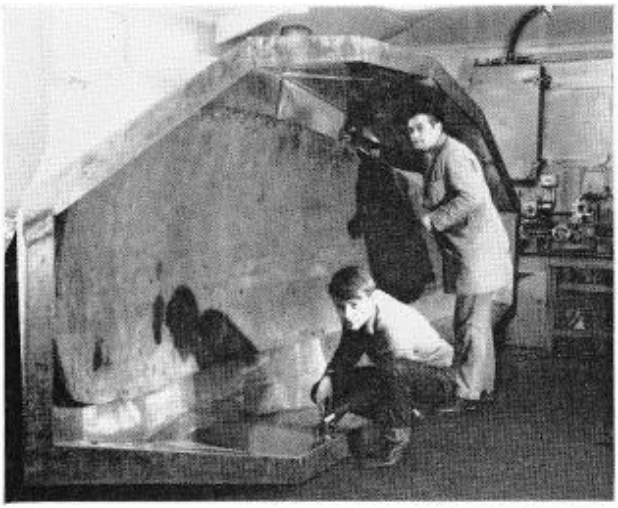
Building the S600 Radar

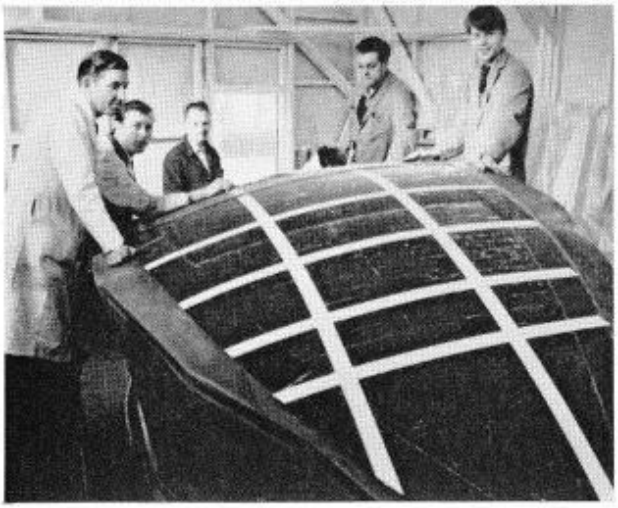
THE BEGINNING of a new era in the radar world in which the 'building block' type of station has come to the fore, started with the demonstration of our new S600 mobile system, the aerials for which were built at Gateshead.

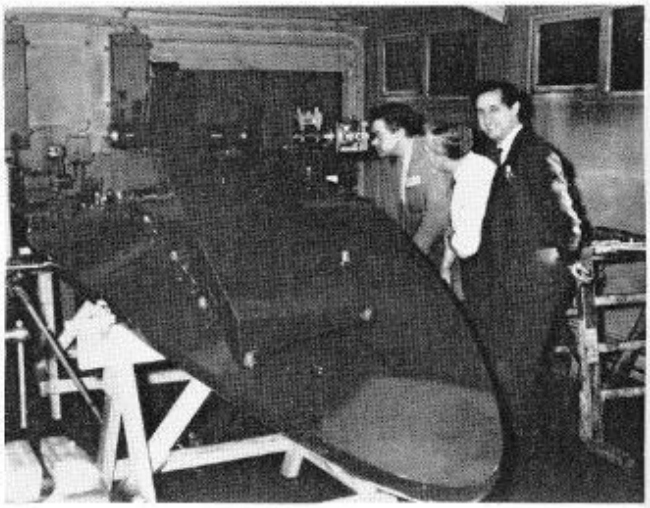
C. R. Brownless of Aerial Development Group, Baddow, arrived at Gateshead in December 1967 to supervise the construction of the heightfinder reflector which was to be a sandwich of two stretch-formed aluminium skins with a two-inch layer of aluminium honeycomb, bonded by a new cold-setting resin.

