

1st Supplement  
to  
Western Australian Museum Special  
Publication no. 3

CATALOGUE OF WESTERN AUSTRALIAN  
METEORITE COLLECTIONS

*Library*

Prepared by G. J. H. McCall,  
Hon. Associate, Western Australian Museum,  
to cover additions to the collections  
up to June, 1966

Perth, Western Australia  
August, 1968

## Contents

	Page
1. Table of statistics .....	1
2. Western Australian Meteorites,	
Additional information, corrections, concerning meteorites previously listed .....	2
New discoveries .....	7
3. Meteorites from Australia (excluding Western Australia),	
Additions .....	18
4. Meteorites from outside Australia,	
Additions .....	18

## 1. TABLE OF STATISTICS

The collections now comprise 130 separate meteorite representations, 58 from Western Australia, 13 from other States of Australia, and 59 from other parts of the world. Two meteorites found in Western Australia, the Rawlinna pallasite and the Wingellina stone are not represented in any collection within the State.

Western Australian Meteorite Finds and Falls

The table given by McCall and de Laeter, 1965, p. 18, is superseded by the table below:- †

Type	Finds	Falls	Total
Irons	29*	1**	30
Stony irons	6*		6
Stones	23	1	24
	58	1 (1**)	60

\* one iron and one stony iron find associated with shale-ball finds, and craters (one impact, one impact explosion (?)).

\*\* of doubtful validity.

† the Lake Moore meteorite has been removed from the table.



5. BILLYGOAT DONGA I Stone, olivine hypersthene  
chondrite

Latitude  $30^{\circ} 10'S$ ; longitude  $126^{\circ} 22'E$ . (Amended.)

- BILLYGOAT DONGA II Correct weight 16 g (specimen  
now lost).

- BILLYGOAT DONGA III Name should lapse, as these  
fragments are olivine bronzite  
chondrite of the Mulga (South)  
recovery (q. v.).

The ellipse of dispersion outlined by McCall and de Laeter (1965, p. 26) is believed to have been erroneously inferred; evidence of new finds (Mulga (North); Mulga (South); River; Dingo Pup Donga (q. v.)) suggests that there are many meteorites in this area of different age on earth, preserved due to optimum conditions for preservation (gibber plain without soil; arid climate).

6. COCKLEBIDDY Stone, olivine bronzite  
chondrite, black, fresh,  
recrystallized

Site of find: 2.6 miles WNW of Nulla Nulla Rock Hole (not 3 miles north as previously stated; McCall and de Laeter, 1965, p. 27). Latitude  $31^{\circ} 56'S$ ; longitude  $126^{\circ} 13'E$ .

7. DALGARANGA Stony iron, mesosiderite  
with octahedrite nodules

Two additional fragments removed from the crater have been studied; finder, J. Nevill, about 1960. Wt 22.5 and 26.2 g. Latitude  $27^{\circ} 38'S$ ; longitude  $117^{\circ} 17'E$  (corrected co-ordinated supplied by R. Chaturvedi, 1967).

This collection: thin section, W. A. M. no. 12365.

Other collections: School of Mines, Kalgoorlie, nos 9803-4, both new masses.



16. LAKE GRACE Stone, olivine hypersthene  
chondrite, recrystallized

This collection: W. A. M. no. 12290, two small weathered fragments (128 g, 50 g) and thin section.

Analytical data, etc.: the total recovery of fragments has been reassembled to form a single faceted, fusion-crust coated meteorite, almost complete and of dumb-bell shape. Thin section study shows it to be recrystallized.

17. LAKE MOORE

Name should lapse; now known to refer to part of the recovery from Lake Brown (15).

26. MOUNT EGERTON Stony-iron (or possibly  
enstatite achondrite  
unusually rich in iron)  
(unbrecciated)

References:

McCall, G. J. H. (1965) Miner. Mag. 35 : 241-249.

Analytical data, etc.: the anomalous etch pattern, shared by Horse Creek (called a pseudo-octahedrite) is due to the presence of an iron nickel silicide phase, perryite (written communication, E. P. Henderson).

