still used in the soap and glass factories of Glasgow. A large chemical work was established by General McNeill in Barra for soap making, but it failed; two ornamental octagonal chimney shafts were the standing relics not long since.

IODINE was discovered in 1812, but it was not till 1841 that it was made in Glasgow in any quantity; in that year 2,565 tons of kelp were imported into the Clyde, and used for soap making; the iodine was extracted from the soap-makers' leys. In 1845 there were four makers of iodine working kelp, the import of which rose in that year to 6,086 tons. In the following year there were twenty makers, tempted by the high price of iodine. Soon after this the potash salts became valuable, and the trade was prosperous. The discovery of the Stassfurt mineral, however, reduced the value of the potash salts to one-third, and the discovery of iodine in the caliche<sup>1</sup> of Peru gradually brought down the price of this article to a figure at which its manufacture from kelp is now unremunerative. The kelp thus used for the manufacture of potash salts and iodine is not the same as that formerly made for recovering soda, at least it ought not to be. The kelp was made formerly from the various kinds of fucus, or beach wrack

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<sup>1</sup> A surface deposit consisting of sand or clay impregnated with crystalline salts such as sodium nitrate or sodium chloride

[sea weed], cut from the rocks while growing in the extensive lochs of the west coast. It was burnt at a high temperature, and raked into a molten slag. The kelp now required is made from the deep-sea tangle and bardarrig, or red wrack, thrown up by the storms on the west shores. It will not stand rain, and should not be burnt at a high temperature. Nevertheless, it always is, with the result that half its most valuable constituent, the iodine, and much of the potash salts, are dissipated and lost. In 1862, I published some researches on this subject, showing the great losses thus occasioned, and proposed a new method of carbonisation or destructive distillation in iron retorts. It was brought before the Society of Arts in an evening lecture, and the council awarded me their silver medal. In reference to this award, the *Chemical News* said — "We do not remember that the Society of Arts has ever given a medal where it was so well deserved," and the editor strongly advised its prosecution on the large scale. Thus encouraged, I determined if possible to carry it out. The Duke of Argyll was the first proprietor to see the value of this discovery, and it was ultimately arranged that the process should be worked on a large scale in his island of Tiree, a lease having been entered into.

Sometime after, a lease was also arranged with the late Sir J. P. Orde for North Uist, and works erected there. In Tiree the estimates made by the factor as to quantity were very large. It was calculated that 30,000 tons were annually collected mostly for manure, and that four times that quantity were annually lost. Our calculations were based on recovering 16,000 tons; and if ever that quantity could have been obtained, the works there would have had a very great success, and turned out much more iodine than all the rest of the Highland shores put together. It is impossible, however, to estimate the quantity of sea-weed thrown up in a storm; and the sea has an awkward habit of calling again and removing a good deal of it, or covering it over with sand. Moreover, this sea-weed is much injured by rain which if continued long will render it useless for kelp purposes. It is also a highly nitrogenous substance, and is quickly devoured by maggots, which become flies, and the material, like some other riches, literally takes to itself wings and flies away, so that once when I carted a large quantity to the works for experiment, it was remarked that the Sassenach had taken a great deal of trouble to put in the material, but it wouldn't give him any kind of pains to put it out, as it would leave him of its own accord. Such then was the nature of the material to be dealt with, and in 1863 I left London for Tiree, to put up the necessary works. For eighteen months I was off and on this island—I say off and on, because this movement presented the first difficulty. Tiree is almost the only western island which has no good harbours, and steamers would not visit it then. Moreover, it is an extremely difficult island to make in winter darkness — to see where the white surf ends, and the low-lying white sandy shore begins. There are some fishing harbours, none of them safe, and some Highland quays. A "Highland quay" is usually a quarter of mile from the water at low water, and completely submerged at high tide. For the purposes of landing large iron tanks, boilers, etc., they were useless; so that all the heavy plant was got ashore with the greatest difficulty, and dragged eight miles over no roads, with still greater difficulty. I had the best encouragement from the proprietor, who with the late Sir J[ohn]. McNeill visited the island when I was there, but the difficulty in getting the people to work was considerable. Very little English was spoken, and of course an interpreter was always by my side. Then the most extraordinary rumours were set about; some thought the Sassenach was a Frenchman, and their ideas about Napoleon were still very warlike; indeed, every nationality claimed me in turn. Others thought my object was to dig up the dead bodies, and boil them down for the fat (there was little of that to spare then amongst the living); others, the majority, took a violent hatred against me, because they thought I was an excise officer sent to look after the illicit stills. They would do nothing for me; they would sell me nothing. Bread and meat could not be got; and much fine turbot and halibut was cut up for bait, but not for me. However this did not last long, and I soon got on very well with them; for I had promised his Grace to employ the people as much as possible. The

