

THE HEAVENS IN SEPTEMBER.

BY GARRETT P. SERVISS.

During the first fall month the constellations which characterized the summer sky are beginning to pass successively from sight, while those that adorn the autumn evenings begin to advance from the east. In this transition period a description of the stars of autumn may, perhaps, better be postponed until next month.

THE PLANETS.

Mercury, which was visible in the west during August, passes its inferior conjunction with the sun on the 5th of September, becoming a morning star and attaining its greatest western elongation on the 21st. Mercury remains in the constellation Leo throughout the month.

Venus, having continued its eastward motion since its conjunction with Jupiter, in August, is found at the beginning of September in the constellation Virgo, four or five degrees east of the brilliant star Spica. At the middle of the month it crosses over into Libra, going fast toward the south. Venus attains its greatest elongation east of the sun on the 22d, at very near the same time when Mercury is at its greatest western elongation.

Venus rapidly increases in brilliancy during September, although the ratio of the illuminated portion of its disk as seen from the earth is constantly decreasing. Viewed with a telescope, Venus will appear in the form of a half moon about the 20th. Its increase in brightness is due primarily to the fact that it is swiftly approaching the earth, between which and the sun it will pass in October. Its brilliancy at the close of the month will be about one-third greater than at the beginning. The mystery of its rotation still remains unsolved, although upon its solution depends the question of the habitability of the planet by beings in any degree resembling ourselves.

Mars, remaining in the constellation Gemini through the month, and moving slowly eastward, is still a morning star, and although improving in position, is not yet a very interesting object for the telescope. Although an exterior planet, Mars exhibits phases and will be seen slightly ovoid in form, with a white patch due to the polar snow, visible with a good telescope at one end of the elliptical disk. Not much news concerning Mars is to be looked for before the conjunction of 1899.

Jupiter is still to be found in the constellation Virgo, where its meeting with Venus occurred in August. It disappears so soon in the evening twilight of September that before the end of the month it will have ceased to be a very conspicuous phenomenon.

Saturn still loiters in Ophiuchus, near the northern border of Scorpio and not far from the red star Antares. During the month Saturn will be the planet best situated for observation in the evening, not even excepting Venus, for, as was remarked last month, the best time for telescopic study of Venus is not after sundown, when the planet is seen blazing in the twilight, but in broad day, when it must be found from a knowledge of its exact position in the sky. The excessive brilliancy of the disk of Venus as compared with that of Saturn is a very interesting peculiarity, depending not merely on the difference of the distance of the two planets from the sun, but more especially upon an essential difference in their atmospheric surroundings.

Uranus remains on the borders of Libra and Scorpio, and Neptune, as a morning star, remains in the constellation Taurus.

THE MOON.

September opens with a waning moon. The new moon of the month occurs on the evening of the 15th; first quarter on the evening of the 22d, and full moon on the evening of the 29th. The last quarter of the preceding moon falls on the evening of the 7th. The moon is nearest to earth near midnight on the 24th and at its greatest distance on the evening of the 9th.

The conjunctions of the moon with the planets occur in the following order: September 8th, Neptune; 9th, Mars; 14th, Mercury; 17th, Jupiter; 19th, Venus; 20th, Uranus; 21st, Saturn.

The sun enters Libra and the astronomical autumn begins on the 22d, at 7 P. M., Washington mean time.

Boric Acid in Wines.

P. Carles points out that boric acid is present in many wines in notable proportions, and that it is found more frequently in white than in red wines. This is partly due to the fact that the clarifying agents generally employed, e. g., gelatin and isinglass, tend to putrefy unless an anti-ferment is present. For many years H₂SO₄ has been used for this purpose, but among its disadvantages it deprives red wines of their color, and is readily detected by its odor. Another reason for the use of boric acid is the demand for sweet white wines, hence its addition in order to check fermentation at a certain stage in the process. It is, of course, open to question whether, from a hygienic point of view, the use of boric acid is permissible in articles intended for human consumption, on account of its antiseptic properties.—Rép. de Pharm.

Science Notes.

After all public works in New York city have been stopped, under the new city administration, we are glad to learn that the Board of Estimate and Apportionment has authorized the reissue of \$375,000 in bonds for the construction of buildings for the Botanical Garden in Bronx Park. Work on the Museum building is being carried forward, the contract calling for its completion early next year.

