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The Soldier-Astronomer in Scotland: Thomas Makdougall Brisbane’s scientific work in the northern hemisphere.

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Most of Thomas Brisbane’s long life was spent in the northern hemisphere. In fact, eighty-three of his eighty-seven years were lived north of the Equator, but much of it was spent outside the scope of this paper, as Brisbane’s profession – in an era when gentlemen did not have professions, as such – was as a career soldier. His life in the British army during the French and Napoleonic Wars can be seen to be one of the formative influences on his character, and indeed, absorbed much of his time, especially in his youth.¹

Thomas Brisbane (1773-1860) was born the eldest son and heir of Thomas Brisbane of that Ilk (1720-1812), and his wife Eleanor, daughter of Sir William Bruce of Stenhouse, baronet, at Brisbane House, Largs, Ayrshire on 23 July 1773.² The ‘Makdougall’ was not incorporated into his surname until 1826, and his own baronetcy was not created until 1836. Nonetheless, young Thomas’s father – who died in 1812 at the advanced age of ninety-two – was the ‘representative of the Brisbanes of Brisbane, confessedly the chief of the same name, who appear to have possessed Bishopton, in Renfrewshire, with lands in the counties of Stirling and Ayr, long prior to the date of any charters they have preserved, which, nevertheless, extend to a very remote period’.³ Besides being a member of the landed gentry, the elder Thomas Brisbane had served under the Duke of Cumberland at the Battle of Culloden in 1746 as a captain and aide-de-camp to the Earl of Home, along with the Duke of Argyll.⁴ This was the winning Hanoverian side in the
Jacobite Rebellion, the final chapter in Britain’s religious and civil disturbances. Thus the young Thomas came from a land-owning establishment family, with strong military inclinations, and, additionally, was imbued with strong ideals of Christian duty.

As background to his apparently comfortable circumstances, the Brisbane estate outside Largs had become impoverished through poor management and ill-fortune. Brisbane’s father had succeeded his uncle James (1687-1770) as head of the family. James Brisbane had proved incapable of running the estate during his long lifetime, and it was thus run for him firstly by his younger brother Thomas (1690-1737), and subsequently by his nephew, also named Thomas, the father of the principle figure of this paper. Sir Thomas’s father had eventually married in 1771 at the age of fifty-one into the Bruce family, which was considerably more financially astute than the Brisbanes, and numbered some canny businessmen. Sir Thomas’s mother, Eleanor Bruce, was a considerable heiress, and under the guidance of her brother Patrick Bruce, a partner in the bank Bruce Simpson & Co., £30,000 was invested in the Brisbane Estate, paying off some large debts. Members of the Bruce family became trustees of the Brisbane Estate, ensuring that her marriage settlement should not be squandered. It seems that the trustees may have directly influenced the course of the lives of Thomas Brisbane and Eleanor Bruce’s children, encouraging the boys to take up the only paid professions which were open to them, in the services abroad at a time of fierce colonial expansion and the financial opportunities of war.\(^5\)
Our Thomas Brisbane was the second of their three surviving children (at least one other named Isabella is thought to have died in infancy). His sister Mary appears to have been the eldest child, as at her burial in Somerset in 1855 the parish register notes that she was ‘aged 83’. She never married, and had apparently lived most of her life in Bath and the surrounding area.\textsuperscript{6} Their brother Michael, youngest of the surviving children, was born on 10 May 1777 at Brisbane House. As a young man, he went to India, joining the East India Company, as a ‘writer’ or legal clerk in 1797, possibly through the influence of his uncle Patrick Bruce; however, he died in the service of the Company in about 1803.\textsuperscript{7}

Thomas Brisbane and his younger brother Michael were taught by tutors at home, a normal procedure for young men of their class at that time, before Thomas (according to his obituarists) was sent to the University of Edinburgh.\textsuperscript{8} Carol Liston has found no evidence that Brisbane was formally enrolled at the university, but he does appear to have attended some classes.\textsuperscript{9} The arts curriculum of the time – the only one on offer which included subjects which today would be classified as ‘science’, as law and divinity did not – was taught by some of the great figures of the Scottish Enlightenment. Amongst these teachers were Brisbane’s cousin Helen Cranstoun’s husband, the eminent philosopher, Dugald Stewart, Joseph Black (chemistry), John Robison (natural philosophy, or what is now considered physics), and John Playfair (mathematics). Teaching was by lecture-demonstration only, and there were no practical classes for students, although some extra-mural classes in anatomy and chemistry were becoming available.\textsuperscript{10}
In particular, no formal practical astronomy was taught to students at this date, although a chair of practical astronomy was created in 1785. The appointment of Robert Blair (1748?-1828) proved to be ‘anything but happy. Blair refused to give any lectures on the grounds that he had no observatory or instruments at his disposal.’ Compressing the details of a long and acrimonious history somewhat, after the death in 1768 of the pre-eminent telescope-maker James Short (1710-68), his less technically able but possibly more entrepreneurial brother Thomas returned to Edinburgh in 1770 with parts of a 12-inch telescope originally destined for the King of Denmark. This he intended to use in a private observatory which he would run commercially. He applied to Edinburgh Town Council to lease a plot of land on Calton Hill, and this presented itself to the Trustees of the Observatory Fund as an opportunity to use their money – some £400 – raised some years earlier, towards providing the Edinburgh observatory envisioned by both Town Council and University at minimal expense and effort. But this promising scheme went badly awry.

The Observatory Fund was placed at Thomas Short’s disposal, and an observatory site was provided on Calton Hill, both with the proviso that the observatory would be open to university students and that when Short died the buildings and instruments would become the property of the City of Edinburgh. The agreement was signed, the foundation stone laid, and an ambitious building with Gothic towers at each corner begun. However, the money ran out after only one tower was completed – the one in which Thomas Short took up residence – and the observatory was unfinished at his death in 1778, at which point
members of his family resisted eviction by the Town Council. The ‘Old Observatory’, as it is known, was finally completed in 1792 – a shadow of the expectations hoped for at its foundation in 1776. As there was no money for instruments, no serious astronomical work was ever done there. Meantime, Robert Blair’s period of tenure had resulted in further disappointment for the university. His research work in the improvement of optical instruments undertaken just after his appointment in 1785 proved to be his sole scientific achievement.

It is thus not clear how much formal astronomy and navigation (if indeed, any) the young Thomas Brisbane would have absorbed in Edinburgh. A slightly younger contemporary, David Brewster (1781-1868), the eminent investigator of optics, who was eight years Brisbane’s junior and attended the university from 1793, appears to have been able to talk his way into the observatory, work with such instrumentation as was available, and even observe a lunar eclipse. After he left Edinburgh, Brisbane was sent (with his younger brother Michael) to the Rev. Dr Robert Thomson’s academy in Kensington for the two years 1787-89. In his Reminiscences, he ‘relates his successful pleadings to be allowed to attend lectures in London, given by men first in their various walks – lectures in all subjects, though even then Mathematics and Astronomy were his favourite subjects.’

Brisbane was entered into the army in 1782, at the age of nine, through a purchased commission, as was common practice at that time, when patronage, influence and preferment, rather than merit, experience and qualifications ran the Establishment.
machinery. He did not take up his position as an ensign until 1789, by which time he was sixteen. At his death he was the longest-serving officer in the British army, having held his commission for seventy-eight years, and having been in actual service for seventy-one. In 1790, he joined the 38th Regiment in Ireland, where he made close friends with a lieutenant in a cavalry regiment: the young Arthur Wesley (1769-1852), as he then was, subsequently to become the Duke of Wellington. ‘Both of the young heroes’ wrote an obituarist somewhat dryly, ‘were at this period distinguished only by their love of field sports.’