promise has been kept, and after a long experience I can speak highly of their faithful service when their confidence was gained. And I may mention that men who were with me from the first are still in our employment, and have become good bricklayers, smiths, and fitters, so that both in Tiree and in our works at North Uist, with the exception of the manager of each, no stranger whatever is employed. A volume could be filled with the history of these works alone, but it will be sufficient to say that the buildings were finished at last, after several large roofs had been carried off by the storms. I may add that no one who has not witnessed them can have any idea of the extraordinary violence of the winter gales in this island, as with the exception of three small hills it is extremely low-lying and flat. During the following winter, the collection of the tangle commenced. There was at first great difficulty in inducing the people to begin, as there has been at all the other Highland shores, where it is now in full operation; it was a new thing, and they did not believe in it. They soon find out, however, that it affords a winter employment for a family, as children can work at it. It consists simply in stacking the tangle out of reach of the tide. They are paid 6d. per cubic foot for this work, and have no further anxiety about it. The collecting, restacking, and carting cost as much again, and for this they are not responsible. Ever since 1863 that collection has been going on, and from that time not a penny that can be made in this way has been lost. About 300 cottars families were then said to have no regular means of subsistence; I was told they lived on the strong air. The amount of money thus introduced into the island has exceeded £50,000; and the whole of this has been found money, which at first they refused to pick up. Any attempt to stop the collection now would raise a considerable outcry. In comparing this price with kelp-making, it is well to remark that the manufacture of a ton of kelp involves the collection, or cutting, drying, and burning of 20 tons of sea-weed, and it also involves the possible loss of the whole by exposure to rain. The price per ton to the kelper, in North and South Uist, even in the good old days, seldom exceeded 35s. to £2; yet, small as this sum appears, it amounted to a considerable aggregate; it paid their rents, and the loss of it is much felt in these islands. It is, however, a poor employment; and wherever agriculture increases, as in Kintyre, kelp making is given up. One of the greatest difficulties in Tiree was in getting a supply of cash to pay the people; the nearest bank was at Tobermory, only thirty-four miles distant. This seems a convenient distance, but it proved to be actually, in point of time, very much further off than California in the winter. I had a most important telegram waiting me there for nearly a month, when in Tiree, where I was weeks without communication. The sums to be paid were often so small, and so distributed, that silver was required, and there were no means of getting it except from Tobermory. At imminent risk of life, I had frequently to go there in a smack; I have been delayed for weeks, I have paid £5 for this trip, and been two days between Tobermory and Tiree. I must record, even at this date, my great obligation to that most obliging and most attentive of bank officials, the then agent of the Clydesdale Bank there. He seldom had the chance of cashing my cheques during bank hours, but at any and every other time, indeed he was sometimes roused from his bed to give me the cash, and let me away. After I left the island the difficulty increased. On one occasion a clerk sent out from Glasgow in a steamer, in the winter, with £300, returned with it about three weeks afterwards; he had made an extensive trip, and seen almost every other island except the one he was sent to. The occasional steamer refused the responsibility. In fact, it was almost impossible to keep up the supplies, and therefore our manager was obliged to give the people lines on the stores of the island. The people complained of the prices charged, and that they could not get supplied, and petitioned me to open a store for them. Pressure of circumstances compelled me most reluctantly to consent to this. The principal store in the island, moreover was eight miles distant. It was arranged, in fairness to the storekeeper there, that the prices should be the same, which, as far as I know, has always been the case. The greater population live near the chief kelp store, and near our works. Having thus fixed the prices, the most respectable firms were selected in Glasgow, one only for each department, and told to supply the very best

articles — their names are a guarantee — and the manager there sends his orders direct to them. Since the establishment of this store things have gone smoothly, and I am not aware of any complaints; having visited the island regularly, I always found the people contented. The only effect on others that the store appears to have had was to do away with a number of very small storekeepers, who set up for a time, and then failed. It is true that some years ago a letter appeared in the *Oban Times*, and an article about the supposed truck system in Tiree, but the editor took the pains afterwards to inquire into the matter more particularly, and with full evidence placed at his command, handsomely published an ample apology, and admitted that he had been misled by interested parties. In fact, until the evidence taken before the Royal Commission, I was always under the impression that in all our proceedings the people had been most fairly treated, and that many of them had been raised from abject poverty; indeed, that no one there had any hard words to say of us. With these ideas then, I am astonished to find that according to an article in one of our daily papers, the best years of my life have been expended in the "spoliation and robbery of the poor." Well, outsiders are said to see the best of the game; but that statement implies that they know something about it, and that they are near enough to see the moves. With such critics, I can only repeat the remark made by Job to his uncomfortably and mistakenly candid friend, "No doubt but ye are the people, and wisdom shall die with you." I can only say that the work will be kept up in Tiree as long as it can be carried on without loss; and the store is entirely in the hands of the people. They desired its establishment, and when they wish it disestablished they have only to say so; but the demand must come from within, and not from without their circle. In taking evidence, however, it is rather important that there should be some guarantee of the reliability of the witness. The Royal Commission, in the vast amount of evidence, and the innumerable witnesses they have had to listen to, probably have not had the time to verify their statements, or detect their motives. The single day devoted to Tiree, at any rate, made this impossible there. There are only three witnesses whose evidence I have to answer. Two of these are men that our manager refused to trust with an advance; the former collects tangle and makes kelp; why does he do that, if it doesn't pay, when he is a joiner, and can work at his trade? The latter says the goods are dear and bad, and I meet both these statements with a flat denial. The third, the elder, convicts himself if his evidence is correctly reported. He says that we got two crofts from him; this is untrue, as only one croft formerly held by him is now held by us. It became an absolute necessity that our holding, which was nearly all at great expense reclaimed from the blowing sand which often covered the roofs of our works, should be increased, to keep our stock of horses; two small crofts, each about ten acres, were added; neither of these were more than half cultivated before, and on one of them was a deep marshy loch, which we drained and reclaimed, and which now forms the best part of the farm. As for his statement about the sum paid for the croft, I understand that for this particular croft he paid nothing whatever. I happen to remember him well, however, for at the time of executing the works, when stone was scarce, he sold me a lot of old stone walls for building purposes, in which he had the advantage of me, and then wanted me to put "elder" on the cheque; but I thought it unnecessary to make the Church of Scotland a party to that transaction. He also was a small local storekeeper, and I shall be glad to hear what claim he has for greater consideration than myself, and on what principle of justice he demands to have the croft back at less than half the present rent, because he paid that thirty years ago. One other complaint I will allude to; that is, that the price of tangle has been reduced from 6d. to 4d. There is some colour in this. On account of the liability to rot, we prefer it to be stretched two feet high, instead of three feet; but the hardship of receiving 4d. for two-thirds of a cubic yard, instead of 6d. for three-thirds, is quite invisible to me. With regard to the use of ground for spreading sea-weed, about which so much has been said, and by which the proprietor is supposed to exact two rents, we have of course nothing to do with this, but I have never before heard this right called in question. The

