

SCIENTIFIC IDEA OF THE TORNADO

It is a Small Land Cyclone That
Originates in Upper Layers
O' Air.

STORMS ALWAYS WHIRL.

The Desert Whirlwind, Ocean Storm,
Land Tornado and Local Storm, All
Due to the Same Cause.

At the nature lesson at the U. of U. yesterday, the teacher explained that the popular idea of a storm, as of other natural facts obtained by observation, lacks definiteness. Observation is the key, the suggestion that may lead to the scientific fact or truth that lies back of it. Thus, we are accustomed to say that warm air rises, while science says that the cold air sinks and displaces the light air. Science shows that unless there is a greater difference than 1.6 degrees between any layer of air and the air 500 feet above it, the air will not move further than 500 feet, since air cools 1.6 degrees in rising 500 feet. But any excess over that difference between layers 500 feet apart in vertical distance, furnishes the condition of unstable equilibrium and brings about such a disturbance of the air that it is called a storm.

STORMS ALREADY DESCRIBED.

The desert whirl has a broad base (due to the very hot surface air—sometimes 150 degrees—not more than five feet high)—does not rise far in air because of the restricted land area that can present a perfectly flat surface to the sun's rays. It may be a tiny whirl of dust, or a considerable dust storm, but it usually occurs only at or near midday, and in the afternoon it dies away. It is a dry storm.

The oceanic cyclone may cover an immense area—as far as the sea is concerned—as the surface temperature seldom exceeds 55 degrees. Yet this air, being saturated, contains potentially more heat than the desert air at 150. The warm sea air may form a thick stratum of almost invisible height, because the invisible vapor of water, evaporated from the green surface by the sun's rays, is 132 times lighter than the air, and will diffuse itself to any height until it reaches its dew point and condenses, which it may do at a height of hundreds of feet; and if in rising 500 feet it does not cool more than 1.6 degrees, the air itself will rise as well as the vapor. But as soon as the vapor condenses back into clouds or rain, each pound that does so, gives off 1,000 degrees of heat, thereby sustaining the warmth lost by rising. These storms are thus self-feeders, and may last a long time.

THE TORNADO.

Imagine, now, that the heated stratum of air is in some way displaced in a body by the cold air flowing underneath and lifting it. When this occurs in heated air that contains such moisture, important differences from cyclones and desert whirls will follow: (1) The area of disturbance will be small, because no great body of air is likely to be so lifted as a whole. (2) There will be a free space without the friction of land or sea in which the cyclone motion may develop enormous speed; (3) the shape of the whirling storm-mass will be that of a very long and narrow funnel, instead of a very wide and short one as the cyclone. (4) The tornado, being a cyclone within the general influence of cyclonic forces—perhaps a cyclone within a cyclone, will turn in the same general direction—to the right in the northern hemisphere (Dove's law), and will sweep in a parabolic curve with its turning point in that part of the continent (Texas, Kansas, Illinois, etc.), to which the trade wind movement has carried it.

JUST WHAT HAPPENS.

If there is cold air above as well as below the warm and moist stratum, the warm air, feeling about for a point of escape through its cold cover, soon finds or makes a vent where it may escape upwards; and the entire warm mass, a mile or more in diameter and often more than 1,000 feet in thickness, begins the rotary motion before explained. Unlike the cyclone, which may feed itself indefinitely, the tornado must cease as soon as the original mass of air escapes upward. There being no land or water friction, the incoming currents may attain a great velocity. Moreover, when a body is drawn toward the center about which it whirls, its velocity will increase as much as its distance from the center decreases. Hence, in a tornado, air with a velocity of 50 feet per second at the circumference, may fly around at 100 feet per second in the center. But such rapidly increases the centrifugal force to an amount proportionate to the square of the increased velocity, and to a small radius in relation to the center of the whirling mass, into which bodies are "sucked" or shot with terrific force.

DESCRIPTION OF TORNADOES.

