ASPECTS OF THE PLANETS FOR OCTOBER.

SATURN

is morning star, though he is now near enough to opposition to lend a charm to the October evening sky throughout the whole month. A few minutes before eight o'clock, he may be seen serenely rising in the northeast, taking on a more superb aspect than he has manifested for thirty years. He may be easily recognized by his soft, steady light and his near vicinity to the Pleiades. He rises earlier each night, and, at the end of the month, comes beaming from the eastern horizon a quarter before six o'clock.

When it is remembered that Saturn travels round the sun at a mean distance of eight hundred and eighty-one million miles, twice the distance of Jupiter, and that his mass is only one-third of that of his giant brother, it seems unaccountable that, from his far away home, he should shine as a star of the first magnitude in our sky. But observation substantiates the theory that Saturn as well as Jupiter, and probably the two other giant planets, Uranus and Neptune, have only partially cooled from a condition of incandescent heat, that they are somewhat in the condition of the sun, and give out heat and some light to increase their beautiful appearance in our sky.

It is possible, before the waters and atmosphere of the earth are absorbed into her interior in the long process of decay, and she becomes a dead world like the moon, that terrestrial observers may witness the gradual cooling of these gigantic planets, and the paling of their luster among the stars. Never in the lifetime of present observers will a more eligible opportunity occur for observing with the naked eye the grand appearance of Saturn as during the three coming months. Never will the telescopist enjoy more delightful views of this magnificent and complex system of worlds than those which will delight his eyes for three years to come.

Those who wish to trace Saturn's position on the star-maps will find him in right ascension 3h. 35m., in declination 16° 52′ north. His place in the heavens is in the constellation Taurus, and his nearest brilliant neighbors among the stars are the clustering Pleiades and Hyades. He has reached his extreme northern declination and will now travel slowly southward. His diameter now measures about eighteen and a half seconds.

Saturn now rises at a few minutes before eight o'clock in the evening; at the close of the month he rises about a quarter before six o'clock.

JUPITER

is morning star, and glorious to behold as he comes darting above the horizon, two hours after Saturn, the most princely star that adorns the firmament at the time of his rising. About eleven o'clock the eastern heavens are aglow, with Jupiter and Saturn for the principal actors, surrounded by the sweet influences of the Pleiades. Orion with the symmetrical bands that no one can loose, and the brightest of the northern brilliants Capella.

As Jupiter is only half as far away as Saturn, and very much larger, we see him under much more favorable circumstances, and the amount of heat and light he probably gives forth is in proportion to his giant bulk. It is generally conceded that he is surrounded by a cloud atmosphere some twenty thousand miles in depth, and that commotions in this cloud atmosphere are the cause of the beautiful belts that adorn his disk. It is probable that we never see the body of the planet, unless it may be through some of the enormous rifts that are frequently seen on his surface.

The right ascension of Jupiter is 6h. 4m., his declination is 23° north. His diameter measures 38·6″. His place in the heavens is in the constellation Gemini, about midway between Capella and Betelgeuse, and northeast of Sirius.

Jupiter rises on the 1st a few minutes before ten o'clock in the evening; at the end of the month he rises a few minutes before eight o'clock.

NEPTUNE

is morning star and retains his place as herald of the morning trio. Those who wish to trace his position on the star-maps, and thus track his unseen steps, will find him in right ascension 3h. 6m., and in declination 15° 34′ north. His place in the heavens is in the constellation Taurus, a short distance southeast of Saturn. There are but twenty-five minutes difference in the time of transit of the two planets.

Neptune rises on the 1st at half-past seven o'clock in the evening; on the 31st he rises at half-past five o'clock.

URANUS

is morning star, and as he has but recently taken on the role, he has not progressed very far from his near proximity to the great luminary. Planetary students will find him on the star-maps in right ascension 11h. 25m., and in declination 4° 36′ north, just entering the constellation Virgo.

Uranus now rises about half-past four o'clock in the morning; at the end of the month he rises about half-past two o'clock.

MERCURY,

as if often the case, may be said to be on the fence, for he is evening star until the 22d, and then morning star for the rest of the month. On the 22d, at eleven o'clock in the evening, he comes into inferior conjunction with the sun. He then passes between the earth and the sun, and if his orbit were not inclined to the ecliptic or sun's path he would make a transit over the sun's disk.

