A scenic landscape photograph of a rocky coastline. In the foreground, a person stands on a rocky, grassy cliff overlooking a large body of water. The background features a range of mountains under a cloudy sky. The text is overlaid on the image.

History of the Mapping and  
Geological & Geophysical  
Exploration of the Aleutians —  
A Progress Report

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Photo by Ray Platt

# How this got started

- Personal interest: Shishaldin, Unimak, 1980s
- Old clipping & Bill Page's letter

- Oral history of Gene Cameron (1998)
- UW-Madison alumnus Ray Wilcox (1998)

U.S.C.&S. photo (Skip Theberge)

# Goals

- Acquire oral histories of participants of the USGS project in the Aleutians, 1946-54 (scientific studies published 1955-1971 in USGS Bulletin 1028A-U)
- Acquire related papers, correspondence, diaries and photographs (from families, archives)
- The circle widens: Pre-WWII work —  
Coast & Geodetic Survey, Fitzgerald and Navy, Jaggard and HVO,
- ... some interesting characters and questions

## PREFACE

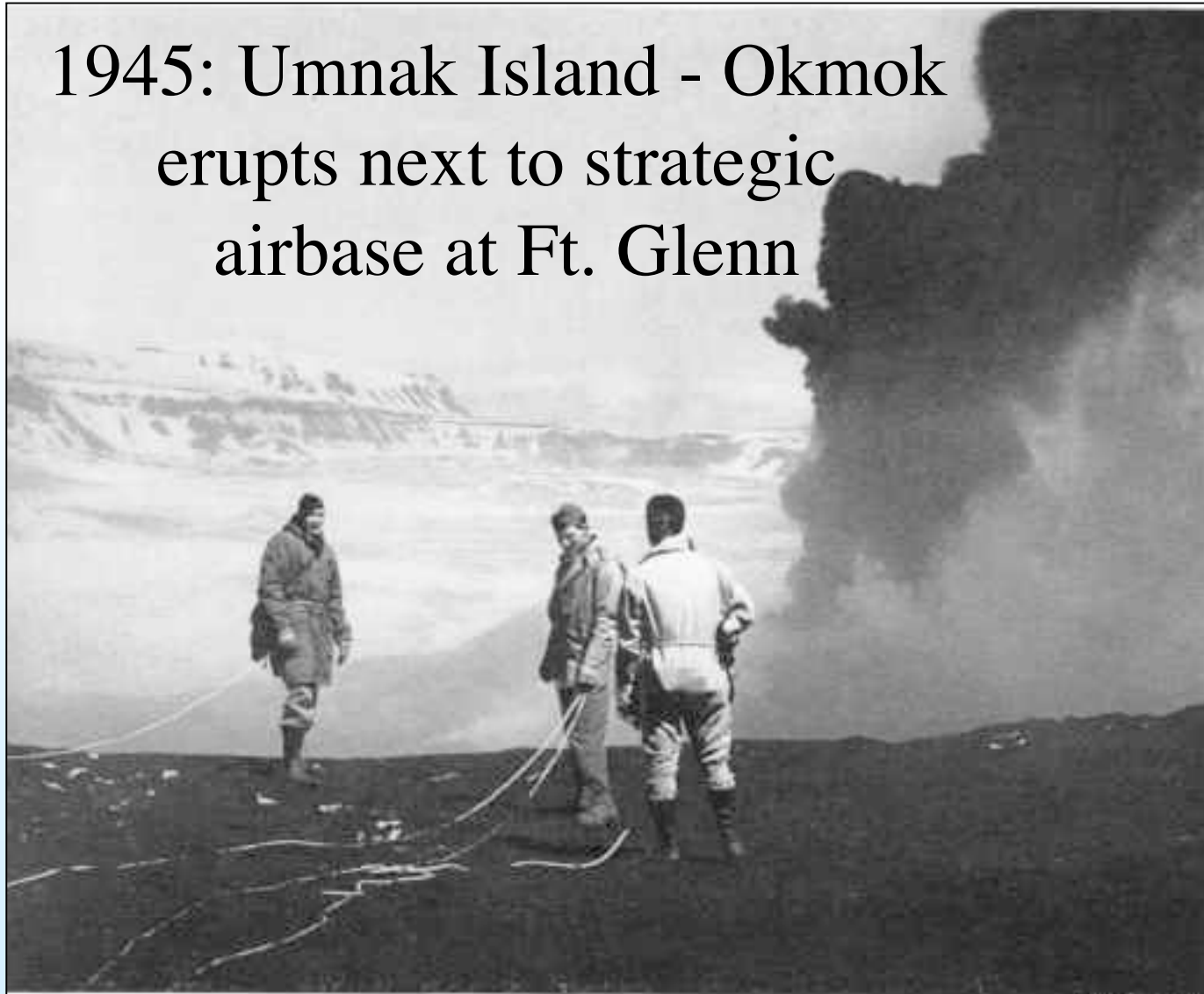
In October 1945 the War Department (now Department of the Army) requested the Geological Survey to undertake a program of volcano investigations in the Aleutian Islands-Alaska Peninsula area. The first field studies, under general direction of G. D. Robinson, were begun as soon as weather permitted in the spring of 1946. The results of the first year's field, laboratory, and library work were assembled as two administrative reports. Part of the data was published in 1950 in Geological Survey Bulletin 974-B, Volcanic activity in the Aleutian arc, by Robert R. Coats. The remainder of the data has been revised for publication in Bulletin 1028.

