

Situated on a plain, near the geographical center of the U. S. is the world's biggest monitoring station, maintained by our Government.

GRAND ISLAND

-Where Pink Slips Are Born

by STANLEY JOHNSON, W9LBV
Grand Island, Nebraska

Often have we wondered what sort of place the birthplace of the infamous "Pink Slip" was. The author describes this most interesting receiving station where DX is very commonplace.



Nary a transmitter in sight in the main room of the Grand Island Monitoring Station.

EVERY good radio operator, whether he is a "ham," a broadcast engineer, or a seagoing "sparks," has heard of Grand Island, Nebraska. Most "bad" radio operators have heard from it, since the government monitoring station, which polices the radio lanes of the world, is located a few miles west of this midwestern city. The station houses radio's equivalent of the "G-men."

However, unlike the "G-men," radio inspectors seldom deal with cases which are clearly of a criminal nature. Most violations of radio regulations are the result of maladjustment of equipment or errors in operating technic. For this reason, the usual penalty is a simple statement of the nature of the offense and a notice to explain how it happened. The revocation of a license, which may, of course, spell financial ruin for a broadcasting station or deprive an operator of his means of earning a living, is regarded as a severe penalty. Fines and imprisonment are rare and their occasional imposition only serves to re-

mind those who have the urge to violate radio laws that the laws have teeth in them.

There are several monitoring stations in the United States but the largest in this country, or for that matter the world, is that located at Grand Island, Nebraska. The stations are maintained by the Federal Communications Commission.

Tourists from other states who visit the Grand Island station are first of all impressed with the plains country in which it is located. The land is extremely flat, with only occasional clumps of trees. The buildings for the station stand alone on a bare square mile of land, with but two farmhouses closer than half a mile. Airway warning lights, on top of the antenna masts of the station, are visible from the transcontinental Lincoln Highway (No. 30) three miles south. There are not even power lines to break the bareness of the scene, all of the wires being brought in underground.

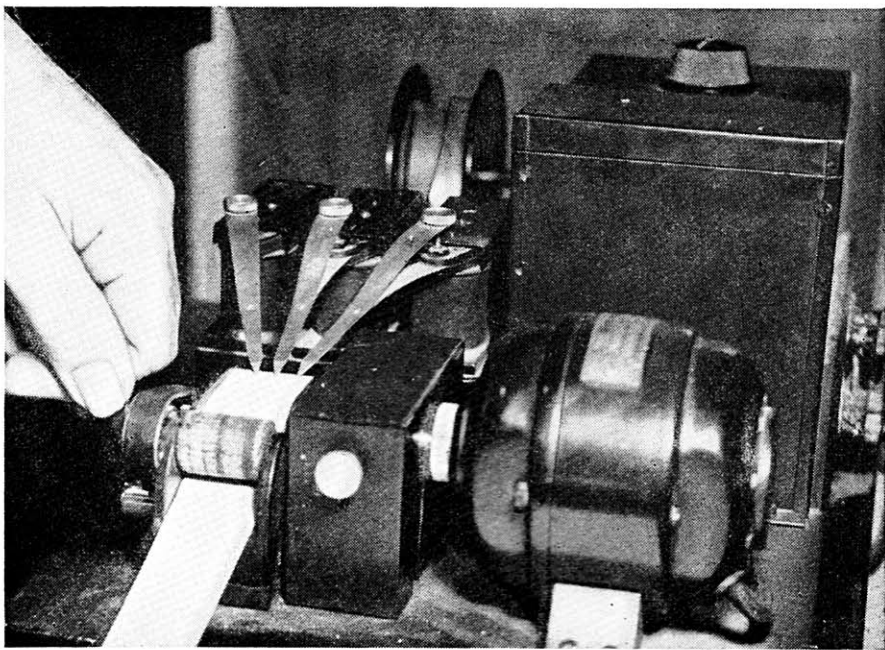
The "wide open" location of the station helps to make the spot a paradise for radio reception. Since the antennas are higher than any nearby objects and there are no hills to interfere, weak signals are picked up with a minimum of loss. Too, since the land is so flat, the station's directive antennas can extend in perfectly straight lines and are extremely effective—signals from all over the world pounding in with "local" strength. "Ham" visitors usually mutter something about "What a spot for rhombics—a couple of rhombics." The chief requirement for the popular rhombic antenna is a backyard the size of a farm.

