



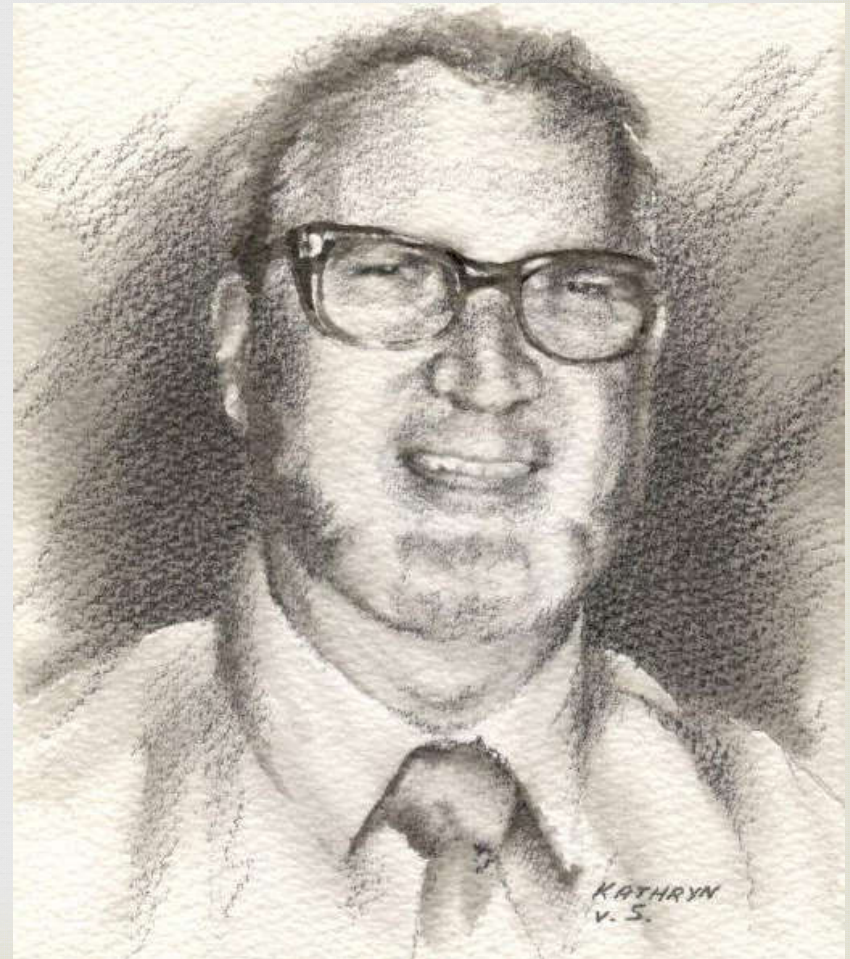
Original sketches of old Astronomers

Presentation by Magda Streicher

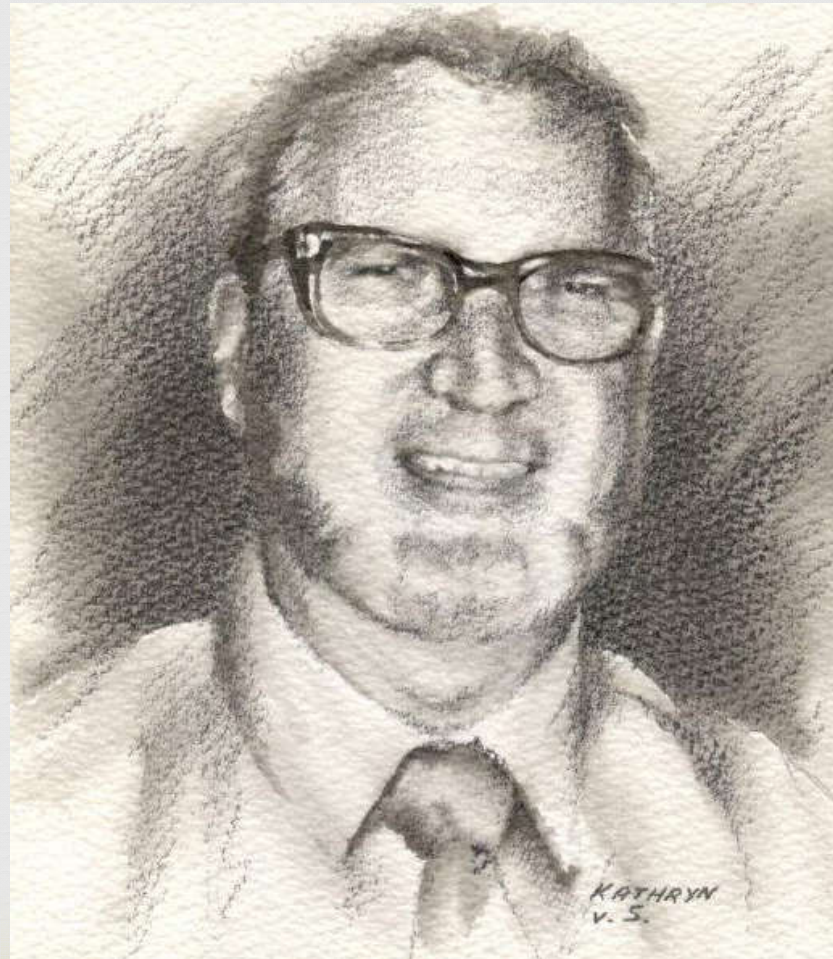
George Ogden Abell



George Ogden Abell (1927-1983) received his BSc (1951), MSc (1952) and PhD (1957) from the California Institute of Technology. He found hints of galaxy super-clusters while searching for them on photographic plates of the Palomar Observatory Sky Survey. He analysed their formation and evolution. Abell also co-discovered periodic comet 52P/Harrington-Abell and together with Peter Goldreich, he correctly determined that planetary nebulae evolve from red giant stars. Asteroid 3449 were named in his honour, as was the George Abell Observatory in Milton Keynes England. The first major catalogue of rich galaxy-clusters was completed by Abell in 1958 and contains 2712 entries. The extended catalogue, contains approximately 4000 objects with at least thirty members up to a redshift of $z = 0.2$.



