

WHAT SHE IS NOW.

Her hair is a lovely brown that turns to gold when the sun shines on it. And, framed with lashes of darker hue, a golden glow is her red and blue eyes. And her white teeth that her smiles disclose. Are like pearls enshrined in the heart of a rose.

THE TORNADO.

Its Nature and Freaks Explained by "One Who Knows."

I have been making the Western tornado a subject of special study during the past ten years, and have been led to the following conclusions as to the nature of the meteor, leaving out of the present discussion the manner of its generation. I present these convictions: They are not creations of accident, springing up haphazard, no one knows how or where, but they are governed by law. The grand cause of their inception, course and motion, is the law of gravity. And the trifling dust whirl we see on our prairies and in our roads during a summer afternoon is governed by exactly the same law as impels the frightful tornado. Since my attention has been turned to the subject I have noticed hundreds of those toy tornadoes, and have enlisted my friends in the observation; during this time I have never seen or heard of one revolving with the hands of a clock or in this fashion:



On the contrary, their motion has invariably been the other way, or contrary to the motion of the hands of a clock, as in this manner:

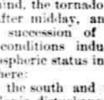


There is a very simple reason for this motion; in fact, the whole mechanism of the tornado is the simplest character when the law of gravity is applied as the key to its solution.

All its actions conform to this law. Leaving aside the discussion of its initial formation at this time I say: The tornado springs out of a circumscribed area of high barometric pressure and moves forward in the line of least resistance or toward areas of low pressure. It never takes form and motion until past midday. It is never generated in the night time. It is never brought into action during a cloudy day or soon after a succession of cloudy days. Now, why the whirling motion contrary to the movements of the hands of a watch?

Prof. W. M. Davis, of Harvard College in his monograph on "Whirlwinds, Cyclones and Tornadoes," says: "It is found, however, that all storms yet studied turn from right to left in the Northern Hemisphere, and from left to right in the Southern. Such constant points, to something more regular than the accidental strength of the winds, to some cause that shall always turn the eddies to the right of the center as they run in toward it in the Northern Hemisphere, and to the left in the Southern Hemisphere; and this cause is found in the rotation of the earth on its axis. There is a force arising from the earth's rotation that tends to reflect all motions in the Northern Hemisphere to the right, and this reflecting force varies with the latitude, being nothing at the equator and greatest at the poles."

There is a simpler reason and more trod in its character. It is this: Bear in mind, the tornado comes into being only after midday, and, further, only after a succession of still, clear days; these conditions induce the following atmospheric status in the Northern Hemisphere: The air to the south and east of the point of cyclonic disturbance has been more influenced by the sun's heat than any point to the north and west of it; radiation has ensued, vast columns of air have been thus lifted, and, correspondingly, areas of low barometric pressure, as compared with those to the north and west, have been established. But the sun's influence to the south has been of several days' duration, so much so as to warrant the conclusion that this area of low pressure in this direction is a constant factor, the dominant factor is the area of low pressure eastward caused by the sun's heat during the morning. Now, then, the first impulse of the air which goes to form the tornado will be toward the south, in the direction of the longest continuing area of low pressure, and for the same reason its next impulse will be toward the east, giving the resultant motion, as shown in this figure:



When the whirl is once established the tornado moves toward the point of least resistance. In this section, during the cyclonic period from the 1st of June to the middle of July, all our tornadoes come from the southwest; they come into the great basin that supplies the vast columns of heated air which rise from the bosom of the Great Lakes. This air to the Lakes produces a very large area of low barometric pressure. The tornadoes which arise at other seasons move off to the Atlantic seaboard in the southeast for a like reason. I have spoken of the air which goes from the tornado. I say that the tornado is nothing more or less than a solid column of compressed air, with three powerful motions—namely: A terrible whirl, or revolution on its own axis; which, in the main, is perpendicular to the plane of its flight; an upward, screw-like motion and the motion of flight or translation. These motions are imparted to the air by its rotation. It is hard to estimate the velocity of this

whirl; it can only be a matter of conjecture. It must be many thousands a minute. The upward, spiral motion is not near so rapid, but vastly greater than the translatory motion, which varies with the contour of the country over which it passes. The configuration of the land governs this motion entirely, retards or accelerates it, while the tornado hugs the ground, and often-times switches it off completely into the upper air. In this manner the rate of progression can vary from ten to one hundred miles an hour. This motion is thus erratic in its character. I know of one instance where the tornado retraced its course for a mile or more and then shot off at a right angle to its original direction.

