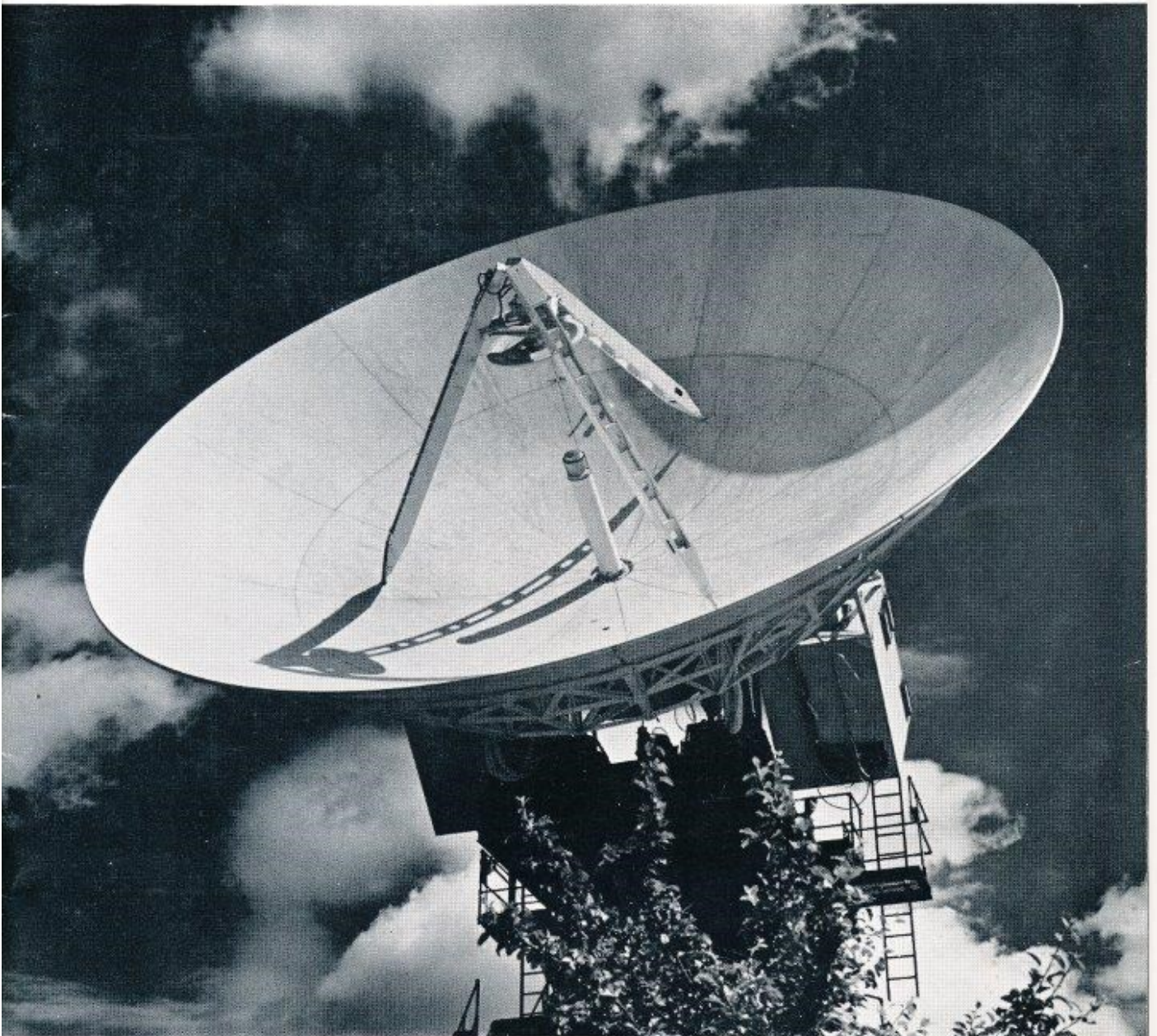


N.E. MARTIN

Ed: Front cover - The aerial of the Marconi-built satellite communications station, now set up on Ascension Island in the South Atlantic in readiness for the Apollo project. See following article.