The geologic and geophysical investigations covered by this report were reconnaissance. The factual information presented is believed to be accurate, but many of the tentative interpretations and conclusions will be modified as the investigations continue and knowledge grows.

The investigations of 1946 were supported almost entirely by the Military Intelligence Division of the Office, Chief of Engineers, U. S. Army. The Geological Survey is indebted to the Office, Chief of Engineers, for its early recognition of the value of geologic studies in the Aleutian region, which made this report possible, and for its continuing support.

## 1945: Umnak Island - Okmok erupts next to strategic airbase at Ft. Glenn

Lt. Ray Wilcox,  
Sgt. C.D.  
Clawson, and G.D.  
Robinson prepare  
to descend into  
Okmok Caldera,  
June 1945.  
(from "Exploring  
Aleutian  
Volcanoes" by  
Robinson,  
*National  
Geographic*,  
October 1946)



# “Volcano General” Emmons

- 1912, Baptism under fire: young 2nd Lt. Delos C. Emmons on ship near Kodiak, showered by hot Katmai ash
- 1935, Hawaiian Dept Air Officer, involved with bombing of Mauna Loa lava threatening Hilo
- 1944-46, Commanding General of Alaskan Department; Okmok crisis
- 1946, posted to War Department, Washington, D.C. Supported military funding of Aleutian volcano study



Delos Carleton Emmons,  
1888-1965

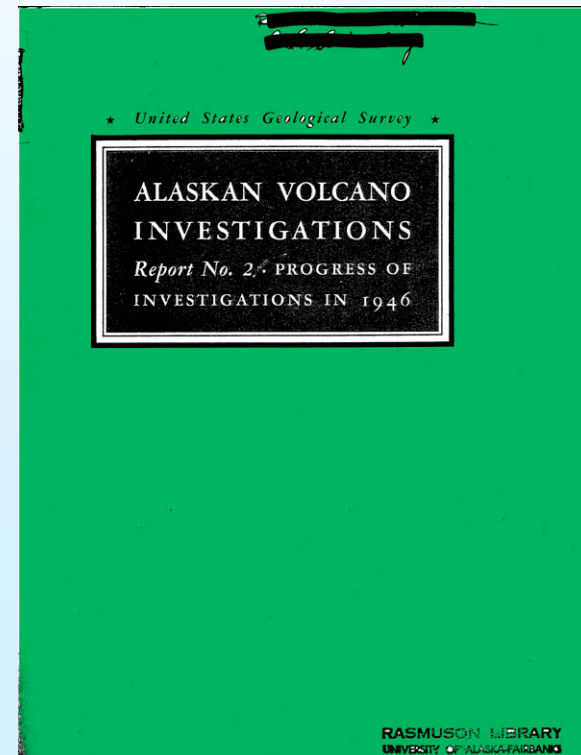
# 1946: Field work and Race to Print



Above: Coats on Gareloi 8/12/46. Will Thompson provided able assistance. Below: Byers with GIs at Okmok, summer 1946. USGS Photo Archives