Now, a few words as to the character of the funnel-shaped cloud. This is only the manifestation of the center of the solid destructive agent below. I have said that the tornado is a solid column of compressed air whirling with frightful velocity. Some idea may be obtained of its solidity when it is remembered or understood that several cubic miles of air under ordinary pressure are forced into a cylinder the size of Washington's monument. It is as solid as stone. Air, by compression, gives off its acquired and latent heat. The heat, situated in the column of the tornado, produces two distinct effects. It converts the moisture coming from the atmospheric column into steam, and throws off vast quantities of heat, thus, in conjunction with the electrical phenomena developed by friction, has led many to suppose that the tornado was caused by electricity; whereas electricity is only the effect. When the pressure is removed, and the air in the column is free to expand, what happens? Each molecule of air is hungry for its normal quantity of latent heat, and on being released from pressure at once attracts its uncompressing neighbor, steals away and locks within itself part of its neighbor's heat. Refrigeration and condensation at once take place, and the funnel-shaped cloud is developed as the core in the center of the tornado, and violent rain and hail-storms are bred. In one sense the funnel-shaped cloud does not pre-empt the storm. The tornado is in active operation before the funnel-shaped cloud is manifest. This cloud is harmless, and is only the evidence of the unseen, wonder-working, destructive meteor below it.

The path of the tornado proper is very narrow, and no work of man above ground has been found able to withstand the force of that whirling meteoric club within its narrow limits.

The great bulk of the damage along its track is caused by the rush of air to the north, west, and, strange as it may appear, most of this damage is caused by explosion. It is Nature's effort to restore and preserve the atmospheric equilibrium. With this rushing column there goes a vacuum, moving with commensurate velocity; toward this vacuum all the air in the neighborhood moves. If it be confined in a house the house explodes. The safety of buildings near the track of the tornado is to have all the windows and doors—away from the approaching storm—open.

There are many phenomena that can only be explained by this rush of air to the moving column, and which are otherwise inexplicable. There is no fact better attested than the one of chickens and other fowls being plucked clean of feathers during the passage of a tornado. The reason is perfectly simple and obvious. The quill of each feather contains air. This air in its movement to the vacuum carries the feather with it. While some of the freaks and works of tornadoes are of the most fantastic nature, I have seen and heard of none that can not be explained on the theory of the solidity of the moving column and the action of the law of gravity, with the added element of electricity caused by friction.—Daniel Berger, in St. Louis Republic.

A CONSIDERATE DAUGHTER.

Why She Didn't Want Her Lover to See Much of Her Mother.

Sam Holby, a wealthy young man, has been paying marked attention to Miss Birdie McGinnis. Mrs. McGinnis, the mother of Birdie, is an immensely stout woman. A few evenings ago Mr. Holby was expected to call. Just before the hour appointed for his arrival Birdie said to her mother: "Mother, dear, will you do me one favor?" "What is it, dear?" "You know that daughters always grow up to resemble their mothers."

"Well, my dear?" "Well, now, just look at yourself in the glass. You look as big as one of these water-tanks. You know you weigh one hundred and sixty-nine pounds."

"Well, what is it, my daughter?" "Please, stay in your room. Don't let Mr. Holby see you. I don't want him to see much of you."

"Why so, my daughter?" "Because, ma, I've nearly got him corralled. He is a little skittish, but I'll have him roped in pretty soon; but if he should see you he will think that I'll be as big as you some of these days, and he'll pump the hose, sure. I tell you, just wait until we are married, and then you can come and live with us, but don't count him in just at this crisis."

A PATH OF VIRTUE.

If Each One Rules Himself Well, the Good Results Are Hard to Compute.

