

JOSEPH McNALLY'S SLATE SUNDIALS

JOHN DAVIS, MICHAEL J. HARLEY and HARRIET JAMES

There is a long history of dial making in Ireland¹. The earliest dials, made of stone and over a thousand years old, are to be found in the ruins of the monastic settlements that dot the country². Much later, the scientific instrument making trade flourished in the 18th and 19th centuries with notable Dublin makers such as Mason, Yeates and Lynch³ producing beautifully crafted bronze and brass sundials. Slate was also used for dials at this time all over the country because it was readily available and could be worked by local artisans with varying degrees of skill ranging from the naïve to the sophisticated. One such slate dial dated 1796 in the Down County Museum¹ shows that the maker, William Straney, had a very sophisticated style indeed as well as an appreciation of the underlying geography, astronomy and mathematics. The best known Irish slate, known as Killaloe slate, came from Portroe, near Nenagh Co. Tipperary. Slate was quarried in this area since the middle ages with peak production reached in the 1840s when 800 people were employed in the quarry. Because of its superior quality, imported slate mainly from North Wales became increasingly common in the 19th century, especially for the houses and gravestones of the wealthy. It is most likely that quality Welsh slate was sought after by the Irish dial makers of that time in preference to the local product.

Most of the early Irish slate dial makers seem to have produced only one or two dials each, possibly for their own use. Then in the early 1800s two County Down makers established themselves with distinctive styles and went on to sell their dials in Scotland and England as well as in Ireland. One of these, Richard Melville⁴⁻⁶, is well known and was particularly prolific, producing horizontal dials with multiple gnomons. His little known contemporary Joseph

McNally has only nine dials recorded, mainly with multiple gnomons, but his is an equally important story. McNally records his profession on one of his dials as "Ship's Broker and Commissioner" and, as all but two of his dials were made for Portaferry in Co. Down or its surroundings, it seems reasonable to assume that this is where he lived and worked. In the 1830s Portaferry was a thriving seaport and market town on the east coast of Ireland about 25 miles south east of Belfast. It had a considerable trade in agricultural produce, coal, timber and fishing with a population of around 2000 people. It had a parish church, a Presbyterian church, Wesleyan, Methodist and Roman Catholic chapels and two schools. To date, it has not been

