The Story of the Oreation Told in a Si

Some of the Mysteries of Nature that Mave
Been Solved by the Astronomers—Laplace's Nebro Mypothesis and Evidences of act Tradict His Theory.

Imagine, if you can, a great nebulous
mass of gaset and meteoric stones revolving

Imagine, if you can, a great nebulous areas of gases and meteoric stones revolving abovely in space are and its own center, subject always to the mysterious power of gravitation, and with a mean diameter of 5500 times 1,000,000 hines. It was of that mass, "without form and void." that our solar system was made. To many readers of this article that statement will be startling; to all of them, perhaps, the figurestiat I have given are simply inconceivable. And yet there can be no reasonable doubt that our sun and its eight planets had their origin in that greatchastic mus of matter. There is as little doubt of it as there is of the gradual evolution or plants from the primitive simplicity of weed-life to the luxuriant beauty of their present growth, and of this no well-informed person has any doubt at all. The proofs are simply overwhelming. But if our solar system was formed out of that nebulous mass, the process must have been a work of thousands of years; how than shall we interpret that scriptural line, "In six days God made the heavens and the earth?" It is a matter of unmixed wonder to me that ten people out of twelve take the word "days" as used in that line to mean days as we divide the time, of twenty-four hours each. As a matter of fact, it means nothing of the kind. It means periods of time, of course, but very long periods. We have the warrant of the Bible itself for the assumption that "God's days as a thousand years."

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Even if the Bible were silent on the subject it would be contrary to all the known laws of the universe, to analogy and to good sense, to interpret the story of the creation as meaning that God completed the work in six days of twenty-four hours each. That interpretation would imply that the Creator works "like a magician; that" he sits in heaven, ordains by a breath the making of a world, and throws it out into space as a juggler tosses a glass ball up in the air. Even in the absence of all proof, I could not bring mys If to believing that possible. But there are proofs of the most convincing kind that the formation of our solar system was a work of ages and not of days. I purpose glving you a few of them in plain, unprofessional terms, but it would be better first to explain how the great work was done.

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I have spoken of an original mass of nebulous matter, composed of gases and meteoric stones, and with a diameter of 5,500,000,000 miles. You will naturally ask why the mass was assumed to have a diameter of a certain extent. The answer to that question is found in the radical distance of the planet Neptune from the sun, which is 2,750,000,000 miles, the diameter of its orbit being twice the radius, or 5,500,000,000 miles. As Neptune is the outermost planet of our system, it marks the boundary of the nebulous matter from which the system was formed.

As this mass of matter slowly revolved in space it assumed a globular shape. The particles composing it were held together by gravitation, and as the rotation continued there was a gradual condensation in the center. That center, in the course of time, became a nucleus of solid matter in which there was great heat. There was heat throughout the mass, but it was greatest at the center.

Then the nucleus began to throw off heat.

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Then the nucleus began to throw off heat, and the mass shrunk and condensed more and more. And the more it shrunk the hotter the center became and the more rapid was the rotation. The slower rotation of the mass had made it globular in shape, but as the rotation increased the globe became and flatter flatter, until it assumed the form of a disk.

At a certain stage of this flattening process the law of gravitation became inoperative; it could nold the mass together as a body no longer. Then a ring of matter was thrown off into space, and the central part of the mass, being thus relieved, again assumed a globular shape, again shrunk, condensed at the center, increased in rapidity of rotation, flattened, and threw off a ring of matter. This was repeated several times, and then the center of the mass, having reached the last stage of shrinkage and condensation, and with it the greatest possible heat, became the sun.

possible neat, became the sub.

The rings that were thrown off during these repeated actions of the central mass, obeying a universal law, begin in their turn to rotate around the densest part of the matter that composed them. They contracted, condensed at the center and threw off ringf, precisely as the original mass had done.

done.

This is a simple and easily understood explanation of the famous nebular hypothesis promulgated by Laplace. It is accepted by the most eminent astronomers and scientists as the only reasonable solution of the great mystery of creation. According to it the nucleus of the original mass formed the sun, the nucleus of each secondary mass formed a planet, and the nucleus of each ring thrown off from a secondary mass formed a planet, and the nucleus of each ring thrown of from a ed a planet's satellite. thrown off from a secondary mass form-

ring thrown off from a secondary mass formed a planet's satellite.

