

Osborne Firefinder

Many Thanks to Mr. Ray Kresek for allowing us to re-print this article. Please visit the Fire Lookout Museum at 123 W. Westview in Spokane, Washington, 99218, or phone (509) 466-9171; or visit their web site at <http://www.firelookouts.com>

The Osborne Firefinder by Ray Kresek

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 an **alidade** he called the "firefinder" and tested in at 8 locations in Oregon and SW Washington. The original instrument was 14" across, round, with a map of the surrounding area, and each of 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 horse hair stretched tight, pivoted precisely in the center of the circle. The 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 lined up on distant smoke.

This first Osborne Firefinder was commercially produced in 1913 by Fred Leupold and Adam Volpel (Leupold-Volpel & Co.) at their scientific instrument manufacturing facility in Portland (Oregon). The U.S. Forest Service purchased fewer than 100 of these 1913 Model Osborne firefinders.

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. Zero degrees was positioned true South from the lookout location. To prove this instrument, "Bush" Osborne placed it atop Mount Hood the following summer. In one month lookout Elijah "Lige" Coalman spotted and reported 131 fires with this instrument!

In 1915, Osborne again modified his "firefinder" 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 1/60th of 1 degree; and a vertical angle reading in 1/10th of 1 degree accuracy. Several hundred of the 1915 Osborne Firefinders were produced by Leupold-Volpel Co.

In 1917, Bush Osborne again gave his Firefinder a radical change. Its width was enlarged from 14" to 24" across. Its weight was increased from 10 to 70 pounds, including the 3-railed track it sat upon. It featured rugged alidade sights front and back, using the concept of the 1913-1914 models; however, the front sight is 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 "seen area" maps made by the firewatcher. About a hundred 1917 Osborne Firefinders were manufactured.

In 1934, Osborne again radically changed only the sighting assembly, to include a far more simple mechanism. The rear sight now included "+" (plus) and "-" (minus) 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. manufactured more than three thousand of the lighter weight 55 pound 1934 Osborne Firefinders, until it ceased to produce the instrument in 1989.

For a time prior to that, the A. Lietz Co. of San Francisco also manufactured the Osborne Firefinder in small quantities. The 1934 Osborne Firefinder is the most widely used fire plotting instrument in the world today. It is used 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.

Alidade: 1. An indicator or sighting apparatus on a plane table, used in angular measurement. 2. A topographic surveying and mapping instrument with a telescope and graduated vertical circle.

Azimuth: 1. The horizontal angular distance from a fixed reference direction to a position, object, or object referent, as to a great circle intersecting a celestial body, usually measured clockwise in degrees along the horizon from a point due south.

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William Bushnell Osborne, Jr.

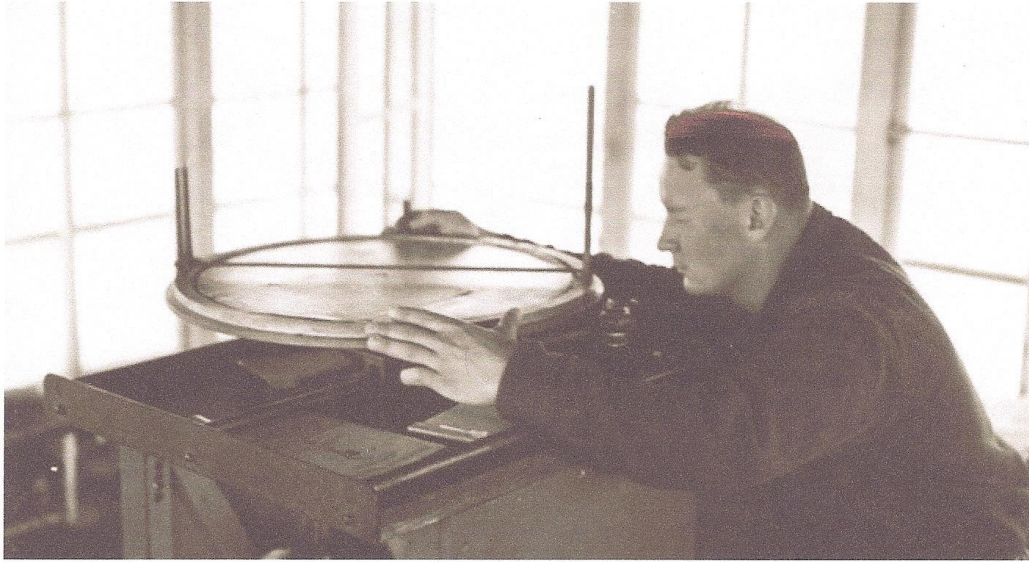


William B. Osborne, Jr. was born November 25, 1884 in Rochester, New York. Following graduation from Yale Forest School in 1909, Osborne took a job as forest assistant on the Oregon National Forest (which later became Mt. Hood National Forest). There he immediately began influencing the Forest Service's fire detection policy, helping install the first forest fire lookout in the Northwest in 1911 and establishing a central fire dispatching system in 1913. It was also during Osborne's spare time, working in his home workshop over the winter of 1910-1911, that his greatest contribution came about. Osborne built a "firefinder" using a map mounted on a rotating steel disc with attached brass sighting mechanisms.

The device allowed lookouts to accurately map the location of forest fires based on sighting the distant smoke.

Osborne's invention was immediately put into use by the Forest Service in Oregon. The forest rangers and lookouts found the instrument's accuracy astounding, and in 1913 the Osborne Firefinder began to be commercially produced by Leupold-Volpel & Company.

Various modifications and developments were made to the firefinder over the next 30 years. Osborne added more powerful scopes for sighting, more precise calibration, and various other technological developments which increased the instrument's accuracy. The Osborne Firefinders were widely used throughout the country by the Forest Service over the 20th century. Production of the instruments by Leupold-Volpel & Company (later renamed Leupold & Stevens) ended in 1989, but new Osborne Firefinders continue to be produced by various companies today.



Raymond Thompson, Fire Guard at Brule Tower, sighting fire with firefinder, Wisconsin, 1950.

Other than six months serving in the military for World War I, Osborne spent 44 years working for the Forest Service, during which time he made numerous contributions in addition to the firefinder. He contributed important scientific research on atmospheric humidity and its effect on forest fire behavior, wrote an influential forest fire manual, invented various fire fighting tools, as well as developed a device for obtaining accurate 360-degree panoramic pictures of the forest landscape. Osborne was also in direct charge of a number of large forest fire fights in the Pacific Northwest over his Forest Service career.

Osborne never received any payments as a result of his firefinder, but that was never his intention. He developed the device solely for the purpose of improving forest fire detection so as to limit the destructive wildfires of his era. Osborne passed away in October 1955, but his name will be forever linked with his invention, as well as the greater history of forest fire control.

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