would manifestly make a river race in two directions unfair to the Atalanta; and since the disputed race came off on the Sound, the second trial would seem more conclusive if made over the same course.

PNEUMONIA AND OZONE.

Dr. Draper, of the Meteorological Observatory at Central Park, New York city, has called attention to the fact that during the past eight years there has been an apparent connection between the death-rate from pneumonia in New York and the presence of ozone in the atmosphere. The epidemic has been particularly fatal during the present year, and it is stated on good authority that the death-rate from this cause has exceeded that from cholera in 1854. It has not been determined whether the connection between the disease and the ozone in the air is simply a coincidence, or whether there are scientific reasons for their joint appearance.

We know as yet but little about either the cause of the disease or of the modified form of oxygen which we denominate as ozone. In pursuing an investigation to discover their true relation, should any be found, two cases are possible: either that the ozone, which in large quantities we know to be injurious to health, is the direct cause of the disease, or that the same atmospheric conditions which produce ozone are also favorable to the spread of pneumonia. We are inclined to believe that the connection is purely accidental, but of the two hypotheses, the latter seems the more tenable, though Dr. Draper has apparently given it no consideration.

ASPECTS OF THE PLANETS FOR OCTOBER.

SATURN

is morning star. He takes the leading part among his brethren, for a noteworthy epoch occurs in his long journey round the sun. He reaches perihelion, or his nearest point to the sun, on the 21st, at 7 o'clock in the morning. As this event occurs only once in nearly thirty years, it must rank as a high festival in the solar family.

The sun and the member of his family who is second in size, and first in the surpassing beauty of his system, make their nearest approach to each other. It is 29½ years since their last meeting under similar conditions. During that time, Saturn has traveled more than five thousand million miles in making his vast circuit around the sun, and now looks the great luminary in the face from a standpoint 100,000,000 miles nearer than when, fifteen years ago, he passed aphelion or his most distant point from the sun.

Figures give little idea of distances to finite minds when trying to form an idea of the space that intervenes between our planet and one that revolves in an orbit of vast circumference like that of Saturn. The difference even between his least and greatest distance from the sun is greater than the whole distance that separates us from the mighty orb on whom all the planets depend for life and light.

The reason for the varying distance of the planets is easily understood. Each planet moves in an elliptical orbit, the sun being in one of the foci of the ellipse. There must be a point in each orbit where the planet is nearest to the sun, or in perihelion, and also a point where the planet is farthest from the sun, or in aphelion. Saturn illustrates the former condition and Venus the latter during the present month. The ellipticity of the orbit, or the eccentricity, as it is called, varies greatly in the different planets. Mercury has the greatest eccentricity, Mars comes next, and Saturn takes the third place, while Venus has the least, her orbit being nearly circular.

The perihelion of Saturn is an important astronomical event, and has been anticipated for years with eager interest. But why should the nearest approach of this planet to the sun be of so much consequence to terrestrial observers? is a question that naturally arises to thoughtful minds. It is because when Saturn is nearest to the sun, he is, under certain conditions, nearest to the earth, and the approach is easily perceptible in his increased size and greater brilliancy. There are three conditions that, when united, give the best possible views of Saturn. He must be in perihelion, his rings must be open to their widest extent, and he must be in opposition, or Saturn, the earth, and the sun must be in a straight line, with the earth in the middle. These three conditions are nearly united in the present position of our magnificent brother in regard to the earth. He is in perihelion, his rings are open to their widest extent, and he is within two months of opposition, as well as in high northern declination.

Nearly a whole generation will pass away before Saturn will again be seen under conditions as favorable as those he now presents. Instead of a dull, murky, and ill-omened star, he shines with a soft and serene light, that gives him a pre-eminence among the surrounding stars, and brings out the best aspect of the planet that ranks as second in the solar scheme. His proximity increases his size, and his wide open rings give him an elliptical form to eyes blessed with exceptional visual power. It is field day with astronomers, who will eagerly improve the rare occasion in searching for new satellites, in seeking to find out what the rings are made of, and in tracing the shadowy belts on the planet's disk.

