Abstract. Both astronomy and philately are multi-faceted disciplines and their interaction makes a fascinating study. In attempting to demonstrate the breadth and complexity of philately, the author describes her own collection which has been in process of formation for some seventy years. Over this time, awareness of the rich variety of collectables has grown and these will be gradually introduced throughout the paper. As with other forms of human activity, the hobby is subject to fashion and some of the resultant developments are described.

1. Introduction

With a large collection formed over such a long period, some organisation has been essential. As a rough-sort, three main subdivisions have been adopted – although there is a certain amount of overspill between them. The three sections consist of: the sky objects and phenomena which have been there to be noticed by mankind from earliest times right up to the present; the lives and work of astronomers, both unnamed and famous; the tools of astronomy from a simple pole stuck in the ground to the giant arrays of modern radio telescopes. It is a breathtaking span but is dealt with under the simple titles of The Observables, The Observers and The Observations. Because philately consists of much more than just stamps, other related items will be introduced and described. As this happens, the appropriate terminology will appear in italics. All illustrations are of items in the personal collection of the author. Stamp designs of 70 years and over are considered to be in the public domain. In the case of more recent designs, permission to reproduce in this paper has been applied for and granted.
2. The Observables

The world’s first postage stamp was the famous Penny Black issued by Great Britain on 1840 May 06 (Easton 1946). The design consisted of a finely engraved head of Queen Victoria against a background created by engine-turning so as to make forgery nigh impossible. The lower corners of each stamp were occupied by a letter of the alphabet uniquely indicating the position of individual stamps on the sheet. The upper corners were filled with what were popularly known as “stars”. In actual fact, this “star” is based on the “croix pattée” element of the King George IV state diadem which the Queen is wearing. Later, the design of the penny stamps had letters in all four corners. However, the earlier “Penny Stars” may, just possibly, count as a candidate for the first astronomical design – even although a sobriquet.

The first true astronomical object to appear as a stamp design was Crux Australis on stamps of Brazil and, in stylised form, on stamps from New South Wales, Victoria and similar southern hemisphere territories.

Figure 1. Left to right: Penny Black with “stars” in the upper corners, Brazil 1887, New South Wales 1897 and Victoria from 1890.

Other early issues featuring astronomical objects would include the first stamps of Uruguay in a design known as the “Montevideo Sun”. Also, turning the stamps over to look at the paper on which they were printed, astronomical watermarks may be found. Suns and stars were popular devices and a particularly attractive watermark on the 1866 issues of Egypt had an appropriate design of a pyramid and star (see Fig. 2).

Apart from such rather limited, stylised or armorial representations of sun, stars and constellations, many years had to pass before anything more exciting came along. In 1929 Uruguay introduced a long set of air mail stamps depicting a winged horse set against a background of the constellation Pegasus as viewed from the southern hemisphere.

A daring transatlantic mass formation flight from Rome to Rio was planned to take place in 1930. Devised by the Air Minister, General Italo Balbo, a squadron of twelve Savoia-Marchetti S55 seaplanes took off on Dec 17 (Dehn 1981). Prior to the flight, Balbo had ordered his volunteer pilots to
Figure 2. The Montevideo “Sun” of 1858, Sun watermark of Argentina 1892, Crux Australis on a watermark of Brazil and the Pyramid and Star watermark on Egyptian stamps of 1866.

attend the Planetarium Romanum where they were to become familiarised with the southern constellations as an aid to navigation (Chant 1935). A commemorative stamp was issued in time to be used on envelopes carried on the flight but not generally available to the public until June 1931. This stamp depicted Crux Australis with six stars and some of the aircraft. A well known constant variety occurs on stamp no. 22 of each sheet of 50 stamps; an extra “star” appears to the left of the constellation.

Three years later another mass formation flight took place – this time from Rome to Chicago. For this flight, the Italian colony of Cyrenaica issued a pair of beautiful stamps showing Ursa Minor and the asterism of The Plough or Big Dipper in Ursa Major along with a representation of the squadron. The ITL 44.75 value is shown below.

Figure 3. Left to right: The Italian stamp issued for the 1930 Rome to Rio flight; enlargement showing the variety “Extra Star”; ITL 44.75 value of the pair issued for the Rome to Chicago flight. The ITL 19.75 value is in the same design but coloured deep blue and green.