The Manitou and Pike's Peak Railroad has just signed a contract for a large observatory to be built on the top of Pike's Peak. The tower can be seen for miles. The structure will be built very solidly, so as to withstand the terrible wind and snow storms which rage in winter over the barren top of the Peak. There will be four large telescopes mounted in the tower for observation purposes. With these it will be possible to see Denver, fifty miles to the north, and to the west Cripple Creek.

Successful demonstrations are reported to have been given in London by Lawson Tait with his electric hemostat, an instrument which, as the name denotes, is intended for the arrest of bleeding in surgical operations. A platinum wire, arranged to carry a current, is inclosed in the blades of a pair of steel forceps or any other requisite utensil, the wire being insulated by a bed of burnt pipe clay. In practice, a current of suitable voltage is turned on, the artery seized and compressed, and in a few seconds the tissues and arterial walls are so agglutinated that the passage of blood is rendered impossible. The temperature employed is about 180° Fah., showing a great difference between this and the electrical cauterizing instruments, and the necessity for a ligature is removed.

At a recent meeting of the Royal Dublin Society, Dr. F. T. Trouton communicated a method of measuring the surface tension of liquids which depends on the rate at which a column of liquid fills or empties itself out of a tube of fine bore, says The London Engineer. The tube is placed horizontally and has one end bent downward into a vessel of the liquid. By altering the level of the liquid it can be either arranged to measure the rate the tube fills, in which case the capillary forces draw the liquid up, or the rate of emptying, the capillary forces retarding. Were the flow viscous, the distance traversed would be proportional to the square root of the time. This was shown to be approximately true. Experiments were described using an inclined tube with a wide bent-down portion attached to the lower end. The rate of emptying could be made constant by making the height of the liquid in the wide part equal to the capillary elevation in the fine tube. Experiments were also described made with liquids such as soap solution, where surface tension varies with time.

The French expert in instantaneous photography, M. Marey, has been making an interesting study of the muscles during work. Says Cosmos in its report of the Academy of Sciences: "The mechanism of locomotion is very complex. The work of Mr. Marey has already elucidated a number of points, but he finds that the information at hand is yet very incomplete, and to get a surer base for deduction it is necessary to collect new facts. The obtain these complicated data, the process is somewhat laborious, but the results that it gives are quite worth the trouble. M. Marey indicates the plan that he employed, embracing eight successive operations. We shall notice only the fundamental ones. They consist in obtaining by chronophotography the series of attitudes of the animal in the acts to be studied, and then in killing it and preparing its skeleton, so that this can be photographed in the same attitudes as the living animal. Thus we have the elements for a complete study of the muscular system. M. Marey has applied his method to the horse, and gives very complete details of the series of successive operations and the deductions that can be made from them."

The Russian Geographical Society has undertaken to make, every year, a series of accurate measurements of certain glaciers, located for the most part in the Caucasus, says The Evening Post, with a view of determining any change in their bulk. In the case of eight glaciers upon which measurements have been made during the last eight or ten years, it was found that they have been steadily decreasing, the lower ends having retreated at an average speed of from 9 to 38 meters every year. Considering separately the northern and southern slopes of the Caucasus, the average speed of retreat of the former was found to be 22 meters per year, while the latter was 25 meters. In 1896 a number of new glaciers were discovered, while in Turkestan an exploring expedition in the Hissar range encountered a large number, several of which had as high an altitude as 13,000 feet at their highest point and sloped down to 10,000 or 11,000 feet at the lower end. Expeditions to Siberia have also secured considerable information of the glaciers of that region, about which previously little was known. In all cases careful investigation of their condition revealed the fact that they are constantly becoming smaller.

Naval Show at Madison Square Garden.

