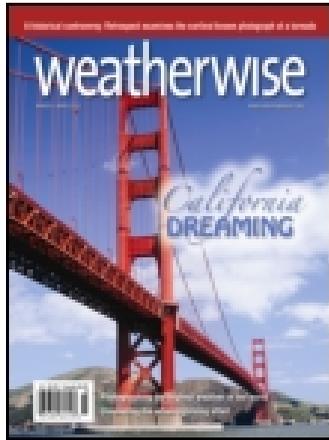


This article was downloaded by: [North Carolina State University]

On: 15 March 2015, At: 16:24

Publisher: Routledge

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: Mortimer House, 37-41 Mortimer Street, London W1T 3JH, UK



Weatherwise

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/vwws20>

Flying Saucers over Mount Rainier

Richard J. Reed ^a

^a University of Washington , USA

Published online: 08 Jul 2010.

To cite this article: Richard J. Reed (1958) Flying Saucers over Mount Rainier, Weatherwise, 11:2, 42-45, DOI: [10.1080/00431672.1958.9925012](https://doi.org/10.1080/00431672.1958.9925012)

To link to this article: <http://dx.doi.org/10.1080/00431672.1958.9925012>

PLEASE SCROLL DOWN FOR ARTICLE

Taylor & Francis makes every effort to ensure the accuracy of all the information (the "Content") contained in the publications on our platform. However, Taylor & Francis, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the Content. Any opinions and views expressed in this publication are the opinions and views of the authors, and are not the views of or endorsed by Taylor & Francis. The accuracy of the Content should not be relied upon and should be independently verified with primary sources of information. Taylor and Francis shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, and other liabilities whatsoever or howsoever caused arising directly or indirectly in connection with, in relation to or arising out of the use of the Content.

This article may be used for research, teaching, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly forbidden. Terms & Conditions of access and use can be found at <http://www.tandfonline.com/page/terms-and-conditions>

WEATHERWISE

THE MAGAZINE ABOUT WEATHER

DAVID M. LUDLUM, *Editor*

HENRY W. BULKLEY, *Associate Editor*

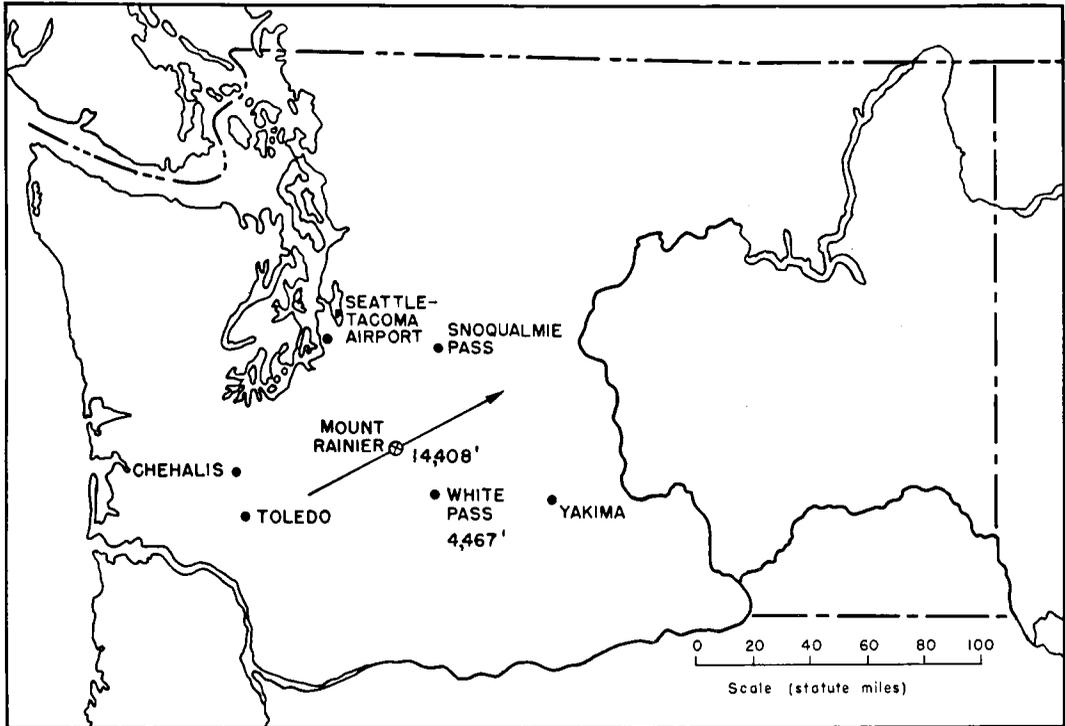


FIG. 1. A map of the State of Washington shows the pertinent locations in the vicinity of Mount Rainier depicted on the front cover. Wind arrow shows prevailing wind direction at occurrence of cloud form outlined on opposite page.