Tornadoes are a form of storms very violent and a small area with rapid advance. They are whirling in the air, a little above the ground, into which the surface winds are thrown with great velocity. They are most numerous in Kansas, Missouri, and Illinois, and they occur at all months and at nearly all hours of the day, but more frequently in the afternoon of June and the adjoining months. Their advance is nearly always to the northeast at about 30 miles an hour. The tornado is seen as a dark funnel-shaped mass hung over with clouds, and emitting a roaring sound as it comes near. The whirling funnel is seen to swing from side to side, and to rise and fall; various objects are snatched from the ground may be seen rising and falling in its eddies. Whirling tree trunks appear like bushes, and many doors like shingles. At a certain height these are thrown out and fall to the ground. Iron chains, large beams and heavy cars are carried away in these whirling. People have sometimes been carried many feet, and occasionally dropped unhurt. The explanation given for sandwhirls in the desert fails to explain the excessive force of tornadoes. The explanation, given above, shows why the cyclone rises out one town, bounds over another, and is shot through a door, etc., and why at a distance from the storm track, which is often only a few hundred feet wide, no damage is done.

DIRECTION OF WIND.

The heater a storm is to the equator the less its winds will be turned to the right by the earth's rotation, and the equator they will whirl around in almost perfect circles. Storms in low latitudes generally have a small but violent central whirl, only one or two hundred miles in diameter. Further from the center the winds will flow almost straight inward, but in our temperate zone the inflowing winds are strongly turned to the right. In

the northern hemisphere the wind blows faster on the right and rear or dangerous side of the storm, and slower on the north, the front or manageable side. In the North Atlantic, where the storms often move rapidly, a hurricane may prevail south of the center, while very moderate winds may blow on the north. On the sea the turning to the right from the earth's rotation is more pronounced than on land. In the upper air the winds are probably perfectly circular in the core of the storm. It has often been observed that the surface winds of a storm are not parallel to the motion of the clouds above it; but the surface winds are always turned more to the right.

A STORM AT SEA.

When a cyclonic storm occurs at sea, the first warning is a falling of the mercury in the barometer, and presently the wind will arrive. Its force increases, blowing in tremendous and terrible gusts until the vessel is stripped of its canvas, and the yards and masts are cracked and broken away. The hull then drifts helpless and unmanageable; rain falls in driving torrents; and the sea rolls in great broken waves. The roaring of the winds rises to a screaming pitch and when at its most fearful strength, suddenly dies away. In a few minutes the air is quiet, and then the heavy sea and clouds and the fading sound of the retreating wind, tell of the violence that has passed. The vessel is then in a cushion of quiet air, left at the core of the storm; but the suspense of this quiet is brief. In less than an hour the center passes on, and the opposite side of the whirl falls on the unhappy wreck with all the rear and fury that were felt before, but now blowing from the opposite direction. This hurricane chops the waves into the dreaded sea where the water rises in pyramids instead of in linear crests, wreathing the vessel and springing leaks in the worst of all, which is left to founder as the weather clears and the storm goes on its path.

FOR FULL REGIMENT.

War Department to Provide Accommodations at Fort Douglas.

The indications are that the war department will in the very near future provide accommodations at Fort Douglas for a full regiment of infantry. Plans to that end are being consummated and it is believed will be carried out when the army maneuvers of the present season are over. The proper authorities have determined that the increase should be made, and it remains for the arrangements to be carried out.

The proposed regiment of Fort Douglas and the increase of soldiers contemplated would prove to be a great thing in a financial way for Salt Lake and the immediate vicinity. The buildings to be erected would require vast quantities of materials and work would be plentiful. Besides this, the supplies necessary at the fort would amount to hundreds of thousands of dollars annually, and much if this amount would go to the merchants and producers hereabouts.

Fort Douglas is an ideal headquarters for a large body of troops, and this fact is recognized by army officials.

SHAMEFUL CONDUCT.

Street Car Men Quarrel While Passengers Are Compelled to Walk.

Six street car men indulged in a fight of way dispute yesterday afternoon to the indignation and discomfort of 72 passengers who were dumped in the street and compelled alternately to walk and run several blocks to the depot through the sweltering sun, where the train was held several minutes for them to board it for Saltair. Briefly these are the facts:

At eight minutes to five o'clock an open car started from the corner of East Temple and First South streets for the Saltair depot. The car was loaded to the limit and men and women stood upon the platform, perfectly willing to do so, as it was the last car before the departure of the train. When First West street was reached two empty cars, east bound, on the same track, and the crew with the passengers begged of the others to back down the track as there was heavy time to catch the train, but they refused absolutely saying they had the right of way and proposed to keep it.

