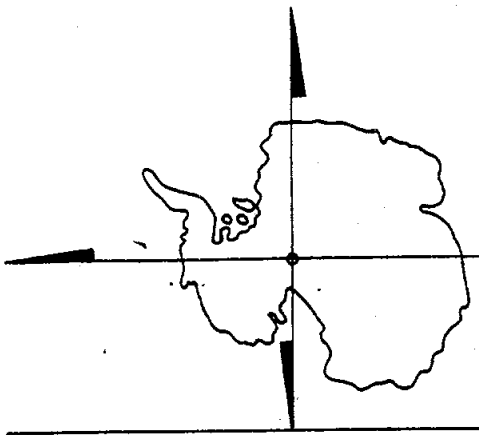

Antarctic Meteorite NEWSLETTER

A periodical issued by the Antarctic Meteorite Working Group to inform scientists of the basic characteristics of specimens recovered in the Antarctic.

Volume 1, Number 2 August, 1978

Supported by the National Science Foundation, Division of Polar Programs, and compiled at Code SN2, Johnson Space Center, NASA, Houston, Texas 77058

- Sample Requests -

The Meteorite Working Group will meet in late September to consider sample requests for specimens described in the newsletter. Please submit requests to the Secretary, MWG, prior to September 15.

REQUIREMENTS AND PROCEDURES FOR ANTARCTIC METEORITE SAMPLE REQUESTS

Formal requests for Antarctic meteorite samples for scientific research should be submitted in writing to the Secretary, Meteorite Working Group, Curator's Branch, Code SN2, Johnson Space Center, NASA, Houston, Texas 77058. Requests are welcome from U.S. and foreign scientists and will be considered two or three times each year by the Meteorite Working Group of the National Science Foundation. In order for a request to be considered, it must arrive in the Secretary's office prior to a deadline published in the newsletter. Consideration will be given to sample requests independently of whether or not the requestor is presently funded for meteorite or lunar sample studies. It should be noted that sample allocation does not in any way commit funding agencies to financing of the proposed research on Antarctic meteorites. Requests for financial support for research must be submitted separately to the appropriate funding agencies.

Sample requests should provide detailed scientific justification of the proposed research. Requests for specific samples should include sample numbers, weight requirements, special handling and shipping requirements, etc. Consortium type sample requests which are aimed at in-depth studies of specific samples by groups of scientists of different specialties are encouraged. Relevant sample information will be contained in the newsletters published by the Meteorite Working Group of the NSF through the Office of the Curator, Johnson Space Center, Houston, Texas.

Investigators wishing to study polished thin sections of Antarctic meteorites in support of their sample requests can do so at the thin section libraries, which are being established at the Johnson Space Center (contact Secretary, Meteorite Working Group), at the National Museum of Natural History, Smithsonian Institution, Washington, D.C. (contact Brian Mason, Curator), or at the National Institute of Polar Research, Ministry of Education, 1-9-10, Itabashi-ku, Tokyo, 173, Japan (contact T. Nagata, Director, and K. Yanai, Curator). These sections are for optical examination only and cannot be loaned out. Requests for polished thin sections or microprobe mounts will be entertained by the MWG, which will recommend the number and distribution of additional sections.

All allocated Antarctic meteorite samples remain the property of the National Science Foundation and are subject to recall to avoid any unnecessary duplication of effort. Any changes in the scope of research on allocated samples not detailed in the original sample request must be approved by the Meteorite Working Group.

- Sample Allocations -

Samples allocated at the September meeting should begin to appear at investigator's laboratories by late October. Processing facilities at the Johnson Space Center are still a bit cramped, but processing of specimens for allocation will go on simultaneously with the initial examination of the remainder of the 1977-78 collection.

The method used for meteorite allocation and distribution will parallel the lunar sample case in many respects. First an allocation plan based on written requests will be prepared by the Meteorite Working Group. Then a report will be sent by the Secretary, MWG, to the National Science Foundation's Division of Polar Programs requesting approval of the plan. As soon as the NSF approves the plan, processing and distribution will begin. It is expected that it will take about two weeks for the report and approval cycle to be completed.

- Newsletter Response -

The first newsletter was mailed to 900 persons whose addresses were obtained from the Meteoritical Society, the Lunar Program and the National Science Foundation. To date, there have been nearly 300 responses to the tear-out sheet requesting continuation of the newsletter. IF YOU WANT TO CONTINUE RECEIVING THE NEWSLETTER, SEND IN YOUR FORM TODAY!!

Many of the sheets returned contained comments from recipients and these have been most helpful in upgrading the program. It is impossible to answer individually all the comments, but some general ones, with our responses, follow:

- Comments and Questions -

1. "The data sheets should include site location of the finds." This information was left off as an oversight and will be a part of each data sheet from now on.

2. "Location maps of the finds would be useful." There is no plan at present to include location maps but it will be considered. The newsletter is primarily designed for rapid dissemination of data while the catalogue will be used for more detailed information.

3. "The MWG appears to need the services of a person familiar with trace element contamination problems." This deficiency has been noted and will be considered. Additional comments on this problem by the readers will be welcome.

4. "Will the newsletter treatment be extended to other important meteorite falls?" This is not contemplated for the immediate future but will be considered if the scientific community expresses a need.

5. "Will the newsletter publish a list of allocations made by the working group?" Yes, this is planned so all researchers can find out what work is being done.

6. "Specimen dimensions should be included in the data sheets." This will be included as part of the physical description of specimens.

7. "Are photographs of the specimens available?" They are not at present because there is no way of producing prints in quantity with our limited resources. We are exploring the possibility of establishing some type of photo/data center where such information could be purchased at low cost. Some photos will appear in the catalogue but not all views or of all specimens.

8. "Will surface residence time estimates be available for the Antarctic specimens?" Plans are underway to have several specimens gamma counted and residence times published in the catalogue. We are also exploring the use of thermoluminescence for measuring residence terrestrial ages. Suggestions and comments on the terrestrial age work would be welcome.

- Collection Contamination Categories -

The specimens collected during the Antarctic 1977-78 summer season were handled with varying degrees of contamination in the field. To facilitate processing and to inform the scientific community about that contamination, the following categories are defined:

Category	Type of Contamination
1	Meteorites picked up with hands and warmed in tent or in helicopter.
2	Meteorites that have been wet and possibly cross-contaminated.
3	Meteorites not touched by hand (Teflon overgloves only), but warmed in Sun until ice melted. Thus, they have been wet but not cross-contaminated.
4	Meteorites collected properly (Teflon gloves), but put into same bag, with possible cross-contamination.
5	Meteorites that were contaminated by leather gloves, pockets or polyethylene bag.
6	Uncontaminated, properly collected meteorites.

The data sheets list the contamination categories by number.