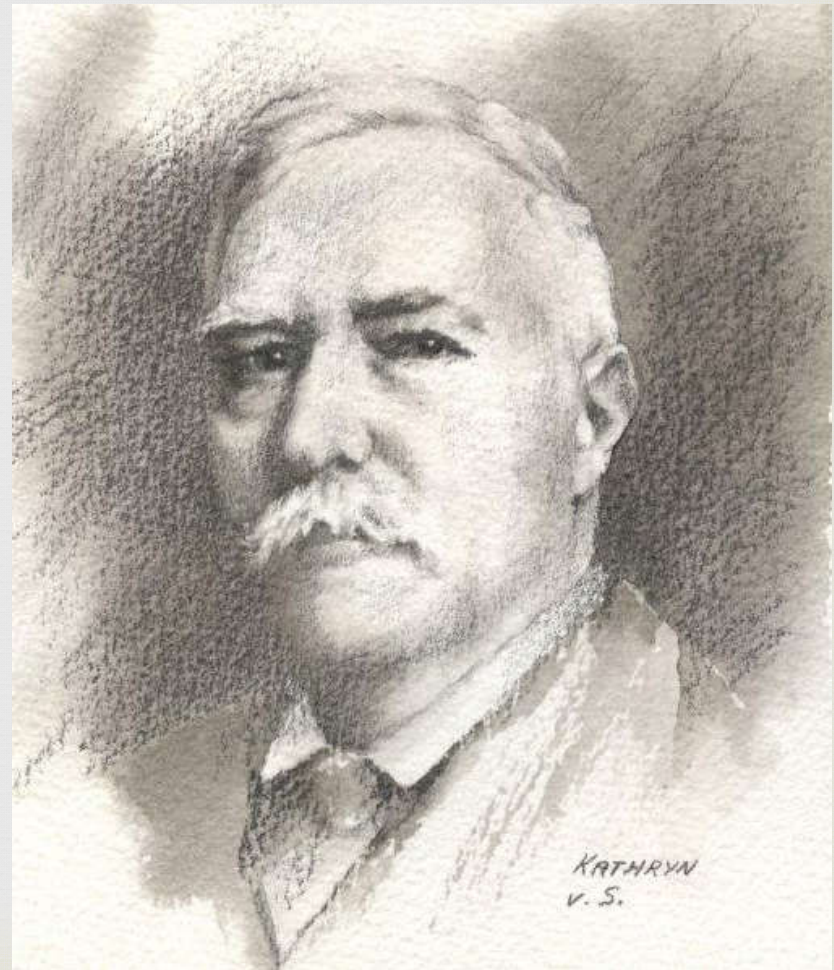
George Ogden Abell



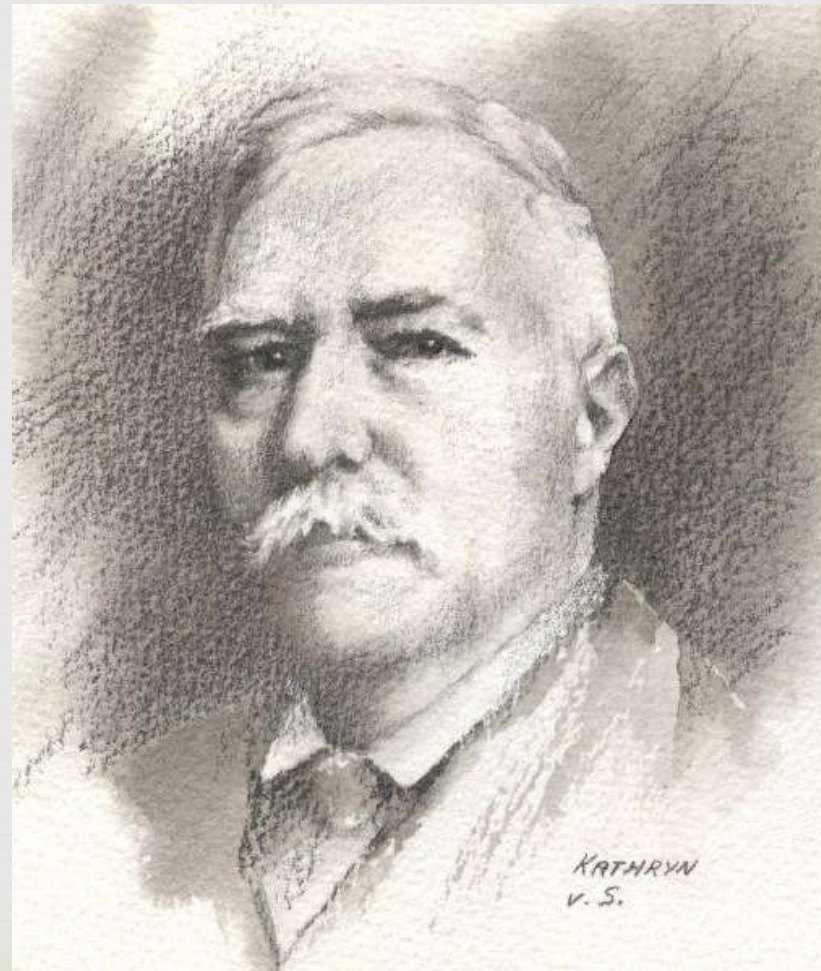
Edward Emerson Barnard



Edward Emerson Barnard was born on 16 December 1857 in Nashville, Tennessee. Working at Mount Wilson Observatory California used wide-field lenses and the 24-inch Bruce telescope to take superb photographs of the Milky Way. These showed dark cloud structures, rifts and holes where there were only few stars visible. He also discovered the California, Rosette and more than 300 dark nebulae. Barnard compiled a catalogue of the more prominent dark clouds, called *Atlas of Selected Regions of the Milky Way*, which was only published in 1927 after his death. He discovered the fifth Jovian moon “Amalthea” in 1892. He discovered a total of five comets, the first in 1876, a second in 1881 and a third in 1882. He is best known for his discovery of Barnard’s Star in 1916, the fourth-closest star to the Sun after the alpha Centauri system. He died on 6 February 1923 in Williams-Bay and was buried at Mount Olivet Cemetery in Nashville.



Edward Emerson Barnard



John Caister Bennett



John Caister Bennett, an accomplished amateur astronomer, but known by the name of Jack, was born on 6 April 1914 in Estcourt KwaZulu-Natal, and passed away on 30 May 1990. Bennett was a dedicated South African comet-hunter who patrolled the skies in the late 1960s. He picked up a magnitude 9 supernova in NGC 5236 also known as Messier 83, becoming the first person ever to discover a supernova since the invention of the telescope. A long-standing member of the Astronomical Society of South Africa (ASSA), he was elected President in 1969. The Society awarded him the prestigious Gill Medal for service to astronomy in 1970. In 1986 he received an Honorary Degree of Master of Science from the University of Witwatersrand. In 1989 at the recommendations of Rob McNaught of Siding Spring Observatory, the asteroid VD 4093 was named after him. He compiled the *Bennett Catalogue*, a list of 152 objects to help observers eliminate them in comet searches.



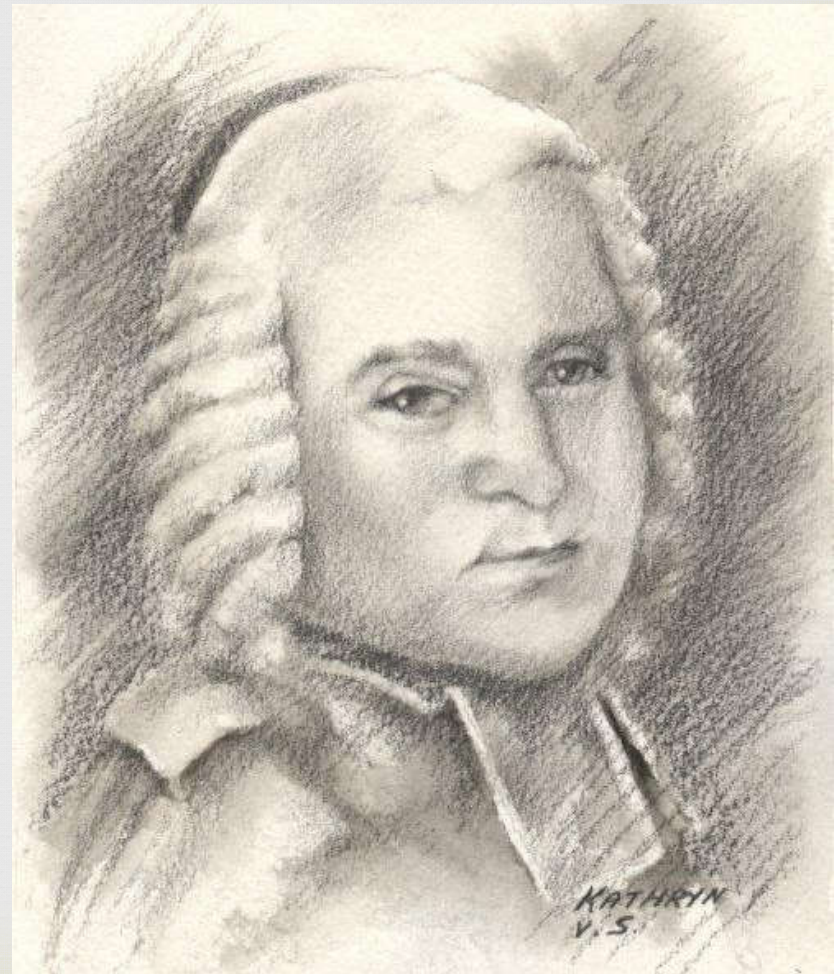
John Caister Bennett



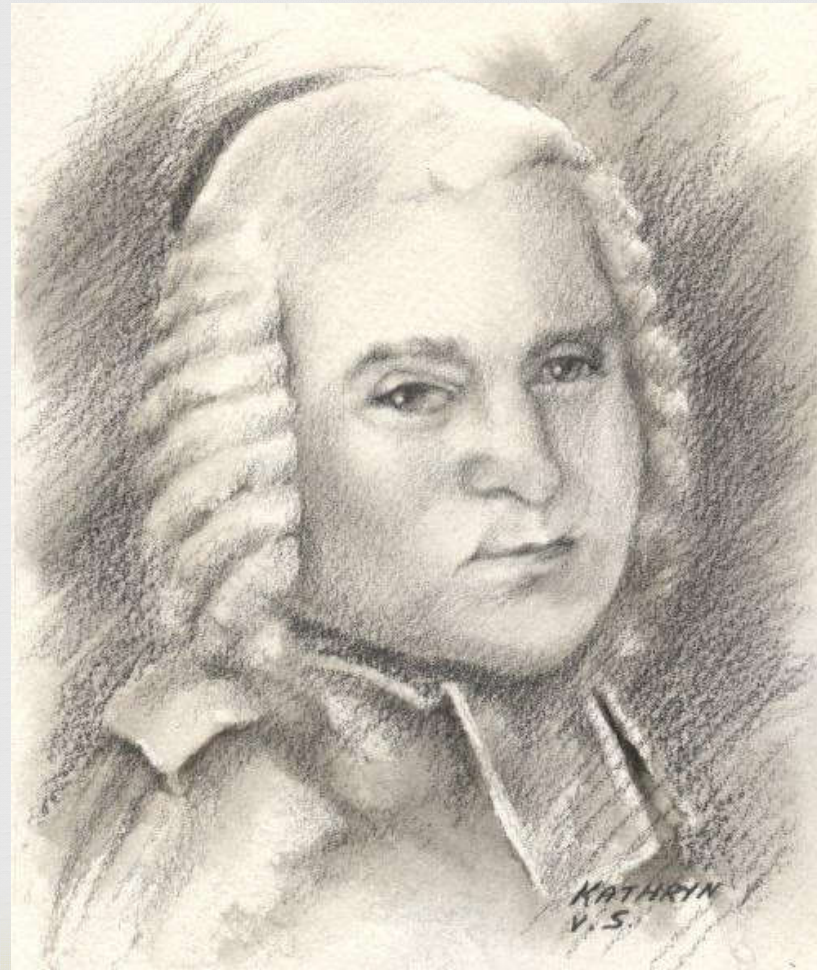
Nicolas Louis de Lacaille



Nicolas Louis de Lacaille was born on 15 March 1713 and died on 21 March 1762. The French astronomer observed the southern skies during his stay at the Cape of Good Hope from 1751 to 1753. Using a small ½-inch refractor, he measured the position of 9766 stars. He also named 14 new constellations and created a list of 42 objects including 47 Tucanae, omega Centauri and eta Carinae nebula in his *Catalogue Nebulae of the Southern Sky* which was published in 1763. The crater Lacaille on the Moon is named after him, as well as the asteroid 9135 Lacaille, and in honour of his contribution to the study of the southern hemisphere sky, a 60-cm telescope at Reunion Island will be named the Lacaille Telescope. He was regarded as the “father of southern astronomy”.



