

The Heavens in October.

Those who begin their acquaintance with the constellations in the month of October are quite likely to become enthusiastic star gazers. It is in this month that the splendid group called "The Royal Family," including Andromeda, Cassiopeia, Perseus, and Cepheus, becomes conspicuous. Nearly overhead at about 10 P. M. on October 1, will be seen the great square of Pegasus, about 15 degrees on a side. The star at the northeastern corner of this square belongs in reality to the constellation Andromeda. It is nearly of the second magnitude, and, with two other stars of equal brightness, forms a line extending toward the northeast from Andromeda's head to her feet. North of the middle star in this line are two fainter stars, constituting the girdle of the imaginary chained figure. Not far from the uppermost of these fainter stars, the naked eye, on a clear night, detects a hazy speck. It is the Great Nebula of Andromeda, and its central condensation can be glimpsed with an opera glass.

North of Andromeda the eye is caught by a zigzag row of stars resembling the letter "W;" these mark the constellation Cassiopeia. The western part of the "W" forms, it will be observed, a more perfect triangle than the other part. Beginning at this end, the stars are named, in their order, Beta, Alpha, Gamma, Delta and Epsilon. Less than half way from Alpha to Gamma is a fainter, yet fairly conspicuous, star named Eta. This is a very beautiful double, and a splendid object for those who have telescopes of three inches or more in aperture. The components are of magnitudes 4 and 7.5 and their distance apart is about 5 seconds. The larger star is yellow and the smaller purple, a peculiar combination.

A test for a more powerful glass, say not less than 4 inches aperture, is furnished by the star Iota. This will be found next beyond Epsilon in extension of a line drawn from Delta through Epsilon. It is a triple, the largest star being of the fourth magnitude. Its nearest companion, distant only 1.5 seconds, is of the seventh magnitude. At a distance of 9 seconds is another companion of the eighth magnitude.

Following Cassiopeia and Andromeda from the east appears Perseus, the hero armed with diamond sword and flying sandals who, in the old classic story, rescues Andromeda from the sea monster. Perseus is a striking constellation marked by a bow-shaped row of stars, the middle one of which is the brightest of the group. With an opera glass or a telescope the background of

the sky on which Perseus appears flying is a wonder of starry beauty. The principal star of Perseus, in particular, has an amazing double loop of small stars apparently attached to it as if they were gemstrung upon a swinging whiplash. Interposed between Perseus and Cassiopeia appears the glowing starry mass of the sword handle, plainly visible to the naked eye, and a glorious object for a modern binocular glass.

Between Perseus and the last star in Andromeda is the marvelous star Algol. Although this star's changes have been noticed for centuries, it is only within recent years that their cause has been known. It seems certain that the remarkable loss of light which Algol experiences every two days, twenty hours, and forty-nine minutes is due to an eclipse caused by the passage across the star of a huge black companion revolving close around it. The fading of Algol and its subsequent recovery are very interesting to watch. The process occupies several hours. There will be a minimum at about ten minutes before 10 P. M. on the 22nd of October.

The possessor of a telescope should not leave the constellation Andromeda without looking at the celebrated double Gamma, the last in the row of three bright stars first described.

West of Cassiopeia, and between zenith and the Pole Star, will be found Cepheus, who was the father of Andromeda and the husband of Cassiopeia. His constellation is not very conspicuous. Four of its brightest stars form a diamond-shaped figure. Lyra, the Northern Cross, and Aquila will be seen descending the western sky, while Hercules is setting. Aquarius is on the meridian, the bright star Fomalhaut shines alone in the south, and Taurus and Auriga are rising in the northeast.

THE PLANETS.

Mercury is a morning star in October, being found in the constellation Virgo at the beginning and in Libra at the end of the month. On the 19th it passes superior conjunction to become an evening star. There is a very close conjunction of Mercury and Jupiter in the forenoon of the 16th, when the planets, unfortunately, will be hidden by daylight.

Venus is still the glory of the evening twilight, becoming brighter and brighter until the 27th, when it attains its greatest brilliancy. It is continually drawing nearer the earth, and in the telescope its crescent figure becomes noticeably narrower and more elongated from week to week. In the course of the month Venus moves from the constellation Libra into Scorpio, and on the 18th it will be near the red star Antares.

Mars is becoming more conspicuous, as it rises earlier and approaches the earth. At the beginning of the month it rises about 11 P. M. It passes from Gemini into Cancer and grows rapidly brighter. Its polar snow-cup should be looked for with the telescope.

Jupiter, which is too near the sun to be observed, passes three or four degrees north of the star Spica in Virgo, and comes into conjunction with the sun on the 13th, after which it emerges in the morning sky.

Saturn remains on the borders of Scorpio and Ophiuchus, and its brilliancy, too, is diminished by the twilight. It is in conjunction with Venus on the morning of the 22nd.

Uranus, just west of Eta, in Scorpio, is in conjunction with Venus on the 10th.

Neptune still rides on the "golden horus" of Taurus.

THE MOON

Like September, October this year opens with a waning moon. The new moon of the month occurs on the 15th, the first quarter on the 22nd, full moon on the 29th, and last quarter on the 7th. The moon is nearest to the earth on October 19th and farthest from it on October 7th.

The lunar conjunctions with the planets occur as follows: Neptune, 5th; Mars, 8th; Mercury, 15th; Jupiter, 15th; Uranus, 18th; Venus, 18th; Saturn 18th.

Out of the ninety annual meteoric showers enumerated by Mr. Denning, nine are noted as of more than usual brilliancy, and one of these falls on the night of October 18th, the radiant being in the eastern part of Orion.

—Scientific American

Magnificent Bequests.

The will of the late Mr. Robert Hamilton has been admitted to probate, executed at Brighton, England, in 1884, and has four codicils. The total amount of property is \$2,027,240. His widow is left an annuity of \$12,000. The four daughters receive \$250,000 each, with reductions for donations during lifetime of deceased; Mr. John Hamilton, \$500,000, less donations the children of his daughter Jessie, \$221,000; the Bishop of Niagara, \$50,000; the nephews, Messrs. G. W. Charles and Robert C. Hamilton, \$20,000 apiece; his nephew, G. Hamilton-Thompson, \$10,000; the mission fund of the Quebec Church Society, \$45,000; and Bishops College, Lennoxville, \$45,000; the Bishop of Montreal, for clergy in Gatineau county, and the mission fund of the diocese of Ottawa, \$10,000 each.

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