- PLEASE RETAIN THIS SHEET AS A GUIDE -

Data Sheet Listing - Volume 1, No. 2

NUMBER	WT. (GMS)	CLASSIFICATION (TENTATIVE)	PAGE
30001	252.0	L-6 Chondrite	6
30002	235.2	L-5 Chondrite	7
30003	779.6	L-3 Chondrite	8
30005	482.5	Achondrite (unique)	9
30006	19,068.0	Iron	10
30021	16.65	H5 Chondrite	11
30025	19.40	H5 Chondrite	12
30033	9.34	LL3 Chondrite	13
30061	12.61	H5 Chondrite	14
30062	16.72	H5 Chondrite	15
30064	6.47	H5 Chondrite	16
30071	10.87	H5 Chondrite	17
30074	12.07	H5 Chondrite	18
30081	8.59	Unclassified - possibly unique	19
30086	19.44	H5 Chondrite	20
30088	51.15	H5 Chondrite	21
30102	12.25	H5 Chondrite	22
30118	7.84	H5 Chondrite	23
30119	6.36	H5 Chondrite	24
30124	4.41	H6 Chondrite	25
30140	78.62	L-3 Chondrite	26
30144	7.88	H6 Chondrite	27
30148	13.10	H6 Chondrite	28
30150	58.30	L6 Chondrite	29
30214	2097.4	L or LL Chondrite	30
30256	676.2	Achondrite (diogenite)	31
30257	1995.7	Achondrite (ureilite)	32
30264	10.97	H5 Chondrite	33
30272	674.1	L-6 Chondrite	34
30278	312.9	L-3 Chondrite	35
30299	260.7	H3 Chondrite	36
30302	235.5	Achondrite (eucrite)	37
30306	19.91	Carbonaceous Chondrite - C2	38

ANTARCTIC METEORITE DATA SHEET

Sample No.	30001	Location:	Allan Hills, Antarctica
Field No.	78010210A	Field Contamination Category:	3
Weight (gms)	252.0		
Meteorite Type	L-6 Chondrite		

Physical Description:

Fusion crust is mainly missing. One large surface was produced by breaking after fall; complementary fragment is probably in the collection. Original surfaces are considerably weathered. Sawed surface showed unweathered metal particles to within ∿1 cm of the surface. Specimen contains several cracks and appears slightly friable.

Other Characteristics:

One existing broken surface contained an irregular, medium gray, fine grained clast ∿0.7 cm across. No clasts were noted on the sawed face.

Petrographic Description: Brian Mason

Antarctic meteorite 30001 is a typical L6 chondrite. Chondrules are sparse and poorly defined; maximum diameter is 1.9 mm. Major minerals are olivine (Fa_{25}) and orthopyroxene ($Wo_{1.7}$ En_{77} Fs_{21}). About 10% of plagioclase (Ab_{83} An_{11} Or_{6}) is present as untwinned birefringent grains up to 0.15 mm across. Minor phases are nickel-iron (≈8%), troilite (∿6%), diopside (∿4%), chromite (<1%) and merrillite (<1%). The small section examined shows no signs of shock or veining. A moderate amount of limonitic staining is present around most nickel-iron grains, none around troilite.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30002	Location:	Allan Hills, Antarctica
Field No.	77122927	Field Contamination Category:	2
Weight (gms)	235.2		
Meteorite Type	L-5 Chondrite		

Physical Description:

Specimen angular with complete, brownish-black fusion crust which shows appreciable weathering. There are no broken surfaces to indicate crustal thickness. Specimen has one large fracture. A few chipped corners show appreciable rusting.

Other Characteristics:

Specimen is approximately 6.5x4.5 cms in dimension.

Petrographic Description: Brian Mason

Chondrules are prominent and well-defined, 0.3-0.6 mm in diameter; most are porphyritic olivine some fine-grained pyroxene. The matrix is dominantly olivine, in angular grains up to 1.0 mm in maximum dimension, with lesser amounts of orthopyroxene. Minor minerals in the matrix are nickel-iron, troilite, and chromite; plagioclase is present as very small grains difficult to recognize. The section is stained brown with limonitic materials, and the metal grains are corroded evidently by terrestrial weathering, troilite is unaffected. Microprobe analyses show uniform composition in the olivine (Fa_{25}) and orthopyroxene ($Wo_{1-2}En_{77}Fs_{22}$), plagioclase composition averages $Ab_{84}An_{10}Or_{6}$, but appears somewhat variable.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30003	Location:	Allan Hills, Antarctic
Field No.	77122920	Field Contamination Category:	1
Weight (gms)	779.6		
Meteorite Type	Tentatively L-3 Chondrite		

Physical Description:

Specimen is very well rounded. No surface fissures are present. Fusion crust covers ~ 1/3 of the meteorite's surface, (~100% T surface, 30% N&W surfaces, and 10% of E surface) and ranges from ~1 to 3 mm thick. The crust is medium black and slightly glassy. The fusion crust is preserved on the surface(s) that were uppermost at the time of discovery (see field photo). The remaining surface of the meteorite is smooth, brownish-black, and has little iron-oxide staining. This surface is polished and may be the lower part of a fusion crust or a wind-polished surface. In an area ~1 cm x 2 cm this surface has been removed, revealing an interior surface that is partially iron-oxide stained.

Other Characteristics:

This is a well indurated specimen. Repeated attempts to chip this meteorite for thin section samples were partially successful.

Petrographic Description: Brian Mason

Numerous and well-defined chondrules, 0.1-0.6 mm in diameter, along with mineral clasts are present in a fine-grained groundmass colored brown with limonitic material. The chondrules exhibit a variety of form and structure, the commonest consisting of granular aggregates of olivine and polysynthetically-twinned clinopyroxene; some chondrules have pale brown transparent glass interstitial to the olivine and pyroxene grains. Microprobe analyses show that both olivine and pyroxene are highly variable in composition. Olivine ranges from Fa_4 to Fa_{48}, with a mean of Fa_{22}; pyroxene ranges from Fs_2 to Fs_{25}. with a mean of Fs_{14}, and its calcium content averages 1% CaO. The highly variable composition of olivine and pyroxene indicates a type 3 chondrite, and the mean composition of the olivine and small amount of nickel-iron suggest L group, so the meteorite is tentatively classified L3; however, certain assignment of group should await further investigation.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30005	Location:	Allan Hills, Antarctic
Field No.	77122928	Field Contamination Category:	3
Weight (gms)	482.5		
Meteorite Type	Achondrite (unique)		

Physical Description:

The specimen is well rounded on all faces except the south face, which is a partially broken surface. A well developed, dark fusion crust randomly covers approximately 5% of the meteorite's surface in small, thin patches. Parts of the stone are covered by a vitreous crust that possibly is the lower portion of the dark, outer fusion crust, which has been physically abraded. Some partially melted crystals are in contact with this glassy rind. The specimen's dimensions are ∿9.5cm x 7.5 cm x5.25 cm.

