

ST. JOHN, N. B., SATURDAY, DECEMBER 19, 1896.

# WONDERS OF SCIENCE

THE INTERESTING ADVENTURES OF THE VARIOUS PLANETS.

Strange Thoughts Suggested and Simpler Facts Recalled by a recent Astronomical Discovery—Both Dog Stars are Noted—Strange Features.

A few days ago a telegraphic cipher flashed over the astronomical world the news that the mysterious companion of Procyon, the Little Dog Star, had at last been seen by a human eye, writes Garrett P. Serviss in the N. Y. World. The discovery was made by Mr. Schaeberle at the Lick Observatory. Barely a month has elapsed since I had occasion to describe in these columns the rediscovery of the almost equally mysterious comrade of Sirius, the Great Dog Star, which had been invisible for six years.

But while the star that hides in the rays of Sirius had previously been seen by astronomers, Procyon's companion has never been seen. It was one of the invisible mysteries of space. Astronomers were convinced that it existed, but could not catch sight of it. Bessel, the great German mathematician, had proved, more than fifty years ago, that Procyon must have a dark consort because the star was observed to wobble and stagger in its course as it would be drawn by the attractive force of a huge neighbour, but the utmost powers of the greatest telescopes failed utterly in the effort to reveal the disturber to the sense of sight.

At last, however, it has been seen, and now we have visual as well as mathematical evidence that both of the Dog Stars are linked, in the same strange manner with dusky mates, while they themselves are remarkable for their dazzling brilliancy. In each instance the enigmatical partner is of immense size and revolves around its splendid associate in a period of fifty or sixty years.

Now, it should not be forgotten that we are dealing with phenomena of tremendous magnitude. It is easily proved that both Sirius and Procyon are suns in comparison with which our sun is like a tallow candle beside an Edison lamp. How did they get their mystic companions and why do they blaze so magnificently while those companions are remarkable for the dulness and faintness of their light? If the stars had souls, as some of the ancients imagined we could, perhaps, understand from human experience why blondes should mate with brunettes; but that one great star for its comrade, the first being notable for its luminosity and the second for its obscenity, and that precisely the same peculiarity should be repeated in the case of a different great star and its comrade—this is one unsolved mystery of astronomy.

And even that is not all. There are other bright stars, as for instance the so-called 'demon-star' Algol, which also have obscure companions, and these evidently do not shine at all, but are absolutely black, so that we know of their existence only through the effects of their attraction, and occasionally through the eclipses they produce when they pass between us and their shining consorts. Are these the other worlds than ours that men have for so many centuries sought to find among the stars? Strange worlds, then, and monstrous in more ways than one.

If the dark companion of such mated stars were comparatively insignificant in size, as the planets belonging to the sun are insignificant compared with him, it would be easy to understand why they are obscure while their brothers are bright. Being small, their heat would be radiated away and they would cool off and solidify far more rapidly than their huge neighbors could do. That is probably why the earth has become a rocky and habitable globe, while the sun yet remains ablaze with inconceivable heat. But in the case of several at least of the mysterious double stars I am speaking of, it is difficult, on account of the great size and mass of the dusky star, to understand how it could so far have outstripped its comrade in the process of cooling. For this reason the suggestion has been put forth that some of these stars which are closely linked with dark bodies may have met their strange companions by accident, may indeed have been in partial collision with them, and that henceforth the two have remained in the chains of their mutual attraction.

This leads us to consider another fact, namely, that our sun, like all the other stars, is in motion through space. The rate of that motion is not accurately known, but it amounts to several hundred millions of miles in a year. Its precise direction is also uncertain, although there can be no question that it is towards the north, and that the very brilliant star called Vega lies not far aside from the line of the path in which the sun is at present travelling. When I say that the sun is thus journeying through space, it must be understood, of course, that the earth and the other planets—Jupiter, Venus, Mars and the rest—are journeying along with him. None of them

can get away from the sun. Wherever he goes they must go also.