Nicolas Louis de Lacaille



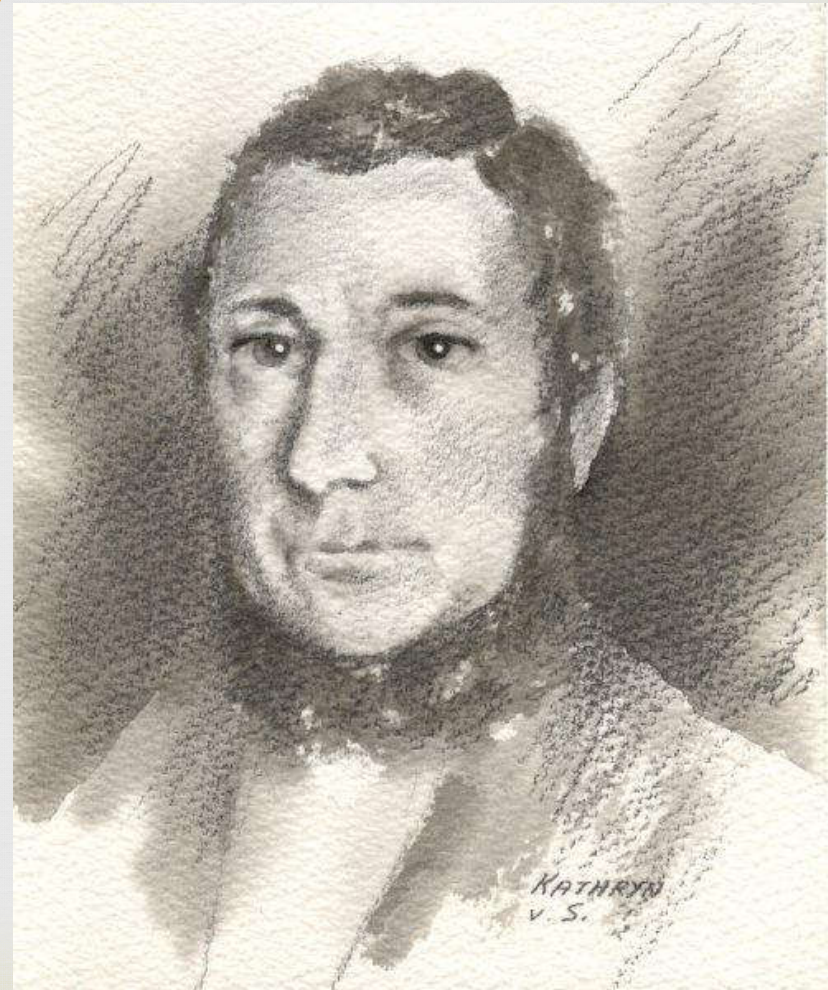
James Dunlop



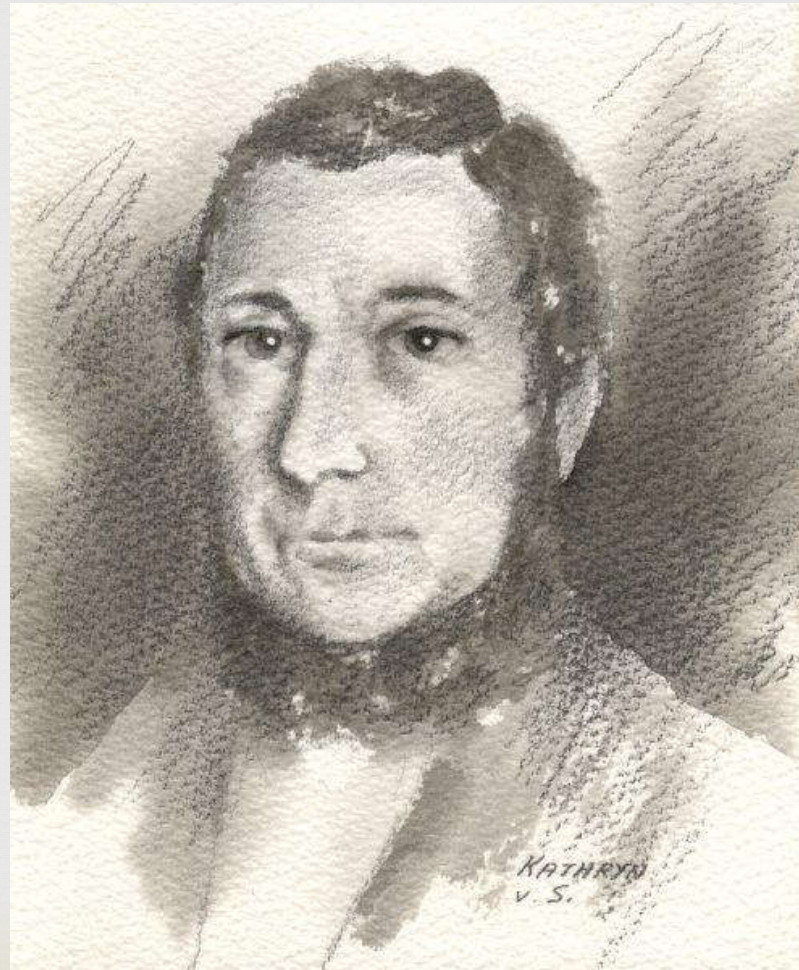
Scotsman James Dunlop who was born on 31 October 1793 in Darley, near Glasgow in England, was described as slender with a pale complexion.

Thirty-three years later he was in Australia, at the eyepiece of a 9-inch f/12 reflector, searching the southern sky for nebulae and clusters.

Dunlop constructed the telescope himself, making the mirror from burnished metal (speculum), and using methods similar to those of William Herschel. By March 1826 he had completed a catalogue of nearly 4000 stars. His sky survey produced also a catalogue with 629 deep sky objects observed at Parramatta in New South Wales (*Catalogue of Nebulae and Clusters of Stars in the Southern Hemisphere*). He was awarded the prestigious Gold Medal of the Royal Astronomical Society in 1828 by the Royal Astronomical Society of London. He died on 23 September 1848, and is perhaps remembered best, as the “Messier of the Southern skies”.



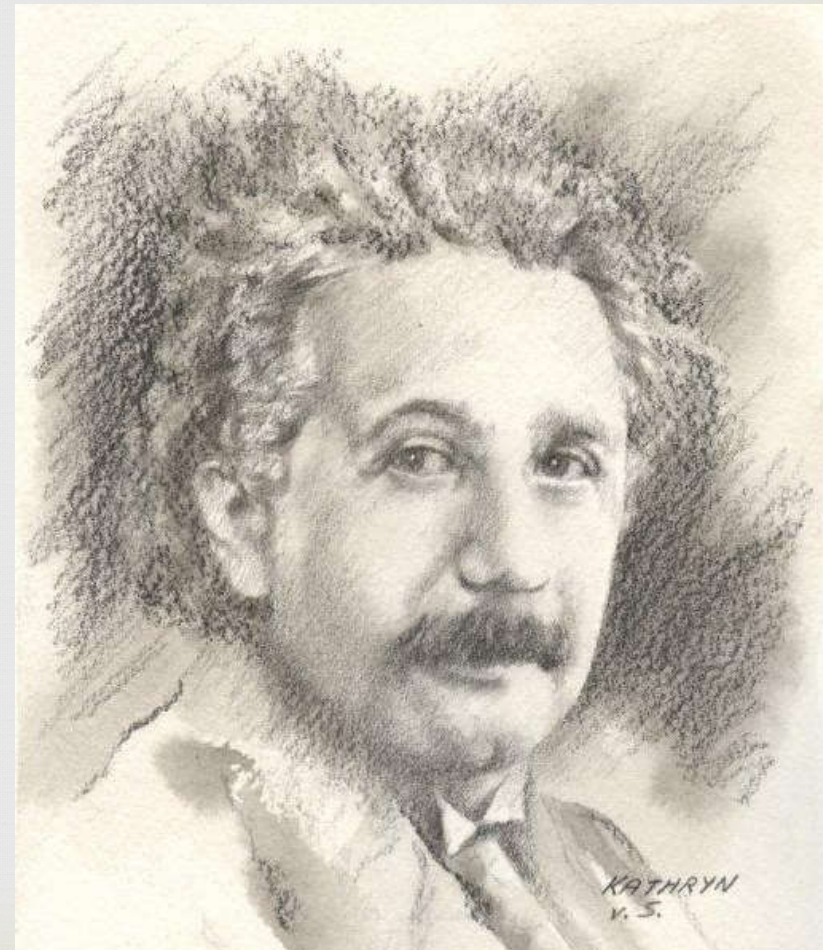
James Dunlop



Albert Einstein



Albert Einstein was born on Friday 14 March 1879 in Ulm, southern Germany. He was the only son, a quiet and rather solitary child, preferring to read and listen to music. Einstein's Special Relativity Theory developed in 1905, uncovered the relationship between mass and energy ($E = mc^2$), which explains energy generation in stars, and the relationship between gravity and mass, which causes light to be bent. The first of the papers was on the quantum theory of light including an explanation of the photoelectric effect for which he was awarded the Nobel Prize for Physics in 1921. He was also awarded the second Planck medal to be issued by the Royal Prussian Academy in 1929. Even when he was lying gravely ill, he asked for his test pages of his mathematical calculations. Einstein died peacefully on 18 April 1955 in Princeton, New Jersey. By request in his will, there was no funeral, no grave, and no marker; his ashes spread over a nearby river.



Caroline Herschel



Caroline Herschel was born on 16 May 1750 and died in Germany on 9 January 1848. In 1772 her brother William Herschel rescued her from household drudgery in Hanover and brought her to Bath in England. Her unselfishness and assistance enabled her brother William and his son John to leave the astronomical world a rich heritage. William equipped her with a telescope and encouraged her to hunt for comets. With great perseverance over time and sometimes icy cold nights, she found eight comets, a few galaxies and a handful of deep sky objects. In 1835 the Royal Society elected her to honorary fellowship; three years later she was made a member of the Royal Irish Academy. She had an expert knowledge of astronomy and was one of the greatest observers of her time. What an incredible lady for her time. (*The Herschel Partnership* – Michael Hoskin).