Other Characteristics:

The specimen is well-indurated and difficult to chip. This would be a good meteorite for the study of fusion crust. The outer dark crust has apparently been removed by physical weathering. There is little evidence that the glassy rind has been affected by chemical weathering. The thin section chip may not be representative of the entire specimen.

Petrographic Description: Brian Mason

This meteorite is an achondrite with the following modal composition (volume percent): olivine, ∿55; pyroxene ∿35; maskelynite, ∿8; opaques (mostly chromite, a little ilmenite, trace amounts of troilite and nickel-iron), ∿2. Olivine occurrs as somewhat rounded anhedral to subhedral grains up to 2 mm long, and has an unusual pale brown color; microprobe analyses show a mean composition of Fa_{28}. Pyroxene occurs as colorless prismatic crystals up to 6 mm long, often poikilitically enclosing olivine; some crystals show coarse polysynthetic twinning; the composition is somewhat variable averaging $Wo_5Fs_{23}En_{72}$. Maskelynite is present as laths interstitial to olivine and pyroxene; it has labradorite composition (An_{53}) and contains 0.2-0.3% K_2O. The meteorite has been severely shocked, as is shown by the presence of maskelynite, undulose extinction in the pyroxene, and occasional areas of apparen shock melting. No signs of weathering were observed.

Meteorite 30005 is a unique achondrite. The olivine is comparable in composition to that in chassignites, the pyroxene to that in diogenites, and the bulk composition will thus be intermediate between these two classes of achondrites. However, these classes are almost plagioclase-free, and maskelynite of similar composition is known only from the Shergotty and Zagami achondrites; these meteorites are quite different from 30005 in consisting largely of calcium-rich clinopyroxene and containing no olivine.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30006	Location:	Victoria Valley, Antarctica
Field No.	78012301	Field Contamination Category:	1
Weight (gms)	19,070.0		
Meteorite Type	Iron		

Physical Description:

This sample is an iron meteorite with an ablation pitted surface. Approximately one-half the specimen (north, east, and bottom hemisphere) is brownish-black with a metallic luster. This area appears to have been polished by physical processes (wind ablation). The opposite hemisphere (south, west, and top portion) is chemically weathered. The color of this surface ranges from rust through gray to greenish. This surface is flaking.

Approximate dimension of specimen: 20 cms diameter

Other Characteristics:

The specimen appears to have been partially buried at sometime. Several inclusions and voids where former inclusions existed are present on the surface.

Petrographic Description:

Not yet available.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30021	Location:	Allan Hills, Antarctica
Field No.	77122744	Field Contamination Category:	4
Weight (gms)	16.65		
Meteorite Type	H5 Chondrite		

Physical Description:

A brownish-black fusion crust covers ∿50% of the surface of specimen. The remaining surfaces are fracture surfaces which are severly weathered. The specimen was moderately difficult to chip. Chipping revealed an interior surface that is iron oxide stained.

Approximately 2.5 cm long.

Petrographic Description: Brian Mason

Chondritic structure well-developed; some chondrules are well-defined, others are irregular in form and tend to merge with the groundmass. Chondrules range from 0.3-1.0 mm in diameter, and show a variety of types: granular olivine and olivine-pyroxene, porphyritic olivine with interstitial partly-devitrified glass, barred olivine, fine-grained pyroxene and others. Fusion crust is present. Yellow-brown limonitic staining is pervasive throughout the section, and some limonite veinlets are present. Microprobe analyses show olivine (Fa_{18}) and orthopyroxene (Fs_{17}) of uniform composition; some small grains of sodic plagioclase were detected.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30025	Location: Allan Hills Antarctica
Field No.	77122727	Field Contamination Category: 4
Weight (gms)	19.40	
Meteorite Type	H5 Chondrite	

Physical Description:

Specimen is tabular and rounded. The entire surface is covered with a brownish-black fusion crust. A few small fissures in the crust reveal a medium gray interior. Specimen is moderately weathered and chipped easily. The freshly chipped surface revealed some flecks of fresh metal, however, it is mostly iron oxide stained.

Approximate length is 3.0 cm.

Petrographic Description: Brian Mason

This meteorite is similar in texture, mineral composition, and degree of weathering to 30021, which suggests that these two stones may be separate pieces of the same meteorite.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30033	Location: Allan Hills, Antarctica
Field No.	77122734	Field Contamination Category: 4
Weight (gms)	9.34	
Meteorite Type	LL3 (tentatively)	

Physical Description:

Specimen is angular, rough and dark brown. Exterior surfaces do not appear to be fusion crust, but are highly weathered. The stone chipped easily, revealing a highly oxidized broken face.

Maximum overall length is ~3.0 cm.

Petrographic Description: Brian Mason

The section shows a closely packed mass of chondrules (0.3-1.1 mm diameter) and irregular crystalline aggregates, with a little interstitial nickel-iron and troilite (1-2% of each) and a relatively small amount of fine-grained matrix. A considerable variety of chondrules is present, the commonest being granular olivine and olivine/polysynthetically-twinned clinopyroxene, porphyritic olivine, and fine-grained pyroxene. Some chondrules have intergranular transparent pale brown glass, in others the glass is turbid and partly devitrified. Yellow-brown limonitic staining pervades the section, and patches and veinlets of red-brown limonite are common. Microprobe analyses show olivine ranging in composition from Fa_8 to Fa_{38}, with a mean of Fa_{18}; the pyroxene is relatively uniform in iron content (Fs_{8-9}) but shows a considerable range in calcium ($Wo_{0.3-8.5}$). The low content of nickel-iron and troilite suggest LL group, and the meteorite is tentatively classified LL3; however, certain assignment of group should await further investigation.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30061	Location: Allan Hills, Antarctica
Field No.	77122789	Field Contamination Category: 4
Weight (gms)	12.61	
Meteorite Type	H5 Chondrite	

Physical Description:

Approximately one-half of the specimen's surface is covered by a thin, brownish-black fusion crust. The other half of the specimen is a light-to-medium gray, fracture surface with appreciable iron oxide staining. Chondrules appear to be present on fractured surface, however, they are not prominent. This is not a complete stone. From field photographs it is apparent that the B surface was in contact with the ice.

Maximum dimension is approximately 2.5 cm.