No guide will be needed to point out Saturn's position in the heavens. He rises on the 1st, in the northeast, about 10 o'clock, and cannot fail to be recognized by any observer who commands a view of the eastern horizon. He will rise about four minutes earlier every evening until the end of the month, when his beaming face will be visible soon after 8 o'clock. He is still classed among the morning stars, although he rises early in the evening. For according to astronomical law, planets on the western side of the sun rank as morning stars, those on his eastern side rank as evening stars. Saturn will be on the western side until opposition in December.

He is in quadrature with the sun on the 1st, at 1 o'clock in the morning, being 90° west of the sun, and half way between conjunction and opposition. He has been traveling eastward or in direct motion for several months, but is stationary about the time of perihelion.

The right ascension of Saturn on the 1st is 6 h. 15 m.; his declination is 22° 18′ north; his diameter is 17·4″; and he is in the constellation Gemini.

Saturn rises on the 1st about a quarter after 10 o'clock in the evening; on the 31st he rises a quarter after 8 o'clock.

VENUS

is evening star. As we classify the planets in the monthly presentation according to the interesting incidents they supply for observation, Venus easily wins the second place on the October list. She grows more beautiful all the time as she recedes from the sun, while her increasing distance being now plainly perceptible in the longer time she remains above the horizon after his departure. When the month closes, she will set two hours and a quarter after sunset. She will be the gem of the early evening sky in October, wending her shining way in the southwest, and leaving but one regret, that her path is not further north while she takes on her present lovely aspect. She has passed near several first magnitude stars since she became evening star, paying her respects to Regulus in July, Spica in September, and she will be near Antares in October, on the 16th, being 3° north at the time.

Venus is in aphelion on the 16th at 10 o'clock in the evening. Her eccentricity, however, is so small that her orbit is considered circular for all ordinary purposes.

The right ascension of Venus on the 1st is 14 h. 57 m.; her declination is 18° south; her diameter is 15·2″; and she is in the constellation Libra.

Venus sets on the 1st about 7 o'clock in the evening; on the 31st she sets at nearly the same time.

MARS

is morning star. He rises about a half hour after midnight, and varies little in his time of rising during the month. He may be found at the close of the month a little way northeast of Regulus, and is visible as a small red star.

The right ascension of Mars on the 1st is 8 h. 48 m.; his declination is 19° 3′ north; his diameter is 5·4″; and he is in the constellation Cancer.

Mars rises on the 1st about a half hour after midnight; on the 31st he rises a few minutes after midnight.

JUPITER

is morning star. He is too near the sun to be of much consequence at present. But he is making his way rapidly to visibility, and when the month closes, he rises more than three hours before the sun.

He is in conjunction with Beta Virginis on the 21st, at 2 o'clock in the afternoon. Observers will not be much the wiser for this meeting of planet and star, but it takes place just as surely as if it were as plainly visible as the rising of the moon.

The right ascension of Jupiter on the 1st is 11 h. 29 m.; his declination is 4° 26′ north; his diameter is 29·6″; and he is in the constellation Virgo.

Jupiter rises on the 1st a quarter after 4 o'clock in the morning; on the 31st he rises a quarter before 3 o'clock.

MERCURY

is morning star until the 16th, and then evening star. On the 16th, at 5 o'clock in the morning, he is in superior conjunction with the sun, having completed one of his swift circuits from superior conjunction to superior conjunction again in 115 days, his synodic period.

On the 4th, at 8 o'clock in the evening, he is in conjunction with Uranus, being 1° 13′ north.

The right ascension of Mercury on the 1st is 12 h.; his declination is 2° 3′ north; his diameter is 5·2″; and he is in the constellation Virgo.

Mercury rises on the 1st about a quarter before 5 o'clock in the morning; on the 31st he sets at 5 o'clock in the evening.

URANUS

is morning star. He is too near the sun to be of any interest to students of the stars. His monotonous course is, however, enlivened by a meeting with Mercury on the 15th.

The right ascension of Uranus on the 1st is 12 h. 14 m.; his declination is 0° 49′ south; his diameter is 3·4″; and may be found in the constellation Virgo.

Uranus rises on the 1st a quarter after 5 o'clock in the morning; on the 31st he rises at half past 3 o'clock.

