

# Report

ON THE

ADMINISTRATION AND WORKING

OF THE

GOVERNMENT NIGER TRANSPORT  
SERVICE.

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# REPORT ON THE ADMINISTRATION AND WORKING

OF THE

## GOVERNMENT NIGER TRANSPORT SERVICE

1. The Government Niger Transport Service is designed to undertake transport of all Government and public passengers and goods to and from stations on the Niger River between Burutu and Jebba and up the Benue River between Lokoja and Yola. Object of this Service.

2. Before considering the working of the Niger Transport Service it will be as well to give an outline of the river itself. The River Niger.

The present main outlet of the Niger River is by the creek known as the Forcados River and it is near the mouth of this creek at Burutu that the southern base of this Transport Service is situated. Some 5 miles further down the creek, nearer its mouth, is Forcados, where the Southern Nigeria Marine have a depot and workshops and where ocean-going steamers lie up and tranship passengers and cargo to the so-called branch boats. The Forcados River.

Before, however, ocean steamers can enter the river at Forcados there is a severe and somewhat extensive bar to be crossed.

The depth of water over this bar varies, but on the 21st October, 1911, at high tide there was a depth of about 19 ft. 3 ins.

3. Opposite Forcados itself the river is several miles in width, and there is in the main channel ample depth of water ; it is at this point too that the main channel or creek to Warri takes off, running in a north-easterly direction.

Forcados itself is little more than a strip of reclaimed land and its only importance lies in the fact that it is a marine transhipment and coaling station and depôt for the Southern Nigeria Marine boats plying in the neighbouring creeks and waterways. The surrounding country is all swampy land, covered with a dense growth of trees and creepers.

4. Five miles due east up this creek and on the same bank, namely, the south, lies Burutu. Burutu, like Forcados, is on a narrow strip of natural ground behind and around which are creeks and swamps. The importance of Burutu lies in the fact that it is a transhipment station between branch boats and river steamers, when the river is too low for the former, and is the southern base or depot for the Government Niger Transport Service.

5. Opposite Burutu the river narrows down to about one mile in width with a depth of from 1.5 to 17 ft. From Burutu the Forcados River winds about considerably, passing between flats or swamps covered with a dense growth of mangrove and other trees, but bearing generally due east until Syama trading station, about 54 miles from Forcados, is reached. From this point the river winds somewhat less and the banks gradually increase in height ; the general bearing is, however, still due east and passing the trading

station of Sagbama at about 90 miles from Forcados, the trading station of Asseh, close to the junction with the Niger proper and some 108 miles from Forcados, is reached.

From Burutu to its junction with the Niger the Forcados River varies in width from half-a-mile to a mile. There is always a channel 5 ft. deep and during the high river months, July to October, it is navigable for steamers having a draft of 11 ft.

The junction  
with the  
Niger.

6. Between the Niger at this point, however, and the seaboard lying between Forcados on the west and Bonny on the east the country is a network of channels and creeks. It is only since April, 1907, that the southern channel leading out of the Niger at this junction has been closed to steamers.

The outlet for this channel is at Akassa, and its closing up is due to an island having formed across the entrance near Samabri. This island is merely a sandbank, already covered with long grass and a few small trees, and there is consequently nothing to prevent it disappearing as rapidly as it appeared. The consequences of such a thing happening might prove very serious, as the bulk of the water brought down by the Niger would doubtless find its way down to the sea by this channel, leaving the Forcados River to gradually silt up.

The Niger  
proper.

7. On entering the Niger proper, the stream widens out, the banks being seldom less and often more than a mile apart ; the stream now turns north and bears generally in that direction as far as Lokoja. The country, too, on either bank gradually becomes more open. The depth of water, however, is more variable, and during the low water month shallows form. The first of these is just above Odugri trading station and about 50 miles above the junction ; here there is said to be probably only some 4 ft. of water at low river.

Shallows.

From this point on to Onitsha the worst shallow is at the Oko flats crossing, about 87 miles from the junction and only some 6 miles below Onitsha itself. At this crossing it is said that the channel at lowest river does not probably exceed 3 ft. in depth. Onitsha itself, a district headquarters and important trading station on the left or eastern bank, is reached at mile 201 from Forcados. The surrounding country has by this time opened out, the banks as a rule are well defined and at Onitsha itself hills appear.

Onitsha.

About 15 miles north of Onitsha there is another shallow where the channel is stated to be probably not more than 3 ft. deep at lowest water.

The trading stations of Illah and Illushi, both on the right or western bank at miles 227 and 246 from Forcados respectively, are then passed and 6 miles north of Illushi there is another bad shallow with a 3-ft. channel at lowest water.

Idah.

From this point on to Idah, an important trading station on the left or eastern bank close to the boundary between Southern and Northern Nigeria, there are no more bad shallows. Idah is at mileage 281 from Forcados, the river up to this point having run through Southern Nigerian territory.

Egori, a trading station on the right or west bank of the Niger 285 miles from Forcados, is the first station in Northern Nigeria, and 17 miles further up the river there is another bad shallow said to be only some 2 ft. 6 ins. deep at lowest water.

From this point on the country becomes undulating and hilly on either bank and the navigation of the river up to Lokoja more difficult owing to rocks which outcrop in the bed. There is also a bad crossing some 5 miles south of Lokoja over which the channel at lowest water is said to be only 2 ft. 6 ins. deep.

Lokoja, the first Capital of Northern Nigeria, is situated on the western bank of the Niger some 337 miles up the river from Forcados. It is situated at the junction of the Niger and Benue rivers and is important as a District Headquarters. It is also important as the headquarters of the Niger Transport Service and as a large trading centre. There are some 90 Europeans stationed at Lokoja, which is also the headquarters of the 2nd battalion of the W.A.F.Fs., and there is a large Native town which is rapidly increasing. There is a commanding hill, some 500 to 600 ft. in height, known as Mount Pattah, immediately behind Lokoja. Opposite Lokoja is the junction of the Benue River with the Niger, the former river flowing in from the east. The Niger by this time has narrowed down considerably and varies in width from about half-a-mile to one mile, but at the confluence with the Benue the united waters of these two big rivers extend for perhaps a mile and a-half from bank to bank.

From Lokoja on to Baro, 407 miles from Forcados, that is to say, for some 70 miles north of Lokoja, the Niger bends slightly to the west and the channel, which seldom exceeds from 2,000 to 3,000 ft., in width, narrows considerably. On this section also there are five bad shallows, the channel over which during the low water season does not exceed some 2 ft. 6 ins. in depth.

Baro is situated on the east bank of the Niger and is important as being the base of the Baro Kano Railway and until recently the headquarters of the Railway staff ; here the workshops and stores are located and all the material for construction, including rolling stock, was landed.

As this is also the northern terminus for the regular service of the Niger Government Transport vessels, it is unnecessary to follow the course of the Niger further. Suffice it to say that the Niger continues for another 10 miles or so as far as Egasa slightly west of north and then bends sharply to the west, bearing but very little north of west as far as Jebba, which is about 130 miles north of Baro. At Jebba the extension of the Lagos Railway crosses the Niger and navigation becomes so difficult as to be impracticable for any but the smallest craft.