Additional find: June 1966 by M. K. Quartermaine and A. E. Bain, 8 miles from the summit of Mount Egerton, towards no. 3 well. Latitude  $24^{\circ} 53'S$ ; longitude  $117^{\circ} 39'E$ .

Total recovery: hundreds of small fragments aggregating more than 20 kg, scattered away from a small impact pit, very close to the point hitherto regarded as the site of the find; the finders were directed to the site by an Aborigine "Sandy" who was the original finder, Gaffney's

assistant.

This collection: not represented.

Other collections: School of Mines, Kalgoorlie,  
no. 10092 entire additional find.

31. NORTH HAIG Stone, achondrite, ureilite,  
brecciated

Latitude  $30^{\circ} 13'S$ ; longitude  $126^{\circ} 13'E$ .

This collection: W.A.M. 12779, a small slice (9.7g),  
and a thin section.

Analytical data, etc.: olivine composition variable  
( $Fa_0 - Fa_{30}$ ). Pigeonite occurs as euhedral, twinned  
crystal grains. Also variable, but within a more  
limited range (Fe/Fe+Mg mole % 5-20). The meteorite is  
unusually hard and difficult to cut. Preliminary  
analyses suggest a few per cent carbon content. S.G. 3.20.

35. RAWLINNA (Stone) Stone, olivine bronzite  
chondrite, recrystallized\*

This specimen reported as belonging to American  
Museum of Natural History is now known to be part of  
the Nininger Collection, held by the Arizona State  
University, Tempe.

This material is identical with the W.A.M.  
material. It is known that this material was found  
by A. N. Carlisle and given to H. H. Nininger; it  
was found at latitude  $30^{\circ} 22'S$ ; longitude  $126^{\circ} 05'E$   
(corrected values). The W.A.M. stone has only a small  
cut off portion missing from an entire fusion-crust  
coated meteorite, hence more than one stone must have  
been recovered. The exact manner in which the W.A.M.  
stone reached the Museum remains obscure.

\* This corrects a previous typographical error  
(McCall & de Laeter, 1965, p. 49).



37. SLEEPER CAMP Stone, olivine hypersthene  
chondrite, recrystallized

Latitude  $30^{\circ} 15'S$ ; longitude  $126^{\circ} 20'E$  (corrected).

This collection: W. A. M. no. 12781, small slice  
(11.6 g) and thin section.

Analytical data, etc.: olivine,  $Fa_{25}$  (det. Mason).  
Thin section study reveals it to be a strongly  
recrystallized meteorite. S. G. 3.38.

40. WOLF CREEK Iron, medium octahedrite

Find: August 1965, 3 miles south west of the crater  
(see McCall and de Laeter, 1965, pp. 52, 60).

Finder: Mrs J. Moyle, Carranya Station; later finds  
by E. H. Pederson and S. R. Taylor.

Numerous fragments collected, total weight 1343 g.

This collection: W. A. M. no. 12680, one polished  
fragment 42 g.

References:

Taylor, S. R. (1965) Nature, Lond. 208 : 944-5.

Analytical data: Ni 8.6%  
Co 0.4%  
Fe 91.0%  
Kamacite bands: 0.5 - 1.5 mm.

#### New Discoveries.

47. AVOCA Iron, medium octahedrite

Find: January-February 1966, by Nobby Nixon, 6 miles  
north of Avoca Downs Station Homestead, which is 1 mile  
north of the Trans-Australian Railway, about 4 miles

east of Randell's Siding. Latitude  $30^{\circ} 51'S$ ; longitude  $122^{\circ} 19'E$ .

Total recovery 37.85 kg, a single ridged cone with a flattened base and spine-like projections; marked by regmaglypts and circular pits.

This collection: W A M. no. 12793, main mass and slices (two polished).

Other collections: private collection Mrs J. Warren, 0.36 kg.

Analytical data, etc.: provisional etching of a polished surface shows it to be a complex medium octahedrite.