Marconi

companies and their people



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REACHING A MILESTONE ON TIME



THE task of designing, building and installing Britain's first overseas civil satellite communication station on Ascension Island in less than a year, presented a fascinating and unique challenge to show the world what Britain could do. That the project has been accomplished in the time prescribed is due, in no small measure, to the enthusiasm and whole-hearted co-operation between Marconi's and Cable & Wireless.

These words opened the leading article in *The Times Supplement* on the Ascension Island earth station when it became operational, and this is the station, built by Marconi's, which will provide the essential communications between the Apollo tracking station in Ascension and the central N.A.S.A. control in the United States. It is one of the links by which the astronauts in the Apollo spacecraft will speak to their controllers while travelling all the way to the moon and back.

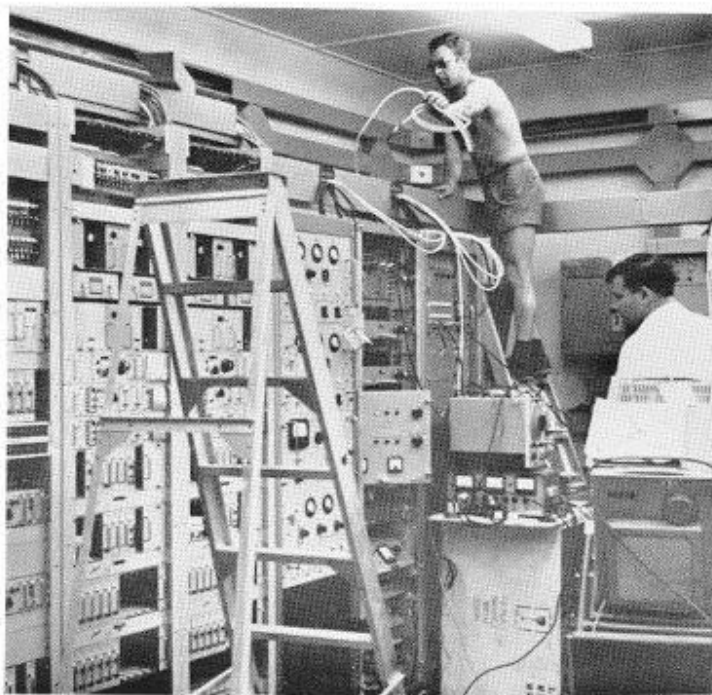
The Marconi teams who built this station and set it up on schedule have scored high points for Britain. Their progress has been of great importance to us all.

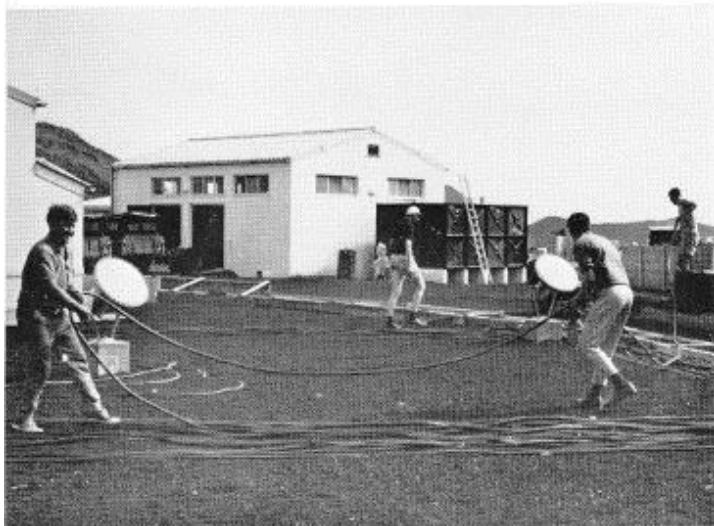
It was at Rivenhall that we saw the station assembled on test and then dismantled, crated by Transport and Packing and sent off to Felixstowe to be shipped by sea. It was met at Georgetown in Ascension by Ray Corduff, deputy site-engineer, and the aerial erection party, who with Cable & Wireless engineers organized the off-loading and transport to the site up in the clinker hills.