8. In connection with the above outline it must be explained that at the time I made my journey up the river, though the water was then falling, it was only a few feet below its highest level for the year. Further, that the remarks in regard to the shallows mentioned have been abstracted from information given me and are not based on any personal observations. Briefly summarised, it may be stated that there is one bad crossing just south of Onitsha, three or four bad crossings between Onitsha and Lokoja, and some five between Lokoja and Baro.

There are many more shallows, but the above are the worst, though they are of course liable to vary considerably both as regards position and depth of channel from year to year.

9. The season of lowest river may be taken as extending over three months from the middle of March until the middle of June, the period of

Periods of  
High, Low  
and Mean  
River.

highest river over the three months August, September and October, and the periods intermediate between these as mean river. During high river, ocean steamers and branch boats with a tonnage of 1,000 tons and drawing 10 ft. can go up as far as Baro, and during the periods of mean river, steamers drawing from 4 to 5 ft. can, as a rule, get up to the same point. During periods of low river, steamers of 3-ft. draft only can get up.

Benue River

10. No personal inspection whatsoever was made of the Benue River, but from information furnished it has been ascertained that the period of high water navigation is much more limited than on the Niger, whilst the depth of water is less and the portion open to navigation by ocean steamers limited to Loko, about 85 miles from Lokoja. Thus the high river period on the Benue can only be taken as August and September and then this river is only navigable for large steamers as far as Loko. During these two months and during July and October, stern wheelers drawing 4 to 6 ft. can go up as far as Yola, some 467 miles from Lokoja. Mean river may be considered as extending from May to July and again from October to December, during which periods stern wheelers drawing 4 to 6 ft. of water can, as a rule, get up as far as Loko.

For the four months January to March, however, the period of low river on the Benue, all navigation even up to Loko is limited to steam and native canoes.

## EXISTING ORGANISATION.

Staff.  
Europeans.

11. The staff of the Government Niger Transport Service, as at present organised, consists of the following :-

### OFFICERS.

Marine Superintendent.  
Deputy Marine Superintendent.  
Senior Assistant Marine Superintendent.  
Seven Marine Officers.

### SENIOR SUBORDINATE STAFF.

Two Senior Engineers.  
Three Engineers.  
One Marine Engineer.  
One Shop Superintendent.

### SUBORDINATE STAFF.

One Supervising Fitter and Smith.  
Two Boilermakers.  
One Plater.  
One Shipwright.  
One Supervising Fitter and Smith.

### ACCOUNTS STAFF AND STOREKEEPERS.

One Chief Accountant.  
Two Accountants.  
Two Storekeepers.

In addition to the above, sanction has been asked to the appointment of three Beach Masters.

Briefly summarised the establishment of European staff as sanctioned consists of :-

- 10 Administrative and Executive Officers.
- 7 Engineers ranking as Senior Subordinates.
- 6 Subordinates.
- 5 Office Staff and
- 3 Subordinates, sanction to whose appointments is awaited.

In addition to the above, there is, of course, the usual complement of Native <sup>Native staff.</sup> staff, consisting of Native Masters, Engineers, Mechanics and Fitters, Crews, Stokers and coolies for beach work.

### COMPOSITION OF FLEET.

12. The fleet of vessels consists of :—

Fleet.

The Stern Wheelers	“ Corona ”	...	150 tons.
	“ Valiant ”	...	120 tons.
	“ Empire ”	...	100 tons.
	“ Sarota ”	...	100 tons.
	“ Sultan ”	...	25 tons.
	“ Kapelli ”	...	25 tons.
	“ Kampala ”	...	15 tons.
			-----
	Total tonnage	...	535 tons.
			-----
11	Barges each of 80 tons	...	= 880 tons.
1	Barge of 60 tons	...	= 60 tons.
2	Barges of 45 tons	...	= 90 tons.
3	Tugs each of 20 tons	...	= 60 tons.
			-----
	Total	=	1090 tons.
			-----

In addition to the above there are :-

- 3 Steam launches.
- 1 Motor launch.
- 4 Steam canoes.
- 17 Steel poling canoes and
- The Dredger “ Quorra.”

### DEPÔTS AND WORKSHOPS.

13. The headquarters of this department are located at Lokoja, where the <sup>Depôts and Workshops.</sup> main depot, workshops, stores and offices are situated, whilst at Burutu there is a subsidiary depot with workshop, stores and floating dock.

Marine officers are also stationed at Onitsha and Baro to deal with the traffic and handling of cargo at those stations.

## TRAFFIC.

Cargo  
handled  
1910-1911.

14. The total cargo handled by the Marine Department during the year 1910-1911 amounted to :-

Up river from Burutu to Baro	...	...	18,666 tons.
Down river from Baro to Burutu	...	...	4,653 tons.
Total	...	...	<u>23,319 tons.</u>

Of this total public traffic amounted to :-

Up river	...	...	8,320 tons.
Down river	...	...	3,417 tons.
Total	...	...	<u>11,737 tons.</u>

Whilst Government traffic amounted to :—

Up river	...	...	10,346 tons.
Down river	...	...	1,236 tons.
Total	...	...	<u>11,582 tons.</u>

And of the above total tonnage of 23,319 tons—

The stern-wheeler passenger and cargo boats carried 17,048½ tons, and  
The tugs and barges carried ... .. 6,270½ tons.

Of which-

3,750½ tons were to or from stations in Southern Nigeria, and  
19,568½ tons “ “ “ Northern Nigeria.

The total weekly average of cargo carried amounted to 450 tons, of which-

329 tons were carried by stern wheelers, and  
121 tons “ “ tugs and barges.

In addition to cargo, this Department has had hitherto to convey all Government officials to and from Northern Nigeria, as also a certain number of mining officials and missionaries to Bauchi and up the Benue. A considerable number of native deck passengers are also carried between Burutu and the various stations up to Baro.

## COST OF WORKING.

Working  
Expenditure.

15. The total cost of upkeep of this department, as estimated for 1910-11, amounted to some £52,900, which includes about £3,500 for working the dredger “ Quorra ”; the estimates for 1911-12 approximate very closely to these figures, namely, a total expenditure of about £53,500, of which again £3,500 are on account of working the dredger.



## REVENUE.

16. As against the above expenditure, allowance must be made for the actual earnings of this department, both on account of services rendered to Government on account of the carriage of both officials and cargo and for services rendered the public on account of which actual payment is made. Revenue.

The estimate of Revenue earned on account of the latter service during 1910-11 amounts to £18,000 and for 1911-12 to £15,450, but this, it will be observed, takes no account of Government services, which for 1910-11 may be estimated at a figure at least as great as that rendered the public.

For 1911-12, owing to the opening of Railway from Lagos, it may be assumed that these services will be considerably curtailed.

## ADMINISTRATION AND WORKING.

17. To consider now the administration and working of this department, and in doing so I will deal with the main heads in the same order as outlined above. Administra-  
tion and  
Working.