The location of the station has some important geographical advantages, too. Grand Island is very near the exact center of the United States, less than seventy-five miles from the spot in northern Kansas to which map makers have given that distinction. Thus radio stations on either coast can be picked up with approximately the same signal strength and with a minimum of interference from each other. Another feature of the location is its freedom from nearby broadcasting stations which might block the signals from weak, distant transmitters. The nearest broadcasting station is KMMJ in Clay Center, Nebraska, a distance of approximately 30 miles, airline. The 20,000 watt KFAB, Lincoln, is the closest high power station and it is almost 100 miles away.

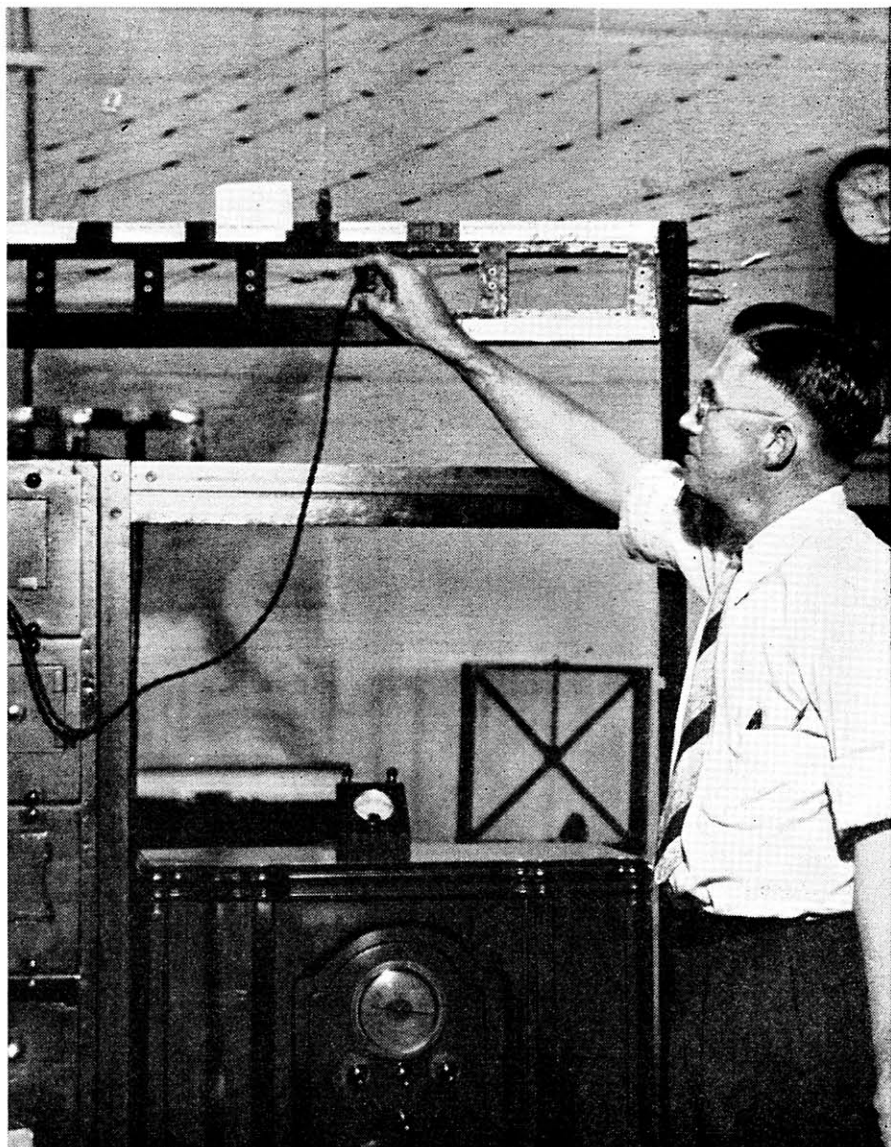
Grand Island, a city of twenty thousand, stands in the heart of a rich farm trading area—making it an ideal spot for a broadcasting station—but when the monitoring station was proposed, city officials promised that no commercial transmitters would be erected in the city. So far, this promise has been kept. The only stations on the air in the Grand Island area are half a dozen amateur "rigs," an eight meter police transmitter, and a low power airway beam station located a few miles north of the city.

