

THE IRON GATEWAY TO THE SUDAN

All About the New Railway
Across the Nubian
Desert.
HIGHWAY TO CENTRAL AFRICA
How It Was Built and Queer
Features of Travel
Upon It.

BY FRANK G. CARPENTER.

I HAVE come to Atbara to describe the new railroad which the British have built from here to the Red Sea. The road begins 209 miles to the north of Khartoum, in the heart of the Nubian Desert, and goes over the sand and rock, up hill and down, for a distance of 322 miles to Port Sudan. It crosses one of the bleakest deserts on earth. There is no vegetation at all between here and the Red Sea, until within about nine miles of the coast, where there is a scanty growth of thorn bushes and scrub, which feeds the small herds of camels and sheep. The only inhabitants of the desert are some Nubian tribes, who go about from place to place, living in tents of matting, seeking pasture for their flocks and camping down by the occasional wells.



A Great Freight Route.
This road is bound to make a great change in the freight rates to the Sudan. All the goods of the past have been landed at Alexandria and carried by rail or boat up the Nile to Suez, a distance almost as great as from New York to Chicago.

There it has been taken on steamers to Wady Halfa, and thence on trains to Khartoum. The railroad freight had to be transferred on its way to Suez, being taken from the broad-gauge cars at Luxor and placed on the narrow-gauge from Luxor to Assuan. All of these transfers were costly, and the freight rates were high. Now ships go right through the Suez Canal to Port Sudan, on the Red Sea, and there land their goods for the Sudan. There are excellent shipping facilities, and the freight is almost direct to the cars, which by one continuous 500-mile haul land them in Khartoum. In the past what could be sent from Chicago to Liverpool at a lower freight than that which formerly prevailed between Khartoum and Wady Halfa. The case of this was the high price of coal, as it all had to be brought up the Nile from Alexandria and onward by ship and road. The coal is now coming in from the Red Sea, and the English are erecting shipping facilities to accommodate the traffic.

The Atbara River.
But first let me give you some idea of the station which forms the terminus of the Red Sea Railroad. Atbara is right in the heart of the Libyan Desert. It is about 200 miles north of Khartoum at the junction of the Atbara River and the Nile. It is also at the junction of the Red Sea road with the great trunk line which is to go from Cairo to the Cape. The northern section of the latter starts at Alexandria and runs northward through here to Khartoum, where the Blue and White Niles come together and form the main stream. The Atbara River, which can be plainly seen from this station, is the best branch that the Nile has between this point and the sea. The Atbara rises in the Abyssinian mountains and it carries down to the Nile every year millions of tons of the rich Abyssinian mud which makes so fertile the Lower Nile valley. During a part of the year this river has a volume which compares with that of the greatest rivers of the world, and at other times it is as dry as a bone. From March until June you can walk across it in most places without wetting your feet, and there is only water here and there collected in the depressions and pools. These contain hippopotami, crocodiles,

turtles and fish. This is the case for about 150 miles above Atbara. The great floods begin in July and last until October. Then the waters are about thirty feet deep, and they roll down in a great river from a quarter to a half a mile wide. They are of a reddish color, and are loaded with the volcanic dust of which the Abyssinian highlands are made. When the floods come they bring down masses of driftwood, upon which are sometimes to be seen the dead bodies of elephants and buffaloes. The waters come with great force, and the Atbara bridge, over which the railroad crosses the river, has to be strong to withstand them.

Made by Yankees.
It seems strange to me when I look at the mighty steel spans which cross the Atbara and reflect that John Bull had to hire Uncle Sam to make them for him. The Atbara bridge was constructed by one of our bridge-building companies, and was sent here in sections. It consists of six great steel spans of 200 feet each, built upon piers which extend about thirty feet down under the river to the bed rock. The bridge is well built, and I am told that it easily withstands the great floods.