With the outbreak of war in 1793, the young Brisbane raised an independent company in Glasgow and with it joined the 53rd Regiment, then based in Edinburgh. He then, with the regiment, was involved in two years of action in Flanders, subsequently marching to Hanover (then a part of the British Crown estates), where Brisbane’s regiment sailed back to England in spring 1795. That autumn, promoted to major, he went to Southampton, where the army was regrouping to sail under Sir Ralph Abercromby to attack the French in the West Indies. On their way out, he and his regiment were aboard a Newcastle collier, the ‘William and Mary’, which became separated from the main fleet. A collier was a small inshore craft, designed to move coals from the north of England to the large London markets, and an error in longitude made by the crew – unused to deep sea navigation - resulted in their almost being shipwrecked. In Brisbane’s own words:

After our vessel had sailed alone for some weeks, the mate came to my cabin one morning at 4 o’clock and awoke me, to say that they had made the land; but he was afraid it was the main continent. I immediately got upon deck and found the ship among the breakers; and the captain on seeing the danger, said, - ‘Lord have mercy on us, for we are all gone.’ I said that is all very well, but let us do everything we can to save the ship. He ordered the helm to be put hard down; but
so completely were the seamen paralysed by their awful situation, that not one of
them would touch a rope. With the assistance of the officers, I, with my own
hands, eased off the main-boom to allow the ship to pay off, and the sail to draw
upon the other tack. Most providentially the wind came from the coast, and filled
the sails, and though we were from four till ten in the morning in this critical
juncture, yet we found ourselves at length off the bank.

Reflecting that I might often, in the course of my life and services, be exposed to
similar errors, I was determined to make myself acquainted with navigation and
nautical astronomy; and for that purpose, I got the best books and instruments,
and in time became so well acquainted with these sciences, that when I was
returning home I was enabled to work the ship’s way; and having since crossed
the tropics eleven times, and circumnavigated the globe, I have found the greatest
possible advantage from my knowledge of lunar observations and calculations of
the longitude. In proof of which, in sailing from Port Jackson to Cape Horn in
1825, a distance of about 8000 miles, I predicted our making the land to within a
few minutes. 

In the West Indies, Brisbane took part in the capture of St Lucia and Trinidad, the
suppression of civil disorder on St Vincent and the failed invasion of Puerto Rico, before
returning home on sick leave in 1798. Two years later he set out for Jamaica, but once
again, the hot climate of the West Indies caused Brisbane’s health to break down, and
although he came back to Cheltenham with his regiment (now the 69th), when it was
ordered to India in 1805, he was obliged to retire on half-pay, as another campaign in
intemperate regions was deemed dangerous on medical advice. Reluctantly, Brisbane
retreated to his Ayrshire estates.

At Brisbane House, he occupied himself with building an astronomical observatory,
and equipping it with the latest instruments. Located about 200 yards north-west of
Brisbane House, it had a 12-foot diameter dome and was situated at latitude 55° 49’ 6”
north and longitude 4° 52’ west. This was only the second observatory of any
permanence to be established in Scotland. James Gregory (1638-75), the inventor of the
Gregorian telescope, had attempted to set up an observatory at the University of St. Andrews in the seventeenth century, having acquired some good second-hand instruments in London – some of which survive to this day – but his attempts had been overtaken by his early and unexpected death in 1675.21 Further north, at the University of Aberdeen, eighteenth-century efforts to put together the Castlehill Observatory as a working concern had faltered and failed.22 In Edinburgh, the astronomical schemes of Colin Maclaurin (1698-1746), professor of mathematics and patron of James Short, had ended with Maclaurin’s death in 1746 after his attempt to defend the city in the aftermath of the Jacobite Rebellion. This was followed by the frustrating events in Edinburgh towards the end of the eighteenth century briefly discussed above; later attempts to found an observatory there virtually petered out.23 In the opening years of the nineteenth century, the sole established astronomical observatory in Scotland was at Garnet Hill in Glasgow, and this, too, was to run into trouble and, after a short period of activity, was closed by 1816 and its effects sold during the 1820s.24 ‘Big science’ – and astronomy was the most expensive of the sciences in terms of capital investment at this period – proved very difficult to undertake even by driven, and exceptionally wealthy, individuals.

The Observatory at Brisbane Glen originally contained a 2-foot altitude and azimuth instrument (fig. 1), costing £62 10s, described and illustrated in the *Edinburgh Encyclopaedia*, edited by David Brewster: ‘the perspective view of the astronomical circle in Plate XLVI is taken from an instrument which Mr Troughton has newly completed for the observatory of Colonel Brisbane … Mr Troughton has obtained all the advantages of the reflecting circle, without any of its disadvantages’.25 The rest of the suite of instruments included a 2-foot mural circle, at £157 10s (discussed further below);
a 3-foot 6-inch transit circle, costing £37 16s; a tubular pendulum at ten guineas; a second mural circle with a gold graduated circle, costing £97 10s; and clockwork mechanism for rotation of the observatory dome, costing £78 5s. The invoice which lists these new instruments was made out by the pre-eminent London instrument-maker, Edward Troughton (c.1756-1835), then at the height of his powers. These instruments were from the cutting edge of precision instrument technology.\textsuperscript{26} Dated 27 May 1810, London, the total came to £528 1s, a substantial sum of money.\textsuperscript{27} ‘…we look forward with sanguine hopes to the labours of Colonel Brisbane of Brisbane, who has fitted up an observatory with Mr Troughton’s instruments, and who has devoted his leisure and his fortune to the prosecution of his favourite science’, wrote David Brewster.\textsuperscript{28} The most important of these instruments was perhaps the mural circle, devised for Brisbane by Troughton. This instrument was two feet in diameter, but when the model was shown by Troughton to the Board of Visitors at the Royal Greenwich Observatory, they were so impressed that they ordered the first 6-foot diameter mural circle, an instrument which became a standard part of observatory equipment during the first part of the nineteenth century.\textsuperscript{29} The Brisbane mural circle was put in place in 1811, and later transferred to Parramatta. There was also a sidereal clock, with two slaves, by the eminent horologist, Thomas Hardy, who had supplied a similar clock to the Garnet Hill Observatory.\textsuperscript{30}

The construction of the observatory building (fig. 2) and its meridian markers to the south and north was also an expensive business. An invoice also survives for this:

- stonework cement and lime at £69 10s; haulage of dressed stone 40s 8d; wages and time wages of men engaged in preparing site, levelling, measuring and
erection of stone pier £146 16s; erection of stone pier at Brisbane, levelling and aligning of said pier 78s 10d; Aligning of pier with piers on Greenhill [which are now known as the Three Sisters] and sightings taken and measured July 3rd 1805, 52s 10d; and all piers aligned with the master pier, levelled and measured and corrected … £320 18s.³¹

Before Brisbane had even purchased his first-rate instruments, he had laid out £545 16s 4d on his expensive hobby. He was extremely serious about it.

A brass plaque originally placed above the entrance to the observatory bore the inscription ‘Ad Scientiam Astronomicam colendam extruxit T. BRISBANE, Anno Domini 1808’.³² However, it has to be admitted that despite Brewster’s hopes, ‘no important observations were recorded. [The Brisbane Observatory] was apparently used by Brisbane to familiarise himself with observational technique before his 1812 campaign, and for a short time before his appointment as Governor of New South Wales in 1821, then during his retirement.’³³ By the time his Reminiscences were published posthumously, Brisbane Observatory had been fitted out at least partially once more – Brisbane himself wrote that he had ‘stripped my observatory [at Brisbane House] of most of my best instruments, in order to bring them here [to Parramatta]’.³⁴ In his old age, he spent part of the year at Brisbane House, and towards the end of his life the equipment appears to have included ‘a 4½-foot instrument by Troughton, … an altitude and azimuth instrument with 18-inch circles, and an excellent sidereal clock and two journeyman clocks … a mural circle … an equatorial instrument and [another] journeyman clock.’³⁵
Today, very little survives of Brisbane Observatory, and almost nothing of Brisbane House. All four of Brisbane’s children died before their father, and his wife survived him by a mere two years, so that the estate, already partly sold-up during Brisbane’s own lifetime, was inherited by distant cousins. After a fairly chequered history Brisbane House was demolished in a Commando training exercise during the Second World War.

The observatory was built on a ridge some 200 yards to the north-west of Brisbane House, and today only the ruins of the walls remain. However, to the south, one meridian marker of the original pair marked on the 1856 Ordnance Survey map stands askew – the work of cattle rubbing against it – and to the north the remains of another can be found built into a wall. One and a half miles away to the south are three meridian markers, known locally as the ‘Three Sisters’. There was one for each major instrument – the transit telescope in the east wing, the mural circle in the west wing, and the altazimuth instrument in the central dome. The Three Sisters are to be found on a small hill now within Largs, and grooves on the top of each held lanterns at night. Twentieth-century building in and around Largs means that these are no longer visible from the ruined Brisbane Observatory: and at some point the 1808 plaque has been moved from the Observatory to the bottom of the hill which has the Three Sisters on top.

