

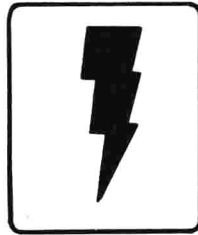
**HANDBOOK OF
UNUSUAL NATURAL
PHENOMENA**



WILLIAM R. CORLISS

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HANDBOOK OF UNUSUAL NATURAL PHENOMENA



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PREFACE

The primary objective of this handbook is to provide libraries and individuals with a comprehensive collection of reliable eye-witness accounts of unusual natural phenomena. To meet this goal, I have analyzed a substantial fraction of the geophysical literature published in English as well as the complete files of Nature (265 volumes) and Science (195 volumes). The result of this research is an incomparable assemblage of rare and curious phenomena. From these riches, I have selected the best and most representative for this book.

My criteria for selecting the "unusual" were that the phenomena be either: (1) beyond the reach of present scientific explanation, or (2) curious to me personally. Usually both criteria were satisfied simultaneously. The reader will soon see that secondary objectives of the book are to pose challenges to the scientific community and beguile the casual browser.

I make no claim of completeness because new phenomena appear constantly as the search of the literature continues. The complete master file of phenomenon reports is being published in stepwise fashion in a series of looseleaf sourcebooks. The Sourcebook Project welcomes inquiries concerning the sourcebooks, although some may find that these more exhaustive accumulations contain "more than they wish to know" about strange phenomena. For these individuals the carefully selected accounts appearing in the present handbook are ideal.

The looseleaf sourcebooks were, in fact, the first publications of the Sourcebook Project. Although thousands have been sold to libraries, feedback from librarians indicated that casebound books would be more acceptable. Such suggestions from librarians were the major factor in the decision to publish this casebound handbook.

My hope is that this handbook will become a standard reference work in the rather disorganized field of unusual natural phenomena. To this end, I have utilized reports taken almost exclusively from scientific journals. The screening provided by the editors and reviewers of these publications helps keep misidentifications and hoaxes at a minimum. The eyewitnesses in many cases are actually scientists who are well-experienced in the strange nuances of nature. Even with this conservative stance, the reader will find that many of the phenomena are very strange indeed and that reasonable explanations do not exist for the majority.

It is difficult to categorize and organize the unknown. I have used sensory stimuli as guides for organizing the chapters. Thus, we have chapters on luminous, acoustic, magnetic, and seismic phenomena and so on. Within each chapter are sections and subsections that divide the seemingly formless collection of observations into genera and species. For example, that perennial phenomenon, ball lightning, is categorized into several different types, as

befits a most complex and curious manifestation of electricity. I might add that there is no classification labelled "UFOs" although the very thorough index will lead the reader to a number of UFO-like observations.

Some of the accounts reported herein are a century or more old, and odd spellings may be encountered on occasion. One also finds that English and American spellings differ in a few instances. No effort has been made to change the sources; they are as they were published originally.

Photographs and drawings are almost nonexistent in the older literature. For this reason, I engaged John C. Holden, a free-lance artist with considerable training in geophysics, to illustrate some of the phenomena from the published descriptions. He has also redrawn some illustrations from the original articles to conform with the handbook style. The 130 drawings constitute, I believe, one of the unique and most valuable features of this book. Not all drawings and photos referred to in the text are reproduced---only the most useful ones. Since several of the drawings portray humans involved in the phenomenon at hand, I should state that "no resemblance to anyone living or dead is intended."

Being that the bulk of this book consists of quotations, I hasten to acknowledge the many writers of papers, letters-to-the-editor, and sundry publications who have contributed their sightings and thoughts. Where lengthy quotations are taken from publications still protected by copyright, permissions have been obtained from the copyright holders.