Our carth was one of the rings thrown off from the original mass, and it, in turn, threw off a ring, which became the moon. The seven other planets of our system were formed in the same way. It is supposed by some astronomers that a ninth ring was thrown off between Mars and Jupiter, which occame disintegrated, and that the matter that composed the ring formed the asteriods that have their orbit between those two planets. That vew is strengthened by the fact that the distance from Mars to Jupiter is about 340,000,000 miles, which exceeds the gradual increaze of distance between the sun and the planets. Therefore, they say a ring must have been thrown off there.

As to the proofs of Leplace's hypothesis, it is not my purpose to enter upon a scientific discussion of them here. On the contarry, I desire to avoid everything of a strictly scientific and technical nature. Fortunately, a statement of that kind is not necessary to put before you the strongest evidences of the truth of the theory; they exist in the facts and conditions that even a child may readily understand. It will give four or five of them very briefly:

First, we know that the earth is hotter in the interior than it is on the surface, because when deep wells and mines are sunk there is an average increase of heat of one degree to every 50 fest. This heat could not have been received from the outside since the earth is dore the earth before the estatus coll life on the surface, which it is compalled earth before the estatus center of the earth before the estatus collection. Therefore, it must have been in the center of the earth before the estatus contest from the center of the earth before the estatus collier of the earth before the estatus contest from the center of the earth before the estatus contest from the center of the earth before the estatus contest on the center of the earth before the estatus contest on the center of the earth before the estatus contest of life on the su

of the earth
the surface,

As the heat comes from the center of the
earth to the surface, which it is compelled
to do, according to well-known laws, it is
given off into space, and this radiation must
given off into space, and this radiation must have been going on from the formation of the glob Going bank, therefore, to the beginning, we must conclude that there was

a time when the earth was a molten mass, and before that nothing but fiery vapor. In other works it was originally a part of the nebulous mass that revolved in space.

We know that the san is losing heat all the time; therefore, there must have been a time when the availy more than it has now. We know, too, that bodies contract as they cool; therefore, there must have been a time when the sun was much larger than it is now. Indeed, the conclusion is irresistible that it was once but a mass of fiery vaper filling the great space now occupied by our solar system. The planets could then have had no separate existence; they must have formed a part of the nebular lous mass. The fact that the planets all revolve around the sun in the same direction, from west to east, and that they move almost in the same plane, one with another, is a strong proof that they were all once a part of the sun's bulk; in other words, a strong proof of the truth of the nebular hypohisis.

More than all this, the spectroscope has shown us nebulous masses in various parts of the heavens, all having the conditions that have been assumed for the mass out of which our system was formed. They are unquestionably throwing off heat and condensing, just as our mass did, and we are thus permitted, by the glorious achievments and inventions of scientists, to see the work of world-making actually going on. A notable instance of this is in, the condition of world-making actually going on. A notable instance of this is in, the condition of the planets Jupiter and Saturn. The telescope enables us to see violent disturbances that must be produced by heat. It is evident that they have not yet cooled off sufficiently to sustain life; in other words, that their mass, so much greater than that of the earth has not yet reached its cooler stage. All these facts, it seems to me, substantiate the nebular hypothesis; indeed, we could hardly ask for stronger proof of its truth short of a direct revelation from the Creator himself.

But our own solar system is not th

of a direct revelation from the creator man-self.

But our own solar system is not the limit of that hypothesis. The spectroscope has shown us that fixed stars are all akin to our sun. They have the same elements, the same characteristics and virtually the same conditions. Why, then, is it not reasonable to assume that all space was originally fill-ed with nebulous masses, which, like that of our system, shrunk, condensed, radiated heat and threw off secondary masses to form planets and satellites?

Most people tread more firmly with the right than with the left foot. There seems to be a greater capacity for propelling the body with the foot; from this the horse-man aprings, with the left in the stirrup, and, unless left-handed, no boy in his play hops naturally upon the left foot.

To the attentive eye none of the ordinary gestures or movements betays peculiarities of individual character more plainly than the gait—the sailor's rolling, tho soldier's stiff, the countryman's jolting gait are immediately recognized.

