

# History of the Osborne Firefinder

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William Bushnell "Bush" Osborne, Jr. as a young graduate forester, went to work for the U.S. Forest Service in 1909 on the Oregon National Forest at Mount Hood.

In 1911 he invented a sighting device that he called the "firefinder" and tested it at 8 locations in Oregon and southwest Washington. The original instrument was 14" across, round, with a map of the surrounding area, and each of the 360 degrees etched around the rim. This disc was secured to an 8 sided 1/8" steel base, which was in turn secured firmly to a tree stump. A brass sighting mechanism, consisting of a rear vertical slit and a front vertical horsehair stretched tightly within a brass framework, pivoted precisely in the center of the circle. The geographical location of the lookout point was situated exactly in the center of the circular map. An arrow etched beneath the rear sight corresponded with the compass reading when the sights were lined up on a distant smoke.



Fred Leupold and Adam Volpel of the Leupold-Volpel & Co. commercially produced this first Osborne Firefinder in 1913 at their scientific instrument manufacturing facility in Portland, Oregon. The U.S. Forest Service purchased fewer than 100 of the 1913 Model Osborne Firefinders.

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In 1914 the center-pivot sighting mechanism was abandoned in favor of a circular outer ring with the original fore and aft sights affixed to it. A cast iron base with a round recessed rim permitted the sights to be moved freely around the rim. The "Zero" degree mark was positioned at true South from the lookout location. These enabled the towerman to site on a column of smoke, and then simply look below the rear sight to determine the correct azimuth for his station to the fire. To prove this instrument, Osborne placed it atop Oregon's tallest volcano, Mount Hood. The following summer, in one month, lookout Elijah "Lige" Coalman spotted and reported 131 fires with this new instrument.

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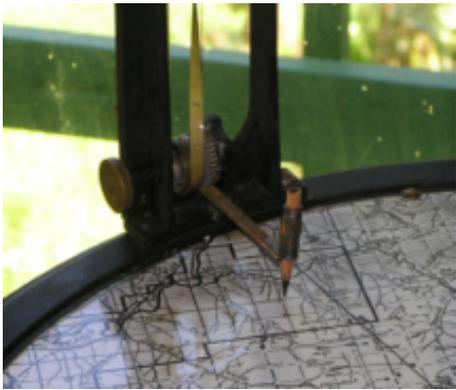


In 1915, Osborne again modified his firefinders sighting mechanism. The 1915 model featured a 0-power scope similar to those used on a rifle, instead of the original fore and aft upright sights, to peer through. Precision calibration permitted obtaining azimuth readings to the nearest minute or 1/60<sup>th</sup> of a degree; and a vertical angle reading to 1/10<sup>th</sup> of a degree. Leupold-Volpel & Co. produced several hundred of the 1915 Osborne Firefinders.

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In 1917, Osborne again gave his firefinder a radical change. Its width was enlarged from 14" to 24" across. Its weight was increased from 10 pounds to 70 pounds, including the three-railed track that it sat upon. It featured rugged sights front and back, using the concept of the 1913-14 models; however, the front sight was equipped with a thin brass tape which could be moved up and down freely with a thumb wheel. As this wheel was turned back and forth while the observer sighted through the rear sight slot at the distant topography, a pencil attached to a



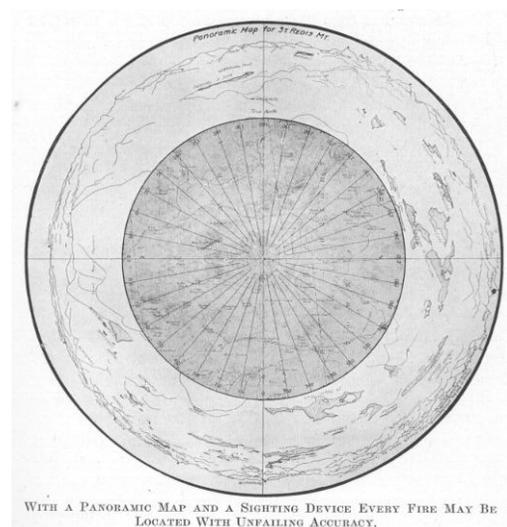


sliding gear-driven arm could draw the panoramic features of the horizon.

Thus a panoramic picture could be drawn to accompany the “seen area” map made for each mountain station. These “seen area” maps, as they were called, were simply a circular portions of the topographic map or maps covering the area surrounding the station. Only about 100 of this model were manufactured and sold by Leupold-Volpel.

The New York State Conservation Commission purchased one of these firefinders with the expressed desire and intent to develop a panoramic border or panorama of the surrounding horizon for each of its fire observation stations. This made it possible for an inexperienced observer to locate fires more accurately than by using only ordinary topographic maps. This firefinder was first tried on Poke-O-Moonshine Mountain during the 1918 season and a panoramic border made. New York officials were so pleased with the results that over the next several years, panoramas were made for all its stations. This was accomplished by transporting the seventy-pound devise to each mountaintop in order that a panorama be produced.