Caroline Herschel

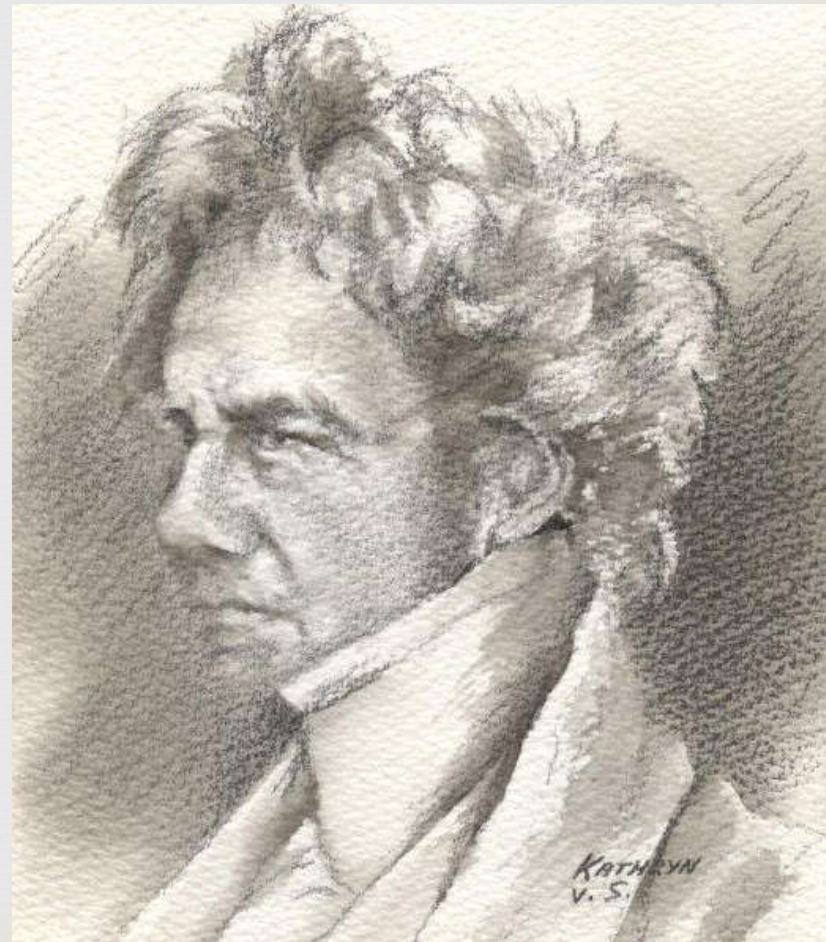


John Frederick William Herschel

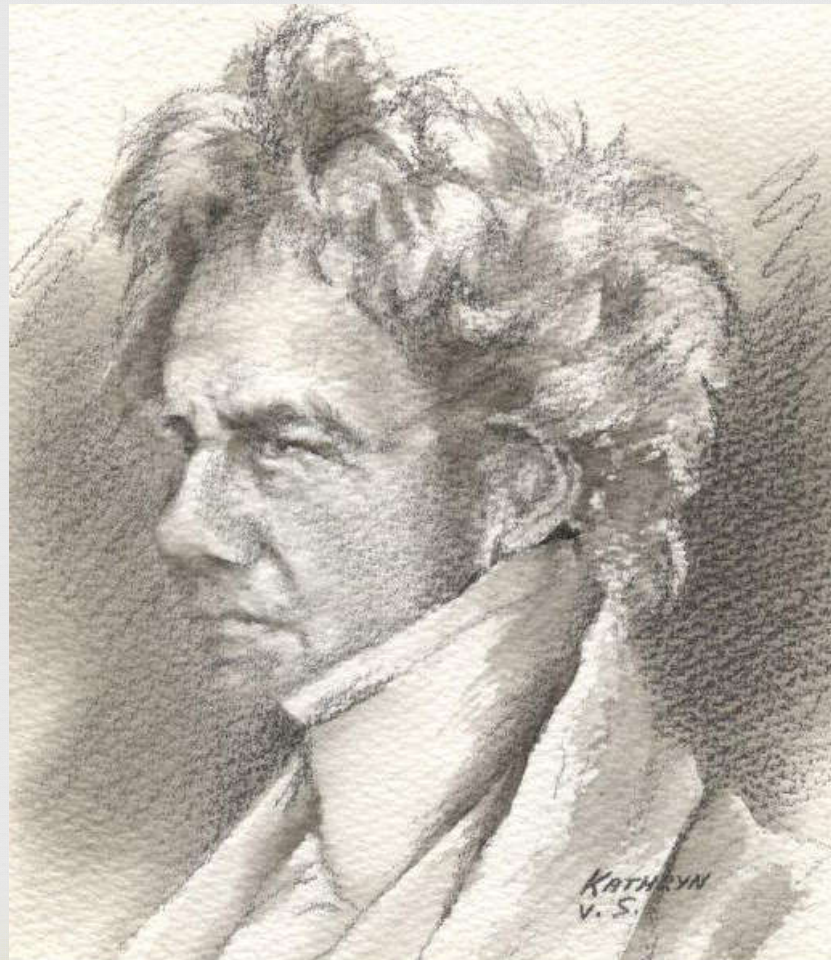


John Frederick William Herschel was born on 7 March 1792 at Slough, near Windsor Castle, the only son of William. He died at his home in Kent 1 May 1871 and was buried in Westminster Abbey on 11 May 1871. Incidentally, he could easily have found the planet Neptune, as on 14 July 1830 one of his sweeps took him within half a degree of the then, unknown planet.

John Herschel spent the years 1834-1838 surveying the southern stars at the Cape of Good Hope. His greatest contribution to astronomy was the completion of his father William Herschel's great task. In 1864 he published a catalogue of over five thousand nebulae and clusters, the ancestor of the "*New General Catalogue*" which astronomers and amateurs still use today. He was knighted in 1831, and became President of the Royal Astronomical Society in 1848. John was a remarkably pleasant and friendly person, according to documentation.



John Frederick William Herschel



Friedrich Wilhelm Herschel



William Herschel moved to England in 1756 and settled in Bath, anglicising his name to William Fredrick Herschel (*Cape Landscapes* - Brian Warner). On the eve of 13 March 1781 the planet Uranus was discovered by him, a new world first shone its light through the lens of a telescope. He began his famous “review of the heavens” and discovered thousands of double stars, clusters and nebulae, yet he never discovered a comet. He was honoured and respected in Slough, and given an honourable resting place in the church floor between the towers in front of the altar. The Latin inscription on the stone reads: “H.S.E. Guglielmus Frederich Wilhelm Herschel, born 15 November 1738 and died 25 August 1822. He broke through the barriers of the heavens and for as long as humanity lasts, William Herschel will never be forgotten, probably the greatest astronomical observer in history.