Still considering just the designs of stamps, a striking set of six square stamps was issued by Mexico in 1942 on the occasion of the inauguration of the Tonanzintla Astrophysical Observatory. These are favourites with collectors and many people were familiar with such images as a total solar eclipse, the Whirlpool Nebula M51, and the Horsehead Nebula in Orion. However, there was one surprise as the top value illustrated the
Hertzsprung-Russell diagram and this design needed a bit of explanation in the philatelic press of the day!

![H-R diagram stamp design](image)

*Figure 4.* The H-R diagram as a stamp design.

A 1969 stamp design from New Zealand commemorated the bicentenary of the voyage of Captain Cook in HM Bark “Endeavour” to observe the Transit of Venus. The design included the Wedgwood medallion with Flaxman portrait of Cook, an octant and a red disc representing the Sun with a small black dot representing Venus. In modern high-speed printing methods there can sometimes occur a small glitch which results in a shift of one of the colours. In this case, there was a 1.5mm shift of the black colour so that the little dot really appears to “move” across the Sun. This is an example of a non-constant variety, but interesting as it can be used in the collection to demonstrate an astronomical phenomenon. These stamps were printed in sheets of 100 and it is not known how many sheets could have been affected.

![1969 stamp - normal and shifted printing](image)

*Figure 5.* 1969 stamp. Left: normal printing. Right: 1.5mm shift of black colour, so that “Venus” appears to “transit”. Permission to illustrate this design kindly granted by New Zealand Post.

Another philatelic area to explore is that of postmarks and various types of cancellations with astronomical significance. China, for example, at one time used postal markings known to collectors as “Sun and Moon cancellations”. Mail carried prior to the advent of postage stamps often had

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1Personal correspondence (via e-mail) with Warwick Paterson of Campbell Paterson, publishers of the New Zealand stamp catalogue.
markings to indicate a route and an example is shown of the Compañía del Sol which operated c. 1845-1849. Some cancellations were intended simply to obliterate the stamp (there was a real preoccupation with fraudulent cleaning and reuse of stamps). Later on, postmarks would indicate the town of posting along with the date and often the time of posting. A very attractive example of this kind of cancellation comes from Rhodesia and clearly shows “Arcturus P.O.” This town grew up around the Arcturus Gold Mine. It opened as a postal agency in Feb 1910 and the postmark remained in use until 1937.

Figure 6. Left to right: Type 3 handstamp indicating that this letter has been carried by the Compañía del Sol, obliterator from Stellartown (Canada), the “Paris Star”, Postmark of Arcturus.

Commemorative envelopes or covers are often produced for special events and these usually have an appropriate design or wording printed towards the left side with the right side bearing the address, postage stamp and cancellation.

Many ships have been named after astronomical bodies or phenomena – for example, “Eclipse”, “Comet”, “Meteor” – or have been given the names of individual stars and constellations. Manuscript endorsements or the ships’ cachets make interesting additions to the collection.

During the International Geophysical Year 1958-1959, a number of stamp designs were produced featuring astronomical phenomena such as the aurorae. Over succeeding years, the development of space exploration and the beautiful images captured by various space probes have provided the excuse for territories all over the world to issue a wealth of attractive stamps which almost threaten to swamp the collector.

3. The Observers

This section starts with the dawn of civilisation and the preoccupation of early man with seedtime and harvest. Mythological interpretations of astronomical events have provided some fascinating designs. In Fig. 7 is shown a Greek design for the 1906 Olympic Games issue depicting Hercules temporarily supporting the heavens while Atlas returns, having obtained the
golden apples of the Hesperides. Also in Fig. 7 are shown designs featuring the Indian Sun-god, Surya, seated in a single-wheeled chariot of fire, drawn by a horse with seven heads; his charioteer is Aruna, the Dawn.

Figure 7. Pair of imperforate colour proofs of the Greek issue for the 1906 Olympic Games and images of the Indian Sun-god Surya.

The discoveries and inventions of, e.g., individual Chinese, Islamic, Greek and other early astronomers are well represented in philately.