William R. Corliss

Glen Arm, Maryland
December 5, 1976

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Chapter 1

LUMINOUS PHENOMENA

INTRODUCTION

The primary sensory channel for detecting new and unusual natural phenomena will always be the eye. Nothing catches the attention faster than a mysterious light. Phenomena may be self-luminous or made visible by the sun or moon. This chapter, however, deals only with the former; that is, those phenomena that make themselves visible through their intrinsic light-emitting capabilities. Nearly all are aerial or atmospheric, with the major exception being marine phosphorescent displays.

Self luminosity implies the release of internal energy or the conversion of energy entering the atmosphere into light. Lightning, ball lightning, electric discharge phenomena, and nocturnal lights seem to derive their energies from atmospheric processes, although these processes may be stimulated to some degree by extra-atmospheric forces. It has been suggested, for example, that ball lightning may be created by tiny antimatter meteorites and that earthquakes (and therefore earthquake lights) are influenced by solar activity. Extraterrestrial influences are less controversial when it comes to aurora-like and meteor-like phenomena. Here, the basic energy sources are almost certainly the sun and incoming meteors.

Genuine mysteries surround most of the phenomena of this chapter---otherwise they would not have been included. Most of the scientific problems center on the light-emitting processes, as in ball lightning and tornado lights. The actual light-emitting mechanisms are so ill-understood that some of the phenomena are denied objective existences by many scientists. Even more debatable are three other aspects of these phenomena:

- The coincident sounds and biological effects
- The prankish, uncanny "behavior" of some of the phenomena
- The role of extraterrestrial influences in stimulating the phenomena

All in all, strange luminous phenomena provide a fertile ground for scientific exploration. Unfortunately, the controversial aspects make it a risky field of research.

REMARKABLE AURORAL PHENOMENA

"Normal" auroras inspired awe and legend in primitive man and even grip the modern beholder with their eerie draperies, arcs, beams, and flashing displays. Despite all our research with spacecraft, sounding rockets, and other scientific instruments, auroras have not yielded up all their mysteries. They are associated with solar activity and terrestrial magnetic storms, leading to the surmise that electrically charged particles emitted by the sun stimulate the auroral radiations high in the earth's atmosphere.

Beyond the reach of this explanation lie a host of peculiar luminous features and effects---seemingly auroral in nature---that must somehow be accommodated by geophysical theories. It may be, of course, that auroral displays have more than one explanation. The following classes of aurora-like phenomena will challenge any hypothesis-maker:

Auroral beams. Isolated, searchlight-like beams rising from the horizon well away from the normal auroral regions. Such phenomena have been seen prior to great earthquakes and also resemble the mountain-top glows described in the section on Electric Discharge Phenomena.

Auroral arches. Spanning the sky from horizon to horizon, often passing through zenith and south of it, these may be longer versions of auroral beams. They may encircle the entire planet.

Auroral "meteors". Isolated, well-defined patches of luminosity that move meteor-like across the sky.

Low auroras. "Conventional" auroras rarely descend below 50 km, yet ground-level observations of luminous displays with auroral overtones are not rare. Low auroras often seem to generate swishes, cracklings, and other sounds, which normal auroras located at 50-100 km would not seem likely to do. This controversial subject is explored farther in Chapter 4. Low, noisy auroras may be associated with terrestrial electrical discharges.

Auroral odors. The very scarce reports of ozone connected with low-level auroral-like displays are also indicative of terrestrial electrical activity.

Artificial auroras. The artificial production of auroras with metallic arrays on mountain tops in northern latitudes also suggests electrostatic discharges as the sources of some auroras.

BEAMS OF LIGHT ON THE HORIZON

STRANGE AURORA

Wagner, William H.; *Popular Astronomy*, 27:405, 1919.

When returning to my home on the night of May 2, about 11:25 p. m. (Summer time), I noticed a bright beam of light spanning the sky almost directly overhead and reaching from the western horizon clear to the eastern in the form of an immense arch. It resembled the rays of a powerful searchlight, but had a dark rift running through

it, dividing it into two parts. The light was very steady, with no evidence of flickering or rapid movement such as a searchlight or Aurora would have. The beam slowly changed its form, one side fading out, leaving a single beam. Later it split up again, only to resolve itself back into one again.