Alan Connolly, Production Engineer, Works Engineering, Gateshead, took care of the surveillance aerial and its associated equipment. David Steel, Assistant Production Controller, co-ordinated both equipments, and John Wales, Production Engineer, was responsible for ensuring that Mr. Brownless was given full assistance. The time schedule for the project was tight.

John Wales tells us that first steps in the production were taken immediately after New Year when the pattern for the profile and curvature arrived at Gateshead from Baddow. This was cut to the right shape and was set up for moulding. A valance or sheet metal surround was built and the whole unit mounted on a sub-frame. Neil McOnie and his team took over, and within a week he had produced a fibreglass male-mould which, when measured, proved to be an excellent reproduction.



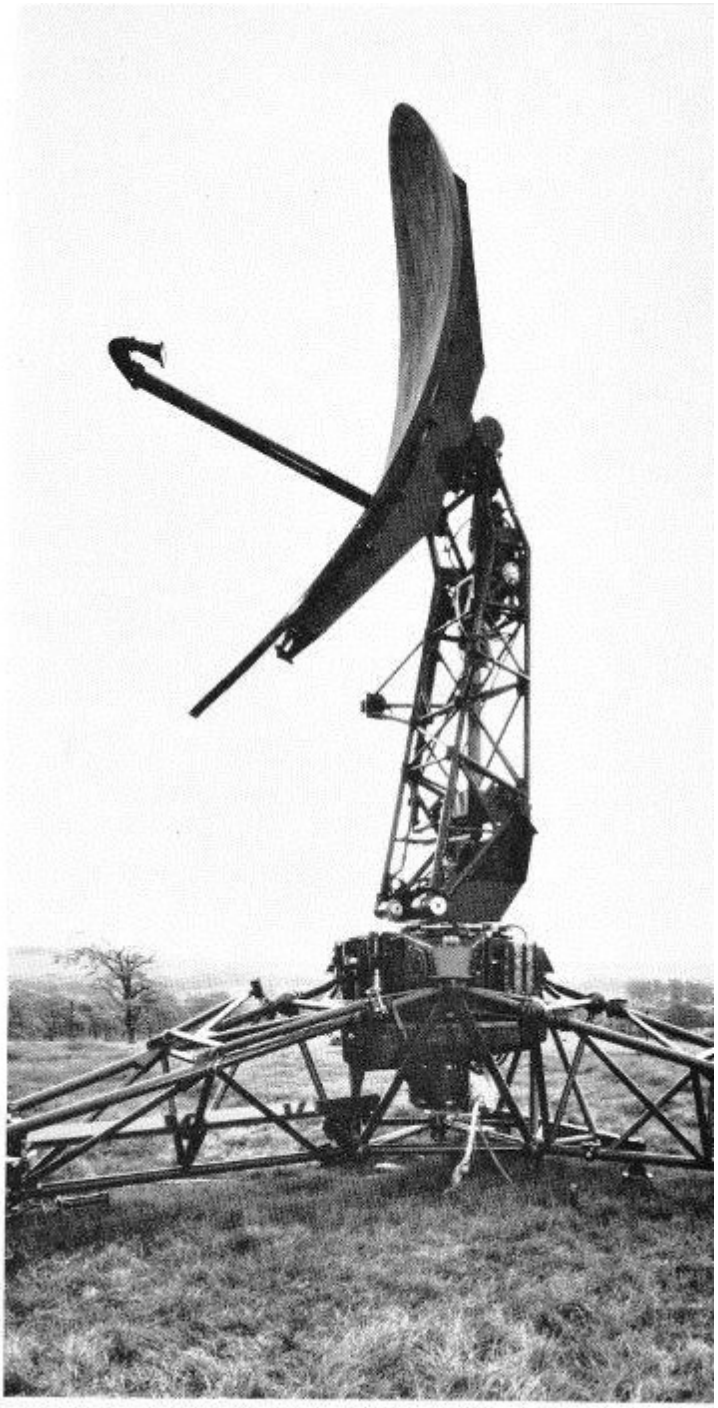




Reflector

The next stages were the fitting of the skins to the mould and the bonding of the honeycomb stiffening core between them. A vacuum system to hold the skins and core firmly to the mould had been designed and was now built into the fixture and tested. A special room had been prepared for the moulding and bonding processes. It had been in heat soak for two weeks so