In 1923 Poland issued a stamp to commemorate the 450th anniversary of the birth of Copernicus – a single dark blue stamp based on the Toruń portrait and with a high face value of 1000 Marks. This was during the inflationary period and some five months later the same design was reissued in red with a face value of 5000 Marks. Over succeeding months the cost of posting letters rose to such an extent that on 1924 May 1, new currency was introduced and the use of these Copernicus stamps ended. Both values have interesting printing flaws and varieties of paper – partly due to the difficult times – and a good description of these along with illustrations is to be found in the catalogue of the international philatelic exhibition held in Poznań in 1973 to mark the quincentenary of his birth (Czernik 1973).

Figure 8. Registered cover from Warsaw to London, 1924 Jan 29. Franked with stamps to a total value of 1,216,000 marks, including both values of the Copernicus stamp.
On the occasion of the Copernicus quincentenary, almost every country in the world issued stamps, special cancellations and other sorts of souvenir. It became almost a collection on its own – and indeed started a trend. Over recent times the same thing has happened on other occasions such as the return of Comet Halley in 1986. There can be problems in trying to balance the desire for completeness with the need for selectivity.

The next “Big Three” of astronomy – Kepler, Galileo and Newton – are all well represented in the stamp album and can also be found on Cinderella items. These are stamp-like labels which have been produced sometimes by a charity, or to advertise a company’s products, or maybe by a town associated with the personage.

![Figure 9. Labels with portraits of famous astronomers.](image)

However, the most interesting aspect of this section is perhaps the fact that letters can be included. Prior to the invention of the envelope, letters would be written usually on one side of a sheet of paper; the paper would then be folded over, the back secured with sealing wax and the address written on the front. This is known to philatelists and especially postal historians as an entire (or entire letter) and you have in one item the words of the writer and the postal markings acquired en route to its destination.

A portion of one charming letter in the collection is illustrated. In Fig. 10 you will see a sketch of Ursa Minor, the Pole Star indicated and nearby a comet. The letter is dated 1742 Mar 24 and addressed to George Clerk, Laird of Drumcrieff near Dumfries, Scotland (an ancestor of James Clerk Maxwell). The writer was his cousin who urges him to make a point of observing the comet and writes: “All in my family had a fine sight of the Comet between 9 and 10 on Sunday last. ... The distance of the Comet F from the polar star A was about 6 degrees”.

Although the letter incorporates only a crude sketch, the path of this comet through the heavens is well illustrated in a beautiful map by Mattheus Seutter which is reproduced in “The Mapping of the Heavens” (Whitfield 1995).

One favourite section of the collection consists in 19th century letters with sidelights on the problems of life at distant observatories. For instance,
in a letter dated 1846 Apr 01, Thomas Maclear, HM Astronomer at the Cape, discusses Gambart’s Comet, the new planet (Neptune) and other astronomical matters and then continues: “There is to be a Caffre War. The Governor is gone to the Frontier”. Interesting times, indeed! The large Maclear family kept in touch but the length of time taken for exchange of letters before steam replaced sail is sadly demonstrated by a letter from Mrs Maclear’s brother in England bringing the news that her sister had been gravely ill for some months.

Stamps continue to be issued commemorating astronomers both past and present. Sweden has a special issue each year in honour of Nobel Prize winners and a fair number of them have been astronomers. Such stamps together with their associated special cancellations and other collectables make for an attractive pictorial display.

Not many women astronomers have appeared on stamps – only such notables as Elisabeth Hevelius, Caroline Herschel and Maria Mitchell. However, as the 21st century progresses, no doubt at least a few present-day well known ladies will be honoured.

4. The Observations

In this section are considered the tools of the astronomer. Probably the very earliest of these would be a simple upright pole by which means shadows cast by the Sun could be measured. Later, more sophisticated devices would include the various sites of standing stones and stone circles. All of these early attempts at recording and understanding can be found on the designs of stamps and other philatelic material. Later on, we find the Antikythera mechanism and the Nebra Disk have also featured on stamps while from

Figure 10. Sketch of the position of the 1742 comet, in a letter dated Mar 24 of that year.
the New World there are the Aztec Calendar Stone and Maya stele.

The beautiful astrolabe is found on a number of stamp designs as well as its more rugged version – the mariner’s astrolabe, especially on issues associated with voyages of discovery. Other early navigational instruments such as the cross-staff, back-staff and nocturnal also form part of this section.

