

SHANNON NAVIGATION.

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**EIGHTH ANNUAL REPORT**

OF THE

**COMMISSIONERS**

FOR THE

IMPROVEMENT OF THE

NAVIGATION OF THE RIVER SHANNON, IRELAND;

WITH AN APPENDIX.



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*Ordered, by The House of Commons, to be Printed, 22 June 1847.*

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TO THE LORDS' COMMISSIONERS OF HER MAJESTY'S TREASURY.

MAY IT PLEASE YOUR LORDSHIPS,

**W**E, the undersigned Commissioners, appointed under the Act 2 & 3 Vict. cap. 61, beg leave to submit this our Eighth Annual Report.

During the course of last year the under-mentioned works were executed :

*Limerick Navigation.*—Sundry repairs to the lock, lock-gates, canal and river-banks, lock-houses and clearing out of back drains.

*Middle Shannon.*—Pier at Mount Shannon, on the western shore of Lough Derg, completed.

*Portumna.*—A timber landing-jetty facing the river, and adjoining the existing canal-bank, completed.

*Upper Shannon.*—Jamestown-lock, built up to the coping-course, and the finishing off the new bridge.

*Carrick-on-Shannon.*—The bridge, with trifling exceptions, finished.

*Knockvicar.*—The bridge and lock almost completed.

From the 1st of January to the 31st December 1846, the daily average number of persons employed was 1,407, giving an equivalent of 440,360 days' work.

During the above period, 351,063 cubic yards of material have been removed by excavation and dredging, including boulder stones, by means of the pentagraph shears, and 6,873 lineal yards of earthen dams were constructed, being equal to nearly four statute miles.

To assist in the execution of the above, 59 pumps were employed, worked by 20 steam-engines, and by manual labour.

## EIGHTH REPORT OF THE COMMISSIONERS FOR

DETAIL relative to the several Works which have been completed, or in which Progress has been made during the past Year.

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 DIVISION No. 1.—LOWER SHANNON.

## FOYNE'S HARBOUR.

The site of the work having been changed with the permission of your Lordships, we determined to execute it under our own superintendence, by days' work instead of by contract, owing to the increased prices which contractors were looking for, by reason of the numerous railways, and other large works going on through the country; and having sent a properly qualified person to conduct it, he commenced forming the necessary establishment, and making the requisite preparation, in collecting plant and materials, opening the quarry, diverting a stream which discharged itself near the site of the harbour. The excavation of the quay-wall was commenced, and the material removed was used in the formation of a dam to keep out the tide during the founding of the quay-wall; and as far as the works at Foyne's have gone, every thing promises satisfactorily; the quantity of clay wheeled in the dam is 2,500 cube yards, and the quantity excavated out of the new river course is about 800 cube yards, and 180 lineal yards of dams formed. The average number of persons employed daily at Foyne's Harbour, from 16th November to 31st December, was 56, being equivalent to 2,167 days' work. The total quantity of material removed, by dredging and excavation, was 3,300 cube yards.

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 DIVISION No. 2.—LIMERICK TO KILLALOE.

## LIMERICK NAVIGATION.

The works performed on the Limerick Navigation during the past year were confined to repairs and maintenance.

The masonry of the locks having been in many cases much fractured and the copings disturbed, a considerable repair was required under this head; the chambers have been examined, and pointed in the joints with Roman cement, and otherwise made good where necessary.

The lock-gates have also been repaired, and supplied with seven new swing-beams, sheeting and new racks and pinions, with several new sluices and gear-heads, and are now in fair working condition.

The faces of the canal and river banks, which had suffered much from the storms of last spring, and which required the making good of several large breaches, have been repaired; the towing-paths are in good order.

The lock-houses along the line have been examined, and the necessary repairs performed.

The back-drains in particular parts were scoured, and much more will be required to preserve the banks.

The average number of persons employed daily on the Limerick Navigation from 1st January to 31st December was 25, being equivalent to 7,825 days' work.

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 KILLALOE.

The "Victoria" and "Prince" dredgers were engaged in deepening above weir at Killaloe from the 1st of January to the 24th of July 1846, when they were removed to Leahinch and Derryholmes shoals, from want of water at Killaloe, to allow of their working the shoal with any effect. The principal dredging was done above the head of the weir; the material removed was very hard, consisting of indurated clay and gravel with large stones; the progress made was consequently slow, from this cause as well as from the want of water, and the wear and tear of the machinery was very great, rendering the dredging of this place exceedingly expensive. The "Victoria" dredger, while working here in the month of March, broke the upper tumbler shaft, and was delayed in consequence 10 days; the principal delays arose, however, from the want of water, which prevented this vessel working on almost any part of the shoal till it had first been topped by the "Prince" dredger; and from the want of power  
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of this vessel, and the hardness of the material to be removed, the latter vessel was unable to keep the "Victoria" working, so slow was the progress made by her, although, from the 1st to the 13th of June, she was worked day and night by the crew of both the vessels; during which time the "Victoria" was consequently idle.

Before leaving this place, the "Victoria" dredged a passage from the lock nearly to the pier-head, outside of the canal embankment, to allow of boats passing up to the pier-head, while the canal itself was being dredged, which the contractor purposed doing.

The total quantity dredged by the "Prince" dredger was 5,119 cubic yards in 152 days.

The total quantity dredged by the "Victoria" was 4,721 cubic yards in 107 days.

This gives a fair idea of what little progress was made.

The average number of persons employed daily at Killaloe, from 3d January to 29th October, was 29, being equivalent to 4,449 days' work.

The total quantity dredged was 9,840 cubic yards.

### DIVISION No. 3.—KILLALOE to TARMONBARRY.

#### MOUNT SHANNON PIER.

THE construction of this pier was resumed on the 30th of April, and continued until its completion on the 19th of September; the work having been satisfactorily turned out of hand by the contractor.

This pier, though small, affords a commodious shipping place for the surrounding country, and promises to be much used when a road leading to it from the interior of the country shall be completed. The pier presents a frontage of 130 feet to the lake, with a wharf the same length and 25 feet wide, with the necessary mooring posts.

Several shipments of grain, pigs and other marketable commodities, and cargoes of meal have been landed from Limerick and other places, for the relief of the destitute of the neighbourhood.

The average number of persons employed daily at Mount Shannon from 30th April to 19th September was nine, being equivalent to 1,098 days' work.

#### PORTUMNA.

A timber landing-quay has been constructed at this station, adjoining the canal bank, and facing the river, for the convenience of embarking and landing passengers and goods, which was much wanted, and will prove a considerable assistance to the steamers and other vessels plying on the river.

#### MEELICK to SHANNON HARBOUR.

There were some men engaged for several months during the summer, searching for and raising with the Derrick barge, and by aid of the diving dress and helmet, stones (many of very large size) left in the river between Meelick and Shannon Harbour, and which for a considerable period of the summer proved of great inconvenience, and were dangerous to the large steamers plying on this reach of the river. All the stones that were ascertained to be in the way of the navigation up to the Bridge of Banagher were lifted before the flood which occurred in the early part of the month of August.

#### LEAHINCH SHOAL.

The "Victoria" dredger worked here from the 29th July to the 9th August, and completed the deepening of part of the shoal which had been left unfinished.

The average number of persons employed daily at Leahinch, from 27th July to 9th August was 19, being equivalent to 156 days' work.

The quantity dredged was 411 cubic yards.

## DERRYHOLMES SHOAL.

In the Report for the year 1845 the failure attending the attempt to excavate the lower end of this shoal was described in detail, and also the cause of such failure; viz., the insufficient power to unwater the excavation, the principal engine, with the pumps worked by it, being most unfavourably situated, and a much larger space being attempted to be unwatered than all the power employed would effect.

The first step taken by the contractor this year (1846) was to commence the removal of the large and small engines lower down the shoal, and closer to the part to be excavated; the very unfavourable weather, with the high floods which occurred in the early part of the year, retarded the works greatly; so much so that it was not till the beginning of the month of April that any attempt at forming stanks could be made, up to which time the removal of the large engine to the new site, with the fitting up, cleaning, &c., together with repairing barrows and other implements necessary for the active prosecution of the works, was carried on.

The formation of dams and unwatering the inclosures was put a stop to by a sudden flood, which delayed the work for about one month.

The small engine being erected and the boat engine being brought and moored at the lowest end of the dam, all the pumping gear was fitted up and put in working order, and on the 25th May the three engines commenced working, and at the close of a week the water in the dam had been lowered about three feet, or at the rate of eight inches in 24 hours. The water was now found to be gaining on the pumps, and two additional ones were therefore attached to the small engine. The three engines now worked 12 metal pumps, varying in diameter from 14 to 9 inches, and which discharged, when worked at the average speed, about 2,500 imperial gallons, or nearly  $11\frac{1}{2}$  tons per minute.

This having the effect of overcoming the water (on the 1st June), some excavators were set on, and continued working at the lower end of the shoal throughout the entire month.

About 150 excavators were now kept daily at work, and every thing going on favourably, the work being carried on with spirit; the upper end was excavated about the 10th June, and men were set to remove some of the stones placed along the longitudinal stank, preparatory to thinning it.

About the 15th, the large "engine" unfortunately got out of order, and the water instantly began to rise in the dam, and in a couple of days filled it, active measures being taken to put it to rights again.

The unwatering was resumed in two or three days, and with the aid of a screw pump, which was worked day and night, and discharged about 300 gallons per minute, the excavation was again laid dry. The work was finished, and the removal of all loose stones along the stanks and slopes of the cutting immediately commenced, and actively carried on, together with thinning the dams, the earth from which was wheeled into spoil, or carried away in barges, and deposited in shallow bays along the King's County side of the river. The removal of the shoal was completed in the month of June, except the dredging of dams, which was completed in November.

The average number of persons employed daily at Derryholmes, from 1st January to 18th July, was 55, being equivalent to 7,872 days' work. The quantity of material removed was 8,871 cubic yards.

## BISHOP'S ISLAND SHOAL.

The "Albert" dredging vessel commenced to work here on the 24th March, having been removed from Ballynatave Shoal, while the water in the river was at a high level, to enable her to dredge away the stanks, and the portion of the bed of the river under them, and any other high places of the shoal, to a sufficient depth to admit of her being brought here again at any period of the year. She completed all that was required of her, as far as practicable, by the 15th May, when she was removed to Shannon Bridge, to dredge away stanks there.

This vessel was again brought back here on the 20th July, and remained till the end of October, when the shoal was completely dredged. The opening of this  
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fine channel here has been of great service to the navigation; trade vessels having always found this a difficult and dangerous place to pass. The course is well marked out by three beacons, formed of large rocks, of which there were a vast number raised by the dredger's crew, with a pentograph shears. One stone was raised at this shoal, which required two Derrick barges with the aid of a powerful purchase to lift, and very large tongs, and which latter were twice broken and repaired before the stone could be raised and brought to the bank; it contained about 200 cubic feet, and weighed nearly 16 tons. This is one of the largest boulder stones raised in this manner. The total number of stones raised at this shoal by the dredger's crew during the year was 616, containing 4,926 cubic feet, or, in weight, about 380 tons; all of which formed part of the shoal, and not merely lying on the surface of the river bed.

The average number of persons employed daily at Bishop's Island, from 25th March to 5th October, was 16, being equivalent to 2,259 days' work.

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#### GARRYMORE.

The "Albert" dredger was sent to this shoal on the 8th June, but owing to the low state of the river was unable to work with any effect, and was, therefore removed hence on the 17th of the same month, having dredged only 770 yards in 12 days, or at the rate of 64 yards per day; the high flood which occurred at the latter end of November, consequent on the great fall of rain about that time, enabling the "Prince" dredger to float on a small island at the Leinster side of the channel, which it was necessary to have topped before either of the large vessels could work; advantage was instantly taken of it, and the "C" dredger was sent here on the 25th of November, and dredged till the 5th of December, making sufficient water for the "Victoria" dredger to float after her, and removing about 240 cubic yards.

The "Victoria" dredger followed the "Prince," and was working here at the end of December.

The average number of persons employed daily at Garrymore from 1st January to 31st December was 18, being equivalent to 517 days' work.

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#### SHANNON BRIDGE.

The only work remaining to be done at this station at the commencement of the year 1846, was some dredging at the Connaught side of the shoal, and in the navigable channel, and the removal of the stanks which enclosed the excavation done here in the bed of the river. To remove the stanks, men were set to work at the commencement of the year to dredge off the top with spoon and bag, and thus enable one of the steam dredgers to follow, and completely remove them. They continued spoon dredging till the beginning of June. About the middle of the month of May the Albert dredger commenced working here, and continued till the 5th June, when, from want of water to finish dredging the stanks, &c. she was removed to Garrymore; on the 9th of November she was again sent here from Bishop's Island, having been preceded by the "Prince" dredger a few days previously.

Both these vessels continued at work at this shoal, removing the stanks, and completing the dredging required, and also dredging a passage in continuation of the Contract Navigable Channel at the lower end of the same, (the "Prince" till the 25th of November, and the "Albert" till the 10th of December).

The dredging required at this shoal is, therefore, now completed.

The average number of persons employed daily at Shannon Bridge, from 1st January to 31st December, was 22, being equivalent to 6,961 days' work.

The quantity removed from this shoal, and from Bishop's Island and Garrymore shoals, was 7,015 cubic yards.

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#### CLERHAUN.

Operations were begun here on the 26th of May, a gang of men being set to make the stank, which commenced immediately above the canal, to the quarry

at the Leinster side; also to raise and strengthen the stanks, to enclose the space within the shoals situated between the part excavated in 1845 and Ballynatave, or the Upper Pit. The contractor hoped to have been able, during the season, to have first finished the excavation of this pit, and then to have set about excavating the space within the stanks; to unwater which he would have had merely to shift the pumps from the Upper Pit to the site they occupied in 1845, without changing the site of the large engine. He also hoped to be able to excavate the lower end of the shoal, using the boat engine and the large engine from Derryholmes to unwater it; and the dredger was to try and clear a channel between the stanks, to give freer discharge to the flow of the river.

These intentions were unable to be carried out, as will be hereafter seen; great exertions having been made to procure men, and all the hands employed being kept at work as actively as possible. The large engine was set to work on the 22d June, and in a week after the small engine was started. Meanwhile the labourers were employed at forming stanks; and on the 25th June the "Albert" dredger commenced to clear a channel between the stanks. On the 30th June the water in the upper pit was lowered sufficiently to enable the excavation at the upper end to be commenced, and at which several men were set to work.

The bed of the river in this pit presented, as the water was lowered, a very curious appearance, and unfavourable to the expectation of rapid execution. The upper end of the pit showed a surface of about 7,000 yards of solid rock, evidently an extension of the Clerhaun Quarry, which is situated at the Leinster side, at no great distance from the edge of the river, between which and the quarry lies a flat and poor-looking piece of Callow; the rock extended about two-thirds of a yard of the distance from the upper stank, towards the deep water in the centre of the pit, when it dipped very abruptly, the stratification, which was not very regular, running north and south.

