

Accession No.: 86-46

PROCESSING RECORD
SCRIPPS INSTITUTION OF OCEANOGRAPHY ARCHIVES

Snodgrass, Frank E 1920-1985

Frank E. Snodgrass Photographs, 1953-1976

BULK DATES: 1961-1976

PHYSICAL DESCRIPTION: 1 mss

DESCRIPTION: The accession consists of 286 2x2 color and black and white slides illustrating the scientific work of Frank Snodgrass who worked for the Scripps Institution of Oceanography as an assistant (later associate) engineer from 1953-1976. These slides were compiled by IGPP illustrator Breck (formerly Don) Betts for presentation at a memorial service for Frank Snodgrass. They largely document the period 1961-1975 when Snodgrass worked with Walter H. Munk at IGPP. The slides include schematics and data, images of instruments designed, constructed and/or tested by Snodgrass, images of the SIO campus, and SIO research vessels, images of the ocean bottom and a few images of Snodgrass himself.

One image shows Frank Snodgrass (foreground) speaking with then graduate student James Irish during a 1970 cruise off Antarctica to study deep sea tides. Another image shows Snodgrass operating a winch on board Scripps research vessel Ellen B. Scripps in 1975, during the first tests of acoustic transmissions in the ocean for an experiment that led to the development of acoustic tomography.

96 glass lantern slides were added to this collection on March 10, 1992, transferred from Mandeville Special Collections Library. These were identified by Walter Munk's assistant Breck Betts, as belonging to Frank Snodgrass.

Lantern Slides

1-11	Stratified fluid
12-26	Equation of State of Sea Water
27-45	Stratified Fluid Tidal Equations
46-49	Equation of State Sea Water
50	Drogue Measurements
51-57	Study Motion Incompressible Fluid
58	Temperature-Salinity 500 meters
59-67	Praudtl - Streamlines and vortices
68-90	Internal Waves
98	Praudtl

**Frank E. Snodgrass
Photographs, 1953-1976
Accession Number 86-46**

SLIDE NO.	CAPTION
	542-550: Sensors in the Deep
541	Temp/Grains Profile
542	Capsule Schematic
543	No Caption [Graph]
544	[Graph]
545	[Graph]
546	[Graph]
547	[Graph]
548	[Graph]
549	[Graph]
550	[Graph]
	551-560: Antarctic 1969-1970
551	[no contents]
552	No Caption [Capsule being lowered]
553	Capsule in Water
554	Capsule on Eltanin
555	[no contents]
556	[no contents]
557	[no contents]
558	[no contents]
559	[no contents]

SLIDE NO.	CAPTION
	551-560: Antarctic 1969-1970 (cont.)
560	[no contents]
561	Port Lab & Capsule
562	[no contents]
563	Port Lab on Truck
564	Port Lab
565	Walter Munk
566	Walter Munk & Jim Irish
567	Frank Snodgrass & Jim Irish
568	Jim Irish
569	No Caption [people on deck]
570	No Caption [man and women on board]
571	No Caption [woman on deck]
572	“Josie”
573	Eltanin
574	Eltanin
575	No Caption [man on board]
576	[no contents]
577	[no contents]
578	Group on rail
579	People on Board
580	No Caption [two men on board]

SLIDE NO.	CAPTION
	581-600: Antarctic Trip 1969-1970 (cont.)
581	No Caption [man on board]
582	Capsule in Water
583	Capsule in Water
584	[no contents]
585	Recovery Capsule
586	Recovery Capsule
587	Recovery Capsule
588	Recovery Capsule
589	Recovery Capsule
590	Launch Capsule
591	Capsule Launch
592	Capsule Launch
593	Capsule Launch
594	Capsule Launch
595	Capsule Launch
596	Capsule Launch
597	Capsule Launch
598	Capsule Launch
599	[no contents]
600	Capsule Launch

SLIDE NO.	CAPTION
	601-610: Deep Sea Tide Cap
601	[no contents]
602	No Caption
603	No Caption
604	No Caption
605	No Caption
606	No Caption
607	No Caption
608	No Caption
609	[no contents]
610	UCSD (Betts)
	611-620: Antarctic Trip
611	Antarctic Launch
612	Launching Capsule
613	No Caption [The deck]
614	[Man and woman on deck]
615	[Equipment]
616	[Equipment]
617	[Equipment]
618	[Equipment]
619	[Equipment]
620	[no contents]