Brisbane still hoped for active service, and was promoted to colonel in 1810, accepting the post of assistant adjutant-general. In 1812 his old friend Arthur Wellesley, now Marquess of Wellington, requested his services as a brigade-major, and the two men met again at Coimbra, in Portugal. Brisbane was now comprehensively involved in the
Peninsular War, and saw action at the battles of Vittoria, the Pyrenees, the Nivelle, the Nive, Orthez and Toulouse, in the last of which he was wounded and mentioned in dispatches. In 1813 he was promoted to major-general, and along with all the other Peninsular generals was appointed Knight Commander of the order of the Bath in 1814. He was sent to Canada in time for the battle of Plattsburgh on Lake Champlain and thus missed the battle of Waterloo in June 1815, but returned to Europe as a part of the army of occupation in France. In his *Reminiscences* Brisbane wrote of his time on the continent that: ‘I may add that while with the army I always carried with me a pocket sextant [,] chronometer and an artificial horizon, which I have had round the world. I took altitudes of the sun when a halt in the march permitted, and obtained the true time. When we got to Toulouse, I went to the Observatory, and found the time agreed to within five seconds. In this way I kept the time of the army.’

The National Museums of Scotland acquired a pocket sextant (fig. 3), signed by the Edinburgh instrument firm of Alexander Adie, from a dealer in 1956. It is inscribed on the cover: ‘THIS SEXTANT / Was used during the Peninsular War / By / General Sir Thomas Makdougall Brisbane Bart. / with which he kept the time of / THE ARMY’. This item is problematic, for Alexander Adie began trading under his own name as late as 1823, and the name of the firm at the time of the Peninsular War was ‘Miller & Adie’, when Adie was in partnership with his uncle, John Miller. However, it is possible that Sir Thomas had this instrument engraved retrospectively, and chose the wrong instrument from amongst his large array of equipment. The National Museums of Scotland have another such incorrectly documented instrument in the collection.
On the withdrawal of the army of occupation, Brisbane left France in 1818 and joined the army in the south of Ireland. The following year, now aged forty-five, he married Anna Maria Makdougall, aged thirty-three, eldest surviving daughter of Sir Henry Hay Makdougall, who had himself inherited the estates of Makerstoun in Roxburghshire in the Scottish borders in 1777 from his mother. A miniature of Brisbane by Rochard, dated 1819, may have been made then in celebration of his marriage. It shows him wearing a red and black military uniform, with the insignia of a Knight Commander of the Order of the Bath, the Peninsular Gold Cross and bar pinned to his jacket. In 1821 Brisbane was, on the recommendation of the Duke of Wellington, appointed Governor of New South Wales, and was thus out of Scotland for four years, together with his wife and growing young family. While there, he built and equipped at his own expense the observatory at Parramatta, some fourteen miles outside Sydney, taking with him the major instruments from Brisbane Observatory, and a local man, James Dunlop (1793-1848), who helped him pack them and became one of his observatory assistants in New South Wales. They were joined on the long sea voyage out to Sydney by the man who became Brisbane’s chief astronomer at Parramatta, Carl Ludwig (or Charles) Rümker, a navigation teacher from Hamburg.

At Parramatta, Brisbane determined to map the stars of the Southern hemisphere, measure an arc of the meridian, and conduct experiments with a pendulum to determine variations of the Earth’s gravity, all at his own expense. Just how he failed is impossible to recount here, but it was bound up with his rather alarming military demeanour, his expectations of how the colonial administration should work, and the fact that he was a
very long way indeed from his lords and masters in Whitehall and surrounded by a largely uncongenial society. There had been only one other attempt to map the skies of the Southern hemisphere before – in 1750-51, by Lacaille, at the Cape of Good Hope. Plans were again being drawn up, this time in London, for a permanent, government-funded Observatory at the Cape: Brisbane regarded this as competition. The Cape’s first director, Fearon Fallows, was appointed in 1822: the observatory at Parramatta opened in May 1822, under Brisbane’s personal direction, with Charles Rümker as observer and James Dunlop as assistant. Although this enterprise was to end in recriminations and a singular lack of long-term success, within a month there came, as the Dictionary of Scientific Biography observes:

[the] rediscovery, in its predicted place (invisible from Europe), of Encke’s comet, thus establishing the existence of comets of short period and providing information on their spatial motions. Besides standard astronomical observations, the greatest effort at Paramatta was the cataloguing of 7,385 stars between 1822 and 1826, published as the Brisbane Catalogue in 1835.

But – as with Brisbane’s other observatories which today lie in ruins - only the pillar which once supported Edward Troughton’s equatorial instrument remains in the grounds of what is now known as Old Government House. Perhaps this monument is appropriate, as it turned out the instrumentation was insecurely mounted, and the Star Catalogue was eventually found to be unreliable.

Brisbane’s career as a colonial administrator was even less successful, and he was recalled home by the Colonial office in December 1825. The Brisbanes arrived back in Britain in 1826 after four years in Australia, and went to reside at Makerstoun, near Kelso. Lady Brisbane’s father Sir Henry Makdougall had died in 1825, and the following
year Brisbane and his wife legally adopted the unhyphenated surname ‘Makdougall Brisbane’. Sir Thomas, now in his fifties, designed and constructed a third astronomical observatory at his new home in the Borders; there, mainly planetary observations were made, in which he was personally involved until about 1847, by which time he was aged seventy-four. The astronomical observatory at Makerstoun was built to the east of the main house, on a ridge on the northern bank of the river Tweed. It was situated at latitude 55° 34’ 45” north, and longitude two degrees and 31 minutes west of Greenwich. The new instruments at Makerstoun included an equatorial by Troughton & Simms, costing over £600. There was also a 46-inch focus achromatic telescope mounted equatorially with a 3½-inch triple object glass, and a 4-foot transit instrument. In February 1827 James Dunlop left New South Wales, and on his return to Scotland again became employed by Brisbane. It appears that Dunlop and Brisbane ‘worked together more or less continuously for the next four years’, and ‘they also’, wrote John Service, Dunlop’s biographer, ‘travelled a good deal together on the continent of Europe, visiting various Observatories and other places of interest’. Brisbane, together with various colleagues, measured the altitude of several places in the locality, including the height of the Cheviot, and occasionally left markers such as the one on the doorstep of the astronomical observatory at Makerstoun, giving the height above sea-level (213 feet). In 1828, both Brisbane and Dunlop were awarded the Royal Astronomical Society’s gold medal for the work they had done at Parramatta and in 1831, Dunlop again went to New South Wales, making a series of magnetic observations on his voyage out.
The present Makerstoun House is built on an ancient site. In about 1125, a peel tower was built by Walter Corbet, parts of which survive in the current building. This was burnt down in 1545, during the so-called ‘Rough Wooing’, when Lord Hertford invaded Scotland in an attempt to persuade the Scots that the infant Queen Mary should marry Prince Edward Tudor of England. The house was rebuilt in 1590 by Thomas Macdowell. As early as 1373, Fergus Macdowell (or McDougall) received a charter from King Robert II for the barony of Malcarstona, which had belonged to his mother, Margaret Fraser. The estate remained in the Makdougall family until 1890, and a sundial incorporated into the building is marked ‘H.M.’ and ‘B.M.’ (for Henry and Barbara Makdougall) and is dated 1684. Henry Makdougall consulted William Adam, the celebrated architect, about re-modelling the house, and plans were drawn up between 1714 and 1721, and various alterations were made. In 1790, Henry Hay Makdougall made extensive modifications, which continued through the nineteenth century. Sir Thomas Brisbane installed the plumbing, and the first domestic lift.52

