ITEM No. 1
FILE No. XXVI-85

THE LUFTWAFFE SIGNAL SCHOOL KÖTHEN

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COMBINED INTELLIGENCE OBJECTIVES
SUB-COMMITTEE
LONDON: H.M. STATIONERY OFFICE

TECHNICAL REPORT ON THE LUFTWAFFE SIGNAL SCHOOL, KÖTHEN

Reported by:

Lt. Col. R.G. FRIEND
Ministry of Supply

CIOS Target No. 1/91a
Radar

COMBINED INTELLIGENCE OBJECTIVES SUB-COMMITTEE
G-2 Division, SHAEF (Rear) APO 413

Contents of Report

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Investigating team - The team comprised the members of C.I.O.S. Trip No. 140, viz:

Col. R.E. Burns	U.S.S.T.A.F.
Lt. Col. Plant	U.S.S.T.A.F.
Lt. Col. Gadler	U.S.S.T.A.F.
Lt. Col. H. Evans	U.S.S.T.A.F.
Lt. Col. R.G. Friend	Ministry of Supply
Major W.H. Maddison	Ministry of Supply
Mr. M.B. Gottlieb	O.S.R.D.
Mr. L.B. Lusted	O.S.R.D.

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SECTION A - GENERAL CONDITION OF TARGET

Before the investigating team arrived (delayed five days in starting by bad flying conditions) the target had been extensively damaged. While it was evident that some of the destruction had been carried out by the Luftwaffe to prevent use of the equipment and disclosure of details, this was supplemented by the destruction subsequently caused by civilians from Köthen, looting soldiery and finally by 2,000 released prisoners of war who were being housed in the Barracks. Some of the workshops had been cleared to accommodate an accompanying Ordnance unit and finally an E.E.I.S. party had removed most items of interest. In the circumstances it was not possible to gain a coherent picture of the organisation nor in the confusion of papers, training manuals, etc. which littered the place were any research or other reports of more than general interest found.

SECTION B - LAYOUT OF THE ESTABLISHMENT

The Establishment, which was sited at about 1½ miles south of Köthen, comprised:-

(a) An airfield, judged to be an operational fighter station, with a complete radio communication station in the vicinity and a Benito installation which may have been experimental or operational, but perhaps fulfilling both functions.

(b) Some experimental radio laboratories located above one of the hangars.

(c) Six large buildings arranged to form two quadrangles containing workshops and store-rooms. It is possible that these buildings were used for general training. The gear found here covered not only radar but also line and radio communication.

(d) Three large inter-connecting buildings, formed as a quadrangle, comprising class-rooms and instructional laboratories, well equipped for the teaching of elementary and applied radio and radar.

(e) Extensive barracks providing good accommodation for perhaps as many as 2,000 students.

(f) A trials field across the main Halle road. In this field were sited numerous Würtzburg-Rieses and Freya equipment and a small number of wooden huts used for officers accommodation etc.

Fig. 1 is a rough sketch showing the general layout of the Establishment.

SECTION C - PERSONNEL AND THEIR GROUPS

Little information could be obtained locally as all the scientific staff had left. The telephone directory and interrogation of a laboratory assistant showed that there were several 'abteilungen' viz. Abt. Leitung, Abt. Funk, Abt. Flum, Abt. Labor, Abt. Werkstatt, Abt. Fertigung and the Versuch Regiment. The Abts. Funk and Flum were clearly the communications and radar early warning divisions while the Versuch Regiment was presumably the trials group. The telephone directory gave the following scientific personnel in these divisions:-

Abt. Leitung	Fl. Ob.Stabs-Ing.	Dr. Kühnold
	Fl. Stabs-Ing.	Becker
	Fl. Stabs-Ing.	Rautmann
	Fl. Stabs-Ing.	Rother
	Fl. Stabs-Ing.	Rudolf
	Fl. Stabs-Ing.	Rose
	Fl. Stabs-Ing.	Hönigl
Abt. Funk	Fl. Ober-Ing.	Dziock
Abt. Flum	Fl. Hpt. Ing.	Klickermann
	Fl. Stabs-Ing.	Dr. Pirson
	Fl. Stabs-Ing.	Dr. Schmidt
	Fl. Stabs-Ing.	Dr. Steil
	Fl. Haupt Ing.	Dr. Zellner
Abt. Draht	Fl. Ing.	Friedrich
Abt. Labor	Fl. Ob. Stabs-Ing.	Schmalbruch
	Fl. Stabs-Ing.	Dr. Gehm
	Fl. Haupt Ing.	Knauer
	Fl. Ing.	Seydewitz
Abt. Werkstatt	Fl. Stabs-Ing.	Gehrlich
Abt.Fertigung	Fl. Stabs-Ing.	Schulze
Versuch Regiment	Komp.Chef. Hptm.	Höfer

SECTION D - INVESTIGATION OF THE LABORATORIES

It was learned that Dr. Kühnold had removed all his papers and some of his laboratory equipment before he left. The laboratories had been fairly thoroughly wrecked but it was possible to appreciate the type of work which had been going on. Two large laboratories were devoted to a display of British and U.S. airborne equipment including H_2S, Carpet, Freya jammers etc. It was later learned that this laboratory acted as a pool of such British and U.S. equipment. For instance, when the Ernst Lecher Institute wanted a Carpet for some A.J. work they applied to Köthen and received a complete equipment in a week or so.

The work that had been going on appeared to be investigations into our equipment, cataloguing etc. and there was no evidence of any A.J. work.

Other small laboratories merely contained Freya parts or communication equipment of no particular interest.

SECTION E - INVESTIGATION OF THE EQUIPMENT IN THE TRIALS FIELD

Fig. 1 shows the rough layout of these equipments and Plate I shows a general view over the trials field.

All the sets had been deliberately smashed, presumably by the Luftwaffe, and in some cases fires in the cabins had reduced the chassis to molten aluminium.

Equipments Nos. 1, 5, 6, 9, 15 were either Giant Würtzburg or Reise G (i.e. normal Giantwith Freya Tx. etc. added). The racks in the cabins had been smashed in every case but the dipoles, mirrors and turning gear appeared to have been undamaged.

The Riese G equipment (Nos. 1 and 5) is now well-known. Plates 2 and 3 show the aerial system, and the Freya transmitter and receiver in the same cabin as the Würtzburg racks. The Freya aerials are carried on the main dipole support. The sketch (Fig. 2) shows the dimensions of the Freya aerial of equipment No. 1 and the working frequency appears to be about 150 Mc/s. The highest frequency of operation of this aerial system, i.e., with extension piece removed, would be about 175 Mc/s. To change the frequency it would mean climbing out on the main dipole support and adjusting the dipole extension pieces and the spacing to the reflectors. There was no split on these Freya aerials. The presentation units of both the Riese G equipments had been smashed up and in consequence it was not considered practicable to attempt to look for any A.J. circuitry such as Freya-laus.