spreading of sea-weed on pasture land has, ever since kelp was made, been held to improve it. The first shower of rain gives the pasture a good dose of valuable manure as top-dressing. The kelper can never remove the whole of the sea-weed; he often has to leave a large portion, and sometimes to leave it all. I have seen thousands of tons rotting in this way, all of which was left for manure. In North and South Uist it was usual for the farmers not only to allow this, but to afford grazing for the kelpers' horses as well. And yet this has been compared by one of our daily papers to letting "a farm to one person for farming purposes, and to another for a bleaching green, to be occupied by them both simultaneously." Where is the analogy? With regard to the payment of the kelpers in goods, I have endeavoured to show that a store in Tiree is absolutely necessary, in the winter, if the people are to be kept in food, or the work is to be carried on at all. We have never altered the price of kelp to the burner in Tiree, and whatever may have been said, our manager assures me that he has never paid less than £4 per ton for good kelp. Among necessitous people, in such an outlying island, the difficulty is to prevent the kelpers from greatly overdrawing their advances, as it is absolutely necessary to advance them considerable amounts; and we cannot always avoid debts which can never be recovered.

In Tiree, there has been a small profit made, which, however, without the greatest care on the part of the manager, would soon become a loss. In North Uist, where there was also a store, this actually occurred, and the losses became so serious that we had to close it; but as there is a bank there, we have no difficulty in paying the people in cash; and the same applies to South Uist. In both these islands the money is distributed in the winter, when it is most wanted. I notice, in looking over the North Uist account for last year, not a favourable one, nine crofters or cottars who received over £12 each; and in the little island of Monach, west of North Uist, as much as £20 has been made by one man. These sums are far in excess of their rents. Payments are made in sums varying from 6d. to £3. In Ireland, where all are paid in cash, very large sums are advanced — but not in the winter — many months before the kelp can reach us. In North Uist, where much kelp was made in the lochs on the east coast, the kelpers came from the west side, and lived in temporary bothies for a few weeks; but they would never leave their homes until we had sent them out meal. It was necessary to charter a steamer and send out about 600 bolls of meal before they would move. About three years ago [c1880], there was a fuel famine in Tiree, and several superior crofters, who had not made kelp before, told our manager they would do so if we sent them out coal. This was done, and the kelp was made. Here again, goods, if of the kind they wanted, were more potent persuaders than money. The question of fuel brings me to notice one of the complaints about cutting of peat. There is no peat in Tiree. The complainant probably refers to the cutting of peat in the Ross of Mull and boating to Tiree. This was done in 1863, and has been very properly stopped. The service is one of extreme danger, and has caused the loss of several lives, the boats having to encounter one of the wildest seas on the west coast. Moreover, if time be reckoned, the fuel was very costly. I have little doubt they would have charged me as much freight per ton for peat from Mull as for coal from Greenock or Ardrossan. On this subject I have had considerable experience, and it may be interesting to give the result. In our works at Locheport, in North Uist, we used peat for heating our iron retorts. The peat was of good quality; it gave a good satisfactory red heat; but compared with coal, it required three times the quantity, which adds enormously to the cost of firing. We cut and stacked 600 tons per annum, and it cost us 2s. 6d. per ton. There was no royalty or rent, and the bog was close to the works. I am satisfied that, on the small scale, it cannot be done at anything like this price; and adding the freight from Mull, it must be a very expensive fuel at Tiree, when coal can sometimes be landed in a sailing vessel at 12s. 6d. to 13s. There is this peculiarity about peat also; that if a manufactory requires a large supply, the cost will necessarily increase with the quantity required, because a larger area must be worked. The peat distillery in Lewis, started under Sir J[ames]. Matheson, by my friend Dr Paul, although