- Summer 1946: 4 field teams
- 6 reports (3 by Coats) plus introduction assembled in record time
- Aim: Secure Army funding for following year (and leverage) ... and it was successful



# 1949: M.S. Eider



Ray Platt Photo

- 1949-54: supported 27 geologists & field assistants on 22 islands, from Attu to Unalaska
- “Bureaucratic screams of anguish” from USGS HQ

- Robinson acquired from US F&WS as “surplus”
- Skipped by Alaskan Carl Vevelstad, with engineer Charlie Best



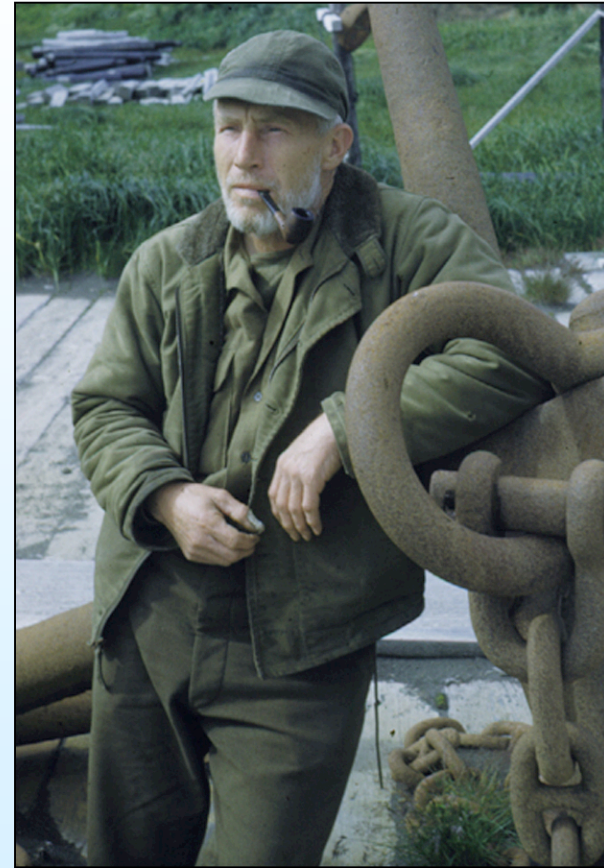
Dick Berg Photo

# Summers in the Aleutians

- Howard Powers (right) and George Fraser provided leadership in the field
- Many college students got hooked on field geology (and some chose lab studies instead)