Equipments Nos. 6, 9, 15 were standard Giant Würtzburgs, all with the presentation units smashed.

The Freya equipments were a varied collection and included Pole Freyas, Freya Fahrstuhl, parts of Freya/Köthen, Yagi Freyas, etc.

The Freya Fahrstuhl (equipment No. 7 in sketch 1) is shown in plates 4 and 5. It had been severely damaged but the general purpose of the equipment was clear. The two aerial frames - stacked Freya vertical elements - could be hoisted up the front of a 60 ft. tower. The tower was mounted on a roller bearing turntable about 18 feet in diameter. The Tx. and presentation unit had been very thoroughly wrecked but appeared to be normal Freya units. It is presumed that this set is used for height finding by variations of aerial height but a detailed examination of this wreck was not considered worth-while.

Equipment No. 4 was a wide-band Freya, presumably Freya Zoll-Wismar, i.e. a pole type Freya with wide-band aerials. Plates 6 and 7 show the aerial system. Each half of these full wave dipoles was 27-ins. long and 3½-ins. diameter and spaced 25-ins. from the screen. The I.F.F. array, seen above the two main arrays, consisted of 8 vertical full wave dipoles arranged as common T & R. There was no indication of bearing split in the main arrays. This particular model had selsyn output taken to an obviously experimental P.P.I. sited in a dug-out about 30 yds. away.

Equipment No. 8 was also a wide-band Freya identical with normal pole type except for the aerial system. Plate 8 shows the aerial system which consists of two arrays (separate T & R) each containing 8 full wave vertical broad band dipoles. These tubular dipoles had the same dimensions as those of equipment No. 4. This equipment No. 8 is presumably a Freya/Wismar.

Of the remaining Freyas the only ones of any interest were the Yagi types of which there were two examples and a number of Yagis lying on the ground. Plate No. 9 shows the complete Yagi-Freya, and plates 10 and 11 show close-ups of the aerials and transmitter. The dimensions of one Yagi that was found on the ground are given in sketch 3. The frequency for this Yagi is estimated at 75-80 Mc/s. The two lower Yagis were paralleled for transmission and the upper ones similarly paralleled for reception. The coupling between aerials and transmitter was by a 300 ohm open wire feeder. That between receiving array and receiver was by double coaxial feeder through a matching transformer.

The transmitter of the equipment of Plate 9 is shown in plate 10. It is similar to the known Freya transmitters with grid, anode and aerial coils astatically wound. The modulator appeared to be the standard Freya type.

A similar Yagi Freya (equipment No. 16 in Fig. 1) was found in the trials field but it differed from that shown in Plate 9 in having a shorter central column and an additional normal Freya array (perhaps I.F.F.) about one third of the way up. The set itself had been very thoroughly destroyed by fire.

Equipment No. 14 in Fig. 1 was also another odd combination of two normal Freya arrays with a wide band vertically polarised array below. This set is shown in plate 12.

Equipment No. 19 of Fig. 1 appeared to be a burnt out Lorentz FuMG. No traces of the dipoles or transmitter could be discovered although a careful examination was made as it was thought possible that the Lorentz mirrors might have been used for centimetre work. There would seem no other reason why an old Lorentz equipment should be near the experimental laboratories.

Two Seeburg Plotters (marked in Fig. 1) were found in a very damaged state. It is presumed, as no predictors were found, that the training carried out at the School on Freyas and Würtzburg-Riesegwas for fighter control through Seeburg plotters. These plotters project four spots of light on to a translucent glass screen on which a map of the area has been engraved The four projection systems in effect magnify geometrically the position of a target or targets on a subsidiary table which is rotated in bearing and translated for ground range. Plate 13 gives some idea of the general layout of the plotter. The four separate projection tables can be seen. The plane of the translucent screen was approximately at camera level and a platform around this screen enabled the 'tellers' to see the spots of light There was presumably 'phone communication between the radars and the plotter (a small telephone exchange can be seen in the right hand corner) and the four plotting tables must have been adjusted by hand. The whole system must have been very wasteful in man power as no more than two engagements could be controlled at once.

SECTION F - INVESTIGATION OF TWO SMALL OUTSTATIONS

It was reported that small detachments from the School were at Wetlin and Löbejun - two villages between Köthen and Halle and a signal store was at Paschleben, about two miles from Köthen.