The monitoring station has no transmitting equipment. All of the necessary apparatus is housed in two brick buildings standing on grounds landscaped with thick grass and low bushes—but no trees of any size. Receiving equipment is in the larger of the two buildings.

On one side of the entrance hallway is the office of Benjamin Wolf, inspector in charge of the station. Two secretaries as-



An intricate time clock recording system is used for frequency standard checking.



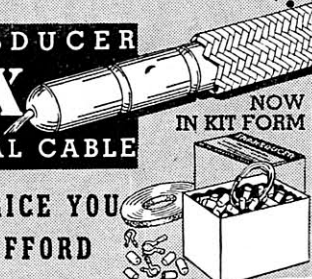
Antennae run in all directions. Clips are used to select the correct receiving pair.

DOUBLE FEATURE!

TRANSDUCER Co-X

COAXIAL CABLE

AT A PRICE YOU CAN AFFORD



Now, for the first time, the radio amateur can buy Coaxial Cable in handy kit form—complete and ready to assemble—at a price he can afford. Transducer offers Co-X, the new, flexible, low loss cable—only product of its type available. Co-X kits comprise a central conductor, "Lifetime" ceramic insulators, outer conductor, all accessories and instructions for finishing cable. Make up your own half inch heat proof Co-X, of any characteristics you wish, to the required lengths, and save more than one-third the price of finished cable. Simple to assemble. Kit K2B—10 feet . . . \$2.40, Kit K2B—25 feet . . . \$6.00, Kit K2B—50 feet . . . \$12.00.

Co-X is invaluable for low loss antenna lead-ins, transmission lines, and ultra-high frequency work. Available only through

TRANSDUCER CORP.

USE COUPON FOR ORDER BLANK

TRANSDUCER CORPORATION
30 ROCKEFELLER PLAZA, N. Y. C.

TRANSDUCER CORPORATION, 30 ROCKEFELLER PLAZA, N. Y. C. RN-1238

Enclosed please find my M. O. ☐ Check ☐ for Kit.
Also please send complete free literature. Send C.O.D.

Name

Address

City State

FOR LITERATURE ONLY PASTE COUPON ON PENNY POSTCARD

WHITHER RADIO?

What will radio be in the future?

Read what modern imaginative writers have to say about the science of radio in the future. Fiction that might become fact overnight. Fiction based on today's facts.

BLACK EMPRESS

A story of the future, or radio and television across the void. Radio controlled planes. Radio weapons. And the dynamic story of the greatest murderess in history. Why did she do it?

"I, ROBOT"

An amazing confession. The story of a robot, told by a robot. The most amazing science fiction story ever written.

And many other thought-provoking, entertaining stories and features in the

BIG JANUARY ISSUE

AMAZING STORIES

NOW ON SALE AT ALL NEWSSTANDS

Grand Island—Where Pink Slips Are Born

(Continued from page 12)

consulting calibration charts. Thus the operator knows that the signal has a frequency within a given ten kilocycles, for example, 14200 and 14210. Given the three dial readings on the frequency meter—the two multivibrator harmonics and the one for the signal—the operator, by a simple mathematical process, "interpolates" and determines the frequency. A long slide rule bolted to the desk makes the calculation easy.