#### 48. BURNABBIE

Stone, olivine bronzite chondrite, spherical, not recrystallized, weathered

Find by A. J. Carlisle (Jnr), 1965, 4 miles east of Cocklebiddy Tank, Eyre Highway. Latitude  $32^{\circ} 04'S$ ; longitude  $126^{\circ} 10'E$ . A single purplish grey mass showing a light-coloured, very decomposed, fusion crust; the stone is incomplete, showing broken surfaces.

Total weight 2.5 kg, main mass 2.3 kg. Three small chips recovered nearby by W. H. Cleverly, 0.2 kg (187.3, 21.5, 5.6 g). Their distribution suggests approach on a due eastwards path.

This collection: W.A.M. no. 12580, 6 small slices (88, 40, 37, 4, 4, 3 g), and thin section.

Other collections: School of Mines, Kalgoorlie: no. 9846 main mass, and no. 9846/1-3 small chips 0.2 kg.

Analytical data, etc.: olivine  $Fa_{18}$  (det. Mason). This is physically a completely different meteorite from Cocklebiddy, a very dark, completely fresh stone found 10 miles away.

## 49. BURRIKA

Stone, olivine hypersthene  
chondrite, extremely  
recrystallized

Find, February 1966 by A. J. Carlisle, about two miles north of the Eyre Highway,  $\frac{1}{4}$  mile east of north from Burrika Burrika Rock Hole. Latitude  $32^{\circ} 04'S$ ; longitude  $125^{\circ} 50'E$ .

Total recovery, 20.4 g in the form of a single flattened fragment showing a fusion crust surface, both crust and broken surface of the meteorite being of a dark brownish-black colour, reflecting considerable terrestrial decomposition due to weathering.

This collection: W. A. M. no. 12786, thin section only.

Other collections: School of Mines, Kalgoorlie: no. 9979; main mass.

Analytical data, etc.: the olivine  $Fa_{24}$  (det. Mason). The thin section reveals a similar advanced state of recrystallization to that seen in the case of Yayjinna (q. v.). Maskelynite present. S. G. 3. 32.

## 50. CARDANUMBI

Stone, olivine hypersthene  
chondrite, recrystallized

Find, 1966, by D. Carlisle about one mile north of the Eyre Highway on the approximate longitude of Cardanumbi Rock Hole. Latitude  $32^{\circ} 10' 30''S$ ; longitude  $125^{\circ} 38'E$ .

Total recovery 6.4 g, in the form of a single, entirely fusion-crust coated stone, of subrounded form. The crust is black, the interior whitish-grey (revealed on cutting).

This collection: W. A. M. no. 12794, thin section only.

Other collections: School of Mines, Kalgoorlie, no. 10037 main mass.

Analytical data: olivine  $Fa_{24}$  (det. Mason).

## 51. DINGO PUPDONGA

Stone, achondrite, ureilite

Find: 1965, by A. J. Carlisle, approximately 10 miles south-west of Sleeper Camp, which is 51 miles north of Harg Station on the Trans Australian Railway. Latitude  $30^{\circ} 26' S$ ; longitude  $126^{\circ} 06' E$  (approx.)\*

Total recovery 122.7 g, in the form of a single stone, partly coated by a thin film of mammillated, chocolate brown coloured fusion crust.

This collection: W. A. M. no. 12778, small slice (19 g) and two thin sections, also a polished section.

Other collections: School of Mines, Kalgoorlie, main mass no. 9959.

Analytical data, etc.: olivine  $Fa_{10}$  (det. Mason). Occurs as sparse larger grains, and as smaller grains in the even-grained base, which consists of anhedral olivine grains, laths of pigeonite showing lamellar twinning, and a dark, opaque interstitial material. There are small specks of nickel iron and troilite present. S.G. 3.05.

\* co-ordinates revised by W. H. Cleverly, January 1967.

## 52. FRENCHMAN BAY

Stone, olivine bronzite chondrite, spherical, weathered

Find: October 1964 by R. L. Devitt and J. H. Turner, lying on the surface of coastal dune sand, amid limestone pinnacles, about 3 miles inland from the sea at the seaward termination of the tapering Nambung watercourse which is situated south-south-east of Wealacutta Pool, near Frenchman Bay. Latitude  $30^{\circ} 36' 30'' S$ ; longitude  $115^{\circ} 15' E$ .