very well laid out, was no exception to this universal rule; although it had great prospect of success, peat too being an excellent source of some kinds of paraffin. One of the advantages of our operations in Tiree has been the chartering of steamers to bring coal to the island. There was no difficulty about the erection of the works in North Uist, because they are situated on a good harbour; but precisely the same difficulty was experienced in starting the tangle collection, and precisely the same complaints would be made if it were given up. Most of our ground there was reclaimed from the peat, and fine crops of oats have been grown on it. It was pretty expensive, and I have no doubt the proprietor would be glad to let the crofters have a considerable quantity of this land on the same terms. I regret very much that the Royal Commission had so little time to spare in Tiree; their experience, however, was quite unique; no one has ever had to complain before of want of air in that island, and they landed far too easily. Had they remained one more day, the probability is they would not have got ashore, or having got ashore, they would not have got aboard again; and then we should have had the benefit of their powerful advocacy for what is the great want of the island, a substantial pier in Gott Bay. I regret, too, that the Royal Commission[ers] were unable to visit the populous part of the island, and see for themselves our works and farm, and investigate on the spot the improvements made. The Royal Commission could not have landed or spent the day in any part of the island where they could have seen so little. Had they driven over to the west side, they would have gone through an island which is very different to any other in the Hebrides; without a tree or shrub, it has a beauty all its own. The green plain of Reef in the centre has four square miles of level turf, the sea visible like a wall on both sides of it. Once covered by the sea, even now it is difficult to resist the impression that it must flow over it again. The bold headland of Renavara [Ceann a' Mhara], with its sea caverns, quite unequalled in the Western Islands; the deep blue of the bays in summer, the wonderful panorama of mountains and islands, almost completely encircling it, and leaving only room in the west for the setting sun to dip into the ocean; the long plains formed by the shell sand, covered with sweet-scented clover, and possessing a flora wonderfully like that of the chalk downs of Sussex; — all these must be seen to be appreciated. Ozone, of course, is never absent. Moreover, there is a purity in the air which is not found to the same extent in the other outer islands. Perhaps I ought to add, outside the church where the Royal Commission sat, there is a very distinct change of air coming from any of them; the reason probably is, that there are no large peat bogs, and no large fresh-water and brackish lochs, which affect the climate in the other islands. The winters, though very stormy, are mild in temperature, frost and snow being uncommon; the facilities for bathing are excellent, all natural at present; and there are links which would bring golfers from all parts, were they known. I have no doubt whatever that this island will some day be the marine sanatorium of the west. It is only about seventy miles from the Oban railway, and need not be more than eighteen hours by an ordinary steamer from Greenock; but there are no good harbours, and therefore no certainty of getting there at all times, or of getting away. Moreover, there is no better fishing ground on the west coast than the rocky reefs between Tiree and Skerryvore lighthouse; but the boats have no harbours to run to, and the island itself is often very badly supplied with fish, because the boats cannot get out. There are no better boatmen anywhere than those of Tiree. The Tiree smacks are well known all over the west coast; and it is a remarkable fact that, before the steamers were introduced, they ferried all the cattle, and did all the carrying trade for the other outside islands. Although they have no life boat, some daring rescues of lives have been made from the numerous wrecks that have dotted their coast. A Government yacht was lost in the naval survey there, and one of our steamers is now a refuge for lobsters off Thainish [Hynish] Point. It may be well to remark that the captain lost his certificate, because the old Admiralty sailing directions warned us not to go within three miles of the island; I regret to say we still find it necessary to infringe these old-fashioned regulations. The steamer was on the way to a harbour, which was discovered by the

captain, and which we have made safer by rings, and used ever since in the summer for several years; and now at last this year some of the Tiree smacks have gone there for our trade. There is a splendid pier at Thainish, built of granite, and said to have cost £14,000; but the position chosen was a bad one, and it sanded up. Then a dock was excavated out of the hard whinstone at the end of it, but though in the shelter of the pier, and closed with a double set of large iron-bound booms, the force of the sea sometimes breaks them, and it also was soon closed with sand; it was intended to be flushed out by a head of water above it. This pier, unfortunately, is now almost useless; it was intended for the vessel to supply the lighthouse, but the large establishment there is now removed to Mull. It was designed by the great engineer who, in Skerryvore lighthouse, has left the most magnificent monument that exists to the memory of any engineer anywhere. Engineers, however, are often at fault where the sea is concerned. We need only refer to Wick harbour, and the useless millions thrown into the surf in the Channel Islands. There is no heavier sea on the west coast than that between Tiree and the mainland, where the Atlantic comes in, on comparatively shoal soundings; and anyone who has crossed that sea in a smack on a stormy day in the winter, is not likely soon to forget it. Dr Johnson, who stayed so long in Coll, and enjoyed it so much, never got across the narrow stormy sound between the two islands, though it is only three miles, and the boats used were about the same — perhaps the very same. This ferry is often impassable for weeks; it is very dangerous, and many lives have been lost here. The most remarkable instances might be collected of the difficulties of shipping attendant on the want of regularity of steamers in the winter. I remember one farmer driving some fat pigs daily to the harbour about Christmas, for such a long time, that when at last they were shipped, — well, it was not Christmas, and the pigs were not fat, that had disappeared on the road. I remember a very clever supervisor, who wanted to prove that our iodine sublimers were stills, and required a licence, and paid me a visit from Mull, expecting to get back next day; he had, however, to stay several weeks, and was severely reprimanded when he got back, for enjoying himself (poor fellow) so long. When I was there, I was glad to run for any part of the mainland or Mull that could be made out, and Ardnamurchan was a haven after Tiree.