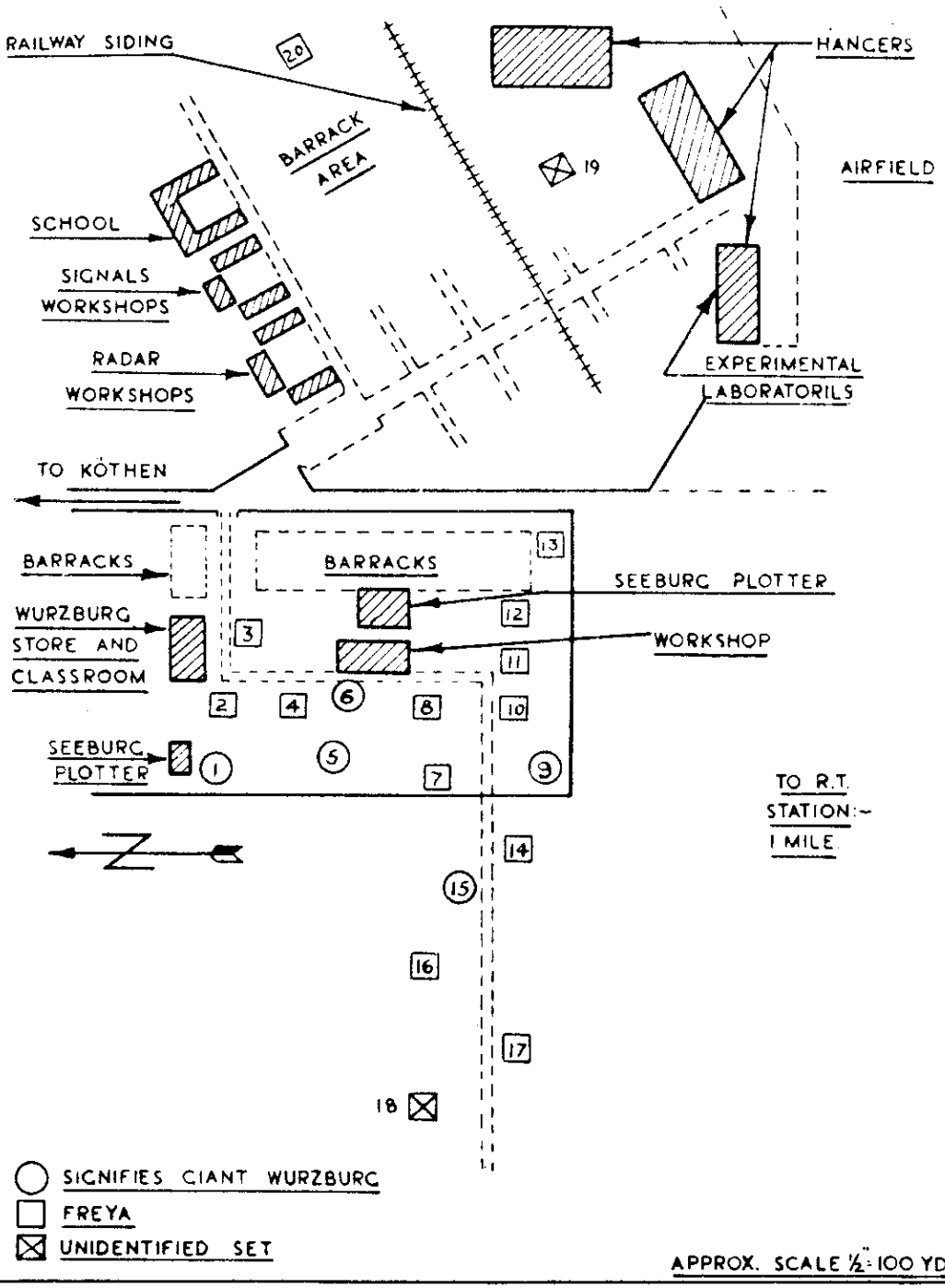
At Wetlin was found a small hut, previously used as a café, on a hill above the village. The hut only contained a transreceiver type SE532F2/38, covering 52-60 cms, a collection of field telephone equipment and a great deal of junk. The handbook of this equipment has been forwarded to C.I.O.S. but it is probably of little interest.

At Löbejun was found a collection of communication equipment which appeared not to have been installed or used and at Paschleben, at the back of a gasthaus and above a stable, was found a dump of old signal equipment, tools, cables etc.

R.R.D.E.
21.7.45.
RGP/ET

FIG. 1

LAYOUT OF KÖTHEN LUFTWAFFE SIGNAL SCHOOL AND LABORATORIES



AERIAL ON GIANT WURZBURG No.1.