A small instrument which appears to be a miniature armillary sphere is shown in a well known portrait of Humphrey Gilbert used for the 1c value of a set issued by Newfoundland in 1933. This is an example of an engraved stamp and in Fig. 11 are seen progressive proofs – stages in preparing the die for use in making up a printing plate. The skilled engraver checks his work at various stages by taking a pull from a hand press as the die at this time is not yet hardened. Several progressive proofs are seen here, including one in rose as an alternative to grey-black. Finally, the issued stamp is shown.

All aspects of time-keeping are included with many stamps and other items depicting sandglasses, sundials and clocks. Similarly, everything relating to the Calendar is important and in this connection may be mentioned the special French Revolutionary Calendar with the names of the months related to their characteristics. From 1870 when the first postal stationery postcards came into use, astronomers found these a less expensive means of communication than letters. It is interesting to look for examples of exchange of data by postcard, especially in the case of cards addressed to Russia which show double dating as Russia was late in adopting the Gregorian Calendar. A similar anomaly occurred when aircraft started crossing the International Date Line and postal markings appeared to show that they had arrived before their departure.

However, perhaps the most important instrument in astronomy is the telescope. The central portion of a stamp design for the territory of St. Kitts-Nevis introduces another feature of collecting astronomy – namely, errors of design many of which are described in Irvine & Seshold (1979). Here in the badge of the colony we find Christopher Columbus (who died in 1506) supposedly sighting the territory with the use of a telescope (invented c. 1609). This erroneous design was perpetuated right up until 1938.
UNESCO declared 2009 International Year of Astronomy and this was intended to commemorate the four hundred years since the application of the telescope to astronomy. In a brochure for this event with introduction by the IAU President, Page 25 was headed “IYA2009 Special Task Groups”. One of these was Philately. Well over one hundred territories announced their intention to issue stamps to commemorate this occasion – a daunting prospect for the collector!

Many of the IYA designs were imaginative and beautiful, however one issue from Azerbaijan is a reminder that errors of the kind referred to in the St. Kitts-Nevis example above are still being perpetrated. Here we find the name of Nesireddin Tusi with his dates of birth and death clearly printed as 1201-1274, and what is he doing? Looking through a telescope!

It was particularly nice to see that some territories issued stamps closely associated with astronomy in their own country. In the case of Malta, two stamps were issued. The EUR 0.37 value showed a portrait of Galileo, Apollo spacecraft and Moon. However the EUR 1.19 value illustrated the 1.2m (4 ft) aperture telescope on equatorial mount designed and built by William Lassell (discoverer of Triton) and taken by him to Malta in 1861. Here he spent three years observing objects not visible from England. This is the only known depiction on a stamp of this seminal telescope.

![William Lassell's telescope on a stamp issued for International Year of Astronomy 2009.](image)

*Figure 12.* William Lassell’s telescope on a stamp issued for International Year of Astronomy 2009. Permission to illustrate this design kindly granted by Malta Post.

The great observatories of the world and many important instruments have been shown on stamps and also on picture postcards which started to appear in the early 1890s. A type of pictorial card with the words “Gruss aus” or “Gruss vom” (greetings from) preceding the name of a town or area became very popular for the tourist trade (see Fig. 13). This continues and it is possible, for example, to show the complete history of Palomar Mountain Observatory starting with a postcard of the dome in skeletal stage of construction, the mirror blank, views of the observatory as the trees gradually grew and amusing cards for tourist use.

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2 Brochure announcing the International Year of Astronomy 2009 produced by the IAU, UNESCO and Organisational Associates.
Incidentally, it may be mentioned that the scientists who work in such establishments perhaps do not realise that the \textit{meter marks} or \textit{franks} applied in the mail room could have interest for collectors of the astronomy theme!

So far, it is Earth-based facilities that have been considered but from the Montgolfier Brothers through the development of aircraft to the rocket experiments of Tsiolek and Goddard, man was attempting to leave the surface of the earth. All of these stages can be found well documented in the stamp album.