## STAFF.

18. In the first place, as regards the staffing of this department, it will be observed that of a total European staff of 28 sanctioned, no less than 10 are officials holding the position of officers, a quite undue proportion, even admitting the difficulty of obtaining suitable subordinates to hold the posts to which it is proposed to appoint officers. Staff.

Thus, for instance, in place of the above 10 officers' appointments, the following would be a more suitable staff :-

Marine Superintendent ;  
2 Assistant Marine Superintendents ;  
2 Additional to allow for absence on leave ;

making a total of 5 officers.

1 Assistant stationed at Burutu.  
The Marine Superintendent and } at Lokoja.  
1 Assistant Superintendent

This is a liberal establishment, for it allows of the retention of the existing separate depôts at Burutu, only 5 miles from the Southern Nigerian Marine depot at Forcados, an anomaly which should in no case be allowed to continue.

## SENIOR SUBORDINATE STAFF.

Beach masters are required :—

- 1 for Burutu.
- 1 for Onitsha.
- 1 for Lokoja.
- 1 for Baro.

And allowing 2 for absence on leave, gives a total of 6 beach masters.

Workshop staff. Foremen or Works Managers :-

- 1 for Burutu.
- 1 for Lokoja.
- 1 to replace absentees.

	3
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Ships Masters or Engineer Masters :-

- 4 for normal running with additional trained native Engineers.
- 2 additional to replace absentees.

	6
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making a grand total of 15 Senior Subordinate Staff.

## SUBORDINATE STAFF.

The following are required :-

- 2 Boiler makers.
- 2 Platers.
- 2 Fitters.
- 3 Additional to replace absentees.

	9
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The Accounts Staff and Storekeepers may remain as at present, namely :-

- 1 Accountant.
- 2 Assistant Accountants.
- 2 Storekeepers.

	5
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The total establishment thus outlined is, it is true, somewhat in excess of the existing staff, amounting as it does :-

- 5 Officers.
- 15 Senior Subordinates.
- 9 Subordinates.
- 5 Accounts and Stores.

	34
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but the excess is all in subordinate staff, which, provided firm discipline is maintained and a suitable staff recruited, should tend to a very much higher

state of efficiency than at present obtains in the department. The complement of officers should be reduced by at least half, and the increase in outdoor subordinate staff from 13 to 24 should tend to greater efficiency in handling cargo and to better supervision and maintenance of the vessels.

It is a misnomer to call a master of one of these vessels an officer, or to expect an officer to be content with such work.

Similarly, a good stamp of beach master is the proper person to supervise the handling of cargo, and it is a mistake to keep an officer at Onitsha and Baro for this purpose.

A beach master need certainly not be a man with nautical training, and there should be no difficulty in obtaining the right stamp of man for such work.

Under the recommendations which I shall make hereafter, it should be possible to considerably reduce this subordinate staff.

## THE VESSELS OF THE FLEET.

19. As will be observed, the present main passenger fleet consists of seven stern wheelers. Of these there are four vessels having a cargo capacity of 100 tons or more, whilst the remaining three have a capacity of from 15 to 25 tons only. Condition of Vessels.

The general condition of these vessels is far from satisfactory ; the bottoms of all are more or less unsound owing to their not having been hauled up, examined and repaired periodically as found necessary. This, it was explained, was due to it having been found impossible to lay any vessels up for any length of time owing to shortage of vessels and pressure of traffic. At the time of this inspection, however, the " Valiant " was laid up for the renewal of the lagging round her water-tube boilers. These boilers have, I was informed, been found unsatisfactory for river work, and it is proposed to replace them with boilers similar to those on the " Sarota," which have been ordered and are coming out. I regret I have not sufficient knowledge of marine boilers to offer any useful opinion on these two types of boiler, but the " Valiant " is an old Southern Nigeria Marine boat which used to be employed on the run between Burutu and Onitsha, and I have been given to understand by Southern Nigeria Marine officers that her boilers were excellent and most suitable.

The " Empire " was also being overhauled at Lokoja. In order to keep them afloat and going as long as possible, the bottoms of many of these vessels have been coated or blocked with layers of cement wherever they showed signs of failure or leaks. This is, of course, a most unsatisfactory and unworkmanlike way of facing the difficulty and there is no doubt that, shortage of vessels or no, a periodical inspection and thorough overhaul should have been carried out. The upkeep of the workshops is, moreover, not justified in merely carrying out petty repairs which only stave off the day when the accumulation of work will be a serious matter. With the future modified requirements of these vessels it should be possible, without serious detriment to traffic, to dry dock each of these vessels in turn, have them thoroughly overhauled and, as will probably be necessary in several instances, their bottoms entirely replated. I advocate this course

rather than scrapping any of the vessels entirely, as I would not recommend the purchase of new vessels until more experience has been gained as regards the probable development of traffic on the Niger and the effect of opening the Railway connection through with Lagos.

I propose to deal with the distribution of these vessels later when going into the question of working.

The three steam tugs were only brought out in 1908, and as their work has been comparatively light as compared with that of the stern wheelers they are in good order. These should, however, be dry docked, overhauled, and cleaned periodically. The steam launches and canoes are reported to be in a better state than the stern wheelers, as it has been possible to deal more readily with such minor repairs as were found necessary. I propose to deal entirely separately with the condition and working of the steam dredger "Quorra."

## DEPÔTS AND WORKSHOPS.

Depôts and Workshops.

20. The depôts are situated at Burutu, Onitsha, Lokoja and Baro, which are all important trading centres. At Burutu and Lokoja there are, in addition, workshops and stores. At the former there is a floating dock capable of dealing with vessels up to 450 tons, and the latter is the headquarters of this department. Taking these in order up the river, Burutu is the first to be considered.

21. The first point to be observed is that five miles away down the river, at Forcados, the Southern Nigeria Marine have also a depôt and a well-equipped workshop and store, with a slipway capable of dealing with vessels up to 400 tons. It is an anomaly that two neighbouring British protectorates should have been unable to combine to form a common base either at Forcados or Burutu or any other suitable site, and worked a single depot with marine workshops.

Such a course should have tended to both efficiency and economy, even were it necessary that the working remained entirely in the hands of one Department, the other being debited for its share of the work done.

22. At Burutu there is a small workshop inadequately equipped with machinery and a small store. A floating dock has also been provided of recent years and is anchored in the stream above the workshops. The dredger "Quorra" had, I was given to understand, been recently dry docked here for cleaning and overhauling, but otherwise it does not appear that much use is being made of this floating dock, which, in view of the state of the bottoms of many of the stern wheelers, should be in constant use.

Store sheds for goods in transit.

There is a large amount of shedding accommodation for the storage of goods and cargo during transshipment. In view of the amount of cargo handled, the area of shedding appears unnecessarily large, and points to delay in providing vessels. The private property of Government officials from Northern Nigeria is also stored in these sheds when going home. This should be much reduced in future.

Delay to Stores in transit at Burutu.

Instances of undue delay to the private property of certain Government officers was observed. Packages, boxes and parcels were here held up during transshipment owing to vexatious references by the Customs officials.