"But we'll miss the train with all these passengers," argued the conductor and the westbound car. "We can't help that," rejoined the obstructive, settling themselves into the seats of the last car.

Then some of the passengers went forward and kindly but firmly requested them to back down the track or permit a transfer of the passengers to one of their cars.

"No, sir, we've got the right of way and we're going to keep it. That is settled." It was now three minutes of train time, and the bell was ringing nearly half a mile away. A messenger volunteered to run to the depot and lay the situation before the conductor of the beach train and request him to hold it, which he promised to do. In the meantime the passengers, whose faces had been collected, were unloaded in the street and after some of them had been injured and threatened by one of the motormen, started on the long run to the depot, leaving the disputing crews holding the ground. Three women with babies were among the passengers who had to make this hurried and unheated journey and were well high exalted when they reached the train, which was kindly held for them.

This morning there were several other complaints made at the News office concerning similar treatment to passengers who took the 4 o'clock train for the lake.

LIKES DESERT NEWS.

British Newspaperman Writes to Utah Friend of Its Excellence.

E. G. Parker of Honger, Utah, is in receipt of a letter from a friend named William Orrett, who resides at Manchester, England, from which the "News" is permitted to reproduce one paragraph. The gentleman, who is a prominent newspaper man, speaking of a copy of the Desert News sent to him by Mr. Parker, says:

"I was very glad that you sent me the Desert Semi-Weekly News. Let me thank you for the kindness. It contained many views of the terrible drought that occurred in San Francisco last year, appearing in any of our periodicals. The views were very interesting. Let me say regarding your paper, I am very proud of it. I particularly notice that of the toxicating liquor advertisement in it, and this fact particularly struck me as being a principle of Mormonism, upon which subject I also found a very interesting article. Taking the paper all around, it has a very high moral tone, and there are very few papers in England to equal it. I am sorry to say, The London Daily News is, I think, the only newspaper in England that prohibits either gambling or liquor notices to appear in any shape whatever."

Good Bargain

when one trades COFFEE and all the old COFFEE AILS for health on

POSTUM

Ten days' trial proves.

A WRECK ON THE LAGOON ROAD

Engineer Armstrong and Fireman
Stewart Both Have Nar-
row Escapes.

INJURED AND IN HOSPITAL.

Fortunately no Passengers Were in
Anywise Injured—Accident hap-
pened in North Farmington.

There was a bad accident on a Salt Lake & Ogden passenger train, a mile and a half north of Lagoon yesterday afternoon at 3 o'clock, and the engineer and fireman had narrow escapes from death. As it was Henry T. Armstrong, 132 North Third West, the engineer, sustained a wrenched back and several scalp wounds, while Fireman Thomas E. Stewart of 410 North Third West contracted a broken collar bone and a number of severe bruises. Both men are in the D. S. hospital and are suffering from the effects of the shock-up.

The engine and two cars were derailed about eight passengers were on board and one of all escaped serious injury. They are not so badly shaken up but they could assist in getting the two men out of the wreck. Both the engineer and the fireman jumped but were caught in the debris which resulted from the smash.

The wreck occurred near the Leonard residence in North Farmington. The train was made up of engine No. 17, one of the two large engines of the road, a baggage car, two coaches and an open excursion car. At the point where the wheels of the tender left the track there is a high fill. Fortunately the cars remained on the grade until the cut was reached, otherwise the train must have rolled down the embankment and loss of life resulted.

The engine was proceeding at a lively clip, tender first. It is thought that the brake beam dropped and derailed the tender, the engine and cars following a moment later. Conductor Charles Fletcher and two passengers, W. H. Copp of Salt Lake and Benjamin Barrett of Kayville, hastened to the front and worked hard in getting out the two men. The engineer was pinned down by a broken portion of the car. He was lying with his head between his legs but despite his position he called to the men to get out his fireman first as he was not badly hurt. Dr. Sumner Gleason, the county surgeon at Kayville, arrived on a special engine shortly thereafter, he examined the injured men as comfortable as possible. He was joined later by Dr. Dixon of Kayville, Drs. Van Cott and Kessler of Bountiful and Dr. Holbrook of Layton, who had been summoned as soon as news of the accident had been received.