Total recovery: 8.8 kg in the form of a single

weathered mass, flattened elongated, and with rounded off facets; covered with a brown, cracked and flaking carapace, and traces of black mamillated fusion crust on the pointed termination.

This collection: W. A. M. no. 12324, main mass, several cut slices and two thin sections.

Other collections: American Museum of Natural History, one cut section.

References:

McCall, G. J. H. (1966) J. roy. Soc. W. Aust.  
49 : 45-51.

Analytical data, etc.: olivine  $Fa_{19}$  (det. Mason).  
Texture spherical, no trace of recrystallization;  
mamillated fusion crust shows unusual features. The  
only meteorite recovered from close to the Western  
Australian coast. The deep weathering perhaps testifies  
to attack by salt-charged atmospheric agents.

53. MOUNT PADBURY

Mesosiderite, with eucrite,  
diogenite and olivine  
achondrite enclaves; also  
medium-fine octahedrite  
nodules

Find: March 1964 by W. C. Martin on Mount Padbury Sheep  
Station, near Meekatharra; numerous fragments being found  
scattered on a hardpan surface, some larger ones slightly  
embedded. Latitude  $25^{\circ} 40'S$ ; longitude  $118^{\circ} 06'E$ .

Total recovery: 272 kg (large masses weighing 88.65,  
31.80, 24.00 kg, numerous smaller masses).

This collection: W. A. M no. 12297. One large original  
mass 5 kg, 4 polished slices, numerous fragments including  
many of achondritic enclave material, 30 thin sections,  
1 polished section.

Other collections: School of Mines, Kalgoorlie, no. 9625, nos 9635-9658, remainder of the large original masses, numerous small masses (the balance of the original find).  
 American Museum of Natural History ) each one  
 Mineralogical Museum, Copenhagen ) polished slice  
 British Museum (Natural History) )

## References:

- McCall, G. J. H. and de Laeter, J. R. (1965) Spec. Publ. W. Aust. Mus. no. 3, p.18 (brief provisional note).  
 McCall, G. J. H. (1965) Meteoritics 2 : 315-323.  
 McCall, G. J. H. and Cleverly, W. H. (1965) Nature, Lond. 207 : 851-2.  
 Cleverly, W. H. (1965) J. roy. Soc. W. Aust. 48 : 55-59.  
 McCall, G. J. H., Wiik, H. B. & Moss, A. A. Miner. Mag., [in the press] (petrological description).

Analytical data, etc.: iron contains 8.95% Ni, nodules show Om/Of Widmanstätten figures, with kamacite fringe around the margin (cf. Dalgara). Troilite abundant. Olivine  $Fa_{85}$ , hypersthene  $Fs_{28}$ , pigeonite, bytownite,  $An_{85}$ , tridymite present. Olivine present in the form of a single crystal enclave up to 4 inches long, and also as granular aggregates, much brecciated. Diogenite enclaves consist of granoblastic aggregates, considerably brecciated, of hypersthene and sparse tridymite. Eucrite enclaves consist of bytownite, pigeonite and tridymite; ophitic, sub-ophitic intergranular, "granulitic" textures are displayed, also shock granular textures and breccia textures; the pyroxene displays exsolution lamellae and, in rare cases, corona of hypersthene, also showing exsolution lamellae. This is the second greatest mass of mesosiderite material ever recovered.

54. MULGA (NORTH)

Stone, olivine bronzite  
chondrite, recrystallized



surfaces of a thin dark fusion crust which is now almost completely altered to iron oxides.

This collection: W. A. M. no. 12798, small fragments (13 g) and two thin sections.

Other collections: School of Mines, Kalgoorlie, 8 main masses, nos 9584/1-3, nos 9738-42.

#### References:

Cleverly, W. H. (1965) Aust. J. Sci. 28 : 126.