Well, are all the dark stars, all the extinguished suns, connected in close orbits with bright stars? Are they all companions to effulgent orbs—black slaves to gleaming white masters? Probably they are not so. Probably there are many huge invisible bodies also roaming the boundless expanses of the universe as the bright stars are doing. This being so, the possibility would have to be admitted that occasionally a shining star and one extinguished star might meet. If they came together the collision might not result in their coalescing into a single body, but in their becoming closely united companions, of which one would be far more brilliant than the other. One possible result of such a collision would be to impart to the dark body a certain degree of heat and luminosity, which, however would be rapidly radiated away. But, even if no actual collision took place two bodies approaching very close to one another in space would, if their initial velocity were not too great, henceforth revolve around one another in a regular orbit.

Now, suppose the sun in its immense journey, leaving three or four or five hundred millions of miles of traversed space behind it every year, should approach a vast dark orb comparable with itself in magnitude. If a collision took place it would be all over with the inhabitants of the earth, and if there were no collision the approach might still be so close that the sun and the tenebrous stranger would remain comrades forever after. Wonderful, and perhaps disastrous, results would follow for the earth, even then. This is a possibility—a very remote one, no doubt—against which no precautions can be taken. No human hand can guide the 'thunder march' of the sun. But astronomers would intently be able to detect the approach of a great disturbing mass. It would disorganize the orbits of the planets. Saturn would run wild and Jupiter forget the stately dignity of his twelve-year cycle; Mars would stagger from his orbit, and Venus plunge earthward or sunward. Principalities and powers would be forgotten and human thoughts and hopes and fears be concentrated with awful intensity upon the observatories and the computing rooms where the latest phases of the on-rushing crisis were under watch.

A little way back I remarked that the great star Vega lies almost in the track of the sun. It is a long, long voyage, from the opposite end Vega shines—175,000,000,000,000 (a hundred and seventy-five millions of millions) of miles is one estimate that has been made of the distance. Suppose the sun to move straight towards Vega with a uniform velocity of 300,000,000 miles in a year, and to experience no disasters on the way, and to encounter no influence swerving it to one side, and suppose Vega to stand fast waiting for it, then in a little more than 580,000 years the two stars would meet. With Vega moving simultaneously towards the sun, of course the time would be shortened. But even 580,000 years is a brief period in either astronomy or geology. There is no reason to suppose that man will not still be in existence on the earth 580,000 years from this time. If, then, such an encounter of Vega and the sun should occur, men would probably be living on the earth who would pass through that marvellous adventure or perish in consequence of it.

The eyes that beheld the approach of Vega would look upon (it, indeed, they could hear the spectacle) such a blaze of inconceivable splendor as the imagination is unable to picture. It is certain that Vega pours forth a hundred times as much light as the sun does, and not improbable that it may exceed the sun in light-giving power several thousand times. It would indeed be a new day that would break upon the earth—a light that would turn the brightest day that sunny Spain or Italy ever saw into night. And if the approach were close the earth would melt and dissolve into a cloud before the fearful gush of heat which, with that insufferable light, would be poured upon it.

As to the sun, its proud pre-eminence would be lost forever, and it would become a dim and humble satellite to the royal star whose path it had crossed. In the course of time it would become fainter and fainter as its radiance leaked away, while Vega would continue to glow no less brilliantly than at first, until at last, hiding like the comrade of Procyon under the wing of its giant master, that sun, which had once ruled its system of planets and dominated a corner of the universe, would be known to astronomers on distant orbs only as the 'mysterious companion of Vega' interesting on account of its singular obscurity and puzzling because of the difficulty of accounting for its origin and history.

## FAITHFUL UNTO DEATH.

Pathetic Story of An Old Missouri Slave.

When a man has been dead forty-six years it is rather late to write a tribute to his memory, says the New York Sun. But this is an instance where a conjunction, of circumstances crowded out the facts, and the good which the man did was almost interred with his bones.