Senator Bamberger, who was at Kayville, also arrived on the scene on an engine and no time was lost in taking the injured men to Salt Lake, where they received attention at the hospital.

The wreck was picked up by the Oregon Short Line outfit. Owing to the accident only one train operated to and from Lagoon last night.

PETITION DENIED.

Second West Property Owners Cannot Have Wider Sidewalks.

The streets committee of the city council last night denied the petition of the property owners on north Second West street to have the cement walk constructed a foot further out from the property line. The property

owners for four blocks along the street asked to have the change in the sidewalk line made, but the committee denied the petition for the reason that the work was to begin this morning and it was too late to make a change and further that it would make a variance between the sidewalk lines along the street as the change would put the walk on the four blocks a foot further out than on the other blocks.

AMUSEMENTS.

Theater—The Mayall company get their patrons, no matter what the stage of the theater is. At the 4th of July matinee the Salt Lake theater was packed with the admirers of the company. Mr. Mayall's villain was roundly applauded and the hour interest was followed with many tears.

There will be but three more opportunities of witnessing the play of "The Wife," which is a clean drama, without the objectionable atmosphere which surrounds so many of the modern offerings.

Grand—"Deadwood Dick" was presented at the Grand last evening by the Ethel Tucker Stock company, and with the same bill the 16 weeks' engagement closes tomorrow evening. The play is of the extreme melodramatic order, and pleased the audience that filled the house. The principal roles were sustained by Mr. Brandon, Miss Perrie, Al. T. Dickinson, Elmer Ballard and Jack Diamond. The piece abounds with stirring episodes, there being nearly as much powder burned as in "Jesse James," while there is a great deal of humor throughout.

Casino Park—"In Sunny Tennessee" is in its closing nights at this resort.

WESTERN MARKET LETTER.

Special Correspondence.

Stock Yards, Kansas City, Mo., July 2.—Total cattle and calf receipts last week 40,000 head, of which 19,000 were in the quarantine division and 6,000 were calves, equally divided in the quarantine and native divisions. This left the supply of natives small, and buyers had some difficulty securing the requisite percentage of good to choice beef steers. Prices advanced 25 to 35 cents during the week on fair to good killing cattle of all descriptions, stockers and feeders 15 to 25 cents higher, veal calves 2 to 50 cents lower. The run today is 12,000 head, nearly half in the quarantine division, market steady to strong on fair to good stuff, steady to weak on common cattle. Straight grass Kansas steers sold at \$4.65 today, and Indian grass steers are selling in the quarantine division at \$4.50 to \$4.60. Hay fed horned Coads, from Oury, sold at \$5.25 last week, and other fed steers from Arkansas valley at \$5.25 and \$5.35, prices 25 to 40 cents above expectations at time of shipping. Cattle have not yet started from the great range country, with the exception of a few calves. Generous rains over the corn belt have again fallen during last week, and the strong prices for finished cattle are naturally enticing many farmers and feeders into making calculations for next season.

Fairly liberal mutton receipts last week, 32,000 head, resulted in lower prices for all but the best ones, and the run of \$6.00 today is also selling weak to 10 lower. Texas, Arizona and native sheep, and Texas goats are pretty evenly divided in the receipts. Arizonas showing best quality as a rule. Texas sheep lacking quality in the last week. Native much mixed, goats selling nearly steady, at \$3.20 to \$3.70. Texas muttons sold today at \$5.50, Arizona wethers \$5.55 and \$6.00, top native spring lambs \$5.50. Outlet is very large for all classes of mutton, and restriction in receipts will be followed immediately by stronger prices. Nothing from Utah or the northwest yet.

LEE KIM YING,

The Celebrated Chinese Physician,
1401 West South Temple St.
Thousand of Testimonials of Persons
Cured of Consumption, Catarrh,
Hemorrhages, and Every Disease
and Sickness.
Herbs Used, No Poisonous Drugs.