that the temperature should be exactly right and constant for bonding, and curing the bonds. Everything had been timed to arrive in the bonding room to be brought up to temperature, in stages, so that each bonding operation could be carried out in a hectic two hours' spell of work.

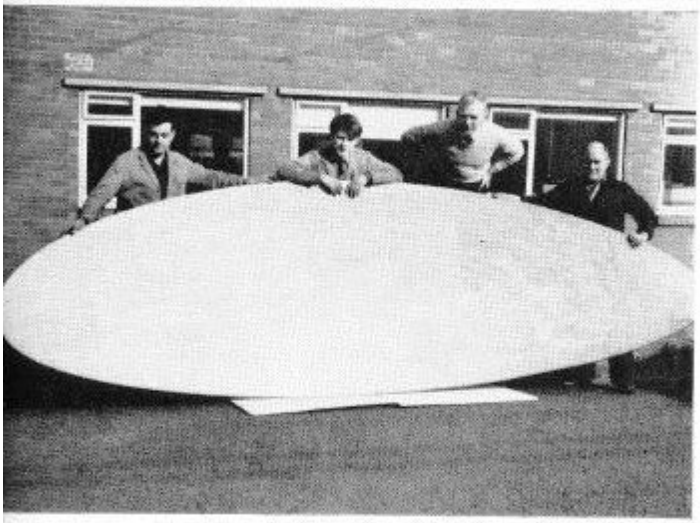
The aluminium honeycomb core was rolled, cut to size, and the pieces of this sub-assembly were bonded and cured for twenty hours under vacuum pressure on the mould. The positions of the support bolts were worked out and the blocks for the verifying bushes were inserted. Then the front skin, which had already been stretch-formed, was put on the mould and the core bonded to it, and again, left to



ABOVE: *The S600 heightfinder dish and gantry set up for the demonstrations at Bushey*

FAR LEFT: *Finishing the assembly for the mould of the reflector pattern and its sheet metal valance. Left to right: P. Metcalfe and W. McStea of Section 18*

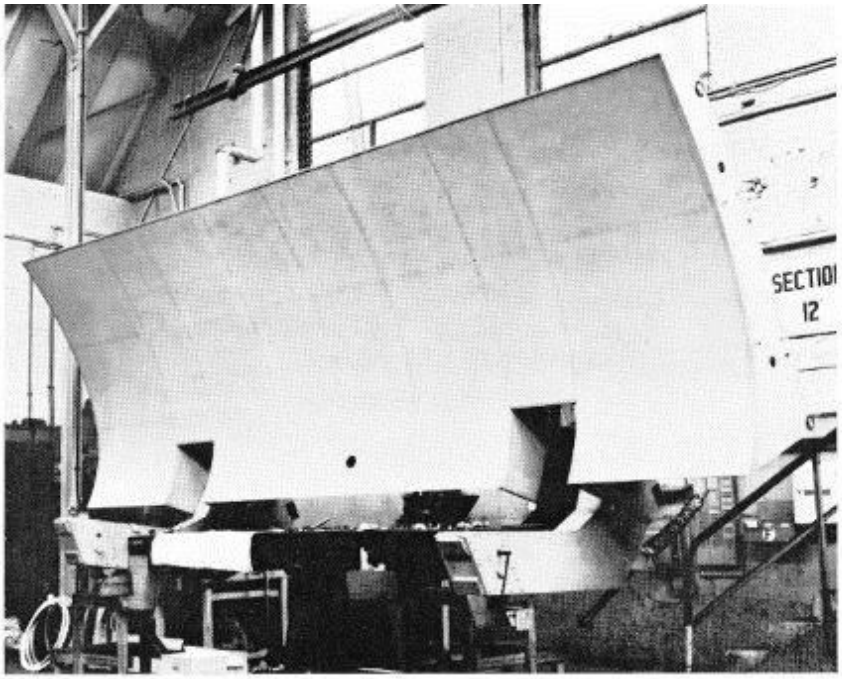
LEFT: *The finished mould with the valance and pattern removed. Left to right: D. Richardson, Section 013; P. Metcalfe, Section 018; E. Anderson, Section 013; N. McOnie, Jnr., Foreman Section 013; W. McStea, Section 018; C. R. Brownless, Baddow Research*