The Officer by the time the reference was made would probably be hundreds of miles away from the river and railway, and a letter would take weeks, if not months, to reach him, and similarly with his reply. By the time the package or box is eventually forwarded and reaches him he is in all likelihood preparing to return to England on completion of his tour, or has been transferred elsewhere.

It should be possible to arrange that such packages shall be forwarded at once, subject to receipt of declaration form on delivery.

The wharfage accommodation at Burutu is too limited and the facilities for landing both passengers and cargo should be improved. Wharfage at Burutu.

A light gangway should always be handy for communicating between the shore and both upper and lower decks of the River steamers. Gangways.

As my recommendations provide for the practical abolition of Burutu and removal and concentration of all work, both as regards the transshipment of cargo and marine workshops, at Forcados, it is useless considering what might be done at Burutu.

23. The next Marine depôt is situated at Onitsha, about 196 miles up the River or 201 from Forcados. This depôt is only of importance as a large trading centre. The Assistant Marine Superintendent in charge is provided with quarters and an office on the hulk "Africa," which is anchored in the stream. Onitsha.

Here, as at Burutu, some facilities are required for dealing with both passengers and cargo.

At present steamers draw up as near as possible to the bank and planks of various lengths are put out to connect with the lower deck of the steamer.

A small timber pile wharf, with a moveable platform to be adjusted to suit the height of the stream and with steps leading up therefrom, should be provided. Wharf required.

A small cargo shed in proximity to this wharf should also be provided, and an area fenced off to keep the crowds of loafers, sightseers, petty dealers and others from hampering and delaying legitimate work.

As stated above, a beach master, with the assistance of some police and a native staff, should be quite capable of dealing with all the work at this depôt.

24. The third and, in many respects, the most important depôt is at Lokoja, 337 miles up river from Forcados. Lokoja.

As the headquarters of the Niger Transport Service, it is provided with a fairly large workshop and stores buildings. These, however, are badly laid out and, though fenced in, the yard forms a right of way to the public, as the booking office has unfortunately been enclosed in the yard ; the clerical offices have also been enclosed in this yard, which is a mistake. Further and above there is no slipway for readily dealing with the smaller craft. Workshops and Stores.

Vessels are brought alongside the bank whether for repairs or for cargo, with apparently little or no method, so that passengers and cargo may be loading or unloading from a vessel sandwiched in between two vessels undergoing repairs.

Workshops  
and Stores.

A small wharf or pier for dealing with cargo has been provided, but this appears to be largely used for loading and unloading patent fuel for use on the vessels and in the workshops.

Transit shed.

A shed is also provided for storing goods in transit, but this is set back an unnecessary distance from the river bank, necessitating an undue amount of portage and consequent delay.

A want of method and organisation has been shown in the lay-out of this depôt and the workshops.

Alterations  
necessary.

The existing wharf may be left solely to deal with fueling work and the fuel yard should be enclosed.

The bank opposite the workshops should be set aside solely for repairing work and the workshops themselves should be enclosed, the clerical offices being placed outside the fencing through which, if necessary, admission can be obtained by a small gateway which should be kept locked against the public. A small slipway should also be provided for dealing readily with launches, steam canoes and light craft.

The public booking office and stores shed for goods in transit should be placed higher up the stream and nearer the bank, which must be raised, if necessary utilising the dredger for this purpose. All that is required is a layer of sand, some 3 to 4 ft. in depth, for perhaps some 50 yards back from the defined bank of the river. A small wharf with a moveable platform and gangways should also be provided here as at Onitsha to facilitate the handling of cargo.

Baro.

25. The last Marine depôt is situated at Baro, some 70 miles above Lokoja and 407 miles from Forcados. This depot has become important owing to its being the base of the Baro Kano Railway. It is here that all stores and material for the construction of that line have been landed. Since the opening of that Railway it has become the transshipment depôt for all cargo between stations on the Baro Kano Railway and the Niger.

The transshipment work here is in charge of an Assistant Marine Superintendent, and two jetties or wharves are provided for dealing with cargo. The bulk of the railway material and plant is, however, dealt with direct on to the river bank higher up, a railway siding having been laid along the bank for this purpose. A covered shed has also been provided for storing goods in transit.

The position of the stores transit shed is hardly the most suitable, when considered in connection with the jetties, as instead of being placed in the vicinity of these it is at the Railway Station.

The arrangements here are probably sufficient with such slight modifications and additions as may be from time to time found necessary.

In view of the opening of the railway connection through to Lagos and the equalising of through rates by rail to that port with the combined rail and river route to Forcados as is recommended in another report, the extent to which Baro will increase as a transshipment station between rail and river must be considered at present indeterminate, and additions and alterations here had better be held as much as possible in abeyance until some experience has been obtained.

26. There are two further matters of importance in connection with Baro to be considered, however, namely, that the river is undoubtedly setting in towards this, the eastern, bank and during last season cut away a depth of about 35 ft., necessitating slewing back the material sidings.

River cutting away bank at Baro.

I was also informed that since the previous year's floods the river had cut away the southern end of an island lying up stream, shewing to what extent the current is now setting in this direction, and is in future likely to attack the bank under the horseshoe of the Baro Hills. In fact, there is, I think, little doubt that the so-called Baro swamp between the present river bank and the railway station was, at some probably not very distant period, a portion of the river bed at high floods.

To attempt to hold this bank for a distance of perhaps 800 yards or so against the attack of the Niger would be an expensive matter, involving a stone revetment, 50 ft. deep from top to bottom and at least 2 to 3 ft. thick, and a heavy apron of pitching stone, 40 ft. broad and 4 ft. thick, along the toe of the slope in the bed of the river at low water, in fact, in the form of what is known in India as a "Bell bund" for the whole length liable to attack.

This form of protection acted most successfully in resisting an attack of the Indus on the embankment of the North Western Railway just north of Sukkur. To carry out a similar protection at Baro would, however, probably cost the greater part of £6,000, and in view of the uncertainty as to the amount of accommodation which is eventually likely to be required at Baro, I do not recommend the outlay of such a sum.

Steps should be taken, however, to train the river away from this side by utilising the dredger "Quorra," when it can be spared from its normal work of deepening the shallows, in straightening and deepening the usual channel and throwing the silt towards the south end of the island referred to above. Similar work in straightening the channel further up stream would probably be useful. Owing to the protection afforded by the southern spur of the horseshoe of hills, which cannot be seriously cut away, and the sharp bend which this spur would force the river to take if it cuts in any distance, I do not think the river is likely, even if left entirely alone, to cut back for a depth of more than 100 yards.

This would involve the slewing and removal of tracks and perhaps a few temporary structures and one of the jetties, but would not, I think, involve the station buildings or any permanent structures of consequence.

Wharfage and siding accommodation could in this case be provided by widening the cutting in the side of the hill to the south towards the Niger Company's store.

This is perhaps a question which should more properly have been considered in the report on the Baro Kano Railway and reference will again be made to it there, but, as the importance of this matter depends largely on the amount of export and import traffic by river, I have thought advisable to mention it here.

