HUNTING FOR METEORITES IN ANTARCTICA: J. O. ANNEXSTAD, NASA, JOHNSON SPACE CENTER, HOUSTON, TEXAS 77058.

The great Antarctic Ice Sheet which contains approximately 28×10^6 cubic kilometers of ice acts as a collector, concentrator, and preserver of meteorites. Although a meteorite was discovered near Adele Land by Mawson's Party in 1912, it was not until recent years that large concentrations were found. The Japanese since 1969, and the Americans since 1976, in the Yamato and Trans-Antarctic Mountains, respectively, have found over 1600 meteorite pieces. Meteorites that have fallen on the Antarctic ice sheet during the last million or so years appear to have been transported by the ice towards coastal areas. Mountain ranges form a natural blockage to ice flow and these coastal barriers create regions of stagnant ice called "blue ice." Meteorites contained in the ice are brought to the surface as the ice ablates by the action of katabatic winds. The mechanism which concentrates meteorites in "blue ice" fields is not clearly understood at present. Triangulation networks have been established in the meteorite ice field near the Yamato Mountains and in the ice field near the Allan Hills to measure ice movement. Preliminary results indicate that the ice movement is minimal and ablation as high as 10 centimeters per year in the regions of highest meteorite concentration.

The collection of meteorites in Antarctica is a controlled process designed to preserve and document the specimens. Field parties are supplied with clean lunar type collection materials and special shipping containers. Specimens are assigned field numbers and photographed in situ with a grey and centimeter scale. They remain frozen and are returned to the U.S. under locked refrigerated storage to preserve their original environmental state. Meteorites collected under the sponsorship of the National Science Foundation are curated, stored, characterized and distributed for scientific analysis by the Johnson Space Center and the Smithsonian Institution. The curation program at JSC is similar to the lunar program, so the more valuable and rare specimens will receive careful handling. Meteorites are handled in a dry N_2 environment where they are photographed, assigned a permanent number, chipped for thin section analysis, weighed and described. Initial characterization and descriptive information is published periodically in a Newsletter. A special committee called the Meteorite Working Group meets regularly to review requests for sample and recommend to the NSF the distribution of Antarctic meteorites for scientific analysis. The discovery of meteorites in large numbers in Antarctica has resulted in a new resource of extraterrestrial material for space geoscientists. The excitement of these finds is also shared by glaciologists studying ice movement and biochemists interested in amino acids in the carbon-bearing specimens.