Frequenters of Madison Square Garden, New York, will find that the appearance of that famous place of recreation has been entirely changed by the naval spectacle which has been produced by Imre Kiralfy. The vast arena in which has figured every possible form of entertainment, from horse shows to charity bazars, is now occupied by a vast tank of water, which is intended to represent the naval battle grounds of the Spanish war. The tank is built of wood and leaded internally to make it watertight. It is some five feet in depth, and the circumference of this inland sea measures no less than one-ninth of a mile. At one end is a proscenium arch, provided with "drops," "curtains," "flies," "wings," and all the etcetera of a regular theater stage, the stage floor in this case being the waters of the tank. Within the stage are represented successively the city of Manila and the entrance to Santiago, and the engagements at these places are simulated by means of models of warships which are moved by man power over the surface of the tank. The stage illusions naturally call for a sympathetic and imaginative audience for the realization of the full effect; but with the stirring events of the war vividly in mind, the "spectacle" proves to be thoroughly entertaining.

The Laughing Plant.

This grows in Arabia, and derives its name from the peculiar intoxication produced in those who partake of its seed. It is of moderate size, with bright yellow flowers and soft velvety seed pods, each of which contains two or three seeds resembling small black beans. The natives of the district where the plant grows dry these seeds and reduce them to powder. A small dose of this powder has effects similar to those arising from the inhalation of laughing gas. It causes the soberest person to dance, shout, and laugh with the boisterous excitement of a madman, and to rush about, cutting the most ridiculous capers for nearly an hour. At the expiration of this time exhaustion sets in, and the excited person falls asleep, to wake after several hours with no recollection of his antics.

The botanical classification of the growth has not yet been identified.—Montreal Pharmaceutical Journal.

The Current Supplement.

The current SUPPLEMENT, No. 1182, is of special interest, both on account of the variety of its contents and the quality of the articles. Probably the most valuable article in the number is "The Utilization of 110 Volt Electric Circuits for Small Furnace Work," by N. Monroe Hopkins. This article is accompanied by detailed instructions for the production of calcium carbide and other directions and working notes. There are eight working drawings, which give a very clear idea of the method of constructing a furnace. For a long time our readers have desired information regarding electrical furnaces which they can make themselves, and this very full article is published in response to their request. "The American Smokeless Powder," by F. M. McGahie, is a valuable paper, giving much information unpublished on smokeless powders, and it is referred to editorially on another page. It is illustrated with diagrams. "On the Position of Helium, Argon, and Krypton in the Scheme of the Elements" is an article by Sir William Crookes, showing a remarkable model which he has constructed, showing the relative position of the elements. "New Constituent of Atmospheric Air," by W. Ramsay and M. W. Travers, also deals with "krypton," and is the original memoir presented to the Royal Society. "Profitable Toilet Preparations" gives a large number of formulas for easily made and high class preparations for the toilet. "The De Laval High Pressure and Steam Boiler Turbine" describes an interesting system, which has elicited much attention at the Stockholm Exposition. "The Performance of the 'Oregon's' Engines on their Great Run of 15,000 Knots" is a technical description by First Assistant Engineer Oflley, of the "Oregon," and is referred to editorially elsewhere. "Natural History of Locusts" is a popular illustrated article of great interest. There are a number of minor practical articles of great interest.

Contents.

(Illustrated articles are marked with an asterisk.)

Aerial navigation, important experiments in.....	132	Navy, probable increase of the.....	140
American Association for the Advancement of Science, the.....	135	"Oregon," engines and engineers.....	141
"Avion," the.....	137	Of the.....	140
Bicycle, the increasing weight of the.....	130	Panama, a new.....	132
Books, new.....	141	Powder, smokeless.....	131
Coal output of Natal.....	139	Putnam, Frederic Ward.....	131
Cromer, the desolation of.....	139	Russia in Central Asia.....	139
"Cupid" lighter than a butterfly.....	139	Sampling machine, a new.....	132
Current Supplement, the.....	140	Science notes.....	146
Gout, the chemistry of.....	133	Scrubbing machine, a.....	132
Heavens in September, the.....	140	Sea-going dredges of the Mersey Bar, Liverpool.....	133
Inventions, index of.....	141	Seam ripper, an improved.....	132
Inventions recently patented.....	141	Six-inch experimental Krupp plate, test of a.....	136
Ivory veneers.....	139	Smokeless powder for army and navy, the new.....	131
Laughing plant, the.....	140	Trans-Mississippi and International Exposition.....	138
Manchuria.....	139	Typewriter's cramp.....	138
Naval show at Madison Square Garden.....	140	Weather service, West India.....	134
		Wines, boric acid in.....	140