Petrographic Description: Brian Mason

Chondrules numerous but poorly defined, their margins merging with the granular groundmass; a variety of types is present, including porphyritic olivine, barred olivine, radiating pyroxene, and others. Fusion crust is present on one edge. The section is pervaded with a moderate amount of yellow-brown limonitic staining, concentrated around grains of nickel-iron; occasional discrete patches of brown limonite are present. Microprobe analyses show uniform olivine (Fa_{18}) and orthopyroxene (Fs_{17}) compositions; some small grains of sodic plagioclase were also detected.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30062	Location:	Allan Hills, Antarctica
Field No.	77122784	Field Contamination Category:	4
Weight (gms)	16.72		
Meteorite Type	H5 Chondrite		

Physical Description:

Specimen is angular. Approximately ½ surface is covered with a thin, brownish-black fusion crust. A light to medium gray fracture surface comprises the remaining 50% of the meteorite's exterior surface. Iron oxide staining is present on the fracture surface, but not to the extent that it obliterates the detection of chondrules and other inclusions. Irregular white inclusions, probably feldspar, approximately ½ cm in length are present. Near one of these inclusions is a ½ cm area devoid of weathered metal fragments. From field photographs it appears that the T surface was in contact with the ice. Maximum dimension of sample is approximately 2.75 cm.

Petrographic Description: Brian Mason

This meteorite is similar in texture, mineral composition, and degree of weathering to 30061 and 30064, which suggests that these three stones may be separate pieces of the same meteorite.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30064	Location: Allan Hills, Antarctica
Field No.	77122786	Field Contamination Category: 4
Weight (gms)	6.47	
Meteorite Type	H5 Chondrite	

Physical Description:

The sample is angular. Approximately ½ the exterior surface is covered by a brownish-black fusion crust that ranges up to ∿½ mm in thickness. The remaining exterior surface is light to medium gray with appreciable iron-oxide staining. Several rounded inclusions, some of which are ringed with black material, are present on the fracture surface. From field photographs it appears that the B surface is resting on the ice.

Petrographic Description: Brian Mason

This meteorite is similar in texture, mineral composition, and degree of weathering to 30061 and 30062, which suggests that these three stones may be separate pieces of the same meteorite.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30071	Location: Allan Hills, Antarctica
Field No.	77122711	Field Contamination Category: 4
Weight (gms)	10.86	
Meteorite Type	H5 Chondrite	

Physical Description:

A relatively smooth brownish-black fusion crust covers approximately 50% of the sample. The remaining surfaces are fracture faces. These surfaces are brown, moderately weathered and show iron oxide staining.

Approximate maximum length is 2.0 cm.

Petrographic Description: Brian Mason

This meteorite is similar in texture, mineral composition, and degree of weathering to 30061, 30062, 30064, which suggests that these stones may be separate pieces of the same meteorite.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30074	Location: Allan Hills, Antarctica
Field No.	77122721	Field Contamination Category: 4
Weight (gms)	12.08	
Meteorite Type	H5 Chondrite	

Physical Description:

The stone is moderately angular. Approximately 70% of the sample's exterior surface is covered by a brownish-black fusion crust. The remaining surfaces are fracture surfaces that are yellowish-brown and severely weathered. An irregular cavity ~4 mm diameter is present on one fracture surface.

Chipping for a thin section sample revealed fresh metal fragments on the interior.

Approximate maximum dimension is 2.5 cm.

Petrographic Description: Brian Mason

This meteorite is similar in texture, mineral composition, and degree of weathering to 30061, 30062, 30064, 30071, which suggests that these stones may be separate pieces of the same meteorite.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30081	Location:	Allan Hills, Antarctica
Field No.	77122716	Field Contamination Category:	4
Weight (gms)	8.56		
Meteorite Type	Unclassified		

Physcial Description:

The stone is angular to subrounded. Highly weathered, brownish-black through reddish-brown fusion crust, and remnants of fusion crust, cover approximately 50 to 70% of the meteorite's surface. One face is a broken surface that shows iron oxide staining and has a granular texture. The longest side of the sample is ∿2.0 cm.

Petrographic Description: Brian Mason

The meteorite is an equigranular (grains 0.1-0.3 mm across) aggregate of approximately equal amounts of olivine and orthopyroxene, with minor amounts of diopside, plagioclase, nickel-iron, and troilite, and accessory chromite. Fusion crust is present along one edge. A moderate amount of yellow-brown limonitic staining is present, concentrated around nickel-iron grains. Microprobe analyses show the minerals are uniform in composition: olivine, Fa_{11}; orthopyroxene, $Wo_{1.7}$ Fs_{11} En_{87}; diopside, Wo_{45} Fs_5 En_{50}; plagioclase, An_{15}, with 0.8% K_2O.

The classification of this meteorite presents difficulties. The structure is achondritic, but the mineralogical composition is similar to that of the common chondrites, which suggests that this meteorite may be a completely recrystallized chondrite. However, the composition of the olivine and orthopyroxene is intermediate between that for the bronzite (H) and enstatite (E) chondrites. The meteorite resembles some silicate inclusions in iron meteorites.

This meteorite is identical in mineral composition and structure to Acapulco, a recent Mexican fall.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30086	Location: Allan Hills, Antarctica
Field No.	77122759	Field Contamination Category: 4
Weight (gms)	19.44	
Meteorite Type	H5 Chondrite	

Physical Description:

The overall color of the sample is brownish-black and severly weathered. About 30% of the meteorite's surface is covered with remnants of fusion crust. The remainder of the surface represents three fracture faces. From field photographs it appears that the T surface was on the ice.

The sample was difficult to chip. The fresh interior surface is not as weathered as the exterior surface.

The longest dimension of the sample is approximately 2.5 cm.

Petrographic Description: Brian Mason

Chondrules numerous, some well-defined, others irregular in form and tend to merge with the groundmass. They range from 0.3-1.2 mm in diameter, and show a variety of types, the commonest being porphyritic olivine, barred olivine, and radiating or fine-grained pyroxene. Fusion crust is present on one edge. The section is pervaded by yellow-brown limonitic staining, and patches and veinlets of brown limonite are present. Microprobe analyses show olivine (Fa_{19}) and orthopyroxene (Fs_{17}) of uniform composition; some small grains of sodic plagioclase were detected.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30088	Location: Allan Hills, Antarctica
Field No.	77122783	Field Contamination Category: 4
Weight (gms)	51.15	
Meteorite Type	H5 Chondrite	

Physical Description:

Specimen is angular and highly weathered. Several fissures are obvious on the brownish-black surface. Approximately 30% of the surface is slightly rounded and represents the remnants of a fusion crust. From field photographs it is apparent that the S -E surface was in contact with the ice. This is not a complete specimen.

A thin section sample was removed from the T surface. The specimen appears to be weathered throughout.

The longest dimension is nearly 3.5 cm.