Vol. 11, No. 2

April 1958

CONTENTS

Flying Saucers over Mount Rainier — Richard J. Reed	43	Florida's Winter Weather: 1957-58 — Keith Butson	58
An Air Force Weather System — George A. Guy	46	Research and Education in Meteorology — Committee on Meteorology, NRC	60
Forecasting Tornado Possibilities — Alexander Sadowski	51	Weatherwatch	68
Snowfall in Florida — David M. Ludlum	55	Front cover: The scene to the northeast of Mt. Rainier late on the afternoon of 29 December 1956 as caught by the camera of Josef Scaylea of the <i>Seattle Times</i> .	
Weather Rambles — Ivan Brunk	56		

WEATHERWISE is published bimonthly for the American Meteorological Society. Office of publication, 3 Joy St., Boston 8, Mass. Subscription is \$4.00 per year; add 50 cents for postage to Canada and all countries in the Pan-American Postal Union; add \$1.00 for all other foreign countries. Subscription orders, claims for missing numbers, changes of address, and advertising correspondence should be addressed to the society at 3 Joy St., Boston 8, Mass. Editorial offices: Box 216, Princeton, N. J.

Downloaded by [North Carolina State University] at 16:24 15 March 2015

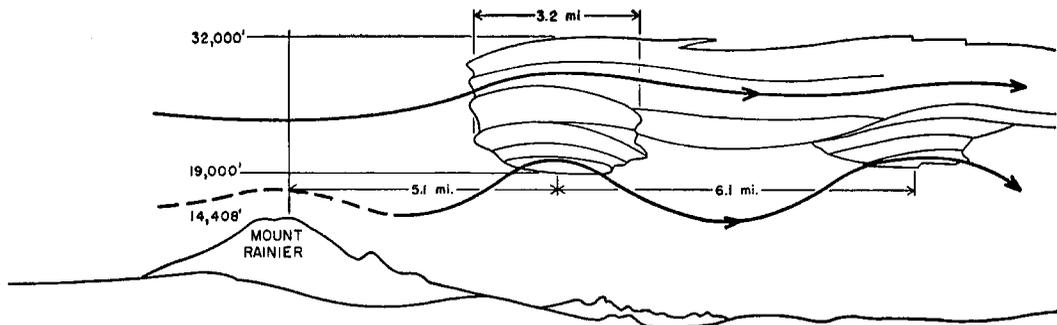


Fig. 2. Outline of cloud and topography. Heavy lines with arrows show probable air motion. Dashed portion of lower line are less certain.

Flying Saucers over Mount Rainier

RICHARD J. REED, *University of Washington*

ON the afternoon of 29 December 1956 Josef Scaylea, photographer for the *Seattle Times*, was atop Pigtail Peak near White Pass, Washington, taking ski pictures for the rotogravure section of the *Sunday Times*. As he went about his work, little did he suspect that by nightfall he would have captured a cloud picture of rare beauty and perhaps shed new light on the mystery of the flying saucers.

It had been a wonderful day for the throng of weekend skiers gathered on the slopes of Pigtail Peak, more like a day in early spring than in late December. While down in the pass temperatures hovered near freezing, the slopes were bathed in warm sunshine which filtered down through thin cirrus clouds and lifted temperatures to a balmy 50°. But the most memorable event of the day was not to occur until late afternoon. Just as dusk began to settle a murmur of excitement rippled through the crowd. Off towards the northeast horizon a strange, saucer-like object had suddenly appeared in the sky. Several of the skiers urged Mr. Scaylea to take a picture of the object. However, it was still quite distant and somewhat ill-defined so he deferred.

During the next few minutes, the object moved rapidly toward Mount Rainier and began to sharpen in outline. Meanwhile Mr. Scaylea had boarded the chair lift to descend to the pass. By the time the lift had travelled a short distance, the phenomenon had reached a state of breath-taking beauty, and it was then that Mr. Scaylea snapped the picture which appears on the cover. Although view-

ers on the hill likened the object to a saucer, a telephone appears to be a more apt description at the time of the photo.