NEPTUNE

is morning star.

The right ascension of Neptune is 3 h. 33 m.; his declination is 16° 22′ north; his diameter is 2·6″; and he is in the constellation Taurus.

Neptune rises on the 1st about half past 7 o'clock in the evening; on the 31st he rises about half past 5 o'clock.

THE MOON.

The October moon fulls on the 23d at 4 h. 22 m. P. M. The moon is in conjunction with Saturn on the 1st at 6 h. 9 m. A. M., shortly before the last quarter, being at the time 4° 15′ south. She is in conjunction with Mars on the 3d, at 2 h. 5 m. P. M., being 5° 4′ south. She encounters Jupiter on the 6th, at 11 h. 49 m. A. M., being 1° 25′ south.

There is a very close conjunction or an appulse between the moon and Uranus on the 7th, at 6 h. 56 m. A. M., the moon being only 6′ north of the planet. She is in conjunction with Venus on the 11th, three days after new moon, at 6 h. 39 m. A. M., being 6° 23′ north. On the 25th, at 8 h. 58 m. A. M., she is at her nearest point to Neptune, being 2° 44′ south. She is in conjunction with Saturn a second time on the 28th, at 0 h. 4 m. P. M., being 4° 7′ south, and with Mars on the 31st at 11 h. 7 m. P. M., being 4° 15′ south.

OCTOBER'S

starlit sky presents one prominent subject for observation and study. It is the perihelion of Saturn. The sun and the most richly gifted of his sons are at their closest point of approach, 100,000,000 miles spanning the distance that intervenes between Saturn's perihelion and aphelion. Fortunately the earth approaches that point of her orbit where her path lies almost between the sun and Saturn, and she profits largely by the proximity, for the increased size and clear radiance bear testimony to the nearer neighborhood of the ring-girdled planet. It seems absurd, however, to speak of the nearness of an object whose mean distance from the sun is 881,000,000 miles. We are at sea, without a pilot, in seeking to comprehend dimensions where a million miles is the measuring unit. But we can see results in the beauty and brightness of a planet that fifteen years hence will shine with a dull, murky light in striking contrast with his present serene aspect.

Astronomers who make Saturnian investigation a specialty will improve the present favorable conditions. It will not be unexpected if they find out whether the dark spaces between the rings are merely shadings in or between the myriad satellites that make them up, or even if a ninth moon should be detected faintly gleaming among its brethren.

If twenty-five years exhausts an astronomer's highest power of observation, before Saturn's return to perihelion in 1915 observers who are now in their golden prime will have lost their power to see clearly, observers who are just entering the astronomical field will rejoice in the maturity of visual strength, and observers who are but children now will become aspirants for the laurels the heavens bestow on those who devote their life work to the study of celestial mysteries.

Nearly a generation of those who now tread the earth will sleep peacefully in its bosom, while this wonder of the skies traverses the vast path that forms his circuit round the sun. A generation of men lives and dies in one Saturnian year!

Well may it be said that the study of astronomy promotes humility, teaching, as no other science can, the insignificance of humanity!

What is our earth with her one moon in the material scale by the side of the magnificent Saturn with his rings, moons, and belts? We may, however, find consolation for our littleness in the thought that the earth is in her perfection of development, while the primeval fires of Saturn still burn. When animate life reigns on this peerless planet, the earth, according to the law of inevitable decay, will be a dead world, cooled down to the condition of our satellite, where life and moisture are unknown. Mars and Mercury will perhaps succumb to the same law before the earth, on account of their smaller dimensions, while Venus will keep pace more nearly with her twin sister. The four great planets will then rejoice in physical perfection, and take the place now occupied by their more insignificant brethren. But millions of years will be required to effect these changes, and the inhabitants of this little planet can meanwhile behold the process of world making on the larger planets, and the process of decay on the smaller ones, while they wait patiently for what is to come.

Vulcan Hammers for Sweden.

Wm. P. Duncan & Co., of Bellefonte, Pa., have just shipped an 80 lb. Vulcan power hammer to Sweden, and are constantly receiving orders in this country. This hammer is growing in favor every day.