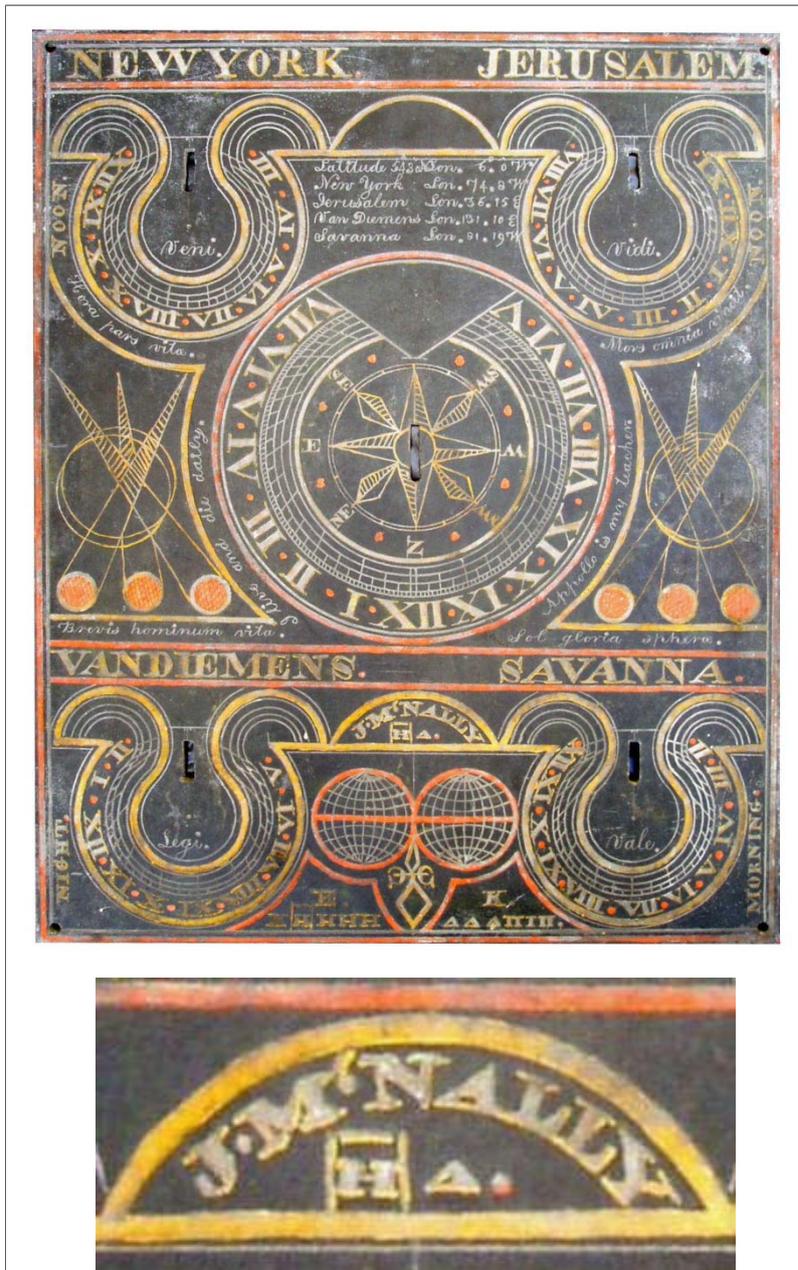


Fig. 1. One of the best preserved McNally slate dials, in a private collection. The engraving is coloured white, yellow and orange. Below: McNally's signature and '510' in Greek numerals.

possible to trace McNally's background, as the census records for the first half of the 19th century were destroyed when the Public Record Office in Dublin burned in 1922 during the Civil War. The records for the second half had been pulped by order of the Government during the First World War. Other genealogical sources such as the Tithe Books, Wills, Probate records and Piggot's Almanac have been searched but to no avail. The slate dial making tradition continued in Co. Down with makers such as Patrick Doyle in the 1850s⁷, a Portaferry schoolteacher with a strong interest in navigation – a good way for local boys to escape the agricultural poverty of the time.

All but one of McNally's extant dials feature multiple gnomons with five circular dials on a rectangular plate, usually with the larger central dial serving for two geographical

locations, one being the design location for the dial. See Fig. 1 for an example. The design locations for the nine dials are shown in Table 1. The latitudes and longitudes of the subsidiary dials locations are usually listed elsewhere on the dials and are shown in Tables 2 and 3. Other features which are common to several of McNally's dials are various astronomical diagrams and the use of Greek acrophonic symbols to give the date. These sometimes have the initials E.K. above them, standing for Etos Kyriou⁸, Greek for "the year of the Lord". Not all of the dials are dated but those which are cover the very short span of 1832 to 1835. The dials all carry multiple mottoes in both English and Latin and these are listed in Table 1. On two of the dials the engraving still shows evidence of being filled, with the major lines being in white and some of the other decorations in orange and yellow. If these are the original colours they must have been very striking when they were new.