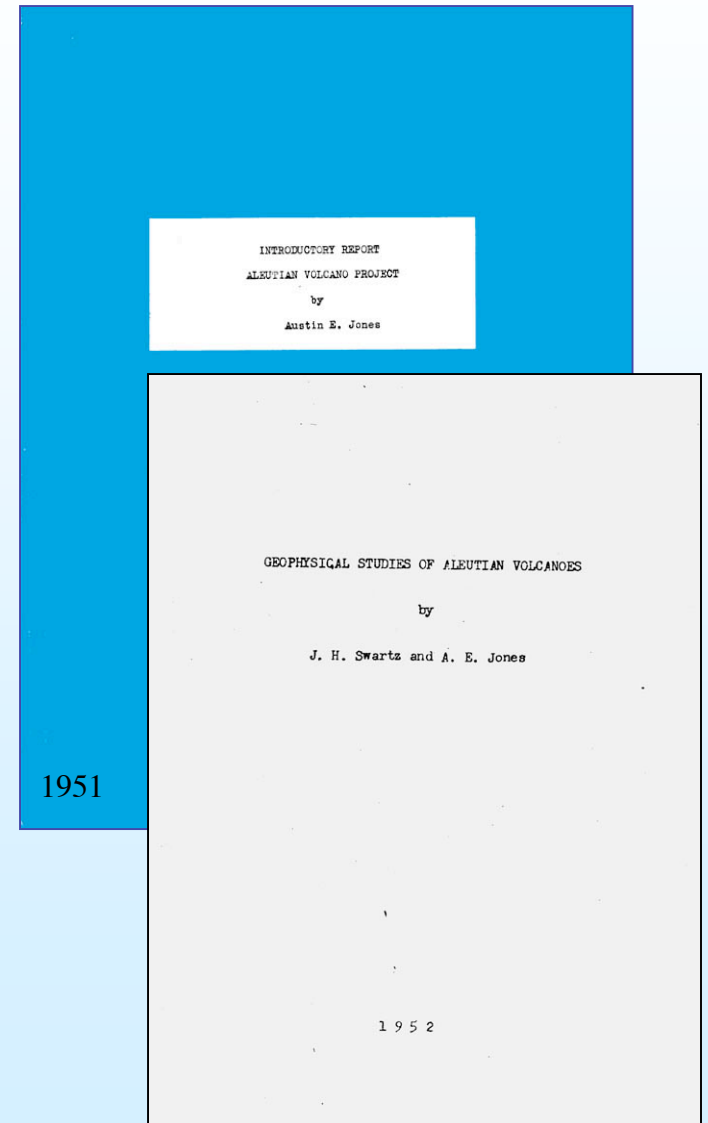
George Snyder, Little Sitkin, 1951. Photo by Dick Robie.



Powers Family Photo

# Geophysics in the Aleutians

- In 1999 at the National Archives outside DC, I came across 4 boxes of documents from a USGS geophysical observatory at Adak
- The existence of Aleutian geophysical work in the period 1947-54 is undocumented in the published literature
- Another important facet and a new set of individuals to consider — particularly Austin Emory Jones



# Adak Geophysical Observatory

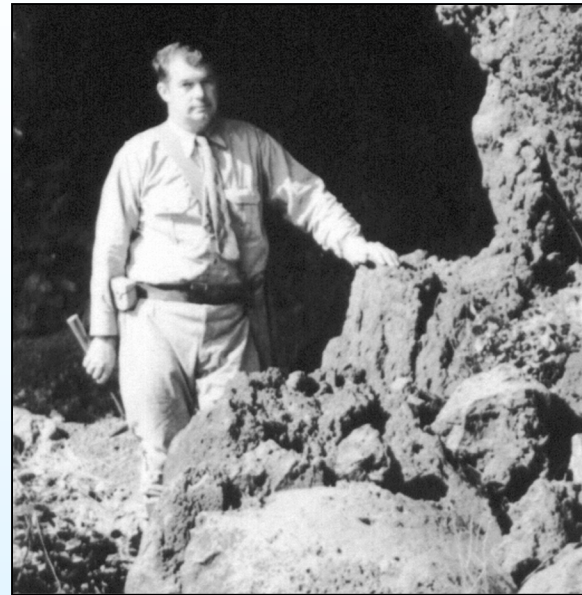
- 1947, Joel Swartz of the USGS sent his college-age son Bill to Adak to set up seismographs
- A difficult job; some GI assistance
- 1949, Austin Jones was hired. He moved his family and stayed through the end of the USGS Aleutian Volcano Project, in the fall of 1954



Finger Bay Seismic Hut, Adak, September 1948.  
Photo by Joel Swartz (Swartz family)

# Austin E. Jones (1898-1985)

- 1915, at eruption of Mt. Lassen
- A.B. Physics & Eng UC-Berkeley 1924; seismo. ass't to Byerly 2 years; magnetic studies of Lassen lavas in 1927-28 (with R.H. Finch)
- Summer 1929 hired by Jaggar (HVO), sent to Kodiak & Dutch Harbor to set up seismic stations
- 1931-35, “first modern seismologist” at HVO (Tom Wright, pers. comm.)
- M.S. at UH (seismo study of Kilauea eruption 1931-32). Pondered questions of oceanic crust layering (not popular) and need for coring ocean floor.