One small and empty dome of the astronomical observatory remains, restored in 1987, and is all that survives of the scientific buildings. At Makerstoun, almost as little remains generally of Brisbane’s scientific endeavours as at Largs. One height above sea-level marker on the door step of the astronomical dome has been mentioned already; there is a second on the south-east corner of the main house. There are two meridian markers to the south of the astronomical observatory, one on the north side of the River Tweed, a second on a prominent hill south of the river, named on Ordnance Survey maps as ‘The Law’. This second southern marker shows interesting similarities to the one now found to
the north of Brisbane Observatory, the one built into the dry-stane dyke. A search was made for the northern marker at Makerstoun, but it must be long-gone. Two other items survive with apparent associations with Brisbane. The first, at a cottage on the estate now named ‘Sundial Cottage’, is a brass horizontal sundial, apparently moved from its original location. The inscription reads: ‘187 FEET ABOVE SEA. / LAT. 55˚ 34΄ 40˝ / LON. 2. 31΄ 12˝ / or in time 10. 4. 8. / MAKERSTOUN / ADIE & SON. EDINBURGH’. These co-ordinates show that it must have been made for the north side of the drive at the main entrance to the north of the house. By the time of the 1858 Ordnance Survey map, it had been moved to the middle of the south side of the house, and subsequently to its present position. The second survival is also a brass horizontal sundial, this time in the churchyard of Makerstoun Church, built in 1808. This was also made by Adie & Son, and is inscribed: ‘Presented by Lieut. General / Sir Thos. Makdougall Brisbane Bart. / FOR THE PARISH CHURCH OF / MAKERSTOUN. 1841. / Latitude 55˚ 35΄ 26˝ / Longitude 2˚ 31΄ 44˝ / Or in time 10m 6s 7˝ / WEST OF GREENWICH / Elevation above the Sea, 321 feet.’

The records of more astronomical activity have survived from Makerstoun, Brisbane’s third observatory, than from his first at Brisbane Glen. As David Gavine has shown, these results were published by Brisbane, usually with one or other of his assistants, in either the Monthly Notices or the Memoirs of the Astronomical Society of London, and ranged from using the stars to pin-point geographical location to comet and asteroid observations.
Astronomy was not the only science undertaken by Brisbane at Makerstoun. As early as 1830, a personal letter from Brisbane addressed to the Royal Society of Edinburgh, and subsequently published, regretted the neglect of magnetic measurements in Britain. In 1828, the eminent European scientist Alexander von Humboldt (1769-1859) had built an iron-free observatory, and called for a world-wide network which could undertake simultaneous magnetic observations. In response, Imperial Russia set up a chain of observatories between St Petersburg and Peking, and other nations had subsequently followed this lead, with simultaneous observations beginning in 1834. The United Kingdom eventually joined the scheme, with geomagnetic observatories being arranged at Trinity College, Dublin from 1838, at the Royal Observatory, Greenwich from 1840, and privately at Makerstoun from 1841. (With the invention of photography and photographic recording in the early 1840s, the difficulty of pre-arranged ‘term-days’, with simultaneous observations being made at five-minute intervals, was rendered increasingly unnecessary.)

Brisbane demonstrated an early interest in geomagnetism when he arranged for James Dunlop, the astronomer at Makerstoun, to make a magnetic survey of Scotland between 1827 and 1829. His support of the international geomagnetic co-operation took the form of personally equipping and running a magnetic observatory at Makerstoun from 1841, the first north of the Border, and, indeed, the only magnetic observatory in Scotland until its closure in 1855 (fig. 4). It was built 140 feet due east of the astronomical observatory, at latitude 55° 34’ 45” north and longitude 2° 30’ 52” west. The magnetic observatory was 540 feet from and 80 feet above the River Tweed, built of
wood, rectangular, 40 feet by 20 feet, and held together with copper nails. The flat area of its impression can still be seen in the field. The instruments and system of observations were similar to those devised at Dublin by the professor of natural and experimental philosophy at Trinity College, Humphrey Lloyd. He had designed these in 1839 for the ensuing network of forty magnetic observatories throughout the British colonies, and part of this suite of instruments — the declination and bifilar magnetometers — was manufactured by the eminent Dublin instrument makers, Thomas & Howard Grubb. However, Grubbs were unable to produce the magnets, and the steel had to be sent to an expatriate Irish instrument maker in London, Edward M. Clarke, to be magnetised. The balance magnetometer was made by T.C. Robinson, and the standard barometer by John Newman, both specialist London instrument makers of these particular instruments. It is unclear what eventually became of the Makerstoun magnetic instruments, which appear to have gone to the government’s observatory at Kew after Brisbane’s death.

The first magnetic observer was a Mr E. Russell, who had studied the observing methods and use of instruments under Lloyd in Dublin; however, he left Makerstoun in April 1842. On term-days when observations were being made at frequent intervals at the same time as at other network observatories, Russell was assisted by three assistants. One was the young Patrick Adie of Edinburgh, who subsequently went on to become a respected London instrument maker with strong connections with Kew Observatory. He was also brother to Richard Adie, who designed the anemometer supplied by the family firm Adie & Son of Edinburgh. Adie & Son also supplied the thermometers. The new
observatory also made meteorological observations, and the rain-gauges were maintained by Mr Macgall, the head-gardener at Makerstoun.\textsuperscript{60}

After Russell’s departure, John Allan Broun (1817-79) took over the running of the magnetic observatory. Originally from Dumfriesshire, Broun’s enthusiasm for physical science led his professor, James David Forbes, to recommend him to Brisbane. After a short time spent at Greenwich training in the use of magnetic instrumentation, he took up his appointment ‘with a vigour’, writes Anita McConnell, ‘which quickly expanded the role and importance of Makerstoun in the worldwide network of magnetic observatories established in the 1840s. Magnetic and meteorological observations were made hourly (except on Sundays) until 1846, when the term set for concentrated observations expired, after which a limited series continued until 1855.’\textsuperscript{61} While at Makerstoun, Broun set up a small high-altitude station in the Cheviots, to compare magnetic readings at high and low altitudes. He left Makerstoun in 1849 and spent the winter in Edinburgh with his colleague John Welsh (1824-59), preparing the results for publication – and introducing new methods of calculation which subsequently became standard – in three volumes which were incorporated into the \textit{Transactions} of the Royal Society of Edinburgh. Broun was subsequently appointed director of the Maharajah of Travancore’s observatory at Trevandrum.\textsuperscript{62}

John Welsh originally came from Kirkcudbrightshire, and he had also caught the eye of J.D. Forbes while a student at the University of Edinburgh. He joined the Makerstoun team in December 1842 on Forbes’s recommendation, leaving in 1850 to become
assistant to Francis Ronalds, superintendent at Kew Observatory. Welsh became Ronalds’ successor at Kew that same year, and spent much of the rest of his life – he died in 1859 – working with magnetic instrumentation.63

Others who assisted with observing duties on Brisbane’s payroll included Alexander Hogg of Kelso, an ingenious mechanic, who began under Russell, was involved in the construction of the magnetic observatory and continued working at Makerstoun until the 1850s. From 1849 he made four magnetic and six meteorological observations daily, besides contributing a weekly meteorological table to the local newspaper, the Kelso Mail. He was helped firstly by Mr Dods the parish schoolmaster of Makerstoun, and after 1842 by Mr Chisholm, the teacher at Maxton parish school, who was in turn replaced by Patrick Adie.64 ‘The results obtained at this station’ states the Dictionary of Scientific Biography, ‘under the director John Allan Broun now constitute the most valuable fruits of Brisbane’s patronage of science’.65 The results were published at the joint expense of Brisbane and the Royal Society of Edinburgh in a series of their Transactions. For this work, Brisbane was awarded the Royal Society of Edinburgh’s Keith Medal in 1848.66

Brisbane had been personally active in scientific societies from the time of his enforced furlough of 1805-1812. He was elected a Fellow of the Royal Society of London in 1810 and of the Royal Society of Edinburgh in 1811.67 He became a member of the breakaway Astronomical Society of London (subsequently the Royal Astronomical Society), becoming its vice-president in 1827.68 He was elected a corresponding member
of the Institut de France, principally because of an incident during 1816, when he was in Paris as allied troops were threatening to destroy the Paris observatory and the buildings of the Institut. Brisbane ordered the troops to desist, to the immense gratitude of the French scientific community.\footnote{69} His first published paper was ‘A method of determining the Time with Accuracy, from a Series of Altitudes of the Sun …’, underlining a lifelong concern of his: local time and exact position. For the solar tables he used a ten-inch sextant by Troughton, divided on platina to 10 seconds of arc and numbered 1200, a technically superior and thus expensive item; the whereabouts of this instrument is currently unknown.\footnote{70} At the same time, he ‘busied himself in calculating tables for the reduction of weights and measures to those of France, and \textit{vice versa},’ and also a table of foreign linear measures comparative with those of Britain, and these tables so impressed the Duke of Wellington that he had them printed at the British Army’s headquarters in France for use by the army of occupation.\footnote{71}