Then a strange thing occurred. The single beam slowly broke up into segments of different widths and brightness, as if broken up by some disturbing influence. Then it blended into a broad and fainter beam which slowly widened and finally faded out entirely.

In one hour it had disappeared completely. The night was clear and cloudless and when I first saw the phenomenon, it passed between the stars Gamma and Zeta in Leo, eastward through Arcturus to the horizon. The whole beam had a slow drift southward and when last seen it passed through Beta and Delta Sextantis eastward through Delta and Epsilon Ophiuchi, having moved this distance in about 40 minutes.

In appearance it resembled the tail of a comet, the Yerkes photograph of Halley's comet May 5, 1910, found on page 92 McKready's "Star Book" bearing a striking resemblance to what I saw.

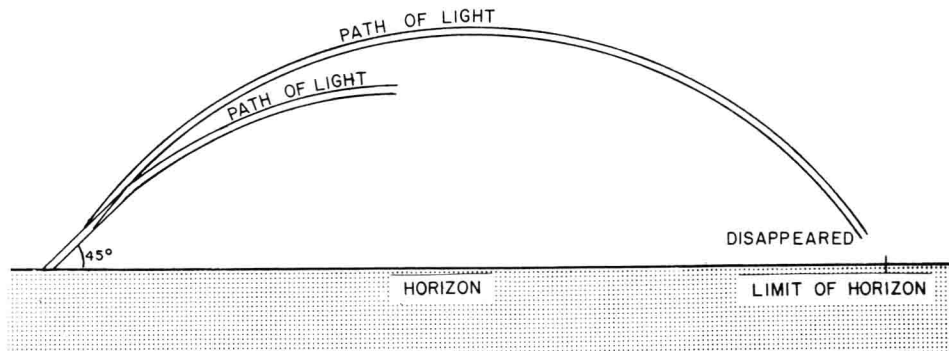
It was perfectly transparent but grew very bright at times, having at one time almost blotted out the second magnitude star Gamma Leonis. Its width varied, but when first seen just filled the space between Gamma and Zeta Leonis, and just before it faded out it was fully twice as wide. (Popular Astronomy, 27:405, 1919)

LIGHT RAYS AT NIGHT

Groves, C. A.; *Marine Observer*, 7:65, 1930.

The following is an extract from the Meteorological Report of S. S. Sheaf Mount, Captain C. A. Groves, Japan to Vancouver, B. C. Observer Mr. A. Macarthur, 2nd Officer.

"11th March, 1929, 10 p. m. A. T. S. in Latitude $49^{\circ} 10'$ N. Longitude $134^{\circ} 40'$ W. Wind S. S. W. force 4. Barometer 29.80 in. Temperature Air 45° F., Sea 47° F. From behind Fracto Nimbus cloud stretching from horizon to a height of 11° and bearing S. 75° E. True, a shaft of light appeared, making an angle of 45° with the horizon and following a straight line $45'$ wide for a distance of 60° ;