Slow steps, whether long or short, suggest a gentle or reflective state of mind, as the case may be, while, on the contrary, quick steps seem to speak of agitation and energy.

energy.

Reflection is revealed in frequent pauses and walking to and fro and backward and forward: the direction of the steps, wavering and following every changing impulse of the mind, inevitably betrays uncertainty hesitation and indecision.

## THE RUSSIAN RETREAT FROM SE-

I went back to my uneasy couch, about two o'clock, but I was speedily aroused by an awful explosion. I hastened to my lookout post again. The flames were spreading all over the city. It was an ocean of fire. At 4 a.m. the camps, from sea to valley, were aroused by an awful shock—the destruction of some great magazine behind, the

all over the city. It was an ocean of fire. At 4 a.m. the camps, from sea to valley, vere aroused by an awful shock—the destruction of some great magazine behind, the Redan. In quick succession one, two, three, four explosions followed. At 4.55 a.m. the magazines of the Flagstaff Bastion and Garden Batteries exploded. The very earth trembled at each outburst, but at 5.30 a.m. when the whole of the huge stone fortresses, the Quarantine and Alexander, were hurded into the air almost simultaneously with a praling rearr, and the sky was reddened by the incessant flashes of the british and gased in awe-skruck wonder. It was broad day. The Rassian fleet was gone, the last of their men of war was at the bottom—only the steamers sere active, towing boats and moving from place to place on mysterious errands. Thirty-five magazines in all were blown up, and through all the night of the 8th and the morning of September 9th the Russians were marching out of the south side. We could see the bridge and mounted the opposite bank. Yes, the south side was left to the possession of the Allies at last! Sebastopol, the city, the docks, and the arsenal, was ours. In half an hour more the end of the bridge itself was floated away by some invisible agency from the south side, and in less than an hour the several portions of it were collected at the further side of the roadstead. Meantime, the fires, fed by small explosions, spread till the town seemed like one great furnace vomiting out columns of velvety black smoke to heaven. Son after seven o'clock columns of smoke-began to ascend from Fort Paul. In a minute or two more flames were seen breaking out in Fort Nicholas. The first exploded with a stupendous roar later in the day; the mines under the latter did not take fire. The retreat of Gortschahoff was effected with masterly skill.—WILLIAM HOWARD RUSSELL, L.L.D., in the "Scribner."

of our system, shrunk, condensed, radiated heat and threw off secondary masses to form planets and satellites?

THEORIES ABOUT FEET.

Peculiarities of Character Indicated in the Mode of Walking.

In the form of the foot the sexes differ amends or even more than in that of the hand. A woman's foot is usually narrower in proportion than a man's, while his will be considerably stronger in the ankle and more powerful in the formation of the costs.

When a woman owns a strong, firm, wide the motor of surprise at finding her "strong" midded." When a man trips along on a delicate little foot people instinctively be until mown as effeminate.

If, instead of the cramping imprisonment of boots and shoes, the toot from infancy were allowed a free, natural development, it may be questioned whether, under such of peoforming other functions besides those of flocomotion and sustaining the weight of the body. Large quantity is said to extend itself even to the constitution, and the left might be attributed to the more frequent exertion of this side were it not that the peculiarity is said to extend itself even to the constitution, and the left might be attributed to the more frequent exertion of this side were it not that the peculiarity is said to extend itself even to the constitution, and the left foot. The reseems to be a greater capacity for propelling the body with the foot; from this the horseman springs, with the left in the stirrup, and unless tell-thanded, no boy in his play hops naturally upon the left foot.

The reperience that has been brought down from the various Arctic expeditions, and more particularly from the Malerman down as effort the part of crafting the considerably stronger in the and element of crafting the head of the part of the while Bay can be traverse proper formances.

Most people trade more firmly with the foot; from this the horseman springs, with the left foot. The reseems to be a greater capacity for propelling the body with the foot; from this the horseman springs, with the left foot. The re

on the concert of the concenter of the cis compelled in the concenter of the cis compelled will be sinking and noiseless.—[Pall Mall of the compelled will be nothing to do but to treduce the compelled will be sinking and noiseless.—[Pall Mall of the compelled will be nothing to do but to the compelled will be nothing to do but to the compelled will be nothing to do but the compelled will be nothing to the waits of the very hard the manulation.