OROGRAPHIC CLOUDS

The saucer-like object which caught the attention of Mr. Scaylea and the skiers was, of course, not a vehicle from outer space, but a unique type of orographic cloud. When air flows over hilly or mountainous terrain, an up-and-down wave motion may be impressed upon it, provided that temperature and wind conditions are proper. As the air describes its wave-like path it alternately warms and cools, the warming taking place as it sinks into the wave trough and the cooling as it ascends to the wave crest. If the air is very dry, the undulating current will not be visible to the eye, though the updrafts and downdrafts will readily be felt by aircraft which chance to pass through them. On the other hand, if the air before entering the wave is sufficiently moist, the cooling in the wave crest will cause water droplets to condense and cloud to appear.

In the vicinity of an isolated peak, the cloud may assume the form of a cap covering the summit or it may be displaced slightly down-wind and resemble a lens or disc. Not infrequently a series of lenticular clouds will be observed trailing down-wind at regular intervals of a few miles.

Because of its connection with the underlying terrain, an orographic cloud generally remains stationary or nearly so, even though the wind may be streaming rapidly through

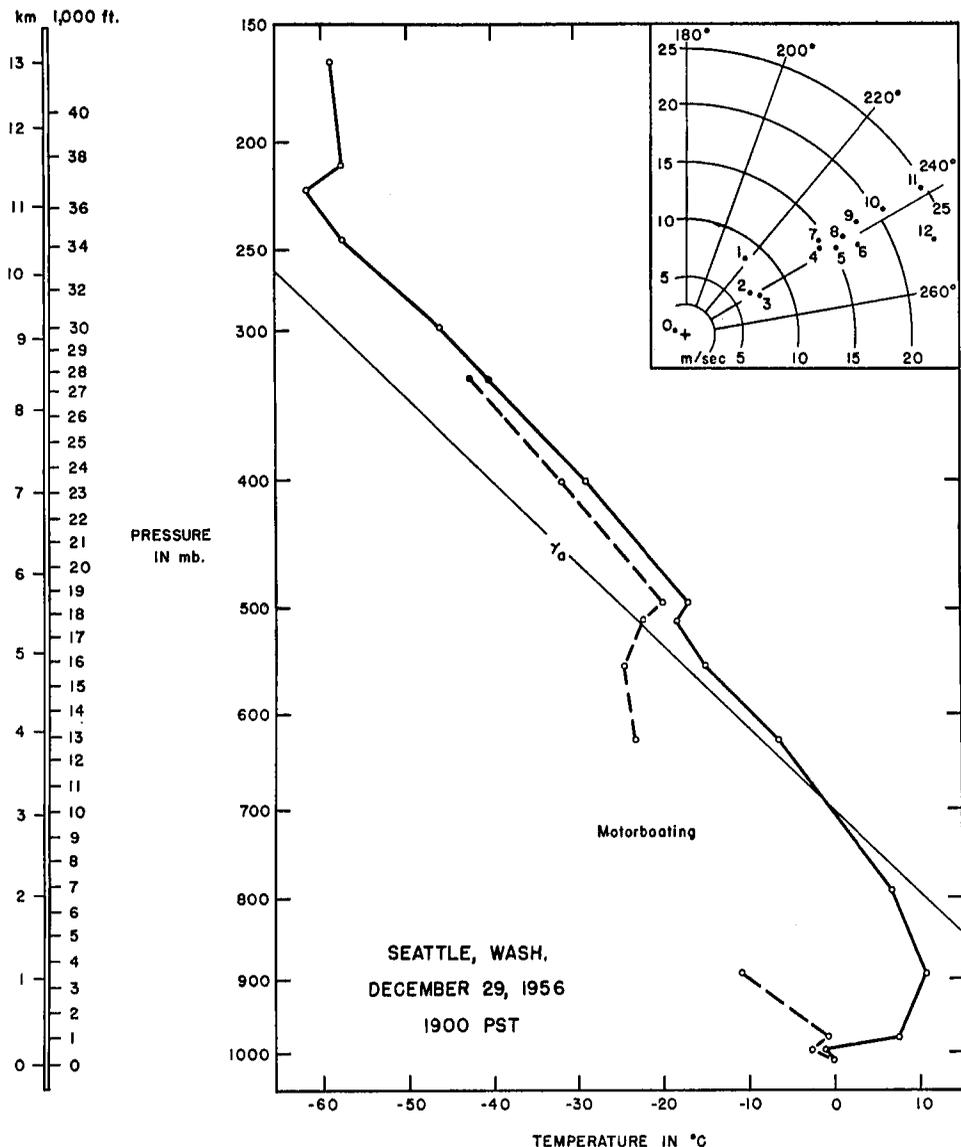


FIG. 3. Sounding and hodograph (inset) for Seattle 29 December 1956. Sounding: solid line—temperature, dashed line—humidity, 1900 PST. Hodograph: points labelled in kilometers, winds in meters per sec., average of 1300 and 1900 PST.

it. There are, however, notable exceptions to this rule, as we shall see later when we discuss the matter of flying saucers.