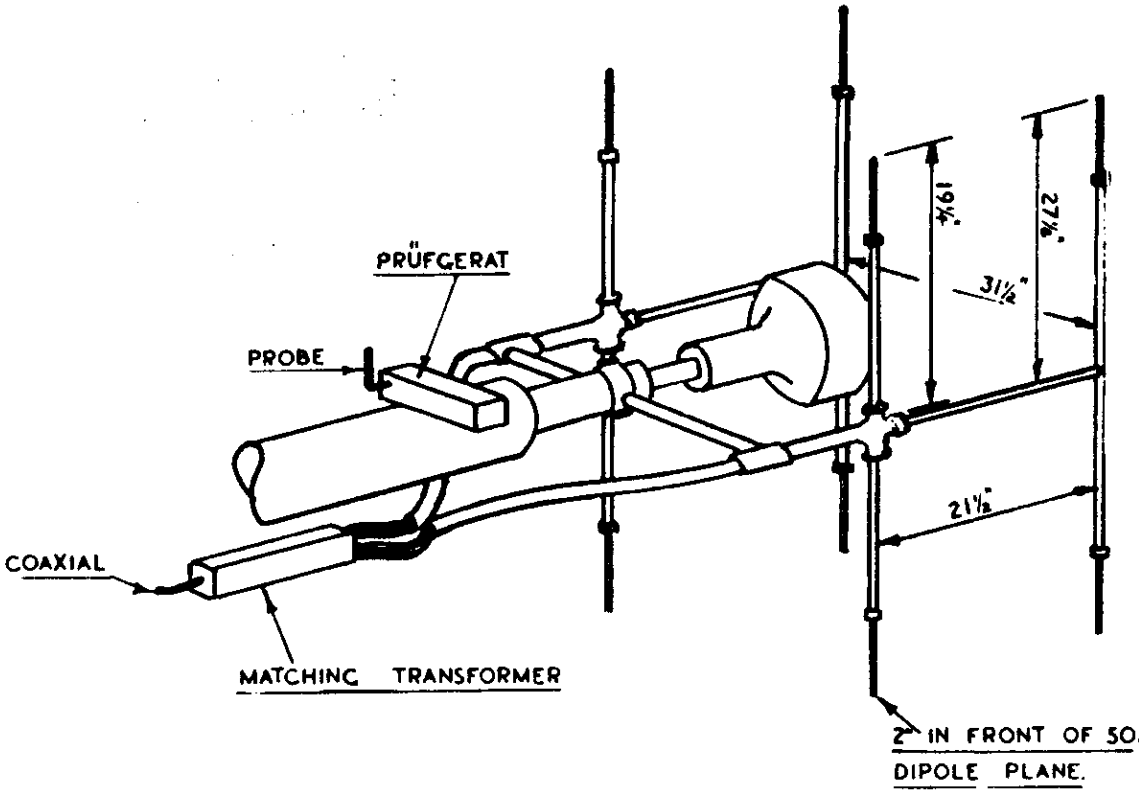


FIG. 2

FIG. 3

DIMENSIONS OF STEEL YACI FOUND AT KÖTHEN

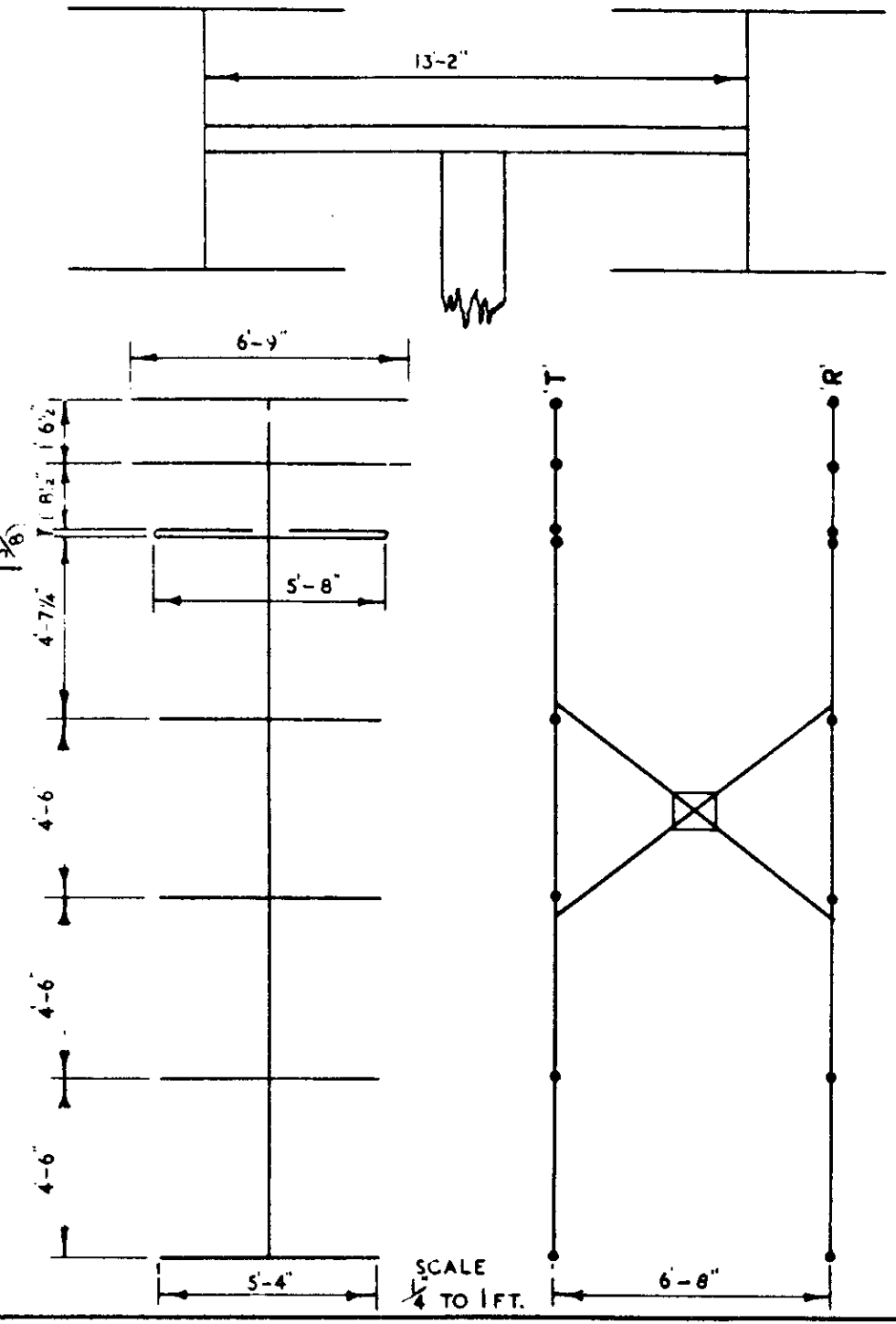


PLATE. I.

