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# UFO MAGAZINE

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## SPECIAL ISSUE:

NSAPRO FIELD

RESEARCH

GUIDE

OFFICIAL GUIDE FOR PHENOMENA

RESEARCH WHILE IN THE FIELD

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"How do you observe UFO'S scientifically?" That is a good question, which has many answers. The Cleveland, Ohio group of UFO observers in NSAPRO has been experimenting for some time with observing methods and instruments. We are trying to find out the best practical ways to observe without using elaborate equipment. We started from scratch with a few ideas, some enthusiasm and some previous experience in observing UFO'S on the part of two observers, Edgar Smith and James L. Black. We are presently trying out everything we can do with inexpensive and home-made equipment, and are aiming at future improvements when better facilities, more money and more skilled observers become available.

A very small percentage of the published UFO sightings include any exactly measured data. The great majority of sightings are made from only one observing site, and mostly by people who had no anticipation of seeing any such phenomena. When suddenly confronted with some strange, unknown object, they have no exact idea how big the UFO is, how far away it is, how fast it is moving or how bright it is, unless it passes close in front of or behind some known object at a known distance. Scientific knowledge of strange phenomena is obtainable only when these data are measurable. So how do you measure the distance to a UFO without using radar? By observing it simultaneously from two or three sites that are widely separated by known distances.

Astronomers and surveyors measure distances to inaccessible objects by a method known as Triangulation. To obtain the distance to the Moon, for instance, an imaginary triangle is created in space, extending from the Earth to the Moon. It has a known side several thousand miles long, extending from one observatory to another. At each observatory base, angles of exact direction to the Moon's center are measured with telescopes, at the same instant. The two sight lines which converge at the Moon differ in their directions in space by a small angle at the Moon, say one degree.

This is called the Parallax angle. The angles observed at the two observatories, plus the parallax angle, add up to 180 degrees. The two long sides of the space triangle are then calculated by trigonometry. Any triangle can be completely calculated if one side and at least two angles are measurable, as in this case.

The same principle of Triangulation can be simplified so that amateur observers can measure the distance to a UFO, without having to calculate it with trigonometry. They can observe a UFO on purpose, not just accidentally, using simple, home-made angle measuring instruments simultaneously from three observing bases, whose exact distances apart are previously measured. The instruments, called Quadrants, can be made at home out of scrap materials and a little hardware. The observing techniques are simple and easily learned by inexperienced observers. By making a scaled drawing of some triangles, obtained by measuring angles, and by measuring the triangles on paper, the UFO'S distance is solved quickly and graphically, with practically no computation. Although we have done most of our sky watching at night for luminous UFO'S the same methods can be worked for daytime sightings. This article is based both on theory and practical experience, and describes methods of how to observe UFO'S by triangulation.

We divided our observers into three teams, each with a captain for that observing post or base. In order to observe the same UFO simultaneously, we inter-communicate between bases by three walkie-talkie radios, all on the same frequency on the civilian short wave band. These have a range of about 1½ miles, and do not need a radio amateur's license to operate. To save time in radio transmissions and to name each observing base uniquely, we call our bases "Red - One, Blue - Two, and Base Command"; the latter one is called "Yellow - Three", when put on a drawing. Exact coordination of UFO observations is controlled by the Base Command captain, who directs the whole operation by radio.

The pre-requisite for success in this work are willingness to do hard work cheerfully, persistence in spite of failures and delays, and harmonious action as a team. Experience is not necessary to begin, but the action should be considered fun, and not a work chore or a duty. One must keep an open mind, and accept new ideas without emotional friction or resistance. Nobody is yet a complete expert in the field of Practical Ufology, and nobody knows all the answers yet. We don't.

Choosing the site for a Triangulation Base, consisting of three Observing Bases, involves considering several factors. We considered the following list.

1. The site should be in a locality where UFO'S have been seen frequently enough to expect some chance of future sightings.
2. It should be an outdoor area where the horizon is as unlimited as possible in all directions, away from any close, bright lights on the ground, and where curious strangers won't interfere, or Police patrols bother you at night.
3. It should be easily reached by auto, and not too far from the observers' homes. Too long a return trip home after a late sky watch will keep some observers away.
4. Certain practical conveniences are necessary or very desirable. If electric power, drinking water and toilets are available nearby, and a telephone, so much the better. We chose a country farm without these facilities. Hiking clothes and shoes are most practical. At each of the three observing bases, there should be a light, folding table or a picnic table, steady enough to write on and to hold small equipment, a tarpaulin or canvas to lay large equipment on, to keep it dry, or to lie down on, folding camp stools, several flashlights and perhaps a dim lamp on the table, insect repellents, and canteens for water or coffee.
5. In order to attract attention of UFO'S to the area, some

Ufologists have tried using a geometrical pattern of colored spotlights or floodlights on the ground nearby, aiming them at the sky, and perhaps flashing them in sequence with a time switch. We have not done this, but several years ago this scheme was tried by others, and it worked in attracting UFO'S at night. If you try it, shade the eyes of the observers from the lights. Someone should check in advance of trying it, with the officials at the nearest airport, to make sure that such lights could not confuse any strange aircraft pilots, making them mistake your bases for a small landing field. UFO'S could land in a small area. Most planes cannot. You don't want to be responsible for any plane crashing up where it is unsafe to land.