1935 Mauna Kea Expedition. Jones family photo.

- Unpublished study of Kilauea ash
- ? Family commitments and the Depression axed his quest for Ph.D. studies at Harvard (with R. Daly)

# Austin Jones — 1940s

- 1939: "The amateur's seismograph" in *Scientific American*.
- Depression & war years: oil co. work in TX; C&GS seismo work in Boulder City, NV
- 1945 to Paricutin for magnetic studies with C&GS (where are the records?)
- 1947 tsunami (Unimak): wrote Transactions of AGU, suggesting chain of scientific observatories around Pacific (Jaggar first suggested this in 1928)
- 1948, Jones repeated suggestion, to survey from Joint Research & Development Board. Robinson had proposed in 1947 to JRDB a military-backed study of Aleutian volcanoes that included geophysical studies

## THE AMATEUR'S SEISMOGRAPH

Instructions for Building and Operating in the Owner's Cellar an Instrument which Will Record Quakes from the Most Distant Parts of the Earth

By AUSTIN E. JONES

**A** SEISMOGRAPH is neither difficult to build nor tedious to operate. Of the many forms, the Bosch-Omori horizontal-pendulum type is probably the easiest to make and maintain. To house it a small separate building is preferable, but if this is too expensive a corner of the basement will be suitable. The corner will have to be walled off to stop convection currents of air, also to preclude accidents to the apparatus. As a foundation, a pier (Figure 1) should be set at least two feet in the earth beneath the floor, or on bed rock. It should have no direct contact with the floor. The zone



of earth will to some extent insulate the pier from disturbances originating within the building. Concrete walls of basements have also been used to support seismographs, with some success (Figure 2).

For the "heavy mass," on the pendulum, which remains virtually stationary while the earth and apparatus move, a compactly shaped cylindrical piece of metal G, weighing more than 50 pounds, will be required and a visit to a junk dealer is quite likely to reveal it already in usable form. However, as a larger mass will prove to be more effective in overcoming friction, the nearer the mass approaches 500 pounds in weight the better. A very effective seismograph can be made with a mass of 200 pounds. The mass need not necessarily be in one piece, as several disks may be bolted together, or a canister filled with shot will answer the purpose.

The mass, represented at M in Figures 1 and 2, may have its axis in the boom, as shown, or at right angles to it. The lines formed by the booms BD and the piano-wire suspension AC should pass through the center of gravity of the mass. In the case of a 200-pound mass the distance BC should not be much more than one foot, while the distance to the end of the boom may be three to five feet. This will

**R**ETURNING from his work, a man is met at the door by that familiar refrain, "Dinner is on the table, so don't delay a single minute." He promises to "be there just as soon as I can wash my hands," and starts toward the bathroom. Then he hesitates, glances furtively backward, ducks suddenly into the cellar doorway and is gone. Time marches on. Some 21½ minutes later he emerges breathlessly from his little seismological laboratory with a yard of grimy snooked paper, to which he points and announces with gusto to a rather disgusted waiting wife that "there has been a tremendous earthquake today and a long woy off." As he eats his chilled meal he talks on and on about big earthquakes and particularly about this one (his wife seems to be listening but is thinking about hats). When he pronounces that the quake was in the Far East those present exchange winks, but tomorrow's papers will say, "Heavy Quake Does Extensive Damage in Java."

The man is an amateur seismologist.

For years past there has been evidence that numbers of amateurs would like to build their own earthquake recording instruments, but until quite recently there has been a lack of literature on the subject, in a form suited to the needs of the beginner. Most professional writings on seismology have been abstruse and mathematical. This situation is changing. Commander N. H. Heck, chief seismologist of the United States Coast and Geodetic Survey, has published an all-around, semi-popular treatise, "Earthquakes." Prof. L. D. Lee, in charge of the Harvard Seismograph Station, has written a detailed semi-scientific treatise on practical seismology, a book which makes available to the amateur who will do a little studying an elementary technical understanding of seismograph and earthquake principles. And now a seismologist who has built seismographs for professional use tells the accompanying article how to make an instrument that will function for the great world-shaking, distant quakes that are chronicled in the newspapers every few days. At last, therefore, improved circumstances have made it better possible for the amateur to proceed.

