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AN AMERICAN ASTRONOMICAL SOCIETY.

For many years the science of astronomy has been cultivated in this country with no small measure of energy and success. American astronomers, professional and amateur, have won by their intelligent labors and brilliant discoveries an honorable rank in the scientific world.

While we have no great observatory in New York, there are here and in this vicinity several private observatories better known, perhaps, abroad than at home. There are many isolated observers, some of world-wide reputation; and the popular interest taken in courses of astronomical lectures—like the admirable series now being given by Professor Young—shows that there is no lack of material here for the nucleus of an American Astronomical Society which shall be worthy of the name.

A CURE FOR SEASICKNESS AT LAST.

In our report of the proceedings of the New York Academy of Sciences mention is made of a paper read by the Rev. Mr. Thwing describing a new and peculiar method of curing seasickness, which the author has tried with success in several instances.

He approaches the sufferer unawares from behind, places his hand upon the patient's head, and speaks in an assuring tone of voice. This puts the passenger into a trance, his sickness is ended, he is supremely happy. The doctor then pronounces the words "all right," which instantly restores the sick man to sense and health, enabling him thereafter to enjoy full meals of victuals without let or hinderance.

We have heretofore heard of advantages claimed to arise from preaching and the laying on of hands; but this, we believe, is the first example of the practical application of the system to seasick passengers on board of Atlantic steamers.

THE ADIRONDACK WILDERNESS.

The need of saving the woodlands of the Adirondack wilderness, out of which flow the Hudson River and other streams of great commercial, manufacturing and sanitary value to the State, has long been recognized by observing and thoughtful citizens. The outer and more accessible portions of the original forest region have long been stripped of their timber, and vast areas of little use for agriculture have thus been made treeless and barren.

There is no question that the general clearing of the Adirondack region of its protecting forests would produce effects of the most disastrous character to the valleys of the streams flowing therefrom: effects like those which, during the past few months, have brought death and desolation to so many European river valleys. The rainfall of the Adirondack region is great; the drainage slopes steep; and without the controlling and restraining influence of the existing swamps and forests about their sources, the rivers which drain this northern wilderness would show only great and sudden alternations of flooded and empty channels, destructive at once to the agriculture of their valleys, to the manufacturing interests which cluster along their banks, and to the commerce of the Hudson, the channel of which has already been seriously obstructed by the detritus washed in from unprotected hill slopes and other spaces stripped of their original forests.

It is gratifying to note that the State Legislature, or rather the Senate, has taken ground against the further invasion of the Adirondack forests, at least for that part of the region under State control; and it is much to be hoped that the Assembly will do as well. Senator Frederick Lansing's bill, forbidding the sale of 660,000 acres owned by the State in the Adirondack region, was passed by a vote of 24 to 5, January 23. It is a good indication of increasing public appreciation of the need of preserving the wooded character of that part of the State. The timber there, if cut at all, should be cut only under rigid control, and with the most careful provisions for immediate rewooding of the cleared ground.

THE STARLIT SKY IN FEBRUARY.

If, facing the south, we raise our eyes to the starry heavens at nine o'clock on the 11th of February, we cannot fail to see on the meridian a very brilliant star, intensely white, with a sapphire tinge. It is Sirius, the leader of the host of heaven, a glorious object, far exceeding our sun in size and splendor. It is the leading brilliant in Canis Major, and, though classed as a star of the first magnitude, gives four times as much light as any other star visible in our latitude. It would be natural to infer that this star is nearer to us than its companions. Such is not the case. Several smaller stars are nearer to us than the brilliant orb that holds a place in the heavens at a distance of at least a million times our distance from the sun.

It is so far away that light is twelve years in spanning the distance. The flashing light that now comes from the star is twelve years old, and if it were this night blotted from the sky, it would continue to shine there for twelve years to come. Its dimensions have been approximately measured, and it is found to be a magnificent sun, at least two hundred times as large as our sun. Inequalities in its motion were long observed, and were attributed to the attraction of a companion. But no one succeeded in detecting the disturbing element until 1862, when the son of Mr. Alvan Clark, the famous telescope maker, in testing a powerful new instrument, turned it upon Sirius, and beheld a tiny point near the star that proved to be the long looked for companion. Sirius belongs to the highest order of stars, known as white stars. Its color has changed, for Seneca describes it as ruddier than Mars, and Ptolemy classes it with Antares. It has been seen with the naked eye in broad sunshine, and it is brilliant enough to cast a shadow.

