prisoned ants, but is probably not so great in a state of nature. Mr. McCook suggests that with ants, as with men, an artificial condition of society gives inducement to a larger devotion to personal appearance.

ASTRONOMICAL NOTES.

BY BERLIN H. WRIGHT.

PENN YAN, N. Y., Saturday, September 28, 1878.

The following calculations are adapted to the latitude of New York city, and are expressed in true or clock time, being for the date given in the caption when not otherwise stated.

PLANETS.

	H.M.		H.M.
Mercury rises	4 27 mo.	Saturn in meridian	11 29 eve.
Venus rises	4 29 mo.	Uranus rises	3 08 mo.
Mars rises	5 40 mo.	Neptune rises	7 13 eve.
Jupiter sets	0 15 mo.	Neptune in meridian	2 02 mo.

FIRST MAGNITUDE STARS, ETC.

	H.M.		H.M.
Alpheratz in meridian	11 31 eve.	Procyon rises	0 46 mo.
Mira (var.) rises	7 54 eve.	Regulus rises	2 50 mo.
Algol (var.) in meridian	2 32 mo.	Spica	invisible.
7 stars (Pleiades) rise	7 41 eve.	Arcturus sets	8 51 eve.
Aldebaran rises	9 00 eve.	Antares sets	8 11 eve.
Capella rises	6 27 eve.	Vega in meridian	6 02 eve.
Rigel rises	11 06 eve.	Altair in meridian	7 14 eve.
Betelgeuse rises	10 52 eve.	Deneb in meridian	8 07 eve.
Sirius rises	1 11 mo.	Fomalhaut in meridian	10 26 eve.

REMARKS.

Mercury rises 1h. 26m. before the Sun, and 6m. after the beginning of twilight. He is advancing among the small stars of the constellation *Leo*, being two thirds through the sign. There are no stars in his vicinity bright enough to be mistaken for him; the brightest being *β Virginis*, of the third magnitude. He will be in conjunction with Venus September 30. Their conjunction in right ascension occurs about 9 o'clock in the morning, and as Mercury has the greater apparent eastward motion in right ascension, he will, when first seen, be east of Venus. Venus will be the brighter and south of Mercury about ¼°. Mars is still too near the Sun to be seen. Jupiter will be near the moon October 4. Saturn is a trifle east of the equinoctial colure, and a line from Alpheratz through Algenib (the two eastern stars in the square of *Pegasus*) produced 30° southward will pass through him.

Astronomical Notes.

OBSERVATORY OF VASSAR COLLEGE.

The computations in the following notes are by students of Vassar College. The times given are merely approximations, but are sufficiently accurate for ordinary observers.

M. M.

Position of Planets for October, 1878.

Mercury.

On October 1 Mercury rises at 4h. 36m. A.M., and sets at 5h. 10m. P.M. It may be perhaps seen before sunrise. On October 31 Mercury rises at 6h. 59m. A.M., and sets at 5h. 2m. P.M.

Its path is so nearly that of the sun that it cannot be seen. Mercury, which is near Venus early in the month, passes south of it before the middle of the month.

Venus.

On October 1 Venus rises at 4h. 36m. A.M., and sets at 5h. 8m. P.M. It will be seen that at this time Mercury and Venus rise and set nearly together. On October 31 Venus rises at 5h. 49m. A.M., and sets at 4h. 35m. P.M.

Mars.

Mars is not likely to be noticed by the casual observer. It rises on October 1 at 5h. 38m. A.M., and sets at 5h. 32m. P.M., being a little south of the equator. On the 31st Mars rises at 5h. 20m. A.M., and sets at 4h. 18m. P.M.

Jupiter.

Although Jupiter has passed its best position, it is very conspicuous in the evening.

On October 1 Jupiter rises at 2h. 38m. P.M., comes to meridian at 7h. 16m. P.M., and sets at 11h. 54m. P.M. On October 31 Jupiter rises at 47m. after noon, and sets at 10h. 8m. P.M.

Jupiter is always interesting; the changes of position of the four moons give great variety to the views which can be obtained with a small glass.

If we take the hours between 8 and 10 P.M. for our observations, we shall find fourteen evenings in October when some one of the four satellites is invisible, and one evening when two are invisible.

The 1st satellite is lost to sight during a part of these hours on the 1st, 8th, 17th and 24th of October, by going behind the planet. The same satellite is unseen at these hours on the 9th and 16th, because it is in front of the planet and its light is lost in that of the planet.

On October 4 the 2d and 4th satellites are missing at the same time, both being behind the planet. The 4th (that which is furthest from the planet) goes behind the planet early in the evening; the 2d, which is the smallest of the moons, disappears later; from 9 to 10 P.M. Jupiter is seen with two moons only.