27. Another matter of importance to which reference may perhaps be made here is that 90 % of the interchange public traffic between the railway and the river is for the Niger Company and is consequently carried up and down river in their own boats.

Transit traffic at Burutu.

## TRAFFIC AND WORKING.

Workshops  
and Stores.

28. The river traffic, that is to say, the public or general paying traffic, may best be described as being of a very " patchy " nature. Government traffic between Burutu and Lokoja and Baro, which includes the mails, is comparatively satisfactory and solid, consisting as it has for the last two or three years very largely of consignments of permanent way materials, plant and stores for the Baro Kano Railway.

The total estimated revenue on account of public traffic carried during 1910-11 amounts to some £18,000 on a tonnage of some 11,500 tons of cargo and passengers, whilst for 1911-12 the estimated revenue is only some £15,450.

The public passenger traffic consists of a certain number of mining officials for Bauchi, missionaries for districts up the Benue, native traders and others with and without cattle, goats, and sheep, whilst the cargo consists for the most part of small consignments of country products, grain, rice, salt, cotton goods, skins, etc.

This traffic is not only carried between the more important trading centres such as Burutu, Onitsha, Idah, Lokoja and Baro, but to and from some twenty other minor trading stations on the Niger and another twelve on the Benue.

It is hardly correct to say that the Government steamers carry traffic between all these minor stations on the Niger, for many of them would not exist were it not for the Niger Company's stores at these places, and for them the Government steamers carry nothing but the mails. All cargoes to and from stations where only the Niger Company's stores exist are, of course, carried in the Company's own vessels.

The general traffic which the Government steamers are called upon to carry is of a very broken nature, in small consignments, frequently between intermediate stations and consequently unsatisfactory and comparatively costly to carry.

Certain  
calling  
stations to  
be fixed and  
minor ones  
omitted.

29. It would simplify dealing with this class of cargo and passenger traffic if certain trading centres or calling places were fixed upon at which only the weekly up and down mail boats would call, situated some 50 to 60 miles apart, as for instance Burutu, Syama, Sagbama or Asseh, Odugri, Onitsha, Illah, Idah, Etobe and Lokoja, intermediate traffic between these points being arranged for by native poling canoes or other native craft, mails to and from such intermediate stations being carried in the same way.

Absence of  
native craft.

30. In connection with this question of river traffic, one cannot but be struck by the absolute absence of anything in the way of native sailing boats or craft of any size other than comparatively small dug out canoes, capable of carrying one to three tons of cargo only.

The Niger River is admirably suited for at least six months of the year for native sailing boats and barges with a cargo capacity of from 20 to 50 tons. Such boats could drop down with the current and should be able to sail up the river, as, during high water, I am informed there is invariably a fair breeze up the stream.



It is much to be regretted that the natives of these parts are so ignorant of boat building and, as an experiment, it might be worth while importing native boat builders from the Nile or from the Irrawaddy to teach some of the most promising inhabitants on the banks of this river how to construct and navigate a sailing craft of some size. The introduction of sailing boats of this description would, I feel sure, do more to develop trade on the Niger than any steam transport service and would at the same time tend to lower the present transport rates.

31. Complaints have from time to time been made as regards the comfort, or want of comfort, which first-class passengers obtain on the Government steamers. In considering these it must be borne in mind, however, that this is a tropical river, infested with various kinds of flies, mosquitoes, flying ants, etc., which has only of comparatively recent years been opened up. That the comfort of such passengers is already very much greater than it was only ten years ago and now that practically all passengers for Northern Nigeria will land at Lagos and travel up by rail, and only those for the lower reaches of the Niger, possibly up to Lokoja, and the Benue will travel by the river, there should be no cause to complain of insufficient accommodation. Passenger traffic.

The stern wheelers, though not too well adapted for carrying cargo, owing to the inconveniently situated hatchways to their holds, should, I think, sufficiently well answer for the class of traffic they are likely to be called upon to carry for some years to come, and any heavy expenditure in providing more up-to-date and better fitted craft would not, in my opinion, be justified.

A somewhat stricter discipline in dealing with the native passengers, who should not be allowed all over the lower deck, but kept within certain fenced off limits, a similar space being set apart for their cattle and goats, and strict silence enforced after a stated hour of the night until say 5 a.m., should tend to greater cleanliness and comfort. First-class passengers' baggage should, now that the number travelling will be comparatively small, be all stowed away on the upper deck, where there will be ample room. This will leave the lower deck clearer and afford more space for the crew and passengers and handling of cargo. The above points are all matters of internal organisation and there are many more of a similar nature which will no doubt receive attention, but which it is hardly necessary to enumerate here.

32. Patent pressed briquette fuel is used on steamers on the up-stream voyage and wood fuel down stream. The cost of fuel is a heavy item in the estimates, amounting as it does to some £15,000 per annum, and every effort should be made to economise in this direction. Fuel.

Wood fuel is said to be as costly as coal in steaming against the current and more unreliable and unsatisfactory, but with the current shows a saving of from one-quarter to one-third the cost.

The opening up of the Udi coal fields some 50 miles inland on the east bank of the Niger from Onitsha would solve this difficulty by supplying a suitable and cheap fuel to hand. This question will be dealt with under railway extensions in Southern Nigeria.

33. With effect from the 1st May, 1911, a provisional Marine tariff has been brought into force. Rates.

This tariff has been based on the recommendations of a Committee called by His Excellency the Governor of Northern Nigeria and the original tariff was revised on the following general principles :—

(i.) That for the present both a high and low river rate should be retained, but that the lowest river rate should be abolished.

(ii.) That the difference between the up and down river rates should be met by classification.

(iii.) That the classification of the Marine rates should be modified to come into line with the railway classification.

(iv.) That the Marine through rates should be recast on a basis of weight, the difference in weight being met by classification.

There is no serious objection to (i.) and (ii.) so far as I can see. As regards (iii.) this principle appears to clash with (ii.) ; if the railway classification is adopted it can hardly be expected to be suited to meet the requirements of (ii.) and I think therefore that this principle should be dropped. The imposition of (iv.) should also, I think, be omitted. Cargo freights should, as a matter of principle, be based on cubic content rather than weight, especially is this the case on vessels with small holds and cargo capacity such as these marine boats have. To meet this by special classification based on weight would surely again lead to difficulty as regards the second principle enunciated above. For these reasons I think this principle also should be dropped.

The result of the reclassification of rates by the Committee is to leave the passenger rates practically as they were with the exception of the third class or deck passage rates, which have been slightly reduced and now work out to about  $\frac{1}{2}$  per mile.

The freight rates, as now revised, have been based on the assumption that 60 cubic feet equal 1 ton ; this may be correct in the majority of cases, but in others it is misleading and the result must entail a loss of revenue unless such additional traffic is encouraged as will clear the deficiency. The Marine Superintendent estimates the loss in Revenue owing to this reclassification of rates at £5,000, but I have, I regret, been unable to check these figures.

