

Railway, is reached. When the Dahabeahs arrived at the Second Cataract, a short distance above Wady Halfa, it was necessary to take careful soundings through the navigable channels, in order to ascertain if there was sufficient depth of water for the Dahabeahs to proceed. Investigation proved that such a course would be unsafe, and even if it could be done, the Reis of the Cataract estimated that two weeks would be occupied in the operation, if the whole available force of the Arabs were employed in the work. The difficulty of the operation may be estimated when it is considered that the length of the cataract is about 14 miles, while, in the state in which the Nile was at this time, the water rushed through the navigable channels with fearful violence. It having then been determined to abandon the Dahabeahs, and to take in their place the Noggurs, or cargo boats peculiar to the Nile above the Second Cataract, the whole of the stores and effects were transferred to camels, and taken by them over the 14 miles which separate the foot from the head of the cataract, to be reshipped into the smaller vessels, twelve Noggurs being required to carry the whole staff, servants, boatmen, and stores. For some distance south of the Second Cataract the river runs through sterile and uninviting country; the east side is covered with masses of black rock, the west with mountains of yellow drift sand, which has doubtless travelled from the Great Sahara Desert. The navigation for a long distance is difficult and dangerous, constant eddies and bubbles marking the presence of scarcely-hidden rocks, until after 30 miles of tedious sailing, the fall of Sumeh is reached. The channel usually taken by the Noggurs is almost in the centre of the river, any is not more than 200 yards wide. This channel is closed in on either side by precipitous granite rocks; rising to a height of 50 feet or 60 ft. above high Nile, while on the east and west banks of the river the cliffs rise to a height of 400 feet or 500 ft. On the highest rock upon the eastern bank stand the ruins of a temple, of which, however, little but the bases of the columns remain in position. On the western side is a small temple, of which the doorway and a chamber still exist. In this barren tract the minosa occasionally relieves the aspect of the sterile rock, and now and then the presence of a small patch of alluvial deposit is indicated by a cluster of date and dome palms, which have escaped the heavy storms and sand-drifts of the desert.

Twelve miles south of Sumeh are the falls of Tangoor, in one part of which occurs a fall of 3 feet. As a favorable wind was blowing hard at the time that the Noggurs arrived at these falls, they were enabled, after several ineffectual attempts, to get through the greater part of the fall under canvas alone, but it was found prudent that each boat should pass through separately. At a short distance above Tangoor is the Cataract of Ambigole, the navigation between the two falls being of a very difficult character. The Cataract of Ambigole, a sketch of which is given on page 108, is divided into two principal falls or passes, one on the east, known as the Virgin's Pass, and the other on the west side called the Father's Pass. The formation here is also granitic, and the river has cut its broken way through the hard rocks with singularly wild effect. At the foot of the Virgin's Pass the river is divided by an island into two channels, and this barrier, combined with the abrupt ending of the island on the northward, creates a very powerful cross current, which takes a direction almost at right angles to the current on the east.

In navigating this part of the river under canvas, the Arab and Nubian sailors showed wonderful skill in handling the Noggurs, which under their management developed unlooked-for sailing qualities. Lying under shelter of a rock until the wind freshens sufficiently, the Reis awaits his opportunity, and when it arrives he makes a dash, keeping the head of his boat across the stream, the course on the port side being studded with rocks that would be fatal to the vessel in case of failure, then sailing her about a quarter of a mile to westward he clears the cross current of 9 miles an hour. About a mile further, but on the west side of the river is the second or higher fall of the Cataract of Ambigole. This rapid, which has a fall of 4 ft., requires the aid both of canvas and towage to surmount it, as shown in the sketch. The channel in its narrowest part is about 200 yards wide, and has cuts through the granite rocks some 200 ft. in height. Here, again, as at Sumeh, are scattered minosa, which have rooted themselves in some of the narrow crevices of the rock, and live upon the scanty amount of Nile deposit accumulated therein. At the head of

the Cataract of Ambigole, are seen broken conical mountains, the hollows in which are filled with yellow drift sand, varied with occasional tufts of coarse desert grass. On the eastern side of the river at this place occurs an island of granite boulders grotesquely grouped, and relieved with trees, which grow freely in the alluvial soil deposited upon the island by the Nile. Such islands are, indeed, about this district, by no means uncommon, and combine to make the scenery in this portion of the river, and of which the above sketch conveys a good idea, almost beautiful. Four or five miles higher up the picture again changes, the granite rocks becoming bolder and more rugged, and rising perpendicularly for some hundreds of feet. The river here takes a sudden turn to the east, and for several miles the scenery is remarkably picturesque, the rocks now rising vertically, and now sloping gently upwards from the river, slight signs of vegetation occasionally appearing, until almost suddenly this is exchanged for a broad expanse of water, and the Cataract of Dal. Detached blocks of granite of enormous size here lie singly or piled together in the stream, which rushing through narrow water-worn channels, or boiling over hidden rocks, rush to the calmer water at the foot of the falls.

In passing through this cataract, the wind lulled, and left several of the Noggurs, which had before been well able to hold their own against the rapids, fast upon the rocks, and it was found necessary to relieve some of them of part of their cargo before they could be floated again.

Ever since passing the Second Cataract a strong north wind had favoured the party, but at Dal the boats lay becalmed for three days, and subsequently two days more were lost from the same cause, whilst towing, at this part of the river, was quite impossible.

After a total delay of six days a strong north wind set in, and the remainder of the cataract was traversed under sail. The river here is broken with islands, some a mile in length, with cliffs 200 or 300 ft. in height; in many cases crowned with rude fortifications of a very ancient date; on one bank of the river, too, the granite hills rise abruptly, and the date and dome palms grow freely. Camels had awaited the party at the Cataract of Dal, but they were of course useless while the boats were lying becalmed in the middle of the river, and as, after a fresh start was made, the wind continued steady, it was decided not to employ the camels, as the transit overland would have been slower. At the village of Zergamatto, an infantry sergeant of the Kuedive's army was placed on each boat; these officers being intended to overcome any transient hesitation on the part of the local residents to assist in towing. The wind continuing fair, the distance between Zergamatto and Kohé (about 60 miles) was easily traversed, 50 miles having been made under sail, and against a strong current. One day.

We may now briefly indicate the direction proposed for the railway from Wady Halfa as far as Kohé, where the bridge crossing the Nile is to be erected. A level alluvial plain on the eastern bank, which forms a good landing-place from boats at all stages of the Nile, and is in all respects thoroughly adapted for a terminal station has been chosen, the town of Wady Halfa being the point of commencement, whence the line runs by easy gradients on earthworks to the foot of the Second Cataract, 6 miles above Wady Halfa, and thence, for a distance of 12 miles, it follows close to the bank of the river, avoiding as far as possible the rocks which break up the surface. In this first length occur the maximum gradients and ruling curves adopted on the line: for although the works are not very heavy, the highest bank being less than 17 feet, the irregular nature of the ground rendered the levels adopted, necessary. Near the twelfth mile, the line leaves the river to cut across a small bend, but touches it again at the fifteenth mile, from which point, for 8 miles further, a course is selected among the granitic rocks, which are here in some places covered with sand and alluvial deposits. At the twenty-fifth mile the line again leaves the Nile, passing behind some hills, but soon returns to the river, which it follows, with but few exceptions, to the village of Sarrus, near which a water station would be erected. It was intended to continue the river side route as far as the cataract of Ambigole, and a detailed survey was made with this object, as it would have involved the formation of at least six tunnels through the granite, besides other very heavy and costly works. It was, therefore, necessary to make a detour and carry the railway behind the hills on the side of the river, through the Mohrat