



PROPAGATION

by Jim Heck

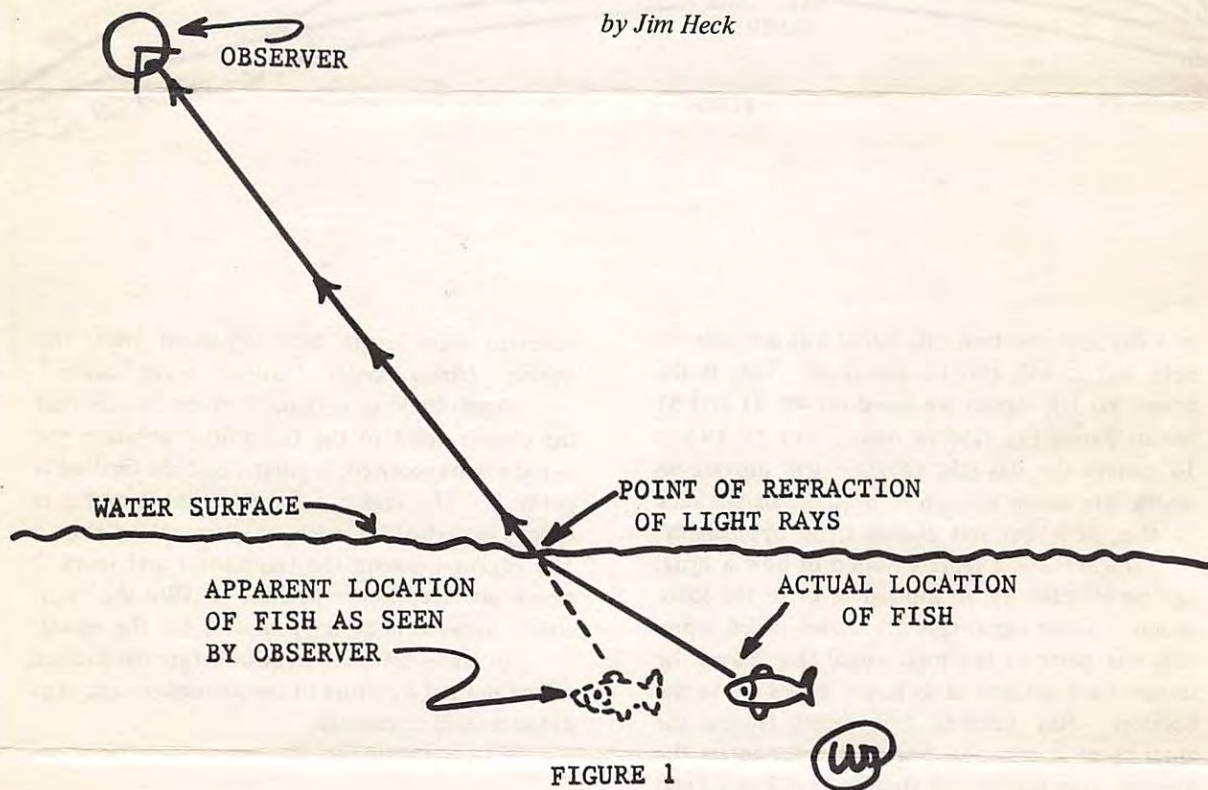


FIGURE 1

The very enjoyable hobby of shortwave listening and DX'ing is made possible by a natural phenomenon called inospheric radio propagation. If it were not for the fact that our planet has an ionosphere which can bend high frequency radio signals back to its surface, shortwave listening would be impossible. Because of this important phenomenon, a basic understanding of high frequency radio propagation can increase your enjoyment of the hobby. In this and subsequent issues of ANDEX, the general subject of shortwave radio propagation will be covered.

Almost everyone has seen or read about the science experiment shown in figure 1. The fish appears to be in one location when it is actually

slightly to the right. This phenomenon results from the fact that light rays are bent as they pass from a media of one density to a media of lesser density. In the same way a radio signal can be refracted as it passes from a media of lower electronic density, i.e. the atmosphere, into one of a higher electronic density, i.e. the ionosphere. The amount of refraction, or bending, depends on the wavelength of the signal, the intensity of the ionization in the inosphere and the angle at which the signal strikes the ionosphere.