Design Location	<i>I shew...</i>	<i>Qualis vita...</i>	<i>Life in its...</i>	<i>Quasi umbra...</i>	<i>Veni Vedi...</i>	<i>Claritatem spend</i>	<i>Vigor aetatis</i>	<i>Sol gloria...</i>	<i>Brevis...</i>	<i>Lux...</i>	<i>Dum...</i>	<i>A virtuous...</i>	<i>Hora pars...</i>	<i>Mors omnia...</i>	<i>I Live...</i>	<i>Appollo</i>	<i>Ars longa..</i>	<i>Luceo...</i>	<i>Vale non...</i>
Irvine						✓	✓												
Maryport	illegible																		
Lat 54° 3' N Lon 6° 0' W					✓			✓	✓				✓	✓	✓	✓			
54° 20' N	✓				✓				✓								✓	✓	✓
Ballyphillip	illegible																		
Portaferry	illegible																		
Corbally	✓							✓	✓										
Lat 54°20' N Lon 6°16' W	✓	✓	✓	✓	✓														
Portaferry Lat 54° 20' N 6° 16' W	✓							✓	✓	✓	✓	✓							
<i>I shew by the kindnefs & splendour of the sun"</i> <i>Qualis vita, finis, ita"</i> (What a man's life is, so will be his end) <i>"Life in its greatest vigour is altogether vanity"</i> <i>"Quasi umbra, transit vita"</i> (As a shadow, passes life). <i>Claritatem et splendorem solis indico"</i> (I announce the brightness and radiance of the sun) <i>Vigor atatis fluit ut flos veris"</i> (Life at its best is but vanity <i>"Veni, Vedi, Legi, Vale"</i> (I came, I saw, I read, Farewell) <i>Sol gloria spheræ"</i> (Sun, glory of the earth) <i>Brevis hominum vita"</i> (Human life is short) <i>Lux venit ab alto"</i> (Light cometh from on high)										<i>Dum spectas fugio"</i> (While you watch, I fly away) <i>A virtuous life, a happy eternity"</i> <i>Hora pars vitae"</i> (Time is part of life) <i>Mors omnia vincit"</i> (Death conquers all) <i>I live and die daily</i> <i>Appollo is my teacher</i> <i>Ars longa vita"</i> (a shortened version of 'Ars longa ut vita' – Art is as long as life) <i>Luceo & Lateo"</i> (I shine and I set) <i>"Vale non morator hora"</i> (Farewell, time does not wait)									

Table 1. The nine known McNally slate dials and their mottos.

IRVINE DIAL

The “Irvine” dial (Fig. 2) came to light in 1959 when its owner’s parents moved into a house in Paisley, Renfrewshire, and found it in an outhouse. It is 540 by 370mm and