This rocky surface, and the greater part of the rest of the pit, was strewn over thickly with an immense number of boulders, some of vast size, more than one containing from 260 to 300 cubic feet. About this time a leak appeared at the lower end of the pit, which, causing the water to rise considerably within the dams, impeded operations; and the formation of an interior stank across the angle having failed, together with other means taken to stop the influx of water which appeared to arise as well from springs as from leaks through the stanks, a cross dam was formed above the deep water in the centre of the pit, so as to shut off altogether the communication between the upper and lower ends; and the screw pump being placed here, and set to work, the excavation of the rock was again begun with vigour. About the middle of July the dredger was removed from this place to Bishop's Island, having dredged a narrow curved channel across the shoal. By the end of this month, part of the excavation was completed; the progress made in removing the rock was, however, necessarily slow, though every exertion was made to get the work advanced.

At the beginning of the month of August, the excavation of about one-third of this upper end of the pit, which consisted chiefly of gravel, had been completed, and a considerable portion of the rock had been removed; a few hundred yards of gravel had also been excavated at the lower end of the pit.

About the 10th of this month, however, an unexpected and unusually heavy fall of rain occurred, causing a great flood in the river, which at Shannon Bridge rose 12 inches in one night, and which breaking over the tops of the stanks, filled the pit with water. The contractor was therefore compelled to discharge the greater number of the men, and the excavation at this shoal ended for the season; 150 men were still kept on at forming stanks below the pit excavated in 1845.

The contractor being unwilling to abandon the work at this place altogether, determined to try and excavate the lower end of the shoal, the water in the river having fallen; he thereon proposed to divide the excavation into two parts, the cross stank at the head of the upper division to be formed in the passage dredged by the "Albert" dredger, and when the upper space should be excavated, the pumps were to be removed to the second or lower division. This, when completed, would have a fine deep channel, which (after the removal of the stanks should be effected) would prove of the greatest service to

to the navigation, and would give a free discharge to the water in case of flood.

Though, from the late season of the year, and the improbability of the water in the river again falling very low, the chance of being able to do any thing more at the excavation of this shoal seemed almost thopeless, yet the importance of completing it as soon as possible, justified what might otherwise have appeared a waste of money.

The men had not been at work a week, however, when a second and even greater flood occurred, which caused the river to rise at Shannon Bridge in the space of 24 hours not less than two feet, and in 48 hours from its commencement nearly four feet, delaying all work for a fortnight; at the end of which period the forming of the stanks to inclose the lower end of the shoal was again briskly commenced, and the weather once more looking favourable for work, the contractor was induced to make another attempt to unwater the upper pit, so as to try and finish the rock cutting; all hands were therefore busily employed, and on the 23d of September the engines were again started to unwater this pit. About the same time the upper division of the lower shoal was nearly inclosed, and on the 5th of the following month the unwatering of this division was begun; the attempt to pump out this upper pit proved ineffectual, and it was abandoned on the 16th of October, shortly after which another rise of water in the river put a stop to this work for the year.

Such was the result of the operations at Clerhaun, the unfavourable nature of which is chiefly to be attributed to the occurrence of the great flood in August, but for which, there can be little doubt that the excavation within the upper pit would have been completed; from what little was seen of the bed of the river at the lower end of the shoal (below the excavation done in 1845) when partially unwatered, there is reason to fear it will prove "very wet cutting;" and in the upper pit, the rock has been so much shaken by the blasting, that it will make much more water than it did at first.

The "Prince" dredger was sent to this shoal on the 7th December, to clear away the stanks enclosing the excavation done in 1845, and was followed on the 15th of the same month by the "Albert" dredger; they continued working here until the 24th of December, when the stanks were completely cleared away, and also the bed of the river under them to within two feet nine inches of the depth required, which is sufficiently low to enable the dredger to get on it again at any season of the year. These dredgers were then sent from Clerhaun to Ballynatave, to clear away the stanks and top all the high parts of the shoal there.

The average number of persons employed daily at Clerhaun, from 26th January to 25th October, was 149, being equivalent to 20,584 days' work.

The total quantity of material removed was 7,015 cubic yards.

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#### BALLYNATAVE SHOAL.

The "Albert" dredger was sent here on the 9th March to remove the stanks and top the shoals, and continued here until the 21st of same month, when the greater part of the shoal was dredged to a depth of two feet six inches above bottom; she was then removed to Bishop's Island for want of water to continue working here. The "Prince" dredger was sent here with the "Albert" about the 24th December, and they continued working here until the close of the year. The "Prince" dredger is about undergoing some repairs at Shannon Bridge, and will then be sent up the river to dredge the shoal at Wren Island. About a mile below Athlone there is still about two feet six inches in depth of this shoal left undredged for the present, which will admit of the largest dredger to float on the shoal to bottom it, at the lowest summer water, if required.

The quantity of dredging done here this year was—

By the "Albert" and "Prince" 3,202 cubic yards of shoal.

952 cubic yards of stanks.

The quantity remaining to be dredged is about 5,000 yards; which either of the large dredgers will take from a month to six weeks to finish.

The average number of persons employed daily at Ballynatave, from 1st March to 30th December, was 22, being equivalent to 331 days' work.

## ATHLONE WORKS.

From the commencement of the year up to the month of February, the delivering of stone from the quarries, dressing them for the lock, and repairing barrows and other implements, were the only operations at this place.

About the middle of February, the weather being favourable for work, and the flood in the river having subsided in some degree, carpenters were set to work to refix and secure the coffer-dam of the lock: the water-wheels were also repaired.

On the 23d February the water-wheels were set in motion to unwater the coffer-dam; but in a few days a burst appeared at the upper end, from the water outside forcing its way underneath the puddle in the coffer.

Carpenters were also employed in preparing timber for the lock-gates, and stone-cutters in dressing stone for the works.

The water in the river having risen considerably, the contractor was unwilling to resume the pumping out of the dam till it should lower again.

Early in April the water-wheels were again set to work, and the water in the dam was lowered in a couple of days sufficiently to allow some masons to commence setting the top course of the upper sill, the bed of which was  $7\frac{1}{2}$  feet above the foundation of the lock; the water-wheels being unable to keep the water down, the steam-engine was started, and continued to aid them for some days; the water in the dam, however, could not be reduced more than about two feet below the level at which the masons were setting, the river outside standing at this time four feet above the intended summer level.

The setting the masonry was confined to the upper sill and sluice tunnels; as the water in the river having risen six or seven inches, no attempt was yet made to unwater the foundations of the lock.

The progress made with the setting was, however, inconsiderable; but the work was very well put together, and, as regards quality, very creditable.

On the 24th April, the river having fallen a little, the steam-engine was again started, together with the water-wheels, and in a day or two the foundations were sufficiently unwatered to allow of the excavation in the site of the lower forebay being begun. The contractor was still, however, afraid of commencing this work till the river was lower; the chief additional setting carried on, therefore, was at the invert, and an increased number of hands being taken on, this and the building of the upper forebay and sluice-tunnels proceeded more briskly, so that in the month of May the invert at both sides of the chamber was completed, with the exception of the top course. The pier wall was extended at the lower end of the dam, and the upper stop-gate groove and invert also advanced, besides other parts of the masonry.

The insufficiency of power to keep the water down in the dam now again interfered with the progress of the work.

As the water in the river fell, the water-wheels became daily more and more inefficient, so that all the power at command could not reduce the water lower than within about two feet of the foundations: the steam-engine and the water-wheels having been repaired, they were set to work again, but without the slightest effect in unwatering the foundation of the lower end of the dam, as the engine alone was unable to do so, and the water-wheels were now, from the low state of the water in the head-race, very deficient in power.

After some time the engine, with the aid of the wheels, reduced the water to within 15 inches of the foundation of the lower forebay, and with the assistance of scoops this was kept down so as to allow of the setting being begun; the progress made with the building of the lock was also more satisfactory than hitherto.

The difficulty of keeping the dam sufficiently unwatered from the inefficiency of the water-wheels, which increased daily, prevented much being done at the foundations of the lock; the chief work being carried on within the dam up to the close of the month of June, was the setting of the lower stop-gate sills and side walls of the recess. The building of the quay wall at the Leinster side had been begun, and a considerable length of the foundations got in. During the month of July the progress made with all parts of the work was on the whole very unsatisfactory; setting within the dam was carried on chiefly at the footing under the lower apron, with which work some progress was made also at the recess walls, stop-gate, sill and invert, hollow groins, &c., besides some trifling setting done in other parts of the work.

The quay-wall at the Leinster side was a good deal advanced, but would have been much more so had there been a good supply of stone from the quarries. Just at the close of this month an accident happened to one of the wheels, which involved the sending to Dublin for machinery, and put a stop to all setting within the dam.

During the month of September the tug-steamer began towing the stone boats from the quarries to the works, and the water-wheels being again set in motion to unwater the dam, the building of different portions of the masonry of the lock-work was proceeded with, such as the pier-walls, the sluice-tunnels and hollow quoins, &c. The quay wall progresses very slowly for want of hands, many of the masons who had been employed during the year having left when the flood in August occurred, and sought work elsewhere. The work within the dam was now again interrupted by frequent leaks, which arose from the clay outside the dam having been washed away by the floods, and which compelled the water-wheels to stop till the clay should be replaced. This work was carried on very slowly, and it was not till the close of the month that the foundation of the lock at the lower end could be proceeded with.

There was at length a marked improvement in the progress of the building and other operations. In the early part of the month of October, the laying of the foundations at the lower end of the dam being briskly proceeded with, the pier-wall was advanced nearly all up to the coping level, and the other parts of the lock were also extended. The quay-walls progressed very favourably, and there had been some improvement in the progress of the weir. This favourable change in the mode of carrying on the works continued during the entire month, by the middle of which all the foundations of the lock had been laid, and before the close of the month there was no part of the masonry that was not six feet over the foundation level; the side walls of the lock and the pier-wall were ready to receive the coping, and a small quantity of that course had been set, and some of the quay-wall at the Leinster side was in the same position; the piling of the weir, too, for more than one-fifth of its length, was completed. This work was, however, for a while stopped by the floods which occurred about the latter end of October, and which also prevented the building of the lower wing walls of the lock, and from the same cause the steam-engine and water-wheels were stopped working, the contractor fearing that from the great pressure of water outside, and from the shattered state of the piles at the lower end of the coffer-dam (the toes of which had been all bent up and broken in driving), the dam would be burst in, if kept any longer unwatered.

An effort to unwater this dam was again made about the middle of the month, and the masons were enabled to resume the building of the lower end of the lock, at which they continued for a day or two; but the leaks caused by the increased height of the water outside the dam having become so copious as to render all the available power unable to keep the water within the dam down, the attempt to do so was abandoned; the setting of the coping on the side walls of the lock was therefore the only work in progress, with the exception of piling in the weir, which was still persevered in.

From the end of the month of November, the work carried on was confined to piling in the weir and setting the coping of the side walls of the lock and the pier wall.

The tug steamer has continued to ply back and forward between Athlone and the Quarries, and stone-cutters have been kept at work dressing stone for the lock so long as the weather would permit.

We have to state, in reference to the limited progress made on the works at this place, that the difficulties to be encountered, owing to the faulty construction of the dam, were very great, many of the piles not having entered the bed of the river; others, having met with boulders, were broken off or twisted out of the proper direction. Yet, notwithstanding all this, had proper precaution been taken, and the work vigorously prosecuted, when favourably circumstanced, we have no hesitation in saying that we might here have had to report the completion of the Athlone works. It is, however, but due to the contractor to state that the work executed by him is of a superior description.

The average number of persons employed daily at Athlone from 1st January to 31st December was 125, being equivalent to 39,120 days' work.

The quantity of material removed was 5,392 cubic yards.

## WORKS BETWEEN LOUGH REE AND LOUGH FORBES.

The works in this division of the river, at which operations have been carried on during the past year, are as follows, enumerating them in their order, commencing down stream :

Curreen Shoal.

Erra Shoal.

Cloonberlaw Shoal.

Lodge Shoal.

Tarmonbarry, including Curlew Shoal.

Cloondrah, deepening River.

Camlin and Races of Mr. Fleming's Mill.

The works below Tarmonbarry have not progressed as much as could have been desired, chiefly in consequence of the water being kept at a high level during the summer months by the works at Athlone not having been lower, even at the driest season of the year, than 1 foot 8 inches above the ordinary summer water in that reach of the river.

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 CURREEN SHOAL.

The works at this shoal consist of the formation of a new channel, about 1,000 yards long and 120 feet wide, to afford a straight course from Lough Ree to Lanesborough, and avoid the present very crooked sailing course, which is narrow, and in some places shallow.

It was originally intended to dredge the whole of this channel, but a portion of the work for about 300 yards in length, and near the land on the Roscommon side, being very high, the contractors determined to enclose it within dams and excavate it, and they commenced operations with that view on the 3d August, having delayed until that period of the year, in the expectation of the level of the water being lowered by the removal of the obstructions at Athlone.

During the months of August and September dams were formed to inclose about 300 yards in length of the channel, and a steam-engine of six-horse power being brought down from Tarmonbarry, and fitted up with pumps to unwater the work.

The engine commenced pumping at the latter end of September, and a supply of tools was brought down to the works; the excavation within the dams was carried on during the month of October, and about 4,000 cubic yards removed; but the weather becoming very unfavourable in the early part of November, the flood rose and caused a breach in the up-stream side of the dam; the works were consequently suspended, and have not since been resumed.

The average number of persons employed daily at Curreen from 15th June to 30th December was 25, being equivalent to 3,674 days' work.

The quantity of materials removed was 3,930 cubic yards.

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 ERRA SHOAL.

The contractor commenced making up the dams at the lower end of this shoal, with a view to complete the excavation, at the same time that the works at Curreen were opened (3d August); but there were only a few men employed for two or three days, repairing the dam and working a chain pump, when an unfavourable change occurred in the weather, the floods rose over the dams, and the contractor determined to complete the work at this shoal by dredging.

On the 7th December, the dredger "Princess Alice" was brought to this shoal from Cloonberlaw, and commenced dredging the Upper Cross Dam; this was accomplished by the end of December, when the vessel was removed to Lanesborough, to undergo repairs.

The number of persons employed daily at Erra, from 3d August to 28th December, was 19; being equivalent to 939 days' work.

The quantity of material removed was 872 cubic yards.

## CLOONBERLAW SHOAL.

The work within the dams at this shoal had been nearly completed, when the flood broke in last year; but as a portion of what remained to be removed was rock, it was necessary to unwater the works again in order to finish it.

The contractors commenced immediately repairing the breaches in the dams on the 15th June, and the steam-engine commenced pumping on the 18th of that month. In consequence, however, of the extent of space to be unwatered, and the number of springs through the rock, the works were not sufficiently dry to admit of the excavators being put to work until the 6th July; between 100 and 200 men were employed daily during the remainder of that month, and removed about 1,150 cubic yards of rock and 1,900 cubic yards of clay and gravel, and on the 1st July the work was completed, with the exception of dredging the upper and lower end of the shoal, and the removal of the dams.