The lower the frequency of the signal (3.5 to 10 mHz) the more easily it is to bend. If the frequency is too low and the ionization high, as

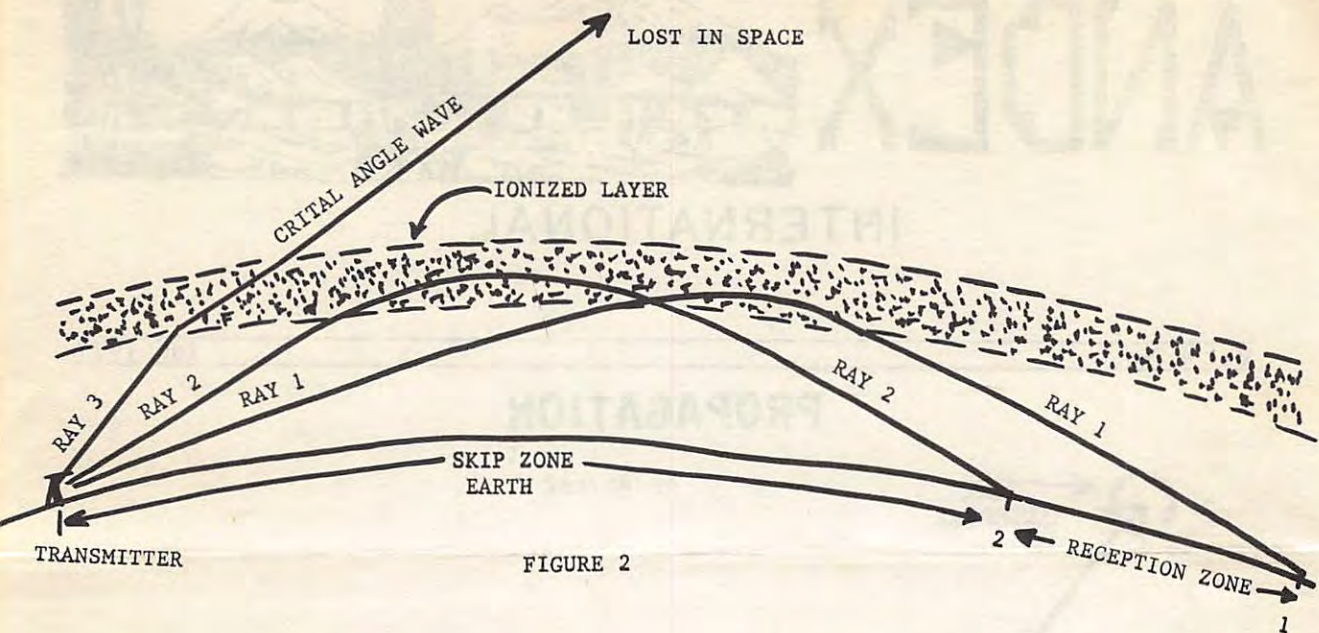


FIGURE 2

in a daylight situation, the signal will not only be bent but it will also be absorbed. This is the reason no DX signals are heard on 49, 41 and 31 meters during the daytime hours. For 25, 19 and 16 meters the daylight situation will provide an ionosphere strong enough to bend the signals back to the earth but not absorb them appreciably.

Figure 2 is a representation of how a signal can be affected by an ionized layer in the ionosphere. Three signal rays are shown which represent the parts of the total signal that leaves the transmitting antenna at different angles above the horizon. Ray number 1 is shown leaving the antenna at a very low angle. It encounters the ionized layer further out than do rays 2 and 3 and consequently is returned to the earth at the greatest distance. Ray number 2 leaves the antenna at a greater angle, encounters the ionized layer sooner and is returned to the earth at a closer distance to the transmitter than ray number 1. Ray number 3 leaves the antenna at quite a high angle and because of the steep angle, does not travel through enough of the ionized layer to be refracted back to the earth. The angle of ray number 3 is called the "critical wave angle." Any part of the signal which strikes the ionosphere at angles equal to or greater than the "critical wave angle" pass on out into space and are lost forever. The "critical wave angle" is different for signals of

different wave length with signals of lower frequency having larger "critical wave angles."

Again looking at figure 2, it can be seen that the closest point to the transmitter at which the signal can be received, is point 2 and the farthest is point 1. The region between point 1 and 2 is called, reasonably enough, the "reception zone." The region between the transmitter and point 2 where no reception is possible is called the "skip zone" because it is skipped over by the signal.

In subsequent ANDEX bulletins the subject of the normal structure of the ionosphere and skip distances will be covered.

73's and good DX'ing.

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A FAMILY AFFAIR



Lori Joyce Sandy Roger

All four members of the Stubbe family are getting involved in the DX scene at HCJB.

Many of you are already acquainted with Roger who is the substitute host on DX PARTY LINE. Perhaps you have also heard him on "HELLO DXers," a weekly program which he does in slow English for the Japanese release at 1200 GMT, 9715 and 11835 kHz. He also hosts a weekly DX program in Spanish at 0145 GMT Tuesday on 11960, 6050, and 690 kHz. Roger is frequency manager at HCJB and recently became Director of the Spanish Department.

Joyce and Sandy are the new office personnel for ANDEX since Doris Hastings left for furlough. Joyce reads and processes the letters and reception reports that come from ANDEX members. You might hear her on PASSPORT, with Roger, two or three times a month. She also participates on "Box 691" each week.