The writer recently made a journey into the country near Harrisonville, Mo., the county seat of Cass, the county adjoining that in which Kansas City is situated. A few miles from the county seat two graves were seen from the highway. They were conspicuous more from neglect than otherwise. The man who was acting as guide

said, in a matter-of-fact manner, as he coaxed the team:

'One is the grave of the mistress; the other, that of her faithful negro man. He was buried beside her, as you see, at her request.'

Of course, he explained, they died about the same time. The mistress was told a short time before her death that the old slave was dead.

'They were victims of the cholera, continued the guide, 'when that dreadful scourge swept over the country. It almost depopulated Harrisonville. Every doctor in the town was stricken down, and then the only men in the town who sold drugs or knew anything about medicine dropped dead in their work. After that those who were left died in their turn, it seemed, and without any assistance. Two of the latter lot were those who were buried in the graves we just passed. The woman was the wife of the oldest doctor in the town, John McReynolds.

'When the California gold fever struck the whole country Dr. McReynolds caught it, and he joined that long procession which whitened the plains and crossed the mountains. He took with him his faithful body servant, an old negro who had been his property from infancy. He had attended his master so long that the master regarded him as necessary to his welfare. The old servant often accompanied his master in the calls of the latter on his patients.

When the doctor reached the gold country he gave up his profession and became a miner, and the old servant was his assistant in that, as he had been in other things in the states. They were successful. At the end of a year the old doctor had \$10,000 in gold, and that was a fortune then. But in the midst of his luck he was taken sick and died. His nurse, attendant, and under-aker was his faithful servant, Asa. They did not waste much time on funerals out in that country in those days. After Asa had buried his master he owned himself. He was in a country where there was no slavery, and had the entire possessions of his master in his own hands. No legal steps that might have been taken in Missouri could have reached him. He was a rich man.

'I have been told, but I do not remember the particulars, that some of the people in the mines, who believed that Dr. McReynolds left a fortune, undertook in various ways to get it. But the old servant thwarted them all and succeeded in getting out of the country. His journey back across the plains was an eventful one. He was followed and tracked and forced to resort to strategy to evade his pursuers. Once he buried the fortune of his master in the sand of the desert when he was hard pressed, and in escaping from a band of desperadoes he found himself a captive of Indians. What his life might have been you can guess if he had not had a bit of good luck about that time. Some sort of epidemic had broken out in the tribe where he was held, and as Asa was a sort of a doctor from observation he experimented on the sick regards with so much success that they regarded him as a special dispensation for their benefit from the hands of the Great Spirit. In this way he regained his freedom, returned to the place where he had buried the fortune of his master, resurrected it and resumed his journey without further molestation.

'He reached Independence, Mo., and called upon a man who had been a patient and friend of his master. This friend accompanied him to Harrisonville, and was the messenger who gave Mrs. McReynolds the first information concerning the death of her husband. Then the friend told about her faithful servant Asa; and this was followed by calling in the old servant from the negro quarters, and he rendered to his mistress an account of his stewardship, with the larger amount of his master's fortune.

'I have been told by some of the very old-timers that Asa was the first colored man who ever received anything like an ovation in Missouri. When Harrisonville heard of the old negro's return he was invited to the homes of the people and had greater glory than any white man who has ever lived there since.

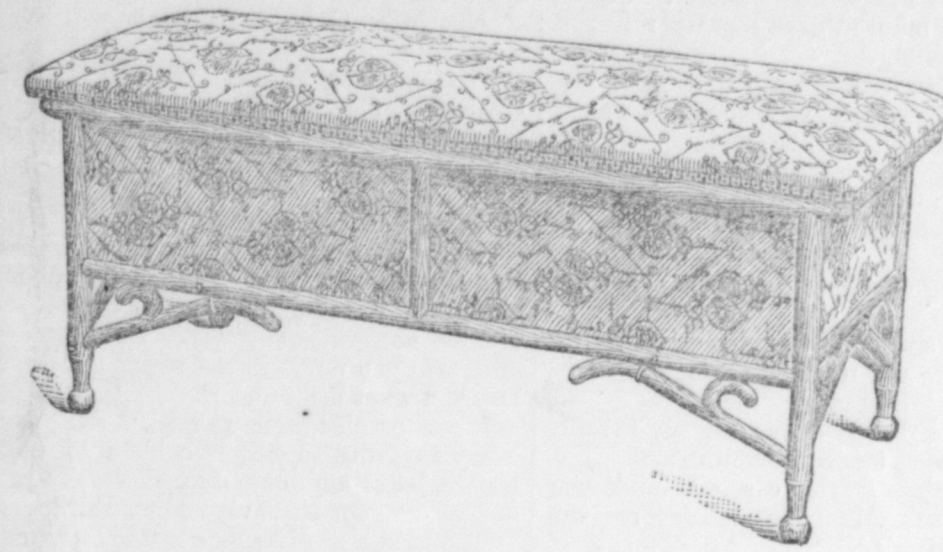
'His mistress gave him his freedom and some of the money; I don't know how much. But he remained her faithful servant. He refused to accept his freedom as long as his mistress lived.