Salt Lake Col- legiate Institute

A boarding school for young men and women. Course consists of eighth grade and four years' academic work. Thorough work. Pleasant Christian home life. Music department. Expenses very moderate.

For Catalogue address:
George B. Sweeney, Principal,
Salt Lake City.

When
The
Hottest
Day
Comes

Let it remind you of the
comfort you'll have next
winter using "That Good
Coal."

BAMBERGER,
161 Melhorn Street,
U. S. A.

ELY AND CHERRY CREEK

NEVADA NORTHERN RAILWAY
Beginning Monday, June 25th,
1906, special daily (Sunday ex-
cepted) freight and passenger
trains between Cochrane, Nevada,
Union point with the Southern Pa-
cific Co., and Cochrane, at which point
automobiles will connect with trains
for Ely and Cherry Creek. Leave Co-
chrane 1:30 a. m., arrive Cochrane 11:30 a. m.,
Cherry Creek 1:00 p. m. and Ely
6:00 p. m. Leave Ely 7:00 a. m., Cherry
Creek 10:30 a. m., Cochrane 1:30 p. m.,
and arrive Cochrane 4:30 p. m.

For further information address H. J. Toll, General Freight & Passenger Agent, Cochrane, Nevada.

Take a Victor
Entertainer on the
Vacation with
you.

Render Grand Opera or Rag
Time at your camp meetings.
"Will make those moonlight
nights more delightful."
Talking Machines.
\$17 UP.

Records, 35c to \$5.00.

CARSTENSEN
& ANSON CO.
74 S. Main St.

SPECIAL BARGAINS AT Teet's Bargain Store

Graniteware Bargains GRANITE COFFEE POTS.....13c Granite Sauce Pans.....5c up Granite Drinking cups.....3c 3 GRANITE PIE PLATES FOR.....10c Granite Preserving Kettles.....10c Granite Dippers.....5c Granite Soap Dishes.....5c Granite Basting Spoons.....5c Granite Pans from.....5c up Granite Bread Pans.....10c Granite Wash Basins.....10c Crockery and Glassware Nice White Cup and Saucer for.....3c 2 White Sauce Dishes for.....3c 1-inch White Plates.....5c White Meat Platters.....8c 2 NICE GLASS TUMBLERS FOR.....5c 2 Salt or Pepper Shakers for.....5c Nice Glass Vases.....8c and 10c White Bowl and Pitcher.....9c Notion Bargains Plus per Paper.....1c Gold Eyed Needle Paper.....1c 2 Papers Hair Pins for.....1c 2 doz. Hooks and Eyes for.....1c BEST ALUMINUM THIMBLES.....1c PER DOZEN.....6c Turkey Red Marking Cotton.....1c COATS THREAD.....1c 3 Spool Cottons Darning Cotton for.....3c Cord Steel, per yd.....5c Good Tooth Brushes.....5c and 10c Vaseline, per Bottle.....5c 1 doz. Bathing Machine Oil for.....5c TALCUM POWDER.....5c Safety Pins, per dozen.....2c Kid Hair Cutters, per dozen 3c and 5c Rubber Fine Combs.....3c, 5c and 10c Metal Back Horn Combs.....5c Pocket Combs.....5c 12 doz. Shirt Buttons for.....5c 12 doz. Pants Buttons for.....5c 2 doz. Pearl Buttons for.....5c Silk Garter Elastic, per yard.....10c MEN'S CANVAS GLOVES, PER DOZEN.....60c	SHOES SHOES Ladies' Shoes from..... 98 cts. Men's Shoes from..... \$1.25 Ladies' Oxfords..... 75c. Children's Shoes at a Bargain	Carpets and Rugs TO CLOSE OUR CARPETS FOR THE SEASON. Yard wide Ingrain Carpets.....23c 40c yard wide carpets for.....27c THIS IS YOUR CHANCE TO GET A CARPET CHEAP Ladies' Corsets LADIES' GIRDLE CORSETS.....10c LADIES' NICE SUMMER CORSETS.....23c Dry Goods Specials India Linen, per yard.....3c yard and up Sitting Linen, per yard.....8c Bed Ticking.....8 1/2c up White Table Linens.....25c 35c up Indigo Blue Calico, per yard.....5c Stationary Specials 50 good Envelopes for.....5c 50 Sheets Note Paper for.....5c Express Lead Pencils, each.....1c Box Paper.....5c up Playing Cards.....8c Brushes Brushes Cloth Brushes.....10c up Hair Brushes.....10c, 15c 25c up Shaving Brushes from.....5c up WILLIAMS' SHAVING SOAP.....5c Hand or Vegetable Brushes.....5c Hosiery and Underwear Misses' and Children's Hosiery.....5c up Ladies' Hosiery.....8 1/2c up Ladies' Undervests.....5c LADIES' LONG SLEEVE UNDERWEAR.....10c
--	---	--