Taking Sirius for a starting point, we will explore some of the leading stars and constellations in the vicinity. Northwest of Sirius, and an hour past the meridian, is the finest constellation in the heavens, the superb Orion. Its outlines are easily traced: an elongated parallelogram of four bright stars, a row of three stars in the center, and an oblique row running from the central band form the framework. The poetic imagination of the Greeks surrounded and interwove with this starry framework the giant stature and majestic proportions of Orion, the mighty hunter, brandishing a club in his right hand, and holding in his left a lion's skin for a shield. Betelgeuse and Bellatrix, the two upper stars of the parallelogram, shine brightly on his shoulders; Rigel and Saiph, the two lower ones, sparkle on his left foot and right knee. The three stars in the center form his belt, and the oblique stars mark his glittering sword. So striking are the outlines of this constellation, that when it has once been traced, it can never be forgotten. Not only does it take the lead for its exceeding beauty, but it is equally noteworthy for the telescopic interest attached to it and for the number and richness of its astronomical curiosities.

Orion is visible all over the habitable world, for the center is midway between the poles of the heavens and directly over the equator. The three stars in the belt measure three degrees in width, and may thus serve as a measuring rod for computing the distance of the stars. This constellation contains the most famous nebula in the heavens, and it is visible to the naked eye. Around the central star in the Sword clusters a hazy cloud-speck. When a powerful telescope is turned upon it, a wondrous transformation takes place—the Great Nebula of Orion springs into existence. The cloudy patch becomes a huge monster, with open mouth and branching horns. Within the open mouth a trapezium of stars is revealed, while spiral forms of ghost-like indistinctness fill in the field of vision. Telescope and spectroscope have exhausted their powers in seeking to solve the mysterious formation of this wonder of the skies.

Eighty stars may be counted in Orion visible to the naked eye, while nearly two thousand are revealed in the telescope. Many of them are double, triple, and multiple stars, the components developing every contrasted color of the rainbow, and bearing witness to the inconceivable richness and profusion of creative Power that not only produces systems ruled by a single sun, but mingles with them other systems, where two, three, four, and even more suns revolve about each other in circuits that take thousands of years to complete.

If now we turn our eyes to a point in the sky 26 degrees northeast of Sirius, and about the same distance east of Betelgeuse, a bright red star will appear. It is Procyon, the leading brilliant in Canis Minor. It shows to skillful observers similar evidence of disturbance to that of Sirius. It is hoped that some of the great telescopes now being constructed will reveal in like manner the companion of Procyon. It will help to impress the relative position of Sirius, Betelgeuse, and Procyon on the memory to note that they form a large equilateral triangle.

Looking 23 degrees north of Procyon, two bright stars, 4° 30' apart, may be seen. They are Castor and Pollux, twin stars in the constellation Gemini. The upper and brighter of the two is Castor, of the first magnitude. It is the most beautiful double star in the northern heavens. A telescope of moderate power will separate it into two stars of nearly equal magnitude—one a brilliant white, the other white tinged with green. Castor and Pollux, as well as Procyon, are on the meridian about an hour after Sirius, while Orion has passed the meridian an hour earlier, and is descending on the westward track.

Turning our eyes northwest of Orion, we behold two clusters in Taurus. One of them is the Pleiades, with six stars

visible to ordinary eyes, ten or twelve to observers gifted with exceptional visual power, and two hundred in the telescope. The other cluster is the Hyades, containing five stars so situated as to form the letter V. The bright red star on the left at the top of the letter is Aldebaran. The brilliant star scintillating low down in the north is Vega in the Lyre, and northwest of the Twins is the superb white star, Capella in Auriga.