October 13 the 2d satellite is not seen until after 9 P.M., as its light is lost in that of Jupiter, and on October 20 the same moon is again invisible because it is between us and the planet in transit. On October 22 this satellite may be seen to reappear from an eclipse, it having passed through the shadow of Jupiter.

The 3d satellite, which is the largest, is not seen on October 5 until it has passed off from the planet's face. On October 12, at about 9 P.M., this large satellite disappears (to small telescopes) by coming between the planet and our view; on October 23 it cannot be seen early in the evening, but comes out of the planet's shadow; and on October 30 it is not seen because it is behind the planet. Jupiter will be very near the moon October 31.

Saturn.

Saturn is in excellent position for evening observers. October 1 Saturn rises at 5h. 27m. P.M., and sets at 5h. 6m. A.M. of the next day. October 31 Saturn rises at 3h. 24m. P.M., and sets at 2h. 59m. on the next morning.

Saturn comes to the meridian at 11h. 16m. on October 1, at a height, in this latitude) of 45°. It can readily be known by its steady white light.

The ring which surrounds Saturn is seen now nearly on edge, so that to a small telescope it will seem like a line of light projecting on each side of the planet's disk. An ordinary telescope of perhaps two or three inches aperture will show the largest satellite, Titan.

Uranus.

Uranus will not be seen during October unless it be with a glass and in the early morning hours. Uranus rises on October 1 at 2h. 56m. A.M., and on the 31st at 1h. 5m. A.M.

Neptune.

Neptune rises on October 1 at 6h. 59m. P.M., and on the 31st at 5h. P.M. It will come to the meridian October 27th nearly at midnight, and its position is good, but to see it requires the best telescopes.

The Pigments of the Retina.

Some time ago we referred to the highly interesting experiments of Dr. Kühne, of Heidelberg, in connection with "visual purple"—that pigment of the retina which has been proved to be so susceptible to the influence of light. Following up his investigations, Dr. Kühne has published several important papers on the subject, the last of which appears in the current number of the *Journal of Physiology*. In the article under consideration, the author takes up the other retinal pigments, which are either not at all or only slightly affected by exposure to light.

In one of his previous papers he gives the method of preparation, the properties, and spectroscopic appearances of three distinct pigments of great stability, which he had discovered, and succeeded in isolating from the retina of a bird. In the same paper he simply mentions the black pigment of the retina, which he believes to be exceedingly stable, and but slightly alterable by light; but, while the paper was still in press, he discovered that this black pigment does not resist the action of light so perfectly as he was at first led to suppose, and is, after all, slowly altered by exposure; he therefore remarks that "if we consider the extremely widespread occurrence in the animal kingdom of the black pigment of the eye, and other similarly stable pigments, it is scarcely possible to repress the idea that these, in addition to visual purple, also represent visual excitants, or so-called visual substances, and are intended to be decomposed by light during life, and to yield those substances which stimulate chemically the terminal apparatus of the visual organ." He likewise directs attention to the remarkable fact that the retinal pigments of a bird he has discovered are so mixed with oil globules that the colors in the cones of the retina represent exactly half the colors of the spectrum, viz., from red to yellowish green, so that with their complementary colors they yield all the colors of the spectrum. He has observed, further, that these three pigments are most readily decomposed by blue light, less by green, and not at all by red.

The importance of these various discoveries of the able German histologist, in reference to vision, can scarcely be overestimated.

Insect Powder.

Why the flowers of the composite plants *Pyrethrum carneum* and *P. roseum*, when pulverized to form the well-known "Persian Insect Powder," should prove so destructive to insects, while perfectly innocuous to other forms of animal life, has not hitherto been understood. Rother, who has investigated the chemical composition of *P. roseum*, ascribes its active powers to the presence of an acid, or, more properly, of a glycoside, which he terms Persicin. It is a brown non-crystallizable substance, having the odor of honey, and when boiled with hydrochloric acid is converted into sugar and Persiretin. With alkalies it forms a neutral amorphous salt, as well as an acid crystallizable one.

Persiretin also behaves like an acid. The plant contains, in addition, an oily resin-like acid, Persiceïn. No alkaloid was found by Rother; Bellesone, however, obtained from the plant a crystallizable substance which exhibited exceedingly acetic properties. Hager, who has examined the flowers of both *P. carneum* and *P. roseum*, attributes their insecticide effects to the presence of two substances, one of which, a body allied to trimethylamine, is combined with an acid in the flower. This powder as well as the pollen has a peculiarly powerful effect as an irritant. Hager finds that aqueous or alcoholic extracts of the powdered flowers contain little of these ingredients, and consequently to be of no value as insecticides.