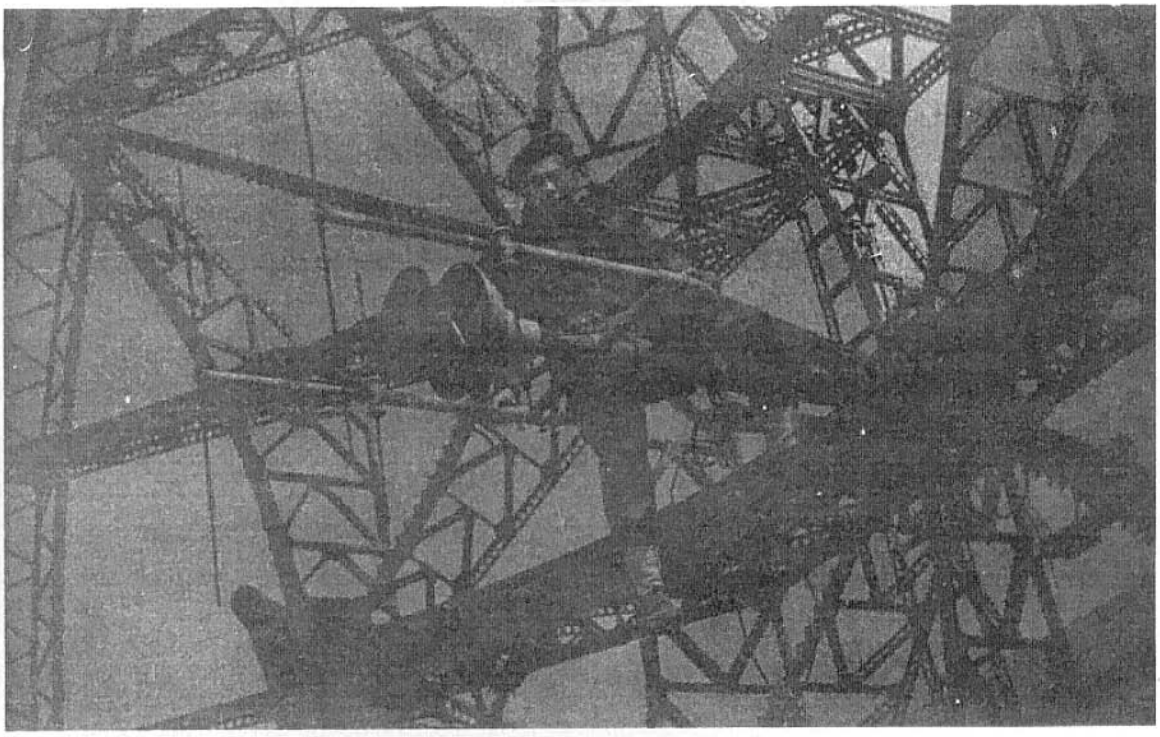


PLATE 2

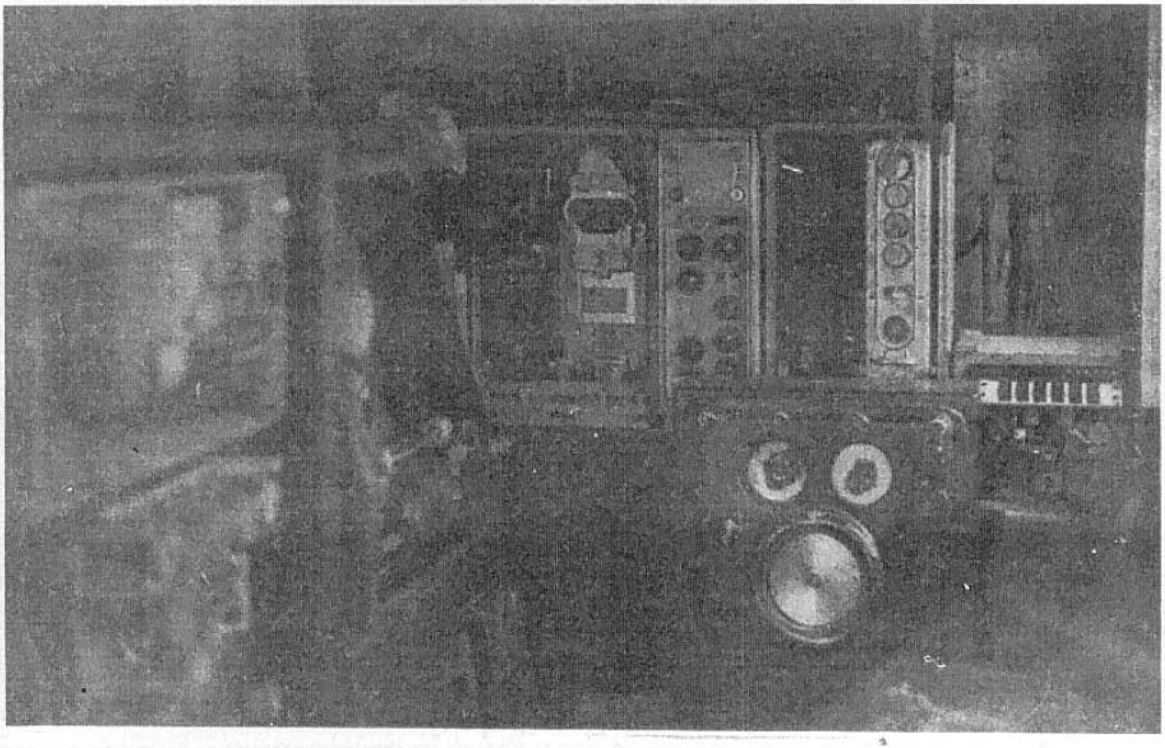


PLATE 3

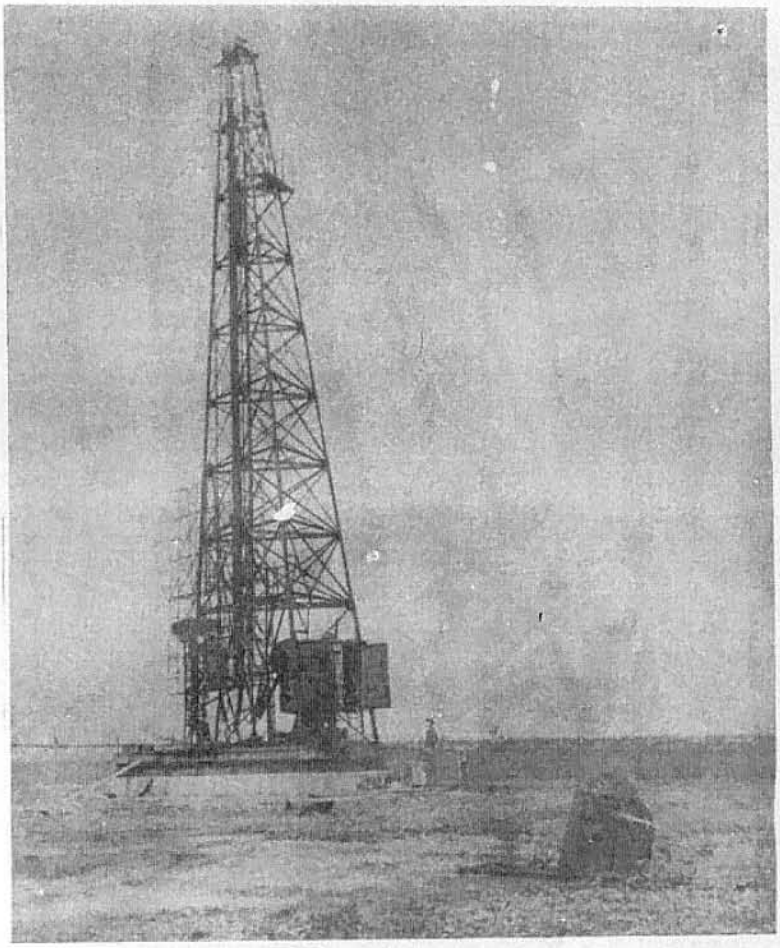
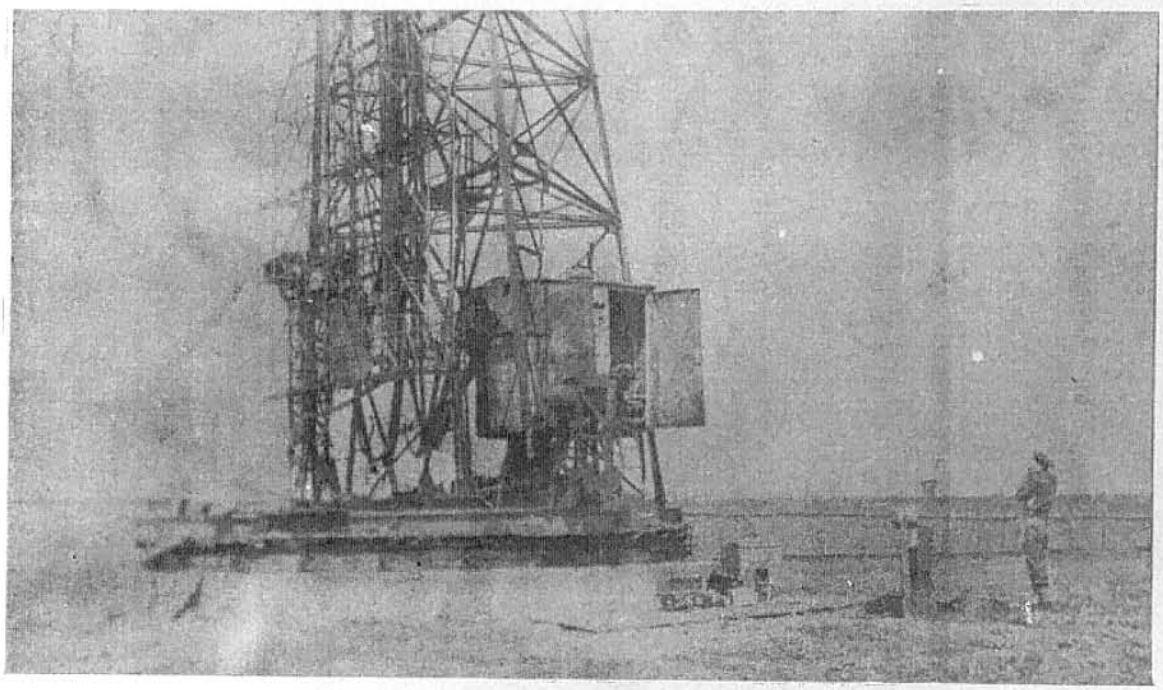


PLATE 4.