The author of the accompanying instructions (see "American Men of Science," the "Who's Who" of American science) did graduate work at the University of California, then was an assistant-scientist with the United States Geological Survey at Mt. Lassen. Later he placed two seismographs in Alaska, and has spent four years as an assistant to the widely-known volcanologist, Dr. T. A. Jaggar, Director of the Hawaiian Volcano Observatory of the Department of the Interior, where the study of earthquakes of the peculiar volcanic type is made a specialty. "A fair amount of my time," he states, "has been concerned in devising seismographs from material at hand, as well as constructing cellars for them." So far as is known, no definite instructions for making a seismograph of the quality he describes have ever been published. The professional has always purchased his instruments ready-made, or has himself employed instrument makers to make them, or else made his own, and in each case no definite building instructions were written out because this was unnecessary.

Recently a Committee on Amateur Seismology was formed in the Geological Society of America, the national organization for professionals and interested amateurs. This society publishes, at Berkeley, California, a monthly journal named the *Bulletin of the Seismological Society of America*, which is not entirely technical and abstruse, many of the articles being readily understandable by the lay reader. Other journals publish occasional articles on seismology.

Readers who construct the apparatus described here are requested to communicate their results to the editors, who are interested.—A. E. J.

The first syllable—seis—of this troublesome word rhymes with ice, dice, lice.