This method of frequency measurement is accurate to one part in fifty thousand, more than enough for checking amateur stations and most other short wave stations. However, for even greater accuracy in the case of signals which fall on harmonics of ten kilocycles, as do stations in the broadcast band, a beat note is obtained between the signal and a harmonic of the multivibrator. Then, with an audio oscillator, the operator counts the frequency of the beat note and adds or subtracts this from that of the multivibrator harmonic, the frequency of which is known.

Frequency measurement by this method has an accuracy of one part in a million. If a civil engineer could lay out a highway with equal accuracy, the error in a road long enough to reach around the world at the equator would be less than half of a small city block.

Once the frequency of a station is determined, the signal which it broadcasts, particularly if a radiophone, undergoes an examination by the cathode ray oscillograph, the X-ray of radio. Most radio fans are familiar with the oscillograph, which changes a radio signal into a visible pattern which glows on the flat end surface or "screen" of the cathode ray tube. The modulation of amateur phone stations is checked by comparing the image on the oscillograph with a chart made up of photographs showing the type of image for each ten degrees of modulation. For example, if a signal produces an image which looks the most like that for ninety per cent modulation, the station is rated at that percentage.

If the station which has been monitored is guilty of off frequency transmissions or of some other violation, perhaps overmodulation, the radio inspector who does the monitoring fills out two "pink slips," one of them going to the violator and the other to the F.C.C. offices in Washington. The wording of these slips is enough to make anyone sit up and take notice. The sixth in a list of instructions for radio amateur reads, "The importance and necessity of operating your transmitter in strict compliance with the rules and regulations cannot be too strongly emphasized. You are directed, therefore, to state why the Commission should not take action to suspend your operator's license and revoke your station license."

The Grand Island monitoring station spends approximately ten per cent of its operating hours in checking amateur stations. This percentage does not hold true for individual days, however. As one of

the radio inspectors described it to the writer, "The ham catches it when there isn't anything else to do." The inspector said this with considerable good humor, having once been an amateur himself and knowing something of the trials of ham radio. When there are special transmissions from broadcast band and commercial stations to be monitored, the amateur bands receive little attention. At the present time, more amateurs run afoul the regulations concerning the type of signals than are guilty of off frequency operation, the more common complaint a few years ago.

One question which radio amateurs frequently ask the "hams" who are on the air in Grand Island is, "You live so close to the monitoring station, do you ever have any trouble?" The answer is that the amateurs in the city have always been careful in using their equipment, frequently checking each other. To the writer's knowledge, there has been only one case of a member of the "G.I. gang" tangling with the regulations and that was under circumstances which made it something of a joke on both the monitoring station and the offending "ham."

The case in question would not happen now, since the routine of sending "pink slips" has been changed. At that time, four or five years ago, the monitoring station simply recorded the call letters of the station in error, not determining its location, and mailed a notice of the violation to the Washington offices, which issued the discrepancy report.

The amateur who was the victim of circumstances lived in the country, a little more than a mile from the monitoring station—in fact, the buildings can be seen from his home. He went on the air with a low power transmitter, monitoring it frequently to keep it in the band. Nevertheless, one day he opened the mail box to find it fairly stuffed with heavy brown envelopes postmarked "Washington."

The blanks showed that while the fundamental frequency of his transmitter was in the band, he had been picked up on six harmonics not falling in amateur bands and to make matters worse one of the harmonics, the third, was reported as being an illegal type A-2 transmission!

Of course, the matter was straightened out eventually—since the amateur transmitter was so close, reception at the monitoring station on a number of harmonics was unavoidable. But the amateur operator spent several days filling out affidavit after affidavit explaining why it really was not his fault at all!

So that's Grand Island. If any of the ham readers should ever get a "pink slip" they will have some idea of what means were used to check their frequency and discrepancies. Above all, however, the inspectors are more than fair in all their dealings with the radioists, and they have one thing—understanding of the problems involved.