While in Australia, he contributed a series of papers, together with his assistants, concerning astronomical, magnetic and meteorological observations made there, to Edinburgh and London scientific journals.\footnote{72} On his return to the United Kingdom, Brisbane became, if anything, more involved in the scientific life of the country. A return must be made to the troubled story of Edinburgh’s observatory, last examined above at the point when Brisbane was a student in the 1790s. In 1811 the Astronomical Institution of Edinburgh was founded by a group of private citizens, amongst whom was Brisbane, and its first president was John Playfair, who had moved from the chair of mathematics to that of natural philosophy (or physics) in 1805. The Astronomical Institution applied to
Edinburgh Town Council to rent the Gothic Tower to serve as their popular observatory, and also to lease neighbouring ground on Calton Hill to build a new ‘scientific’ establishment there. The design for this new building, a cruciform Doric structure, with a prominent dome for the telescope in the centre, was proposed by William Playfair, nephew of Professor John Playfair. The foundation stone was laid in 1818, and it took six years to build. Once again, the publicly raised funds were absorbed by the expensive building work; however, the government responded to an appeal from the Institution, and produced a grant of £2000 towards equipment. These included an 8-foot transit circle by Repsold of Hamburg; a 6-foot mural circle and a large alt-azimuth instrument by Troughton & Simms of London, as well as a small Troughton instrument bequeathed by Playfair to the observatory, which became known as ‘The Royal Observatory’ after the visit of King George IV in 1822.\(^7\)

In time, the Astronomical Institution itself became moribund, and by the late 1820s its buildings began to fall into decay. After Robert Blair’s death in 1828, it took a Royal Commission – and more time – before the vacant chair of practical astronomy was filled by the astronomer Thomas Henderson (1798-1844) in 1834, back from a stint at the Cape of Good Hope. By this date, Brisbane was president of the Astronomical Institution, and he helped to persuade the government to assist with converting the Institution’s observatory into a public establishment, with a salaried principal observer who had an assistant to support him. This observatory was also to be made over to the University of Edinburgh for its own use. The principal observer became Regius Professor of Astronomy, and Astronomer Royal for Scotland. The post, as Herman Brück has
emphasised, was no longer to be a sinecure – and at least one unsuccessful candidate, Thomas Carlyle, who had in fact left Edinburgh without a degree, felt peeved about this for the rest of his life. Brisbane was helping behind the scenes, with his influence in political and scientific circles, towards the professionalisation of British science.74

By 1834, Brisbane was also the fourth President of the Royal Society of Edinburgh, having been elected ‘unanimously’ in succession to the great novelist Sir Walter Scott two years earlier.75 A portrait of him made at the age of seventy-four (and thus painted in 1847) is the official portrait by John Watson-Gordon, and it hangs in the Royal Society of Edinburgh’s rooms – a copy is in the hands of descendants, and an engraving of it is to be found in his Reminiscences.76 It can be argued that in the role of benevolent patron of scientific endeavour, Brisbane had found his metier, after a full and vigorous life in the station to which he had been born. If he had not been born with the proverbial silver spoon in his mouth, he had at least seized all the opportunities made available to him, and then went on to provide opportunities for others. This was shown particularly by his endowment of the Makdougall Brisbane Prize to the Royal Society of Edinburgh in 1855. This continues to be awarded biennially, with preference for a person aged below forty years of age working in Scotland, for distinction in the promotion of scientific research, and it is presented sequentially in the physical, engineering and biological sciences. It was first awarded in 1859 to Sir Roderick Murchison for his contributions to the geology of Scotland.77 Brisbane also awarded a fund, by 1858, for a similar biennial Brisbane prize to the Royal Scottish Society of Arts valued at 10 sovereigns, for ‘Authors or Inventors of Communications of Merit, which shall be approved of by the Society, or its
Committee and judged by them deserving of such distinction’. He had been a Fellow of this society since 1826. At a more local level, Brisbane was a founder member and first president of the Tweedside Physical and Antiquarian Society, established to promote the study of natural history and antiquities of the district, with a museum set up in Kelso in 1838.

Plainly interested in the material culture, geology and zoology of the Antipodes, in the spirit of Enlightenment Brisbane presented to the museum of the Royal Society of Edinburgh – now disbanded – a number of items from New South Wales and New Zealand. He also gave important material to the Museum of the University of Edinburgh, and for this he was awarded an honorary degree in 1823. In due course these collections were transferred to what has subsequently become the National Museums of Scotland.

Brisbane also presented the Royal Society of Edinburgh with a standard yard and metre engraved on steel, in 1834, with an inscription recording his gift (fig. 5). The metre had been laid out by the Parisian mechanician, Nicolas Fortin, and the yard by Troughton & Simms of London, both with great precision. This was presented at the height of a period of intense controversy (neither the first nor the last) over whether Britain should go metric or not. That same year, 1834, the Houses of Parliament at Westminster caught fire, incinerating the ‘Exchequer’ yard, so that the whole subject of physical standards was reopened for scientific discussion. Francis Baily of the Royal

Another area in which Brisbane became involved as a scientific patron was in the standardisation of time. By the mid-nineteenth century, the arrival of railways had meant that local time according to the sun was no longer practical, and that moves towards setting up a national standard time zone were already under way. Brisbane had already shown interest in this, in pin-pointing the exact longitude, latitude and height above sea level of each of his private observatories. In 1839, he also participated in experiments with Edward John Dent the horologist, Robert Bryson the Edinburgh clockmaker, and Thomas Henderson, first Astronomer Royal for Scotland, to ascertain the precise longitudes of Edinburgh and Makerstoun, using chronometers. In due course, finding the longitude at selected places was achieved by using electric telegraph, as when the Royal Observatory on Calton Hill was connected with Greenwich. As a continuation of this, at the 1855 Glasgow meeting of the British Association for the Advancement of Science, further experiments and demonstrations were undertaken, when an electric current transmitted from the observatory in Edinburgh caused a model time ball to drop daily in the Mechanical Section, meeting at Glasgow University, to the admiration of onlookers. This time-ball signal had been advocated by the second Astronomer Royal for Scotland, Charles Piazzi Smyth (1819-1900), who had lobbied for its erection since his arrival in Edinburgh in 1846. It was a visual signal, designed to improve the safety of mariners at sea, and had been instigated at Greenwich as early as 1833, then imitated elsewhere. However, as Smyth reported to his Board of Visitors in 1858:
a weakness which had long existed in the Observatory caused, by the defective condition of the Transit Clock [by Reid & Auld of Edinburgh], has been, I am happy to say, most efficiently rectified by the munificent conduct of Sir T. Makdougall Brisbane, who allowed me to order in his name, from Dent of London, the best Astronomical clock that could be made. It has now been erected here rather more than two years, and besides several peculiarities to ensure evenness of rate, has some electric adaptations which greatly extend its usefulness, and were employed with good effect in the recent longitude experiments.  

The setting-up of the time-ball on the top of the Nelson Monument (which resembles an inverted telescope) took place in 1855, and to this day it is raised at 12.55 and dropped at 1 o’clock. In the earliest trials, the sidereal clock by Dent, paid for by Brisbane, was used as the time standard. An electric circuit ran from the clock to the time ball, releasing its ¾-ton weight, and gravity allowed it to slide the ten feet or so to the bottom of the pole. A few years later – but using another modified astronomical clock – it was deemed necessary to have a time-signal, and from 1862, simultaneously with the descent of the time-ball on Calton Hill, Edinburgh’s famous 1 o’clock gun goes off from the Half-Moon Battery on the Castle.  