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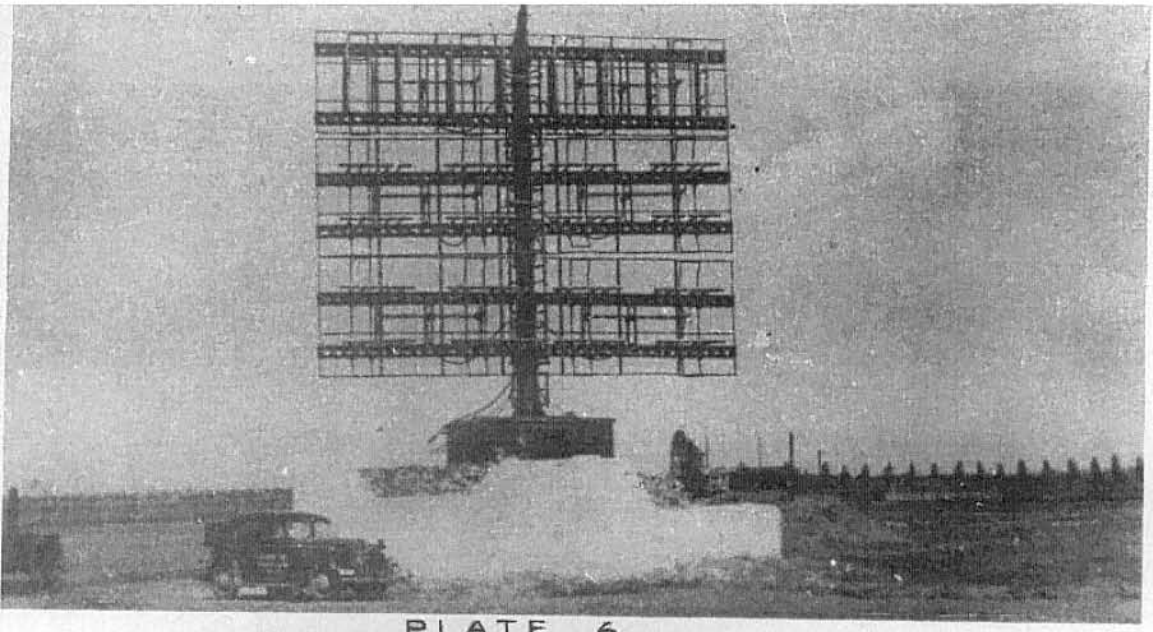