Petrographic Description: Brian Mason

This meteorite is similar in texture, mineral composition, and degree of weathering to 30085, which suggests that these two stones may be separate pieces of the same meteorite.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30102	Location: Allan Hills, Antarctica
Field No.	77122767	Field Contamination Category: 4
Weight (gms)	12.33	
Meteorite Type	H5 Chondrite	

Physical Description:

Specimen is angular, highly weathered and dark brownish-black. Approximately 40% of the surface is the remnant of a fusion crust, the remaining surfaces are fracture surfaces. From field photographs it is apparent that the T surface was in contact with the ice. This is not a complete specimen. It's maximum dimension is approximately 2.5 cm.

The interior of the meteorite appears very weathered after removing the thin section sample.

Petrographic Description: Brian Mason

Chondrules prominent and well-developed, ranging from 0.3-1.5 mm in diameter; a variety of types is present, including barred olivine, granular olivine, olivine-pyroxene, and radiating pyroxene chondrules. The groundmass consists of granular olivine, pyroxene, nickel-iron, and troilite. Fusion crust is present along one edge. The section is pervaded by yellow-brown limonitic staining, and patches and veinlets of red-brown limonite are present, concentrated around grains of nickel-iron. Microprobe analyses show olivine (Fa_{19}) and orthopyroxene (Fs_{15}) of uniform composition; some small grains of sodic plagioclase were detected.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30118	Location: Allan Hills, Antarctica
Field No.	77123118	Field Contamination Category: 4
Weight (gms)	7.84	
Meteorite Type	H-5 Chondrite	

Physical Description:

Specimen is rounded. A brownish-black fusion crust covers approximately 75% of the meteorite's surface. Approximately 25% of the specimen is a fracture surface. This a nearly complete specimen. No fresh metal was observed on chipping. The maximum dimension is ~2.5 cm. From field photographs it is evident that the B surface was in contact with the ice.

Petrographic Description: Brian Mason

Chondritic structure well-developed, with a variety of chondrule types, the commonest being barred olivine, granular and porphyritic olivine, and fine-grained pyroxene. The matrix is fine- to medium-grained, consisting of olivine, pyroxene, nickel-iron, and troilite. Fusion crust is present on one side of the section. The section is pervaded by yellow-brown limonitic material. Microprobe analyses show olivine (Fa_{19}) and orthopyroxene (Fs_{17}) of uniform composition; some small grains of sodic plagioclase were detected.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30119	Location:	Allan Hills, Antarctica
Field No.	77123120	Field Contamination Category:	4
Weight (gms)	6.36		
Meteorite Type	H5 Chondrite		

Physical Description:

Specimen is nearly tabular and almost completely covered with a thin, weathered fusion crust. The fusion crust has a slight patina. No fresh metal was observed on chipping. The fresh interior surface is gray. Maximum dimension of specimen is ∿2.0 cm.

Petrographic Description: Brian Mason

Chondrules common, some sharply defined, others with indistinct borders merging with the groundmass. Yellow-brown limonitic staining pervades the section, and patches and veinlets of red-brown limonite are common. Fusion crust is present on one edge. Microprobe analyses show olivine (Fa_{18}) and orthopyroxene (Fs_7) of uniform composition; some small grains of sodic plagioclase were detected.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30124	Location: Allan Hills, Antarctica
Field No.	77123119	Field Contamination Category: 4
Weight (gms)	4.41	
Meteorite Type	H6 Chondrite	

Physical Description:

Specimen is rounded and nearly completely covered with a thin, weathered fusion crust. From field photographs it is known that the B surface was in contact with the ice. The maximum dimension of the specimen is ∿1.5 cm. No fresh metal was observed when the sample was chipped to obtain a thin section sample.

Petrographic Description: Brian Mason

Chondrules sparse and not easily distinguished from the granular groundmass, which consists of olivine, pyroxene, nickel-iron, and troilite; accessory chromite is present. Yellow-brown limonitic staining pervades the section. Fusion crust is present on one edge. Microprobe analyses show olivine (Fa_{19}) and orthopyroxene (Fs_{16}) of uniform composition; grains of sodic plagioclase were detected.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30140	Location: Allan Hills, Antarctica
Field No.	Y77123124	Field Contamination Category: 4
Weight (gms)	77,45 gr	
Meteorite Type	Tentatively L-3 Chondrite	

Physical Description:

The specimen is roughly conical shaped. The basal portion is irregular and appears to be a broken surface. The remainder of the meteorite's surface is only slightly pitted and is suggestive of a fusion crust. The entire meteorite is a dark reddish-brown with considerable rust-like staining. The extensive weathering of the stone has apparently removed or altered most of the fusion crust.

Petrographic Description: Brian Mason

The section examined consists of an elliptical non-chondritic enclave, 8 x 5 mm, completely enclosed in highly chondritic material. The enclave consists of polysynthetically-twinned clinoenstatite (somewhat variable composition, averaging $Wo_{0.2}Fs_7En_{93}$) poikilitically enclosing irregular to globular isotropic or weakly anisotropic masses. These masses have variable composition (SiO_2 59-83%, FeO 15-31%, MgO 5-9%, K_2O 2.7-4.3%, Na_2O 0.6-2.6%, Al_2O_3 ~0.3%, CaO, TiO_2, <0.1%); they appear to be devitrified glass, and some analyses are close to that of merrihueite. The enclave has a little interstitial nickel-iron and troilite. The chondritic portion consists of a close-packed mass of chondrules, with a relatively small amount of fine-grained matrix. Chondrules range in diameter from 0.2 to 2 mm, and exhibit a variety of form and structure; the component consists of granular aggregates of olivine and polysynthetically-twinned clinopyroxene, sometimes with a little interstitial glass. Both olivine and clinopyroxene are highly variable in composition. Olivine ranges from Fa_8 to Fa_{44}, with an average of Fa_{25}; pyroxene ranges from Fs_2 to Fs_{17}, with an average of Fs_7 and a low calcium content, averaging 0.2% CaO. Troilite and nickel-iron are interstitial to the chondrules, and part of the nickel-iron has weathered to limonitic material. The highly variable composition of olivine and pyroxene indicates a type 3 chondrite, and the mean composition of the olivine and the amount of nickel-iron suggest L group, so the meteorite is tentatively classified L3; however, certain assignment of group should await further investigation.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30144	Location:	Allan Hills, Antarctica
Field No.	77123106	Field Contamination Category:	4
Weigh (gms)	7.88		
Meteorite Type	H6 Chondrite		

Physical Description:

The specimen is rounded with a thin, patchy fusion crust covering ~75% of the stone's surface. The remainder of the stone is covered by a reddish-brown weathering rind. This appears to be a complete specimen. Its maximum dimension is ~2 cm. After chipping it was determined that the meteorite is weathered throughout.