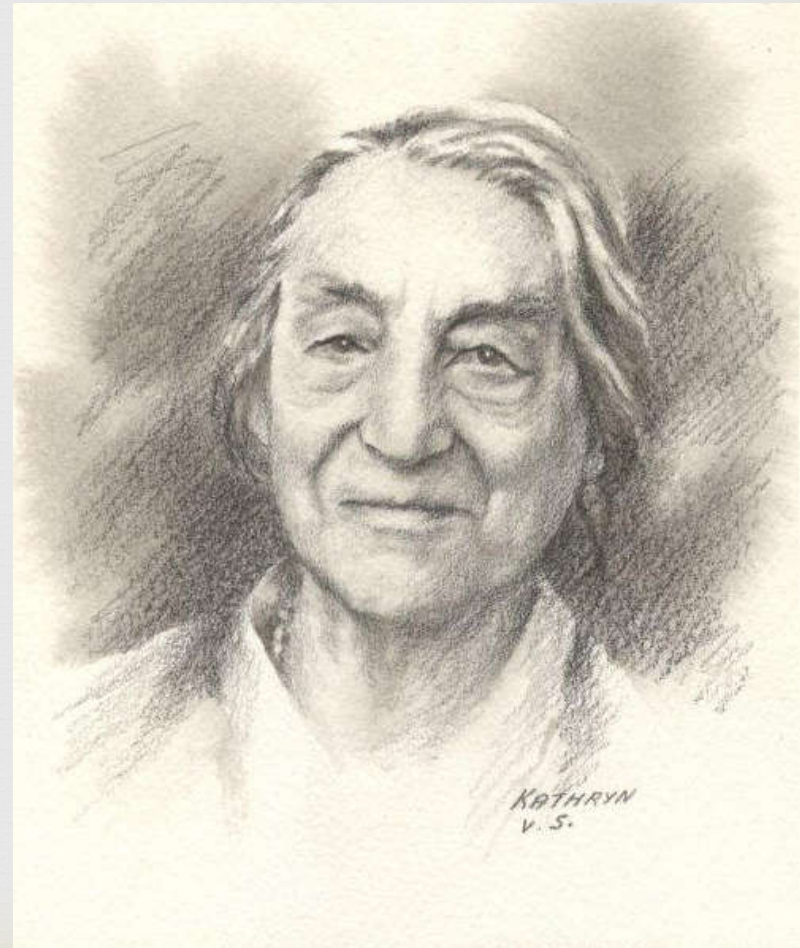
Friedrich Wilhelm Herschel



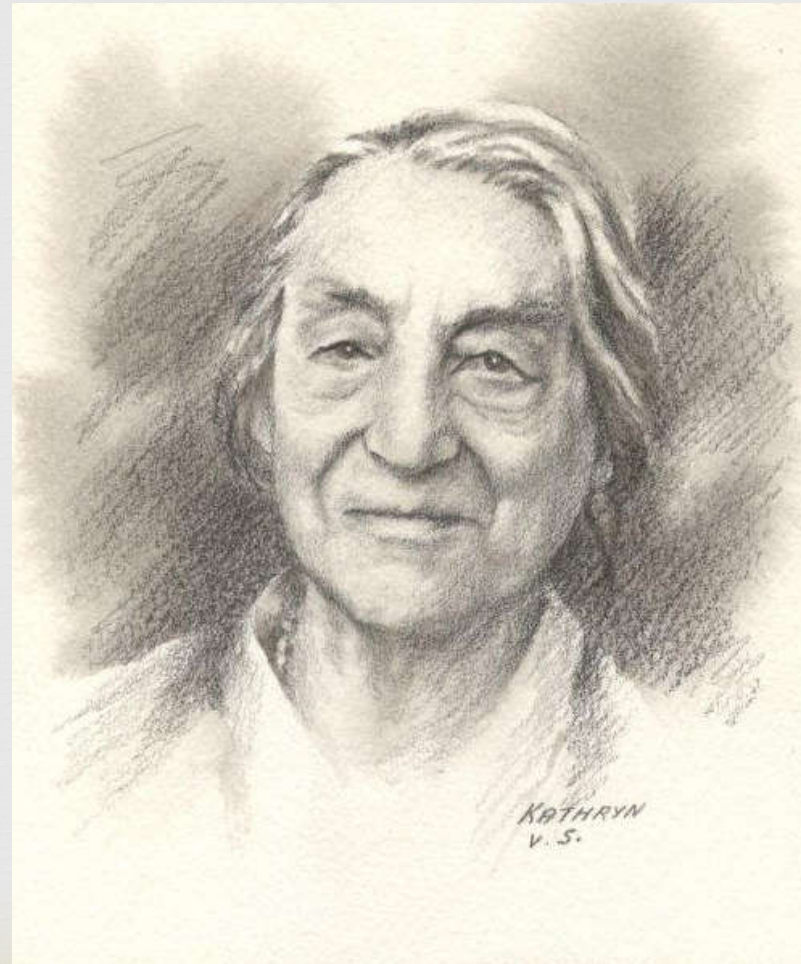
Ellen Dorrit Hoffleit



Ellen Dorrit Hoffleit, was an American senior research astronomer at Yale University who spent 70 years researching the heavens. She studied at Radcliffe and received a doctorate from Harvard under Harlow Shapley. From 1956 to 1978 she directed the Maria Mitchell Observatory in Nantucket and discovered the optical variability of the first-discovered quasar 3C 273. She is also renowned for her work on two star catalogues including the Yale Catalogue of Bright and Near Stars, which includes crucial information on all stars visible to the naked eye. In 1992 Hoffleit penned a history book called *Astronomy at Yale*, which covers over-250 years. When Hoffleit died on 9 April 2007 she had just turned 100, having been born on 12 March 1907 in Alabama.



Ellen Dorrit Hoffleit



Arthur Robert Hogg



Arthur Robert Hogg was born in Victoria Australia in 1903 and died in 1966. He studied at the University of Melbourne, and graduated with a Master of Science degree in 1925. He joined the Commonwealth Solar Observatory in 1929 and undertook research into atmospheric electricity and cosmic rays, designing and building much of his own equipment. At the age of 43 years he became an astronomer who focused on stellar astronomy. Hogg, who helped to choose the Siding Spring site, helped establish the 74-inch telescope and related facilities. He remained at the CSO for the rest of his life (which later changed its name to Mount Stromlo) and compiled a list of 23 southern open clusters. He was a well-liked man, who was prepared to work slowly and carefully.



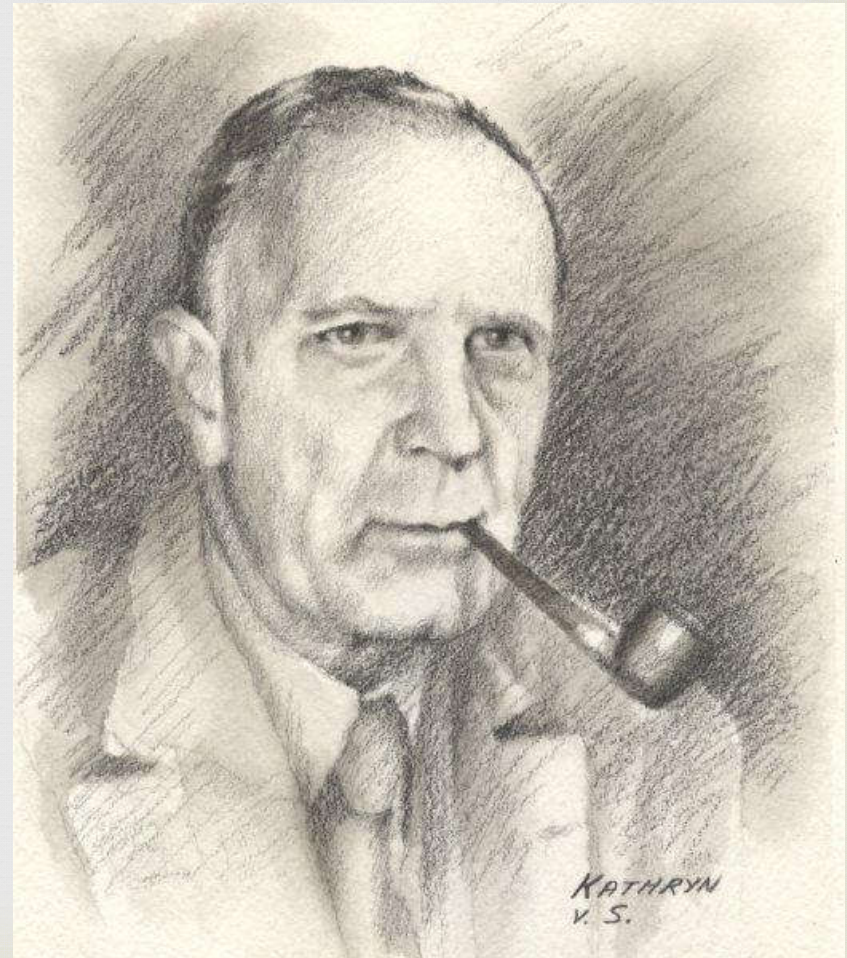
Arthur Robert Hogg



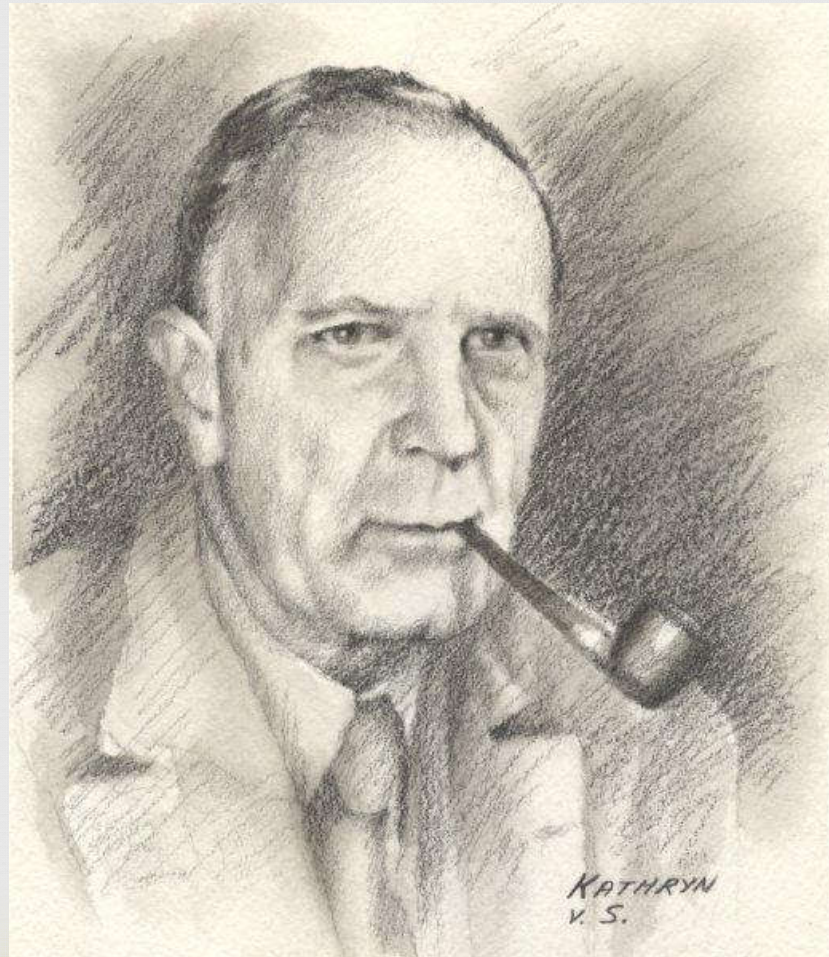
Edwin Powell Hubble



Edwin Powell Hubble was born in Marshfield, Missouri, on 20 November 1889. Later in life he became an army officer and boxer. He studied law at Oxford, but soon turned to astronomy as a graduate student at the Yerkes Observatory of the University of Chicago. Hubble studied Cepheid variables, their red shift, and revealed that “spiral nebulae” are really separate galaxies at extreme distances and also that the universe is expanding. Hubble’s law states that galaxies recede with a speed that increases with distance. He developed a classification system for galactic structure based on the design of a cosmic “tuning fork” diagram. He died of a heart attack in San Marino, California, on 28 September 1953. The famous Hubble Space Telescope was named in his honour.