What Makes Success,

In business life two things are essential to success: First, sound judgment; second, activity. In all departments we find a greater deficiency in judgment than in other requisites. Long familiarity in a given department does not necessarily produce it, though this will undoubtedly aid and strengthen it. Only by reliance on one s self, and feeling individually responsible for the results of action founded on one's own efforts, can the fact be established of good or bad judgment. Special talent will not furnish it for a man who may have capacity for acquiring information, may be able to enter into learned discussions on supply or demand, may have vast knowledge of productions, their sources of supply, and their various uses, and still lack the ability to apply to practical and everyday use the benefits of such information.

So also one may become familiar with all the details of business through long experience in the service of others, and as a servant, or in an executive capacity, making himself invaluable without ever realizing the responsibility attached to individual discretion or judgment. In this belief we find an answer to the oft-repeated inquiry why so large a portion of business men are unsuccessful; to claim that so many fail to meet fair success through force of adverse circumstances, instead of permitting circumstances to control them. Men who have the capacity to comprehend the whole question presented to them, to properly weigh not only the side of success but of failure, and who understand the importance of right thinking and the full penalty of mistake, are the ones who succeed, and whether they get credit for having good judgment or not, they certainly exercise it.

Roses in Pots.

The ever-blooming roses are best for house culture in pots—because they bloom quicker and more continuously than any of the others, and besides this, their style and habit of growth are more bushy and better adapted to the purpose. They can be kept nicely with other growing plants, and with proper attention to their requirements will bloom freely. (1.) Do not use too large pots—if possible, not more than three or four inches. The rule is, one size larger than the plants have been grown in. The smaller the pot—provided, of course, it is large enough to contain the plant—the quicker and stronger the plant will start. It is very difficult to get a small plant to live and grow in a large pot. A rose will not bloom much till the pot is well filled with roots; therefore, small pots facilitate quick bloom. If the pots are old, they should first be thoroughly washed. If new, they should be soaked in water, otherwise they will absorb the moisture from the plant. (2.) Have good rich soil—mellow and friable. That made from old decomposed sods is best. If manure is used, it should be old and thoroughly composted; fresh manure is injurious. (3.) Put some bits of broken crockery, charcoal, or other similar material. in the bottom of each pot to facilitate drainage, then enough fine earth to raise the plant to a proper height. It should not be much deeper than it was before. Next put in the plant and spread out its roots as near their natural position as possible; then fill in fine earth and press firmly down with the hand. When done, the pot should not be quite full; a little space is needed for water. (4.) When first potted, water thoroughly, and if the sun is strong, shade for a few days; then give full light and air. Though the plant should not be allowed to wither for want of water, the earth should get moderately dry before watering again. Too much water is worse than not enough. Very little water is needed until the plant starts to grow.—*Guide to Rose Culture.*

Dyspepsia.

This malady, which is prevalent in all countries and especially so in the United States, has been ably treated, from a physiological standpoint, by Dr. J. Cornillon, of Vichy Springs, France. His lengthy paper on the relations of dyspepsia with constitutional diseases may be found in the SCIENTIFIC AMERICAN SUPPLEMENT of July 15 and 22, and will be read with interest and profit by all dyspeptic sufferers. Send 20 cents to this office for the two numbers, 132, 133.

New Agricultural Inventions.

Mr. George E. Clow, of Seymour, Ind., has patented an improved Scythe Snath Fastening, which consists of a ferrule formed with solid neck extension and enlarged head, slotted to receive and adjust the clamping loop. This device admits of a quick adjustment of the scythe on the snath.

Mr. John C. Welsh, of Stokes Station, Ill., has patented an improved Sulky Plow which possesses several novel features that cannot be properly described without an engraving.

The Deepest Mines in Nevada.

The Yellow Jacket is now the deepest mine on the Comstock lode, the greatest depth attained in it being on the 2,400 level, which is 2,833 feet below the Gould and Curry croppings, the datum line for the Comstock mines. The next deepest mine on the lode is the Savage, in which the greatest depth attained is 2,430 feet from the surface, or 2,643 below the datum line. The 2,200 level of the Yellow Jacket is equal to the 5,400 level of the Imperial; the latter is the third deepest mine on the lode.

ONE hundred and eleven thousand nine hundred and fifty-five persons visited the Paris Exhibition on the 15th of August, one of the chief holidays of the year.

AT a great shoe manufactory in Lynn, Mass., recently, a pair of kid side-laced woman's boots was made from the stock in just eleven minutes, in sight of visitors.