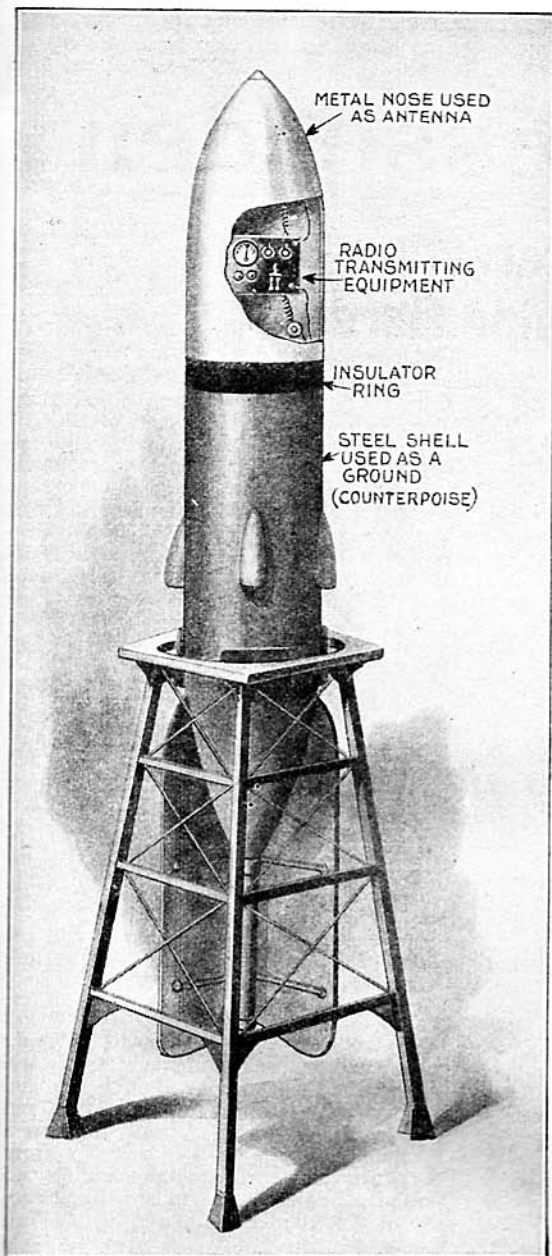


# Is Radio Earthbound?

By D. C. WILKERSON

*Can Radio Waves conquer interstellar space and travel from planet to planet? That is the question the scientists hope to answer with Prof. Goddard's proposed Moon Rocket, which will contain a radio transmitter.*



The proposed design of the Moon Rocket. A radio transmitter, within the nose of the shell will send out waves continually, as the rocket takes its course.

**D**URING the last year, more than any other year in history, men have been given the results of scientific radio achievements which stimulate the imagination, as a spur to lagging engineering and technical development.

We have experienced the near approach of Mars, the flurry of mysterious radio impulses apparently connected with the fiery planet in some way, but the findings of this investigation have not been thoroughly tabulated from all quarters.

Professor C. Francis Jenkins, the television and telephotographic expert, made signal graphs of the electrical disturbances for the whole time of Mars' approach period, and there are other results yet to be centralized for study, from all over the world.

From scientific research and countless years of grinding labor, the human race has been able to grasp the immensity of the eternal universe to which the earth is an insignificant part. The aver-

age "man in the street" now knows that we on earth are flying at tremendous speed through the heavens, linked to the sun and the other planets, our solar system being in turn linked in some way to the greater system of tremendous stars.

Astronomers have yearned for centuries to bridge the gap beyond our own infinitesimal plane, and determine whether or not nature has peopled other worlds with living, thinking beings like ourselves. The physical limitations of space, and the force of gravity chain us to the earth, but the eye, aided by giant telescopes, has pierced the heavens and found there much food for reflection.

Even with the tremendous magnifying power of the mightiest of modern telescopes, we cannot discern on any other celestial body traces of life. The face of the moon, the

nearest object in point of miles to our earth, discloses no vestige of animal or vegetable life. The greenish haze noted on the surface of Mars has not been satisfactorily observed generally.

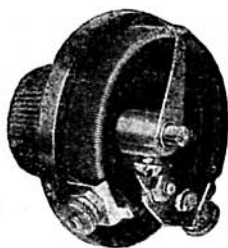
## HEAVISIDE'S RADIO WAVE THEORY

The sudden growth of radio has placed in our grasp a new force of most portentous possibilities. It is practically instantaneous. Its wave moves with the speed of light. A modern English physicist, Dr. Heaviside, has propounded the theory that radio waves are earthbound, being guided by the elec-

(Continued on page 1760)



Whether or not radio waves are earthbound, that is, contained entirely within the Heaviside layer, will be determined through the moon rocket experiment. If the setting up of radio waves beyond the earth's zone by means of the rocket is feasible as delineated, there is the chance of hearing them on earth.



## How Many Ohms?

Many people find it very difficult to choose the correct rheostat ohmage for their tubes. This is because no reliable data has as yet been made available to guide both fan and radio dealer—data that is clear and understandable.