Split auroral beam over the Pacific

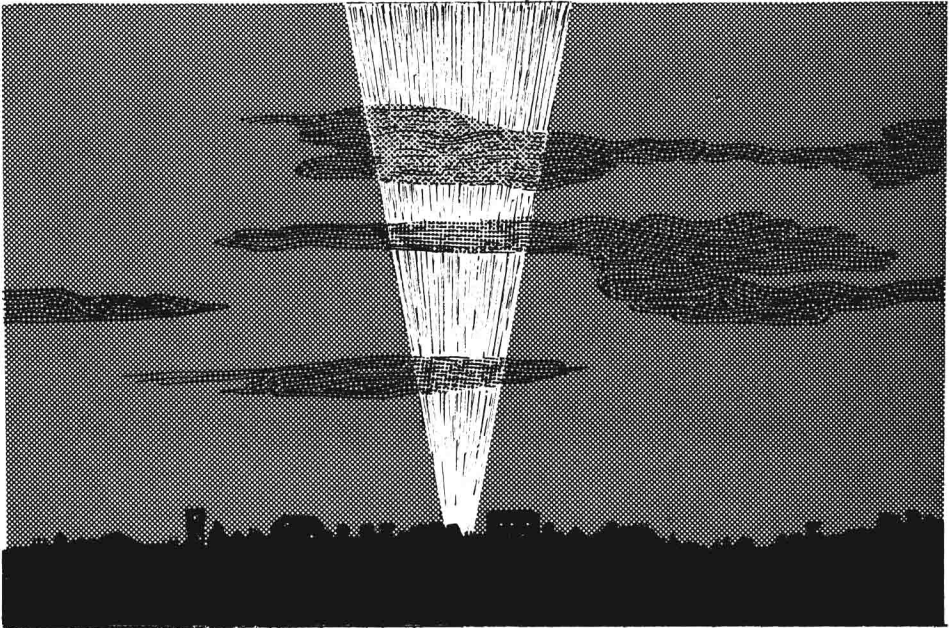
4 Luminous Phenomena

in the sky the light broke off into two curved sections passing through the zenith and finishing 3° above the horizon bearing N. 75° W. True. The straight portion of the phenomenon had the appearance of a gigantic searchlight. The whole streak of light was motionless over its arc of 166° and commenced fading away at 10.20 p. m. and finally disappeared entirely ten minutes later. Fracto Nimbus and Cumulus clouds in S. W. portion of sky lit up by reflection of light. "

Note. ---It is possible that this was some kind of auroral ray. Another explanation is that it was the trail of a meteor, but if, as the description seems to imply, the ray was seen at first to progress across the sky, the bright head of the meteor would have been seen. (Marine Observer, 7:65, 1930)

A CURIOUS PHENOMENON Noble, William; *Knowledge*, 4:173, 1883.

Can any of my brother readers of Knowledge offer a feasible explanation of a very remarkable phenomenon which I witnessed at 10h. 35m. p. m. on Tuesday, August 28? I was just coming out of my observatory when, on the E. N. E. point of the horizon beneath the Pleiades, I saw a bright light. My first thought was that the moon was rising, but an instant's reflection sufficed to remind me that she would



Searchlight-like ray of light on horizon

not be up for the next two hours. As I watched the light becoming brighter and brighter, I saw that it threw a kind of radial illumination upward, the effect of which I have tried to reproduce in the accompanying rough little sketch. As will be seen, a few distant cumulo-stratus clouds, close to the horizon, crossed it. For a moment I imagined that I was viewing the apparition of a new and most glorious comet; but, as I watched, the "tail" disappeared and what would represent the nucleus flashed up brilliantly. Then I made up my mind that some distant house, barn, or haystack was on fire, and returned to the observatory for a 3 inch telescope, which I keep for looking over the landscape. Before I had time, however, to enter the door, every vestige of illumination disappeared as suddenly as it had come into view, and after waiting in vain for some time, I left the observatory and came into the house. I have diligently inquired if there was a fire anywhere in this part of Sussex on the night of which I am speaking, but there was none. (Knowledge, 4:173, 1883)

A CURIOUS PHENOMENON

Bradgate, W. K.; *Knowledge*, 4:207, 1883.

The remarkable phenomenon which Mr. Noble described in No. 98 of Knowledge was also witnessed by me in Liverpool on Aug. 29, at 12 h. 40 m. a. m. I had just been looking at Saturn, when, for the first time, I saw a bright divergent cone of light about 7° above the horizon; the entire length of the cone was about 5° . The apex or nucleus displayed such a degree of concentration that I thought it was the planet Jupiter. I turned my telescope, a 2-inch, armed with a power of 30, on the point where the apex should be (it was now obscured by a cloud), with the expectation of being able to unravel the mystery, but was disappointed, as the cloud was too dense. I then ran my telescope along the major axis of the cone, and the field of view was so faintly illuminated that the brightest part could hardly be said to equal the lumiere cendree seen under similar conditions. It gradually faded from view, after having been visible for thirteen minutes. I continued watching the part of the heavens where it had disappeared, with the confident hope that it would return, but was at last obliged to give it up, as a great bank of clouds precluded all further observation.