A Chinese sage has notably described the path of virtue. In the Confucian writings is this passage, speaking of a Prince who applied himself to govern well: "He began by putting his house in good order. His chief care was to regulate his conduct. He applied himself, above all, to rectify his inclinations. He labored very much to invigorate his resolutions. In order to strengthen his resolutions he strove to establish his thoughts. Finally, to establish his thoughts, he aspired to reasoning, even of the primal origin and final end of all creatures, and formed to himself a clear idea. In effect, the clear idea of the origin and end of all creatures established his thoughts. His thoughts being established, these strengthened his resolutions. His resolutions being confirmed, these served to rectify his inclinations. His inclinations being corrected, these served to regulate his conduct. His conduct being rightly ordered, it was easy to put his house in good order. The good order reigning in his house facilitated the good administration of his States. His States, finally, being well-governed, gave tone to the whole Empire, and virtue was made to flourish. One may go as far as not find again so much in so little space. We may observe therein the immense result which is held forth from the influence of one man. Another Chinese sage gives this current proverb: "The Empire, the State, the family, the root of the Empire is in the State, the root of the State is in the family, the root of the family is in the person."

But it was never thought by those sages that the head person, whether of the family or of the State, should merely exert his will, but should contemplate the nature of the law, which is above all persons alike, and to be respected through the will of the best. Therefore the Emperor's dress in olden times was covered with figures of the sun, moon, dragons, insects, features of nature, mountains, rivers, to signify that the Governor ought to be like all natural powers, good and obedient to law. The influence of great personages, in fact, because he comes to greatness by the steps which are set by the sage in admirable order. The reason about the origin and the end of all creatures is to exercise the mind on the two mightiest of all ideas, those, namely, of morals and religion, for religious reasons of whom we come, and morals reason of the end of our coming. Such reasoning establishes our thoughts, because it brings us to a center, whence we can observe correctly the secret of the way of heaven and earth. Says Confucius: "The secret of the way of heaven and earth is that they are one and the same. The Prince's thoughts being established, this strengthened his resolutions, for fine thoughts are like great company, and who can live with great company without gathering strength throughout? Moreover, if thoughts be clearly established, the mind will be exercised to attempt the duty. By this the inclinations will be rectified, for by a long triumph of will or resolution, virtue is transmuted into nature or habit. Habit is what we have; and that virtue which is a habit is the highest kind of virtue, for it is goodness which has become a nature, and is plain and easy consequence that corrected inclinations regulated the Prince's conduct, for his acts then had free course from a good and open fountain in himself. So progresses freedom, according to Hegel's great account of liberty, the greatest that ever existed: "the spiritual realization of its own nature." "If there be virtue," says an ancient Chinese poem, "what need of laws? I have heard it said that when kingdoms were about to go down, they had many laws." The next step is that the Prince's conduct being rightly ordered, it was easy to put his house in good order." This followed because example is so strong a force. Confucius has it another way elsewhere: "Let there be men taught by means of the ruler's character, and the Government will flourish; but without men, the government ceases." Precept is, but utterance, but example is the power which the utterance signifies. From the ruler's own house being in good order, followed the extension of virtue through other households, until all the States and the Empire itself were flourishing. This is the lesson hidden in the measure of meal, which signifies the reproductiveness of a little good till the whole mass be lifted. But is not also the power of bad infection great? Truly, it is so. Bad things spread like disease. Depraved example depraves. Yet who ever heard any one speak of the reproductiveness of the bad? For if he had not by nature to reproduce itself, of necessity it would be permanent and pervasive forever, since from countless ages it was first upon the ground, by reason of the low order of life primitively out of which Egypt God has called his son. In sum, and for our guidance, each one has his own opportunity to do well that the good may abound; and the path is plain from serious thinking to good government and to the diffusion thereof. "He does best for the good of the world who lives nobly in his own house." If each one only rule himself well, it is hard to compute what a kingdom he will occupy. —St. Louis Globe-Democrat.

A LUNA IN DIAMONDS.

The Precious Gems Owned by Mrs. Stanford, of California.

