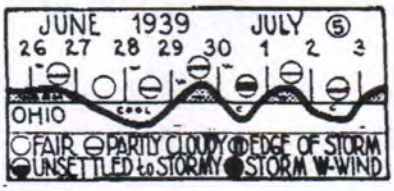
conductor which furnishes an easy path to the ground it breaks down, and there is a lightning flash between the whirling ball and the conductor which makes the sound of the explosion that ends the of fire.

TEMPERATURE AND RAINFALL.



Ohio, June 26 to July 2.

The northeast, west central and part of the north central area will be cool. Warmer in the central and south central portion. The remaining areas will be normal. The west portion will be dry, with moderate precipitation in the central and east central areas. The remaining portions of the state will be normal.

Newark Oh
Advocate
June 21 1939

WEATHER A WEEK AHEAD

As Forecast by PROF. SELBY MAXWELL, Noted Meteorologist

BALL LIGHTNING IS A WHIRLING CHARGE

OUR READERS REPORTED THESE FACTS

BALL LIGHTNING OR BALLS OF FIRE.

Our recent request asking experiences from those who had seen a ball of lightning brought many interesting letters. They help to clear up this scientific mystery. We thank our readers for their interesting contributions.

Nearly all correspondents said that ball lightning ranges in size from an orange to a basket ball, and that while these fire balls occasionally occur in rain storms they are most apt to occur in dry air and they may actually come into houses. Sometimes they are silent, but often they explode, with a noise like a large firecracker.

We offer the following hypothesis of a possible explanation of ball lightning.

A lightning discharge is an alternating current of electricity. It flashes rapidly back and forth between a cloud and the earth. There may be many alternations of the current in one flash. The actual electricity is hardly larger than a thread, but highly heated. In a museum we found a piece of glass that had been punctured by lightning discharge and the hole through the glass was hardly larger than a tiny thread. Around this thread for perhaps six inches, the air is white hot. A lightning discharge is over in the briefest fraction of a second. As the heated air collapses it sets up violent sound waves, or thunder.

Lightning is crooked. Once in a great while a kink in the discharging bolt may actually come back upon itself, so that the electricity flies in a closed loop. The instant this happens there is a shorter path via the junction and the remainder of the electricity flies off, leaving this little whirling loop by itself. If the air is filled with rain the loop joins the main flash of lightning and is gone so quickly we don't see it except as a part of the big flash. But if the air should be dry the electricity in the whirling loop apparently cannot escape, and so the whirling ball drifts off like a spinning doughnut. When the vortex of elecrticity comes to a

THE MAN IN THE MOON.

The lugubrious looking face seen when the moon is full has sometimes been called the "Man in the Moon." These dark spots on the moon are thought to be flows of lava from a time when the moon was red hot, and they may have been made by tidal attraction from the earth. Prof. Selby Maxewll has written a very interesting monograph about these moon spots. It will be sent to you free upon request. Address your letter to Prof. Selby Maxwell, care of this newspaper, enclosing a stamped (3c), self-addressed envelope for reply. Just ask for the "Man in the Moon."

Wilmington, De.
Journal Every Evening
Feb. 9, 1938

Ball Lightning Is Real, Has Never Been Reproduced

By HOWARD W. BLAKESLEE
(AP) Science Editor

NEW YORK — T. Neugebauer, German scientist, has an explanation of ball lightning.

These balls of fire, ranging from the size of an alarm clock to the weatherman's sounding balloon, appear occasionally during thunder-

storms. Their colors range from fire to lavender. They have been photographed.

They are probably, Neugebauer says, an electrical gas. Lightning in some manner unknown breaks up a mass of air particles into electrons and positive ions. This break-up is well known in laboratories, where an electrical discharge will break a good many air particles.

But no laboratory has enough power available to produce a sufficient number of the ions and electrons to imitate a ball of lightning. Neugebauer says the electrified particles form sufficient numbers to act like a gas.

This electrical gas ball should disappear either by collapsing or exploding. The electrical fire balls in nature do both.

Denton Md Journal
Feb 19 1938

grunted.

(To be continued next week)

"Ball" Lightning Said to Be Harmless to Humans

"Ball" lightning has baffled explanation, declares a writer in the Indianapolis News. That it occurs can not be doubted. A German work on the subject, by Dr. Walther Brand, contains an elaborate discussion of 215 cases reported by careful observers. Such lightning occurs during thunderstorms in the form of a small luminous ball or pear-shaped body, averaging a few inches in diameter, which either moves freely in the air or travels along objects as if attached to them.