It could hardly have been an auroral streamer, as the point where it appeared is 67° east of North. (Knowledge, 4:207, 1883)

AURORAL APPEARANCE

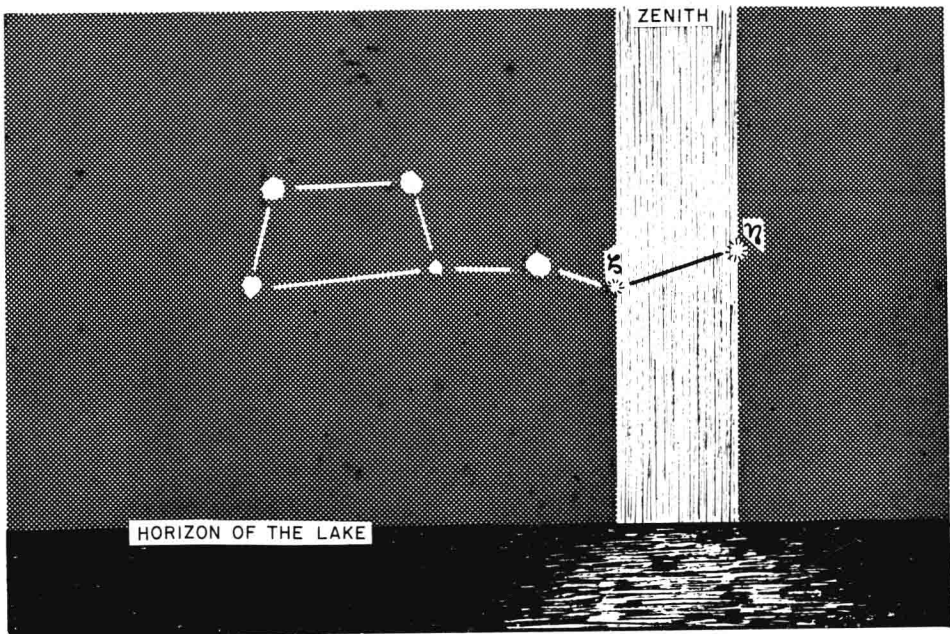
Bonnycastle, R. H.; *American Journal of Science*, 1:32:393-394, 1837.

At a quarter past nine o'clock on Sunday night the eighth day of May, in the present year, my attention whilst regarding the heavens was forcibly attracted to the sudden appearance due east of a shining broad column of light.

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At first, as my window overlooks the bay of Toronto and the low island which separates it from the lake, I took this singular pillar of light for the reflection from some steamboat on the clouds, but having sought the open air on the gallery which commands a full view of the bay and of Ontario, I was convinced that the meteor was an effluence of the sky, as I now saw it extend upwards from the eastern water horizon line to the zenith, in a well defined, equal, broad column of white strong light, resembling in some degree that of the aurora, but of a steady brightness and unchanging body, whilst there were few or no clouds. Ursa Major, then near the zenith, was situated with regard to this column, at a quarter past nine as below, the column passing nearly vertically between ξ and η .

There was no moon, as on that day it rose at 2h. 4m. consequently it was dark, and as the sky was not very cloudy the meteor was seen to the greatest advantage as the night wore on. It passed very slowly and bodily to the westward, continuing to occupy the space from the horizon to the zenith, until the upper part first faded slowly and then the whole gradually disappeared, after it had reached nearly to due northeast. I had unfortunately broken my thermometer and could therefore only



Pillar of light over Bay of Toronto

state that the weather was cold, and that there was no wind. At twenty five minutes past nine o'clock the pillar of light had vanished, but it immediately afterwards re-appeared slightly in the horizon where it had been last seen, and in the mean time the constant auroral arch of the halos I have before mentioned became visible in the

northern horizon, and increased very rapidly in brilliancy, and at ten minutes to ten gave so intense a glow to the sky that it was light enough to enable me to see the objects around distinctly as in pale moonlight. It was in short equal to the light of the moon at the end of the second quarter.