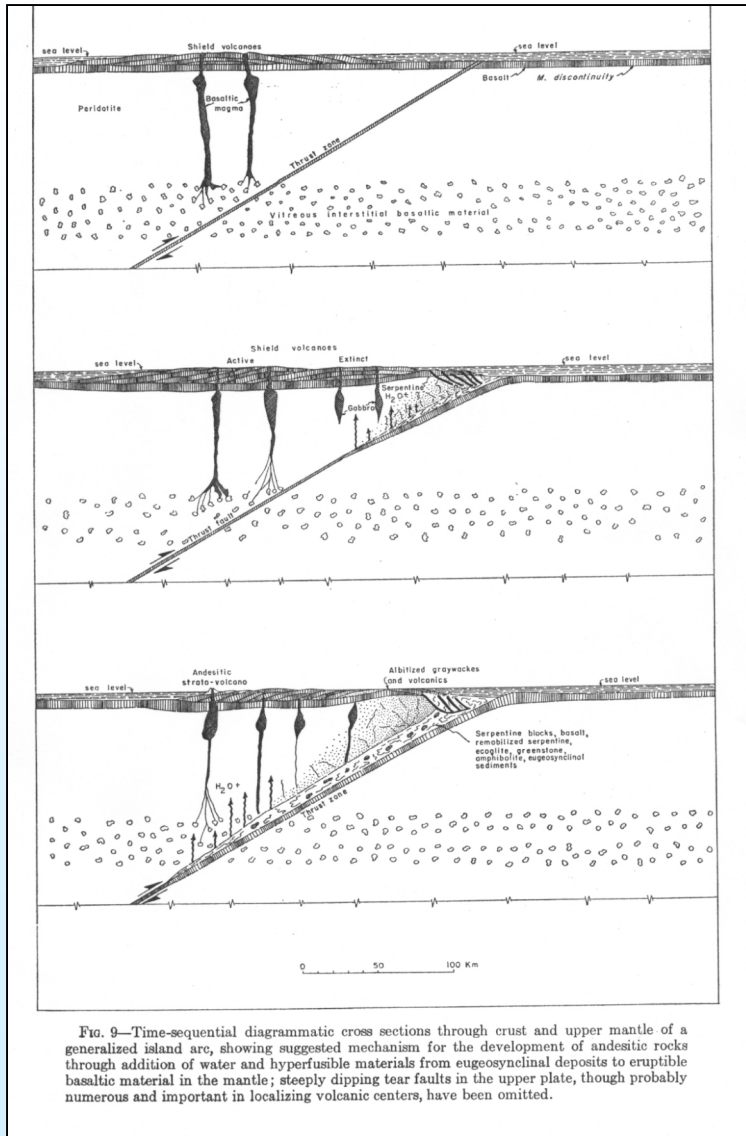
# Austin Jones — 1950s, Aleutians

- In 1949, Jones was hired by USGS to operate Adak geophysical station; remained to 1954.
- He wrote several papers, never published, including one on the energy balance of Aleutian volcanoes.
- He mentioned “documents taken from my desk in the USGS Baltimore Geophysics office”. Cold war security? (his son thinks so)
- 1954-62, he did work for C&GS in Dutch Harbor (seismographs, tidal gauge); IGY
- 1962: moved to the Reno UN Seismo Lab, working on seismic studies of Project VELA UNIFORM. Retired in 1973.

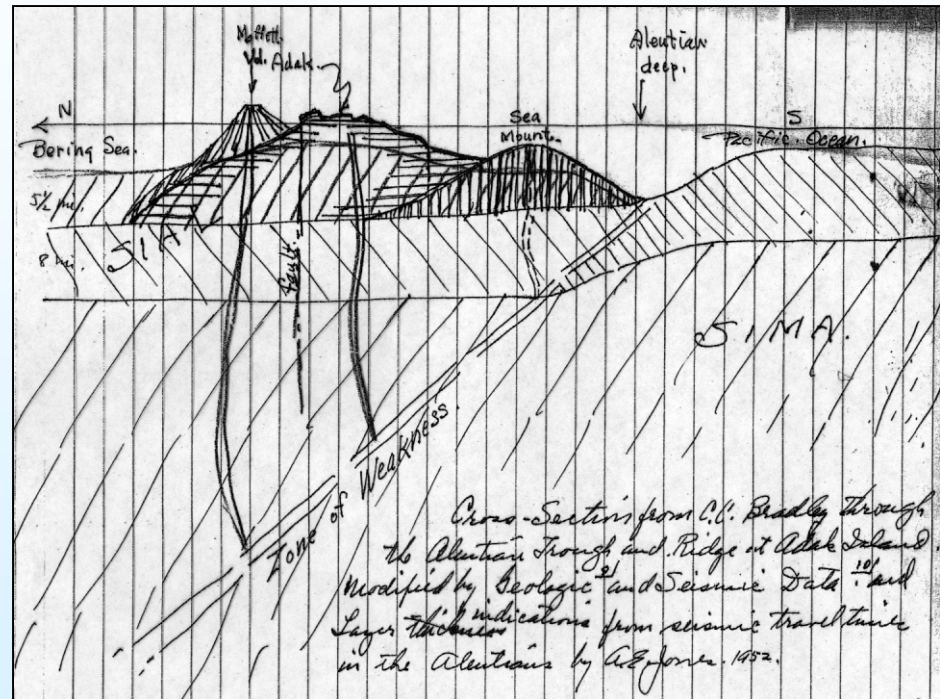


Jones on Adak in early 1950s.  
Photo by Howard Powers  
(USGS Photo archive)

# Seismicity and Aleutian Subduction ... 1952 ... 1962



Left: from Coats' seminal 1962 paper "Magma type and crustal structure in the Aleutian arc" (in *The Crust of the Pacific Basin*, AGU Mono.)