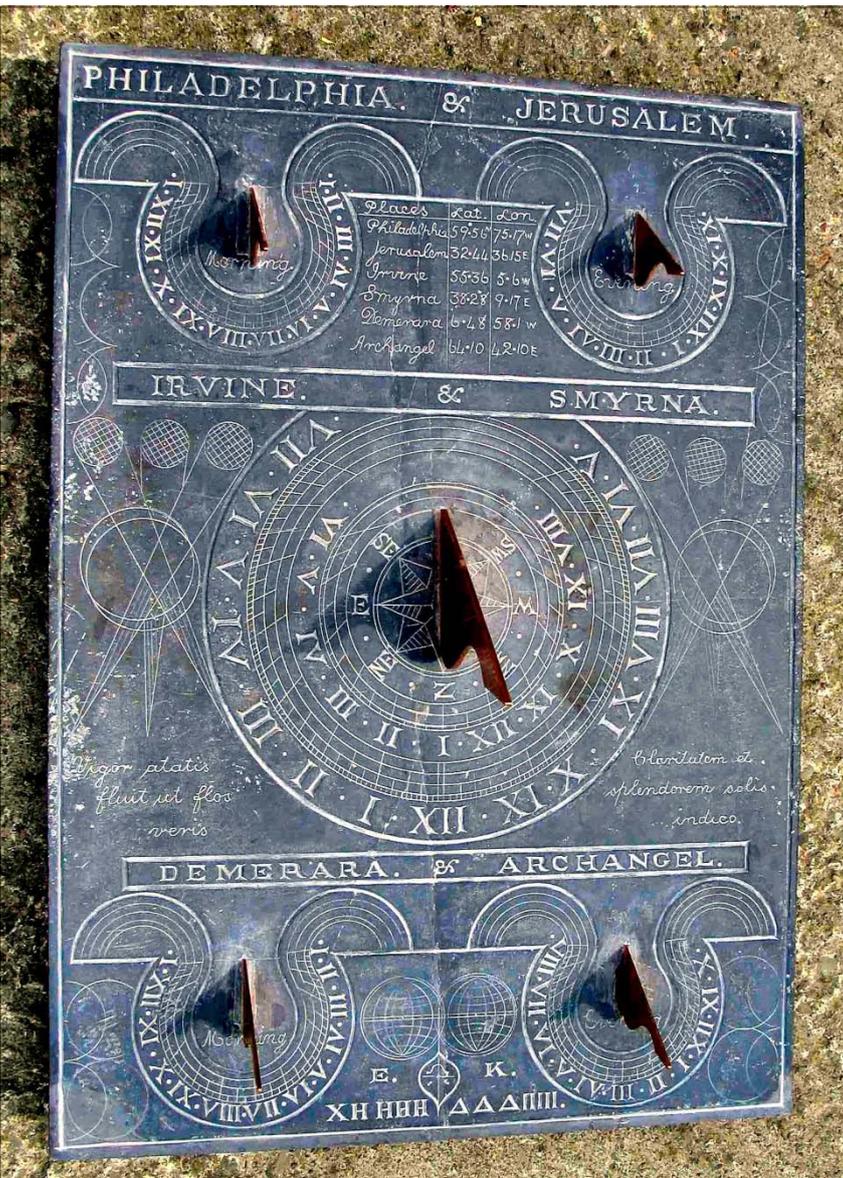


Fig. 2. General view of the Irvine dial after its recent restoration.

about 20mm thick and is unsigned, leading initially to the idea that its maker was “E.K.”! The central, larger, dial has twin chapter rings and is labelled “Irvine & Smyrna” so, as Irvine on the west coast of Scotland is only about 20 miles from Paisley, it seems highly likely that this is its original design location. At that period, Irvine was the third largest seaport in Scotland⁹.

The latitudes and longitudes of the six locations for which the dial indicates the time are given on the dial and are shown in Table 2. The names are explicitly paired (“Philadelphia & Jerusalem”, Irvine & Smyrna” and “Demerara & Archangel”) in a way not seen on McNally’s other dials. This set of place names is unique in the authors’ combined experience and hence it was a challenge to discover why they had been chosen. The strongest clue is that Smyrna (now Izmir in western Turkey) and Philadelphia (now Alasehir, and only about 130 km from Smyrna) were two of the locations of the Seven Churches of Asia, thought to have been founded by St. Paul. Smyrna and Philadelphia are mentioned in chapters 2 and 3 of the Book of Revelation and are the two churches of which Christ made no criticism. Today, Smyrna remains a place of importance to the Orthodox (Coptic) church. Jerusalem, of course, has strong Christian connections and although Archangel in Russia does not immediately seem to be a place of religious significance the word “archangel” features heavily in all Christian literature. Archangel was also the first Russian port to be opened and Britain was one of the first countries to import goods from there. An internet search has revealed that the sailing ship *Friendship*, built in Massachusetts in 1796, visited Smyrna and Archangel several times over the period 1807-1810, but this is probably a coincidence. The six place names have significance to various Christian denominations, particularly the Moravians. They founded a community at Gracehill in Northern Ireland in the 18th century and sent out individuals and missionary groups to numerous locations. One John Montgomery was sent to Irvine in Scotland in the mid-1770s. Others went to Philadelphia in the USA (a group which eventually went on to found the steelworks at Bethlehem).

Place	Lat on dial (N)	Actual Lat (N)	Lon on dial	Actual Lon
Philadelphia ¹	59° 56' ²	44° 9'	75° 17' W	75° 40' W
Jerusalem	32° 44'	31° 47'	36° 15' E	35° 10' E
Irvine	55° 36'	55° 37'	5° 6' W	4° 40' W
Smyrna	38° 28'	38° 30'	9° 17' E ²	26° 30' E
Demerara	6° 48'	7° 0'	58° 1' W	58° 0' W
Archangel	64° 10'	64° 40'	42° 10' E	41° 0' E

1. Assumed to be Philadelphia, USA. 2. Gross error.

Table 2. Table of the latitudes and longitudes engraved on the Irvine dial compared with their modern values.