On the 13th Mercury is in conjunction with Mars at eight o'clock in the morning, Mercury being 3° 25′ south. They are both too near the sun to make the conjunction of any account to terrestrial observers. Indeed, four of the planets, Neptune, Uranus, Mercury, and Mars, might as well be dropped from the monthly record as far as any visible part they play on its annals is concerned. But the student who is thoroughly interested in these mysterious wanderers will find pleasure in tracing their unseen as well as their visible course. Knowing their right ascension and declination he will find their place in the heavens on any reliable star-maps.

Mercury's right ascension is 14h. 2m., his declination is 15° 45′ south, and his diameter 7″. His place is in the constellation Virgo, and his most brilliant starry neighbor is Spica or Alpha Virginis.

Mercury sets on the 1st about half-past six o'clock in the evening; at the end of the month he rises shortly after five o'clock in the morning.

MARS

is evening star, and pursues his slow course too near the sun to be perceptible to the most sharp-sighted star-gazer. There is nothing in his present movements to interest the student. He has dwindled to insignificant proportions, lost his ruddy hue, and his light is dim among his peers. Sixteen months must pass before his next opposition takes place, and ten years must roll their annual circuit before he takes on his most brilliant phase. We have already drawn attention to his conjunction with Mercury.

His right ascension is 13h. 47m., his declination is 10° 57′ south, and his diameter is 4″. His place in the heavens is in the constellation Virgo, between Mercury and Spica.

Mars sets now about half-past six o'clock in the evening; at the end of the month he sets about half-past five o'clock.

VENUS

is evening star, and though we place her last on the list, she leads the solar brotherhood in size, beauty, and general magnificence during the short stay she makes in the western heavens. She is now near enough to her period of greatest brilliancy to be easily seen before sunset by those who know where to look for her, and she is bright enough to cast a perceptible shadow. No observer can look unmoved upon the Queen of the Stars, as every clear night she makes her appearance in the evening sky, or fail to admire the fascinating grace with which she retraces her steps toward the sun. Her charming pensile loveliness is beyond words to describe as she hangs like a golden lamp suspended by invisible chains from the star depths, fed by celestial fire, forming a picture never two evenings alike, and never ceasing to call forth the reverent admiration of the beholder.

Venus is traveling from her greatest eastern elongation to her inferior conjunction, pursuing her retrograde course with flying feet.

She gets up a charming tableau as she proceeds on her winding way. On the 16th, at five o'clock in the afternoon, she is in close conjunction with the first magnitude star Alpha Scorpii, better known as Antares, the familiar red star in the constellation of the Scorpion.

At her nearest approach she is only eight minutes from the star, and as planet and star will be visible soon after that time, the opportunity for observation will be unusually favorable and will form a delightful study for observers. The contrast in dimensions between Venus, when nearly at her brightest, and a first magnitude star, and the contrast in color between the red tint of Antares and the soft golden hue of the planet, are points to be noted, as well as the exceeding beauty of the scene in which the actors are sure to appear as soon as the short autumnal twilight fades.

Antares is almost as easily found as Venus, being a brilliant red star east of the planet. Observers will find great pleasure in watching their gradual approach from night to night until they meet and pass each other on the celestial highway, approaching at conjunction more closely than any other planet and star have done before during the year.

The right ascension of Venus is 15h. 26m., her declination is 22° 38′ south, and her diameter is 26 8″. Her place in the heavens is in the constellation Scorpio, where she may now be seen approaching Antares.

Venus sets on the 1st about nineteen minutes after seven o'clock in the evening; at the end of the month she sets about half-past six o'clock.

Successful and Unsuccessful Inventors.

Why are many apparently good ideas not successful when brought before the public as new inventions? This is a question, adds an English contemporary, which many inventors have asked themselves, and in answering it have blamed the world all round, but never themselves. This may seem singular to many people, but let us see how this occurs.

Inventions, no matter of what kind, but especially those connected with manufacturing, originate generally either with the person occupied with manufacturing as master or as servants, or with the machine maker who supplies the machines and tools used by the former. The manufacturer, operative or not, finds that his goods are not as perfect as they should or might be; his competitor is doing as well as himself, and may soon distance him through being backed by larger means; so he begins to think how he can distance him; how he can increase this production and diminish the cost, and thus do more with a smaller capital; or how he can make a superior quality out of the same material, and so make his goods more acceptable to the consumer.