The dredger was brought to this shoal on the 1st November, and continued working there until the 6th December, when she was removed to Erra; during this time she removed the upper and lower cross dams, and a portion of the shoal to within about three feet of the bottom level, but was unable to dredge any deeper in the then high state of the water.

The average number of persons employed daily at Cloonberlaw, from 15th June to 8th August, was 69, being equivalent to 826 days' work.

The quantity of material removed was 4,506 cubic yards.

## LODGE SHOAL.

The dredger having undergone the requisite repairs, including the fitting of a new shaft, which occupied until the 11th September, completed the dredging at the upper end of the shoal on the 10th October, and was then removed to work at the Lower Cross Dam, which she cleared away, and also dredged as much of the shoal as the buckets could reach in the then state of the water.

Being driven out of work at the end of October by the rise of the flood, the vessel was removed down to Cloonberlaw, as already stated.

The average number of persons employed daily from 1st January to 31st December, was 16, being equivalent to 993 days' work.

The quantity of material removed was 6,620 cubic yards.

## DIVISION No. 4.—TARMONBARRY TO LEITRIM.

## TARMONBARRY.

The greater portion of the works belonging to this contract had been executed at the close of the year 1845.

The chief works which remained to be done were coping the lock and wharf wall, completing the filling and forming the approach to lock and wharf, closing the weir, and completing the excavations in the river course at Gannon's Island and Curlew Shoal, near Lough Forbes. The closing of the weir and completing the excavations at Gannon's Island and Curlew, were, by an arrangement made between Messrs. Sykes and Brookfield, the contractors, and Mr. Mackenzie, handed over to the latter with our sanction.

The dredger was set to work until the 30th June, when she completed the removal of the dams and shoal below the lock and wharf.

## LOCK.

From the beginning of the year till the middle of March, a few men were employed filling in behind the north-west wing-wall of the lock, forming the wharf and completing the approach to lock and wharf. In the latter end of February and beginning of March, some horses and carts were employed conveying gravel from the strand at the eastern end of the weir, and spreading it on the roadway of the embanked approach to the lock; from this period until the latter end of May no work of any consequence was executed.

In the month of June the small stank which enclosed the upper portion of the lock was removed, and the upper apron completed. In the same month the portion of the longitudinal dam which had remained since the previous year in the bed of the river at Lock was completely removed, and the river-course on each side of the new channel completely cleared of stone, &c. (this latter being an extra work, which was commenced a year before.)

In the month of July two additional beacons were built in the bed of the river at Lock; a few loads of coping-stones were also brought from a quarry near Lanesborough by land carriage; but this quarry not turning out well, the contractors abandoned it, after getting therefrom only 430 cubic feet of broken stone.

There was no work done in August and September, except a little gravelling on the approach to the lock, and building a rubble retaining wall at the back of the embankment, north-west of Tarmonbarry-bridge.

In the month of October, the contractors made arrangements for obtaining the coping and other stone required, from the quarry at Lecarrow, since which time five boat-loads of dressed stone (about 1,500 cubic feet) have been delivered at the lock, and about 1,000 cubic feet have been set.

The contractors for these works have not used any exertion to fulfil their contracts, nor have they paid that attention to the instructions given to them which we expected from the satisfactory manner in which the first contracts entered into by them were performed.

The average number of persons employed daily at Tarmonbarry, and at Curlew Shoal, from 1st January to 31st December, was 95, being equivalent to 29,737 days' work.

The quantity of material removed was 21,852 cubic yards.

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#### CURLEW SHOAL.

At the commencement of the year the excavation of the river course from Tarmonbarry upwards had been completed, as already mentioned, as far as Gannon's Island, but the upper end of that shoal and nearly the whole of Curlew Shoal remained to be executed.

Mr. Mackenzie, the contractor for the works between Lough Forbes and Rooskey, being anxious to have the excavation of Curlew finished, and the weir at Tarmonbarry left open for the summer, in order to lower the level of the water in Lough Forbes, and thereby facilitate the progress of his works above, entered into an agreement with Messrs. Sykes & Brookfield, by which he undertook to complete the excavation remaining to be done at Gannon's Island and Curlew, and also to close the weir at Tormanbarry when called upon by us to do so; Messrs. Sykes & Brookfield supplying the stone for that portion of the weir.

On the 19th February, Mr. Mackenzie's agent commenced operations at Curlew, by clearing away some beds of rock and other obstructions between the longitudinal dam (which was formed last year) and the Longford side of the river, in order to increase the waterway for the discharge of the floods during the progress of the work.

On the 27th of March, the dams being completed, the steam-engine commenced pumping, and a few excavators were put to work; but in consequence of the number of springs through the rocky bottom, and the leakage through the dams, the engine was unable to keep any considerable space unwatered. A large screw-pump was brought down from Rooskey, and fitted up at Curlew, to be worked by men. This pump, along with those worked by the steam-engine, was found sufficient to keep the works dry, and the rock-cutting and excavation were carried on during the months of April and May, but under considerable disadvantage in the former month, in consequence of the height of water in the river, and the unfavourable weather. During the month of June, nearly the whole force of men was employed at Gannon's Island, the excavation at which place, consisting of very tough clay and gravel (a good deal of which had to be blasted), was completed on the 25th of that month, and the dams immediately afterwards removed, which lowered the water at the tail of Curlew Shoal nearly two feet.

During the month of July and the early part of August the work at Curlew was carried on uninterruptedly, and by the 12th August the work within the dams was completed,

completed, with the exception of a narrow piece of rock cutting along the outer side of the channel, nearly opposite the site of the steam-engine. On the evening of the 11th a breach was made in the upper cross dam, and the water let through the new cut; the water fell one foot in Lough Forbes during the night of the 11th, and on the 17th, was 1 foot 10 inches lower than before the opening of the dams; but in consequence of an unusual fall of rain, which occurred on the evening and night of the 17th, the water rose 3 feet 6 inches within the next four days.

The weather becoming fine after the 21st, the river fell rapidly, and some men were employed lowering the upper cross dam as the water fell.

Two stone beacons were built to mark out the eastern boundary of the channel at Curlew before the water was let in; the only other work in progress being the dredging of the dams at Gannon's Island and Curlew, at which a few men were employed from the 19th October to the 22d November with a spoon and bag.

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#### CLOONDRAH.

In consequence of the removal of the upper dam at Curlew, after the completion of the new cut, on the 11th August, the water fell so rapidly in the Camlin River, that the race of Cloondrah Mill was left completely dry, and, of course, a total stop put to its working.

Mr. Fleming having brought his claim for compensation for the stoppage of his mill under our consideration, and also the permanent damage he would suffer from the alteration in the usual level of the head water, consequent on the proposed works at Tarmonbarry, we deemed it advisable to take advantage of the low state of the water for the purpose of deepening the mill race and tail race, and altering the mill machinery to suit the proposed levels of the river.

By our directions, a plan, section and estimate of the necessary works were prepared, and it was ultimately arranged with Mr. Fleming that he should be paid 300*l.* as compensation for the temporary stoppage of his mill, and 300*l.* as the cost of deepening his mill-pond and under-pinning the mill buildings, and suiting the machinery to the levels, taking upon ourselves the deepening of the mill-races and some portion of the Camlin River, and building a new regulating weir.

We commenced operations on the 16th November, by forming a dam across the Camlin from the pier of the Royal Canal lock over to the bank on the opposite side, all the water of the Camlin being turned down the Cloondrah Canal. About 100 men daily have since been employed at this work, and at the end of the year they had removed about 4,700 cubic yards of stuff from the river and mill races, the excavation on the upper side of the mill being just completed; some progress also made in deepening the tail race, and the foundations prepared for the regulating weir, which is to be 150 feet long, the stone quarried, and all preparations made for commencing the building as soon as sand could be procured.

This work has been executed as much as possible by task, the labourers being divided into gangs of 10 or 12, and a certain portion of the work marked out for each gang, at a specified price per cubic yard, varying from 5*d.* to 7*d.*, the material being generally very hard and tough, and the runs rather long.

This system of employing the men by task was introduced, at first, with some difficulty, being quite opposed to the wishes of the labourers; but being persevered in, it gradually found favour with them, and the result is that they have generally worked very well, and earned better wages than they could get if employed by the day; at the same time the work has been done much cheaper than it would otherwise have been.

The employment afforded to the labourers of the neighbourhood by this work, has been of the greatest possible service in relieving the lamentable distress which exists here in common with most parts of the country, and which would be greatly aggravated in the neighbourhood of a tolerably large and poor village like Tarmonbarry, if convenient and remunerative labour were not afforded to the able-bodied.

The average number of persons employed daily at Cloondrah, from 1st November to 31st December, was 95, being equivalent to 3,791 days' work.

The total quantity of material removed was 4,700 cubic yards.

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#### ROOSKEY.

We regret to be obliged to report unfavourably of the progress made by the contractor in the execution of the works at this place. To facilitate his arrangements, he entered into an agreement to remove the Curlew Shoal at the mouth of Lough Forbes, which formed the key of this reach of the Shannon, considering, that could he effect his object early in spring, even at a sacrifice, it would decrease the water in the river so as almost to leave the shoal dry near Rooskey; but, being mistaken in his views, the removal of the shoal was very much impeded, and the operation of excavation was not in active progress until September. To make up for his want of success, in the spring, however, he endeavoured, by unremitting exertions, to remedy the error committed, and during the autumn and winter months the unwatering of the inclosures and excavation was carried on with various success.

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#### THE WEIR.

The rubble-stone foundation for the weir is completed, and the weir itself will be commenced early next spring.

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#### THE LOCK HOUSE.

The walls have been completed to their entire height, and the building will shortly be finished.

The average number of persons employed daily at Rooskey, from 1st January to 31st December, was 61, being equivalent to 18,975 days' work.

The total quantity of material removed was 4,150 cubic yards.

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#### CARNADOE.

The works at this place consisted of a small quantity of excavation, taken out of the upper end of Lough Bodarrig Channel, and the finishing to be done to the quay-wall and approach to the bridge. A considerable portion of the channel to Lough Bodarrig remains to be deepened, and a small shoal or two between Carnadoe Bridge and Carrigeen Canal to complete the channel; but as the material is of a soft nature, it will be an easy and expeditious measure.

The average number of persons employed daily at Carnadoe, from 1st January to 21st October, was 36, being equivalent to 9,054 days' work.

The total quantity of material removed was 12,091 cubic yards.

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#### JAMESTOWN CANAL.

On the 20th January the first stone of the lock was laid. It is founded in a gravel formation, between two bogs, the one (upstream) being narrow and swampy, presenting very much the appearance of an old river-course.

The original design for this lock provided against a bad foundation, in placing a layer of puddle under the footings and back of side walls, and driving trenching-piles at the upper and lower aprons. In excavating the side, it was found to consist of an indurated clay and gravel, perfectly impervious to water, which admitted of all the puddle in the foundations, and a considerable portion at the back of the side walls being dispensed with.

Since its commencement, the building of the lock has been carried on slowly, but satisfactorily, and is at present built to the level of top of invert; a considerable stock of dressed stone is also on the ground.

In re-forming the canal banks considerable subsidence occurred, and the bank at Black Lough had to be re-formed and widened.

The

The quay-wall and wharf at the upper end of the canal are in a favourable state, and can, when the water is low, be completed in less than a month.

There remains, at the mouth of the canal, still about 6,000 cubic yards of excavation incomplete; the contractors intend to dredge a great portion of it, the stuff being very soft.

Until the excavation of Jamestown Shoal was commenced, considerable difficulties were experienced in procuring quarries capable of turning out stone for the lock; however, an excellent quarry was found just below Jamestown Bridge, which has supplied all the heavy ashlar.

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#### JAMESTOWN RIVER.

Jamestown Bridge, the completion of which we reported in our last, is well built, no settlement of any sort having been perceptible during its progress. In the beginning of May 1846, the contractors matured a plan for letting the whole river course flow through the canal, so as to enable them to dry the shoals in the horseshoe reach between Jamestown and Drumsna Bridges, and also to continue setting at the lock.

To effect this, they formed a side cutting above the lock, running parallel to the canal between this and the lock; a stank was made across the canal, and another one at the tail of the lock; another stank was made across the river at Jamestown Bridge, and a lower one at Drumsna Wharf. An eight-horse power steam-engine was fixed at the lower stank (on wharf), working four wooden pumps 14 inches square each, which unwatered the whole of Drumsna Shoal.

Before the stank was closed at Drumsna Wharf, the water was allowed to run itself off in this reach to the lower level, laying bare a considerable portion of Jamestown Shoal; some small cross stanks were then made at Jamestown and Mount Campbell Shoals, and the pits unwatered by hand-pumps and scoops.

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#### DRUMSNA.

Below Drumsna Bridge the shoal is completed, with the exception of a few hundred yards near the stank; it consisted chiefly of rock and clay with gravel; the former is a hard brittle stone, laying in horizontal bonds.

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#### DRUMSNA BRIDGE.

On examining the piers of this bridge, when the water was run off, they were found to consist of nothing more than common rubble-stone, loosely bedded together; and, as it would have been an extremely difficult and dangerous operation to underpin the piers, as originally intended, we caused the foundations and piers to be cased with cut-stone, pointed with Roman cement, which we have every reason to believe will answer the purpose, just as well as if underpinned, avoiding the risk which that operation would have incurred of prostrating the bridge altogether. Before all the piers, however, could be completed, the autumn flood broke in. There remain three piers and an abutment to case; also to raise the parapets of the retaining walls, and improving the approaches by filling.

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#### MOUNT CAMPBELL.

During the months of July, August and September the removal of this shoal was carried on with great energy at the commencement of the work. Labourers were scarce, in consequence of the lateness of the crops, which delayed operations considerably; and, had it not been for this circumstance, the shoal would now have been completed. It is, however, in a very forward state, 15,000 cubic yards only remaining to be taken out; it consists entirely of rock, indurated clay and gravel. The former was most advantageous for quarrying, laying in beds slightly inclined, very smooth, and some of considerable thickness; the stone is very hard and brittle, having generally a most angular fracture. It is, perhaps, the most perfect stone for public works that has been found on the Shannon, but hard and brittle to dress. The clay and gravel are

very hard and difficult to remove. The chief feature in this shoal is the ease of keeping it unwatered, one hand-pump at each end being sufficient to unwater an enclosure containing from 400 to 500 working men. On the 14th October the lower stank burst in, flooding all the implements, since which time no work has been resumed at this shoal.

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#### JAMESTOWN.

From Jamestown Bridge to the weir, the excavation in the river course is all completed; below that but little has been done, except just at the weir, where the rock terminates and the clay and gravel commence. Above the bridge nearly all is complete except the removal of a longitudinal stank, placed there in the summer of 1845, to build the quay-wall and excavate half the channel near it. In contradistinction to Mount Campbell, this shoal is composed of the hardest and most irregular rock, which had to be all removed by blasting; a good shot being seldom obtained in consequence of the stone flying.