These freight rates and classification have, however, I understand, been accepted by the Niger Company and Messrs. Holt & Company, the only two firms who at present run any steamers on the river, and it may, therefore, be assumed that they are not unduly low ; these firms, however, still base their own freights on cubic contents.

I am, therefore, of opinion that the present general schedule of marine rates may be adopted with such modifications as may be necessary to bring them into line with marine requirements, the general principles to be borne in mind being :-

(i.) That a high and low water rate shall be retained.

(ii.) That there shall be no difference between the up and down river rates.

## DREDGER "QUORRA."

34. Before going into the question of proposals for improving the administration, organisation and working of the Marine, it will be as well to consider the suitability of the River Niger as a navigable river as also the work done by the present dredger "Quorra," which was brought out with a view to increasing the depth of channel at low water.

The Dredger  
"Quorra."

35. Seen during floods or at high water, the Niger is undoubtedly a very fine river between Burutu and Lokoja and even up to Baro. It is rarely if ever less than half-a-mile in width and during high floods has a depth of from 10 to 12 ft. and is thus easily navigable for steamers of 1,000 tons burden. This period, however, lasts for some three or four months only, and though there are periods of a month or six weeks, both before and after high water when the river is rising and falling, when a depth of channel of 5 ft. or more may be expected, this is not sufficient for ocean-going steamers and it is very risky attempting to take them up late in the season when they may be caught with a falling river, which sometimes occurs very suddenly.

The  
suitability of  
the Niger for  
navigation.

During the low-water season, which, as mentioned above, may be considered as extending over three months, from the middle of March until the middle of June, the depth of channel does not in many places exceed 3 ft. 6 ins. and in bad seasons falls to even less.

If the river is therefore to be looked upon as a reliable means of transport this period must be taken into account, and it was with a view to improving the low-water channel that the dredger "Quorra" was ordered out.

One of the arguments for improving the low-water channel by dredging was that because five river dredgers were able to keep open 62 miles of 9-ft. bar channels 250 ft. wide on the Mississippi, it was to be anticipated that one, or at the very most two, would keep open 9 miles of 6-ft. channel 150 ft. wide on the Niger, which is the estimated maximum obstruction.

Comparison  
of the Niger  
with the  
Mississippi.

I am not aware of the nature of the bottom of the Mississippi River, nor do I know what amount of silt is brought down; the configuration of the river, the nature of its banks and the variation between high and low water and the velocities of the stream at such times are also matters which would require to be known and considered before any useful comparison can be made between this river and the Niger, but I can confidently assert that in a tropical river such as the Niger, subject to comparatively long periods of low water, with an extremely lively sandy bed throughout, it is attempting too much to guarantee a 6-ft. channel can be obtained with one, or with even two dredgers of the type of the "Quorra."

Three such dredgers might maintain a 4-ft. 6-in. channel, but even this is too much to assert with any confidence. Every additional 6 ins. in depth would require increasing efforts owing to the very lively nature of the bed. Another point to be remembered is, that during low river the volume of water passing down is comparatively small, and it is extremely doubtful if during bad seasons there would be a sufficient volume to maintain a channel 6 ft. deep and 150 ft. wide without reducing the mean velocity, and at once causing a rapid deposit of silt to take place. In such a case the dredger would have to be employed constantly on the one cut, and could not be moved elsewhere.

36. Unfortunately, the dredging operations of the "Quorra" during 1910 and 1911 do not appear to have been carried out with sufficient care and

Dredging  
performed by  
"Quorra"  
during 1910  
and 1911.

method to enable a definite opinion being formed as regards the extent to which the channel was deepened and improved.

The maximum depth of channel which was rendered available during 1911 was from 3 ft. 3 ins. to 3 ft. 9 ins., and it may be taken that this was perhaps 6 ins. more than would have been the case had no dredger been employed. Tugs with loaded barges were unable to get above Lokoja from the 10th May to the 15th June, but passenger boats with a draft of 3 ft. were able to reach Baro throughout the year. The two worst shallows on the river during this year were that opposite Illushi, some 80 miles below Lokoja, and that known as No. 2, which is about 20 miles above Lokoja.

From the report of work done by the dredger during last season, it will be seen that only 204½ hours' work, actual dredging, were put in. This, assuming 100 days as the period during which dredging might beneficially have been employed, works out to about two hours a day actual dredging.

This is a very poor result, and though much time had no doubt to be taken up in fuelling the dredger, in working it to and from the shallows, in fixing the most suitable line for the cuts and in dropping anchors, it should have been possible, with proper fuelling arrangements and by taking some trouble in investigating and staking out or buoying the most suitable alignment for the cuts, to have put in at least three times this amount of work.

Whether or no a much more satisfactory result would have been obtained had more work been put in by the dredger it is not easy to say, as I am of opinion that every inch of additional depth obtained requires a rapidly increasing amount of work. It is, however, unfair to gauge the capabilities of the dredger on the experiences hitherto gained, and a further trial should be made under more favourable circumstances.

Recommendations of Committee.

37. A committee which was assembled in May last to consider certain questions in connection with the working of this dredger recommended the provision of steam steering gear, after winches, and of a suitable launch for laying out anchors, etc.

The after winches have, I understand, already been approved, and no doubt the provision of steam steering gear would make the dredger more handy, but need not for the present be considered essential.

A more powerful steam launch should be attached to the "Quorra" to assist in laying out the anchors, and one should be set aside for this purpose.

The "Quarrita," the small launch at present attached to the dredger, is too light for this work and should be employed solely as a survey launch for marking out the cuts to be made.

38. As regards the actual dredging done by the "Quorra," I was informed that the calculations showing the cut made were based on the section, depth to which suction pipe is lowered by width of cut multiplied by the length of cut.

This is, of course, hardly the case; the sandy bed to the depth and width of the cut is no doubt in the first instance opened up, but as the dredger only pumps up a small percentage of the water passing through the cut, and such water contains only 15 per cent. of sand, it follows that by far the greater

proportion of the sand is simply stirred up to settle in the channel again behind the dredger. No attempts appear to have been made to ascertain exactly what results are obtained when the dredger is making a cut, say, 3 ft. deep. Soundings taken in rear of the dredger or by the launch after the cut has been made would furnish this information.

Unfortunately, at the time of this inspection the rudder of the discharge pipe was under repair, so that a complete inspection of the dredger working was out of the question. An attempt was, however, made to work without the discharge pipe on a sand bank appearing near the west bank of the river just above Lokoja. The bed or bank was not very suitable, but owing to the depth of water in the river this was the best site that could be found.

When, however, dredging was at length started the dredger would not work owing to the suction gear being out of order. The result, therefore, of an attempt to see the dredger handled and working can only be considered as most unsatisfactory.

39. As stated above, I feel satisfied that the dredger has not been given a fair trial, and I accordingly recommend that increased efforts should be made to attain this end during the coming low-water season.