The Klosner Radio Corporation has devoted considerable time to checking up all available data on the subject as well as to conducting independent experiments.

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This chart covers every use to which a rheostat can be put, with all the various types of vacuum tubes in general use. It is invaluable as a source of standard information to every user of a radio set. The dealer will find it indispensable.

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RHEOSTAT CHART					
The correct Rheostat Ohmage for every use					
TUBE TYPE	OHMS	WATTS	RESISTANCE	REMARKS	
250A	100	1	1000	For filament	
250B	100	1	1000	For filament	
250C	100	1	1000	For filament	
250D	100	1	1000	For filament	
250E	100	1	1000	For filament	
250F	100	1	1000	For filament	
250G	100	1	1000	For filament	
250H	100	1	1000	For filament	
250I	100	1	1000	For filament	
250J	100	1	1000	For filament	
250K	100	1	1000	For filament	
250L	100	1	1000	For filament	
250M	100	1	1000	For filament	
250N	100	1	1000	For filament	
250O	100	1	1000	For filament	
250P	100	1	1000	For filament	
250Q	100	1	1000	For filament	
250R	100	1	1000	For filament	
250S	100	1	1000	For filament	
250T	100	1	1000	For filament	
250U	100	1	1000	For filament	
250V	100	1	1000	For filament	
250W	100	1	1000	For filament	
250X	100	1	1000	For filament	
250Y	100	1	1000	For filament	
250Z	100	1	1000	For filament	

antenna and adjusted to various transmitting waves. On the receiving side, it is simple to handle, requiring only two controls which are the condenser VC and the potentiometer. During the present winter months the "6" amateurs (Sixth District, Pacific Coast) come in with fairly good audibility on the more favorable nights (this reception being at Pittsfield, Mass.). The change of switches and VC adjustment for shifting from transmitting to receiving, or vice versa, requires about two seconds. When starting to work a station, however, it is best to make a notation of the dial setting of the VC so that on subsequent change-overs after transmission, the "Uni-Set" can be put back to precisely the same receiving adjustment without any exploring.

Aside from its utility for amateur work, the "Uni-Set" might have a possible field of application where compactness and portability are desirable factors, such as in army field work, forest patrol service and aviation. After the writer has had two or three months of experience with the operation of the "Uni-Set," a report of the DX will be submitted including the results of some more extensive voice tests.

## I Want to Know

(Continued from page 1690)

radio frequency amplification, neutralized, added to a regenerative detector and two-stage audio frequency amplifier set.

"C" is a standard neutralizing capacity. The three-coil inductance unit is of advanced design. It has been found that much greater amplification could be had if the capacity coupling between the primary and secondary of transformers could be eliminated or reduced.

To that end, a special inductance, called a "regenerator," was designed. It has a rotor (which may be made by winding 30 turns of No. 24 D.C.C. wire on a 2 1/4-inch to 2 1/2-inch tube. A hard rubber tube will be best) at one end of the secondary. This secondary may be made in the conventional manner by winding about 50 turns of No. 24 D.C.C. wire on a three-inch tube. At the opposite end of the secondary is the primary. It fits just inside the secondary, at the filament end, and is only two turns wide. In order to transfer sufficient energy from primary to secondary, more inductance is required, so a deep groove, two turns wide, is cut in the insulating disc in which the primary is now wound. For experimentation, try about 15 turns of No. 24 D.C.C. wire as the primary. It may be necessary to change this to as many as 20 turns, or even 25 turns, depending upon the care used in construction.

Resistance "R" may be a Bradlevohm or a Variolm variable between 10,000 and 100,000 ohms. A filament control jack is used to cut off the filament current of the audio frequency amplifier tubes, when only the detector is being used for reception.

## Is Radio Earthbound?

(Continued from page 1629)

trical properties of the surrounding gases.

This theory enjoys great vogue among men of high authority. More adventurous minds have hoped that by means of the radio wave we might communicate with other living beings on other planets. What a masterful conception to stimulate the hopes of man! To reach out beyond our own little sphere and find other civilizations will do more to advance human thought and development than all the works of religious founders for all time.

Communication from airplanes and airships between each other and with radio ground stations has given support to the thought that possibly the radio wave is not fettered to earth, and that it might penetrate to interstellar space.

Electromagnetic disturbances caused by mighty eruptions shown in spots on the face of the sun have been noted on the earth and records made from them in radio stations. If such disturbances can project a radio wave from the sun to the earth, then is it not proved that these impulses can carry on through space?

# on the dot

It's as easy as placing your pencil point on a town on the map—this tuning in with Apex Vernier Dials.

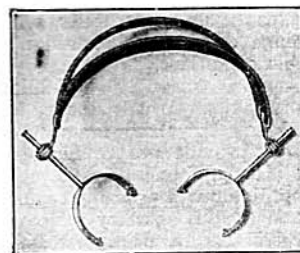
They make logging a simple matter and "getting a station" positive. The ratio is 12 to 1. Sells in Royal Brass Finish for \$2.00—Satin Silver Finish \$2.50—DeLuxe Gold Plated (24k) \$3.50. Applied to any shaft—quickly.