A Desert Railway Centre.
Atbara might be called one of the railway centres of the Sudan. Lying at the junction of its two chief lines, it has the principal offices and shops, and is the home of the director, Captain E. C. Midwinter, Bey. It was through a letter from the Govern-

General that I met Captain Midwinter and had a long talk with him about this new road to the Red Sea. He had a part in building the line, and is now its manager. We first visited the road shops, which lie here in the sands of the desert, covering two or three acres of the bleakest part of the earth. They are great sheds, with walls of galvanized iron and roofs of iron and plate glass. There are locomotives, cars and steel ties and telegraph poles lying outside, and going in I found all sorts of railway repair and construction work were going on. The mechanics were a mixture of whites, blacks and yellows, representing a half-dozen different nations and tribes. There were British overseers, Greek and Italian mechanics, Nubian blacksmiths and many Nubian boys, who were taking a sort of manual training course in order that they may serve as locomotive engineers, under machinists and trackmen. The machinery is of modern make, and the shops are about as well equipped as our shops at Panama.

How the Desert Ruins Railroads.
As we walked from lathe to lathe and from planing machine to planing machine, Captain Midwinter pointed out some of the peculiarities of the wear and tear which the desert has upon railway materials. "Here," said he, as he pointed to the wheel of an American locomotive, in which was cut a groove so deep and wide that I could lay my three fingers in it, "is an example of how the sands ruin our car wheels. The desert is

covered with grains as hard as flint. They blow over the rails, and as the cars move they grind out the steel as though they were emery powder. As a result a wheel's life is short, and we have to cut down its life every few miles. Moreover, the sand gets into the bearings, and there is a continuous wearing, which necessitates almost constant repair.

"How about your sandstorms? Are they serious obstacles to traffic?" "At times, yes. They come with such violence that they cover the tracks; they darken the sun so that when you are in one you cannot see your hand before your face. They often spring up far off, and you can watch them coming. A single line of sand gets into everything and crimps its way through all parts of the machinery. "Another thing we have to contend with," continued the railway manager, "is the extraordinary dryness of the air. This shrinks everything connected with the road. Our rolling stock has to be tightened up again and again. One of our passenger cars will shrink as much as eighteen inches in one wall alone, and we have to put in extra boards to fill up. This is so as to all sorts of woodwork.

The Destructive Ant.
"Another trouble is the white ant," Captain Midwinter continued. "That little termite eats anything wooden. It chews up the insides of our cars and even attacks the furniture. "Where there is the least moisture the ants will go for the railroad ties, and they will also chew out the insides of the wood telegraph poles. They always work in the dark, leaving a thin shell of wood outside. The result is that a tie or pole may look sound, but all at once crumble to pieces. We have to inspect the road very carefully at regular intervals and watch out for weak points. We are now using steel shells as ties. They do not make so smooth a road as the wooden ties, but the ants cannot eat them. We are also using steel telegraph poles.

American vs. British Locomotives.
"I understand that you have some American locomotives. How do they compare with those from Great Britain?" "Not well," replied the railroad director. "We have some of your engines which we bought seven years ago. We are still using them, but most of them have been repaired and made over. You people make locomotives, expecting in order that they be full capacity for four or five years and then throw them on the scrap heap. This is not advisable out here in the desert, where freight costs so much and the trouble of getting our rolling stock is so great. We want machinery that will stand all sorts of trials, including the climate. We want it rustproof and rot-proof and heavily made all around. We have here not only the dry air but the sand to contend with, but in the neighborhood of the Red Sea also the salt air and the alkali water. The latter ruin our boilers, and more so, in some respects, than the sand. Take a look at this English locomotive which has just been sent in for repairs. Its boiler is full of holes. That comes from the alkali water.