SLIDE NO.	CAPTION
	621-630: Off Shore Tide Paper
621	[no contents]
622	No Caption [Graph]
623	[Graph]
624	[Graph]
625	[Graph]
626	[Graph]
627	[Graph]
628	[no contents]
629	[no contents]
630	[no contents]
	631-640: Geothermal Heat Flux
631	Geothermal Heat [Graph]
632	Geothermal Heat Flux [Graph]
633	[Graph]
634	No Caption [Economy Tide Capsule Graph]
635	[Graph]
636	[Complex Tide Capsule Graph]
637	[Equipment]
638	[Equipment]
639	[Equipment]
640	[Equipment]

SLIDE NO.**CAPTION****641-660: Stine Talk Mode Instruments**

641	No Caption [Equipment]
642	[Equipment]
643	[Equipment]
644	[Equipment]
645	[Backup Timer Graph]
646	[Equipment]
647	[Equipment]
648	[Equipment]
649	[Interocean Receiver Ranging Modifications Graph]
650	[Tides Acoustic System]
651	[Graph]
P	Frank Snodgrass (Photo by Peter Worcester) - 1975
P	Frank Snodgrass Portrait – 1969
	Duplicates
?	No Caption [Graph]
499	[Graph]
474	[Equipment]
?	No Caption
500	[Equipment]
531	[Tables and Graphs]
542	[Diagram]
540	[Graph]

SLIDE NO.**CAPTION****Duplicates (cont.)**

547	No Caption [Graph]
548	[Graph]
549	[Graph]
545	[Graph]
557	[Equipment]
540	[Graph]
627	[Graphs]
?	[Graph]

201-220: Guadalupe Island Tide Gauge Instruments

201	No Caption [Graphs]
202	[Ocean Wave Spectra Graph]
203	[Graphs]
204	[no contents]
205	No Caption [Graphs]
206	[Diagram]
207	[Equipment]
208	[Graph]
209	[Graph]
210	[no contents]
211	No Caption [Diagram]
212	[Equipment]

SLIDE NO.

CAPTION

201-220: Guadalupe Island Tide Gauge Instruments (cont.)

213 No Caption [Graph]

214 [Graph]

215 [Graph]

216 [Equipment]

217 [Graph]

218 [Equipment]

219 [Equipment]

220 [Equipment]

301-320: Tsunami Ocean Waves

301 No Caption [Graph]

302 [Graph]

303 [Graph]

304 [Graph]

305 [Oahu Map Graph]

306 [Building Wreckage]

307 [La Jolla Shoreline]

308 [no contents]

309 No Caption [Scripps Pier]

310 [On Scripps Pier]

311 [Graph]

321-340: New Zealand and Samoa

321 No Caption [New Zealand Shoreline]

322 [New Zealand Field by the Shore]

SLIDE NO.	CAPTION
	321-340: New Zealand and Samoa (cont.)
323	No Caption [New Zealand Field by the Shore]
324	[Two men in Field]
325	[New Zealand Shoreline]
326	[New Zealand Field by the Shore]
327	New Zealand Cape Palliser Quartus
328	No Caption [New Zealand Cliffs near the Shore]
329	[New Zealand Rocky Shore]
330	[New Zealand Shore]
331	March 7 th [NZ Shore]
332	No Caption [New Zealand Shore]
333	[Airline Jet]
334	Samoa [Children before huts]
335	No Caption [Airline Jet]
336	[Samoan Town]
337	[Samoa Shore]
338	[Samoa Shore]
339	[Samoa Shore]
340	[Samoa Inlet]
341	Samoa [Jungle]
342	No Caption [Samoan Jungle]
343	No Caption [Boy in Samoan Jungle]

SLIDE NO.	CAPTION
	341-360: Palmyra Alaska (cont.)
344	Palmyra, F. Snodgrass [Man in Jungle]
345	No Caption [Samoan Jungle]
346	[Jungle Floor]
347	[Samoan Jungle]
348	[Samoan Shore]
349	[Samoan Shore]
350	Palmyra [Cot in Samoa]
351	No Caption [Alaskan Shoreline – Aerial]
352	Glacier Yak to Jun
353	No Caption [Man in Alaskan snowy woods]
354	[Man in Alaskan snowy woods]
355	Island Airport
356	No Caption [Three men in parkas, Alaska]
357	Trees by beach Yakatat
358	Dock Yakatat
359	Yak to Juneau [taken from plane window]
360	Juneau Airport and Glacier
	401-420: Deep Sea Capsule
401	[no contents]
402	No Caption [Tide Capsule on Deck]
403	[Equipment on Board]
404	[Equipment on Board]