As I have referred to the strong objection to the introduction of anything new, I may relate two circumstances that occurred to me, which well illustrates West Highland and Lowland character in this respect. Some years ago, when a large quantity of black wrack kelp was made in North Uist, I tried hard to get some improvement made in the direction of burning the weed at a lower temperature. The people were assembled in great numbers, and the Sheriff kindly harangued them in Gaelic for me. Their objections were threefold — it would not yield so much, it would not be so good, and it would take too long. The late Sir J[ohn]. P. Orde was present and the late factor, and it was agreed at last that the most experienced kelper and I should try the experiment, each to have a certain quantity of weed weighed out, and each to burn it his own way. As I expected, my lot was finished first; the yield was about 25 per cent, greater, and the product was, weight for weight, also 25 per cent, more valuable. Anyone can understand this result, seeing mine was only burnt to ash, and not to slag. The old man, my opponent, was offended too, and his exclamation in Gaelic was translated for my benefit; it was rendered thus — "I have been making kelp for fifty years, and am I to be taught by a young Sassenach, with no beard on his face to speak of?" That was the only result of the experiment. The other instance occurred at Coll, at the house of my very lamented friend the late John Lorne Stewart, for whose great knowledge of agriculture and sterling good sense I had the highest esteem. His introduction of the making of cheese, by the Cheddar method, is only one of the many improvements for which we are indebted to him. He even imported a Swiss, and made Gruyere cheese of excellent quality in Coll. At his home farm in Coll, he had a most intelligent and active hard-working low-country couple, who made the cheese for which the dairy was celebrated. I

casually asked them if they were aware that, in giving the butter-milk away to the pigs, they were also throwing away the sugar of milk, which was a valuable marketable article, and which was largely sent over to this country from Switzerland, and that it only had to be evaporated down, and the sugar would crystallise out. To my great astonishment, the next morning I was called pretty early to see the first crop of crystals. They had lost no time; and although they found afterwards that the pigs paid better, it was not the novelty that deterred them from increasing their profits if possible. Some time afterwards I met the man, and he told me, "Man, it did'na pay; but I whiles make it, to show I can dae it."

The eyes of the island fishermen have been opened by the large fleets of fishing boats coming from all parts, and taking the herring off their shores; these men don't bring the fish, they were there before, they only bring the means and the ability to catch them.

The contrast between the winter and the summer is nowhere so extraordinary as it is in the Hebrides. And I would wish particularly to call the attention of the Royal Commission to the wretched postal service, common to all these islands, in the hope that something may be done to improve it. Tiree is by far the worst; there is no telegraph here, where it is so much required, and where, I believe, it would soon pay. In 1870, the Commissioners of Supply of Argyllshire presented a memorial to the Marquis of Hartington, then Postmaster-General, and published at the same time part of a voluminous correspondence which had passed between myself and the post office authorities, to which I beg to refer. In the course of that correspondence, I wrote to Mr Abbot, in March 1864: "As the manager of the British Sea-weed Company, I received December 11, 1863, a notice, dated November 17, to pay the annuity on our French patent before December 3, or it would become 'null and void.' Now, this property was irrecoverably lost to us, and for that loss I hold the post office morally, though perhaps not legally, responsible. When I add, that this letter was brought by the steamer to Coll, and by a friend across the ferry, and that the (very) regular 'mail packet' was not in till the 18th, and that then she left my private mail-bag behind at Tobermory, I think I have stated an instance of gross postal mismanagement which could not be paralleled in any country in Europe. I frequently correspond with a brother in the Pyrenees; will it be believed that my letters generally take four times as long between this and Tobermory (thirty miles), as in traversing the entire length of Scotland and England, crossing the British Channel, and going through France? Yet such is another fact. I received December 26, 1863, a notice, dated November 18, from the collector of taxes, to pay my income tax, 'stating that' if I wished to appeal, I 'must' do so to the surveyor at Oban within fourteen days from that date, in writing. Two days after I forwarded a cheque for the money, and intercepted the receipt on my way to England, at Tobermory, January 21, 1864. On my return here, February 20, 1864, I found a letter lying at the post office, stating that 'if my income-tax were not paid within four days, it would be recovered with the statutory addition of 10 per cent, for costs.' Now, Sir, you may think that this instance does not refer to your department; but I wish to know on what principle does the Government condescend to collect my money for its support on the one hand, and refuse to carry my letters on the other; and by what right do they detain for several weeks a letter demanding instant payment of my taxes, and containing a violent threat in case of non-compliance? — as if our Government were conducted on the highwayman's terms, 'your money or your life.' The absurdity of any permission 'to appeal, in writing, within fourteen days, when H.M. mail doesn't deliver the letter for five weeks, will be evident to all, though any Englishman would be loath to acknowledge that such a scandalous anomaly could be suffered to exist in any part of Great Britain. In fact, to be consistent, our judges should hang their convicts first, and try them afterwards." The reports there about the Tiree Post Office appear incredible now, and yet I cannot say that there is much improvement in the winter. Now, that Oban and Strone Ferry are accessible by railway, all these islands ought to have their letters delivered by a steamer, calling