Analytical data, etc.: olivine  $Fa_{18}$  (det. Mason).  
Texture spherical, no recrystallization, (physically this material appears quite unlike the 59 Mulga (North) stones).

#### 56. MUNDRABILLA

Iron, medium octahedrite

(a) Find: 1965, 10 miles north of Mundrabilla Siding on the Trans-Australian Railway.  
Latitude  $30^{\circ} 45'S$ ; longitude  $127^{\circ} 30'E$  (approx.).

Finder: W. A. Crowle, field assistant to geologist D. C. Lowry, Geological Survey of Western Australia.

Three masses, complete meteorites (?), weights: 94.1, 45.0 and 38.8 g. The masses were found distributed over an area half a mile across, resting on claypan surfaces.

This collection: not represented.

Other collections: Geological Survey of Western Australia, no. R 2102, three masses.

(b) Find: 1966 (April) near the same spot, by R. B. Wilson and A. M. Cooney, two large irons weighing 11 and 5 tons; recovered 200 yards apart, resting on the limestone surface with a layer of iron-shale beneath both masses. They were surrounded by



innumerable small iron fragments of the type recovered by W. A. Crowle.

This collection: the larger main mass and several of the smaller iron masses.

(This recovery brought to an end 4 years of search, following reports from rabbit trappers; three expeditions failed to find the masses in spite of the fact that the ultimate recovery was exactly where reported. This emphasises the difficulty of motor travel and accurate location in this gibber plain limestone desert country.)

## 57. PANNIKIN

Stone, olivine hypersthene chondrite

Find: 1965, by A. J. Carlisle, 1.2 miles east-south-east (bearing  $114^{\circ}$  from the site of the Burnabbie Find), i. e. approx. 3.5 miles east of Cocklebiddy Tank, Eyre Highway. Latitude  $32^{\circ} 02' 30''$ S; longitude  $126^{\circ} 11'$ E.

Total recovery: 13.6 g in the form of two small chips (10.4, 3.2 g), which show no fusion crust and are associated with an impact pit.

This collection: W.A.M. no. 12799, thin section only.

Other collections: School of Mines, Kalgoorlie, nos 9962-3, main masses.

Analytical data, etc.: olivine  $\text{Fa}_{24}$  (det. Mason). This meteorite has a texture unlike any other meteorite from the Cocklebiddy area and probably represents a quite distinct arrival event from any other meteorite from this area.

## 58. RAWLINNA (pallasite)

Stony iron, pallasite

Found before 1959 by A. J. Carlisle, 12 miles south-south-west of Rawlinna Station on the Trans-Australian Railway Line. Latitude  $31^{\circ} 10'$ S; longitude  $125^{\circ} 16'$ E.

Total recovery: about 50 g, held in H. H. Nininger's personal collection.

This collection: not represented.

## 59. RIVER

Stone, olivine hypersthene chondrite, recrystallized

Find: 1965, by D. Carlisle, 15 miles west of Sleeper Camp, which is 51 miles to the north of Haig Station, Trans-Australian Railway Line. Latitude  $30^{\circ} 22'S$ ; longitude  $126^{\circ} 01'E$ .

Total recovery: 190.5 g in the form of a single, entirely fusion-crust coated, oriented meteorite.

This collection: W.A.M. no. 12780, one small slice, 17 g and thin section:

Other collections: School of Mines, Kalgoorlie; no. 9960 main mass.

Analytical data, etc.: olivine  $Fa_{25}$  (det. Mason); texture coarse, strongly recrystallized, shows large but indistinct chondrules. Plagioclase evident. S.G. 3.24.

## 60. WARBURTON RANGE

Iron, nickel rich ataxite

Find: December 1963 or January 1964 by H. Gill and G. Simms, 25 miles south of the Warburton Mission in the extreme east of the State. Latitude  $26^{\circ} 17'S$ ; longitude  $126^{\circ} 40'E$ .

Total recovery: 56 kg, in the form of a single mass, conical in shape with a flattened base, on which it rested in sandy terrain amid rock outcrops. The mass is marked with numerous shallow, elongated regmaglypts.