Money Tight.

Drug Clerk—"I' I've been docked a week's waits of other waits of

## PREY OF THE OCEAN.

## Analysis of the World's Recor-wrecks for Last Year.

We hear much of the many finely-modelled ships that are built, from time to time, but little of the many vessels that are lost. Occasionally public interest is excited by heroism displayed in saving a shipwrecked crew; but in many cases the loss of a good ship is only indicated by a line or two in the list of casualties in the daily papers.

Who, for instance, would think that last year sixty-eight vessels, the largest proportion ships, saied from some port or other, and, according to Lloyd's annual return, never again were heard of, and these, too, were fairly good-sized crafts?

What of the crews? The story can never be completed, the suffering may be but guessed at.

too, were fairly good sized crafts?

What of the crews? The story can never be completed, the suffering may be but guessed at.

And Britain and her colonies have more than their share, but while we make up a half of the stord losses, we contribute, 28,-500 cut of the \$4,000 tons which have thus passed out of record.

The total of wreeks, too, seems large—1086 vessels of \$64,946 tons, but it must be remembered that there are probably always afloat on the high seas over twenty million tons of shipping, which fact, although it increases the surprise that so many vessels should be lost without any news, indicates generally a fairly low ratio of loss—3 to 4 per cent. of tonnage.

It may be accepted as a testimony in favor of steel that of the total tonnage lost only 12 per cent. was constructed of this metal, while 41 per cent. was of iron, and 47 per cent. was of wood and composited vessels. But it should also be noted that the wooden vessels generally are older, so that age as well as material may have contributed to the result.

Again, ships bulk more largely than steamers, the latter making 43 per cent., and ships 57 per cent, of the total; but age again must be considered, for a large number (124 vessels of 47,910 tons) were condemned and broken up against only 18,635 tons of steamers.

A ship is more readily abandoned at sea

again must be considered, for a large number (124 vessels of 47,910 tons) were condemsed and broken up against only 18,635 tons of steamers.

A ship is more readily abandoned at seathan a steamer, because when the masts "go by the board" in a storm the ship is often helpless. We have therefore 50,576 tons of ship thus abandoned against only 9000 of steamers, which latter in itself is a large number; they were all of large size too, averaging 1200 tons.

It is interesting to note further that steamers collide more frequently than ships, or the results are more disastrous. Thus we find that while 45,076 tons of steamers were lost by collision, only 12,849 tons of ship losses are accounted for.

The number of vessels does not show the same disparity, 43 of the former against 47 of the latter, which would indicate that small ships more readily collide; and one may be pardoned the assumption that these are mostly in home channels rather than on the high seas.

Of course the hidden rock, the fog-bedimmed, rugged headland, and the overpowering tempest are as disastrous to the steamer as to the ship, and we find that in each case about a half of the losses are attributed to these more or less unavoidable causes.

As to the nationality, we find that the "death rate" of tonnage of Britain's fleet is 2.67 per cent., and of the colonies 3.13 per cent.

Britain has a-heavier loss in ships than

The state of the s

An Albany, Ore., despatch says:—Fred Reis saw a bright meteor approaching from the southeast yesterday. It was traveling very rapidly and with a rushing sound fell into the street, followed by bright sparks. Reis hastened to the spot where it struck theearth and found a rock about fourteen inches in circumference.

It was still very hot and charred the board upon which it was placed. The rock had the appearance of a volcanic production.

The man who has one talent and improves

## SPORTS OF WINTER IN NORWAY. nts and Joylal Snov

Shee Races.

The amusements of Christiania are those of all cold countries. One special delightis skating on the frozen smow; it may in fact be called the national sport of Norway in the cold white months. For the peasants, however, it is no mere sport, but a necessity of existerce, whereas in the towns it is a recreation which every one loves to share in or to watch. The snowshoes are long, flat, and pointed, made of light, elastic, but solid wood. When wearing these snowshoes, a balancing-stick is necessary, but the most skillful skaters only need a little branch. The rest of the equipment is much the same as for ordinary skating, except that very long stockings and very thick mufflers are worn to break the force of concussions; for skating on snow in Norway is really a mad rush from the top to the bottom of hills, with sudden leaps in the air where the ground, becoming suddenly vertical, disappears from beneath your feet.