In the first place, as soon as the water has fallen sufficiently and shallows begin to form an officer should be deputed to go out in the survey launch and make careful surveys of the worst shallows, on which should be shown the depths along various base lines and the set of the current. The main channel and direction of the current having been located, the most suitable alignment for the cut to be made should then be marked out with long bamboo stakes or small extemporised buoys. The location of the cut should, of course, follow as far as possible along the lines of the current.

Methods to  
be adopted in  
dredging.

Surveys.

When actual dredging is to be commenced a second survey should be made on the same lines as the first one, and the results, when compared with those originally obtained, will show any change that has taken place and any modification which may be found advisable in the location of the cut.

As soon as these have been completed the dredger should be set to work to clear the required channel.

Hitherto the dredger has been worked up stream and commencing from the bottom of the cut. In a river such as this, with a freely moving sandy bottom, better results would probably be obtained by working the dredger down stream and commencing at the top of the required cut. Sand and silt shifted would then be moved in front of the dredger and there should not be the same amount of silting up going on in rear of the dredger. Soundings taken along the lines of the cut made immediately the dredger has completed the cut will settle this point.

Dredging.

Supplies of fuel should be provided ready to hand in the neighbourhood of the shallows as soon as these have been located and it has been ascertained that dredging will be required, so that the dredger will be able to fuel with as little delay as possible in the vicinity of the work and, if necessary, during the evening or early morning. If difficulty is experienced in obtaining suitable fuel at any particular site, arrangements should be made to fuel by means of tugs and barges.

Fuelling.

Cost of  
working.

40. The actual cost of working the dredger amounts to about £300 a month during the four low-water months when dredging is in operation. During the eight non-working months the expenses may be placed at £100 a month. The total cost for the year thus amounts to about £2,000. To this, however, is added a sum of £100 per mensem on account of insurance, and a sum of £333 per mensem on account of depreciation during the four working months ; similar, a reduced charge of £50 per mensem for the former and £150 per mensem for the latter is made during the non-working months. These amount to a total annual charge of £800 on account of insurance and £2,532 on account of depreciation.

The sum of these two charges amounts to nearly 10 per cent. on the original cost of this vessel ; in other words, ten years' life will practically see the original value written off the books.

Though in the case of shipping companies it is the custom to write off value on account of depreciation and to insure vessels with underwriters, the advisability of such a procedure in the case of a Government Marine Service is open to question.

In the first place such figures unduly inflate the cost of working and are apt to create a false impression. In the present case the figures on account of depreciation are unnecessarily high. Bearing in mind that this dredger is only working during four months in the year, an annual charge of 5 per cent. on the capital cost should be sufficient to cover depreciation, and nothing whatsoever should be allowed for insurance.

Furthermore, in the case of a Government Marine on which a certain Capital outlay has been recognised as necessary not merely, presumably, as a Revenue-earning concern but with a view to development of the waterways and country, to continue writing down the Capital cost, at once assumes the eventual wiping off of the outlay from the books unless it is intended to maintain the original outlay by further additional vessels from time to time.

41. Before making my recommendations I would briefly summarise some of the foregoing conclusions and remarks :-

Summary.

(i.) In the first place it is obvious that only one workshop is required for both the Niger Transport Service and the Southern Nigeria Marine at Burutu or Forcados—preferably the latter.

(ii.) That better facilities in the matter of wharves, etc., are required for landing passengers and cargo at all the more important trade centres.

(iii.) That the present prospects of both Government and public traffic down the Niger are not such as to justify any increased expenditure on the Marine in the form of new boats.

(iv.) Similarly, that until some more definite results have been obtained as to the benefits obtained by dredging, additional dredgers are not to be recommended. Efforts might be made, however, to facilitate navigation, and render it somewhat safer by buoying the channels between sunken rocks or by blasting away the rocks, snags and other similar obstructions. This should not be a very costly matter, and the benefits derived would be considerable.

(v.) That owing to the opening of through railway communication between Lagos and Northern Nigeria, a weekly mail service beyond Lokoja is not required ; but that in order to meet requirements in the

matter of through booking with the Baro Kano Railway, a fleet of tugs and barges will have to be maintained to run between Burutu and Baro. Passenger services up the Benue can be maintained with the smaller stern wheelers, steam launches and steam canoes.

The above is a brief outline of the main points showing what the requirements of the Marine are likely to be in the future, and in what respect the present Marine requires modification to meet these.

42. Before proceeding to detail such modifications in administration and working of this department as might be introduced with a view to increasing the efficiency thereof, I propose to consider a suggestion that has been put forward, namely, that the regular weekly mail and passenger service should be handed over to the Niger Company.

Suggestion that the weekly mail and passenger service should be run by the Niger Company.

In the first place, I am not aware on what terms the Niger Company would be prepared to run a weekly mail and passenger service. At present they do not run their steamers to time table, and bearing in mind that such service entails provision for dealing with the " patchy " passenger and cargo traffic which is at present carried in the Government vessels, I do not think they would lightly undertake this service.

43. Putting this view, however, entirely aside there are certain other weighty grounds for at present considering such a course inadvisable.

Grounds for considering such a course inadvisable.

It must be remembered that the Niger Company are practically the only firm owning an independent fleet of steamers on the River. Messrs. John Holt & Co., another big firm, have one or two vessels, but not a sufficient number to do all their own work.

In addition to these there are several other smaller firms, such as Messrs. Christian & Co., Thomas Welsh & Co., Messrs. I. T. Palmers & Co. and Messrs. Venn, Stewart Young, Nottage, Pratton Smythe and J. M. Jackson, who own no vessels at all and are entirely dependent on Government or the Niger Company to carry their cargoes.

There is considerable danger involved in handing over to a private company the regular weekly service carried on by Government, especially when it is borne in mind that that Company are at present practically the only firm with a marine service of its own on the River.

Such an arrangement would be tantamount to allowing the Niger Company to assume a monopoly of transport on the Niger River and would inevitably be detrimental to the interests of the less powerful trading firms.

Though Government still retained a fleet of tugs and barges to work the heavier cargoes, so much of the traffic is dealt with in comparatively small consignments that the only satisfactory way of carrying it is by the regular weekly passenger boats as at present.

Indeed, I think it will be found that, unless public traffic from the Baro Kano Railway *viâ* Baro develops considerably, the whole of the public traffic can be dealt with in the regular weekly steamers, and a tug with barges will seldom be necessary.

If such a supposition is correct, it is obvious that the Niger Company would undoubtedly gradually get the control of all River traffic and would then be in a position to raise their tariff.

Still further, they would to a great extent have the smaller firms in their power, and by giving their own shipments preference over those of other competing firms greatly handicap the latter.

It may be thought that by fixing the conditions and tariffs beforehand these difficulties will be avoided, but I am afraid this will prove neither easy nor satisfactory, and I am of opinion, therefore, that if trade and competition are to be encouraged it is essential that Government retain a Marine on the river and run a regular weekly service of boats.

44. There are still further grounds for considering it advisable that Government shall retain the running of this service in their own hands. These are the desirability of Government retaining in its own hands a certain number of vessels on which it can rely at short notice in case of necessity, such as in the event of an expedition up the river being suddenly found necessary and, further, that Government already possesses in the vessels of the present transport service the necessary craft for running a regular weekly service between Burutu and Lokoja. That the stern wheelers require overhauling and replating has already been explained, but once this has been done there is no reason why these vessels should not meet requirements for some years to come.