Few, even among the royal families of Europe, have more valuable diamonds than Mrs. Stanford, wife of Senator Stanford, of California. One who can speak authoritatively says her diamonds are valued at \$1,000,000. Her husband bought four sets of diamonds for her when the valuables of Queen Isabella, of Spain, were sold in Paris and paid upwards of \$600,000 for the four. One set is of the stones known as "blue diamonds," as they emit violet rays by day; another has pink rays in its tones; the third is of yellow diamonds, and the fourth is of flawless white stones. Each set has a tiara or necklace, pendant, brooch, earrings, from four to six bracelets and some finger rings, all of the same style of make and of corresponding stones. In addition to these are six rings, which have some genuine black diamonds, cut pear-shaped, and numerous other diamond ornaments in a variety of styles. One necklace (not belonging to any of the sets above named) is valued at one hundred thousand dollars and its pendant at thirty thousand dollars. She has over sixty diamond finger rings, which she keeps on a string of black tape. To accommodate all these jewels she has a case which was made to order of steel, with cast-iron handles and burglar-proof locks. The case has a separate drawer for each set of diamonds, and is, of course, nearly all the time deposited in a bank. Mrs. Stanford carries very little for these treasures, especially since the death of her only son, whom she idolized. On one occasion, before his death, she wore nearly all her jewels at once. It was when a dinner was given herself and her husband by Mr. William E. DeLoe, of New York. She wore a black tulle dress, embroidered in silver, and her draperies were clasped with ornaments made of her diamonds, which she had reset especially for that occasion. She also wore tiara, necklace, pendant, earrings, brooch and other ornaments of diamonds.—Philadelphia Times.

Arsenic in Copper Mines.

In 1883, 5,449 tons of arsenic were produced in England. More than a third of it came from the Devon Great Consols mine. Sometimes two hundred tons a month are sold from this mine, a quantity of white arsenic sufficient to destroy the lives of more than five hundred million of human beings. The Commissioners of Mines saw stored in warehouses of the mine, ready packed for sale, a quantity of white arsenic, probably sufficient to destroy every living animal upon the face of the earth. The Commissioners consider that in the case of mines in which arsenic is extensively manufactured, it is only reasonable that the manufacture of a poison so virulent should be subject to a special State supervision; and they submit that an officer should be empowered to require that the best practical means be taken not only to prevent the poisoning of the air by the volatilization of the arsenic, but also to hinder the access of the poison to running water.—Christian at Work.

The battle-ground of Missionary Ridge has been converted into a strawberry patch.

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I am now 35 years old, and have suffered for the last fifteen years with a lung trouble. My father and mother were both afflicted with the same disease, and I was born with it. I had the distressing symptoms of that terrible disease. I have spent thousands of dollars in the search of the usual methods, but only in my own case, and the treatment of other members of my family, but temporary relief was all that I obtained. I was unfit for any manual labor for several years. At length I came into possession of a pamphlet on "Blood and Skin Diseases," from the editorial office of the Atlanta, Ga. A friend recommended the use of Swift's Specific, claiming that he himself had been greatly benefited by its use in some lung troubles. I resolved to try it. About four years ago I commenced to take S. S. S. according to directions. I found it a refreshing tonic, and have used about fifty bottles. The results are most gratifying. My cough has left me, my strength has returned, and I weigh sixty pounds more than I did in my life. It has been three years since I stopped the use of the medicine, but I have had no return of the disease, and I feel as well as ever. I have been able to do the hardest kind of mechanical work, and I feel as well as I ever did. I was a laborer. These, I know, are wonderful statements to make, but I am honest when I say that I owe my existence and health to Swift's Specific. It is the only medicine that brought me any permanent relief. I do not say that Swift's Specific will do this in every case, but I can positively affirm that it has done this much for me, and I would be content to give it to one suffering humanity. I listed to hear this cheerful testimony to the merits of this wonderful medicine. I am well known in the city of Montgomery, and can refer to some of the well citizens of this city. J. H. B. J. H. B. Swift's Specific is entirely vegetable. Treat Skin and Blood Diseases. Sold by all Druggists. The Swift-Specific Co., Drawer 3, Atlanta, Ga., or 125 W. 24th St., N. Y.

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