It is an intoxicating sensation to speed

ground, becoming suddenly vertical, disappears from beneath your feet.

It is an intoxicating sensation to speed through the arras quickly as lightning, as lightly as a bird, the lungs inflated with the pure air, the blood rushing through one's twins, making one feel strong, vigorous, supple, and as if one's limbs were elastic. This salutary and delightful exercise, violent as it appears, is not really at all exhausting, and delicately bred, high-born young ladies can take part in it. Truly it is a beautiful sight, and thoroughly Scandinavian, a sort of glimpse into the heroic ages of the sagas, it to watch a beautiful fair girl in her short if gray dress, with bright eyes and glowing the cheeks, shoot like an apparition from another world across the whiteness of the untrodden snow.

The races on the snow are among the greatest fetes of the capital, and all the world, headed by the court, goes to see a them. The most celebrated Norwegian skaters compete, but of late years it has always been the young of Christians who have carried off the prizes. The sport is becoming every day more and more of a national institution, and it is not unusual for young nobles to snend a long time up in

have carried off the prizes. The sport is becoming every day more and more of a national institution, and it is not unusual for young nobles to spend a long time up in the mountains practicing skating. Alpine hotels and inns, which used to close at the beginning of the cold season, are now kept open for some weeks in the depths of winter.

Very soon all those who value their reputation in society will go up to greet the

A despatch from Teheran says that the Shah of Persia is seriously ill. The nature of the illness is not reported, but the Shah is known to have been greatly disturbed by the recent troubles in his dominions, and especially by the hostile and menacing attitude of the priesthood toward his authority.

Education is the only interest worthy the deep, controlling anxiety of the thoughtful man —[Wendell Philling

## TWITTING ON FACTS.

# Did you ever hear a man and air wife

uarrel?
We have. In fact, we have just been stening to a very animated discussion between one of the "natural protectors" of vely women and the partner of his joys

and sorrows.

It began about a pair of boot-lacings.
He bought them.
She said they were not long enough. He said they were. She told him she knew, and he remarked: "Yes, of course, she always knew everything!"

After that things were extremely lively. The war of words ran high. The very flie on the window stopped buzzing to listen, and no doubt took sides among themselves. The husband called the wife a liar, a tattler, a woman of doubtful character, and various other epithets not pleasant to listen to.

to.

She retaliated by informing him that he was a cheat, a rascal, a scamp, and a betrayer of female innocence.

And both bore this torrent of abuse, and neither boiled over.

And why? Simply because these things were not facts, and each party know it.

were not facts, and each party knew it.

But presently Mr. Hix overstepped the bounds, and told her that Mrs. Mir, who was her mother, had been in the poor-house. And then the blood of the Mixos rose, and she made a plunge for her husband's foretop and informed him that she would as lief be in the poor-house as to rob graves for a living.

Which was a spiteful fling at the memory Which was a spiteful fling at the memory of Hix's grandfather, who was supposed to have supplied a medical college with "subjects" occasionally.

After that the twitting on facts became

After that the twitting on facts became general, and in the ensuing five minutes we learned more of the personal history of the Hixes and Mives than we ever knew before, though they had lived neighbors to us all their lives.

Now, what is the moral?

Simply this: Avoid twitting on facts.

Nobody likes to be taunted with misfortmes which they cannot help. Least of all do they like being twitted with the faults of their relatives.

Little minds are fond of twitting.

You have all heard the story of the map and wife who quarreled and were divorced because he was worth twelve and a half cents at the time of their marriage, and she was worth only twelve, and could not beat to be told that her husband had raised her to wealth by marrying her, and that he might have married a woman with as much as himself.

A fire has occurred at Berson, a village of Gironde, France, and fourteen of the villagers were either burned to death in their homes or were killed while attempting becape. The flames spread with great rapidity and the efforts of the villagers to fight the fire were fruitless. In the efforts to save the aged and little children a number paished while engaged in the work of resoue. The greater part of the village was destroyed and the inhabitants are in greatstraits owing to lack of food and proper clothing.

How easy is the thought, in certain moods, of the loveliest, most muchfish devotion. How hard is the doing of the thought in the face of tahouses of unlessed unlessed difficulties.—[George McDenald.]