'We had to unload off-shore', he said, 'and bring the gear in on lighters. It was too risky for the ship to go in alongside though the water is deep enough, but any sort of blow would have sent great ocean rollers booming in to create havoc. As it was we had good weather and we gained time on the operation. We brought in 80 tons of equipment in crates, and the heaviest single hoist on to a tossing lighter was 11 tons. It was lifted off with the mobile crane in the same way as the other crates, and was carried up to the site on the low-loader.'

The aerial-erection party had arrived earlier in a specially chartered plane, and had already put up the gantry and pivot mount, a duplicate of the one at Rivenhall, in readiness for the aerial assembly. This they had done in five days.

LEFT: The dish aerial outlined against the clinker hills of Ascension. TOP RIGHT: The last petals going up to complete the dish. In the foreground are Don Reed, David Oliver, and Dick Muir. BOTTOM RIGHT: Steve Mullen, right, is making initial tests on the order-wire and tracking receiver racks. George Costley is completing the co-axial wiring





Laying cables out along the run are John Bryant, left, Paul Foy and George Costley

Don Reed and the main party of engineers arrived as the crates of equipment were being brought up to the site from the jetty; stripped to their shorts, and with chisels and nail extractors, they got down to unpacking, so that erection could be carried on with the advantage of time won.

Day by day the main units went up: the central hub with the horn feed, the back frame, the inner ring of reflector petals, the tripod, the sub-reflector, and the outer ring of petals. The test run at Rivenhall had been a useful exercise.

With the invaluable long-boom crane from the

American base the transmitter cabins were hoisted and fixed, the catwalks assembled, and the parametric amplifiers lifted and fitted in position. The superstructure was completed on 14 August, ten days after the arrival of the boat.

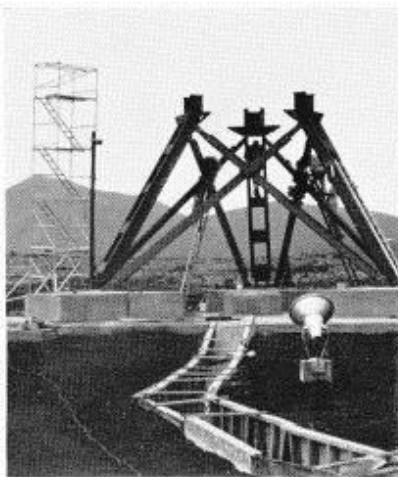
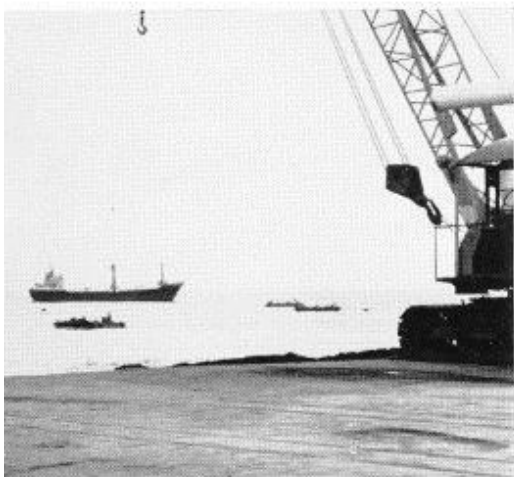
The going was good: almost too good. In parallel with the aerial, work was also progressing on other important aspects of the project: the equipping of the operations room, and the two transmitter power-supply cabins, the running of the cables from these points to the mounting and to the transmitters and receivers.

When the cabling was finished on the aerial structure, and the azimuth and elevation banding formed, the second phase of the operation was complete. The aerial turned for the first time under power on 23 August, and the paramps were pumped down to their operating temperature of 15° Kelvin, -258° Centigrade.

We were ahead of schedule at this time. Everyone had good reason to be pleased with progress. But the main tests were yet to come, tests which would have to be done in co-operation with the satellite Early Bird, and although we had tracked Early Bird at Rivenhall, tests with it now would not be the same, as Early Bird was orientated towards Europe.

