LETTER FROM STEPHANIE
Keeping a Journal

Dear Fellow Explorers,
Hello, and welcome to Antarctica!

I'm Stephanie Shipp, a researcher here in Antarctica. I study the ocean floor around Antarctica—specifically, I look at the geological history left behind after glaciers grew during the last ice age. I'm writing to let you know what we're working on down here, and to explain what, how, and why we study Antarctica.

I'm a pretty seasoned Antarctic researcher—so far I've been on five research expeditions to Antarctica. It's really tough work, but also incredibly satisfying; and I hope to go on many more expeditions.

Each year, I spend about 5 weeks "in the field." I work with a team aboard a research vessel (or boat), collecting samples and studying the ocean floor. The rest of the year, I work in the lab, analyzing the data my team and I collected. My lab is at Rice University in Houston, Texas—not too close to Antarctica! As a result, I need to take very careful notes while I am in the field!

I keep all my notes in a field journal. A journal is the foundation of any scientist's research; in my journal, I write down everything I observe and all questions and ideas that I have. I also draw lots of pictures. I write down plans for experiments and I record the results of my experiments; I also begin interpreting those results in my journal. That way, all of my ideas are in one place, ready to be used when I want to present them more formally.

MY JOURNAL IS MY OWN THINKING PLACE, JUST FOR ME. My journal, like most scientists' journals, is filled with all sorts of scribblings, maps, drawings, and sketches. It doesn't need to be very neat, but it does have to be full of details; back at the lab, I need to be able to double and triple check all my observations. Keeping a good journal is kind of like having an extra brain!

For my work, I have to be especially careful about how I keep my journal. I work around water in a place with ice and snow and rain, so I need to make all of my entries in pencil or ball-point pen. The few times that I have made comments in felt-tip pen, the pages have gotten wet, making the ink bleed all over the page. That doesnot just mean a messy page—it means I lose all that research! As you might guess, Murphy's Law applies in the research field, too—it is always the most important ideas that get lost!

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WHEN YOU ARE WORKING AS A SCIENTIST, YOU SHOULD ALWAYS KEEP A JOURNAL TO RECORD OBSERVATIONS, IDEAS, AND RESULTS. I'm including a few pages from my own journal to give you ideas about how I do it; you can borrow some of my methods and develop some of your own as you investigate your own research topics.

All the best,

Stephanie

P.S. I have developed lots of funny abbreviations in my note-taking. It's a great way to make writing faster when I am taking notes. To help you follow, I have included a glossary.

Date: 2/15/98

Location: Off Coulman Island, Ross Sea, 170°W, 73°S, onboard R/V Nathaniel B. Palmer

Research Team: John B. Anderson (PI), Julia Smith Wellner, Ashley Lowe, Kim Giesting, Tony Rodriguez, Elke Jahns, Marco Taviani, Kathy Licht

On Watch: Stephanie Shipp, Elke Jahns, Kathy Licht

Weather and Ocean Conditions: overcast, wind 15 knots, barometer 930; falling, seas 4-6', no sea ice, occasional small icebergs

Equipment: side-scan sonar (left channel not working—record shows noise); multi-beam, 3.5 kHz profiler, 50 in3 seismic system, kasten corer, piston corer, Smith-MacIntyre grab sampler. Equipment log has record of changes in settings.

Q: Did the ice sheet extend this far to the north? Where did the ice come from?
Spent 8 hours collecting mb and sss images of the sea floor. First analysis—large grooves interpreted to be features carved by the ice sheet. Flow direction roughly N30°E—matches directions of features to the east. Some grooves appear originate from around the island—may have had ice flow from the west through the mountains. Note: collect sediment samples to see if the rocks and minerals in the sample match the rocks and minerals from the mountains to the west or the land to the south.

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Q: When was the ice here?
The features look "fresh"—which indicates the grooves were created during the most recent ice age (and not an earlier one)—but need samples from the seafloor to get material we can age-date when we get back to the lab.

Collected 4 kasten cores to get undisturbed samples of upper sediment.
NBP98-KC34 - no recovery
NBP98-KC35 - no recovery
NBP98-KC36 - 1.8 meters - latitude / longitude
NBP98-KC37 - 1.2 meters - latitude / longitude
Film rolls #14 (photos 23-36) and #15 (photos 1-17)
Samples for age dating indicated on core descriptions and sketches.