Fig. 3. The Greek date on the Irvine dial and its preferred form.

From 1735 they undertook missionary work in Demerara in the West Indies. Thus it seems likely that the owner was trying to show his religious beliefs and he may also have been a seaman or ship owner from Irvine.

The latitudes and longitudes quoted on the Irvine dial are generally quite close to the accepted modern values. One exception is for Philadelphia, where McNally seems to have chosen Philadelphia on the river Delaware in the USA instead of the old Asian town and then engraved the correct longitude but a latitude of 59° N instead of 39°. (It is notoriously difficult to distinguish 3 and 5 in many old type-scripts and McNally may have misread his source.) There was another, smaller, Philadelphia of similar longitude and a latitude of around 44° N⁶ but this seems a less likely match. Another exception is Smyrna, where the correct latitude is given but the longitude is stated as 9° 17' E instead of 26° 30' E. This incorrect longitude has also been used in drawing the timescale on the inner chapter ring of the central dial.

The form of the Greek acrophonic numerals giving the date



Fig. 4. McNally's Maryport dial before its theft. Photo: R Sylvester.

(1835) is unusual. The layout (Fig 3) is non-standard in that the numeral for five is usually¹¹ Γ rather than IIII and 500 (a component of the century 1800) is generally written by putting a small H (for 100) inside a Γ. On the Irvine dial, an H is followed merely by a space. On other McNally dials the H for 500 is surrounded by fine lines above and to both sides (see Fig 1).

The Irvine dial has two Latin mottoes, (see Table 1) written in script. The first, *Claritatem et splendorem solis indico* can be translated¹² as "I announce the brightness and radiance of the sun", although *claritatem* should probably be *claritatem*. The second is *Vigor ætatis fluit ut flos veris* which appears in "The Book of Old Sundials"¹³ where it is translated very freely as "Life at its best is but vanity" although a more literal translation is "*The strength of age/life flows away like the flower of Spring*".

When the Irvine dial was found in 1959 it had a major crack in the slate and gnomons for just two of the small subsidiary dials. These were in the form of thin brass triangles leaded into the slate. They had then been bent over for reasons of safety. They seem to have angles rather greater than 56° although they are difficult to measure accurately. The hourlines of the central dial, which incorporates a noon gap, are all accurately directed to the correct origin of delineation. Their angles have been analysed by least-squares fitting and indicate an optimum latitude of 56.5°±1°, in acceptable agreement with the figure of 55° 36' given on the dial for Irvine. Comparison with other McNally dials suggests that the gnomons were originally of a simple pierced design and that the surviving gnomons were replacements. When they were removed during the recent restoration it appeared that the slots in the slate had been previously disturbed. A complete set of replacement gnomons was made with an angle for the latitude of Irvine. At the request of the dial's present owner, their shape imitates those on a dial by Melville in the National Museum of Scotland, with the central gnomon being larger than the four subsidiary ones. The gnomons were set into the original slots with epoxy resin. The crack and chips in the slate were glued and filled and some missing detail recut.

Place	Lat on dial	Lon on dial	No. of dials
Corbally	54° 20' N	6° 16' W	1
Savanna	31° 57' N	81° 19' W	3
Calcutta	22° 36' N	88° 33' W	2
Botany	34° 8' S	151° 18' E	1
New York	40° 41' N	74° 8' W	3
Van Diemens	41° 30' S	131° 10' E	2
Baltimore		76° 55' W	1
Madras		80° 35' E	1
Natchez		92° 10' W	1

Table 3. The locations for the subsidiary dials on McNally's Portaferry dials.