Preparation for the commissioning and acceptance tests had also been going ahead during erection with the installation of a satellite-beacon simulator on Command Hill. This provided the means of working up the tracking and search systems to operational standard and led to the first overall

LEFT: M.V. Flut anchored off Georgetown after a voyage of twelve days from Felixstowe. The equipment was brought in on lighters. CENTRE: Legs for another step to the moon. The aerial-erection party get 'cracking' on the gantry. RIGHT: Removing the crating from the transmitter cabin in preparation for hoisting it into position on the back of the dish. Left to right, Barry Gannon, Cliff Barham and John Brett





The aerial-erection team—engineers and riggers. Left to right: Johnnie Thompson; Doug Clements; Peter Bowkett; Frank Quinn; Monroe, the American crane-driver; Harry Wilson; Billy Ash; Brian Marjoram, and David Oliver

BELOW, LEFT: The transmitter cabin being hoisted into position. The cabins rotate in azimuth and elevation with the dish. CENTRE: Robin Steele of Central Division with surveying equipment. He came over from the B.B.C. station at English Bay, where another Marconi installation team is at work. The two teams were able to meet and play football—on the cinders. RIGHT: The station, 'ops' room, powerhouse, and quarters from the approach road.





Sunday climb over the hills to Letterbox. Brian Betts with Don Reed in rear. If nobody has received a letter from them, then no ship has called

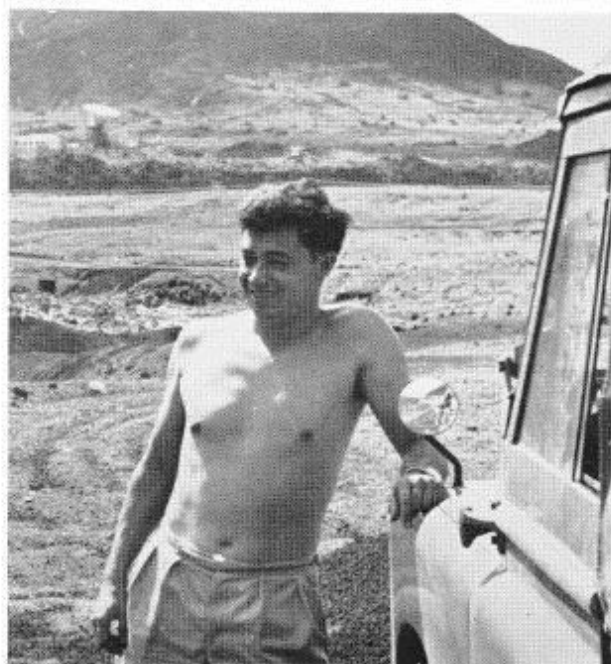
test, on 9 September, when Early Bird was tracked.

Not everything went as smoothly now as we would have liked. There were teething troubles. These, only to be expected in a new installation of this magnitude, began to drain reserves of time dangerously, and time, in this situation, is as precious as water in the desert—you cannot get home without it.

The site engineers, while working out their tests, were in constant touch by Telex—and speech if necessary—with Keith Bolwell, Project Manager, in his Baddow H.Q., through Cable & Wireless in London. It is interesting to see the file of messages, with test charts sent home and analyses and information sent out.

The home-based engineers could come up in a comparatively short while, sometimes in only a few minutes, with answers for their front-line men thousands of miles away down in the South Atlantic. Thus Don Reed and his team steadily

Ray Corduff, Deputy Site-Engineer, took all these photographs. In the distance is the finished station



worked their way out of trouble, brought their station up to operational tune, successfully accomplished the commissioning tests, amassing a log full of signatures to show for them, and were ready on 16 September, with two days to spare, for the final and active run on Early Bird.