The weir was founded in the middle of September, and by the 20th October, when the upper stank burst, and all the works were flooded, it was all built and coped, with the exception of 100 lineal feet, as a gap for the discharge of the water. It is wholly founded on rock, and for a considerable length formed out of the rock itself, capped with ashlar.

The Jamestown quay wall is finished; the wharf will require a little more filling and forming, and the parapets of the retaining wall to be set. Some steps have also to be built down to the wharf at one end, and to the water at the other.

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#### LOUGH NANOGUE.

During the whole season two dredge-boats have been working at this shoal; the stuff consists of soft bog, which is removed in barges, and chiefly deposited in deep water just outside the shoal. It is expected that another month will finish this shoal completely.

The number of persons employed daily on the Jamestown Canal and river works, from 1st January to 31st December, was 342, being equivalent to 107,064 days' work.

The quantity of material removed amounted to 82,067 cubic yards.

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#### CARRICK-ON-SHANNON.

The Carrick-on-Shannon contract embraces the building of a bridge and a quay-wall, the formation of a wharf and harbour, and a small quantity of excavation.

The bridge was founded in the month of June 1845, when the foundations of one abutment, two piers, a considerable length of quay-wall, and the excavation of half the shoal were proceeded with simultaneously; considerable difficulty was experienced in unwatering the pits, the deep water, both above and below, boiling up through the gravel as soon as the surface was disturbed. These boils were with difficulty kept down by sods of earth weighed with stones, wooden hurdles having, in some cases, to be used; the first pit was, however, much easier unwatered than the second (Roscommon side), which required a four-horse engine, working six wooden pumps, to be constantly going in this small inclosure, besides a considerable number of men scooping day and night.

The return quay-wall at the down stream end sunk considerably for about 20 feet in length, being founded on soft bog, and had to be taken down and rebuilt at a lower level.

There is at present above 600 lineal feet of quay-wall built, with an excellent wharf formed at the back, which will afford ample accommodation to the trade of the place; the bridge will be open for public use early in February; at present a considerable portion of the parapet is set, and the roadway formed and soled; some delay has occurred in procuring flagging for the footways, but the contractor has now obtained an excellent quarry for the purpose, and will work it immediately. The masonry is executed in a most superior manner. The total  
number

number of persons employed daily at Carrick-on-Shannon, from 1st January to 31st December, was 70, being equivalent to 21,311 days' work.

The quantity of material removed amounted to 4,500 cubic yards.

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## BOYLE WATER.

### KNOCKVICAR.

The works are now in a very forward state. The bridge had all the arches turned in the month of August, with the exception of two small land arches, one of which remains open.

The setting of the parapet is proceeding but slowly, the contractor not being in a hurry to open this bridge, in consequence of his inability to found the land abutment of the land arch until the water lowers, the river flowing through it.

The masonry is well executed and of very heavy materials, the quoins of the arches consisting of nearly all double stones, with a false chamfer run down the centre to preserve uniformity of appearance.

The lock was founded on the 6th March 1846, and considerable energy shown in its building until the 18th August, when the stank burst and flooded the works until early in September, when by means of two steam-engines the pit was again unwatered.

The setting continued until the 19th October, when another sudden and unexpected burst occurred, flooded all the tools, &c., and unfortunately drowned two of the labourers; since that date no work has been resumed; at present the chamber of the lock is complete within about five feet of coping level. The greatest portion of both sills and stop-gate grooves are set, and most of the stone prepared and on the ground.

The whole of the lock is founded on rock running in regular beds. It varies considerably in quality, a large proportion being available for ashlar.

The excavation above the lock is nearly completed as high as Lough Key; the channel below the lock is excavated to the full width, and will not have to be again unwatered: there remains a few cross stanks to be dredged out, and considerable trimming on the spoil-banks.

This reach of the river, viz., between Lough Key and lower end of contract, was all unwatered in one enclosure; two steam-engines, one an eight-horse, working two wooden pumps, 12 inches square, and two iron pumps, 14 inches in diameter, and a four-horse engine working two wooden pumps, 12 inches square, together discharging 425 cubic feet of water a minute, the river course being laid dry by turning the river down the old mill-race. The quay-wall was founded on the 13th July, and finished about the latter end of October.

It is composed of fair dressed ashlar rock, faced below summer water, coped with 15-inch stone dowed together.

The wharf and weir still remain incomplete, and but a short length of the wing-wall is built.

This work can, however, be rapidly put together, the rock itself forming a considerable portion of it, and stone being easily obtained.

The overfall was founded early in October, and obliged to be discontinued on the 19th of the same month, when the stank at the lock burst. Considerable progress was, however, made during this short time, and it is about half built, and will not require the large enclosure to be again unwatered.

A stank will have to be formed round the overfall to complete it and deepen the mill-race.

The above have been the chief works in hand of all the contracts held by the Messrs. Jeffs, and great exertions have been made to forward them during the fine season.

The lock has been pushed on remarkably well, and the fortunate occurrence of finding an excellent quarry within a mile of the work, and a large quantity of the rock in the excavation turning out as ashlar, has enabled the contractors to keep a great number of stone-cutters at work during the winter.

The average number of persons employed daily at Knockvicar, from 1st January to 31st December, was 231, being equivalent to 70,662 days' work.

The quantity of material removed amounted to 90,352 cubic yards.

## COOTEHALL.

The excavation of half the width of channel is nearly completed; the other half not having been touched; it consists chiefly of rock, laying in thick beds, adapted for the building of the piers and abutments of Cootehall bridge; this is the most backward work on the Boyle Water, with the exception of two small shoals, Oxhill and Tumna, which have not yet been commenced.

The bridge has only one abutment, founded on the 13th August, but a fair proportion of dressed stone is at the quarries, and when the excavation is again resumed the remaining piers and abutments can be founded.

The average number of persons employed daily at Cootehall, from 11th May to 25th October, was 167, being equivalent to 23,908 days' work.

The quantity of material removed was 23,499 cubic yards.

## DOCTOR'S WEIR SHOAL.

Since the 6th August last, this shoal has been in progress of removal up to the 22d December, when the pit was flooded; about three parts of the excavation is completed, all the rock being taken out, and the remainder being dredgable; the unwatering of one pit, 400 feet long by 90 feet wide, was effected by hand-pumps, taking about 60 men in the 24 hours.

The average number of persons employed daily at Doctor's Weir, from 7th September to 31st December, was 113, being equivalent to 10,202 days' work.

The quantity of material removed was 8,240 cubic yards.

## ANNALECKEY SHOAL

Was commenced early in August, and is still in progress of removal. The inclosure contains about 9,000 cubic yards (the entire shoal being 12,800), the whole of which will be out in a few days; this includes all the rock, so that the contractor will, probably, dredge the remaining portion.

The shoals at Annaleckey and Doctor's Weir have been worked longer than perhaps was ever the case on the Shannon, and, notwithstanding the pits, made considerable water; and there were several heavy floods. By care and attention the stanks were kept secure, and no interruption caused to the work.

The average number of persons employed daily at Annaleckey from 7th September to 31st December was 161, being equivalent to 15,803 days' work.

The quantity of material removed was 8,156 cubic yards.

## RENTS AND TOLLS.

No alteration has taken place in the rates of tolls and other dues levied on the Shannon since our last Report.

The amount received continues progressively to increase, as will be seen in Schedule (A.). The amount collected at the stations between Limerick to Lough Allen is 102*l.* 6*s.* 3*d.* over that of the year 1845; and the collection at the Lower Shannon stations also shows an increase over the previous year of 15*l.* 6*s.* 10*d.*

The demand for additional mill-power, owing to the greater consumption than formerly of bread-stuffs, has occasioned several parties to enter into negotiation with us for the leasing of mill-sites, and water-power, along the line of the navigation. Some of these are still pending, but nothing conclusive has been arranged in any case.

## ACCOUNTS.

The incorporation of the Shannon Commission with the Board of Public Works under the Act 9 & 10 Vict., c. 86, caused the charge for the "Establishment" of the Shannon Commission to cease on the 30th September 1846.

The advances, as loans to counties, liable to be assessed for the Shannon Improvements continue to be regularly repaid as the instalments fall due, with the exception of the arrear referred to in our previous Reports, as due by the county of

of the city of Limerick, for the repayment of which no legal provision has yet been made.

Notwithstanding the assurance referred to in our last annual Report, which we received from the agent of John B. Scott, Esq., that the amount of his contribution towards the erection of the pier at Cahircon (Kildysart) would be paid within the month of March 1846, our claim remains still outstanding; however, we continue to hope that a satisfactory settlement will shortly be arranged.

We have, &c.

(signed) HARRY D. JONES.  
RICHARD GRIFFITH. } Commissioners.  
R. RADCLIFF. }

Office of Public Works, }  
Custom-house, Dublin, }  
June 1847. }



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- No. 3.—Copy of a Return furnished by the Paymaster of Civil Services of the several Sums remitted to him during the Year 1846, by the Treasurers of Counties, in Repayment of Advances made by the Shannon Commissioners :—Repayments - - - p. 23
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- (A.)—Comparative Table of Tolls and Wharfage received from Years 1840 to 1846, inclusive - - - - - p. 27
- (B.)—Return showing the Tonnage of the Imports and Exports at the principal Stations on the Shannon, from 1st January to 31st December 1846 - - - - - p. 28
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- (E.)—Return showing the Number of Passengers by the City of Dublin Steam-packet Company's Boats during the Year 1846 - - - - - p. 33
- (F.)—Table showing the Number of Persons employed on the several Works, with the Periods of Employment, during the Year 1846 - - - - - p. 33
- (G.)—Return of Work performed by the "Victoria," "Albert," "Prince," and "Princess," Dredgers, from 1st January to 31st December 1846 - - - - - p. 34
- (H.)—Table showing the Quantities of Materials delivered on the Works during the Year 1846 - - - - - p. 35
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-

A P P E N D I X.

— No. 1. —

ACCOUNT of the several Sums Received and Expended by the COMMISSIONERS in Execution of the Provisions of the Act 2 & 3 Vict., c. 61, between 1st January and 31st December 1846.

ESTABLISHMENT.		£.	s.	d.	£.	s.	d.
RECEIPT:							
To Balance of Account ending 31st December 1845	- - -	9	5	10			
To amount lodged to the credit of the Commissioners in the Bank of Ireland by the Paymaster of Civil Services	- - -	1,467	-	-			
TOTAL RECEIPT					1,476	5	10
EXPENDITURE:							
By establishment	- - - - -	773	18	11			
By occasional clerks	- - - - -	1	17	9			
By travelling expenses	- - - - -	102	14	11			
By postage	- - - - -	33	8	1			
By contingencies, including books, maps, coals, carriage of parcels, &c.	- - - - -	43	11	7			
By law contingencies	- - - - -	394	18	5			
TOTAL EXPENDITURE					1,350	9	8
BALANCE					125	16	2

Office of Public Works,  
Custom-house, Dublin,  
16 June 1847.

Thos. Stickney, Accountant.  
H. J. Mason, Asst-Acct.

— No. 2. —

ACCOUNT of the several Sums Received and Expended by the COMMISSIONERS in Execution of the Provisions of the Act 2 & 3 Vict., c. 61, between 1st January and 31st December 1846.

WORKS.		£.	s.	d.	£.	s.	d.
RECEIPT:							
To Balance of Account ending 31st December 1845	- - -	9,054	6	2 $\frac{3}{4}$			
To amount of monies issued by the Treasury during the year 1846	- - -	55,000	-	-			
To dividend on amount which had been invested under the terms of the contra for Athlunkard Works left unfinished by the contractor	- - -	3	8	6			
To amount received from the Board of Ordnance, as consideration for two pieces of ground adjoining the Barracks at Athlone, conveyed to that Board	- - -	1,000	-	-			
TOTAL RECEIPT - - - (carried forward)					65,057	14	8 $\frac{3}{4}$

## WORKS—continued.

## EXPENDITURE :

No. of Work in the order in which they stand in the 4th Report of the Commissioners of Inquiry, pages 11 and 12.	NAMES OF WORKS.	Amounts Expended.			£. s. d.
		£.	s.	d.	
	Total Receipt brought forward - - -	-	-	-	65,057 14 8 $\frac{3}{4}$
7	By Foynes Island - - - - -	297	18	5	
10	Clare - - - - -	74	3	-	
22	Works at Meelick - - - - -	9	16	3	
23	Shannon Grove (Counsellor's Ford) - - - - -	368	2	6 $\frac{1}{2}$	
30	Shannon Bridge - - - - -	100	-	-	
34	Tullymore Ford - - - - -	29	1	1	
35	Calf Island - - - - -	400	-	-	
36	Long Island - - - - -	550	-	-	
37	Rann Island - - - - -	845	-	6	
39	Works at Athlone - - - - -	6,004	10	-	
40	Lough Ree - - - - -	393	5	7	
41	Curreen - - - - -	1,848	4	4 $\frac{3}{4}$	
45	Erra - - - - -	77	7	9	
46	Cloonbearlow - - - - -	133	16	4	
47	Lodge Cut - - - - -	942	9	10	
48	Lanesborough to Tarmonbarry, &c. - - - - -	1,171	3	8	
49	Cloondrah Canal - - - - -	2,980	17	8	
50	Tarmonbarry (the River Course) - - - - -				
52	Clooneen Cox and Cloonfad - - - - -	1,183	9	-	
53	Bird Island - - - - -	223	5	3	
54	Roskey - - - - -	2,018	6	3	
55	Derrycarne - - - - -	200	4	1	
58	Jamestown Canal - - - - -	5,097	16	7	
59	Drumsna - - - - -	1,365	6	11	
60	Mount Campbell and Charlestown - - - - -	478	17	11	
61	Jamestown - - - - -	2,674	2	7	
64	Cornacoroo - - - - -	52	15	2	
67	Carrick-on-Shannon - - - - -	2,952	2	8	
71	Port - - - - -	74	5	9	
72	Leitrim - - - - -	-	15	-	
73	Battle Bridge - - - - -	12	17	6	
74	Lough Allen Canal - - - - -	35	9	3	
76	Bealantra and River Course - - - - -	38	-	3	
78	Lough Allen - - - - -	12	3	3	
80	Dredging Vessels, Barges, &c. - - - - -	346	6	4	
81	Workshops, Machinery, Contingencies, &c. - - - - -				
82	Scariff River - - - - -	99	14	6	
84	Carnadoe (Shoal at Bridge) - - - - -	1,137	19	7	
85	Carrigeen - - - - -	765	11	7	
87	Annaleckey - - - - -	696	-	3	
88	Doctor's Weir - - - - -	425	8	2	
90	Cootehall - - - - -	2,053	2	1	
93	Knockvicar - - - - -	7,815	15	5	
	TOTAL EXPENDITURE - - - - £.				45,985 12 4
	BALANCE - - - - - £.				19,072 2 4 $\frac{3}{4}$

Office of Public Works,  
Custom-house, Dublin,  
16 June 1847.

