OVER THE HIGH DAM

New radio links to span the Aswan Dam and the Nasser Lake

In the face of international competition the Marconi Company has won a contract from the United Arab Republic for the supply of a Tropospheric Scatter System which will establish a link spanning two of the world's latest and greatest man-made giants.

Firing from Aswan in upper Egypt to Wadi Halfa in the Sudan, the system will jump the Aswan High Dam, the largest rockfill dam ever built, and the Nasser Lake, one of the largest artificial lakes in the world.

For centuries the waters of the Nile, the world's longest river, have surged relentlessly through Africa and poured into the Mediterranean sea.

Since the time of the Pharaohs attempts have been made to control the river and utilize its waters. Now, as Egypt's Aswan High Dam nears completion, it would seem that entire and permanent success is about to be achieved, and Egyptian agriculture will no longer be at the mercy of flood or drought.

The Aswan High Dam will be the largest rockfill dam that the world has ever built, with a total length of 3,600 metres. It will be 111 m. high, above the Nile bed, 980 m. wide at its base and 40 m. wide at the top.

The Nasser Lake, which has been formed by the dam and is the largest artificial one in the world, has a length of 500 km. and an average width of 10 km. When work started on the dam the water began to build up to form the Nasser Lake, and the line circuits that existed, linking Cairo to Khartoum, became submerged.

The lack of communications that this brought about were overcome by the establishment of a

Night view of second stage work on the Aswan Dam Power Station, part of the massive structure across which the Tropospheric Scatter System will fire [*Reproduced by courtesy of the United Arab Republic*]

high-frequency system. So rapid was the increase in traffic, however, that a system providing even higher quality and quantity became essential.

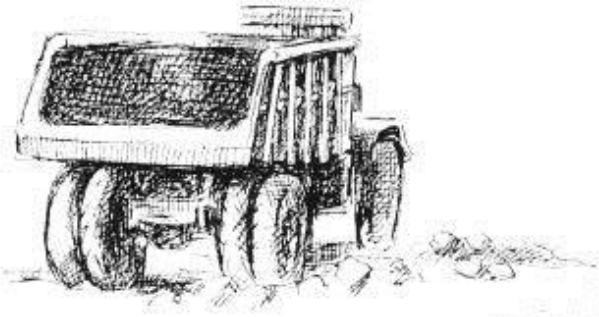
The provision of this vital need was undertaken by U.A.R.T.O., their requirement being a tropospheric scatter system, to give as near perfect as possible a communications link, unbroken, from Cairo to Khartoum.

U.A.R.T.O., who are paying for both ends, and giving the Sudanese their end as a gift, put the system out to tender. It was won, against international competition, by the Marconi Company.

The system must fire over the High Dam and

The amount of steel used in the construction of the Aswan High Dam is fifteen times more than that used in the Eiffel Tower. Hewing out the diversional canal was the first stage in the construction of the dam, It was the biggest construction undertaking in Egypt since the Suez Canal [*Central Press*]

Four of the six colossal hydraulic tunnels that were dug out of the rock. Above can be seen the foundation of the hydro-electric power station [*Camera Press*]



across the Nasser Lake, providing a high grade multi-channel communications link, with a total path length of some 180 miles from Aswan to Wadi Halfa on the Sudanese bank.

The Marconi team who will ensure the establishment and success of this great project are led by D. P. Young, Radio Communications Division's Regional Sales Controller for the Middle East.

Recently his systems engineer, Don Smith, surveyed and selected the site for the 60-ft. diameter parabolic aerials at the Aswan end, soon he will be setting off again to select the site at Wadi Halfa.

'The heat in this desert bowl is terrific', says Don. 'It goes up to 122 degrees Fahrenheit, and the shape of the land reflects it. Our equipment must

stand up to this climate, which even in the "cool" season never drops below 100 degrees F.'

Among other Marconi people closely connected with the system, is Radio Communications Sales engineer John Wyman.

It is going to take three months to get the equipment from Alexandria to Aswan, and from Port Sudan for Wadi Halfa. The aim is for it to be in operation within two years.

The system will initially carry twelve telephone channels, of which one channel will be used for eight teleprinter circuits. It has been engineered to allow an ultimate capacity of twenty-four channels, one of which will eventually carry twenty-four teleprinter circuits.

The radio equipment to be supplied will be REL2600 series, all solid state transmitters and receivers. The transmitters, with their klystron power amplifiers, will radiate 1 kW into the 60-ft. aerials at a frequency in the 900 Mc/s band.

To ensure a very low noise figure over the path length, the receivers are preceded by parametric amplifiers. To guarantee the utmost reliability the system will operate in both space and frequency diversity, giving, in fact, the equivalent of quadruple diversity.

Marconi's are also responsible for the supply of the aerials, carrier, power and terminal equipment. In addition they will supervise and have commissioned the entire installation, and have made available a training course for U.A.R.T.O. and Sudanese technical staff.

A triple diesel-power supply installation at Wadi Halfa and a stand-by diesel set at Aswan have been provided by Pelapone Limited of Derby, who were the suppliers, over fifty years ago, of a generating set to Sig. Marconi for his experimental work on board the yacht Elettra.

When all is constructed, and the system starts to operate, it will not be the completion of the job for the Marconi engineers; throughout the following twelve months transmission tests will be carried out each month, in order to discover 'worst month performance'.

This 'worst month', that is the one in which operation is at its lowest peak of efficiency, could be any one from January to December.

Only when this has been ascertained and dealt with will the system possess the Marconi guarantee of continuous high-grade service.