The ball may be visible only an instant or may remain for several minutes. Its appearance often but not always is preceded by an ordinary flash of lightning. It is accompanied by a hissing or humming sound. It disappears either silently or with a light crack or with a loud explosion, and leaves behind it a sharp-smelling smoke or mist. In some cases several balls are seen at once.

The unattached balls display a fondness for entering houses, not only by way of doors, windows and chimneys, but also through small cracks. They are said to be harmless to human beings, whom they seem to avoid as they avoid all other good conductors. The attached balls, on the other hand, travel along good conductors, and cause serious burns if they touch the human body.

Kalgoorlie WA
Miner
Feb 26 1937

WHAT IS A THUNDERBOLT?

Scientists won't admit that a true thunderbolt has anything in common with a fireball. A thunderbolt, they say, is really a meteorite. It is of a dull black colour, composed of stone matter and iron. Meteorites may be mere fragments in size, or they may weigh several tons, but they are a comparative rarity, for all the specimens ever preserved number only 1000, counting 15 from the British Isles. There is at least one recorded case of a meteorite shower, when 100,000 of them descended like rain over Pultusk, Poland.

Brisbane
Courier Mail
January 2 1937

5

A THUNDERSTORM MYSTERY

Rarest Form Of Lightning

Occasionally in heavy thunderstorms in Queensland spectators see what they believe to be fire-balls that burst with loud reports. One recently occurred at Hereford, in England, and a correspondent wrote to the London "Daily Mail" as follows:

"During a thunderstorm I saw a large, red hot ball come down from the sky. It struck our house, cut the telephone wire, burnt the window frame, and then buried itself in a tub of water which was underneath. The water boiled for some minutes afterwards, but when it was cool enough for me to search I could find nothing in it."

An explanation was obtained from the Astronomer Royal, Dr. Spencer Jones, who said that in England it was a rare occurrence and was known as "globular or ball lightning." Dr. Jones added:

This is much the rarest of all forms of lightning and has never satisfactorily been explained.

The lightning in this form appears as a luminous ball of fire, anything from a few inches to two or three feet in diameter. It usually remains visible for several seconds, but exceptionally it can be seen for one or two minutes; it generally moves slowly and ultimately bursts with a loud report like a bombshell. It is not, of course, a "thunderbolt," and the correspondent naturally found no material object in the tub.

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Journal Every Evening
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Lincoln Ne

Ball Lightning. Rare Display. Seen During Wind and Hail Storm In Vicinity of 39th and Lake

In connection with the wind and hail storm in Lincoln last Tuesday evening, the rare phenomenon known as ball lightning was observed by at least four persons in the vicinity of 39th and Lake.

Mr. and Mrs. P. H. Moore of 2523 Scott ave., obtained a good view. Mrs. Moore was looking out the west window at 8 p. m. at the close of the wind and rain storm, whose center passed about one and one-half miles further south, when she noted three red balls of fire rolling and bouncing northward on the east side of 38th. After being visible for about 15 seconds on the gently sloping hillside about 160 feet from the Moore residence, the balls encountered an iron post and disappeared.

Mr. Moore joined his wife at the window but too late to see this first display. Within ten or 15 seconds three, or possibly four, more balls followed. One of these missed the iron post and ran northeastward along a path in the grass for 100 feet and out of sight behind the neighbor's garage.

Don and Dale Darnell, 2505 Scott ave., also witnessed the second display. Their best view was at closer range than that of Mr. and Mrs. Moore for they could see the entire path from 38th st., to the garage. They believe there were two or three balls in the path. They describe the balls as the size of a wash-tub, with sparkling rays of blue and orange fire. Mr. and Mrs. Moore estimated their size as that of a basketball, all smooth and firey red except one, which was purple. They heard no thunder but the boys heard a sharp report when the balls collapsed.

Prof. J. C. Jensen of Nebraska Wesleyan university, who secured a series of five photographs of a display of ball lightning of unusual brilliancy and size in 1930, would be glad to hear from others who witnessed these or similar phenomena.

Lightning Ball Makes Chimney Call on Governor

Providence, R. I., July 10 (UP).—Nature gave a private performance of one of its best acts last night for Gov. Theodore Francis Green. A lightining "fire ball" descended the fireplace chimney of the governor's study to explode on the hearth.

Rare and spectacular as the performance was, Green still didn't enjoy it. The explosion blew soot over everything in the room, including the governor, shattered pottery and overturned a bookcase.