Thos. Stickney, Accountant.  
H. J. Mason, Asst-Acct.

— No. 3. —

COPY of a RETURN of the several SUMS remitted to the Paymaster of Civil Services, during the Year ending 31st December 1846, by the TREASURERS of the under-mentioned Counties in *Ireland*, in Repayment of Advances by the COMMISSIONERS for the Improvement of the River *Shannon*, pursuant to the Act 2 & 3 Vict., c. 61, and on account of Interest, at Four per Cent. per Annum, accruing on said Advances.

COUNTY, &c.	Date of Payment.	Particulars of each Payment.		TOTALS.					
		Principal.	Interest at 4 per Cent. per Annum.	Principal.		Interest.		Principal and Interest.	
	1846:	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	
CLARE - - -	10 March -	1,510 7 5	243 18 5	3,063 - -	480 9 11	3,543 9 11			
	20 July -	1,552 12 7	236 11 6						
GALWAY - - -	27 March -	2,909 10 4	431 12 10	6,075 - 3	906 4 1	6,981 4 4			
	10 August -	3,165 9 11	474 11 3						
KING'S COUNTY -	19 March -	1,042 14 11	147 - 8	2,162 16 -	296 1 6	2,458 17 6			
	4 August -	1,120 1 1	149 - 10						
LEITRIM - - -	12 March -	1,551 4 11	238 19 4	3,410 15 7	517 9 10	3,928 5 5			
	29 July -	1,859 10 8	278 10 6						
LIMERICK - - -	21 March -	458 13 -	63 2 9	917 6 -	126 5 7	1,043 11 7			
	18 August -	458 13 -	63 2 10						
DITTO CITY - -	15 April -	154 5 3	- - -	308 10 7	- - -	308 10 7			
	27 August -	154 5 4	- - -						
LONGFORD - - -	3 March -	953 17 3	147 3 7	2,047 9 9	325 18 -	2,373 7 9			
	14 July -	1,093 12 6	178 14 5						
MAYO - - -	24 March -	260 15 10	38 6 6	544 18 8	87 1 11	632 - 7			
	6 August -	284 2 10	48 15 5						
ROSCOMMON - -	3 March -	3,214 6 2	519 2 3	7,084 10 8	1,141 18 -	8,226 8 8			
	16 July -	3,870 4 6	622 15 9						
SLIGO - - -	18 March -	70 1 8	16 13 3	196 5 4	39 17 11	236 3 3			
	28 July -	126 3 8	23 4 8						
TIPPERARY (South Riding)	17 March -	413 - 11	64 15 1	782 7 10	123 16 2	906 4 -			
	27 July -	369 6 11	59 1 1						
DITTO (North Riding)	2 April -	981 18 1	151 1 7	2,051 18 1	314 14 11	2,366 13 -			
	10 August -	1,070 - -	163 13 4						
WESTMEATH - -	17 March -	1,748 5 1	262 10 -	3,503 15 6	552 3 7	4,145 19 1			
	8 August -	1,845 10 5	289 13 7						
TOTAL Repaid by Counties - - - £.				32,238 14 3	4,912 1 5	37,150 15 8			

Paymaster of Civil Services Office,  
Dublin Castle, 1 January 1847. }

(signed) T. F. Kennedy.

No. 3—*continued.*

COPY of a RETURN of the several SUMS remitted to the Paymaster of Civil Services, during the Year ending 31st December 1846, by INDIVIDUALS, in Repayment of Advances by the COMMISSIONERS for the Improvement of the River *Shannon*, pursuant to the Act 2 & 3 Vict., c. 61, with Interest at the Rate of Five per Cent. per Annum, accruing on said Advances.

INDIVIDUALS.	Principal.	Interest at 5 per Cent. per Annum.	Principal and Interest.
	£. s. d.	£. s. d.	£. s. d.
1846:			
15 Jan.—Colonel C. M. Vandeleur's contribution, per Shannon Commissioners, to Kilrush Pier - - - - -	350 - -	35 - -	385 - -
30 „ —John Bindon Scott's (Esq.) contribution, per ditto, towards the Works at Cahircon, Kildysart - - -	- - -	129 2 1	129 2 1
£.	350 - -	164 2 1	514 2 1

Paymaster of Civil Services Office,  
Dublin Castle, 1 January 1847. }

(signed) *T. F. Kennedy.*

## RECAPITULATION.

	Principal.	Interest.	Principal and Interest.
	£. s. d.	£. s. d.	£. s. d.
Repaid by Counties - - - - -	32,238 14 3	4,912 1 5	37,150 15 8
Ditto - by Individuals - - - - -	350 - -	164 2 1	514 2 1
TOTAL - - - £.	32,588 14 3	5,076 3 6	37,664 17 9

Paymaster of Civil Services Office,  
Dublin Castle, 1 January 1847. }

(signed) *T. F. Kennedy.*

— No. 4. —

RETURN, showing the TOTAL AMOUNT of Advances as LOANS made by the COMMISSIONERS acting in Execution of the Provisions of the Act 2 & 3 Vict., c. 61, to the under-mentioned Counties, up to the 31st December 1846, including Interest thereon at the Rate of £.4 per Cent. per Annum, from the Dates of the respective Advances, until the entire shall be paid off by Twelve equal successive Half-yearly Instalments; also, the Amounts received by the Paymaster of Civil Services, *Ireland*, from the Treasurers of Counties, in Repayment of said Loans and Interest; and the Amounts still outstanding on foot of same.

NAMES OF COUNTIES.	Total Advances in the Years 1840 to 1846 inclusive, with Interest, at the Rate of £. 4 per Cent. per Annum, until the entire shall be paid off by Twelve equal successive Half-yearly Instalments.			Repayments by Counties on Account of Loans.			Amounts still Outstanding, and repayable by Instalments.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
Limerick - - - - -	6,756	15	2½	4,978	1	8	1,778	13	6½
Limerick (County of the City) -	4,530	16	6½	1,814	7	11	2,716	8	7½
Clare - - - - -	21,928	14	7½	13,308	9	8½	8,620	4	11½
Tipperary (North Riding) - -	15,522	10	5½	10,881	12	7	4,640	17	10½
Tipperary (South Riding) - -	7,126	14	7½	4,886	11	-	2,240	3	7½
Galway - - - - -	45,019	1	2	28,958	5	-	16,060	16	2
Roscommon - - - - -	66,120	8	-½	23,675	19	11	42,444	8	1¾
King's County - - - - -	15,296	-	-	11,433	13	1	3,862	6	11
Westmeath - - - - -	28,109	9	5½	15,269	8	2	12,840	1	3½
Longford - - - - -	19,624	2	10¾	7,053	9	1¾	12,570	13	9
Leitrim - - - - -	30,875	7	2½	8,615	6	10	22,260	-	4½
Mayo - - - - -	4,833	17	10½	2,603	5	10	2,230	12	-¼
Sligo - - - - -	3,686	6	1½	662	14	4	3,023	11	9½
TOTALS - - - £.	269,430	4	2¾	134,141	5	2	135,288	19	-¾

*Note.*—Under the provisions of the 13th section of the Act 2 & 3 Vict., c. 61, the Advances to Counties are to be repaid by twelve half-yearly instalments, and the Amounts in the last Column are in the course of collection under this regulation.

Office of Public Works,  
Custom-house, Dublin,  
16 June 1847.

*Thos. Stickney*, Accountant.  
*H. J. Mason*, Ass<sup>t</sup> Acct.

## — No. 5. —

ACCOUNT of the several Sums Received and Expended by the COMMISSIONERS in Execution of the Provisions of the Act 2 & 3 Vict., c. 61, between 1st January and 31st December 1846.

RENTS AND TOLLS.		£.	s.	d.
RECEIPT :				
To Balance of Account ending 31st December 1845 -	- - - - -	130	16	8
To Rents :				
Mills, Lands and other Holdings - - - - -	£. s. d.	327	2	9
Fishing of Weirs - - - - -		623	-	-
Produce of Sales - - - - -		53	17	3
Water Power - - - - -		48	9	3
		1,052	9	3
To Gauging and Weighing Boats (Fees for) - - - - -		2	3	9
To Law Expenses recovered - - - - -		-	11	8
To Tolls - - - - -		1,781	19	8
Wharfage - - - - -		211	10	6
Quayage - - - - -		173	19	11
Cranage - - - - -		13	6	2
		2,180	16	3
	TOTAL RECEIPT - - - - - £.	3,366	17	7
EXPENDITURE :				
By Salaries and Allowances :	£. s. d.			
Engineers, Surveyors and Inspectors - - - - -		150	10	4
Clerks - - - - -		43	15	6
Collectors - - - - -		683	17	11
Lock-keepers - - - - -		215	2	6
Gauging and Weighing Boats - - - - -		-	18	-
Water Bailiffs - - - - -		23	16	-
Care-takers - - - - -		9	5	10
		1,127	6	1
By Payments on account of Loans made by the Board of Works to the late Limerick Navigation Company; viz.				
Interest due up to the 31st December 1846 -	479 5 -			
Two Instalments of Principal - - - - -	385 8 4			
		864	13	4
By Rents - - - - -		31	-	-
Taxes - - - - -		21	3	3
Rents refunded - - - - -		15	7	6
Tolls - ditto - - - - -		-	15	1
Wharfage - ditto - - - - -		-	11	6
Maintenance and Repairs of Canals, Trackways, &c. -		919	4	-
Miscellaneous Expenses - - - - -		20	10	-
	TOTAL EXPENDITURE - - - - - £.	3,000	10	9
	BALANCE - - - - - £.	366	6	10

Office of Public Works,  
Custom-house, Dublin,  
16 June 1847.

*Thos Stickney*, Accountant.

*H. J. Mason*, Ass<sup>t</sup> Acc<sup>t</sup>.

SCHEDULE (A.)

COMPARATIVE TABLE, showing the TOLLS and WHARFAGE received during the Years 1840 to 1846 inclusive.

STATIONS.	TOLLS.							WHARFAGE.							TOTALS.							
	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1840.	1841.	1842.	1843.	1844.	1845.	1846.	1840.	1841.	1842.	1843.	1844.	1845.	1846.	
Limerick -	822 8 10½	674 15 9½	510 14 6½	499 9 4½	485 14 6½	569 15 3	705 12 5½	20 2 8	23 - 11½	24 11 2½	23 1 - 1½	21 14 8	28 5 2½	27 8 1	842 11 6½	697 16 9	535 5 8½	522 19 5½	508 9 2½	598 - 6½	734 - 6½	
Annaghbeg -	5 11 4½	11 - 1½	45 5 10½	22 4 - 1½	11 15 11½	14 9 -	15 19 - 5½	4 18 3	8 15 11	21 17 1½	3 5 -	- 6 -	1 2 - 1½	- 7 9	10 9 7½	19 15 - 1½	68 2 11½	25 9 - 1½	12 1 11	15 11 - 1½	16 6 9½	
Errina -	1 9 9½	3 11 4½	3 5 6	1 2 1½	2 - 10½	1 3 7	3 7 7	1 4 6½	1 2 9½	- 19 8 -	- 8 -	- 16 8 -	- 12 9	1 11 3½	2 14 4	4 14 1½	4 5 2	1 10 1½	2 17 6½	1 16 4	4 18 10½	
O'Brien's Bridge -	16 9 7	20 6 9½	17 17 9½	10 7 5½	8 1 3	3 7 2	2 8 1	7 4 2	11 15 6½	14 19 5½	2 14 8½	2 4 9	1 17 2	5 8 5½	23 13 9	22 2 4½	22 17 3	13 2 1½	10 6 -	5 4 5	7 16 6½	
Cusane -	1 6 9	1 12 8½	27 12 - 1	9 15 10½	2 4 4	2 11 7½	2 3 3½	- 1 8 -	- 2 8 -	- 4 6 -	- 16 3½	- 4 3½	- 3 -	- 2 4 -	1 8 5	1 15 4½	27 16 6½	10 12 4	2 8 7½	2 16 7½	2 5 7½	
Killaloe -	124 6 - 1	208 10 5½	215 8 2½	252 1 3	262 5 4	440 18 4½	483 17 2	29 7 2½	45 8 11½	26 16 - 1	27 17 8½	29 17 9½	24 7 2	28 19 8	162 12 3	224 19 5½	202 4 4	280 18 11½	222 2 1½	465 5 6½	512 16 10	
Scariff -	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5 6 6½
Portunna -	169 12 6	198 3 9½	165 1 11½	161 16 6½	168 19 10½	218 14 9½	163 6 6½	11 7 9	14 17 2½	15 17 11½	13 16 10½	16 6 9½	9 16 2½	8 8 5½	181 - 3	212 - 11½	170 19 11	175 12 5	179 6 - 5	228 11 - 1	171 15 -	
Victoria Lock -	3 2 9½	3 19 8½	3 16 5½	2 3 5	2 9 5½	5 6 4	9 5 3	-	- 7 4½	- 18 3½	- 16 11½	- 8 7½	- 6 5½	- 5 7	2 3 9½	4 7 1½	3 14 11	2 - 4½	2 17 9½	5 12 5½	9 10 16	
Banagher -	289 - 1	103 6 10½	39 5 8	31 16 11½	31 12 6½	76 19 10½	55 7 1½	3 13 8½	9 2 1	7 8 2½	5 16 6½	6 2 8½	8 18 1	8 - 7½	299 12 8½	112 8 11½	100 13 10½	97 12 6	97 15 2½	85 17 11½	62 7 9	
Shannon Harbour -	5 1 5	192 11 11½	167 6 - 1	117 5 8	134 14 1½	160 11 6	219 19 11½	-	- 4½	- 1 9½	- 10½	- 2 -	- 6½	- 1 5½	5 1 5	192 12 4	167 7 10½	117 6 6½	134 14 3½	160 12 - 1	220 1 5	
Shannon Bridge -	72 8 9½	6 11 3½	3 1 - 1	31 16 10½	22 10 - 1	12 - 11½	15 3 11	3 7 3½	2 9 7½	1 15 7	1 17 1½	- 9 8½	- 18 3	1 16 3	75 10 1	9 - 11	4 16 7½	23 13 11½	22 19 5½	12 19 2½	17 - 3	
Athlone -	108 10 2½	115 4 5½	74 5 11½	70 6 2½	98 3 2½	105 12 4½	78 9 - 1	34 9 11½	7 11 7½	4 2 2½	7 12 7½	11 7 10½	16 2 4½	6 16 4½	142 - 2	122 16 1	78 8 1½	77 18 10½	110 11 2½	122 15 9	85 5 5	
Lecarrow -	-	-	-	-	-	2 19 4	4 10 10	3 6 4	-	-	-	-	2 18 8½	11 8 6½	5 1 7	-	-	-	6 18 - 1	15 19 4½	8 7 11	
Lanesborough -	12 7 9½	12 10 3½	21 14 7½	16 9 9½	5 16 7½	8 17 - 1	2 15 9	4 18 11	8 3 3	10 18 11½	7 12 7½	3 9 9½	4 4 - 1	2 6 2½	17 6 8½	21 13 6½	22 12 7	24 3 5½	9 6 5	13 1 1½	5 2 - 1	
Cloondra -	19 5 9	17 4 8	12 12 2½	16 3 8½	15 17 2½	8 2 4½	1 13 2	- 2 2½	- 8 2	- 2 6 -	- 7 7½	- 7 5½	- 1 6 -	- 1 6	19 7 11½	17 13 10	12 15 8½	16 11 4	16 5 3	8 3 10½	1 14 7	
Rooskey -	8 3 8½	4 7 5½	4 1 11½	6 7 7½	7 2 7½	6 5 9½	1 18 1	3 - 5½	1 4 9	1 6 3½	1 19 9	2 8 - 1	1 6 16	1 2 7	11 4 2½	5 12 2½	5 8 3	8 7 4½	9 10 8½	7 11 11½	3 - 8	
Drumna -	7 16 1½	6 16 9½	8 14 9½	9 4 2½	10 8 11½	7 15 9	3 7 3	1 16 - 1	1 16 2½	2 18 9½	2 - 2½	2 1 7½	2 12 6	- 17 2½	9 12 2½	8 12 4½	11 13 7	11 4 6	13 10 7	10 8 3	4 4 6½	
Jamestown -	3 11 3½	1 3 9	1 19 4	1 7 5	- 12 1½	-	-	- 10 - 1	- 8 6½	- 9 -	- 4 4	- 1 10 -	-	-	4 1 4	1 11 8½	2 8 4	1 11 9	- 12 11½	-	-	
Carrick-on-Shannon -	14 8 2½	12 14 1	12 15 8	9 7 5½	8 15 8	9 12 5	7 9 11	17 4 11½	16 6 7½	16 3 9½	11 9 6	10 4 7	5 13 8	-	21 12 2½	20 - 8½	28 19 5½	20 16 11½	19 - 2	16 6 1	7 9 11	
Battle Bridge -	1 2 4	- 13 10½	1 7 2½	- 7 11½	- 17 2½	- 13 6½	- 7 11	1 10 7½	- 12 2	1 3 8	- 5 -	- 12 1	1 - 4	- 3 -	2 12 11½	1 7 - 1	2 10 10½	- 12 11½	1 9 2½	1 13 10½	- 10 11	
Drumleagu -	7 15 9½	4 8 9	2 11 2	4 1 10½	1 11 6½	1 14 5½	- 3 11	- 8 8	- 1 8	- 8 8	- 1 9½	- 10 -	-	- 2 4	8 4 8½	4 10 5	2 19 10	4 2 8	1 12 4½	1 14 5½	- 6 3	
TOTALS - £	1,704 - 1½	1,701 15 10½	1,682 18 1½	1,423 15 11½	1,456 13 2½	1,690 3 2½	1,781 19 8	145 9 1½	154 17 5	163 4 9½	122 5 9½	168 4 4½	118 19 8½	99 9 7	1,849 9 2½	1,856 11 8½	1,640 2 11	1,506 1 9	1,564 17 7	1,770 3 -	1,881 9 3	