'The cholera came, as I have said, and one of the victims was the mistress of Asa. He cared for her and was her attendant until he was stricken himself. When he failed to respond to her call she suspected the reason, and then it was told her that he was dead. She knew her time had come, and she hardly had time to request that his remains be placed beside hers, and it was done. And there are their graves. Only a few people living know even the names of the dead, and not many know the story I have told you. If I were a rich man I would put a monument over the grave of that colored man, and I would just have a few words on it, after his name, something like this:

'Faithful Unto Death.'

SHORT'S 'DY-PEPTICURE' acts like magic in all stomach troubles, cures chronic dyspepsia, indigestion, headache, sleeplessness, bilious disorders, etc. 35c. and \$1.00 at all druggists.

# Furniture for Christmas Gifts....



There can be no more appropriate or acceptable Christmas Gift than a piece of Furniture. See the many beautiful things shown in our Furniture Department. Cut shows Antique Oak Box Window Seat, top hinged and large space inside—17 in. high, top 15x39 in.

Upholstered in Denim, - - \$7.75  
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## HER LONG SLEEP.

A French Girl Who has Slept Undisturbed for Thirteen Years.

The Paris newspapers recently printed a despatch from Saint Quentin to the effect that Marguerite Boyenval, known both as the 'Marmotte' and the 'Sleeping Girl,' was dead; the report proved to be untrue, but its publication has served to revive general interest in this marvellous case of trance or coma, or whatever may be its proper technical name. The learned doctors of France, and indeed of all Europe, have now lost interest in the case, but have kept a constant watch upon it for years back, Dr. Charcot having made no less than four visits to the girl; but with the public at large the strange story of Marguerite's affliction had very generally dropped out of mind until revived by the recent rumor of her death.

Told in a word, the girl's story is simply that she went to sleep thirteen years and six months ago and has never woken up. That is what the people of Thenelle, the little Picardy village where the Boyenval family live, tell, and that to all appearances, is exactly what occurred. The case has a history, however, which goes beyond that.

Marguerite had a love affair when she was nineteen years of age and it turned out badly. There was scandal, and the gossip in the village wrought the young girl up to a high state of nervous tension. She even tortured into a belief that she was in danger of arrest, and one day as she stood in the doorway of her father's cottage and saw a squad of gendarmes approaching the full belief that they were coming for her came upon her like a stunning blow. She fell to the ground unconscious, and when she was restored it was only to go into convulsions. When she recovered from this attack she went to sleep. That was in May, 1883, and the sleep continues and seems likely to continue until it gives way to the sleep of death.

Among those who recently saw the girl is Mr. Charles Chinicholle, of the Paris Figaro, and in that paper he gave, among other things, these details of what he saw:

Very pale and with tightly drawn cheeks she had more the appearance of being dead than asleep. The mouth and eyes were closed. If one turns back the lids only two white globes are seen. The iris have retroverted. Around the bed and everywhere in the room are signs that mean more than well to do. Mme. Boyenval is a stout little woman with a not unpleasant countenance. It is explained on seeing her how formerly Marguerite must have been very strong. The mother even now resembles her daughter. And after gazing down upon her for a few moments I murmured, 'She is very beautiful.'