PLATE 6

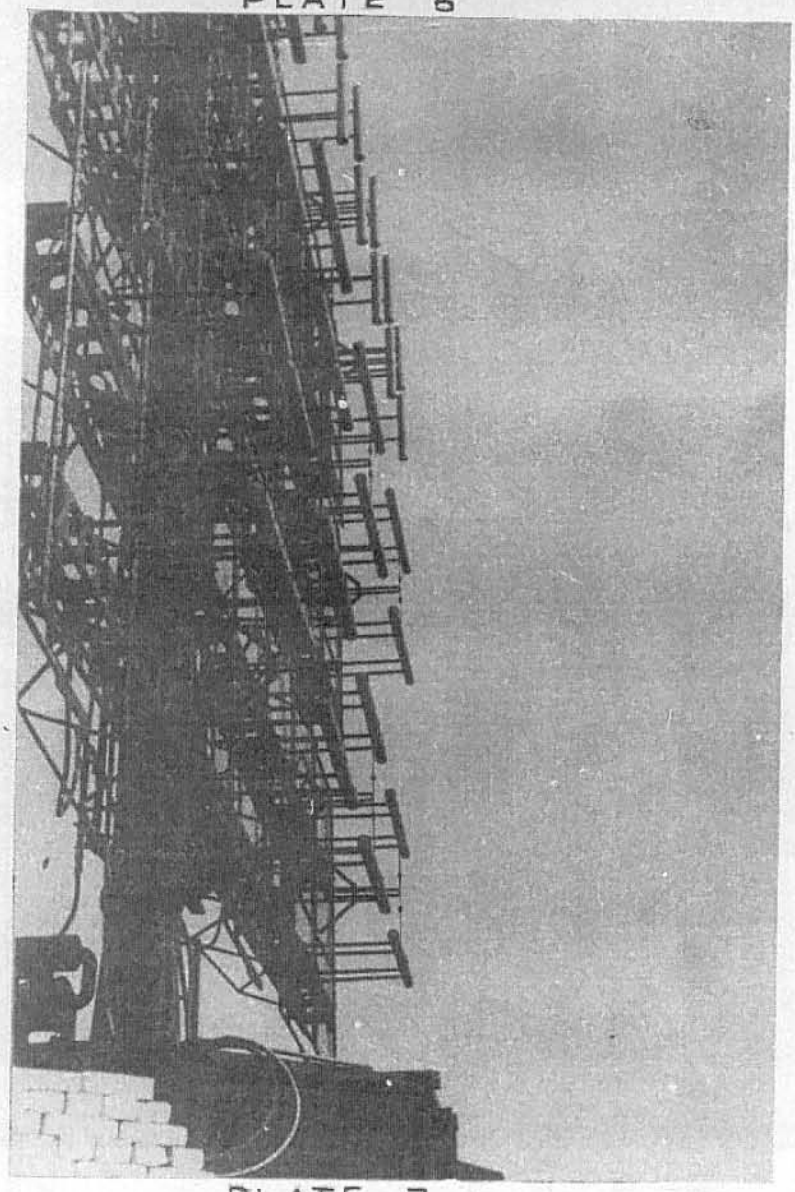

PLATE 7

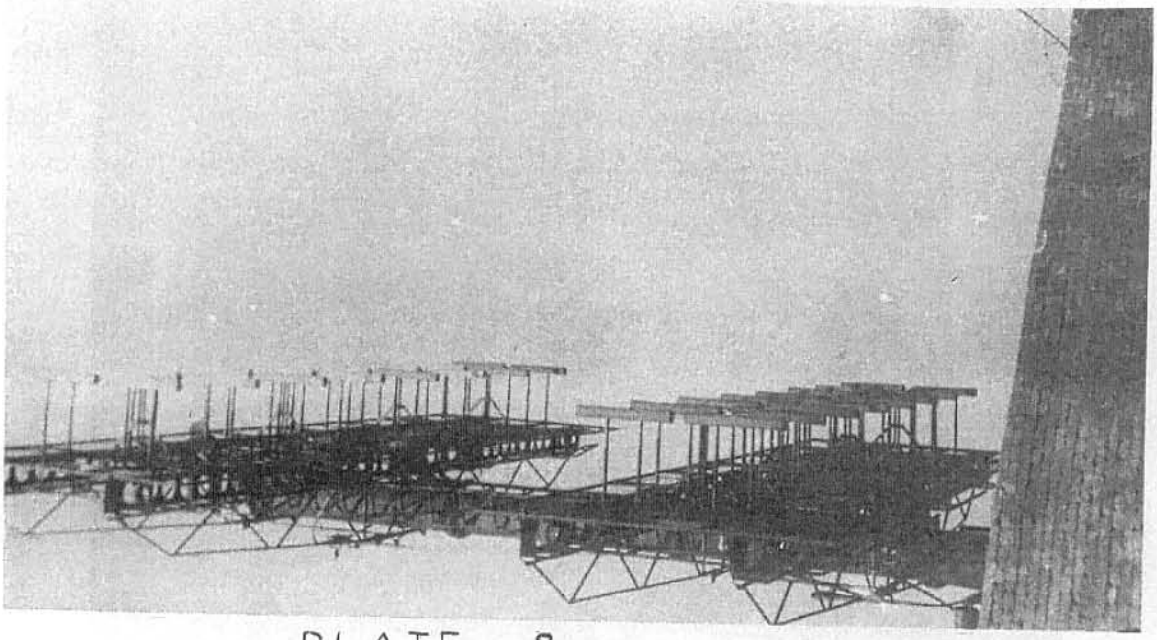

PLATE 8

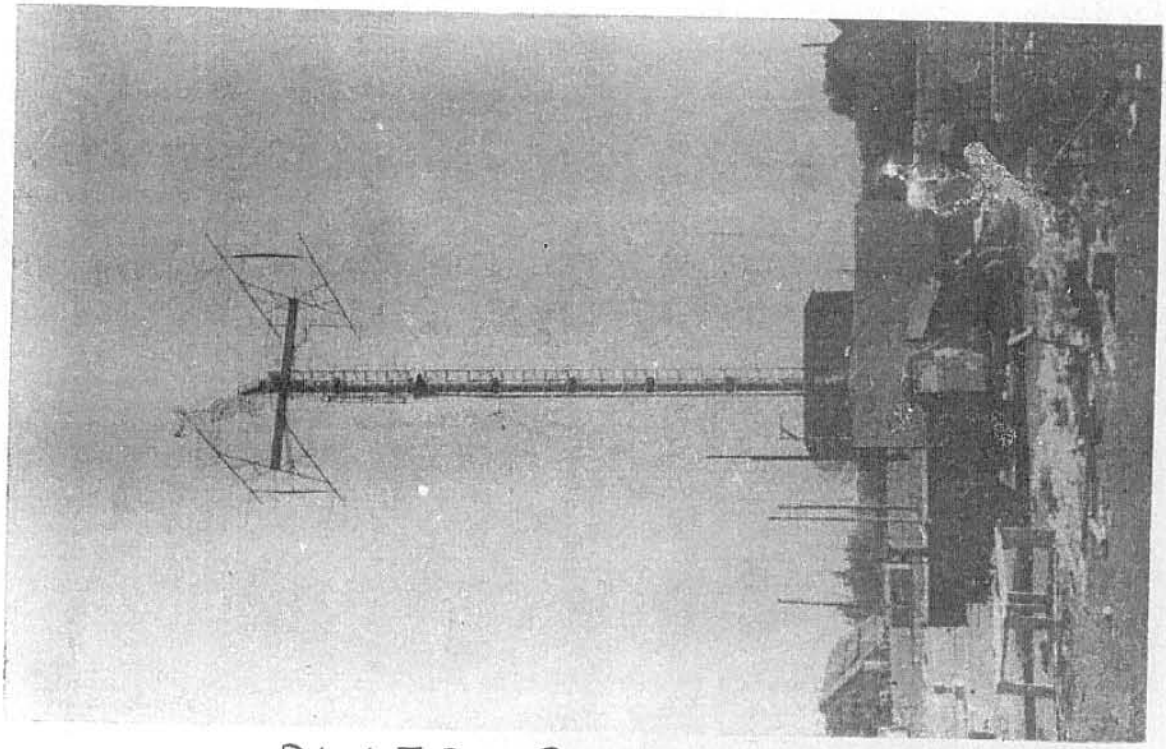

PLATE 9