The following was our experience. We found that the uncle of one of our club members owned a 21-acre farm in a rural area where few people go, and where he was not working the farm for crops or animals. The owner had seen a UFO close up, some years ago. He gave us permission to use his farm (outdoors only) for our Triangulation Base, without cost. We chose our three observing bases in level, open fields where we could see directly from base to base. The principal one, which we call "Base Command", was located on a flat knoll with an unobstructed horizon. The nearest trees are a few hundred feet away. A short length of scrap gas pipe was driven into the ground to mark the exact spot for instrumental observations. About 1200 feet Northeast from this, in another open field a temporary pole was set up with a white cloth on its top, to sight on while measuring the line to it. A man stood at each end of this base line, to keep the men handling the tape line from wandering off the straight line. These men used a 50-foot tape line and plumb lines, to measure the distance. They kept their tape level each time, and wrote

down the number of tape lengths they had measured, to prevent errors. At the end of this line, just 1200 feet from "Base Command" position, another pipe was driven into the ground, marking our base "Blue - 2". On another day, the angle was chosen as  $62^{\circ}00'00''$  between this base line and the second line to base "Red - 1". A borrowed surveyor's transit was set up over the pipe at "Base Command", and the angle was turned off of the first line, sighting on the pipe at base "Blue - 2", and setting a pole near base "Red - 1" for line to it. The second line was measured just 1000 feet long, and a pipe was set at base "Red - 1".

Since not everyone will have access to a surveyor's transit instrument, the angle between base lines can be measured accurately enough by the surveyor's Plane Table method. We used it for reconnaissance to estimate the angle of  $62^{\circ}$ , on a previous day to the one when we borrowed the transit. A Plane Table is simply a leveled board to draw on, held rigidly on top of a tall tripod. Even a steady folding card table would do. I made my own Plane Table. It was set up over the pipe at "Base Command", leveled with a spirit level, and a line was drawn on paper which was then taped to the board. The line was oriented to magnetic north by sighting over it, in line with a compass needle. A 12-inch triangular ruler was laid on the paper so that its edge was over the pipe in the ground. The sighting pole at base "Blue - 2", with a white cloth on top of it, was sighted on by eye, and the ruler's top edge was aligned with this and line was drawn on the paper along the edge of the sighting ruler. Then the temporary pole at base "Red - 1" was set approximately for line there, and it was sighted upon with the edge of the ruler, and a second line was drawn along the ruler's edge. A protractor then measured the angle on the paper between the sight lines. It was about  $62^{\circ}$ , so this value was chosen for use with the surveyor's transit on the later day. This graphic Plane Table method is quite good enough to use without the transit. The third base line from "Red - 1" to "Blue - 2" did not have to be measured on the ground: a scale drawing of the big triangle

was made with a decimal scale and a protractor, and that third base line was measured on it as 1146 feet long. This was later confirmed by trigonometry.

An alternative method of measuring the base lines with much less work, but less accurately, is to borrow a transit and a surveyor's level rod or stadia rod, and read the amount of the rod that is included between two cross-hairs in the eyepiece of the transit, as seen from opposite ends of the base line. This amount is calibrated in feet and hundredths on the rod. It corresponds to distances to the rod from the transit, and works on the principle of similar triangles. We used this method also as a check. Surveyors use it for reconnaissance and topographic mapping.

In the future, we hope to interest scientific and technically trained individuals to add more sophisticated and accurate instruments to our equipment. Radar is too expensive to obtain, for getting the distance of a UFO directly. If an optical type of Range Finder could be used, and if it could aimed quickly enough to catch a UFO, it would be such less work than triangulating. If an optical instrument with a photometer could be used, the brightness of light from a UFO could be measured, and the amount of energy it radiates could be computed, from which we could deduce quite a bit about its energy sources. If a spectrogram of its light or its other radiations could be made, much more could be deduced about its energy and how it radiates. Magnetometers could detect the intensity of a UFO'S electromagnetic field. We have a simple, home made Cartwright type of Magnetic Detector at our base, which responds to magnetic fields, and which warns of the approach of a UFO with a strong force field about it. Some intense UFO radiations have been reported, intense enough to sunburn a person's skin when close enough and lone enough. Sometimes Artificial Radioactivity has been induced in the

ground, where a UFO has been on the ground for some time, or hovering low. Radiation detectors like Geiger Counters are desirable, to measure and detect such radioactivity. If a brilliant UFO came close, dark sun glasses would be desirable to protect an observer's eyes from Ultra-violet Radiation. If a UFO should block out radio communications between bases, due to its strong force field, it might be desirable to experiment with some kind of sound signals between bases. These would have to operate without electronic devices which might also be blocked out of action. All these ideas need testing. If a tape recorder could record the authentic sounds of a real UFO, analysis would reveal more facts about UFO'S. To test whether a UFO's light is pulsating too rapidly for the eye to see, try this: watch the UFO through binoculars, and rapidly oscillate the binoculars by hand through a small angle, keeping the UFO in sight. If its light is pulsating rapidly, like a neon sign on 60-cycle alternating current will do, the oscillated UFO image will show bright and dark images separated momentarily by the angular motion. If the UFO'S light is steady, or pulsating at a very high frequency, its images should merge into a bright line of light without perceptible variations in brightness, in the binocular. Try this technique on bright stars that are twinkling, and see how they vary in brightness this way. It works!

EDITOR'S NOTE: This special edition of UFO MAGAZINE is published with the hopes that other researchers in the UFO field will look at the serious work that has been done by NSAPRO (see Winter 1968-69 UFO Mag.), and will themselves begin similar projects that may one day solve the enigma of the elusive disks.

All scheduled features planned for this issue will be incorporated into the Winter issue.

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# NOTES