Petrographic Description: Brian Mason

Chondritic structure not prominent, the rather sparse chondrules merging with the granular groundmass, which consists of olivine, pyroxene, nickel-iron, and troilite, with accessory chromite. A moderate amount of limonitic staining is concentrating around nickel-iron grains. Fusion crust is present on one edge. Microprobe analyses show olivine (Fa_{19}) and orthopyroxene (Fs_{17}) of uniform composition; medium-grained sodic plagioclase was also seen.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30148	Location:	Allan Hills, Antarctica
Field No.	77123107	Field Contamination Category:	4
Weight (gms)	13.10		
Meteorite Type	H6 Chondrite		

Physical Description:

75% of the sample is covered by a thin, patchy fusion crust. A reddish-brown weathering rind covers the remaining ~25% of the meteorite's surface. Rounded inclusions are visible on the fractured surface. Many large and small fissures are present. These fissures probably attributed to the severly weathered condition of the meteorite. This is not a complete specimen. Its maximum dimension is ~2.5 cm. From the field photographs it was determined that the B surface was in contact with the ice.

Petrographic Description: Brian Mason

Chondritic structure not prominent, the rather sparse chondrules merging with the granular groundmass, which consists of olivine, pyroxene, nickel-iron, and troilite. The section is extensively stained with yellow-brown limonitic material, which is also present as small patches and veinlets. Fusion crust is present on one edge. Microprobe analyses show olivine (Fs_{18}) and orthopyroxene (Fs_{16}) of uniform composition; medium grained sodic plagioclase was also seen.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30150	Location:	Allan Hills, Antarctica
Field No.	77123101	Field Contamination Category:	4
Weight (gms)	58.30		
Meteorite Type	L6 Chondrite		

Physical Description:

Maximum dimension of specimen is ∿3.25 cm. Fusion crust covers the B and S surfaces, the remainder of the specimen is a fracture surface which is brownish-red. The fracture surface has a fine grained, granular texture with some crystal faces apparent. The fissures on the fracture surface are iron oxide stained. When chipping, many very fine pieces fell off. The sample appears to be weathered throughout.

Petrographic Description: Brian Mason

Chondrules are sparse and barely distinguishable from the granular groundmass, which consists of olivine, pyroxene, nickel-iron, and troilite. The section contains a fine-grained enclave, 1.5 mm across, consisting of olivine, pyroxene, and numerous minute nickel-iron grains. Yellow-brown limonitic staining is pervasive throughout the meteorite. Microprobe analyses show olivine (Fa_{25}) and orthopyroxene (Fs_{22}) of uniform composition; medium-grained sodic plagioclase was also seen.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30214	Location:	Allan Hills, Antarctica
Field No.	77122798	Field Contamination Category:	6
Weight (gms)	2097.4		
Meteorite Type	L or LL (tentative)		

Physical Description:

Specimen is angular with remnants of fusion crust on ∿30% of the exterior surface. Another ∿30% of the meteorite may have previously been covered with fusion crust, but has been abraded away. The remaining portion of the sample is a fracture surface. The stone contains many fissures. Snow (ice ?) was observed in several of the fissures when the meteorite was removed from cold storage. It ranges in color from brown through brownish-black, and has a weathering patina on all surfaces with the exception of the fracture surface. Some iron-oxide staining is apparent on exterior surface, however, the material adjacent to the fissures and the fracture surface are most severely iron oxide stained. A number of chondrule-like structures are obvious. Chipping revealed that the meteorite is very weathered and friable along fracture surfaces. This is not a complete specimen.

Its approximate measurements are 16 cm x 9.5 cm.

Petrographic Description: Elbert King

This section is rather badly weathered with much of the metal oxidized to hematite. Some of the large hematite areas are colloform. However, the narrow end of the slide is much more weathered than the wider end, giving some hope that the deep interior of the stone may be much fresher. Troilite is abundant and outlines the margins of many chondrules.

Chondrule margins are sharply distinguishable from the fine-grained matrix. At least two chondrules contain fresh pinkish-brown glass that shows strain isogyres in crossed polarizers. Most chondrules appear to be fluid drop chondrules, and some are broken or are only small portions of their original volumes as judged from their radii of curvature. Some chondrules, which range in size to more than 4 mm in maximum diameter, contain large euhedral olivine crystals and some large euhedral olivine and pyroxene crystals occur as individual crystals with no apparent crystallized liquid attached. A number of the fluid drop and lithic chondrules appear to be surrounded by fine-grained troilite-rich, dark rims or rinds, but the exact nature of the rims is difficult to distinguish because of the weathering.

The largest chondrule shows interesting poikilitic textures, with pyroxene enclosing smaller round grains of olivine and another pyroxene (?). The rim of this chondrule is of low interference color pyroxene (?), large patches of which are in optical continuity. It deserves detailed study, particularly microprobe analysis, and maybe a peculiar lithic fragment. Most other chondrule textures appear to be normal for low petrologic type ordinary chondrites.

One troilite-rich, fine-grained lithic fragment is obvious (∿1.9 mm maximum dimension) that deserves detailed study. Two small fragments of finely devitrified glass are present, ranging to 0.2 mm.

The matrix in this stone is very difficult to see because of the weathering. It appears dark to opaque, very fine-grained and troilite-rich.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30256	Location: Allan Hills, Antarctica
Field No.	Y78010310	Field Contamination Category: 6
Weight (gms)	676.2	
Meteorite Type	Achondrite (diogenite)	

Physical Description:

The sample is rounded with the fusion crust randomly distributed over approximately 15% of the surface. The remaining surface is free of fusion crust and appears to have been abraded away. The fusion crust is dull black. The surface area not covered with fusion crust is weathered and ranges from yellowish-brown to grayish-green. The various colors are limited to discrete areas. Several areas of iron oxide staining are present on the surface. This appears to be a complete stone. Approximate dimensions: 9.5 cm x 7.5 cm x 6.75 cm.

Other Characteristics:

Part of the specimen may be brecciated, and the thin section may not be representative of the entire meteorite.

Petrographic Description: Brian Mason

This meteorite consists almost entirely (~97%) of coarse (grains up to 6 mm) orthopyroxene clasts, with comminuted grain boundaries; microprobe analyses give the composition $Wo_2Fs_{23}En_{75}$. Some orthopyroxene grains contain small blebs of clinopyroxene, with composition $Wo_{46}Fs_8En_{46}$. Accessory minerals include plagioclase (~1%), troilite (< 1%), and very rare minute grains of nickel-iron. A small area of limonite was noted, and moderate limonitic staining along grain boundaries.

Meteorite 30256 is a typical hypersthene achondrite (diogenite).

ANTARCTIC METEORITE DATA SHEET

Sample No.	30257	Location:	Allan Hills, Antarctica
Field No.	Y78010301	Field Contamination Category:	6
Weight (gms)	1995.7		
Meteorite Type	Achondrite (ureilite)		

Physical Description:

Approximately one-half of the sample's surface is rounded and mostly covered with fusion crust ~2 mm thick. This crust is dark brown with areas of reddish (iron oxide?) staining. Small areas of the fusion crust have been plucked revealing crystalline structure. The remaining two-thirds of the sample consists of three planes which are fracture surfaces. These surfaces are crystalline, rough on a mm scale, and show no evidence of fusion crust. The fracture surfaces are dark brownish-black and are moderately weathered with small patches of what appears to be iron oxide stain.