Brisbane died on 27 January 1860, at Brisbane House, in the same room in which he had been born eighty-seven years before. His widow survived him by a mere two years, and subsequently the estates at Brisbane and Makerstoun were inherited by cousins on either side of the family. As for the equipment in his three Scottish observatories, as recounted by Piazzi Smyth in April 1860:

With a most praiseworthy desire to supply the chief deficiency in the armament of this Observatory [at Edinburgh], the late Sir Thomas M. Brisbane had indicated his wish to present it, at his death, with his best equatorial: and shortly after his lamented decease, the offer, accompanied by certain conditions, was made by
Lady Makdougall Brisbane. The Board [of Visitors] accordingly held a pro re natâ meeting on 26 March 1860; but after anxious discussion, and after bearing full testimony to the eminent liberality of the deceased, they decided that the instrument was too small for the purposes of the Observatory: and the conditions attached to it, not such as they could recommend to Her Majesty’s Government to comply with. These conditions were, indeed, also unfortunately opposed, to precisely that most useful and powerful ‘peripatetic’ manner of employing any instrument, which has long been advocated as peculiarly suited to our position…

Thus the equatorial instrument by Troughton & Simms – described as the star item in the sale of ‘the entire Apparatus contained in the late Sir Thomas Brisbane’s Observatories’ – was sold at auction with the other 113 items, on 4 April 1860.

What was Brisbane’s lasting contribution to science? He, of course, believed that it was the RAS gold-medal winning Catalogue of 7385 stars, chiefly in the Southern hemisphere..., which can be seen in one of his portraits, under his hand. The portrait is by Robert Frain, showing Brisbane at the age of fifty-seven, made in about 1830, at the point when the Catalogue was recognised in this light. But, as James Dunlop’s biographer put it in 1890, ‘Sir Thomas Brisbane had bought large but essentially faulty instruments without knowing it, and found this out when it was too late to remedy the evil’. This is perhaps an unfair assessment of the problem, exonerating the astronomer practitioners and placing the blame upon the maker of the instruments, the by-now long-dead Edward Troughton. In fact, even the finest instruments, bought and set up as new in 1808, used daily until packed up in 1821, sent across Scotland and shipped from Leith to London, London to Rio, arriving at Sydney late in the year, taken either by river or on horseback to Parramatta, and set up (not by Troughton’s expert workmen), then intensively used thereafter: how could these be expected to produce as exact results as they first did in
1808? The quotation in the *Dictionary of Scientific Biography* has already been cited above, where it was claimed that ‘The results obtained at [Makerstoun Magnetic Observatory] under the director John Allan Broun now constitute the most valuable fruits of Brisbane’s patronage of science’, and recent work in the history of geomagnetism confirms this. However, there is a case to be made that his indirect patronage and influence, or acting behind the scenes - for instance, where the Royal Observatory at Edinburgh was put on to a secure professional footing; providing encouragement for science through the award of prizes; his generosity in supplying instrumentation where he thought it would be essential, but otherwise unobtainable; even the suggestion that he ensured that most mariners should have at least some sort of basic navigation skill – these all helped to turn British science away from its essentially amateur nature into something more professional. Surely this should be the memorial of this undeservedly forgotten soldier-astronomer.
Appendix: Collections at the National Museums of Scotland presented by Thomas Brisbane

Department of History and Applied Art

List of ethnographic material donated by Sir Thomas Brisbane
Chantal Knowles

These items have all come from the University of Edinburgh. Thirty-six records have “UC” identifiers; “A.1968.407” was probably from Sir Thomas Brisbane and has a previous X-register number “X.594”.

<table>
<thead>
<tr>
<th>A.UC.426</th>
<th>Head rest or pounding stool: Polynesian, from the Austral Islands</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.UC.427</td>
<td>Stool or papahia of tamanu wood, used in pounding breadfruit with the penu or stone pestle: Polynesian, from the Austral Islands</td>
</tr>
<tr>
<td>A.UC.451</td>
<td>Paddle of light wood, with an ovate blade and a round head ornamented with eight conjoined, carved, grotesque human figures on the solid butt: Polynesian, from the Hervey Islands</td>
</tr>
<tr>
<td>A.UC.453</td>
<td>Large paddle of light wood, with an ovate blade and a round head carved with eight conjoined, grotesque human figures: Polynesian, from the Hervey Islands</td>
</tr>
<tr>
<td>A.UC.454</td>
<td>Paddle of light wood, with an ovate blade, an oval handle and an oblong head carved with ten conjoined, grotesque human figures: Polynesian, from the Cook Islands</td>
</tr>
<tr>
<td>A.UC.456</td>
<td>Paddle of light wood, with an ovate blade, a round shaft and a round head ornamented with carved, grotesque human figures: Polynesian, from the Hervey Islands</td>
</tr>
<tr>
<td>A.UC.459</td>
<td>Paddle of light wood, with an ovate blade, a round shaft and a round head ornamented with ten conjoined, carved, grotesque human figures: Polynesian, from the Hervey Islands</td>
</tr>
<tr>
<td>A.UC.461</td>
<td>Paddle of light wood, with an ovate blade, partly oval shaft and a round head</td>
</tr>
</tbody>
</table>
ornamented with eight conjoined, carved, grotesque human figures: Polynesian, from the Cook Islands

<table>
<thead>
<tr>
<th>A.UC.463</th>
<th>Paddle of light wood, with an ovate blade, round handle and a round head ornamented with eight conjoined, carved, grotesque human figures: Polynesian, from the Cook Islands</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.UC.464</td>
<td>Paddle of light wood, with a round shaft, an oblate blade and a round head with concentric circles: Polynesian, from the Hervey Islands</td>
</tr>
<tr>
<td>A.UC.503</td>
<td>Papa-huia or box for holding feathers: New Zealand</td>
</tr>
<tr>
<td>A.UC.503 A</td>
<td>Papa-huia or box for holding feathers: New Zealand</td>
</tr>
<tr>
<td>A.UC.518</td>
<td>Wooden hani or spear or staff of office, carved at one end with a grotesque human face with a protruding tongue: New Zealand</td>
</tr>
<tr>
<td>A.UC.559</td>
<td>Paddle club of partizan form, made of dark brown wood, with the surface of the blade carved in compartments: Polynesian, from Fiji</td>
</tr>
<tr>
<td>A.UC.581.1</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
</tr>
<tr>
<td>A.UC.581.2</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
</tr>
<tr>
<td>A.UC.581.3</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
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<tr>
<td>A.UC.581.4</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
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<tr>
<td>A.UC.581.5</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
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<tr>
<td>A.UC.581.6</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
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<td>A.UC.581.7</td>
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<tr>
<td>A.UC.581.8</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
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<tr>
<td>A.UC.581.9</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
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<tr>
<td>A.UC.581.10</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
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<tr>
<td>A.UC.581.11</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
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<tr>
<td>A.UC.581.12</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
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<tr>
<td>A.UC.581.13</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
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<tr>
<td>A.UC.581.14</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
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<tr>
<td>A.UC.581.15</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
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<tr>
<td>A.UC.581.16</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
</tr>
<tr>
<td>A.UC.581.17</td>
<td>Arrow with a reed shaft with notched and hatched markings: Melanesian, Vanuatu (?)</td>
</tr>
<tr>
<td>A.UC.659</td>
<td>Wooden parrying shield with pointed ends and linear ornamentation on the two front faces: Australian, unlocalised</td>
</tr>
<tr>
<td>A.UC.673</td>
<td>Straight wooden club with a mushroom head and roughened grip: Australian, unlocalised</td>
</tr>
<tr>
<td>A.UC.768</td>
<td>Spear of polished brown wood, with six whorls of four barbs on the head, each cut out of solid wood: Possibly Polynesian</td>
</tr>
<tr>
<td>A.UC.769</td>
<td></td>
</tr>
</tbody>
</table>
Fishing spear of polished dark wood, with four points neatly fastened to the shaft with fine sinnet: Polynesian, from Tahiti, Society Islands

A.UC.823
Spear with a wooden shaft and a head of dark wood with eight barbs, head missing: Australian, unlocalised

A.1968.407
Spear of dark wood carved with barbs: Polynesian, from the Cook Islands

Brisbane’s ethnological collections are discussed in Dale Idiens, *Pacific Art in the Royal Scottish Museum* (Edinburgh, 1982), 5; item UC 426 is illustrated on p.27.