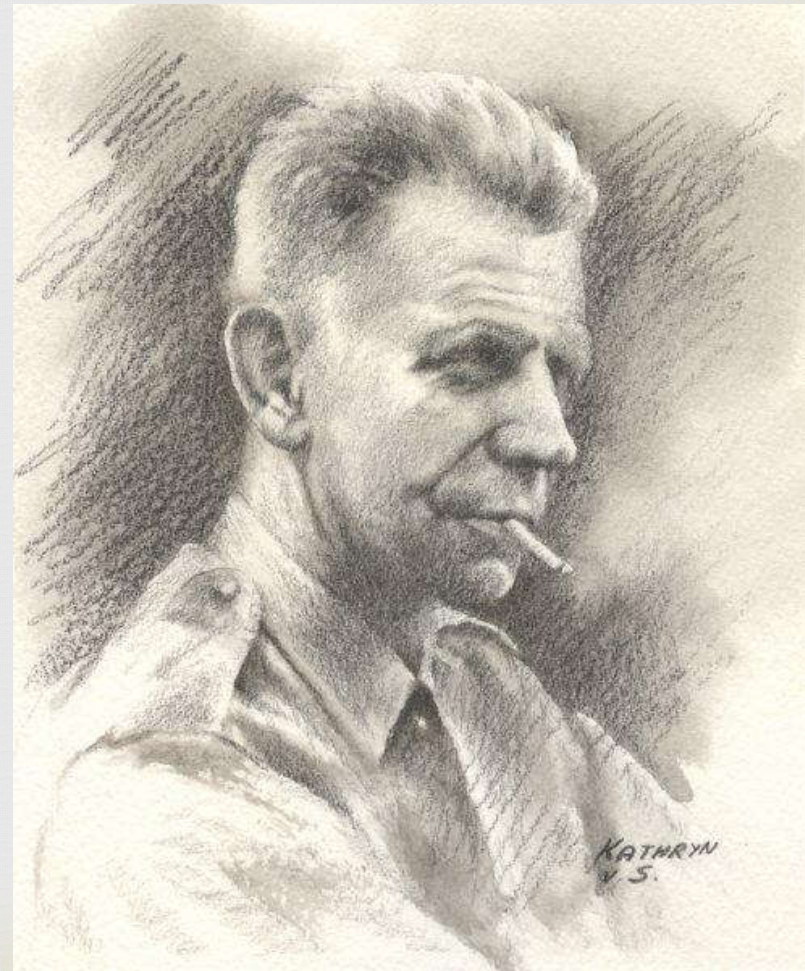
Edwin Powell Hubble



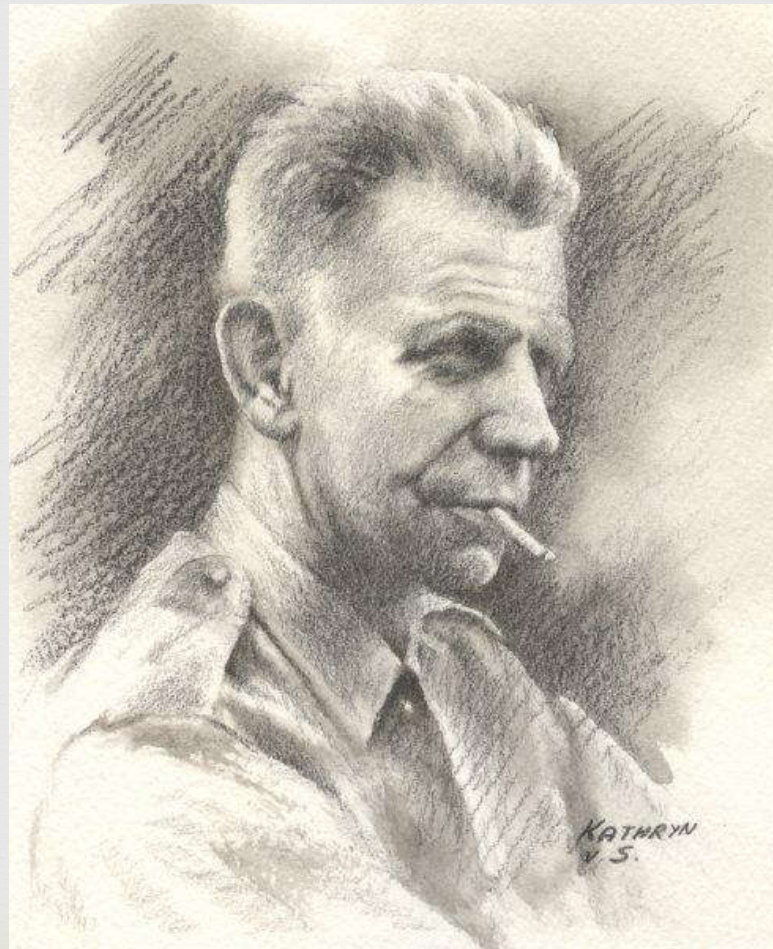
Cyril Jackson



Cyril Jackson was born in Osset, on the outskirts of Leeds in Yorkshire, England on 5 December 1903. He immigrated with his father to South Africa in 1911, where he was educated at Forest High School, Johannesburg, becoming their first dux. In 1922 he studied further at the University of the Witwatersrand, obtaining a BSc in 1922. He was appointed at the Union Observatory in 1928. In April 1929 Jackson discovered his first minor planet (which he called *Catriona*) and followed this with a remarkably productive career, during which he discovered 72 new minor planets most of which were given typically South African names. Jackson found an unidentified object, which turned out to be the comet 1935.2. He also co-discovered a second comet on 20 September 1936 and a third in August 1948 which is still observable today as Comet 47P Ashbrook-Jackson. He died in February 1988 and his ashes came to rest in the Pietermaritzburg garden of memory.



Cyril Jackson



Jean-Joseph Le Verrier



Jean-Joseph Le Verrier was born on 11 March 1811 at St-Ló, Normandy, the son of a local government official. He studied in Paris from 1831 to 1835, concentrating on the orbit of Mercury, and problems involved in the identification of periodic comets. Le Verrier was a junior astronomer at the Paris Observatory when he presented a paper suggesting that an undiscovered planet occupied the next place in the sequence, predicting the position of planet Neptune. He went on to study in immense detail, the other planetary orbits. In 1854 he succeeded Arago as director of the Paris Observatory but his autocratic rule finally bought about his dismissal in 1870 – though he was reinstated in 1873, after the death of his successor. He died in Paris France on 23 September 1877 (*Cambridge Astronomy – Michael Hoskin*).



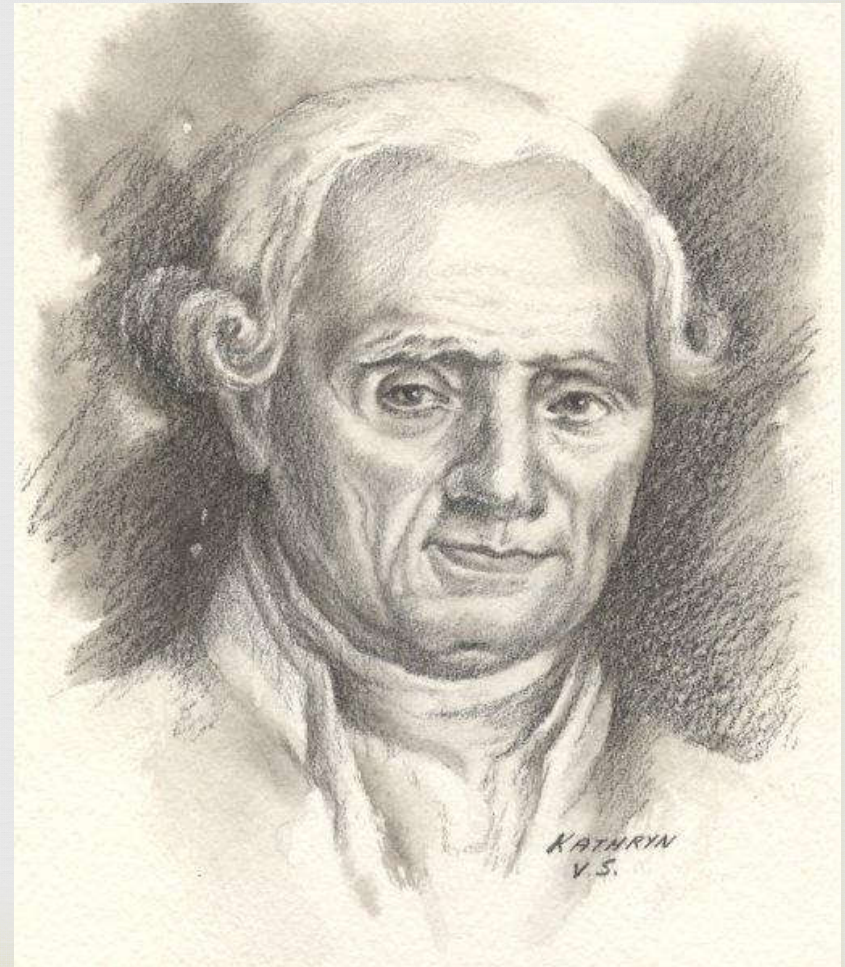
Jean-Joseph Le Verrier



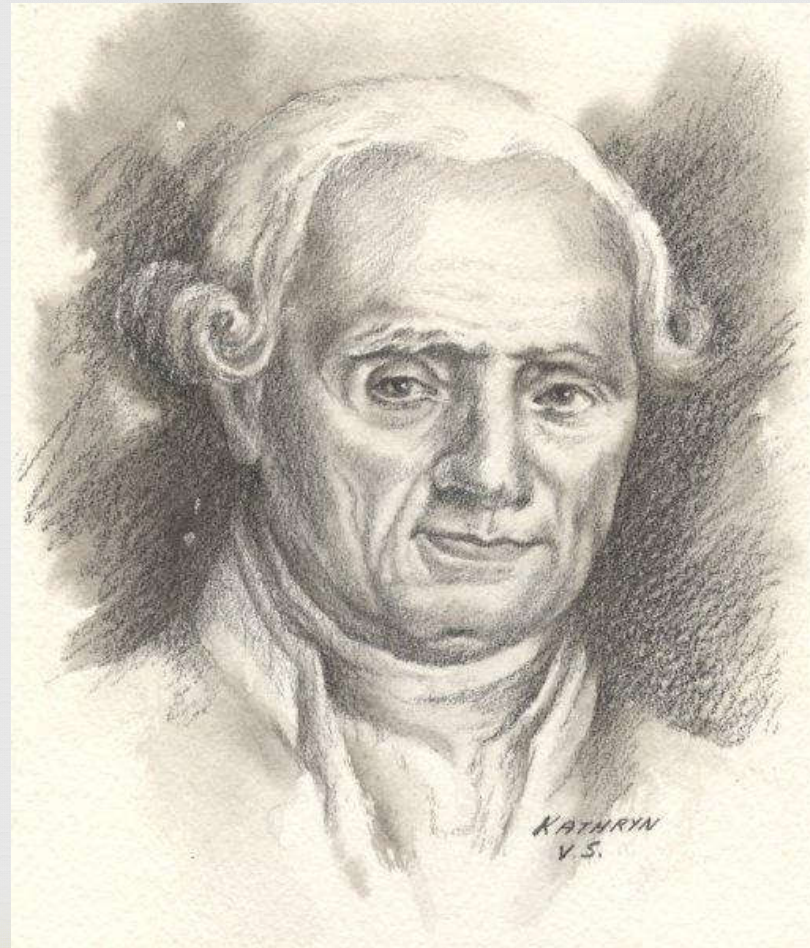
Charles Messier



Charles Messier (1730-1817) referred to Salm, an independent state on the border between France and Lorraine, which France annexed in 1766, as his fatherland. The comet hunter discovered 13 comets independently and co-discovered half-dozen others. While hunting for comets, he noticed a faint patch of fuzz in the constellation Taurus, now known as the famous “Crab Nebula”. Messier compiled a list of fuzzy objects that were not comets, in order to avoid them. The French comet-hunter then published a catalogue with 110 objects which later grew to 103 by 1781, referred to by an “M”, and followed by its Messier number. These catalogue entries, largely with the help of a young rival, Pierre Méchain, were later identified as star clusters, nebulae, and galaxies.