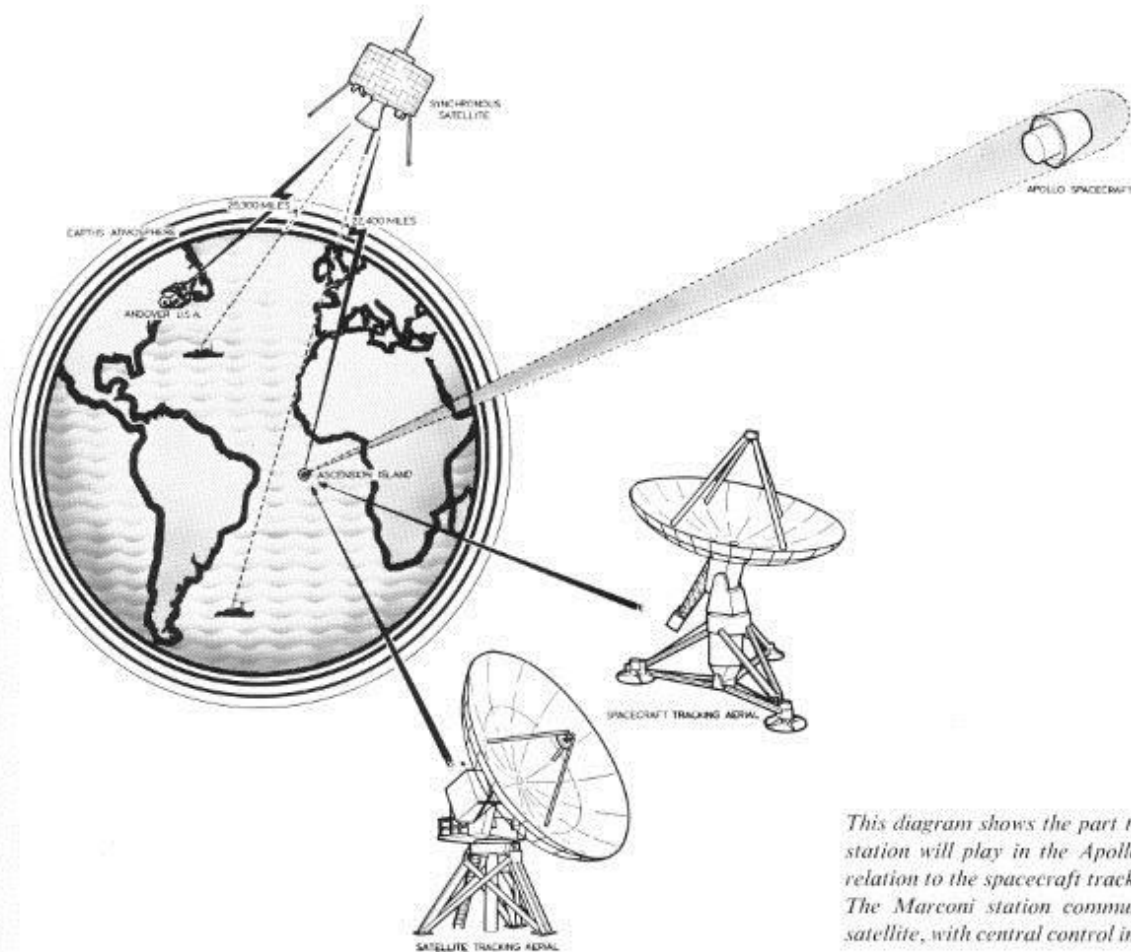
This went excellently for a full hour, between 8 and 9 a.m. on the 17th, and was witnessed by Cable & Wireless engineers. The reception of speech and teletype via the satellite was equally good. 'Speech,' said Ray, 'was crystal clear, no noise, no mush and free from interference. Far better than the phone from Baddow to New Street. 'The words', he said, 'came back within half-a-second of being uttered. That was the time they took to travel the 50,000 miles to the satellite and back'.

It was success indeed, for us and for the 'Saints' too, with the result that when the scientific work was over excitement broke through. St. Helenians (Saints), Chinese and various other nationalities working on the job were allowed to speak to the

satellite, and the words came back for all to hear in English, German, West Indian, Chinese, French, pidgin. . . .

The job was done; bang on time. Teleprinters began to click congratulatory messages; the first from Bill Quill, Manager, Space Communications Division.

On the evening of 19 September, the Chairman of Cable & Wireless, Sir John Macpherson, met our Managing Director, Mr. Telford, in Chelmsford. And afterwards Sir John wrote to Mr. Sutherland to say: 'I would like, on behalf of all of us in this Company, to put on record our very deep appreciation of all the effort which has gone into this by your people in reaching this milestone on time. It is indeed a magnificent achievement and I do know how much hard work and devotion to duty it has entailed. I should be grateful if you would kindly express our appreciation to everybody in your organization who has contributed towards this project.'



This diagram shows the part the Marconi station will play in the Apollo project in relation to the spacecraft tracking station. The Marconi station communicates, via satellite, with central control in the U.S.A.