The machine maker is in the same position as the manufacturer, only instead of having to cater for the public he has to work for the manufacturer; but still he has the same motives as the latter to produce something new or cheaper, and the prime motive with him is likewise the competition of others. He makes, we will say, a loom such as is used in his district, and for which there is always a demand, but this demand is supplied not only by Smith, but also by Jones, by Robinson, and by Taylor. As Smith is not an easy-going man, but one with brains, he endeavors to get precedence of the others, which he can only do by producing looms more cheaply or better. To make cheaper, without making them as good as the others, would be impossible, as competition has only allowed a narrow margin of profit; so he must make them better by furnishing a loom which will either produce more cloth, or one which takes less power to drive, or less attendance on the part of the weaver, or in other respects accomplishes more than others. In order to produce something better than their competitors, both manufacturers and machine makers try to invent improvements, very often spending over them much time and money. If they succeed they generally reap the reward of their exertions. When, however, inquiries are made among the general body of inventors, many are found who have a different tale to tell. Many have spent their money, wasted months and years, ruined their health, and finally have died poor and broken-hearted. And yet how many have come before the public, satisfied with their inventions themselves, only to find that the thing is pooh-poohed or pronounced ingenious but impracticable! There is still another class of equally unfortunate inventors, who are successful enough as far as it goes, but who go and upset their own inventions as soon as they are introduced by another which supersedes them, and which is, in its turn, put aside after awhile by another, all of which are only different ways of doing the same thing, but none of which have any material advantage over existing modes of working.

Where there are so many failures, there must naturally be something wrong somewhere, and we think we have not far to search to find the cause. Generally, no one is to blame for it but the inventor himself. Not that he does not understand his subject—for we are not considering outsiders who think that they are geniuses and cure-alls—but because they are working unaided and looking at the object in view only from their own standpoint, while, if they had the assistance of others, possessing the knowledge of which they themselves are deficient, their labor would either not be wasted or be more successful. How often does it occur that a machine maker thinks he can improve a machine, but when it comes to work it is not so handy for the operative, or the latter finds it too complicated; this or that part gets out of order under certain conditions of working; or it will do for one material, but not for another, for which it is quite as needed; or a hundred other inconveniences which only the operative who attends to it can discover. The manufacturer is no better off; he finds that the machines he is using have this or that defect; he watches them hour after hour, day after day, and thinks how this could be mended. At last he has found the reason of the defect, and he sets to work to carry his improved ideas out; but here he meets with innumerable difficulties. There ought to be a wheel here, but there is no room for it; there he wants a forward motion, but all the moving parts at hand have a rotating motion, and at a speed which is useless to him; here this is in the way, and there that, and if at last he gets all his motions, there are so many parts about it, that all his time and attention are required in keeping them in order.

Now, if the two could be brought together, the manufacturer would tell the machine maker at once, or very soon, that he was on a wrong track, that the alterations would be unsuitable for certain materials, and his experience with the latter would enable him to show that they require quite a different treatment; or the machine maker would show the manufacturer in a few minutes how to overcome certain mechanical difficulties which are only child's-play to him, but are a puzzle to his friend. The latter is, perhaps, the more frequent case, and is the reason why so many inventions soon pass from the hands of the operative manufacturer into those of the mechanic, who remodels and often reaps the principal benefit from them. Only very recently a case in point occurred where an old workman, one who thoroughly understood his business, had spent many years in producing an invention which turned out to be useless through mechanical faults of the arrangement, and which, when abandoned by the inventor, passed into the hands of a machine maker who had the thing working successfully in less than three months.

In advocating the co-operation of manufacturer and mechanic, it may be objected that it is often dangerous to communicate one's ideas to another who might see through them at a glance and appropriate them. Such things are possible, and have been done more than once, but generally only where people have trusted an unworthy person. We think, on the whole, it would be better for the inventors of both classes if they took the trouble to look for a capable man with a good reputation, and who possesses the qualities in which they themselves are deficient, even at the risk of having to give up a share of the profits, for at the end their gains would be more than if they worked for a length of time in the dark.

MM. Pellicot and Jaubert claim to have destroyed the winter egg of phylloxera, and arrested the multiplication of that pest by treating the vines with a solution of 1 kilo of sulphate of iron in 2 liters of water.