SLIDE NO.	CAPTION
	401-420: Deep Sea Capsule (cont.)
405	No Caption [Kathy Electronics]
406	[Kathy Electronics]
407	[Equipment]
408	[no contents]
409	No Caption [Equipment]
410	[Kathy Electronics]
411	[Kathy Electronics]
412	[Kathy Electronics]
413	[Capsule]
414	[Men with capsule on deck]
415	[Capsule being lowered into the water]
416	[Ship deck]
417	Kathy in Cradle
418	Ins. Tripod and Battery Pack
419	Kathy Electronics
	501-520: Bottom Photos
501	2000m [Fish on Bottom]
502	[Fish on Bottom]
503	[Fish on Bottom]
504	[Bottom]
505	[Fish on Bottom]
506	S.C.I.s, 1800, 18 Oct 1967; 2000m [Bottom]

SLIDE NO.	CAPTION
	501-520: Bottom Photos (cont.)
507	2000m [Bottom]
508	S.C.I.s, 2330, 17 Oct 1967; 2000m [Bottom]
509	2000m [Bottom]
510	S.C.I.s, 2330, 18 Oct. 1967; 2000m [Bottom]
511	No Caption [Bottom]
512	2000m [Bottom]
513	[Bottom]
514	S.C.I.s, 1830, 18 Oct 1967; 2000m [Bottom]
515	[Bottom]
516	[Bottom]
517	Scripps Canyon, 26 June 1967; 1200', 1000m [Bottom Negative]
518	[Bottom Negative]
519	No Caption [Fish on Bottom]
520	[no contents]
	481-500: Deep Sea Tide Capsule
481	Corrosion
482	C.M. Gallows
483	No Caption [Tide Generating Force Figure]
484	World Map
485	World Map
486	[no contents]
487	Flicki Digital System

SLIDE NO.	CAPTION
	481-500: Deep Sea Tide Capsule (cont.)
488	[no contents]
489	Surface Echo [Diagram]
490	Echos [Diagram]
491	Log-log Deep Sea Temperature [Graph]
492	Deep-sea Current Spectrum [Graph]
493	Sea Current/Temperature Record [Graphs]
494	[no contents]
495	No Caption [World Map]
496	[no contents]
497	No Caption [Two men with capsule]
498	[no contents]
499	Temperature Gradient [Graph]
500	Falling Boom Exp.
	461-480: Deep Sea Tide Capsule
461	[no contents]
462	No Caption [Capsule in water]
463	[no contents]
464	[no contents]
465	[no contents]
466	Battery Pack
467	[no contents]
468	Dye Injection Probe

SLIDE NO.	CAPTION
	461-480: Deep Sea Tide Capsule (cont.)
469	CM. Probe
470	No Caption [Falling Boom Exp.]
471	Tripod Swarm Exp.
472	No Caption [Equipment]
473	Tri c.m. Camera
474	Ins. Tripod & C.M.'s
475	Tripod 6 C.M.
476	Josie – Digital System
477	Digital System
478	Digital System
479	Foulks Tilt Meter
480	Foulks Tilt Meter
	441-460: Deep Sea Tide Capsule
441	[no contents]
442	No Caption [Three men on deck]
443	[Men on deck]
444	[Men on deck]
445	[Man and woman on deck]
446	[Woman on deck]
447	[Man and Josie's Electronics]
448	[Equipment]

SLIDE NO.**CAPTION****441-460: Deep Sea Tide Capsule (cont.)**

- 449 No Caption [Men with Equipment]
- 450 [Equipment being lowered into the water]
- 451 [Men with Capsule]
- 452 [no contents]
- 453 [no contents]
- 454 No Caption [Capsule in the Water]
- 455 [Man and woman on board]
- 456 Maregraphe – Detecteur Relevage; La Jolla, 1/67
- 457 Detecteur mile a l'eau; La Jolla 1/67
- 458 Bouee Relevage; La Jolla 1/67
- 459 Bouee Relevage; La Jolla 1/67
- 460 Bouee Relevage; La Jolla 1/67

421-440: Deep Sea Tide Capsule

- 421 No Caption [Capsule]
- 422 Munk IAPO Cruise
- 423 [no contents]
- 424 Kathy
- 425 No Caption [Man with Capsule]
- 426 [Equipment]
- 427 The Group
- 428 No Caption [Men with Capsule; b/w]
- 429 [Workspace; b/w]