Sandy is the new ANDEX membership secretary and is also responsible for the monthly mailings during the summer months. She is 16 and will be a junior this fall at the Alliance Academy in Quito. Sandy has been bombarded with applications from new members as well as membership renewals. She wishes to remind all members to keep her informed of address changes and to send their renewals in promptly to avoid unnecessary delays.

Roger and Sandy enjoy mountain climbing. Roger has been to the top of both of the peaks of the Ilinizas (17,000 and 17,500 feet).

He has climbed to the top of Cotopaxi (19,500 ft), and made an attempt to climb Chimborazo, the "king of the Andes." However, this climb was aborted a few hundred feet from the summit which is about 20,575 feet. Sandy has been up a few of Ecuador's lower mountains with him. They are making plans now for another trip to Cotopaxi.

Sandy is also interested in music and enjoys playing the piano, accordion, clarinet, and saxophone. Tentative plans for the future include nurses training in the States following graduation from High School.

Lori is 14 and a special education student at the Alliance Academy. She folds the "Good Day" papers that are enclosed with the mailings each month.

The Stubbes wish to help make your hobby of shortwave listening more enjoyable and are "at your orders."



Many of our ANDEX members are aware, through our radio programs, that Ecuador's postal rates have been greatly increased in recent months. Some of you have been asking how this will affect your membership dues in the future.

Various changes are being considered by the ANDEX staff, but it will probably be some time before a decision will be made. It is possible that the change will take place in October when we begin our new fiscal year at HCJB. However, our ANDEX members will be informed well in advance when a change is made and how it will affect them.

We would welcome any suggestions that our members would like to make concerning a solution to this problem. Some of you have already suggested a larger format with double the number of pages, but on a bi-monthly basis. This would cut down on the most expensive item which is postage. Please feel free to send your suggestions to ANDEX today. We would sincerely like to hear from you regarding this matter.

The path of the godly leads to life. So why fear death? (Prov. 12:28 —*Living Bible*)

DX-ER OF THE MONTH

"IT MIGHT HAVE BEEN"



Dwayne Janke

Our DXer of the Month is Dwayne Janke, ANDEX member # 1984.

Dwayne lives in Medicine Hat, Alberta, Canada. He is a recent high school graduate. He plans on pursuing a career in journalism. He enjoys SWLing, reading, hockey, and news.

His shortwave listening has been mainly in the area of DXing the SWBC, "Ham," and BCB bands. Some of his time has also been devoted to the CB rig.

In addition to being an ANDEX member, Dwayne is a member of the Canadian International DX Club (SWL6DJ771).

Dwayne's shack includes two receivers, a Realistic DX-160 and an Admiral Multi-band Portable, model PRM1141X, the Gilfer C-10 Calibrator, and a 50 ft. inverted "L" antenna coupled with a homemade antenna tuner.

Dwayne collects QSLs, pennants, and other radio souvenirs. He tapes IDs for future reference and logging.

One of the first stations that he heard was HCJB. "I also have begun to read through the Bible as a personal self improvement project."

We welcome Dwayne Janke to the DXer of the Month and trust that he will have many more years of profitable and enjoyable DXing.

Once a dare-devil pilot, an inventor, a dashing Hollywood producer, possessor of one of the greatest personal fortunes, as illusive as the CIA or KGB, he is still making the headlines.

It seemed as if everything he touched turned into gold. He received over 546 million dollars for Trans World Airlines for his initial investment of only eighty million dollars.

He built the Glomar Explorer to aid the Central Intelligence Agency in the salvaging of a sunken Russian submarine.

He set aviation speed records in 1935 and 1938. He circled the globe in three days and nineteen minutes.

He started designing his own planes, giving birth to an aircraft company which in time manufactured helicopters, missiles, spacecraft, and plane and rocket electronics.

He designed a plane eight stores tall as early as World War II, the forerunner of the Boeing 747 and C-5.

However, a personal evaluation of his life reveals these pathetic words: "It might have been."

A grotesque, shrunken, dehydrated shadow of the man he had been, Howard R. Hughes died of criminal neglect, according to Mexican authorities. Secret files portray him as a pathetic, if eccentric, old man who slowly wasted away — a dope addict, of uncertain sanity, who measured time by enemas. He spent his last years confined in an asylum of his own creation.

Thus the words of Jesus Christ echo across the history of a man's life once again. "What shall it profit a man if he gain the whole world and lose his own soul?"

There is no indication that he ever believed in Jesus Christ as his own personal Saviour.

What a change Christ would have made in his life!

What is the greatest thing toward which a man can strive? What goal, more than any other, will demand the best that is in a man?

One of the deep, deep tragedies of life is the "might have been."

Jesus said, "Seek first the Kingdom of God and His righteousness and all these things shall be added unto you."