'She has, however, aged much in her sleep,' replied her mother, overhearing me.

'And this sleep came all at once?' I asked.

'At the beginning she had several intervals of half wakefulness, and I thought she was going to awake entirely, but slumber seized again at the end of five or six minutes—and—there she is!'

'You give her nourishment, they tell me, by inserting a spoon between her teeth?'

'Formerly. But for eight years I have fed her directly by her stomach. She formerly derived some nourishment from herself. You see.'

And Mme. Boyenval raised the coverlet. The nightgown enrobed a skeleton. The stomach was sunken and the ribs were as though covered with tissue. Her hips were like two fists. The arms lay along the body. I touched one of her hands. 'Oh, how warm she is!' I exclaimed.

'Yes; I keep her warm by hot water bottles.'

The fingers were hard and devoid of flesh. Her mother seized one arm quickly and raised it. It remained erect in a menacing attitude. Mme. Boyenval is always present at the visits of strangers. The most celebrated physicians of Europe have visited this little cottage in Thenelle, and have returned again and again with their colleagues.

'Dr. Charcot has been here four times,' said Mme. Boyenval. 'The first time—long, and then with others. He has performed several experiments upon her—M. Brouardel also. And then M. B. Rillon. And then men from foreign countries whose language I did not understand. There were magnetic healers, whom I abominate. They want to go too far. For some time the physician of Origny, Dr. Charrier, came every day. Oh, what would you! There is nothing more to do. I no longer have any hope.'

'Who knows? I know a person who remained half a day in that state. They burned his feet. He did not stir. Then all at once he awoke and told them that he had heard all that had been said and around him. Perhaps your daughter hears us.'

'Yes; the doctors believed that during the first few months she could hear, but they say now that her organs are too feeble.'

'Perhaps, as my friend did, she will cry out this very night, 'Mother?'

'Ah, heaven preserve me! I should run away!'

The breast of the sleeper slowly rose and fell. But breath was only apparent when a mirror was held before her face, and a thin haze slowly collected upon the glass surface. Never the less her lungs still continued to perform their duty, and her heart to pulsate. I refrained in presence of that ecstatic figure to go into more technical details. I only would add that this sleep is from its very long duration the strangest case that scientists have ever studied.—Detroit Free Press.

## HOW THE WORK WILL BE DONE.

Alpine Climbing Will Soon be Done in a Prosaic Way.

Alpine climbing is soon to be revolutionized by the unpicturesque but eminently practical trolley car. The enthusiastic mountain-climbers of England may not like the innovation, but it will appeal to the prosaic.

The enterprise is one of the most stupendous of the age. The cap of Jungfrau is 14,000 feet above sea level. Fancy riding to such a height in a trolley car! To be able to do so on the surface of the mountain would be marvellous enough, but most of the route will be through a tunnel cut through the centre of the mountain. It will be the most expensive trolley ride in the world. Nine dollars will be the fare for the round trip.

The aesthetic side of the enterprise has been well considered by the company which will build the road and by the Swiss government, which has approved the scheme. The old mountain-climber might be tempted to declaim against a project which would rob Alpine-climbing of its perils and terrors, but he will be benighted when told that the Alpine Club has approved of the road.

Something of the vastness of the enterprise will be realized when it is pointed out that the difference in level between the lower and upper terminal will be 7,000 feet, and that this altitude or rise will be accomplished within a distance of seven and a half miles. No such grade has ever been attained before, and so steep does it finally become that the passengers will be compelled at the last moment to alight from the cars and accomplish the remaining 330 feet in an elevator.

The mountain torrents and the waterfalls, fed by the glaciers, will operate immense turbines. These will be coupled to the great electric generators from which the current will be distributed over the mountain. The current will run from the generators through transformers in which the volts will be 'stepped up,' as they say in electrical circles, into the thousands and sent by wire in all directions. Then, when it has reached its destination or 'point of use' it will be 'stepped-down' again to a usable intensity. It is expected that 1,400 horse-power will be manufactured in this unique and exceedingly economical manner.