**Department of Geology and Zoology**

Robert McGowan

While still Governor of New South Wales, Brisbane also sent back to Scotland to the University of Edinburgh’s natural history museum ‘33 New Holland birds from Governor Brisbane’ in 1823; ‘67 birds’ in 1824; a further ‘collection of birds from New South Wales’ in 1824, and the following year, ‘a collection of birds from Australia’, number unspecified. In 1836, ‘74 birds Africa’ were accessioned through his influence. The 1823 consignment contained specimens of the Paradise Riflebird, from which as the type specimen, a male was figured and described as *Epimachus brisbanii*, by James Wilson in his *Illustrations of Zoology being representations of new, rare or remarkable subjects of the animal kingdom …* published in Edinburgh in 1831. The female, also figured by Wilson, has not survived. Both examples were shot at Port Macquarie. Wilson’s name is a synonym of *Ptiloris paradiseus* Swainson, who described this species six years earlier in 1825.

1823.58 33 New Holland Birds from Governor Brisbane
1824.78 67 birds
1824.82 Collection of birds from NSW
1825.4 Collection of birds from Australia
1836.6 74 birds Africa

Brisbane also donated to the University Museum some geological specimens:

G1822/3.54 Piece of gypsum, Pebble Island
G1824/25.64 Collection of rocks from New South Wales
G1825/26.59 (Magnificent) amethyst from Brazil
G1826/27.5 Beautiful group of crystals of amethyst from Minas Geraes

For these gifts he was awarded an honorary degree by the University of Edinburgh in 1823 (quoted by Carol Liston, p.463, ref. 38.)


**Department of Social and Technological History**

A.D. Morrison-Low

Material in this department has not come directly from Brisbane, but as discussed in the main paper has been acquired by NMS through various routes.


Transferred from the Royal Observatory, Edinburgh, per professor H.A. Brück, Astronomer Royal for Scotland.

T.1956.87 Box sextant by Adie, Edinburgh, in red leather case. The instrument is inscribed: ‘THIS SEXTANT / Was used during the Peninsular War / By / General Sir Thomas Makdougall Brisbane Bart. / with which he kept the time of / THE ARMY’.

Purchased.


Presented by the Royal Society of Edinburgh.
Manuscript notebook / letter. Manuscript notebook recording comparisons between the Royal Society of Edinburgh Brisbane Metre and Royal Astronomical Society 5 foot scale, undertaken in July 1834 by Messrs. Baily, Henderson and Murphy, together with a letter from Lieutenant Murphy to Thomas Henderson, July 1834 relating to thermometer corrections; and from C. Piazzi Smyth to J.D. Forbes, June 1846, passing the mss. to the Royal Society of Edinburgh.

Purchase; now housed in NMS Library.

Thanks to the British Academy and the Australian Science History Club for helping me with the costs of personally delivering this lecture in Sydney. Grateful acknowledgements to those who helped me with the research: Dr Anita McConnell, Dr Allen Simpson, Dr David Gavine, Dr Stephen Lloyd, Mrs Valerie Campbell of Brisbane Mains, Lady Mary Biddulph of Makerstoun. Also to colleagues who answered difficult questions about provenance: Bob McGowan, Chantal Knowles, Andrew Martin, Dr Suzanne Miller, Brian Jackson and Geoff Swinney, and the NMS Photographic Studio for their photography.

A version of this lecture was awarded the Makdougall Brisbane Medal of the Royal Scottish Society of Arts on 19 January 2004.

References

1 For Brisbane’s career as a soldier, see Thomas Makdougall Brisbane, Reminiscences of General Sir Thomas Makdougall Brisbane of Brisbane and Makerstoun, Bart. ... (Edinburgh, 1860); W. Rogerson, Historical Records of the Fifty-third (Shropshire) Regiment, 1755-1889 (London and Devonport, 1891), 21, 23; R. Cannon (ed.), Historical Records of the Thirty-fourth, or the Cumberland Regiment of Foot, 1702-1844 (London, 1844), 93-100.


3 B. Burke, A Genealogical and Heraldic Dictionary of the Peerage and Baronetage of the British Empire (London, 1863), 123.

4 Brisbane, op. cit. (1), 5.

Mary Brisbane died at 6 Sydney Place, Bathwick (then in Somerset) on 31 March 1855. She was buried at St. Mary, Bathwick, on 7 April ‘aged 83’ (parish register). These brief details are also in *Gentlemen’s Magazine*, new series 43 (1855), 549. Her Will, dated 1832, was proved on 16 June 1855, The National Archives (TNA) PROB 11/2213, sig 479. Apart from gifts of clothing to her servants, everything, including properties in England, was left to her brother, Sir Thomas. Death Duty registers value her estate at £8000: TNA IR 27/312, register 3, No 726.

British Library, Oriental and India Office Collections (OIOC) J/1/16 f.254, letter dated Largs 18 November 1796, signed by the minister, confirming Michael Brisbane’s date of birth as 10 May 1777, and his paternity; OIOC J/1/16 f.255, letter dated Kensington 7 January 1796, signed by Robert Thomson, Kensington, confirming that he underwent the usual course of ‘arithmetical and merchants’ accounts; OIOC J/1.16 f.252, applies when already in Bombay to enter the East India Company service as a ‘writer’; OIOC F/4/1012 p.353, appointed 15 February 1795; OIOC E/4/1013 p.357, his seniority relative to other recruits entering that year; *East India Company Directory*, 1803: listed among the writers as an assistant in the political department. In his Will OIOC L/AG/34/29/343 f.14 r. v. Michael left one-third of his possessions to his father and mother, one third to his brother Thomas Brisbane, and one third to his sister Mary. He intended that on the death of the first two parties named, their share should go towards the payment on the estate of Brisbane. Likewise, if Mary did not marry, her share should go towards this debt. Signed and witnessed, Bombay, 3 April 1802; proved Bombay, 1 March 1803. Searched, without success: burials in Bombay, Madras and Bengal provinces, and monumental inscriptions, Bombay presidency.


Liston, *op. cit.* (5), p.17; nor is his name to be found as a graduate in *A Catalogue of the Graduates in the Faculties of Arts, Divinity, and Law, of the University of Edinburgh since its Foundation* (Edinburgh, 1858).


15 *Ibid.*, 1-2; Bryson, *op. cit.* (8), 589.

16 Bryson, *op. cit.* (8), 589. Christopher Hibbert, *Wellington: a Personal History* (London, 1997), 23, explains that ‘in 1798, Richard Wesley, Earl of Mornington was about to be created Marquess Wellesley of Norrington in the peerage of Ireland. The Marquess insisted upon that spelling of the family name which his brother Arthur now adopted.’ Hibbert also refers to Iris Butler, *The Eldest Brother: the Marquess Wellesley, the Duke of Wellington’s Eldest Brother* (London, 1981), 25, who states that the name was originally spelled Wellesley, but that that the family began to spell the name Wesley during the seventeenth century.

17 Brisbane, *op. cit.* (1), 7-13; Bryson, *op. cit.* (8), 589-90.

18 Brisbane, *op. cit.* (1), 13-14; Bryson, *op. cit.* (8), 591.

19 Brisbane, *op. cit.* (1), 14-22; Bryson, *op. cit.* (8), 592-3.

20 Brisbane, *op. cit.* (1), 66-67; Bryson, *op. cit.* (8), 593.


23 Bryden, *op. cit.* (11); Brück, *op. cit.* (11), 2-14.


27 Mitchell Library, Glasgow: Brisbane Papers, Box 23, A.1: invoice from Edward Troughton to Thomas Brisbane, dated 27 May 1810.


29 For the Brisbane mural circle, see McConnell, *op. cit.* (26), 17-18; also article ‘Circle’ in Brewster, *op. cit.* (25), VI, 485: ‘… a very beautiful two foot circle, in the possession likewise of General Brisbane, and which was actually the model of the six feet mural circle erected last summer [May 1812] at Greenwich’.

30 Gavine, *op. cit.* (24), 277-9. The Garnet Hill Observatory regulator clock by William Hardy of London is now in the collections of the National Museums of Scotland, NMS.T. 1988.96. This is scratched on the reverse, presumably by Hardy himself: ‘This regulator was made for the / Glasgow observatory but from a disposition / to shuffle off the agreement I had it for three years / by me when the earl of Dysart bought it of Me / from a liberal disposition to marking that the treatment / I received from the Glasgow people was not right / Wm Hardy June 1817.’ That example belonging to Brisbane is now at Sydney Observatory.

31 Mitchell Library Glasgow, invoice, *op. cit.* (27).

32 This translates as: ‘Brisbane gathered together information for the science of astronomy’. My thanks to Dr Anita McConnell.