Crystalline grains with well-developed crystal faces set in a black, fine-grained matrix make up the broken surface. Some grains are covered with a dark stain and others are milky white to clear. The small, white to clear anhedral grains are aligned in a strip across the broken surface (N & T views) and part of the fusion crust.

The sample is not a complete stone. It's approximate measurements are 16 cm x 11cm x 9.5 cm.

Other Characteristics:

The small white anhedral grains are visible on the surface of the meteorite in the field photos. One grain was removed and placed in an aluminum cup and allowed to warm. The grain retained its original form after an hour of warm temperature.

Petrographic Description: Brian Mason

This meteorite is an achondrite (ureilite), consisting almost entirely of anhedral to subhedral olivine (~80%) and pyroxene (~15%); it is fairly coarse-grained, with olivine grains up to 4 mm, pyroxene to 3 mm. The olivine grains show undulose extinction. The pyroxene shows coarse polysynthetic twinning. Grain boundaries are marked by a concentration of carbonaceous material; trace amounts of troilite and nickel-iron, partly altered to limonite, occur along grain boundaries. Microprobe analyses show olivine of variable compositions (Fa_{9-23}, average Fa_{13}) and with unusually high Ca (0.2-0.3%) and Cr (0.3-0.4%) contents. The pyroxene is a low-calcium clinopyroxene with composition average $Wo_7En_{81}Fs_{12}$. The meteorite is extremely resistant to cutting and polishing, which probably indicates the presence of diamond, as in other ureilites.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30264	Location: Allan Hills, Antarctica
Field No.	B78010301	Field Contamination Category: 6
Weight (gms)	10.97	
Meteorite Type	H5 Chondrite	

Physical Description:

The stone is tabular with well-defined edges and is completely covered by a slightly glassy, brownish-black fusion crust. One surface shows cracks that have weathered rusty, and a cavity which is a nearly perfect hemisphere.

Chipping for a thin section sample revealed a fresh surface containing rust stains and fresh metal particles.

The approximate dimensions of sample: 2.75 cm x 2 cm x 1.5 cm.

Petrographic Description: Brian Mason

Chondrules are prominent and well-defined, 0.3-1.2 mm in diameter; porphyritic olivine, barred olivine, and radiating pyroxene chondrules were noted. The matrix is medium-grained (grains up to 0.2 mm), and consists largely of olivine and pyroxene, with minor amounts of nickel-iron, troilite, and plagioclase; the plagioclase occurs as small grains in the matrix and in the bars of some chondrules. Fusion crust, up to 1 mm thick, is preserved on one edge. The sections shows extensive limonitic staining, and limonite is concentrated around nickel-iron grains. Microprobe analyses give a mean composition of Fa_{19} for olivine and Fs_{16} for orthopyroxene. The meteorite is classified as an H5 chondrite.

ANTARCTIC METEORITE DATA SHEET

Sample No. 30272 Location: Allan Hills, Antarctica

Field No. Y78010509 Field Contamination Category: 6

Weight (gms) 674.1

Meteorite Type L-6 Chondrite

Physical Description:

Specimen is angular in shape. A thin, ~1 mm thick, black fusion crust covers approximately 50% of the meteorite. The crust appears moderately stained, probably by an iron oxide weathering rind. Several large surface fractures are present. The S surface, which is covered by a fusion crust, is concave. The remaining 50% of specimen is a fracture surface that is yellowish-brown. More than ½ of the fracture surface is iron oxide stained. Where this is not present, the matrix is a fine grained, whiteish-gray material. Several very fine grained, rounded inclusions are apparent on the fracture surface. This is not a complete specimen.

Other Characteristics:

From the field photos it was determined that the B surface was in contact with the aluminum foil. It is not known if this surface (B) was in contact with the ice prior to placement on the foil. The broken surface produced during chipping showed only oxidized metal.

Petrographic Description: Elbert King

This meteorite contains abundant fresh metal and troilite. One troilite grain is more than 4 mm in maximum dimension. Many metal and troilite grains show alteration to hematite and limonite/geothite, and some metal and troilite grains include thin veins of oxide alteration. However, the overall appearance of the meteorite is fresh and oxidation of the metal and troilite is scattered, not pervasive.

Chondrule outlines and margins are indistinct, but some barred and radiating chondrule structures are clearly visible. The largest chondrule still visible in this section (total area less than 1 cm^2) has a maximum diameter of approximately 1.6 mm. No fresh glass was seen in the chondrules or matrix. In fact, some areas that appear to have been glass are now coarsely crystalline. Several of the chondrules have the textures of fluid drop chondrules, but the meteorite is so recrystallized that no lithic chondrules can now be recognized. One chondrule is recrystallized such that its margin cannot be recognized except by an outline of small troilite grains.

Most of the larger olivine and pyroxene grains have very patchy and undulatory extinction. Some mineral grains show physical dislocations. Also apparent are numerous closely spaced fractures in some mineral grains. It seems likely that the meteorite has experienced light to moderate shock. The largest single crystals of olivine are more than 1 mm maximum dimension. Grains of placioclase (oligoclase?) with prominent twinning are common.

No unusual textural features were observed in this section.

Electron microprobe analysis of five olivines shows that it is close to Fa_{26}.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30278	Location: Allan Hills, Antarctica
Field No.	Y78010601	Field Contamination Category: 6
Weight (gms)	312.9	
Meteorite Type	L3 (tentative)	

Physical Description:

Sample #30278,0 is moderately rounded. Approximately 95% of the surface is covered by a dull black fusion crust (with exception of the B surface) that is ~1-2 mm thick. The fusion crust on the B (posterior) surface is reddish, shows well-developed radial flow lines, and is more oxidized than the other surfaces. Several spots, ~1 cm diameter, where the fusion crust has been plucked, reveal interior material that is light gray and moderately iron-oxidized.

This appears to be a complete specimen, whose dimensions are ~8.0 cm x 5.5 cm x 4.5 cm.

Other Characteristics:

A freshly chipped surface reveals a small amount of metal and appears relatively unweathered. This stone appears to be a low petrologic type.