The cars will be operated, lighted and heated by electricity. It is estimated that the temperature of the tunnel will average between two and ten degrees below zero, growing colder, of course, as the summit is approached. The tunnel will be lighted by electricity. On such steep grades special cars must be used, with facilities for

clutching the roadbed and holding on to it in case of a break. There are forty mountain roads in Switzerland, and the Jack rail is used on all. It will be used on the Jungfrau road, its construction is such that the car cannot slip backward should the propelling power give out.

The heaviest down grade, 10 per cent., will be between the Mönchsjoch and the Jungfrau. The cars will run at a speed of five miles an hour on grades above 15 per cent. On lesser grades it will be slightly increased. The cars will be built on the plan of trolley parlor cars, such as are used for the accommodation of shoppers between Brooklyn and Flushing. They will contain every possible convenience, and special cars for invalids are contemplated by the management. The power will not be taken into the car through an ordinary trolley pole, but will come via a trolley shoe, which will slide along a third rail by the side of the ordinary tracks.

The tunnel as it extends through the mountains will have openings at intervals, for sanitary and other purposes, but especially to relieve the monotony of this almost underground journey by giving the tourist a transient view of the wonderful scenery roundabout. This road begins at the Schiedegg station.

## THICKLY POPULATED SAXONY

Belgium's Distinction is Now at an End Forever.

Every schoolboy who has studied and remembers anything of geography knows that the little monarchy of Belgium has enjoyed the distinction of being the most densely populated country of the world. The year 1890 was one of a census in almost every country, and by that census it appeared that the average population of Belgium to the square mile was 530, England following with 505, France with 420, Holland with 350, Italy with 360, Germany with 238, Ireland with 148, Spain with 86, Sweden with 28, and the United States with 22.

The population of Belgium at that time was twenty-five times greater to the square mile than the population of the United States. The land area of Belgium is 11,000 square miles. It is larger than New Jersey, New Hampshire, Connecticut, Massachusetts, Vermont or Maryland, but not half the size of Maine. With the multiplication of its manufactures and mining interests and through its remarkable commercial and railroad facilities, Belgium has been increasing very rapidly in population of late years; though, even as early as 1820 Belgium, then a part of the kingdom of Holland, was the most thickly populated portion of Europe. At the time of the establishment of Belgian independence in 1830 the population was 3,700,000; it was 5,000,000 in 1870 and it is now in excess of 6,000,000. But Belgium's distinction has been eclipsed during the present year by Saxony, which is now the most thickly populated country of Europe.

The area of Saxony has varied according to political conditions, having been more than twice as large at the beginning of the present century as it was at the outbreak of the Prussian-Austrian war of 1866. Since then it has been increased, so that it now includes 6,777 square miles, a little more than the island of Jamaica, in the West Indies. The population of Saxony has been increasing more rapidly than that of other parts of Germany, and it is now in excess of 3,000,000. Saxony has always been the most thickly-populated portion of Germany, but not, until this year, the most thickly-populated country of Europe. The development of the manufacturing interests of Saxony accounts chiefly for its great growth. At the close of the Franco-German war, Dresden, long a favorite city among Americans abroad, had a population of 177,000. It has now 285,000. Leipzig had 166,000, it has now nearly 300,000. Chemnitz had 68,000; it has now 100,000. The development of the woolen industry in Saxony accounts very largely for the increased population in its manufacturing centers, the disposition of the Germans of Saxony being, quite evidently to move into the large cities, whereas the residents of Hanover and Bavaria, two of the largest political divisions of Germany, have preferred to pursue the business of agriculture. Bavaria is five times larger than Saxony, but the population is less than twice as large. The cities of Bavaria too, have not grown very rapidly of late years, and the city of Hanover, in Hanover, has increased very little during the last ten years. Density of population, sometimes considered as the test of civilization in a country, is not to be thus regarded if the tenth ward of New York city can be accepted as a fair criterion.—N. Y. Sun.