Come and see us for anything you want at a Bargain.
CHEAPEST STORE IN THE WEST

TEETS = ORPHEUM = TEETS
Theatre Bldg.

ESTABLISHED 1864

F. Auerbach & Bro.

ONE PRICE TO ALL NEVER UNDERSOLD

Saturday Morning Special from 9 Till 12 o'clock.

BOYS' and CHILDREN'S WASH PANTS

Regular Price 25c Pants at 18 Cents the Pair.

Pretty Patterned Percale and crash in a variety of colors, for three hours, the pair.....18c

\$4.95 Skirt Sale

We have taken one big table and filled it with bargains in Walking Skirts at \$4.95. As they are all odds and ends it is impossible to describe them, but most of them formerly sold for \$10.00. All reduced to—**\$4.95**

Alterations Extra.

On Sale Saturday Only

1,000 yards WHITE LAWN 40 inches wide, regular price 25c and 30c, Saturday at, per yard.....16c

Extraordinary Special All Day Saturday

Mew "Fritzi" Belts.

Extra quality soft Kid Belts in the new popular "Fritzi" style, black or white with double gilt prongs and hand-turn buckles on Sale Saturday only at.....39c

Saturday All Day

LADIES' BROWN OXFORDS, with wide ribbon ties and hand-turn soles, worth \$1.50. Special Saturday, per pair.....\$1.95

Saturday Evening Special from 7 till 9 o'clock.

Children's Straw Hats

Regular 65c values in fancy mixed colors for two hours. 7 till 9 o'clock, at.....39c

Saturday Night From 7 to 9 O'clock

250 yards CURTAIN SWISS, FULL YARD WIDE, in the prettiest Drapery Designs, regular price 16 1/2c, for 2 hours, Saturday night from 7 to 9 o'clock, at, per yard.....10c

GARDNER DAILY STORE NEWS

At last genuine warm weather is with us.

Cool Clothing is just about the most popular commodity right now.

The man who isn't looking for something light and airy is the one who is fortunate enough to have a supply of such things.

We have had a small rush in our hat department the past few days, fact is we were unable at times to handle the throngs.

Which we believe was the result of the prices—they are a little lower than usual on goods of such QUALITY.

Straw hats for knock-about or street service. 25c, 50c, 75c and \$1; for business or dress wear, \$1. \$1.50, \$2 up to \$3.50; and Panamas, \$5, \$6 and \$6.50.

Crash hats, 25c, 50c and 75c.

Our lace weave underwear is one of the best values to be had—open weave, it admits of cool air reaching the body. It is sold the Gardner way at \$1 the suit. Others \$1 to \$7.

Cool shirts, cool hose, cool suits—a saving on every purchase.

ONE J. P. GARDNER, 136-138
PRICE PRICE J. P. GARDNER, Main St.

THE QUALITY STORE.

\$115.00 DOCTOR'S MONEY.

We collected it for Dr. A. J. Holmquist of Helper, Utah. The delinquent was going to sue for malpractice and was just going to raise Hob—but he didn't.

We can collect some for you if you turn them in.

Francis G. Luke, Gen'l Mgr.

Merchants Protective Association,
SCIENTIFIC COLLECTORS OF BAD DEBTS.
Fifth Floor, Commercial Block, Salt Lake City, Utah.
"SOME PEOPLE DON'T LIKE US."