This collection: W.A.M. no. 12295, main mass, five cut sections and two polished sections (568, 382, 351, 186, 139 g). Also a 5 kg mass (cut off main mass).

## References:

- McCall, G. J. H. and de Laeter, J. R. (1965)  
Spec. Publ. W. Aust. Mus. no. 3, p. 18  
 (brief provisional note).
- McCall, G. J. H. (1965) Meteorites 2 : 315-323.
- McCall, G. J. H. and Wiik, H. B. (1966) J. roy. Soc. W. Aust. 49 : 13-16.

Analytical data, etc.:

Fe	80.22	
Ni	18.21	
Co	0.87	(H. B. Wiik)

This meteorite shows a fine decussate arrangement of kamacite laths, fringed by taenite and inset in a base of plessite. Troilite is present as sparse rods.

## 61. YAYJINNA

Stone, olivine  
 hypersthene chondrite,  
 strongly recrystallized

Find: 1965, by A. J. Carlisle (Jnr) about 4 miles east of Cocklebidy Tank on the Eyre Highway, just south of the Highway; 0.6 miles north of site of Burnabbie find. Latitude  $32^{\circ} 02' S$ ; longitude  $126^{\circ} 10' 30'' E$ .

Total recovery: 262.4 g in the form of a single stone, coated with fusion crust on all sides, though on one side a troilite-filled veinlet projects.

The shape is that of a flattened cuboidal block with very sharply defined corners and edges.

This collection: W. A. M. no. 12785, slice, 47 g, and thin section.

Other collections: School of Mines, Kalgoorlie, no. 9961, main mass

Analytical data, etc.: olivine  $Fa_{25}$  (det. Mason).  
 The thin section shows intense recrystallization, and only vague traces of chondrules which are very large. Maskelynite is prominent.

S. G. 3. 27.

## 3. ADDITIONS FROM AUSTRALIA

(excluding Western Australia)

TENHAM Stone, olivine hypersthene  
chondrite, veined, white

Fell 1879 at Tenham, S. Gregory, Queensland, a shower  
distributed over 12 x 3 miles.

This collection: W.A.M. no. 12325, 147 g, a single complete  
meteorite, with yellowish interior and black crust almost  
entirely coating it (recovered by E. P. Henderson 1964, exch.  
with Smithsonian Institution, Washington).

## 4. ADDITIONS FROM OUTSIDE AUSTRALIA

ABEE Stone, enstatite chondrite

Fell October 1952, Abee, Alberta, Canada.

This collection: W.A.M. no. 12800, small fragment and  
thin section.

ATLANTA Enstatite chondrite

Find 1938, total weight 5.5 kg, at Atlanta, Louisiana, U.S.A.

This collection: W.A.M. no. 12845, one cut and polished  
slice, 165 g (exchange British Museum (Natural History)).

KHAIRPUR Enstatite chondrite

Fall September 23, 1873 at Khairpur, India, 14 kg total  
weight.

This collection: W.A.M. no. 12846, one cut and polished  
slice, 86 g (exchange British Museum (Natural History)).

MURRAY Carbonaceous chondrite,  
Type II

Fall September 1950 at Murray, Kentucky.

This collection: W.A.M. no. 12577, 44.5 g, one fragment with black fusion crust (exch. Smithsonian Institution, Washington).

## STANNERN

Stone, achondrite, eucrite

Found 1808 at Stannern, Iglau, Moravia (now Czechoslovakia).

This collection: not represented.

Other collections: University of Western Australia, one thin section.

## THIEL MOUNTAINS

Stony iron, pallasite

Found Thiel Mountains, Antarctica (recently, date not known).

This collection: W.A.M. no. 12578, 370 g, a single cut and polished slice (exch. Smithsonian Institution, Washington).

## WOODBINE

Stony iron, mesosiderite (?)

or

Iron with silicate inclusions

Find: 1953. Jo Davies's County, Illinois, U. S. A.

This collection: W.A.M. no. 12576-6659, one cut and polished slice. This meteorite has the appearance of a medium octahedrite with mesosiderite inclusions, themselves including achondrite enclaves.