33 Gavine, *op. cit.* (24), 278.

36 The heart-rending story of the Brisbane children is told in Brisbane, op. cit. (1), 37-42; Lady Brisbane’s death on 2 September 1862 is recorded in Burke, op. cit. (3); the inheritance is discussed in Carol Liston, ‘Governor Sir Thomas Brisbane 1773-1860 – a background …’, Descent: the Journal of the Society of Australian Genealogists, 11 (1981), 4-16.

37 The estate had originally belonged to the Kelso family since at least 1050, and they had built a house, Kelsoland Mansion, in 1636. The Brisbanes acquired the territory in the mid-seventeenth century, renaming the house Brisbane House, and subsequently adding two wings. The house has been described as being ‘designed in the plain style introduced in the seventeenth-century, being entirely devoid of towers, turrets and other ornamental features’: David MacGibbon and Thomas Ross, The Castellated and Domestic Architecture of Scotland from the Twelfth to the Eighteenth Centuries, 5 vols. (Edinburgh, 1887-92), IV, 370-1; also described with contemporary photographs of the interior in George Eyre-Todd, ‘Brisbane House. The seat of Mr Charles T. Brisbane of that Ilk’, Scottish Field, 21, no. 126 (1913), 343-5. As part of the entail set up by his great-uncle, the estate passed on Sir Thomas’s death to his cousin’s grandson, Major Charles Bailey Brisbane, and in due course to his son Charles Thomas Brisbane. He died at the start of the First World War with no direct male heirs, and his sister’s daughter, Florence St Aubyn, inherited on condition she adopted the surname Brisbane, which she did. She died in 1932, aged seventy-three, and the estate passed to Major Charles Bailey Brisbane’s sister’s great-grand-daughter, Marion Monro. She tried very hard to keep the house habitable, but there was a world-wide recession and she was obliged to sell the estate in 1938. It was again sold during the Second World War, in two parts to two local farmers. Troops were stationed in the estate, and as Brisbane House was by now dangerously derelict, it was used as target practice: Much of this information comes from Valerie J. Campbell, ‘The Brisbane Story’, Largs and North Ayrshire Family Historical Society Journal (August 2002-December 2003), in press.


39 Brisbane, op. cit. (1), 22-30; Bryson, op. cit. (8), 593-7.

40 Brisbane, op. cit. (1), 34-5.

41 NMS.T.1956.87.

This is a theodolite (NMS.T.1999.392), by Troughton & Simms, London, c.1825, and was purportedly that used by James David Forbes (1809-68), in his pioneering survey of the glaciers of the French Alps during the 1840s, and probably misidentified by his son long after the event. It has a plaque on it which reads: ‘Theodolite used by Prof. J.D. Forbes in all his glacier observations and specially designed for this work. Presented by his son Edmund B. Forbes, Esq., M.I.C.E. 16th Sept. 1912 [to the Natural Philosophy Museum of the University of Edinburgh]’, and according to Frank F. Cunningham, James David Forbes Pioneer Scottish Glaciologist (Edinburgh, 1990), 16, this had been bought for the young student by his father as a reward for winning the Moral Philosophy prize. It is discussed further on p. 117, and is illustrated as the frontispiece to Forbes’s own book, Travels through the Alps of Savoy... (Edinburgh, 1843), and from both these sources it is clear that it is not the theodolite with the plaque.

Bryson, op. cit. (8), 598.


Brisbane, op. cit. (1), 67-68; Bryson, op. cit. (8), 598-9. For Dunlop, see J. Service, Thir Notandums, being the Literary Recreations of Laird Canticarl of Mongryn (of Kittle Memory) ... (Edinburgh, 1890), 129-222. For Rümker, see Liston, op. cit. (5) passim, and Saunders, op. cit. (34), passim.

Burke, op. cit. (3).

Brisbane, op. cit. (1), 68; Gavine, op. cit. (24), 279-80.

Service, op. cit. (46), 144-46.

T. Makdougall Brisbane and William Galbraith, ‘Barometric measurement of the height of Cheviot’, Edinburgh New Philosophical Journal, 14 (1833), 69-76; the ‘height of cistern of barometer above the mean level of the sea at Berwick’ for Makerston astronomical observatory is given as 213 feet in Brisbane, op. cit. (1), 68.


House down. The then owner rebuilt the house according to the Adam plans of 1714-21, winning in 1975 an award for exceptional merit in European Architectural Heritage Year: personal communication from Lady Mary Biddulph.


54 Gavine, *op. cit.* (24), 279-80.


57 Dunlop, *op. cit.* (55), 1-5, results, 6-63.

58 Brisbane, *op. cit.* (1), 68-70; Bryson, *op. cit.* (3), 604.

59 The description of the magnetic observatory at Makerstoun, its instruments, and the most significant results obtained by the observer, John Allan Broun, and his staff, were published at the joint expense of Brisbane and the Royal Society of Edinburgh, and appeared in the *Transactions of the Royal Society of Edinburgh*, 17 (1845) – 19 (1850), with a supplement to 22 (1861). Information about Thomas and Howard Grubb can be found in J.E. Burnett and A.D. Morrison-Low, *Vulgar and Mechanick*: *The Scientific Instrument Trade in Ireland, 1650-1921* (Dublin and Edinburgh, 1989), 89-117; the fate of the Makerstoun magnetic instruments is mentioned by Gavine, *op. cit.* (24), 282.

60 John A. Broun, ‘Introduction: Observations in Magnetism and meteorology made at Makerstoun in Scotland in the Observatory of General Sir T.M. Brisbane, Bart., 1841 and 1842’, *Transactions of the Royal Society of Edinburgh*, 17 (1845), x-xi; for Patrick Adie, see Clarke et al., *op. cit.* (42), 75-84.


64 Broun, op. cit. (60); Brisbane, op. cit. (1), 69-70.


66 Brisbane, op. cit. (1), 71; Bryson, op. cit. (8), 98-100.

67 Brisbane, op. cit. (1), 70.

68 McKenna, op. cit. (65).

69 Brisbane, op. cit. (1), 61.


71 Brisbane, op. cit. (1), 33; Bryson, op. cit. (8), 597.


73 Brück, *op. cit.* (11), 7-11.


75 Brisbane, *op. cit.* (1), 61; Bryson, *op. cit.* (8), 604. Steven Shapin comments that land-ownership was a necessary condition for the president of the Royal Society of Edinburgh in 1812, although through geology it had found its ‘intellectual vocation’. He goes on to state that ‘succeeding Scott as President in 1832 was Sir Thomas Makedougall Brisbane, Bart (1773-1860) – military man, diplomat, astronomer and Ayrshire landowner. But it was not until 1868 that an academic – Sir David Brewster – became its President that a man who had been professionally engaged in the teaching of science – Sir Robert Christison – occupied the Presidency’: Steven Arthur Shapin, ‘The Royal Society of Edinburgh: A Study of the Social Context of Hanoverian Science’, unpublished Ph.D. thesis, University of Pennsylvania, 1971, pp217-8.

76 Brisbane, *op. cit.* (1), opposite p.65.


81 Quoted by Liston, *op. cit.* (5), 463, note 38.

82 See appendix to this paper for a discussion of this material.

83 Now NMS.T.1982.213; see Waterston, *op. cit.* (80), 194. The item has an accompanying manuscript from the Royal Society of Edinburgh, which is now NMS.T.1989.51, accessible through the NMS Library. The background to metrification in

84 The context to this is discussed in Derek Howse, *Greenwich Time and the Discovery of the Longitude* (Oxford, 1980).


88 The Dent clock presented by Brisbane to the Royal Observatory, Edinburgh, was in turn transferred (from one government department to another) to the national museum: NMS.T.1961.36.

89 Bryson, *op. cit.* (8), 605.


91 Cambridge University Library, Royal Greenwich Observatory Archives, RGO 6/170 Section 38, 265: ‘Catalogue of the valuable Astronomical and Philosophical Instruments of the late general Sir Thos. Makedougall Brisbane, Bart., ... which will be sold by Auction by Mr T. Nisbet, in their great room, No 11 Hanover Street, Edinburgh. On Wednesday, April 4, 1860 at One o’clock.’

92 Frontispiece, in Brisbane, *op. cit.* (1).


94 McKenna, *op. cit.* (65); McConnell, *op. cit.* (61).