FAR, LEFT: *Marking off the insert positions on the bonded honeycomb core. Left to right: G. Bugg, C.I.B.A. Ltd.; N. McOnie, Jnr., Foreman Section 013; D. Richardson, Section 013; W. McStea, Section 018; P. Metcalfe, Section 018*

CENTRE: *The final stage of assembly—the optical alignment of the nod-tube with the reflector. Left to right: W. McStea, Section 018; C. R. Brownless, Baddow Research; A. Connolly, Production Engineer, Gateshead Works*

LEFT: *The first complete S600 heightfinder panel. Left to right: W. McStea, Section 018; P. Metcalfe, Section 018; C. R. Brownless, Baddow Research; G. McAllister, Section 017*



The final stages of assembly of S600 surveillance aerial at Gateshead works

[Photographs at Gateshead Works by John Wales]

cure for at least twenty hours under vacuum pressure. The third stage was the bonding of the stretch-formed back skin.

At each of these operations, from the mixing of the first batch of adhesive, everyone had to work at top speed to finish the job inside two hours. This not only included applying the adhesive, but fitting the polythene blanket, starting up the vacuum pumps and looking for leaks in the polythene blanket. It was like working in the desert, for the temperature was over 100° F.

Work on the backing structure started in week 8, and at the same time the assembly of the surveillance aerial began. Good working relations had been established between Gateshead and Aerial Development Group and Radar Division Engineering Group A, at Baddow, and information flowed smoothly between them. The whole project from start to finish took just four months. This included design, getting materials and skins from sub-contractors who co-operated to the full.

The heightfinder backing structure was completed in week 12, and the whole reflector was assembled and despatched just after Easter. The surveillance aerial followed a short while later and all concerned heaved a sigh of relief.

Retirements in the Chelmsford area

(First half of 1968)

STAFF

January		
V. J. S. Sandy	40 years	Equipment Division
February		
F. Wheeler	50 years	Central Management
E. Owers	49 years	Fabrication Division
R. Palmer	27 years	Fabrication Division
March		
W. C. Hulgrave	50 years	Central Division
G. C. Baker	41 years	Equipment Division
N. C. F. Clay	17 years	Radar Division
April		
J. E. Strutt	40 years	Equipment Division
S. Smith	16 years	Central Division
C. P. Robinson	12 years	Building and Facilities
May		
C. H. Fairweather	25 years	Radar Division
June		
J. J. Keating	46 years	Security
S. A. Hunter	42 years	Central Division
H. D. Luxon	42 years	Equipment Division
D. S. Redhead	28 years	Equipment Division

WORKS

January		
R. Guy	41 years	Works Services Division
F. J. Thorogood	32 years	Equipment Division
W. F. Miles	28 years	Works Services Division
S. Jones	13 years	Equipment Division
G. T. Moseley	13 years	Supplies Division
T. Bell	9 years	Works Services Division
February		
A. J. Walls	40 years	Fabrication Division
H. F. Keable	37 years	Fabrication Division
S. Soar	33 years	Fabrication Division
A. B. Goodey	14 years	Works Services Division