Collected 3 piston cores to sample deeper part of the sediment record.
NBP98-PC38 - 1.3 meters - latitude / longitude
NBP98- PC39 - 2.4 meters - latitude / longitude
NBP98- PC40 - 2.1 meters - latitude / longitude
Sediment in bottom of 39/40 piston cores is very hard—good indicator we hit material deposited by an ice sheet. MT found no fossils at base.
Upper sediment has some olive green diatomaceous mud; present ocean setting. Tiny granules probably dropped by icebergs (MT).
Cores labeled, cut into sections, magnetic data collected from each section, packed for transport to Florida State, stored in refrigerator in box #2.

Discussed with JBA next steps—plan to survey farther north to see if we can find where the grooves end to locate the maximum position of the ice sheet.

Sent e-mail to Breezy back home to see if she can dig up any coring records from past surveys that worked where we are planning to go. The 1980 cruise sampled in this vicinity—did they find material deposited by the ice sheet??

Got most recent weather report—large storm system coming from the east - may see more sea ice blow in—and will probably run into heavier seas within 48 hours.

Note: tonite—annual "gumbo cook-off" between JBA and the Captain and round 3 of ping-pong-ball tournament (Marco leads—need to finish before the storm rocks ship too much!).

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JOURNAL GLOSSARY

On Watch We use this term to describe the time when a team member is on duty. While on watch, he or she is responsible for keeping the research running smoothly by monitoring equipment and continuing to gather data. I was on watch all night, but it was pretty easy; nothing went wrong with the equipment.

R/V This is my abbreviation for "research vessel," the ship from which we conduct all our research. Clear seas ahead gave us a smooth ride on the R/V.

Seismic Data This term describes the data we collect using sound waves. One sound source originates inside the ship; others are towed behind the ship. Our equipment emits sound waves that travel through the water and bounce off the ocean floor. A sound receiver is located in or towed behind the ship; it picks up the sound as it comes back up from the seafloor. Because sound travels at different speeds in different kinds of surface layers, we can estimate how thick each layer is. We measure the time it takes for a sound wave to come back to the surface to create a picture of a vertical "slice" of the sea floor. All the data are recorded on a computer so that we can print them out or process them later.

SSS Another one of my handy abbreviations! This one stands for "side-scan-sonar." This kind of equipment is similar to the one I described in the definition for "seismic data," but the side-scan-sonar emits waves at a much higher frequency. These higher frequency waves cannot penetrate the seafloor, so that we can gather data on the seafloor surface. With these kind of data, we can create a picture of the bottom of the sea. Our picture looks a bit like an aerial photograph. With this equipment, the source and receiver are often part of the same platform, which is towed behind our R/V. We call that equipment, "the fish."

MB This one stands for "multi-beam." Multi-beam data are also generated with sound, but the system is mounted in the hull of the ship instead of being towed behind it. It sends out as many as 120 beams to the seafloor, allowing us to get an image of a whole swath of seafloor. Our picture from MB data looks a bit like a photograph.

Piston Corer This equipment looks a bit like a big straw. We use it to collect vertical sections of the mud of the ocean floor so that we can examine all the layers (called strata) of the sea floor. The piston corer can collect cores up to sixty feet (18 meters) in length (or height).

Kasten Corer This equipment is similar to a piston corer, but this kind of corer pulls out square samples, wider than those collected by the piston corer. The cores are only about two meters in length. The wider sample lets us take bigger samples at a single strata.

Smith-Macintyre Grab Sampler These samplers are like scoops with jaws; they take a bite out of the top of the sea floor. Sediment collected this way is all jumbled; and if a rock gets caught in the jaws, the jaws stay open and the entire sample can be dumped onto the sea floor. But this form of sampling can be very useful because it's a relatively quick way to collect samples.

Diatomaceous Mud This kind of sediment is very fine-grained; about ten percent of it is fossils of single-celled photosynthetic planktonic algae. This type of sediment provides a clue that the materials within it were deposited in open marine water, rather than under an ice sheet or ice shelf. The chlorophyll from diatoms often gives a greenish tint to the diatomaceous mud.