The auroral arch rose very high on this occasion and then flattened, and at ten the double arch, I have already described, was peculiarly beautiful, the darkness under it being singularly grand. (American Journal of Science, 1:32:393-394, 1837)

LIGHT RAYS ON HORIZON

Edwards, W.; *Marine Observer*, 6:10-11, 1929.

The following is an extract from the Meteorological Report of S. S. Mongolian Prince, Captain W. Edwards, Cape Town to New York. Observer, Mr. V. C. Palmer:---

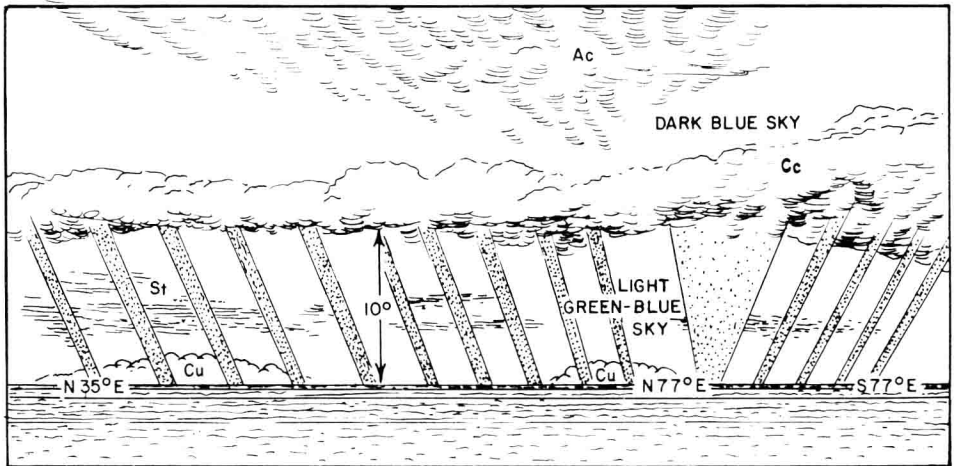
"January 7th, 1928, 4.19 p.m., A. T. S., 1845 G. M. T., in Latitude 5° 19' N., Longitude 34° 53' W., observed rays of light emanating in the eastern section of the sky and extending to the southward bearing S 77° E true, and to the northward bearing N 35° E.

"The extreme altitude was 10° and they appeared in white and grey contrasts.

"1956 G. M. T., a broad ray appeared bearing N 50° E., true, and had the appearance of being light green in colour.

"At 2011 G. M. T., there were no rays visible. The computed time of moon rise U. L. was 6.26 A. T. S. and bearing N 67° E.

"January 8th, 1928, 5.45 p.m., A. T. S., 2022 G. M. T., in Latitude 8° 59' N., Longitude 37° 45' W. At sunset observed two rays of light in the eastern section of the sky emanating from a point on the horizon bearing N 65° E, true; one extended



Anomalous light rays on horizon

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to an altitude of 45° and the other to an altitude of 60° . At the same time an arc was visible in the western section of the sky bearing S 50° W, true, and had an altitude of 50° , this was showing through Cirrus clouds. The colours visible were purple and green. This effect was visible till 2038 G. M. T.

"The sun's bearing at sunset was S 68° W, true. The computed time of moon-rise and bearing was, 7.20 A. T. S., N 70° E.

"The W/T Operator reported heavy static rushes." (Marine Observer, 6:10-11, 1929)

SKY-SPANNING AURORAL ARCHES

LUMINOUS ARCH

Anonymous; *American Meteorological Journal*, 8:35, 1891.