Desert Water Stations.
"I suppose the lack of water is one of your chief difficulties, is it not?" "Yes. This railroad is something over 300 miles long, and the track is laid through the sand. For about one-third of the distance inland from the Red Sea the country is mountainous, but the rest is flat. There are no streams, and we have to rely on artesian wells for our water supply. We have bored a number, but we find that the water in many places is salt. We struck one which had 3 per cent. of salt in it, and another in which the water was 1 per cent. salt. Of course, such water is useless for our locomotives. "We are having trouble also in getting a good water supply at Port Sudan. We sank one well to a depth of 800 feet and struck a good flow of fresh water. We had hardly completed it, however, before the salt water from the Red Sea began to seep in, and we are now drilling again. There are some stretches along the route where there is no water whatever. In such places we have to carry our supply with us. For this we have tanks of galvanized iron, each of which will hold about 1,500 gallons.

Travel on the Red Sea Railroad.
"With all this, Captain Midwinter, can you make your road pay?" "I think so. It is the shortest cut to the Sudan and Central Africa, and it will have the most of the carrying trade of that region. The country is vast, and it is just now on the edge of its development. Goods will be brought over the Red Sea road to Khartoum and thence sent up the White and Blue Niles. We shall have new roads going out from Khartoum connecting the Nile with all parts of the country, and both the rivers and the road will be feeders for this line of ours.

The Sledar on Railroad Building.
"Speaking of the railroads of the Sudan, during a conversation with Sir Reinhold Wingate, the Governor-General at Khartoum, I asked him several questions as to their possible future. He said: "The development of the country depends largely upon railroad building. The road from the Nile to the Red Sea is already increasing our trade, and it will do more as soon as we can bring the cars right into Khartoum and Omdurman. We are building a bridge across the Blue Nile, which will carry the road into Khartoum, and in the near future, I hope, we shall have a bridge across the White Nile, which will take it down to Omdurman. The road will probably be soon extended into the desert, the plain which lies between

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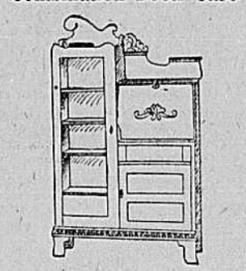
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the White and Blue Niles, and we shall have another extension running off into Kordofan.

"How about railroads from the Sudan to Abyssinia?"

"They will come some time, but whether they will start from the Sudan or from Abyssinia remains to be seen. There is talk now of extending the railroad which runs from Djibouti to near Harar clear across Abyssinia and on into the Sudan to Khartoum. There are no natural difficulties in the Sudan to prevent such a construction, and the same is probably true of Abyssinia. It is also a possibility of the far future that the railroads of the French Congo and those of the Sudan may be joined."

The Cape to Cairo Line.
"How about the Cape to Cairo road?" "I don't doubt whether there will be an all-continuous rail route from Cairo to the Cape. We shall probably have a

steam route, and that at no distant time.

"The navigation of the White Nile can be so improved that, by the aid of short lines of railroads around one or two places, we could send steamers from here to the great lakes of Central Africa. We are now sending them as far as Gondokoro, on the borders of the Belgian Congo. We have a monthly service to that place, and it is over 1,100 miles from Khartoum. The trip there takes about two weeks, and it is made in comfortable steamers. We have also steamers going up the Blue Nile and are gradually exploring the several branches of the White Nile. Our steamers on the main stream of the White Nile are now carrying tourists, and we have boats which leave on the 15th of January and the 15th of February, especially adapted to tourist travel. They are fitted throughout with electric lights, have hot and cold baths and some good double berth cabins. They carry a

sufficient number of stewards and servants to supply comfortable accommodations.

"The strider tells me that telegraphic communication is being rapidly opened up along the Sudan part of the Cape to Cairo steam route. Khartoum has direct connection with Egypt and through here with all the rest of the world. The wires have been strung from Khartoum almost to the Belgian Congo, and by the time this letter is published this place will probably be in direct communication with Europe. There are now more than 4,000 miles of telegraph working wires in the Sudan; and last year more than 250,000 private telegrams were sent over them.

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