SLIDE NO.	CAPTION
	421-440: Deep Sea Tide Capsule (cont.)
430	[no contents]
431	[no contents]
432	No Caption [Graphs]
433	[Graphs]
434	[Capsule's electronics]
435	4 Capsules [on deck]
436	No Caption [Tripod for Sea Arm Expt.]
437	Tripod Sea-Arm Expt.
438	Battery Pack
439	Kathy – Release
440	No Caption [Graphs]
	521-530: Wimbush Vanc Talk
521	Dumee with 4 inch Extension [b/w photograph]
522	Temperature Profile [Graph]
523	Self Heating Curve [Graph]
524	Free Convection [Graph]
525	Dumee Diss. Curve [Graph]
526	Dumee Probe [b/w photograph]
527	Temperature & Pressure Data [Graphs]
528	Dumee & Vibration [b/w photograph]
529	Data of O Record [Graphs]
530	Benthic/Flowerbed [Graph]

SLIDE NO.	CAPTION
	531-541: Boundary Layer
531	Table I [Equations]
532	Sk(k)/Temp Spectrum [Graph]
533	Camera/Dye Injection System [b/w photographs]
534	Current Speed Spectrum [Graph]
535	Sea Current / Sea Temperature Record [Graphs]
536	Regression Plots U(a)
537	Table II & III [Tables]
538	Current Spectra [Graphs]
539	Log-Log Temp [Graph]
540	U...U(a) On Chart [Graph]
	1-10, 12-20
1	No Caption [Equations]
2	[Graph]
3	Temperature of the Atmosphere, Temperature Gradient [Graphs]
4	Atmospheric Stability [Graph]
5	Isothermal Atmosphere [Equations]
6	No Caption [Graph]
7	[Graph]
8	[Graph]
9	Surface Waves [Graph]
10	No Caption [Graph]
12	[Equations]

13	Thermal Expansion Calculations [Table]
14	No Caption [Graph]
15	[Graph]
16	[Graph]
17	[Graph]
18	[Graph]
19	[Graph]
20	Tumlirz Equation [Formula]
	21-40: Deep Sea Tide Capsule
21	[Parameters for Pure Water Equation]
22	[Graph]
23	[Charts]
24	[Graphs]
25	[Graph]
26	Parameters for Sea Water Salinity S%
27	[Equations: Density, Velocity, Pressure, Temperature, Entropy, Zero Order, Velocity Sound, Field Variables]
28	Free Motion – Linearized [Equations]
29	[Equations]
30	[Equations]
31	Spherical Rotating Earth [Equations]
32	Spherical Earth – No Rotation [Equations]
33	Laplace’s Tidal Equation [Equations]
34	Flat Earth – No Rotation [Equations]

SLIDE NO.	CAPTION
	21-40: Deep Sea Tide Capsule (cont.)
35	[Graph]
36	Diagram Drawn for a very small value of R
37	Separate Variables
38	[Equations]
39	Legendre Equation
40	Zonal Modes, Spheroidal Wave Function
	61-80: Deep Sea Tide Capsule
61	No Caption [b/w]
62	[b/w]
63	[b/w]
64	[b/w]
65	[b/w]
66	[figure]
67	[b/w photographs]
68	[b/w photograph of plane tail]
69	Equations: Adiabatic changes, hydrostatic Equation, Adiabatic Density Gradient
70	Vaisala-Brunt Frequency
71	[Chart]
72	Internal Waves Equations
73	[Equations]
74	Constant N Equations
75	[Diagram]

SLIDE NO.	CAPTION
	61-80: Deep Sea Tide Capsule (cont.)
76	[Diagram]
77	[Diagram]
78	[Diagram]
79	[Diagram]
80	[Diagram]
	81-85, 87-92, 98, 5 w/o numbers
81	Barovariograph Record, 4 August 1952 [Diagram]
82	Speedomax Record, 4 August 1952 [Diagram]
83	Speedomax Record, 16 October 1952, La Jolla [Diagram]
84	Correlation between pressure and wind direction, 4 August [Graph]
85	[Map of Earth]
87	[b/w photograph of airplane tail]
88	[b/w photograph of airplane tail]
89	[b/w photograph of airplane in flight]
90	[b/w photograph of airplane in flight]
91	Rocky Mountain Profile Graph
92	[Photograph of the continental divide near Boulder, 7 March 1966 and NCAR anemometer readout]
98	[Unidentified b/w Photos]
68	No Caption [View of Earth]
?	Strasse von Gibraltar [Chart]
?	Blockbild der Strass von Gibraltar [Map]

SLIDE NO.

CAPTION

81-85, 87-92, 98, 5 w/o numbers (cont.)

?

For Professor Eckart; Allen Schooley, NRL [photograph]

?

For Professor Eckart; Allen Schooley, NRL [photograph]