Apex 7-Tube Microdyne—Super-Heterodyne knock-down sets sell for \$97.50. The Apex Super Five in a Walnut Cabinet is \$95.00. See your better Radio Dealers.

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To obtain exact proof of this perplexing question has been a problem impossible of solution, since we had no way to set up radio waves beyond the earth's zone of influence, until Professor Goddard first brought out his projected Moon-Rocket.

#### THE MOON-ROCKET

The Moon-Rocket has been discussed in these columns before, and a lengthy discourse about it would be out of place here. Simply the plan is to build a giant rocket which shall move through space by the ejection-reaction principle. It will carry a series of explosive charges sufficiently powerful to drive the body of the rocket beyond the gravitational pull of the earth, the successive charges to drive the rocket to the moon. As the mighty projectile progresses through the heavens, it will be watched by thousands of astronomers who will check on its flight, speed and the place where it lands on the moon. This latter item of course depends upon the accuracy of calculations made for picking the proper time, place and direction of initial flight.

#### TO INCLUDE RADIO TRANSMITTER

It is now proposed to include in the mechanism of the rocket a small but powerful radio transmitter which shall be set in operation at the moment the rocket is released. Coincident with the verifying of the flight of the rocket by astronomers, the vast army of radio listeners will stand by their receiving sets with watches in hand noting the strength of signals as long as they shall continue.

This will settle once and for all whether or not the radio wave, our only present day hope for signaling other intelligent creatures on other planets, can conquer the void between our interstellar neighbors and ourselves. What a wonderful inspiration it will be to mankind to realize that there exists elsewhere than on earth other living, thinking beings.

Some plans were made for carrying a man as a passenger in the Goddard Rocket, and volunteers were even listed for the journey. Such a human sacrifice has been discouraged, for there is little doubt but that a man thus carried could not survive the trip for many reasons. It is also believed that the first tremendous impulse of the rocket in flight would be great enough to burst the blood vessels of the passenger, therefore the idea of the passenger has been abandoned.

In lieu thereof, the radio transmitter has been suggested as a passenger. It will certainly provide intelligent means for obtaining important facts about the vast spaces existing throughout the universe.

When the world of science knows for a certainty that the radio waves can carry through interstellar space, the time when further and more ambitious attempts to communicate with our planetary neighbors will be hastened.

This may answer the cynical queries of skeptics who demand to know what use all this sort of thing is to the world. Every new scientific fact produced supplies further tools with which to better our fast growing and complicated structure of civilization. Let it be hoped that success crowns the efforts of all men who dare to pioneer the distant fields of our universe.

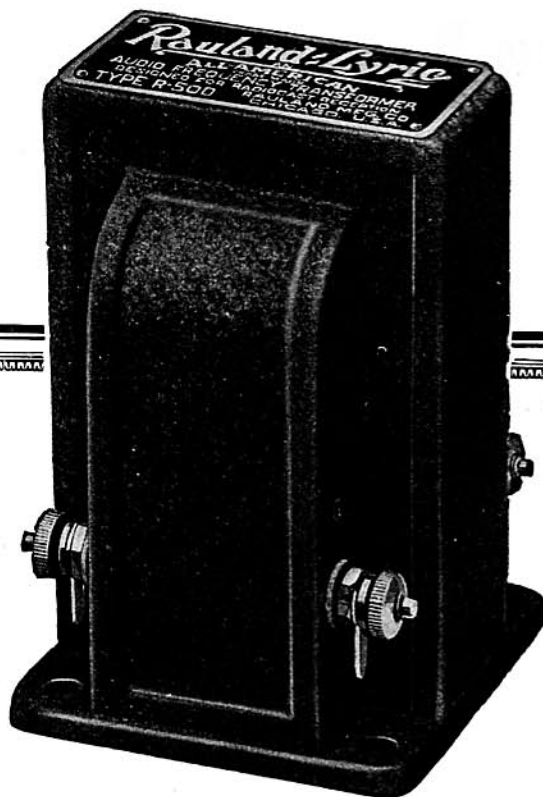
#### 'TIS AN ILL WIND THAT BLOWS NO GOOD

Lawyer: "We've a strong case against the Hectic Transformer Company."

Client: "Why is that?"

Lawyer: "In the radio trial, the judge's receiver greatly distorted the facts."

Contributed by Jack Bront.



## Tonal Beauty Lies Deeper than the Varnish

DEEPER even than the circuit diagram—chiefly, indeed, in the audio transformer.

All-American engineers, builders for years of the largest selling transformers in the world, have achieved another triumph, in the world's finest transformer at any price. Rauland-Lyric amplification, with an ordinary tuner and loudspeaker, has received the plaudits of musical authorities hitherto skeptical of all radio reproduction.

Perfect amplification makes of radio a joy unending. Who shall say that such a benefit is not worth the slight additional cost?

There is romance in the story of Rauland-Lyric. A request will bring it to you complete—from the laboratory studies to the auditions with world-famous music critics. Rauland Manufacturing Company, 2646 Coyne Street, Chicago.

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