three times a week in summer, and twice a week in winter. All should be thoroughly connected by telegraph; this is not an expensive thing to keep up, not much more than the first outlay, and would be very useful to the country generally, in reporting wrecks, or in time of war, besides the commercial advantages; and I do not think these services should be delayed until each petty office pays. The grants allowed to the Western Islands compare most unfavourably with those of the Orkneys and Shetlands. I would point out also that some experiments should be made in planting of trees; I believe, judiciously done, this would be successful, and must improve the outer islands. In Lewis, the late Sir James Matheson has set an excellent example. It would require to be done somewhat in the same way as the shores of the Bay of Biscay. Even in Tiree, where there is good clay, trunks of trees have been found.

One thing, which is much in the way of older men in the Highlands, is the want of English; that, however, is daily improving, and I am satisfied the younger men now growing up will not object so much to leaving their homes. Wages are a matter of supply and demand, and there is no doubt, a small wage at home is preferred, and perhaps is better. Therefore any industry introduced into one of these islands is productive of food, and becomes popular. I claim to have introduced an industry which has contributed to the welfare of thousands, a statement never before called in question, and on which I am sure the workers themselves are unanimous. No one who knew the island of Tiree twenty years ago will hesitate to admit the great increase in the prosperity of the crofters and cottars there. Having, however, had to defend myself even for conferring this benefit, I say little at present about further development, merely predicting that new applications will be found, that new discoveries will be made, and that sea-weed will yet become commercially valuable. A paper containing the latest information on this subject has already been placed in the hands of the Royal Commission.

44380. Before asking you any questions about your own system, as practised in connection with the manufacture in the island of Tiree, I wish to ask you a question about the harbour. You have dwelt very much upon the want of a good harbour in Tiree; do you think it possible at some point on the coast, at a tolerably moderate expenditure, to construct a good harbour for small steam vessels and fishing vessels? I think there is only one place in the island where any attempt might be made, and that is in Gott Bay. There is no other place large enough for a vessel to get in or out. Gott Bay, although it is somewhat open, is very stiff clay, which makes a capital holding ground.

44381. It is very wide? Yes, but at one side of it, on the south side, there is considerable shelter already, from some outlying rocks. These rocks require to be connected with the mainland. I have no doubt a pier can be made there.

44382. Then you think a low tide harbour could be made there — a harbour in which vessels could float at low tide? Certainly.

44383. Has any estimate ever been made of the expenditure required? An estimate was made some years ago by Captain, now Admiral, Bedford Pim, who was conducting the naval survey, and it was thought then that a small pier could be made for £5,000 or £6,000; but I believe a more recent estimate puts the cost for a pier accessible to a steamer at all times of the tide at a very much higher sum.

44384. I think we heard the sum of £8,000 mentioned, but perhaps you point to a larger sum? I think, probably, even larger than that.

44385. What sort of estimate do you make? Perhaps half as much again — from £10,000 to £12,000.

44386. And that is, you think, the only point on the island where a harbour could be formed? I think there is no doubt whatever about that.

44387. I think the Free Church clergyman of the island mentioned another place to us? There is no other place I know of where there is anything like the room or the shelter.

44388. But would it be possible anywhere to form a smaller harbour available for the best class of fishing boats? All the harbours might be improved by increasing the quays. There are several of them all round the island, but none of them are harbours that they could run into in bad weather; and taking the experience of the Lighthouse Commissioners at Hynish, they had a splendid pier there, but it was impossible to get in and out of the dock, though it was under the shelter of the pier; while they might easily have landed at Skerryvore lighthouse.

44389. What is the size of a smack? A Tiree smack is 25 to 30 tons. Some run from 50 to 60 tons, but the Tiree smacks run from 25 to 30.

44390. What length of keel? I cannot tell.

44391. Is it a full decked boat? Half decked.

44392. Are there any fishing boats of that class in the island now? These Tiree smacks are not as a rule useful for fishing. They are not fishing boats. They are used for carrying a good deal.

44393. But, are there any boats of that size used for fishing now out of the island? I don't think there are.

44394. Do the people feel the want of the large safe fishing boat of the east coast there? I should think they do, but I am not prepared to answer that.

44395. Where do these smacks run into for shelter at present? In the winter they are obliged to be hauled on shore.

44396. With reference to the island, has any serious outlay been made upon pier or harbour works by the proprietor within the last thirty years? I think not.

44397. There has been no attempt by the proprietor to form a harbour? I think not.

44398. I hope it will not be thought indiscreet on my part if I ask you whether your kelp manufacturing establishment is moderately remunerative at present, so that you look forward to maintaining it? I have mentioned in my statement that it will be carried on as long as it can be carried on without loss.

44399. But you have not stated whether it is in danger of being condemned as a losing concern? Well, we have yet to wait to see what the opposing source of iodine can make.

44400. During the course of your work there has your rent been reduced by your proprietor under your present lease? It has been.

44401. You spoke of the great utility of the work to the native population, and of the fact that the people employed are almost universally people in the island. Of the utility we make no doubt, but are you not under an obligation in the terms of your lease only to employ the people

of the island? There is a promise in the lease that we will employ, as far as possible, people of the island, and as an actual fact no others are employed.