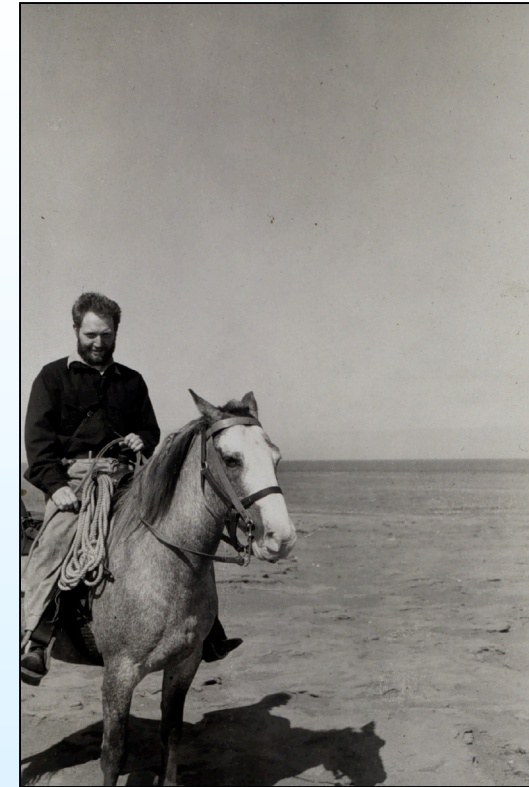
Above: from unpublished manuscript by Austin Jones in National Archives, dated 1952

“Bob Coats knew Austin Jones and thought very highly of him” (Garniss Curtis, 2000)

# U.S. Coast & Geodetic Survey



Above: Landing to transport a SHORAN station on west end of Attu, July 1946. Below: Getting a fix on a station. Bill Page photos.



Francis X. Popper. Four-legged transport on Unimak, 1940. USC&GS photo. Skip Theberge. saved this and many others from the garbage can of history. On the NOAA web site, .

# Summary

- 34 individuals interviewed
- 30 colleagues and family members contacted/  
interviewed
- 5 archives visited
- dozens of hours of tapes to  
index/ transcribe

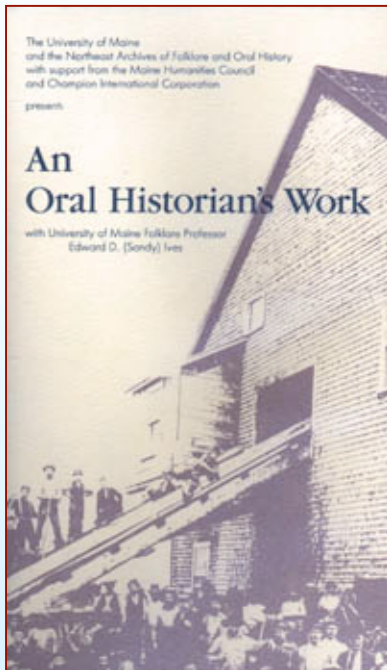


David Jones and his father's diaries, photos and files. Spokane, 2001.

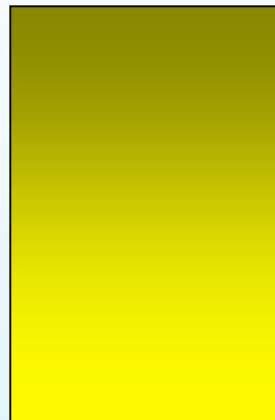
# Preserve History... Now

- Oral histories: with training, almost anyone can do it
- Individuals' records and documents; what happens to them?
- Agency files....some archived, some not, some indexed, some not ....

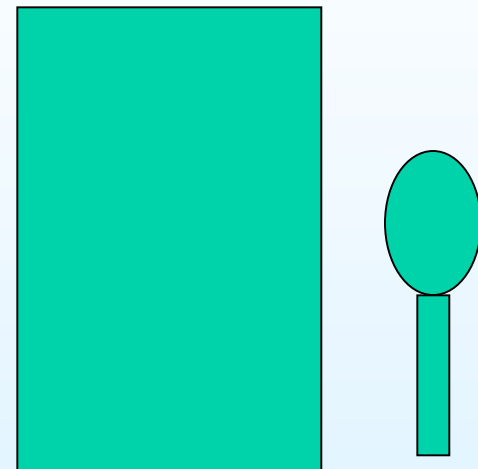
# Tools



VHS Tape available from the Maine Folklife Museum (~\$40).  
An excellent "how to" introduction to recording oral histories.



Background research on individual to be interviewed; outline & questions



Tape recorder and mike