A curious phenomena, says the report, was witnessed near here last night by passengers on the north-bound passenger train on the Houston & Texas Central, which passes this point at 2:25 a.m. It was in the form of a luminous arch, possibly of an electrical character. The luminous mist was first observed by the engineer, when it was still several hundred yards' ahead of the train, and thinking it a prairie fire, he slowed up, thus arousing the passengers, who, with the crew, crowded to the windows and on to the platforms to look at the vast, hueless rainbow spanning the heavens. As the arch was more closely approached its dim, white radiance was seen to be clearly defined against the sky as though painted there by the sweep of a brush dipped in white fire. The stars could be seen shining close against the rim of it, and all around and under the arch. It was in form the half of a perfect circle, one leg resting on the earth, while the other appeared to have been broken off near the base. It seemed to gradually increase in size.

The arch rose directly over the track, and as the train approached it seemed to gather a greater luster, as of the diamond or some clear, glittering star. The stars could be seen in close proximity to it. When the train passed directly under the bridge of light, the surrounding country spanned by it became plainly visible, appearing to be bathed in pale moonlight.

A curious feature of the luminosity was that while it gave all objects a weird, unreal aspect, the shadows which it caused them to throw were black and as clearly defined as silhouettes. In a few minutes after the train passed under the arch it seemed to fade away, melting gradually into the starlit sky. The night was fair and fogless. There was no moon, so the arch must have been self-luminous. (American Meteorological Journal, 8:35, 1891)

A REMARKABLE PHENOMENON

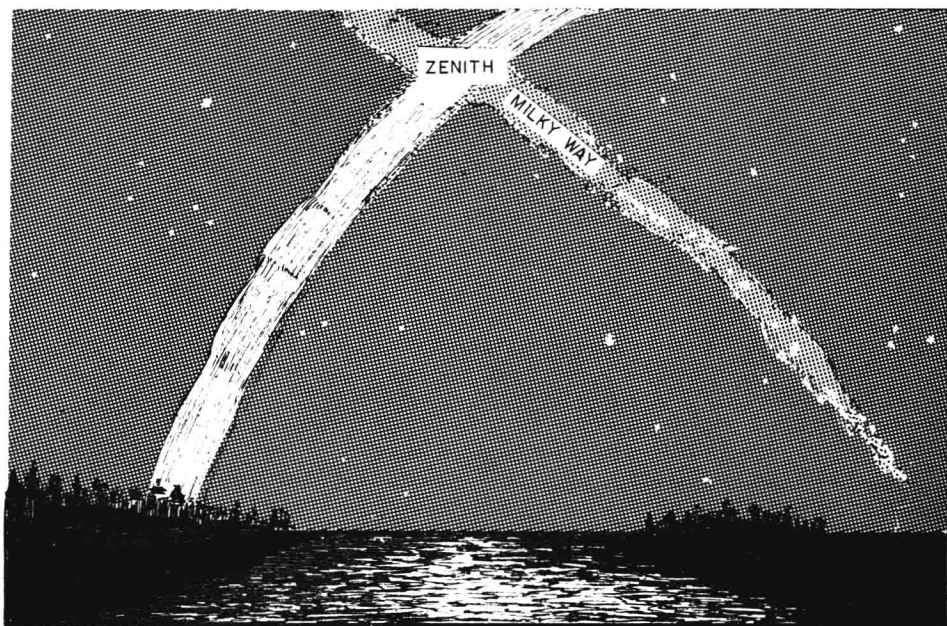
Campbell, Frederick; *Popular Astronomy*, 11:484-486, 1903.

During the late evening of August 21st last, the writer, in company with several others, witnessed a celestial phenomenon surpassing in wonder anything that ever before had come to their attention. I was spending three weeks at Cranberry Lake,

St. Lawrence Co., N. Y., in the Adirondack wilderness. The latitude of this place is about 44 degrees and 12 minutes north, and the longitude 74 degrees and 45 minutes west. It is about 75 miles nearly east of the city of Watertown, N. Y.