45. I do not, on the above grounds, consider it advisable to break up the Government Niger Transport Service on the lines suggested. To hand over the running of the regular weekly mail and passenger boats, which in 1910-11 carried approximately 75 per cent. of the total public cargo conveyed by the Government Marine, would, as stated above, be tantamount to giving the Niger Company a monopoly of the River transport, which in the interests of trade competition and the development of the country does not recommend itself.

Carriage of passengers and mails up the Benue.

46. Furthermore, there is still the carriage of mails, passengers and cargoes up the Benue, which presumably Government would in any case have to retain. The grounds for doing so are precisely similar to those which have been represented in the case of the Niger.

Steps necessary to improve existing Administration and method of working.

47. This suggested modification in the present transport service of the Niger having been disposed of, there remains to consider what steps should be taken to improve the existing Administration and method of working. That some steps are necessary will, I think, be gathered from the foregoing remarks.

On broad lines, then, the following recommendations present themselves :-

(i.) The abolition of the depot and workshops at Burutu. The Marine shops and slipway at Forcados, with the assistance of the floating dock at Burutu which can be brought down and anchored in a suitable place at Forcados, should prove capable of carrying out all the work of both Marines.

(ii.) The abolition of the transshipment depot at Burutu and concentration of all transshipment work at Forcados. The concentration of transshipment work at either Burutu or Forcados is on the grounds of efficiency and economy essential, and Forcados is preferable to Burutu on the following grounds :-

Most of the transshipment work from ocean-going steamers to branch boats is carried out at Forcados, and it will undoubtedly simplify matters if all transshipment work is carried out at the same depôt.



It has been recommended that the Marine workshops be combined at Forcados, and for convenience of administration it will be advisable to have both the workshops and transshipment work in the same place.

The following objections may be raised to this proposal, namely, that the existing accommodation at Forcados is insufficient, that there is no room for extension, and that it is dangerous for river craft to anchor at Forcados on account of the want of shelter against the severe tornadoes which occur there.

The answer to these is that they are both matters which can be overcome without serious difficulty or heavy expenditure. By utilising one of the powerful Lagos Harbour dredgers additional land can easily be reclaimed to the east of the present enclave at Forcados, on which the transshipment sheds from Burutu can be readily re-erected, and the necessary wharves provided.

The necessary shelter for the River boats at Forcados can be obtained by extending the existing jetties parallel with the shore and leaving room for anchoring them under the lee of the jetties, and between them and the shore.

The extension of these jetties is already in hand in connection with the requirements of transshipment work, and a slight addition to what is already in hand would probably prove sufficient.

These works would undoubtedly necessitate a small additional outlay, but the greater efficiency and economy in working would more than justify this.

(iii.) The provision of facilities in the nature of moveable wharves, landing stages and gangways for embarking and disembarking passengers and cargo at all the more important trade centres, such as Forcados, Onitsha, Idah and Lokoja.

(iv.) The improvement of the workshops, coal yard and tranship shed and booking office at Lokoja on the lines already indicated above.

(v.) The fencing in, within specified limits, of third-class passengers and animals on the passenger boats and maintenance of some form of order and discipline amongst the third-class passengers. First-class passengers' baggage also to be stowed away on the upper decks.

(vi.) A reduction in the number of officers employed, and an increase in the subordinate staff, including the employment of beach masters in place of officers to supervise the handling of cargo.

(vii.) Lastly, the introduction of some serious efforts to obtain the best results from the dredger "Quorra," on lines which have already been indicated ; a complete and accurate account being kept day by day of all work done. It is already somewhat late in the season or I would have recommended the engagement of a qualified engineer versed in river dredging ; if, however, one can be obtained in time to reach Lokoja by the beginning of April next, I would advise that he be employed at once and sent out. The navigation of the river should also be improved by buoying the channels between sunken rocks or by blasting away the rocks, snags, and other similar obstructions.

48. The Committee of Northern Nigeria Officials which was called by H.E. the Governor of Northern Nigeria about a year ago to consider certain matters in connection with the organisation of the Marine Service, recommended its amalgamation with the Baro Kano Railway under the control of a Director.

Amalgama-  
tion of N. & S.  
Marines  
recommended

49. I do not think that the general considerations on which this recommendation is based are sufficiently evident, nor do I think they are likely to become more so in the future. Bearing in mind the recommendations made above for the greater efficiency and economy in working of this department, the natural solution appears to be the amalgamation of the Niger Government Transport Service with the Southern Nigeria Marine.

Advantages.

The advantages of such an amalgamation are :

- Centralisation of workshops and depôt at Forcados.
- Economy in staff.
- Elasticity in working,
- Provision of the necessary funds.

That for the first 281 miles the Niger flows through Southern Nigeria, and the development of trade over that portion is a matter for the Government of that country to deal with.

Proposals for  
carrying out  
amalgama-  
tion.

50. There should be no difficulty in carrying out this amalgamation on the following general lines :-

The Administration of the Niger Transport Service to be taken over by the Director of Marine, Southern Nigeria, with an Assistant or Deputy Director in charge of the Niger Service, with headquarters at Lokoja.

The workshops, floating dock and depôt at Burutu to be taken over by Southern Nigeria for purposes of amalgamating with their depôt at Forcados, as recommended above.

Steps  
necessary to  
improve  
existing Ad-  
ministration  
and method of  
working.

The Southern Nigeria Marine to take over the workshops at Lokoja and the five largest stern-wheel steamers at their present value in order to run a weekly mail and passenger service between Forcados and Lokoja. Towards this service Northern Nigeria will pay one-sixth of the cost and be credited with the same proportion of the earnings ; the distance from Idah, which is on the boundary N. and S. Nigeria, to Lokoja being approximately one-sixth of the distance from Forcados to Lokoja. The remaining vessels of the Niger Transport Service, including the two smaller stern-wheel steamers, the steam launches and steam canoes, together with the three steam tugs and lighters, will be retained as Northern Nigeria vessels and will be utilised in working up the Niger to Baro and up the Benue as required at the cost of that Government, all expenditure on account of the working and upkeep of these vessels being kept distinct. All improvements made at Lokoja in regard to wharfage, shedding for goods and removal of booking office, etc., will be on account of the Northern Nigeria Government and debited to them.

51. There only remains now the working of the dredger to consider. This vessel will similarly be handed over to the combined Marine service to work on the Niger and, as at present, separate accounts should be maintained. The greater part of her time will be employed in Northern Nigeria waters, and in this case the cost of working must be debited against the Government of Northern Nigeria. Should the dredger, however, be required to work below Idah, as is quite likely, Southern Nigeria will have to bear its share of the cost of working for the period during which the dredger is thus employed. I regret to say, however, that I am not at all satisfied that the result of these dredging operations will justify their continuance.

W. D. WAGHORN,

*Major, R.E.*