Petrographic Description: Brian Mason

The meteorite consists of a close-packed aggregate of spherical to ellipsoidal chondrules (0.3-1.8 mm diameter) with interstitial nickel-iron troilite (concentrated as rims to condrules) and relatively little matrix. Most chondrules consist of granular or porphyritic olivine, sometimes accompanied by polysynthetically-twinned clinopyroxene, and with partly devitrified glass between the mineral grains. Microprobe analyses show that both olivine and pyroxene are variable in composition; olivine ranges from Fa_{11} to Fa_{29}, with a mean of Fa_{24}, and pyroxene is low-calcium (Ca=0.1-0.4%) with Fs ranging from 9 to 21 and a mean of 12. The mean composition of the olivine and the amount of nickel-rion suggests L group, so the meteorite is tentatively classified L3; however, certain assignment of group should await further investigation.

Some unusual enclaves were noted in the polished thin section. One, 1.5 mm across, consisted of numerous small (max. 0.2 mm) grains of olivine and pyroxene in a brown-black semi-translucent matrix, possibly carbonaceous. Another, 3 mm long, consisted of an aggregate of olivine (composition Fa_{13}-Fa_{26}) and orthopyroxene (Fs_{16-17}) grains with a little interstitial turbid glass.

The section shows a slight amount of yellow-brown limonitic straining, concentrated near the fusion crust.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30299	Location: Allan Hills, Antarctica
Field No.	77123030	Field Contamination Category: 6
Weight (gms)	260.7	
Meteorite Type	H3 (tentative)	

Physical Description:

Sample #30299,0 is nearly tabular. A thin, glassy, spotty fusion crust covers approximately 10-15% of the meteorite's surface, however, it is mostly confined to the T surface. The remaining surfaces are smooth and medium brown. Much of the meteorite's surface that is not covered by fusion crust is glassy. The B surface has only small glassy areas and is appreciably iron-oxide stained.

Specimen is ~9.5 cm x 5.5 cm x 3.5 cm.

Other Characteristics:

Stone was difficult to chip. The broken surface produced by chipping contains chondrules and fresh metal.

Petrographic Description: Brian Mason

The section shows a closely-packed mass of chondrules (0.15-1.5 mm diameter) and irregular crystalline aggregates with interstitial nickel-iron and troilite and a relatively small amount of matrix. A considerable variety of chondrules is present, many of granular or porphyritic olivine with transparent to turbid interstitial glass; other types include fine-grained pyroxene, medium-grained olivine and polysynthetically-twinned clinopyroxene, and barred olivine. The section is stained yellow-brown with limonitic material, with small areas (up to 0.4 mm across) of red-brown limonite along one edge (near-surface?). Microprobe analyses show olivine ranging in composition from Fa_{11} to Fa_{21}, with a mean of Fa_{16}; the pyroxene is low-calcium (CaO=0.4-1.2%), with a range in composition from Fs_{15} to Fs_{20} and a mean of Fs_{18}. The mean composition of the olivine and the amount of nickel-iron suggest H group, so the meteorite is tentatively classified H3; however, certain assignment of group should await further investigation.

ANTARCTIC METEORITE DATA SHEET

Sample No.	30302	Location:	Allan Hills, Antarctica
Field No.	77123022	Field Contamination Category:	6
Weight (gms)	235.5		
Meteorite Type	Achondrite (eucrite)		

Physical Description:

Specimen is angular to subrounded. A glassy, thin, black fusion crust covers ∿70% of the surface. In places the fusion crust has been physically plucked away. Large cavities are randomly distributed on the surface of the stone. The material exposed in these circumstances is fresh and unweathered, showing feldspar cleavages. The E surface (orthogonal photo) has a large, ∿2 cm, clast protruding. This clast could easily be removed. The clast has an obviously coarser grain size and darker color than the bulk meteorite. Plagioclase crystals on this surface are several mm long. The B surface (orthonogal photo) has an irregularly shaped clast that in specific areas is different in texture and color from the bulk meteorite. Specimen's approximate dimensions: 9.25 cm x 5.5 cm x 4.0 cm. This appears to be a complete stone.

Other Characteristics:

Several small interior and exterior chips were generated during chipping. The exposed fresh surfaces are light gray, much like the light colored patch described above. No obvious clasts were exposed.

Petrographic Description: Brian Mason

This meteorite is a brecciated pyroxene-plagioclase achondrite (eucrite). It consists largely of pigeonite (∿60%) as brown grains up to 2 mm, and plagioclase (∿35%) as colorless grains up to 4 mm, in a comminuted groundmass of these minerals. A little troilite (<1%) and rare minute grains of nickel-iron are present. Fusion crust rims part of the section. No evidence of weathering was seen. Microprobe analyses show a range of compositions in the pigeonite: Wo 3-14, En 32-56, Fs 37-64; a few grains of subcalcic ferroaugite averaging $Wo_{25}En_{27}Fs_{48}$ were also analyzed. Plagioclase ranges in composition from An_{75} to An_{94}. The section contains a large (6 mm) fine-grained enclave of similar composition.

ANTARCTIC METEORITE DATA SHEET

Sample No. 30306

Location: Allan Hills, Antarctica

Field No. 78010402

Field Contamination Category: 6

Weight (gms) 19.91

Meteorite Type Carbonaceous Chondrite - Type C2

Physical Description:

Color: The color is a charcoal-gray with a slight olive-green cast. Weathering rind is 2.0 - 4.0 mm deep and of a lighter gray than the interior.

Interior: Interior is a fine-grained gray matrix with ≈2-3% light colored inclusions throughout groundmass. Inclusions are irregular in shape. No obvious chondrules are present BUT a few 0.1 - 0.2 spherical-shaped areas are present. These areas are lighter in color. No white veins were observed.

Other Characteristics:

Fusion Crust: Crust is present on approximately 40-60% of the sample . Differential weathering has removed fusion crust in one large area. Remainder of fusion crust is cracked and broken, with furrows across specimen. Crust remaining stands above the interior of the specimen ≈0.5 - 1.0 mm. Selected areas of crust are vesicular and glassy. - The specimen is remarkably free of limonite stain.

Petrographic Description: Brian Mason

Examination shows that it is a C2 carbonaceous chondrite. Chondrules are sparse, small [up to 0.5 mm diameter], and poorly defined; most consist largely of granular olivine, and some contain small globular grains of nickel-iron. The bulk of the meteorite (80 - 90%) consists of opaque to translucent olive-brown matrix, the translucent material showing weak birefringence; an X-ray powder photograph shows that the matrix consists largely of a layer-lattice silicate, which by analogy with other C2 meteorites can be tentatively identified as a ferriginous chlorite. Scattered through the matrix are colorless birefringent grains, mostly olivine, up to 0.3 mm but usually less than 0.1 mm across. Rare grains of chromite are present in the matrix. A notable feature is the apparent absence of metallic sulphides. The meteorite is moderately porous, containing irregular voids up to 0.3 mm across; the specific gravity, 2.58, measured on a small fragment, is therefore probably somewhat lower than the true value. No evidence of weathering was seen, which suggests that the meteorite may be a recent fall.