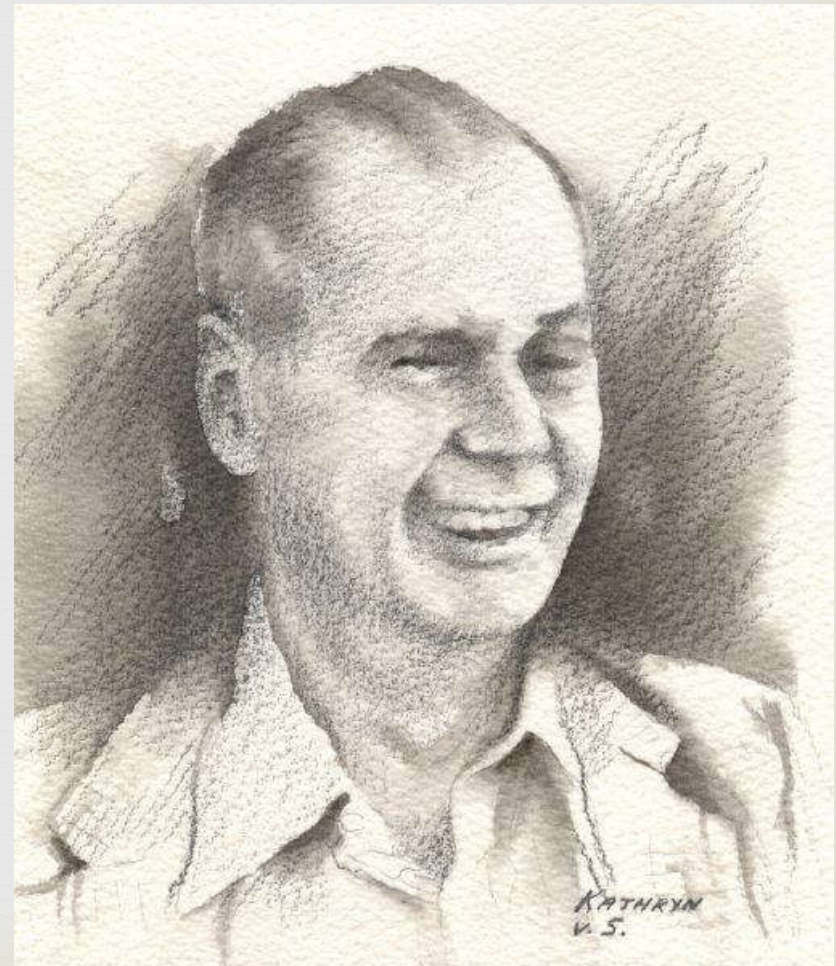
Charles Messier



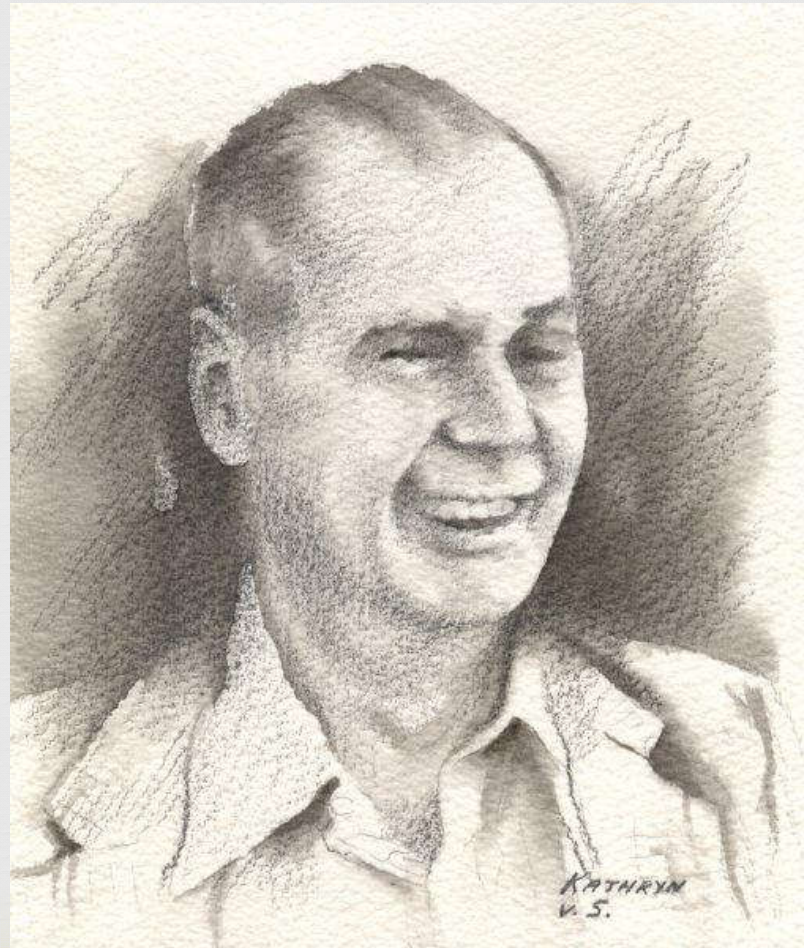
Michiel Danie Overbeek



Michiel Danie Overbeek was born in 1920 and grew up in Ermelo South Africa. He studied Mining and Metallurgy from 1939 to 1940. In 1951 he constructed a 6-inch telescope and started observing occultation and variable stars. In 1958 he obtained a B.Sc. degree in astronomy from UNISA. Overbeek served twice as President of the Astronomical Society of South Africa in 1961 and again in 1999. He was the Director of the Occultation Section for many years, and made over 250 000 variable star observations in his time. The Minor Planet Centre in the USA announced on 11 November 2000 that minor planet (5038) 1948 KF Overbeek be named in his honour. ASSA bestowed on him their highest honour in 1984, when he was awarded the Gill medal (*Mnassa October 2001*). Some of Danie's last written words were most appropriate: "I shall now bow out gracefully." He passed away on 19 July 2001, at his home in Johannesburg.



Michiel Danie Overbeek



Marie Paris Pismis



Marie Paris Pismis was born on the 30 January 1911 in Ortakoy, Istanbul and died on 1 August 1999. She was a Turkish astronomer of Armenian descent. Later she went to Harvard University where she met her future husband, a Mexico mathematician. She ultimately became the most influential astronomer in Mexico. In 1937, she became the first woman to get a PhD from the Science Faculty of Istanbul University. Pismis studied among others; the kinematics of galaxies, H11-nebulae and the structure of open star clusters and planetary nebulae. For more than 50 years she worked at the National Autonomous University of Mexico which awarded her a number of prizes including the "Science Teaching Prize". She compiled the *Pismis Catalogue* of 24 clusters in the southern hemisphere.