LOWER SHANNON, 1846.

STATIONS.	QUAYAGE	WHARFAGE.	CRANAGE.	TOTALS.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Queen's Quay -	6 9 6	5 6 1	- - -	11 15 7
Kilrush Pier -	129 10 2	44 3 -	13 6 2	187 7 4
Saloon Quay -	7 14 11½	11 14 3½	- - -	19 9 3
Kiltsey " -	1 - 6	- 8 8	- - -	1 9 2
Kilbysart " -	- 18 - 1	- 17 6½	- - -	1 15 7
Clare " -	24 18 9	49 11 4	- - -	84 10 1
TOTALS - £	173 19 11	112 - 11	13 6 2	299 7 -

ABSTRACT, 1846.

Limerick to Drumleagu -	£. s. d.	1,881 9 3
Lower Shannon -	299 7 -	
TOTAL - £	2,180 16 3	

Thomas Sweeney, Accountant.  
H. J. Mason, Asst. Act.

Office of Public Works, Custom-house, Dublin,  
16 June 1847.

IMPROVING THE NAVIGATION OF THE SHANNON.

SCHEDULE (B.)

RETURN, showing the TONNAGE of the IMPORTS and EXPORTS at the Principal Stations on the River Shannon, from 1st January to 31st December 1846.

ARTICLES.	STATIONS.															Totals 1846.	Totals 1845.	Totals 1844.	Totals 1843.	Totals 1842.	Totals 1841.	Totals 1840.					
	Limerick.	O'Brien's Bridge.	Killaloe.	Lough Derg (Killaloe End.)	Scariff.	Lough Derg (Portumna End.)	Portumna.	Bangor.	Shannon Bridge.	Athlone.	Lecarrow.	Lanesborough.	Rooskey.	Drumana.	Carrick-on-Shannon.												
<b>LANDED:</b>	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	
Slates - - - - -	1,732½	6½	-	2	15	2	211½	224½	1	263½	-	81½	-	-	-	2,540½	2,497	2,700½	3,165½	3,569½	3,883½	3,999½	-	-	-	-	-
Tiles and Bricks - - -	-	10½	25	82½	11	129½	56	20	1	478½	-	41½	4	-	-	860½	1,145	644½	578½	360½	717½	988	-	-	-	-	-
Coal - - - - -	6½	69	521½	449½	146½	26½	287½	84½	107½	447½	27½	-	15	6	-	2,207½	2,268½	1,546½	2,583½	2,979½	2,839½	4,462½	-	-	-	-	-
Iron not made into articles of merchandise.	78½	¼	36½	40½	11½	7½	78½	96½	7½	121½	2	-	37½	20½	-	467½	530½	396	553½	708	983	754½	-	-	-	-	-
Timber of all kinds - -	90½	19½	276	197½	35½	22½	271½	22½	79½	603½	8	-	75	35	-	1,807½	1,932½	1,575½	2,319½	2,319½	2,980	2,391½	-	-	-	-	-
Hay and Straw - - -	8	53½	18½	10½	-	14	69	102½	25	6	27	37½	19	-	-	441½	351½	311½	570	399½	558	450½	-	-	-	-	-
Ores and Minerals - - -	-	-	1	-	-	-	1	-	-	1	½	-	2	-	-	6½	8½	24½	6	7	17	21½	-	-	-	-	-
Salt - - - - -	3½	-	9½	23½	3	10½	301½	27½	-	114½	-	-	-	-	-	494	436	405½	423	393	415½	325½	-	-	-	-	-
Marble, foreign or manufactured.	15	-	54½	-	-	-	2½	-	-	-	-	-	-	-	-	72½	72½	64½	31½	69½	76½	58½	-	-	-	-	-
Manure - - - - -	10½	141	17½	306½	700	13	948	200½	-	11½	-	153	30	-	-	2,531½	2,929	2,030½	1,662½	3,336½	1,797	970½	-	-	-	-	-
Lime for building - - -	-	-	7	-	-	-	165	-	-	143	-	46	-	-	-	361	58	87	125	356½	246½	2½	-	-	-	-	-
Building-stone and Flage	½	33½	32½	658½	-	2	22½	361	-	3,450½	20½	64	8	-	5½	4,659½	6,421½	7,113½	6,376½	4,031½	1,755	455½	-	-	-	-	-
Sand and Gravel - - -	-	-	220½	137	-	-	85½	-	-	-	3	47	78	40	231½	848	993½	1,900½	1,681	1,621½	1,061	691½	-	-	-	-	-
Turf - - - - -	4,442	-	5,704½	22½	-	586½	1,018½	611½	130½	4,295	92½	354	190	-	1,433½	18,881½	16,838½	15,340½	11,496	12,719½	12,270½	14,149½	-	-	-	-	-
Grain - - - - -	724	1,711½	19½	237½	81	80½	39½	363½	20	361	27½	14½	-	-	50½	3,405½	3,765	4,153½	1,760½	1,843½	2,615	2,124½	-	-	-	-	-
Flour, Meal, Malt and Starch.	3,397½	130½	292½	150	36½	50½	152½	490½	-	369½	-	-	-	-	½	5,070½	2,299	2,011½	3,196½	2,605½	3,252½	2,729½	-	-	-	-	-
Butter - - - - -	2	-	-	-	-	1½	-	-	-	-	-	-	-	-	7½	11	5	19½	8½	4	3½	10½	-	-	-	-	-
Black Cattle and Horses	45½	-	-	2½	-	-	16½	-	3½	8½	-	-	-	-	¼	76½	23	38	18	14½	11	6½	-	-	-	-	-
Sheep - - - - -	4	-	11½	-	-	-	-	-	-	-	-	-	-	-	16	2½	14	11½	16½	15	19½	15	-	-	-	-	-
Pigs - - - - -	105½	-	55½	6½	-	-	-	1½	-	-	-	1½	-	-	4½	174½	176½	72½	16	281	106½	83½	-	-	-	-	-
Salted Provisions - - -	31	-	1	2½	-	10½	102½	45½	-	102½	-	-	-	-	3	299½	395½	448½	381½	491½	597½	275½	-	-	-	-	-
Potatoes and other Vegetables.	32½	11	69	9½	-	2	12½	-	½	-	5½	6½	1½	-	47½	197½	264½	234½	343½	422½	428	111½	-	-	-	-	-
Groceries - - - - -	848	-	-	-	-	82	-	-	33	-	-	-	-	-	-	963	766	871	1,064½	1,650½	436½	485½	-	-	-	-	-
Wines and Spirits - - -	620½	-	4½	1½	1½	18½	-	-	1	-	½	-	-	-	-	648	88½	600½	279	147	210½	106½	-	-	-	-	-
Porter, Beer and Ale - -	1,294½	-	4	-	-	52½	-	3½	-	1½	-	-	-	-	-	1,357	972½	867½	635½	681½	685½	248	-	-	-	-	-
Bale-goods, Hardware and General Merchandise.	4,121	10½	261	103½	39½	561½	218½	80½	46	1,332½	7½	½	-	55½	-	7,438	5,794½	4,589½	4,516½	4,953½	4,820½	4,739½	-	-	-	-	-
Tobacco - - - - -	239½	-	4½	-	-	2	-	4	-	-	-	-	-	-	-	249½	238½	120½	202½	161½	212½	66½	-	-	-	-	-
Military Baggage - - -	-	-	-	-	-	7	-	-	5½	37½	-	-	-	-	-	49½	107½	36½	145½	86½	160½	-	-	-	-	-	-
Machinery - - - - -	237½	½	42½	3½	-	26	13	37½	51½	20½	-	3	30	14½	-	480½	281	636½	393½	276½	335	-	-	-	-	-	-
<b>TOTALS</b> - - - - -	<b>18,091½</b>	<b>2,197½</b>	<b>7,686½</b>	<b>2,452½</b>	<b>1,081</b>	<b>1,698½</b>	<b>4,683</b>	<b>2,780½</b>	<b>509½</b>	<b>11,846½</b>	<b>221½</b>	<b>804½</b>	<b>536½</b>	<b>183½</b>	<b>1,836½</b>	<b>56,610½</b>	<b>51,661½</b>	<b>48,873</b>	<b>44,547</b>	<b>46,435½</b>	<b>43,405½</b>	<b>40,892</b>	-	-	-	-	-

Office of Public Works, Custom-house, Dublin, }  
16 June 1847.

Thos. Stickey, Accountant.  
H. J. Mason, Ass<sup>t</sup> Acc<sup>t</sup>.

SCHEDULE (B.)—continued.

RETURN, showing the TONNAGE of the IMPORTS and EXPORTS at the Principal Stations on the River Shannon, from 1st January to 31st December 1846—continued.

