FTD-TT-63-110

TRANSLATION

GIGANTIC RADIO EYE

By

T. Akkuratova

FOREIGN TECHNOLOGY DIVISION

AIR FORCE SYSTEMS COMMAND

WRIGHT-PATTERSON AIR FORCE BASE

OHIO

UNEDITED ROUGH DRAFT TRANSLATION

GIGANTIC RADIO EYE

BY: T. Akkuratova

English Pages: 4

SOURCE: Russian Newspaper, Trud, 8 Dec. 1962, p 4

ASTAR 4345

THIS TRANSLATION IS A RENDITION OF THE ORIGINAL FOREIGN TEXT WITHOUT ANY ANALYTICAL OR EDITORIAL COMMENT. STATEMENTS OR THEORIES ADVOCATED OR IMPLIED ARE THOSE OF THE SOURCE AND DO NOT NECESSARILY REFLECT THE POSITION OR OPINION OF THE FOREIGN TECHNOLOGY DIVISION.	PREPARED BY: TRANSLATION DIVISION FOREIGN TECHNOLOGY DIVISION WP-AFB, OHIO.

Gigantic Radio Eye

by

T. Akkuratova

At a distance of several kilometers from Serpukhov is being built the largest in the world diagonal radio telescope. This gigantic "eye" will make it possible for scientists to take a look into the unexplored depths of the Universe. Right now is being completed the construction of the enormous east-west antenna having a length of a kilometer.

The road winds along the shore of the Oka river. Around us we can see fields, and far off on the horizon we see the dark wall of a forest. An ordinary landscape in the central part of Russia. . But suddenly the bus began climbing a hill, and you verbally enter a world of fantasy. On a plateau open to all kind of winds are paced steel masts encircled by a lace work of wires, suspended from azure little chains of antennas. Against the background of the cold sky you see bent metal frames, forming as if a gigantic string instrument. High above the ground you see blinding-blue suns of electrowelding with its sparks shevering in every direction. It appears as if arrivals from other planets are at work. But this is only an illusion. Terrestrial people are hard at work here. You can see them climbing up and down over put up scaffolds and ladders wearing conventional quilted jackets, belted with broad belts. These are assembly men A. Shementsov; N. Kichapin; V. Lapshin and mechanic M. Chernov. At greater height they are welding together metal structures, spanning steel wires of antennas. Here is being built a unique radio telescope, which will enable scientists to penetrate into the secrets of universes, removed from us by millions of light years.

• We are already finishing the assembly of the east-west antenna - says M. Chernov. Not much remains to be done and we will have a system of energy selection and

a system for rotating the entire instrument. At present time the assembly men are setting up support for another - north-south- antenna,,thoroughly checking their accuracy.

...In line with the frames of the radio telescope - a small house. Its rooms are filled to capacity with instruments. Here over cables will travel radio signals,picked up by antennas. Highly sensitive receivers will amplify same many times, transmit to a recording apparatus, and scientists will decode the starry voices, determine the coordinates of cosmic "radio stations". The radio telescope will be capable of picking up the weakest radio signals from the cosmos - interrogating signals" from far away stars, fogs, galaxies, originating in the depths of the universe millions and billions years ago. The objects sending the signals, can not be observed by any one of the existing astronomical instruments,because they are so far away from our planet. So far the instrument dials are dead frozen over the zero markers, the screens are not illuminated, curves are not flickering-running, engineer Yuriy Petrovich Ilyasov together with his comrades are making a thorough check of the instruments. He tells us in detail about the features of the unique astronomical instrument, his construction.

- The construction of our radio eye, which has been developed by P.D.Kalachev, is reliable and convenient in operation. It allows to automatically turn the entire giant reflector and control the synchronicity of rotation of individual "arcs" frames. Two antennas, arranged perpendicular to each other form the giant "cross". Length of each - kilometer, height 40 meters. Total area of radio telescope - 80 thousand square meters. This allows to "pick up" signals from weak and remote sources, raises the sensitivity of the instrument. One antenna will be stretched strictly over the meridian. The other one arranged from west to east. Each one scans the sky,literally through a narrow slit. The center of the "cross" formed by antenna "slits" separates radio waves from a strictly selected section of the firmament. Since the earth rotates about the axis, within 24 hours we will be able to examine the entire area of the sky.

- The greater length of the antennas,- continues Yu.P.Ilyasov,- creates a high resolving power of the instrument, i.e. it allows a more definite distinction of

radio radiation sources.

Finally, our "eye" has still another highly important feature. Ordinarily radio telescopes are tuned to one wave only. Our instrument will catch waves of various length - from two and one half to tens of meters. Our Sun broadcasts in that range. But this aspect will be better explained by Dr.of Phys-Math.Sc.V.V.Vitkevich.

We are interviewing Viktor Vitoldovich Vitkevich, chief of radioastronomy lab at the P.N.Lebedev Physics Inst.of the Academy of Sciences USSR. V.V.Vitkevich has recently made an important astronomical discovery, he detected the existence of so-called super-corona of the Sun. It surrounds our heavenly body with an expanded sphere which has a cross beam of tens of millionsof km. The super-corona is pierced by powerful corpuscular streams, electronic whirls rage in it and interfere with the propagation of radio waves.

The new radio telescope will allow to obtain more accurate and extensive data on the super-corona of the Sun, about the structure of near solar space,-says V.V. Vitkevich-, and this is very important. Time is not far away when man will fly to the nearest planets of the solar system. And we should well know the conditions through which radio waves are passing along these paths, taking into consideration the possibility of disrupting communication with the super corona.

When we said good bey to the radio astronomers, we have againa seen the spark of electrowelding, the assembly men were spanning wires,threading antenna rings- soon the radio eye will peak into the universe.

On illustrations: Gigantic "Radio Eye" into the universe.

DISTRIBUTION LIST

DEPARTMENT OF DEFENSE	Nr. Copies
HEADQUARTERS USAF	
AFCIN-3D2	1
ARL (ARB)	1
OTHER AGENCIES	
CIA	1
NSA	6
DIA	9
AID	2
OTS	2
AEC	2
FHS	1
NASA	1
ARMY	3
NAVY	3
RAND	1
NAFEC	1

MAJOR AIR COMMANDS	Nr. Copies
AFSC	
SCFDD	1
ASTIA	25
TDETL	5
TDEDP	5
SSD (SSF)	2
AFGC (PGF)	1
ESD (ESY)	1
RADC (RAY)	1
ASD (ASYIM)	1
AFSWC (SWF)	1
AFMTC (MTW)	1