When the Sun had set, the northern sky seemed remarkably bright; and, as the darkness deepened, it was apparent that the illumination was something more than that of evening twilight. We were being treated to a display of aurora borealis, or northern lights. The spectacle was more marked than is often seen even during winter nights. There were streamers that reached far beyond the Great Dipper; and occasionally, in the midst of the general radiance, certain spots would brighten to an intense glow and again fade somewhat. There was no color at any point, simply the clear pure light. But the glory was enhanced by occasional flashes of lightning near the northern horizon, but unaccompanied by thunder.

We gazed upon this with interest for some time, and then retired within doors and gave it very little more thought. At about half past nine, however, I was suddenly summoned out of doors to witness a spectacle such as I had never looked upon before nor had ever heard or read of. The heavens were spanned by two great bows of light, crossing each other near the zenith by a wide angle. The one was the familiar Milky Way or Galaxy, then in its glory, no Moon being present. The other was a remarkable archway of light, comparable with the Galaxy in width, but much brighter, and seemingly, stretching from horizon to horizon, though in the one direction its light, like that of the stars, faded near the horizon, and in the other it was obscured by a small cloudbank. I estimated the width of the arch to be three degrees or that of six full moons placed side by side. This bow stretched



Archway of auroral light crossing Milky Way

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from a little north of west, to a little south of east. It passed just south of Arcturus in the west, and just north of Jupiter in the east, at 10:00 p. m. The arch remained in place for a long time, possibly half an hour or more. It changed very little in appearance and brilliancy. In places it had a fluted, wavy aspect, being completely broken only here and there, and then only by a very narrow interval. The waves appeared as if gently blowing in the direction of the arch, toward the northwest, like curtains waving in a breeze, or a little like steam being blown along. As the wind was actually blowing very freshly at the time, the illusion was not difficult. The entire arch was bright, and where brightest easily obscured all the stars in the immediate vicinity. Job's Coffin and Altair were in the arch.

The first thought was that this was a great streamer of the aurora borealis, seen earlier in the evening, and still continuing quite brightly; but it was apparent at a glance that it was something totally distinct; for one thing, it arched the entire heavens; again, it did not narrow to a point, but was equally broad across the entire sky; but most of all, it did not radiate from the north at all; it extended from a point nearer west than north, somewhere between northwest and west. Moreover, the next day I conversed with two reliable men who were together out-of-doors when the spectacle started up; and of them I learned that it did not originate at its more northerly or northwest extremity, but at its southeast end. They saw it rise from that direction and gradually extend itself along the sky in a generally northwest direction until the heavens were arched as when I first saw the sight. It seems altogether probable that the simultaneous appearance of the aurora borealis and of this archway of light indicates a common origin, even if the arch could not be regarded as a part or a streamer of the aurora. Evidently there was a wide-spread magnetic disturbance of the atmosphere which caused the aurora to appear first, and later threw this great bow across the sky. But why it should have manifested itself in this way, choosing its direction and regulating its width as it did, is a very great mystery. Something a little similar to this I recall seeing in the same part of the country several years ago, repeated two or three evenings; but at that time there was no arch, but a strange and persistent brightening of the heavens in a northwest direction, well up, and entirely detached from the horizon, with no accompanying aurora, as far as I now recall.

There was no possibility of this being a lunar rainbow, for there was no color, and there was no Moon. Borrelly's comet was near at the time, but there was no possibility of this being its tail, and doubt as to the comet's being in any way responsible. (Popular Astronomy, 11:484-486, 1903)

AN UNUSUAL AURORAL DISPLAY

Bobrovnikoff, N. T.; *Popular Astronomy*, 45:299-301, 1937.

At about 8:30 E. S. T., April 27, 1937, a fine aurora was noticed by me on the northern horizon in Delaware, Ohio. There were low clouds in the north and northwest but otherwise the sky was clear. The aurora consisted of a low arch, which could not be seen distinctly on account of the clouds, and streamers showing their usual pulsation and motion from east to west. There was nothing especially remarkable about this aurora except perhaps its color which was distinctly reddish. Although auroras are seldom seen in our latitude, there would be no reason to describe this phenomenon in detail if it did not lead to another most remarkable display.