ARTICLES.	STATIONS.															TOTALS 1845.	TOTALS 1845.	TOTALS 1844.	TOTALS 1843.	TOTALS 1842.	TOTALS 1841.	TOTALS 1840.			
	Limerick.	O'Brien's Bridge.	Killaloe.	Lough Derg (Killaloe End.)	Scariff.	Lough Derg (Portumna End.)	Portumna.	Banagher.	Shannon Bridge.	Athlone.	Lecarrow.	Lanesborough.	Roonkey.	Drumana.	Carriek-on-Shannon.										
<b>LOADED:</b>	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Slates	8	-	91½	1,726½	5	1,959½	9½	-	-	41½	-	12	-	-	-	3,811	3,920½	3,808	4,482	4,743	4,467½	4,600	-	-	-
Tiles and Bricks	148	-	-	3½	-	-	-	-	-	20½	-	-	-	-	-	217½	194½	133½	53½	133½	355	254½	-	-	-
Coal	1,322½	-	-	-	-	-	16	-	20	6½	-	3½	-	10	-	1,376½	1,609½	879	1,201½	1,123½	1,441	2,293½	-	-	-
Iron not made into articles of merchandise.	128½	1½	37½	5	-	-	-	3½	20	6½	-	-	-	-	-	202½	219	244½	264½	282½	599	302½	-	-	-
Timber of all kinds	1,288½	-	24½	14	-	-	25	68½	16	8½	73	-	45	-	-	1,563½	1,621½	1,356	1,924½	1,924½	1,678½	3,223½	-	-	-
Hay and Straw	55	-	22½	2½	-	4½	38½	32½	-	4½	2	-	5	-	-	166½	267½	103½	79	71½	167½	78	-	-	-
Ores and Minerals	7	-	130½	-	-	-	-	-	-	-	-	-	-	-	-	142½	142	187½	283½	483½	635	925½	-	-	-
Salt	376½	-	-	-	-	-	-	-	-	-	-	-	5	-	-	391½	292½	270½	278½	232½	148½	135	-	-	-
Marble, foreign or manufactured.	10	-	59½	-	-	-	-	-	-	-	-	-	-	-	-	69½	51½	80½	42½	85	85	33	-	-	-
Mazure	1,206½	52	18	-	5	10	-	86	-	197½	-	4	44	-	28	1,651	2,240	1,973½	1,163	2,063½	1,932	1,626	-	-	-
Lime for building	15½	-	-	-	-	162	-	6½	-	-	-	-	959	-	-	1,142½	1,946½	1,193½	26½	222½	102	1	-	-	-
Building-stone and Flags	354½	-	2½	-	19	4	-	1½	-	-	2,180½	-	848½	-	-	3,415½	12,569½	5,096	201	744½	1,079½	251½	-	-	-
Sand and Gravel	40½	192	-	150	-	83	-	-	-	473½	-	-	40	-	-	899½	398½	351	706½	4,931	796½	72½	-	-	-
Turf	40½	-	-	2,938½	-	99½	2,134½	-	-	-	-	-	-	-	-	5,279½	5,218½	5,074½	4,846½	4,922½	4,829	1,621½	-	-	-
Grain	5,444½	145½	260½	191½	57½	144½	1,789½	238½	-	696½	2	-	202	-	1½	9,157	11,060½	11,396½	8,253½	8,534½	7,475	7,287	-	-	-
Floor, Meal, Malt and Starch.	920½	845½	90½	109½	14½	770½	83½	268½	-	20½	116	2½	-	-	20½	3,446½	5,354	3,445½	5,761	5,138	7,327½	4,249½	-	-	-
Butter and Eggs	312½	1½	92	¼	-	-	100½	-	-	-	-	-	-	-	-	506½	104½	126½	166½	15½	131	93½	-	-	-
Black Cattle and Horses	97½	-	96½	-	-	31½	98½	-	-	48	-	-	-	-	-	371½	269	142½	208	310½	154½	73½	-	-	-
Sheep	6½	-	27	2½	-	8½	57½	-	-	-	-	-	-	-	-	101½	157½	71½	65½	67½	147½	68½	-	-	-
Pigs	171	-	32½	-	-	89½	218½	6½	-	104½	-	-	-	-	-	623½	479	260½	532	298½	163½	139	-	-	-
Salted Provisions	838½	-	1	-	-	12	25½	-	-	1	-	-	-	-	-	879½	837½	483½	489	411½	656½	346½	-	-	-
Potatoes and other Vegetables.	192½	7	13½	48	-	5	37½	-	-	2½	1	4	-	-	8	321½	211	178½	325½	481	326	247	-	-	-
Groceries	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4½	-	½	2½	-	-	-
Wines and Spirits	171	-	-	-	-	-	1	-	-	5½	-	-	-	-	-	177½	164½	19	4	½	11½	1	-	-	-
Porter, Beer and Ale	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1½	9	1	1	½	11	-	-	-	-
Bale-goods, Hardware and General Merchandise.	2,154½	11½	174	12½	2½	105	154	45½	5½	706½	-	-	-	-	-	3,370½	3,267	2,571½	2,355	2,470	2,241½	3,117½	-	-	-
Tobacco	27½	-	-	-	-	-	-	-	-	-	-	-	-	-	-	27½	-	1½	8½	10½	-	-	-	-	-
Military Baggage	-	-	-	-	-	-	-	-	-	19½	-	-	-	-	-	19½	85½	16½	115	37	71½	131½	-	-	-
Machinery	-	-	23	-	-	-	-	25	1	-	-	-	38	23½	-	110½	732½	465½	350	139½	80½	-	-	-	-
<b>TOTALS</b>	<b>15,335½</b>	<b>1,256½</b>	<b>1,210½</b>	<b>5,204</b>	<b>83</b>	<b>3,490</b>	<b>4,754½</b>	<b>840</b>	<b>44</b>	<b>2,068½</b>	<b>2,387</b>	<b>26½</b>	<b>1 ½</b>	<b>261½</b>	<b>59½</b>	<b>39,483</b>	<b>53,423½</b>	<b>39,929½</b>	<b>34,196½</b>	<b>39,880½</b>	<b>37,334½</b>	<b>51,178</b>	-	-	-

D 3

1st Class chargeable per Ton, and 1st and 2d chargeable per Box-load.

2d Class per Ton.

Office of Public Works, Custom-house, Dublin, }  
16 June 1847.

Thos. Stickey, Accountant.  
H. J. Mason, Ass<sup>t</sup> Acc<sup>t</sup>.

IMPROVING THE NAVIGATION OF THE SHANNON.

## SCHEDULE (C).

RETURN, showing the AMOUNT of TRAFFIC passing to and from the River *Shannon*, through the Grand and Royal Canals.

ARTICLES.	From Canals to River Shannon.			From River Shannon to Canals.			
	Grand Canal.	Royal Canal.	TOTALS.	Grand Canal.	Royal Canal.	TOTALS.	
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	
Slates - - - - -	8½	-	8½	1,155½	-	1,155½	
Tiles and Bricks - - - - -	364	4	368	-	-	-	
Coal - - - - -	817	30½	847½	57	-	57	
Iron not made into articles of merchandise -	242	11¾	253¾	68½	-	68½	
Timber of all kinds - - - - -	610	70½	680½	443	-	443	
Hay and Straw - - - - -	1½	-	1½	186	-	186	
Ores and Minerals - - - - -	2½	-	2½	137½	-	137½	
Salt - - - - -	177½	-	177½	101½	-	101½	
Marble, foreign or manufactured - - - - -	64¾	-	64¾	74¼	-	74¼	
Manure - - - - -	319½	-	319½	3	-	3	
Lime for building - - - - -	-	-	-	-	-	-	
Building Stone and Flags - - - - -	75½	-	75½	98½	-	98½	
Sand and Gravel - - - - -	-	40	40	-	-	-	
Turf - - - - -	479½	-	479½	137½	-	137½	
Grain - - - - -	339¾	-	339¾	3,709½	227¾	3,937½	
Flour, Meal, Malt and Starch - - - - -	1,333½	-	1,333½	1,894½	-	1,894½	
Butter - - - - -	-	-	-	152¾	-	152¾	
Black Cattle and Horses - - - - -	39½	-	39½	342½	-	342½	
Sheep - - - - -	2	-	2	89½	-	89½	
Pigs - - - - -	1½	-	1½	433¾	-	433¾	
Salted Provisions - - - - -	136	-	136	734½	-	734½	
Potatoes and other Vegetables - - - - -	48½	-	48½	40¾	-	40¾	
Groceries - - - - -	76½	-	76½	-	-	-	
Wines and Spirits - - - - -	-	-	-	174¾	-	174¾	
Porter, Beer and Ale - - - - -	1	-	1	-	-	-	
Bale-goods, Hardware and general merchandise	9,833½	61¾	9,895½	3,407¾	23¾	3,431½	
Tobacco - - - - -	-	-	-	-	-	-	
Military Baggage - - - - -	125¾	-	125¾	64½	-	64½	
Machinery - - - - -	254½	-	254½	76	-	76	
TOTALS - - - - -	15,352¾	218½	15,571	13,581½	251½	13,833	
	Yrs.						
Comparative Return of Traffic passing to and from the River Shannon through the Grand and Royal Canals - - - - -	1840	12,877¾	1,389½	14,267	14,548	1,919	16,721
	1841	13,250½	1,741	14,991½	15,329½	1,924¾	17,254
	1842	12,823½	1,362	14,185½	13,354½	3,118½	16,472½
	1843	11,173½	1,305¾	12,479	13,532½	2,683½	16,215¾
	1844	9,446½	1,478	10,924½	13,863½	975	14,838½
	1845	11,687½	1,290	12,977½	17,285¾	1,275½	18,561
1846	15,352¾	218½	15,571	13,581½	251½	13,833	

Office of Public Works,  
Custom-house, Dublin,  
16 June 1847.

Thos. Stickney, Accountant.  
H. J. Mason, Ass<sup>t</sup> Acc<sup>t</sup>.

SCHEDULE (D.)

RETURN, showing the TONNAGE of the IMPORTS and EXPORTS at the Stations on the Lower Shannon, from 1st January to 31st December 1846.

ARTICLES.	STATIONS.						TOTALS.
	Querrin Quay.	Kilrush Pier.	Saleen Quay.	Kilteery Quay.	Kildysart Quay.	Clare Quay.	
LANDED:	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Slates - - - - -	-	-	-	13	-	261	274
Tiles and Bricks - - - - -	$-\frac{1}{2}$	1	-	8	-	6	$15\frac{1}{2}$
Coal - - - - -	-	250	-	-	-	2,064	2,314
Iron, not made into articles of merchandise.	-	$126\frac{1}{2}$	4	-	$-\frac{1}{2}$	175	$305\frac{3}{4}$
Timber of all kinds - - - - -	7	$274\frac{1}{2}$	$115\frac{1}{2}$	3	-	2,107	2,507
Hay and Straw - - - - -	$1\frac{3}{4}$	1	-	-	-	-	$2\frac{3}{4}$
Ores and Minerals - - - - -	-	-	-	-	-	-	-
Salt - - - - -	-	225	$33\frac{1}{2}$	-	-	450	$708\frac{1}{2}$
Marble, foreign or manufactured - - - - -	-	-	-	-	-	-	-
Manure - - - - -	18	-	2	327	151	556	1,054
Lime for building - - - - -	-	354	-	-	-	-	354
Building Stone and Flags - - - - -	-	155	$50\frac{1}{2}$	-	-	322	$527\frac{1}{2}$
Sand and Gravel - - - - -	-	250	12	72	-	70	404
Turf - - - - -	-	25	$3\frac{1}{2}$	-	-	146	$174\frac{1}{2}$
Grain - - - - -	1	422	-	-	-	753	1,176
Flour, Meal, Malt and Starch - - - - -	-	2,742	174	-	-	3,804	6,720
Butter - - - - -	-	$6\frac{1}{2}$	-	-	-	-	$6\frac{1}{2}$
Black Cattle and Horses - - - - -	$-\frac{1}{2}$	$91\frac{3}{4}$	$1\frac{1}{2}$	2	-	-	$95\frac{3}{4}$
Sheep - - - - -	-	$4\frac{1}{2}$	-	$1\frac{1}{2}$	-	-	6
Pigs - - - - -	-	$15\frac{3}{4}$	$18\frac{1}{2}$	2	-	-	$36\frac{1}{4}$
Salted Provisions - - - - -	$1\frac{1}{2}$	$119\frac{1}{2}$	$39\frac{1}{2}$	-	-	29	189
Potatoes and other Vegetables - - - - -	$-\frac{3}{4}$	$-\frac{1}{4}$	-	-	-	-	1
Groceries - - - - -	-	$199\frac{3}{4}$	-	-	$-\frac{1}{4}$	-	200
Wines and Spirits - - - - -	-	395	-	-	-	-	395
Porter, Beer and Ale - - - - -	-	$181\frac{3}{4}$	-	-	-	-	$181\frac{3}{4}$
Bale-goods, Hardware, and general merchandise.	6	398	$160\frac{1}{2}$	-	3	58	$625\frac{1}{2}$
Tobacco - - - - -	-	-	-	-	-	-	-
Military Baggage - - - - -	-	-	-	-	-	-	-
Machinery - - - - -	-	15	-	-	-	-	15
TOTALS - - - - -	$36\frac{3}{4}$	$6,253\frac{1}{2}$	$614\frac{1}{2}$	$428\frac{1}{2}$	$154\frac{3}{4}$	10,801	18,289
Comparative Return of Tonnage of Articles landed at the Piers and Quays above named, from commencement of collection by the Commissioners	Yrs.						
1841	-	6,419	-	-	-	-	6,419
1842	-	3,960	-	-	-	-	3,960
1843	416	$3,941\frac{1}{2}$	-	255	64	-	$4,676\frac{1}{2}$
1844	70	2,832	$20\frac{1}{2}$	676	$9\frac{1}{2}$	870	$4,477\frac{3}{4}$
1845	$78\frac{1}{2}$	$4,270\frac{3}{4}$	$617\frac{1}{2}$	375	$191\frac{3}{4}$	6,086	$11,619\frac{1}{2}$
1846	$36\frac{3}{4}$	$6,253\frac{1}{2}$	$614\frac{1}{2}$	$428\frac{1}{2}$	$154\frac{3}{4}$	10,801	18,289

Office of Public Works, }  
 Custom-house, Dublin, }  
 16 June 1847.

Thos. Stickney, Accountant.  
 H. J. Mason, Ass<sup>t</sup> Acc<sup>t</sup>.

(continued)

SCHEDULE (D.)—continued.

ARTICLES.	STATIONS.						TOTALS.
	Querrin Quay.	Kilrush Pier.	Saleen Quay.	Kilteery Quay.	Kildysart Quay.	Clare Quay.	
LOADED :	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Slates - - - - -	—	—	—	—	—	—	—
Tiles and Bricks - - - - -	- -	2	- -	- -	- -	- -	2
Coal - - - - -	- -	- -	- -	83	- -	- -	83
Iron not made into articles of merchandise.	- -	8	- -	- -	- -	17	25
Timber, of all kinds - - - - -	- -	4½	2	- -	- -	15	21½
Hay and Straw - - - - -	½	- -	- -	- -	- -	- -	½
Ores and Minerals - - - - -	- -	- -	- -	- -	- -	410	410
Salt - - - - -	- -	23½	- -	- -	- -	- -	23½
Marble, foreign or manufactured - - -	—	—	—	—	—	—	—
Manure - - - - -	—	—	—	—	—	—	—
Lime for building - - - - -	—	—	—	—	—	—	—
Building Stone and Flags - - - - -	- -	- -	- -	- -	- -	1,304	1,304
Sand and Gravel - - - - -	- -	90	- -	- -	- -	- -	90
Turf - - - - -	2,697½	- -	325	- -	- -	- -	3,022½
Grain - - - - -	12½	5,802¾	2,807½	6	10¾	6,050	14,653½
Flour, Meal, Malt and Starch - - - - -	- -	271½	- -	- -	- -	1,703	1,974½
Butter - - - - -	- -	100	- -	- -	½	34	134½
Black Cattle and Horses - - - - -	- -	49½	43	- -	17½	½	110½
Sheep - - - - -	- -	2¼	1	- -	13¾	1¾	18½
Pigs - - - - -	4½	1,026½	65½	- -	5¼	1½	1,103
Salted Provisions - - - - -	- -	6	- -	- -	- -	- -	6
Potatoes and other Vegetables - - - - -	1¾	- -	- -	- -	- -	- -	1¾
Groceries - - - - -	—	—	—	—	—	—	—
Wines and Spirits - - - - -	—	—	—	—	—	—	—
Porter, Beer and Ale - - - - -	- -	½	- -	- -	- -	- -	½
Bale-goods, Hardware and general merchandise.	- -	155½	- -	- -	- -	7	162½
Tobacco - - - - -	—	—	—	—	—	—	—
Military Baggage - - - - -	- -	- -	- -	- -	- -	6	6
Machinery - - - - -	—	—	—	—	—	—	—
TOTALS - - -	2,716¾	7,541¾	3,244	89	47¼	9,549¾	23,152½
Comparative Return of Tonnage of Articles loaded at the Piers and Quays above named, from commencement of collection by the Commissioners - - -	Yrs.						
1841 - - -	- -	6,405	- -	- -	- -	- -	6,405
1842 - - -	- -	6,201¾	- -	- -	- -	- -	6,201¾
1843 - - -	2,870	7,520	- -	54½	30½	- -	10,475
1844 - - -	2,660¾	5,222½	340¾	9½	17¾	2,641	10,892½
1845 - - -	4,648	7,480¾	2,914¾	49	30	11,004½	26,127
1846 - - -	2,716¾	7,541¾	3,244	89	47¼	9,549¾	23,152½

Office of Public Works,  
Custom-house, Dublin,  
16 June 1847.

Thos. Stickney, Accountant.  
H. J. Mason, Asst Acct.