44402. With reference to the payment of wages in goods, or the payment of the people in goods, we make no doubt that the custom originated in the cause which you state — the difficulty of obtaining facilities for payment in any other form — but does the same difficulty exist at the present moment? Do you at the present moment maintain a system of paying in goods, under the belief that you are conferring a benefit on the people, or is it in any degree maintained for the purpose of profit by the company or by the proprietor of the works? It certainly is for the benefit of the people, so far as I know.

44403. But I mean, do you carry it on for that purpose, or do you regard it, in short, as a source of profit to the company? No.

44404. It is no material source of profit? It is no material source.

44405. With reference to the difficulty of effecting cash payments, does that difficulty still exist, or is it now superseded? I think it still exists.

44406. You think you would have great difficulty in keeping a sufficient amount of specie in the place to effect your payments? Very great difficulty.

44407. With reference to the practice of payment in goods, is it noticed at all in the lease? Is there any provision or stipulation concerning it in the lease? No.

44108. Has this practice ever been a subject of correspondence between the proprietor, the Duke of Argyll, and your firm? I don't think so.

44409. You don't think the Duke of Argyll has ever censured the practice, or expressed a desire that it should cease in any form? I don't think so.

44410. There was a statement made in the island, and which I am bound to say I personally did not understand, to the effect that when wages were paid in specie they received much less wages effectively than when they were paid in kind — that you paid higher wages in goods than you paid in specie — that the goods were made to represent a larger amount than the specie. How is that? I cannot explain that. I saw it for the first time in the report. It has never been done with my knowledge.

44411. The goods you issue represent the money value, according to your belief, fairly, with what may be called some ordinary profit? Certainly.

44412. If a man applies to you or expresses a desire to be paid in specie, would you do your best to pay him in specie? If you had the money would you pay him in specie on his demand? Certainly.

44413. In fact, your desire would be to pay in specie if you have the money? Certainly.

44414. Do you ever pay in specie? Are there any wages, practically speaking, paid in specie, or are all wages paid in goods? I think some of the wages are paid in specie.

44415. It is your desire to pay in specie if you could do it? Certainly.

44416. I think some humble witness on the island stated that when you or your firm effected a purchase in the island of small commodities — such as eggs and things of that kind — you paid in goods and not in specie. Do you know anything about that? I believe it is a common thing for people in the island to bring in eggs and pay in eggs instead of money. I believe they have a rate at which they hand over eggs instead of money.

44417. Then there is a general system of barter? With eggs I believe there is, or there was. It is not much now, I believe.

44418. What do you do with the eggs? Do you eat them or export them? They are sent to the markets in the south.

44419. It is a branch of trade? Yes.

44420. Then I see there is a general system of barter for commodities connected with your establishment, which you think is for the good of the people? I don't think it is so much in our establishment, but it is done all over the island, I believe.

44421. It was said in evidence before us, though I did not understand it — I think by the manager — that the price paid per ton for the kelp was £4 in goods, but only £2 in cash, or that he had stated to the people that if they insisted upon being paid in cash they would only get £2 in cash? I cannot understand the statement. I never heard of such a thing.

44422. I did not understand it myself, but there was a statement made to that effect. But I understand you to deny that absolutely? Certainly.

44423. Or that any pressure is put upon the people at all to take goods in preference to money? I am not aware of any; in fact, the question has never arisen, so far as I know.

44424. As so much allusion has been made to this question of drying kelp upon the land, I would just desire to understand it a little more clearly myself. In your lease do you hold that right to spread your sea-weed or dry it upon the land, upon any particular portion of the land? I am not sure if that is expressed in the lease. At any rate it is a question with which we have really nothing to do, because the weed is purchased from the people, who themselves put it on the land, and that has been done, so far as I know, from the beginning of the century, wherever kelp has been made.

44425. I understood you to say that the people stacked sea-weed above high-water mark? Yes.

44426. Then you said the sea-weed for another 6d. was carried; by whom? By ourselves.

44427. And then where do you put it when you cart it to the works? Do you spread it out? No, that sea-weed is what is collected in the winter, and is known by the name of tangle. That is what I referred to as never collected before, and that is simply stacked above high water mark, and there is an end of it. But the kelp which the witness must have alluded to is the other weed collected in the summer and spread over the fields to dry, and they then burn it into kelp. We have nothing to do with that, simply because we buy the ash; but that is the sea-weed they refer to.

44428. But it is not you or your firm who spread any portion of this sea-weed at all? We have nothing whatever to do with it. I mentioned it in my statement simply to explain the matter, because it seems to me to be a very simple -one, and to have given rise to some very extraordinary remarks.

44429. Then you don't pay the proprietor any rent whatever for the liberty to spread this variety of sea-weed upon the shore? None whatever.

44430. And, in fact, if it was not spread upon this complainant's pasture, it would make no difference to you at all? None whatever.

44431. You are not interested in spreading it on that complainant's pasture at all? Not at all.

44432. Then who spreads it there? It is not the man himself. He would not have complained if he spread it himself? I am not sure about that.