To the right is an example of the combination panoramic and “seen area” map produced for the St. Regis Mt. Fire Tower. Due to the size of the firefinder, the overall width of the entire product was 19 inches in diameter and the topographic map portion was only 12 inches, thus covering a distance of 6 miles in all directions for the station. Though these maps were only 19 inches in diameter, the original map tables purchased by the Conservation Commission were about 30 inches.



At some later date, New York abandoned this concept of providing panoramic borders on its tower maps and covered the entire 30 inch diameter map table surface with topographic maps. In all cases, these were simply paper maps, usually but no always placed under a piece of glass for protection.

In the 1950's the then New York State Conservation Department contracted with the Plastics Division of the J. P. Lewis Co. of Beaver Falls, N. Y. to have the maps laminated to afford them better protection from the elements. This type of map was used until the last of New York's towers closed in 1990.

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In 1934, Osborne again radically changed only the sighting assembly, to include a much simpler mechanism. The rear sight now included “+” and “-” vertical scales and two sets of cross threads

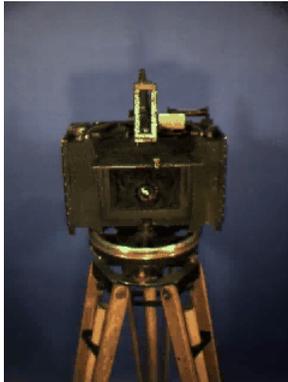


of horse hair, so that accurate vertical readings could be made on fires both below and above the lookout's elevation. Leupold-Volpel Co. (known as Leupold-Stevens since 1942) sold more than three thousand of the lighter weight, 55 pound, 1934 Osborne Firefinders, until it ceased production of the instrument in 1989. For a time prior to that, the A. Lietz Co. of San Francisco also manufactured the Osborne Firefinder in small quantity. The 1934 Osborne Firefinder is the most widely used fire-plotting instrument in the world today. It is still in use across

America, and in many foreign nations on at least four continents. They were last featured for sale in the 1991 Forestry Suppliers catalog for \$3,495 each.

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### Osborne Swing Lens Camera



In 1932, Osborne designed his photo recording transit and swing-lens panoramic camera, made by Leupold-Volpel of Portland, Oregon. It was used by the USDA Forest Service and turned out 6" X 14" photographs, a sample of which can be seen below. Only ten of these cameras were ever manufactured.



The camera was mounted on the tripod and setup on the roof of the fire tower or fire lookout as they are referred to in the western states. The camera lens would swing 120

degrees in order to take photos like those below at Curly Bear Lookout in Glacier National Park.

The negative within the camera didn't lie on a flat surface but rather was mounted on a curved 120-degree arc. As the lens was opened and the picture taken the lens swung through this arc exposing only a small vertical strip of the negative at any one moment producing the complete photograph. Three photographs were taken for a complete panorama at each lookout site and sample can be seen on the next page.

The numbers along the top boarder are one-degree azimuths. The numbers along the side boarders are the degrees of depression (-) or elevation (+), so that both an accurate horizontal and vertical reading could be made on fires whether they occurred above or below the elevation of the lookout.

The elevation of the lookout is identified as a "0" degree vertical reading on the side boarders, is further identified by the small arrows about one third of the way down each side and by the horizontal line superimposed on each photo. Unlike most eastern towers, many western lookouts are not located on the highest point of land.

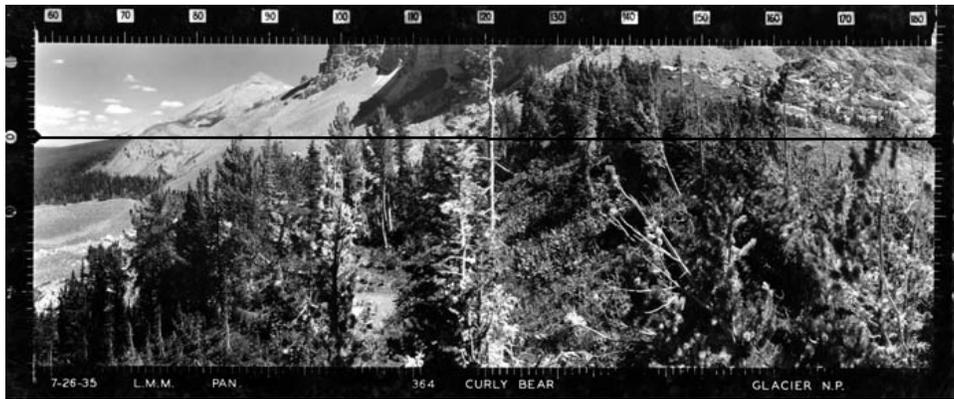
When a fire was spotted, the towerman would transmit his readings to the local ranger or forest supervisor, who if in possession of the same photos, not only had the direction of the potential fire but a visual image of its location. This concept of locating forest fires was used in our western states for many years.



Field of View – Curly Bear Lookout – Glacier National Park - 180 degrees to 300 degrees



Field of View – Curly Bear Lookout – Glacier National Park - 300 degrees to 60 degrees



Field of View – Curly Bear Lookout – Glacier National Park - 60 degrees to 180 degrees

\*Compilation, insertion of all pictures and references to New York State's use of the firefinder by Capt Paul T. Hartmann, NYS Forest Rangers (ret)