MARYPORT DIAL

Another McNally dial was on an elaborate memorial in the churchyard at Maryport, Cumbria^{14,15}, (Fig 4) although it has recently been stolen. Maryport is on the southern shore of the Solway Firth, almost opposite the Scottish port of Kirkcudbright which is well known to diallists for its abun-

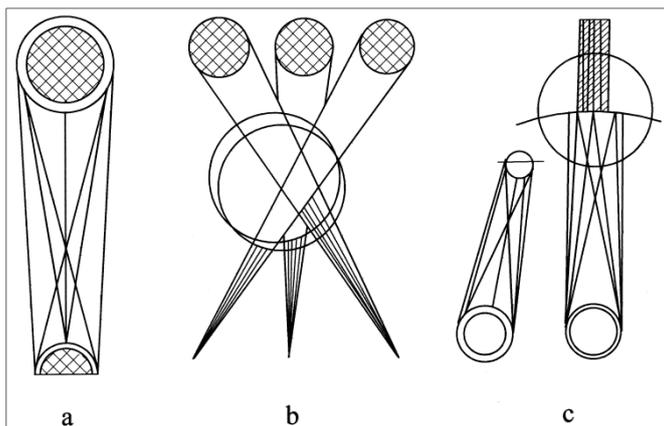


Fig. 5. Drawing of the astronomical diagrams found on several of McNally's dials. The centre figure (b) is the most common.

dance of dials. This dial was made for Richard A Turnby, a Maryport master mariner and whose name is on the dial. The central dial appears to be for Jerusalem and Maryport and the subsidiary dials are for New York, Sierra Leone, Bengal and a location which is virtually illegible but may be Papua (New Guinea). It seems likely that these were ports which Turnby had visited. Underneath the signature of "Joseph M'Nally" are the words "Shipbroker, Commissioner".

Many of McNally's dials, including the Maryport and Irvine ones, feature a pair of globes as part of the decoration. Globes were a key part of the design of William Straney's earlier 1796 slate dial¹ referred to earlier, although in that case it was clear that they represented a stereographic pro-

jection of the celestial sphere complete with ecliptic and constellation sigils whereas McNally's are much simpler. It may be that McNally was preserving a local style by including them.

PORTAFERRY DIALS

A total of seven McNally dials are now in or around Portaferry, Co. Down, either in the Down County Museum or in private collections: some of them were seen during the 1996 BSS tour of Northern Ireland¹⁶. Some of the details of the dials are given in Tables 1 and 3. There is a tendency for the subsidiary dials to be positioned on the dialplate in the same order that they would be found on a map, i.e. with locations west of Greenwich on the left and the more southerly locations at the bottom. One of the dials in the Down County Museum has its main dial calibrated for Jerusalem and Corbally, was made for a "JA^sMurry" and is signed "JM^cNally fecit". Corbally House is a rural location about 25 km west of Downpatrick so it is probable that it was made for a local dignitary. Another has had McNally's name crudely removed and that of a William Ardissil inserted in its place. Two of the dials in private hands have the remains of a colourful infill to the engraving and, whilst it is not certain that this was actually done by McNally, it was done a considerable time ago and would be a natural way of making the details stand out on the dark slate. One of these private dials has additional Greek numerals for 510 underneath McNally's signature (Fig. 1). We are unable to explain this: the number seems too large to be a serial number for the dial. It might possibly stand for 5 October in a rather idiosyncratic format.