THE "TELEPHONE" CLOUD DETAILS

First let us take a closer look at the "telephone" cloud photographed by Mr. Scaylea. The reader who is interested in more general facts and theories concerning orographic clouds and lee waves is referred to the International Cloud Atlas (1) and to a recent re-

view article by Corby (2). The main features and dimensions of the cloud are shown in figure 2. Mount Rainier, White Pass, and other pertinent locations are marked in figure 1.

It is seen from figure 2 that the first visible wave crest or "pile of saucers" was situated about five miles from the summit of Mount Rainier (14,408 feet) and that the second was approximately six miles farther downstream. The discs themselves are roughly

three miles in diameter. They give the illusion of being in rotation, but the circular shape is due to variations in the amplitude of the air waves and not to a spinning motion.

A distinct layering may be noted. The lobe nearest the mountain is composed of at least five strata, three of which join with the second lobe. The bar or handle between the two lobes can be attributed to a decrease in wave amplitude with height so that the cloud does not sink sufficiently to dissolve in the interstice. The base of the cloud is at 19,000 ft., the top at 32,000 ft.

The foregoing figures were obtained with the help of a detailed map of the area, a measuring rule, and some elementary trigonometry. Because of the large number of identifiable peaks in the photo, it is believed that the figures are highly accurate. The following incident will perhaps substantiate this claim better than a rigorous scientific analysis.

When the facts relating to the picture were first discussed with Mr. Scaylea, he said that the photograph was taken from the platform at the top of the chair lift. In making the measurements it was noted that it was impossible to join various points in the background and foreground and have them converge to the summit of Pigtail Peak. They met instead at a point on the ski lift at about a quarter of a mile below the summit. This discrepancy so troubled the writer that he made a special trip to White Pass armed with the picture. The lift was operating at an accelerated speed and only skiers were permitted to use it, but thanks to the courtesy of Jim Sullivan, manager of the ski lift, a special dispensation was granted and the writer was allowed to ride to the summit. Upon arriving there it was immediately apparent that the picture was not taken from the platform at the top as Mr. Scaylea had stated, and on the return trip it was agreed by both the writer and Mr. Sullivan that a point about a quarter mile down the slope afforded a view closely resembling the photograph. When informed of these facts, Mr. Scaylea was slightly taken aback, but upon refreshing his memory, he recalled with certainty that he had indeed not taken the shot until part way down the slope.

In order to make the cloud measurements, it was necessary to assume that the cloud was located directly downwind from Mount

Rainier. The wind direction was obtained by averaging the rawins taken at Seattle-Tacoma airport three hours before and three hours after the time of the picture. The airport is situated 45 miles northwest of the peak. From an examination of plotted upper-air charts it was concluded that any wind differences between the airport and Mount Rainier were probably quite small. The mean wind direction of 240° in the cloud layer is depicted by the arrow in figure 1. The detailed hodograph is shown in the inset in figure 3.

From the temperature and humidity sounding in figure 3 it is possible to get an independent check on the height of the cloud base. This is done by determining the lifting condensation level for the various points on the sounding. Most of the lower part of the sounding was characterized by a condition known as "motorboating" which signifies that the humidity was too low to be measured by the radiosonde equipment. Consequently, an exact figure for the lifting condensation level cannot be determined for the lower levels, but it is safe to assume that it is well above 20,000 ft. Above 13,000 ft. the moisture increases and at 18,000 ft. becomes relatively high. All points between these levels yield a lifting condensation level or cloud base of 19,000 ft. in confirmation of the figure obtained by the photogrammetric method.

From a consideration of the foregoing data and examination of the synoptic charts for the period, we arrive at the following picture of the events leading up to the cloud formation. For several days prior to the occurrence a large anticyclone, characterized by subsiding air currents, had settled over the area. At the time of the occurrence a weak storm was approaching the Washington coast from the Pacific Ocean, and stations along the coast were reporting cirrus lowering to altostratus and altocumulus. In the area about Mount Rainier the picture shows mainly cirrus or cirrostratus, while the nearby sounding reveals that a moist layer is drifting in at 18,000 ft.

The wind direction above the peak is nearly constant with height; the wind speed increases only slightly and is not large, averaging about 35 knots. The lapse rate above the ground inversion is relatively unstable. Evidently these conditions were suitable for the forma-

(Continued on page 65)