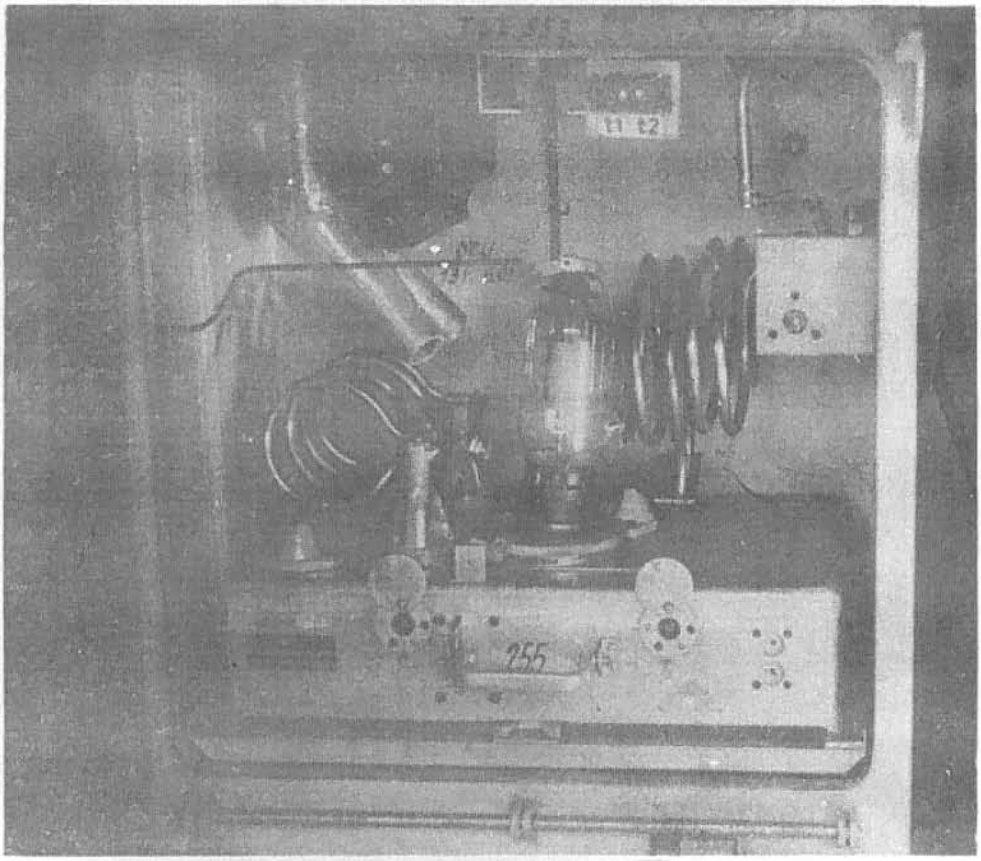

PLATE 10

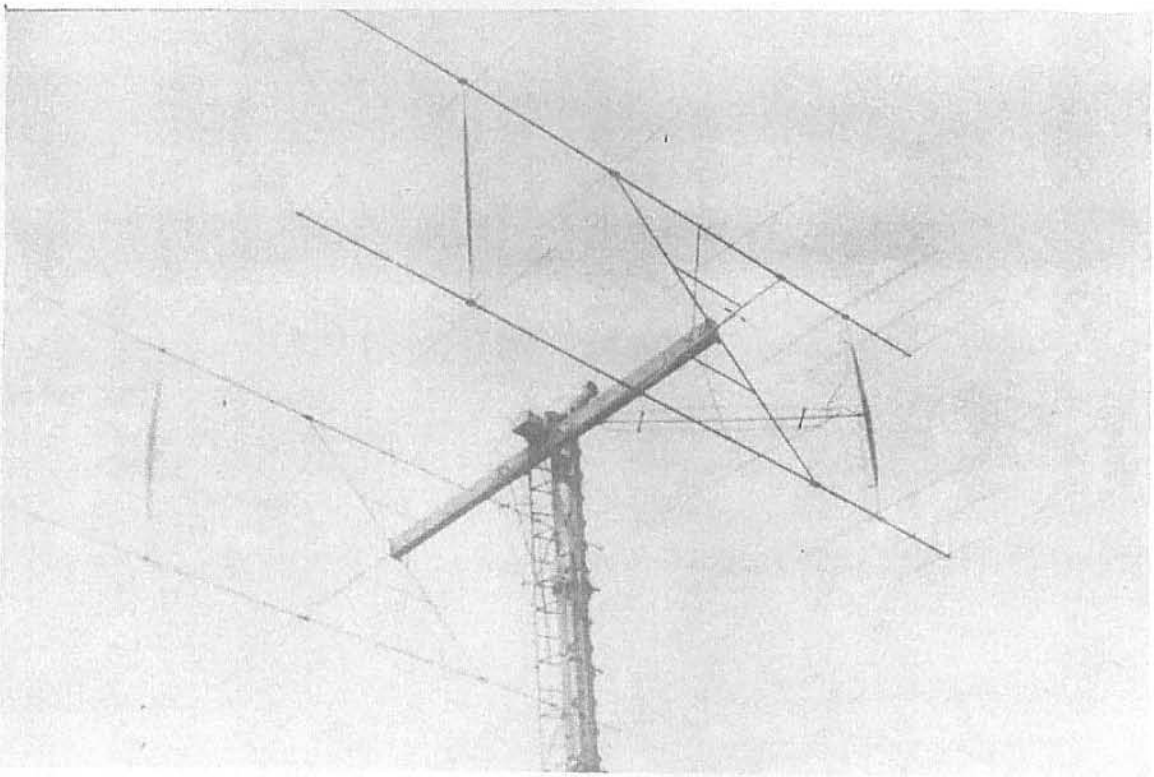

PLATE 11.

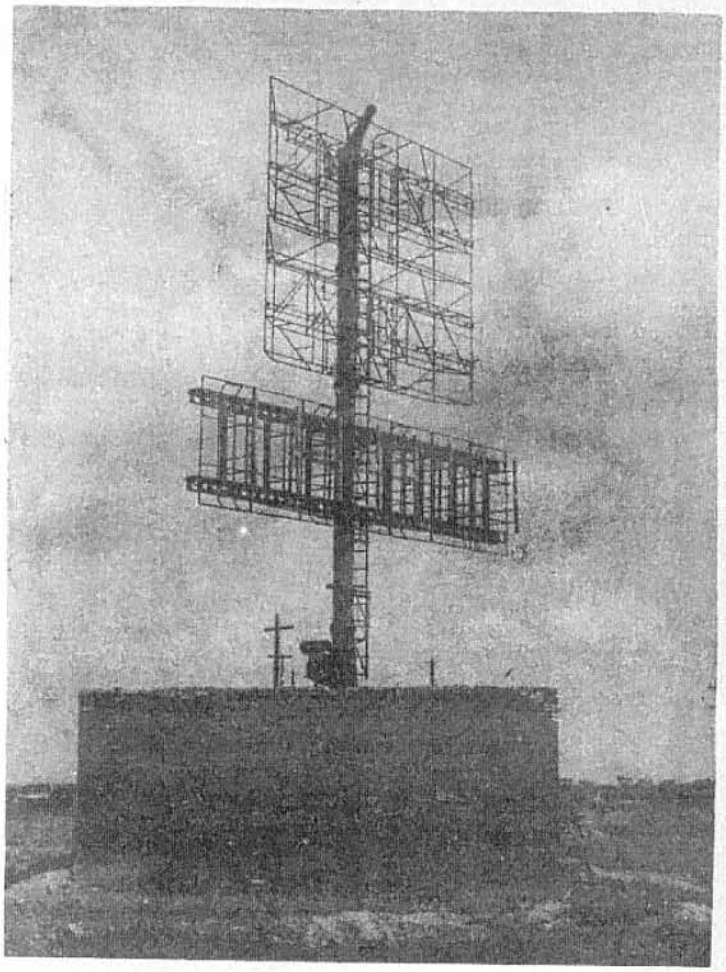

PLATE 12

PLATE 13