Prior to the Space Age, rocket experiments during the 1930s carried (and were indeed funded by) souvenir mail. Pioneers such as F. Schmiedl in Austria, Gerhard Zucker in Germany and Britain, Stephen H. Smith in India, Karl Roberti in the Netherlands and their contemporaries elsewhere, continued their trials almost until the start of World War II and it was during and after that conflict that rockets became sufficiently powerful to launch the first small earth satellites and eventually to achieve manned space flight, planetary probes sent to great distances and orbiting telescopes such as the Hubble Space Telescope (HST).

Here it may be mentioned that the author (see \textit{e.g.} Morris 1988) coined the term “Astro-philately” to describe her method of collecting, but now Astrophilately (without the hyphen) is one of the recognised Commissions of the Fédération Internationale de Philatélie (FIP) and is regarded as quite separate from Thematic collections on Space. Astrophilately is described as consisting of covers and cards cancelled at the place and date of special events associated with Space Exploration – \textit{e.g.} launches and landings of
Figure 14. Rocket flight by Karl Roberti on 1935 Apr 23 with “Icarus”. 260 items of mail carried.

spacecraft. Cancellations of the post office nearest to the appropriate Mission Control Centre are acceptable when dated for EVAs, dockings, etc., as are postmarks from tracking sites and recovery ships. This has opened up a whole new area of collecting and is regarded by the author as unsuited to a collection on pure astronomy; only those items with special reference to astronomy are included but even so these account for a growing sub-section.

5. Fusion

To draw together the twin strands of astronomy and philately, it is worth considering the life of one remarkable man who combined these in the highest degree. This was The Earl of Crawford, KT, 1847-1913.

Figure 15. Detail of a photograph of the Earl of Crawford by Dover Street Studios. A similar photograph hangs in the Meeting Room of the Royal Philatelic Society London.
Born to a life of duty, he found time for various activities and was a great traveller and explorer, ornithologist and sportsman. As if those pursuits and his duties as owner of some great estates were not enough, he was keenly interested in astronomy and between 1872-92 had a well equipped private observatory at Dun Echt in Aberdeenshire where one of his assistants was David Gill. With Gill and Ralph Copeland, he travelled to Mauritius for the 1874 Transit of Venus, funding the expedition himself.

Crawford was President of the Royal Astronomical Society in 1878 and 1879 and was elected a Fellow of the Royal Society in 1878. His use of photography to record his astronomical observations was recognised when he served as President of the Royal Photographic Society from 1897 to 1900.

Later in life he returned to philately with the purchase at auction of a “fat” album containing a number of stamps (Negus 2002). He continued to add to the collection – not only material but also knowledge. An enthusiastic yachtsman, he spent most winters abroad, cruising to warm climates for relief from rheumatism and asthma. During these cruises he spent many hours studying his stamp collection and wrote that since his purchase of the “fat” album – “I must have sailed nearly 100,000 miles about the world, and I have always taken on my travels some stamps for study and arrangement, thus providing myself with interesting and unfailing occupation”.

He joined the Philatelic Society London in June 1900 and was elected Vice-President two years later. In 1906, he called a meeting of the Council to discuss the possibility of seeking the approval of the King to add the word “Royal” to the Society’s name. Crawford then wrote to HRH the Prince of Wales (at that time President of the Society) and received a reply to the effect that the organisation should be known as “the Royal Philatelic Society of London”. (The “of” was dropped in more recent times).

In addition to all his other pursuits, Crawford was a well known bibliophile who had purchased some notable libraries. On his death, his philatelic library was bequeathed to the British Library where it would be accessible to collectors. In his memory, the Royal Philatelic Society London awards annually the Crawford Medal for the most valuable and original contribution to the study and knowledge of philately published in book form during the two years preceding the award.

Crawford’s library of astronomical books was gifted to the Royal Observatory Edinburgh in 1888 on condition that a new Observatory distant from the city’s pollution should be constructed. This new Observatory was opened by the Earl of Crawford in 1896.
6. Conclusion

This paper provides merely an overview of the many ways in which astronomy and philately may be linked and in fact only scratches the surface of what is a totally absorbing hobby. There is the constant search for suitable items and new issues appear at frequent intervals. At the very least there is plenty of entertainment for those nights when the skies are cloud-covered! Readers are advised that, like astronomy, philately has a huge bibliography at all levels. A general introduction will be found in "Stamp Collecting: A Guide to Modern Philately" (Phillips 1983).

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References