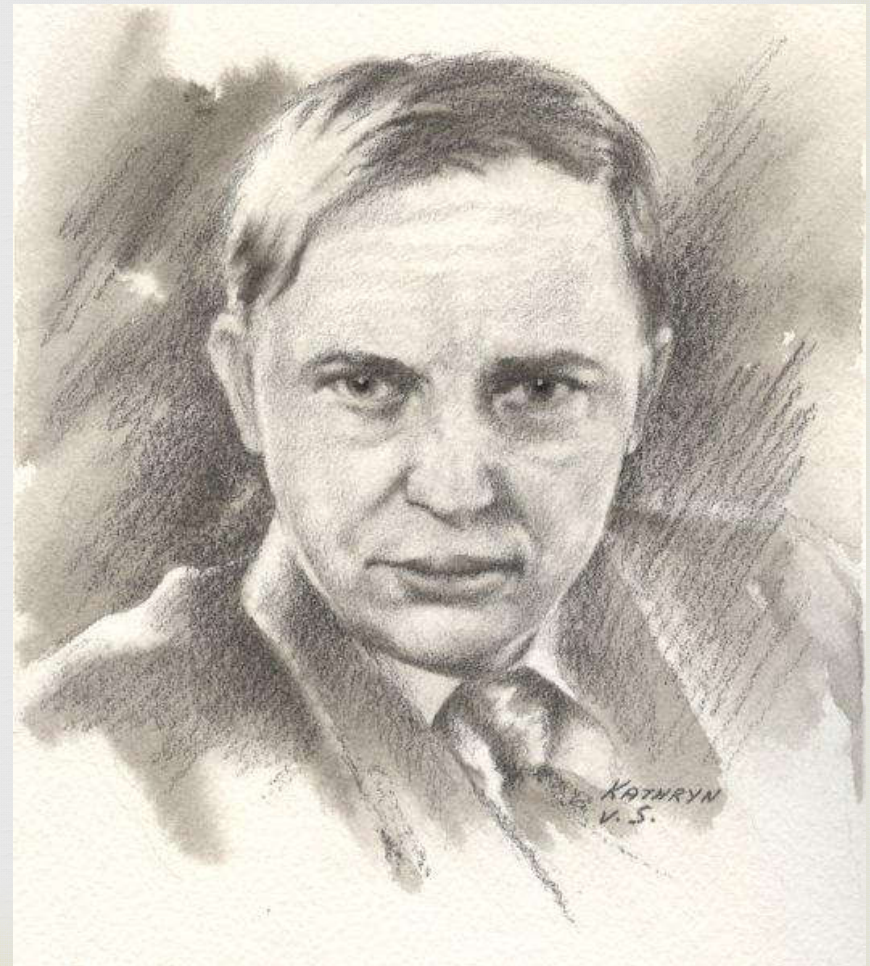
Marie Paris Pismis



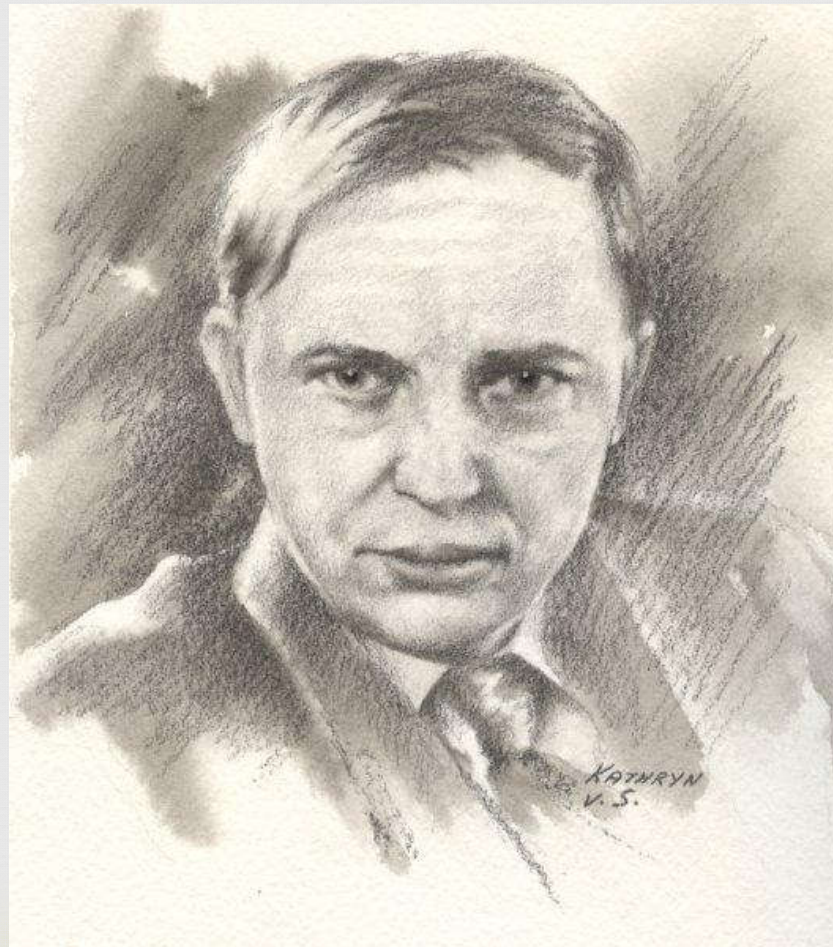
Harlow Shapley



Harlow Shapley was born in Nashville, Missouri on 2 November 1885. He was offered the directorship at Harvard when the position was left vacant in 1921 after the death of Pickering. He discovered that for any two Cepheid variable stars with the same period of variation, the one with the brighter average magnitude would be closer to us. He also studied globular clusters and their distribution around the Milky Way with plates taken with the 25-cm Metcalf telescope at Mountain Wilson Observatory in order to locate the geometrical centre and size of our galaxy. He published the Shapley-Ames catalogue of 1249 galaxies which showed that galaxies were distributed in clusters, one of which was named the Shapley Concentration or Supercluster. He died in Boulder, Colorado, on 20 October 1972.



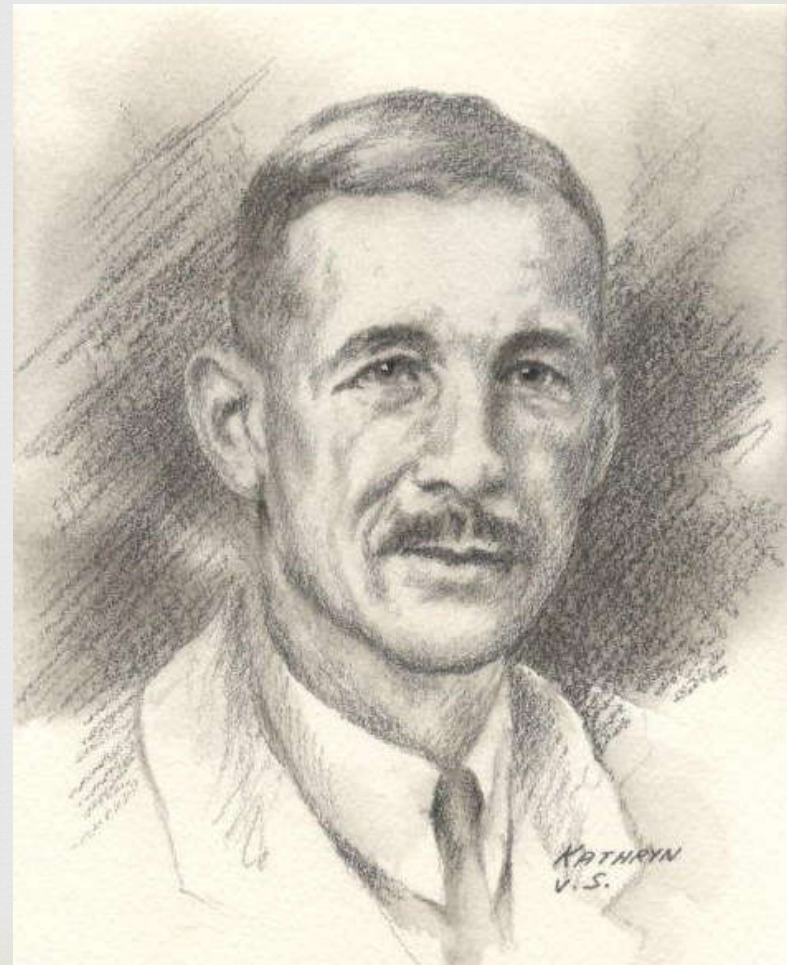
Harlow Shapley



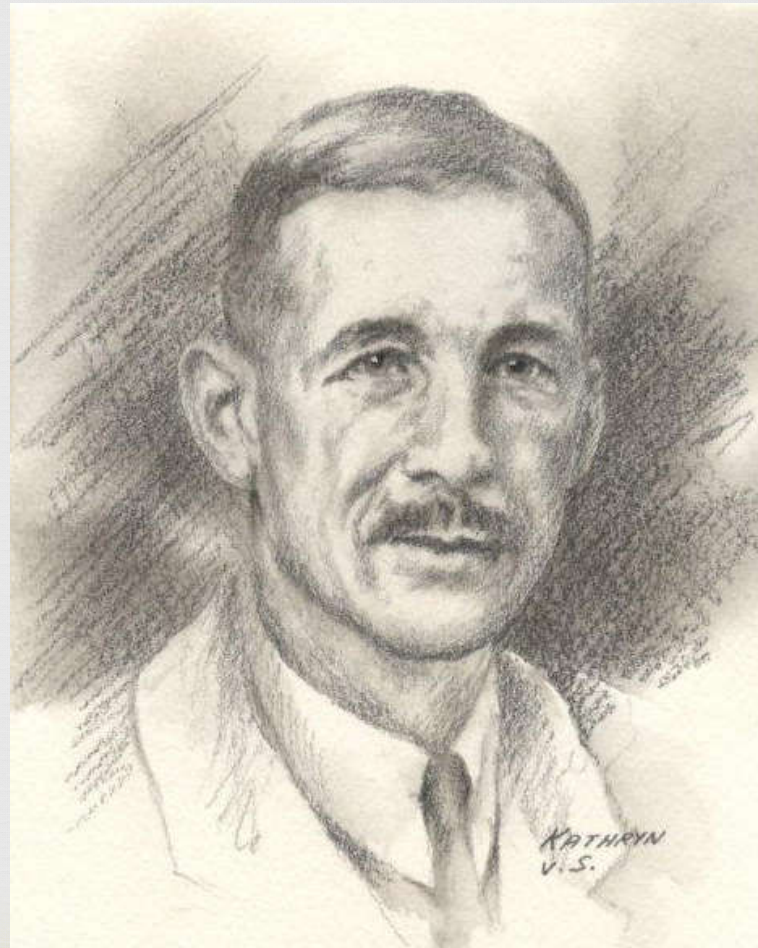
Robert Julius Trumpler



Robert Julius Trumpler (1886-1956) was a Swiss-American astronomer who discovered that the brightness of individual distant open clusters was lower than expected and catalogued the dimensions in order to determine the size of the Milky Way. As a member of Lick Observatory, Trumpler confirmed the evidence for the presence of a layer of obscuring material through the central plane of the galaxy, showing the existence of interstellar dust. This was published as recently as 1930. He first grouped them into types characterized by similar structures and the shapes of their H-R diagrams. Trumpler noted that most spiral galaxies have at their centres a small, bright nucleus and he also came to the conclusion that the Magellanic Clouds are gravitationally bound to the Milky Way Galaxy. (Star Clusters - Brent A. Archinal and Steven J.Hynes).



Robert Julius Trumpler



Kathryn van Schalkwyk



- ❧ Kathryn van Schalkwyk resides in Polokwane (Pietersburg) in the Northern Province (Limpopo) in South Africa. She was born (in 1961) and bred in Bloemfontein in the Free State.
- ❧ She started painting full time in the 1980's after studies in B.A. Fine Arts at the University of the Free State.
- ❧ In 1989, after only 6 consecutive exhibitions, she became an Associate of the Watercolour Society of South Africa, now the Watercolour Society Africa (WSA). It is a lifelong award as a result of achievement. In 2004 she became the first Higher Associate of the society in South Africa, and was also elected a Fellow. Kathryn has several times received the “Cream of the Crop”, “Best on Show”, “Highly commended” and merit awards at National and Grand Prix exhibitions.
- ❧ Kathryn acted as chairman of the Nelspruit, Pretoria and Polokwane branches of the WSA for several years.
- ❧ Since 1985 she has taught art to hundreds of students at her private studio in Bloemfontein, Nelspruit, George, Pretoria and Polokwane.
- ❧ She has become well known as a portrait painter, but experienced the painting of the astronomers as an exciting challenge and found that the exposure to this field has influenced her painting in general. The painting she executed after completion of the astronomer's portraits, was aptly called “Space Garden”!