44433. But who, as a matter of fact, spreads the kelp on that complainant's piece of ground? I cannot say I know. I understand the complainer to be a crofter, and therefore he cannot have very much land upon which that could be spread. I am not familiar with the particular instance alluded to, but I know that in the outer islands, where it was very largely done, and upon very large farms, it was never complained of. It was always looked upon as an advantage.

44434. But this crofter complains that somebody comes and spreads sea-weed on his pasture; you don't know who does it? I don't know anything about it, but if he complains he should prosecute the man who does it.

44435. Now I want to ascertain how far spreading kelp upon a man's pasture is advantageous and how far it is not. It is taken there and spread on the grass or on the pasture? Yes.

44436. How long does it occupy that area? If the weather is fine they would have it out of the way in two or three days. If it comes on wet and showery the rain would injure it considerably, and the result would be that it would leave a very large portion of its substance to benefit the land. If the rain kept on for a day or two they would have to leave it all.

44437. But while it is on the land can the cattle and other animals come and eat on the spot, or does it occupy the whole pasture? Well, it necessarily occupies only a small portion that is near the sea coast.

44438. But the area it does occupy is for that time destroyed as pasture, and beasts cannot eat while it is lying there? Certainly not.

44439. But you are not concerned in the matter? Not at all.

44440. *Sir Kenneth Mackenzie.* — Do I understand you to say you pay £4 per ton for the kelp? To the burner.

44441. Do you pay that at Loch Eport? No.

44442. What is the difference between the Tiree kelp and the Loch Eport kelp? The Tiree kelp is very much better. It is made by hand, and on rocky shores alone. The North Uist kelp is sandy, and not worth more than half as much.

44443. It was stated to us at North Uist that the people who worked the kelp got 35s. a ton for manufacturing it? I believe that is the price there.

44444. But there is no question that at Tiree it is £4? Certainly. Perhaps I should explain that the North Uist kelp was principally kelp got in the lochs, and a different kind of kelp from that which we use — the most of it.

44445. *The Chairman.* — One of the witnesses, I think in Tiree, made a rather painful but picturesque statement to us that the kelp was gathered at midnight by torchlight in some places, and frequently by women and children, and that the people—especially the young people and the women were exposed to very great hardship in the practice of the industry. He spoke of stacking kelp in winter, with the snow on the ground, by torchlight. Have you ever heard of such an incident, or do you think it really occurs? I have never heard of it.

44446. Do you think it might occur in connection with the tides and seasons? I am not sorry to hear it, because it shows that the price they get makes them work at it by night, which was not the original intention.

44447. But if their condition is, perhaps, so poor that they are obliged to work at the sacrifice of their health and comfort, that would not be a source of gratification? That would not certainly.

44448. But you never heard of such a thing? I never heard of it certainly.

44449. *Mr Fraser-Mackintosh:* You stated that during the time the sea-weed was spread upon the small part of the pasture by the sea-shore it prevented the cattle from making any use of the pasture? Yes.

44450. And you also stated it did not lie on the ground sometimes above a day or two? That is so.

44451. But is the operation going on almost the whole summer? The moment you take one supply off is there another supply going on? No, that is scarcely the case. Kelp that is burned on the sea-shore comes usually at a certain season of the year. As a rule, it comes on in May. We don't if we can help it take any kelp except what comes in May.

44452. But truly, for some months of the year, is not the use of this piece of pasture land lost to the tenant? I don't think so. The fact is that the sea-weed rots so very quickly that it cannot remain long, and if it remains long the farmer gets the benefit.

44453. But you are collecting sea-ware all the season? No, we bind them down not to collect it after the 1st July, if we can manage it.

44454. And when do you begin? Towards the end of May. Practically June is the only month.

44455. Suppose you employed your own servants, your hired servants, and not the people, to collect the kelp and spread it, have you not power to put it wherever you choose on the sea-shore, under your lease? No, certainly not.

44456. You cannot place it anywhere under your lease? No.

44457. Supposing you were not there at all, and that the company did not exist, in that case the crofter would have the full use of his pasture all the year? Yes, unless he preferred to collect kelp and spread it on it, which very likely he would do.

44458. By what authority then do you understand that the people you contract with go and spread it upon other people's land? Well, I can scarcely answer that question. It really is not a thing with which we have anything whatever to do; simply because we buy the kelp after they have made it, and if they spread it on another crofter's land and spoil it, I suppose he can get damages. I don't see any reason why he should not. There is nothing in our lease to protect them.

44459. There is nothing in your lease to give you any power to place this sea-ware upon any place? Certainly not. Our power extends simply to the stacking of the tangle, which is not the sea-weed referred to, because that is only stacked outside of high tide, and does not come on the crofters' lands.

44460. What object have you in leasing the lands you have? Is it entirely to give pasture to your horses? Entirely; and to grow corn for them.

44461. *Mr Cameron.* What amount of money is spent in wages in Tiree in the course of a year through your agency? I cannot tell the exact amount of money spent in Wages, but the amount which has gone into the island for the last six years will average very nearly £3,000 a year.

*NB. Evidence taken on Tiree appears in Volume III of the Napier Commission Report. For the evidence relevant specifically to the above, see paragraphs from 34280 for Donald Sinclair, Cottar of Balephuill and from 34310 for James Sleven, Resident Manager of the North British Chemical Company.*