ASTRONOMICAL DESIGNS

All of McNally's dials have much decorative engraving on them in a similar style. Either side of the central dial on the Irvine dial are mirror-image diagrams (Fig 5b) which have an astronomical feel about them. Very similar diagrams appear on the Maryport dial. At first sight these appear to show the position of the sun at the solstices and equinoxes, although the left and right (in Fig 5b) suns make angles of $\pm 26^\circ$ with the vertical rather than the astronomical values of $\pm 23.5^\circ$. An alternative explanation is that they represent a prediction of an eclipse. There was an annular eclipse¹⁷ of the sun visible from northern Ireland and England and southern Scotland on May 15 1836, just one year after the dial was made. Certainly, eclipses were in the public imagination at that time, following William Wordsworth's 1820 poem "The Eclipse of the Sun"¹⁸. The sun's rays in the diagram do not cross the centre of the "Earth" but it has not proved possible to extract a significant location on the

globe from the diagram. It seems at present that the diagram is a highly schematic view rather than a geometrically accurate one.

Other astronomical diagrams (Figs. 5a and 5c) are found on one or more of the dials. As they always take the same form, it is probable that McNally had a pattern which he referred to, possibly from a book on astronomy although the exact source has not been identified.

THE MELVILLE CONNECTION

The facts that the two most prolific makers of multiple slate sundials came from the same region of Ireland, sold dials in Scotland and had overlapping dates seem unlikely to be pure coincidence. The earliest⁶ known dial by Richard Melville is dated 1832. Made for a John Sandwich of Downpatrick, it is now in the Down Co. Museum and is a very simple single dial with the hourlines incorrectly laid out at equal angles. The next earliest known Melville dials are from the late 1830s and early 1840s and show the fully-developed five-dial layout which later became his trademark, although at this stage they were without the Equation of Time tables which were found on his later dials. Melville's early (Irish) dials usually have the names of their owners on them, as do some of the McNally dials, though the later Melville Scottish ones usually did not. Melville moved to Scotland sometime around or before 1843 and it is perhaps significant that Clarke et al⁶ say "Melville may have made the short crossing from Ireland to Irvine". In the meantime, McNally had made several high quality multiple dials with dates of 1834 and 1835. As a ship's chandler, McNally could have accepted commissions from mariners visiting Ireland or he may have travelled to the west coast Scottish and English ports with his vessels. It is tempting to suggest that Melville learned the five-dial design from McNally, either directly or indirectly. Their early designs are quite similar but Melville later went on to develop the style further, with as many as nine subsidiary dials, more place names and the addition of Equation of Time tables. Many of these later dials are signed Melvin rather than Melville. With the depressed economy of the time in Ireland, it would have been natural for Melville to follow in McNally's commercial footsteps to Scotland.

The letter-cutting on McNally's 1835 Irvine dial is of inferior quality compared with that of Melville's, as evidenced by an 1845 dial which has recently been restored¹⁹. Both makers used letters cut in v-profile with a chisel or scribed with a point. Melville's copperplate is more elegant than McNally's. He uses thick and thin strokes in calligraphic style whereas McNally uses only one thin stroke. As the maker of many more dials, Melville would clearly have had

the opportunity to refine his technique and style after McNally apparently ceased production.

CONCLUSIONS

Joseph McNally's slate dials are highly decorative and form an important link in the long tradition of slate dial making in Ireland. It is hoped that further examples will be uncovered in the future, and that more details of his life, and his connections with other dialmakers, can be found.

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*Stood Science waiting for the hour
When Sol was destined to endure
That darkening of his radiant face
Which Superstition strove to chase
Erewhile, with rites impure.....*

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David Dunlop, David Gooding, George Huxley, Michael
Lowne, Betty Lyttle, Patrick Powers, Anne Somerville,
Robert Storey, Robert Sylvester, Jill Wilson, David Young.

Authors' addresses:

J. Davis

Orchard View, Tye Lane

Flowton, IP8 4LD

john.davis@btinternet.com

ACKNOWLEDGEMENTS

We are very grateful to a number of people for allowing us
to photograph their dials and for help in tracing and analys-
ing them. They include: Richard Caldow, Mrs. E. Cooper,

H. James

35 Bradley Road

Warminster, Wilts

BA12 8BN

sunnydials@compuserve.com

M.J. Harley

1a Greenhaw Rd

Londonderry

N. Ireland, BT48 7RZ

m.j.harley@ntlworld.com