SCHEDULE (E.)

RETURN, showing the Number of PASSENGERS that Embarked at the under-mentioned Places on the River *Shannon* by the City of Dublin Steam Packet Company's Boats, during the Year 1846, from the 1st January to the 31st December 1846.

MONTHS.	Limerick up.	Killaloe.	Williams-town.	Portumna.	Banagher.	Shannon Harbour.	Athlone.	TOTALS.
	Number.	Number.	Number.	Number.	Number.	Number.	Number.	Number.
January - - -	392	234	77½	126	26	388	50	1,293½
February - - -	475	270½	74½	160	69½	323	25	1,397½
March - - -	542½	306½	76½	158	130	327½	34	1,575
April - - -	713½	337½	111	272½	107	405½	47	1,994
May - - -	673	314½	78	240½	76	436½	25	1,843½
June - - -	684	318½	115	145½	31	721½	18	2,033½
July - - -	630½	371	89	196	41	614½	20	1,962
August - - -	773½	427½	93	282½	66½	597½	13	2,253½
September - - -	897½	394	110	247½	133½	635½	10	2,428
October - - -	866½	370	86½	278	106½	483	16	2,206½
November - - -	683½	267	90	217½	33½	467	14	1,772½
December - - -	386	258	68½	84	44½	243½	27	1,111½
TOTALS - - -	7,717½	3,869	1,069½	2,408	865	5,643	299	21,871

Note.—The fractions introduced in the above Return represent children.

Office of Public Works, }  
 Custom-house, Dublin, }  
 June 1847.

SCHEDULE (F.)

TABLE, showing the AVERAGE NUMBER of PERSONS employed on the several WORKS, with the Periods of Employment, during the Year 1846.

NAME OF WORK.	PERIOD.	Number of Working Days.	Average Number of Persons employed Daily.	Equivalent Number of Days' Work.
Foynes - - - -	From 16 Nov. to 31 Dec. 1846	39	56	2,167
Limerick Navigation - - -	— 1 Jan. to 31 Dec. "	313	25	7,825
Killaloe - - - -	— 5 Jan. to 29 Oct. "	152	29	4,449
Mount Shannon - - - -	— 30 April to 19 Sept. "	122	9	1,098
Leahinch - - - -	— 27 July to 9 Aug. "	8	19	156
Derryholmes - - - -	— 1 Jan. to 18 July "	143	55	7,872
Bishop's Island - - - -	— 25 Mar. to 5 Oct. "	136	16	2,259
Garrymore - - - -	— 1 Jan. to 31 Dec. "	28	18	517
Shannon Bridge - - - -	— 1 Jan. to 31 Dec. "	313	22	6,961
Clerhaun - - - -	— 26 Jan. to 25 Oct. "	138	149	20,584
Ballynatave - - - -	— 1 Mar. to 30 Dec. "	15	22	331
Athlone - - - -	— 1 Jan. to 31 Dec. "	313	125	39,120
Curreen - - - -	— 15 June to 30 Dec. "	148	25	3,674
Erra - - - -	— 3 Aug. to 28 Dec. "	49	19	939
Cloobearlaw - - - -	— 15 June to 8 Aug. "	41	69	2,826
Lodge - - - -	— 1 Jan. to 31 Dec. "	60	16	993
Tarmonbarry - - - -	— 1 Jan. to 31 Dec. "	313	95	29,737
Curlew Shoal - - - -	— 1 Jan. to 31 Dec. "	313	95	29,737
Cloondrah - - - -	— 1 Nov. to 31 Dec. "	40	95	3,791
Clooneen Cox - - - -	— 1 Jan. to 31 Dec. "	313	71	22,399
Bird Island - - - -	— 15 Sept. to 25 Oct. "	35	162	5,683
Roskey - - - -	— 1 Jan. to 31 Dec. "	313	61	18,975
Carnadoe - - - -	— 1 Jan. to 21 Oct. "	252	36	9,054
Janestown Canal and River - - - -	— 1 Jan. to 31 Dec. "	313	342	107,064
Carrick-on-Shannon - - - -	— 1 Jan. to 31 Dec. "	305	70	21,311
Annaleckey - - - -	— 7 Sept. to 31 Dec. "	98	161	15,803
Doctor's Weir - - - -	— 7 Sept. to 31 Dec. "	90	113	10,202
Cootehall - - - -	— 11 May to 25 Oct. "	143	167	23,908
Knockvicar - - - -	— 1 Jan. to 31 Dec. "	305	231	70,662
TOTAL - - - -		313	1,407	440,360

E. Hornsby, Ass<sup>t</sup> Sec<sup>y</sup>.

## SCHEDULE (G.)

RETURN of WORKS performed by the *Victoria*, *Albert*, *Prince* and *Princess Alice* Dredgers,  
from 1st January to 31st December 1846.

NAME of DREDGER.	Name of Works on which Employed.	Number of Days on which Dredging was done.	Number of Men employed on Dredging Operations.	Number of Cubic Yards Dredged.	Average Quantity Dredged each Day.	Description of Material Dredged.
The Victoria	Killaloe - - - -	107	1,988	4,721	44½	indurated clay and gravel.
	Leahinch - - - -	8½	156	411	48½	coarse gravel and stones.
	Derryholmes - - - -	70	1,360	4,613	66	indurated clay, gravel and boulder stones.
	Garrymore - - - -	19	310	1,775	93½	- ditto - ditto.
	Total for Victoria Dredger - - - -	204½	3,814	11,520	75	
The Albert	Athlone - - - -	52	1,015	15,347	295	clay, sand and stones.
	Ballynatave - - - -	15	331	3,840	256	gravel, sand and stones.
	Bishop's Island - - - -	136	2,259	11,879	87	gravel and large stones.
	Shannon Bridge - - - -	45	806	6,766	299	clay, gravel and sand.
	Garrymore - - - -	9	207	769	85	- ditto - ditto and stones.
	Clerhaun - - - -	27	536	1,406	52	gravel and stones.
Total for Albert Dredger - - - -	284	5,154	40,007	104		
The Prince	Killaloe - - - -	152	2,461	5,119	33½	coarse gravel and stones.
	Derryholmes - - - -	75	1,079	3,067	40½	- ditto and stank material.
	Total for Prince Dredger - - - -	227	3,540	8,186	36	
The Princess Alice	Erra - - - -	49	939	5,633	115	clay, gravel and boulder stones.
	Cloonberlaw - - - -	20	297	1,456	73	- ditto.
	Lodge - - - -	60	993	6,620	110	- ditto.
	Tarmonbarry - - - -	10	182	872	87	- ditto.
	Total for Princess Alice Dredger - - - -	139	2,411	14,581	105	

E. Hornsby, Assis<sup>t</sup> Secretary.

SCHEDULE (H.)

RETURN, showing the QUANTITY of MATERIALS delivered on Works from 1st January to 31st December 1846.

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NAMES OF WORKS.	STONE.							TIMBER.			IRON.		Roman Cement.	Concrete.	Paddle.	Lime.	Coals.	Turf.	Patent Felt.	Pig Lead.	Gun- powder.	Patent Fuse.	Mooring Rings.
	Fair Dressed. Ashlar.	Rough Ashlar.	Rubble Masonry.	Rubble Stone.	Lime Stone.	Pitching or Paving.	Mooring Posts.	Foreign.	Native.	Planks.	Wrought.	Cast.											
	Cube feet.	Cube feet.	Cube yds.	Tons.	Tons.	Superfic. yards.	No.	Cube feet.	Cube feet.	Lineal feet.	Cwt.	Tons.											
Foynes	-	2,600	-	180	-	-	-	683	100	2,760	63	-	-	-	-	5	-	-	-	-	-	-	-
Limerick Navigation	160	510	124	300	-	150	-	260	-	-	2½	1½	30	-	114	22	-	42	-	-	-	-	-
Mount Shannon	120	740	23	1,216	-	98	-	-	60	-	-	-	-	48	-	-	-	-	-	-	-	-	3
Derryholmes	-	-	120	-	-	-	-	156	348	680	70	-	-	-	-	98	50	5,400	5	300	80	-	-
Bishop's Island	-	-	-	-	-	-	-	800	250	-	380	8	-	-	-	180	-	1,300	-	-	-	-	-
Garrymore	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Shannon Bridge	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Clerhaun	-	-	240	-	-	-	-	280	3,288	3,680	70	2	-	-	196	70	12,000	6	1,700	548	-	-	-
Athlone	31,102	19,894	1,645	145	515	15	-	490	130	-	15	45	-	8	1,266	2,000	16	5,115	-	-	618	87	-
Curraea	-	-	95	285	-	-	-	400	-	877	-	-	-	-	50	-	330	-	-	-	-	12	-
Cloonberlaw	-	-	-	-	-	-	-	120	-	450	3½	-	-	-	-	10	930	-	-	250	195	-	-
Cloondrah.	-	-	-	-	-	-	-	-	-	-	Tons.	-	-	-	-	-	-	-	-	-	-	-	-
Tarmonbarry	1,940	-	80	620	-	121	3	180	870	190	5½	-	-	-	-	47½	3,327	-	-	6,200	308	-	-
Clooneu Cox & Cloonfad.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	560	250	-	-
Rooskey	558	-	147	1,074	42	596	7	-	2,800	-	8½	2	1	-	125	35	6,000	155	1	1,680	750	-	-
Carnadoe	344	238	95	-	42	2,363	3	-	-	-	½	-	-	-	125	-	-	-	-	-	-	-	-
Jamestown Canal	25,685	5,266	1,946	1,073	3,000	364	-	624	250	-	5	3	6	30	330	7,000	260	600	100	-	500	50	-
Jamestown River	10,182	3,689	848	13	2,500	-	-	900	750	1,200	20	7	3	138	30	6,000	1,190	2,400	1	14,200	1,420	-	-
Carrick-on-Shannon	15,551	7,354	1,676	1,728	432	1,948	6	-	100	-	38	-	-	-	669	3,500	20	840	-	-	100	-	-
Cootehall	-	2,600	550	742	83	-	-	-	-	1,104	-	-	-	-	554	-	-	-	-	-	875	140	-
Knockvicar	35,418	13,789	1,866	2,519	494	1,000	8	456	874	7,872	161	-	-	-	930	1,689	646	400	-	-	3,557	331	-
TOTALS	121,060	56,680	9,455	9,896	7,108	6,657	27	5,340	9,790	18,813	782½	68½	40	224	3,559	21,359	2,529½	37,384	1,555	13	30,540	4,261	3

IMPROVING THE NAVIGATION OF THE SHANNON.

E. Hornsby, Assis<sup>t</sup>. Secretary.

35

SCHEDULE I.)

RETURN of the Quantity of DREDGING and EXCAVATION, also of the Length of DAMS including the Parts excavated, and the Number and Description of ENGINES used on the WORKS, from the 1st January to 31st December 1846.

NAMES OF WORKS.	Dredging.	Excavation.		Total Quantity Dredged and Excavated.	Length of Dams including the Parts to be Excavated.	Number of Engines.	Description of Engines.	Horse Power.	Number of Pumps.	{Description and Dimensions of Pumps.	Maximum Quantity of Water discharged per Minute.
	Clay, Gravel and Stones.	Clay and Gravel.	Rock.								
	<i>Cubic yards.</i>	<i>Cubic yds.</i>	<i>Cubic yds.</i>	<i>Cubic yards.</i>	<i>Lineal yards.</i>						<i>Gallons.</i>
Foynes	-	3,300	-	3,300	-	-	-	-	2	Hand lever, 26 feet long, 10 inches square.	
Killaloe	9,840	-	-	9,840	-	-	-	-	-	-	
Leahinch	-	411	-	411	-	1	Steam-engine.	-	-	-	
Derryholmes	7,680	1,191	-	8,871	300	3	Steam-engines	12, 8, 4	12	-- Six of 14 inches, one of 12 inches, two of 11 inches, and three of 9 inches diameter; one screw-pump, 24 inches diameter.	2,797
Bishop's Island	11,879	7,535	-	19,414	-	-	-	-	-	-	-
Garrymore											
Shannon Bridge											
Clerhaun	1,905	1,666	3,504	7,015	680	4	Steam-engines	12, 12, 8, 4	16	-- Six of 14 inches, four of 13 inches, two of 12 inches, two of 11 inches, two of 9 inches; one screw-pump, 24 inches diameter.	3,574
Athlone	-	5,392	-	5,392	Coffee-dam	4	-- 1 Steam-engine and 3 Water-wheels.	10 & 35	8	-- Four wooden, 17 x 20, two ditto 15 x 14, two ditto 12 inches diameter.	6,782
Curreen	-	3,930	-	3,930	602	1	High-pressure steam-engine	6	2	14 inches diameter	800
Erra Shoal	872	-	-	872	-	-	-	-	-	-	-
Cloonberlaw	1,456	1,894	1,156	4,506	30	1	High-pressure steam-engine	6	2	14 inches diameter	800
Lodge Cut	6,620	-	-	6,620	-	-	-	-	-	-	-
Cloondrah	-	4,700	-	4,700	-	-	-	-	-	-	-
Tarmonbarry	5,633	8,970	7,249	21,852	320	1	High-pressure steam-engine	6	4	-- Two of 9 inches, and two of 10 inches diameter.	1,450
Clooneen Cox and Cloafel	-	16,080	-	16,080	850	-	-- 2 Chain-pumps, 1 Double Lifting-trough.	-	-	-	1,118
Bird Island	-	5,205	-	5,205	562	-	1 Double Lift-pump	-	-	-	381
Roonkey	-	4,000	150	4,150	173	1	Chain-pump	-	-	-	297
Carnadoe	-	12,091	-	12,091	277	-	-	-	-	-	-
Lough Nanogue	-	7,500	-	7,500	-	-	-	-	-	-	-
Jamestown Canal	-	500	790	1,290	-	1	Steam-engine	8	-	Employed pulling waggons.	-
Drumsna	-	9,525	7,919	17,447	600	1	Steam-engine	8	-	14 x 14 x 18 x 20 x 4	1,019
Mount Campbell	-	14,784	6,654	21,448	233	-	-	-	-	-	-
Jamestown River	-	23,948	11,334	34,382	380	-	-	-	-	-	-
Carrick-on-Shannon	-	-	-	4,600	-	-	-	-	-	-	-
Cotehall	-	11,036	12,463	23,499	600	-	-	-	3	Two of 12 inches, and one screw-pump	675
Knockvicar	-	55,357	34,995	90,352	766	2	High-pressure steam-engines	8 & 4	6	Two of 14 inches, and four of 12 inches	2,346
Annaleckey	-	4,174	3,982	8,156	250	-	-	-	2	Two of 14 inches	335
Doctor's Weir	-	6,509	1,731	8,240	250	-	-	-	2	Two of 14 inches	335
	45,885	208,741	91,937	351,063	6,873	20	-	-	59	-	22,709

F. Hornby, Assist<sup>t</sup> Secretary.