We have thus given a bare outline of some of the principal stars and constellations that grace the sky about 9 o'clock on the 11th of February. We have drawn the picture for 9 o'clock. At an earlier hour in the evening observers will find the stars less advanced on their stately march over the celestial track. Observers at a later hour will find the grand procession farther toward the west, while new stars will take their places in the east. The same is true for different portions of the month. Before the 11th, Sirius will not reach the meridian until after 9 o'clock. After the 11th, he will have passed it. The stars rise and set—excepting those around the pole that are always above the horizon—four minutes earlier every night, because the earth advances in her orbit round the sun a space equal in distance to that time. But the heavens present the same picture whenever the same season returns. The February sky of 1884 will repeat that of 1883.

The stars, as we look at them, seem as fixed and unchangeable as the vast vault in which they shine. In reality, they are in a condition of ceaseless commotion. Some are moving toward, others are receding from us. Sirius is receding from us at the rate of twenty-two miles a second, Betelgeuse at the same rate, and Castor is receding twenty five miles a second. Vega is approaching with the tremendous velocity of fifty miles a second, and Pollux at the rate of forty-nine miles a second. These stars are at such an immense distance that the motion will not be apparent for many centuries, but in the progress of ages a change must occur. The receding stars will diminish, the approaching ones increase in brightness. The present configuration of the stars will be broken up, Orion will be transformed, Sirius will pale in luster, Castor and Pollux will separate, and Vega will shine with a superb brilliancy that will perhaps entitle her to a higher rank than Sirius now holds.

Staid and serene as the stars appear, the picture is never monotonous, never the same for two nights in succession. The planets give an ever changing element to the scene. Jupiter is now wandering high in the north, grandly posed for observation; Saturn shines with paling luster in the region near the Pleiades and Aldebaran; Venus holds her state as harbinger of the sun and sky; Mercury may be seen in the morning sky at the close of the month. The moon moves eastward in her course, and the ghost-like shadow of the great comet of 1882, speeding its way south of the glowing Sirius, harmlessly recedes to parts unknown.

Something new may always be hoped for, to give excitement to the celestial outlook. Comets may at any time enliven the scene with their fantastic and shadowy presence, meteors may flame across the sky and dissolve in trailing robes of silvery light, the aurora may raise its flaming banners in the northern heavens, a variable star may blaze forth into sudden brilliancy, a bright star may fade into invisibility, and new asteroids may be added to the system. It is not impossible that some clear-eyed observer may discern an intra-Mercurial planet in transit over the sun, or discover an ultra-Neptunian planet in the region that is being searched with that end in view.

Some of these events may occur within the boundaries of the present month. At least, there will be beauty and variety enough under any conditions to increase the knowledge, widen the sphere, and add to the enjoyment of every lover of the stars.

Adulteration of Aniline Colors.

BY FRIEDRICH EHRLICH.

The high price of the aniline dyes has unfortunately induced many persons that deal in them to attempt their adulteration. It is not, as may be supposed, the manufacturers that are responsible for the adulterations, but single dealers, who weaken and dilute their wares in various ways, and by different manipulations, so as to make larger profits.

As long as aniline colors were sold in liquid form it was very convenient for the adulterators, for then the analysis was still more difficult and many intentional impurities could not be detected at all.

Now they find their labors much increased, for the aniline dyes are sold only in crystals, and hence adulterations are more easily detected. In some cases it is accomplished by interrupting the crystallization and mixing in foreign substances, then evaporating the mixture, and grinding when dry. But this can only be done in case of such dyes as the public are accustomed to purchase in powder. For other dyes, like fuchsine, other means of deception must be employed.

The principal substances used to adulterate aniline colors are sugar, starch, Glauber's salt, oxide of tin, and sulphate of magnesia, but dextrine plays the most important part. The last named is a favorite article with all kinds of adulterators, nor has it been passed over unnoticed by dishonest aniline dealers. We may say that the greater part of all the dextrine made is used for deception in various articles, and that only the smaller part finds use in stiffening cotton fabrics, imparting to them a stiffness they would not otherwise possess.

The frequent use of starch gum (dextrine) for adulterat-

ing dye stuffs, especially logwood extracts, is due in part to its cheapness and in part to its indifference to colors, the beauty of which is not affected by it, and by its solubility in water, so that it escapes observation in dyeing and printing.