"I wasn't injured but I had to take a bath," Green complained.

Ball lightning is comparatively uncommon. Green's specimen was a sphere about two feet in diameter.

Syracuse N.Y. Herald July 20, 1935

Uncle Ray's Corner

Lightning Sometimes Produces Glassy Tubes

Last time I spoke about the "thunderbolts" which the ancient Greek god, Zeus, was supposed to hurl through the sky. The question comes:

"Is a thunderbolt a real object?"

A thunderbolt is imaginary. The Greeks said that Zeus used to throw a large bolt into the air when he wanted to make thunder.

Other legends grew from the sharpened heads of Stone Age arrows and spears. Ancient people found these relics at times, but failed to explain them properly. In some places stories grew that the sharp objects were sent to the ground during thunder storms.

Lightning sometimes makes tubes in sand. These glassy objects are known as lightning tubes, or fulgurites. Some are only an inch or two long, but others are snake-like tubes which extend from 15 to 25 feet through the sand.

Q. What is heat lightning?

A. It is a flashng of light in the sky which is seen sometimes on a hot day. The most common time is in the late afternoon or early evening. This lightning is believed to be a reflection of forked

Mass of ball lightning at Lincoln, Neb. (From photograph)

lightning in distant thunderstorms. Lightning flashes may take place so far away that we fail to hear the sounds which they produce.

Q. Is there such a thing as "ball lightning"?

A. Yes, this lightning has been observed by scientists and photographed. There are times when objects smaller than basketballs are observed floating about during a storm. In other cases (but rarely) masses of ball lightning fill a section of the sky. An event of the latter type took place at Lincoln, Neb., 25 years ago.

For Science section of your scrapbook.

Uncle Ray

THURSDAY, APRIL 25, 1935

CURIOUS LIGHTNING FLASHES ARE REVEALED

Reno Nv
Evening Gazette

A curious phenomenon, apparently meteorological and for which there seems to be no immediately obvious explanation, has just been brought to the attention of the Smithsonian Institution.

Late in January a lady in a small Virginia town near Washington observed what seemed to be a lightning flash low in the southwestern sky. It was about 8 p. m. and an exceptionally cold evening. As the observer watched the light became more vivid until it seemed to be coming from a great ball of fire on the horizon, just above the distant foothills. Then the flashes proceeded to make a circle of the sky, from the southwestern heavens back to the starting point, all the time keeping low on the horizon. They were most vivid in the north, seeming to die away in the southeast.

At about the same time a phenomenon very similar to that described by the Virginia lady was observed by Dr. Charles G. Abbot, secretary of the Smithsonian Institution, from Washington Avenue in Washington. There was some resemblance to heat lightning flashes, but this light seemed very near at hand and was accompanied by no sound.

The sky was exceptionally clear that night. It was one of the coldest nights of the winter, but just preceding a change in the weather.

Dr. Abbt has reported the phenomenon in Science. It is possible that the same phenomenon was noted by others about 8 p. m. January 22 or 23, or has been observed at other times. An accumulation of details from reports of any such observations might provide clues which would make it possible to advance a rational explanation of the strange, vivid light. It does not seem to fit easily into any of the descriptions of curious phenomena in textbooks of meteorology.

The possibility that the appearance was other than meteorological—although perhaps accentuated by peculiar atmospheric conditions—is recognized, although the local source of such a light is unknown. A suggestion is made by one of the Smithsonian staff that possibly it may arise from electric discharges from ice-coated high tension wires in Virginia.

In any event, it is just such a phenomenon as would have aroused superstitious awe in an earlier age.

Perth WA
Daily News
Feb 12 1935

today.

OCCURRENCE OF FIREBALLS

Few in This State

"There are few instances of the occurrence of fireballs in this State, but in the Eastern States, particularly New South Wales, they have been reported frequently," said the Divisional Meteorologist (Mr. E. B. Curlewis) today, in reference to the fireball which caused considerable damage in Botany, Sydney, on Saturday night.

"A fireball appears as an incandescent sphere and occurs during thundery conditions when the atmosphere is very heavily charged with moisture, and there is very little air movement," he said.

"The fireball seems to float a few feet from the ground, and, on striking an object, may cause considerable damage.

"There have been occasions when a fireball has floated in through a window and, moved by slight eddies in the atmosphere, passed out again through the door without doing any damage. Usually however, they cause quite a lot of destruction."