The only means we have to protect ourselves against this fraud is more care in examining the dye before purchasing. It would not be in place here to enter into a full description of the chemical analysis, so we pass over the scientific tests and mention the methods which do not require any special skill nor the use of costly apparatus.

Besides the scientific examination of dyes for their purity, of course only one other way remains of forming a judgment as to their quality, and that is the practical estimation of their value by comparison of the colors produced. Before undertaking these time consuming experiments, it is well to obtain an approximate idea of the object in question, which is best gained by studying the substances used for adulterating the different dyes.

We pass over the details given by the author on these points, as they are to be found in the ordinary text books, and pass next to an excellent recommendation of the author, which applies quite as well to other goods, drugs, spices, medicines, and even food, namely, to purchase only from houses of known reputation, and not to be misled by lower prices, and induced to buy from irresponsible or unknown firms.

Another Important Telephone Decision.

The long litigation between the Bell Telephone Company and the Dolbear Telephone Company came to an end in the Circuit Court, at Boston, January 24, victory resting with the former. In his decision Judge Gray held:

That Mr. Bell was the first inventor who successfully used the electric current for the transmission of articulate sound. The differences of Dolbear's and Bell's plans are not such as to warrant the former to claim an invention of the entire system. The essence of Bell's invention consists not merely in the form of apparatus which he uses, but in the general process, or method, of which that apparatus is the embodiment. Notwithstanding the distinct difference claimed by the Dolbear receiver, they avail themselves of Mr. Bell's discovery that undulatory vibrations of electricity can intelligently and accurately transmit articulate speech, as well as of the process which Bell invented and by which he reduced his discovery to practical use. They also copy the mode and apparatus by which he creates and transmits the undulatory electrical vibrations corresponding to those of the air. And in the plate charged with electricity, which they have substituted for the magnetic coil in the receiver, the charge constantly varies in accordance with the principle which Mr. Bell discovered, and by means of the undulating current caused by the process and in the mode which he invented and patented. The defendants have therefore infringed on Bell's patent by using his general process or method, and should be restrained by injunction from continuing to do so.

Societies for the Promotion of Thrift.

One of the notable features of Pennsylvania industrial life is the great development of societies for securing to workmen, from their individual savings, comfortable homes of their own. The lead in this useful movement was naturally taken by Philadelphia, which now has about three hundred and fifty building and loan associations, with an aggregate paid up capital of nineteen or twenty million of dollars. In other manufacturing towns of the State are nearly half as many more associations, with a proportional amount of accumulated property.

These facts have been compiled by the Philadelphia *Ledger* from the State Auditor-General's report of corporations paying taxes on capital stock. Fully ninety per cent of the thirty million dollars forming the aggregate capital stock of these associations, it appears, has been lent to members, and is composed not merely of the savings of thrifty people, but savings devoted at once to the material improvement and development of cities, towns, and villages, increasing the tax value of real estate and providing the people with comfortable homes.

Touching a proposition to exempt from taxation the capital stock of societies of this sort, the *Ledger* justly says that the thrift that produces such a grand total of savings, and that at once puts the savings into property that is of itself already taxed as such, is certainly deserving of such encouragement from the Commonwealth as would arise from exemption from other taxation for State purposes, especially at a time when the revenues arising from such taxation are not needed.

Following the lead of Philadelphia in the development of these commendable associations, are Pittsburg and Allegheny, which have together fifty-eight societies; Reading has eight; York, sixteen; Erie, five; and there are nearly two hundred other societies scattered throughout the State. All the busy smaller places in the State, such as Chester, Altoona, Pottsville, McKeesport, Williamsport, Easton, Allentown, Bethlehem, Wilkesbarre, Scranton, and Phoenixville are down in list. The centers of productive toil are also the centers of activity in building society work. They are the working people, indeed, who are the mainstay of these co-operative saving societies. A glance down the list of Philadelphia societies, printed in the *Ledger*, will illustrate this. Many of the societies have merely fanciful or other meaningless names, but some are named for great industrial works, occu-

pations, or employers, that indicate to one acquainted with the subject the origin and chief membership of the societies. The Art Workers, Artisans, Carpet and Hosiery, Diston, *Ledger*, Lumbermen's, Pequa (Pequa Mills), Tradesmen's, Wood and Iron Workers, Willimantic, are all names for societies that originated from the business callings or associations of the original members. The names are interesting from another standpoint. The list shows that the thrifty Germans have adopted building societies as a most practicable means of securing their savings. The number of societies with German names is noteworthy, as is also the number with the names of Catholic churches, indicating their origin among the congregations of the churches whose names they have assumed.

Importation of Adulterated and Spoiled Teas.

The House Committee of Ways and Means reported favorably, January 23, a bill prohibiting the importation of teas adulterated.

This prohibits the importation of teas adulterated with spurious leaf or with exhausted leaves, or containing chemicals or other deleterious substances making them unfit for use. All tea imported is to be examined, and if it is found to come within the prohibitions of the act, the importer or consignee must give bond to export it within six months. In case of failure to do this, the collector must cause the tea to be destroyed. The term "exhausted" is defined to include any tea which has been deprived of its proper strength by steeping, infusion, etc. This provision is intended to exclude teas that have been once used and then manipulated to be sold again.

This decision of the committee was materially influenced by a statement made by Mr. J. R. Davies, who has been for many years in the tea trade. Mr. Davies exhibited samples of worthless and adulterated teas which had been put upon the New York market, "teas" which had sold elsewhere from 4 to 8½ cents a pound. The enactment of a law in England prohibiting the importation of all adulterated teas, including all tea whose chemical properties are injurious to health, has had the defect to divert an immense quantity of these teas to the American market. In 1881 over 44,000 packages were forbidden entry into England and were exported, part of them coming to this country. Such importations should be stopped at the custom house or destroyed, as is done in England.

George M. Beard.

Dr. George Miller Beard of this city died of pleuro-pneumonia Jan. 23, at the comparatively early age of forty-three years. At the beginning of his practice he gave much attention to the use of electricity in the treatment of disease, and was throughout his busy life an untiring writer upon that and kindred subjects. The treatment of nervous troubles led him to pay especial attention to the relations of mind and body, particularly in those aberrant manifestations of mind shown in trances, delusions, obscure nervous diseases, mind readings so called and the like. His studies of the conditions affecting the value of human testimony are suggestive and in many instances highly valuable. Had he been able to make proper allowance for the influence of his own intense personal character in determining his judgment, there would have been less occasion to doubt the correctness of his conclusions. One of his last utterances gives a key to the investigating and recording spirit which ruled his life. Almost with his last breath he said: "I wish it were possible for me to record for the sake of science the thoughts of a dying man. This final battle that I am going through with would be interesting."

Edward H. Knight, LL.D.

Edward H. Knight, the accomplished writer on mechanics and kindred subjects, and author of "Knight's American Mechanical Dictionary," died at his home at Bellefontaine, Ohio, Jan. 21. Mr. Knight was a valued contributor to the *SCIENTIFIC AMERICAN*, and was formerly connected with our branch office in Washington. He was one of the United States Commissioners to the Paris Universal Exposition, and in 1878 was decorated with the order of the Legion of Honor at Paris.

The First Comet of 1883.

Mr. W. L. Burton, second officer of the steamship City of Savannah, reports the discovery of a comet at two o'clock of the morning of January 12. The ship was on the way from this city to Savannah, and about 25 miles southwest of Cape Lookout. The position of the comet is indefinitely described as "southeast of Orion." The supposed comet, faintly visible by the naked eye, was observed the same evening as early as nine o'clock, the ship being in the river below Savannah.

The Floods in Europe.

A dispatch from the Imperial German Foreign Office at Berlin to the German Consul at Boston states that through the inundations last autumn 20,000 houses, 130,000 persons, and 150,000 acres of land and property have suffered damage in Prussia alone, and the damage by the December floods has been nearly as great. In the Bayrische Rheinplatz 1,000 houses were swept away and 12,000 persons rendered homeless. Hessen and other districts along the rivers suffered the same calamity.

The floods in Austria, Italy, and other parts of Europe were quite as disastrous as those of Prussia.