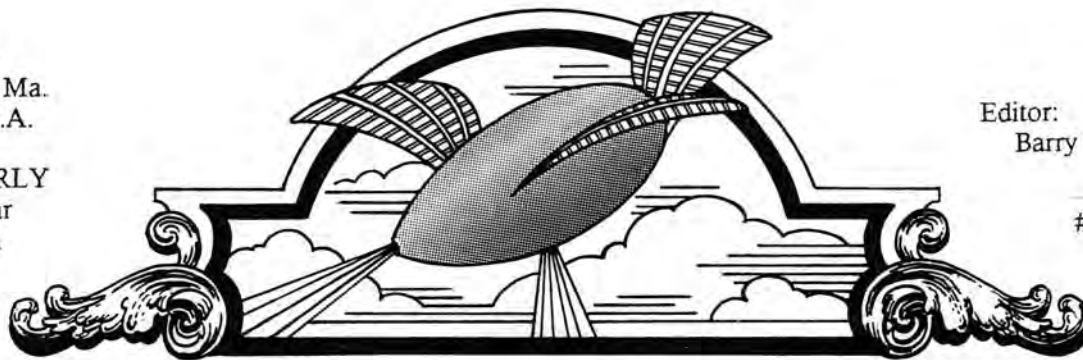


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# U.F.O. HISTORICAL REVIEW

## THE ODD FLYING OBJECTS OF E. L. TROUVELOT

Recently I had an opportunity to be reminded of an interesting artifact in astronomy's past that is only slightly known by those involved with UFO research. In fact it is surprising that more hasn't been made of the artifact, considering the zeal with which UFOlogists consume anything even remotely suggesting extraterrestrial intelligence visiting the Earth.

The artifact is a chromolithograph illustration. It depicts a meteor shower on the evening of November 13-14, 1868. It was drawn by Etienne Leopold Trouvelot of 27 Myrtle Street in Medford, Massachusetts (the next town over from UHR headquarters!). Displayed is activity witnessed over a five-hour period by Trouvelot of the Leonid meteors, an annual event that is well known to anyone into astronomy. As one can see, there are some very odd meteors in this rendition. How did this illustration come to be and what are we looking at?

Trouvelot was born on December 26, 1827 in Aisne, France. He lived there until 1855 when he moved to the United States and worked as an artist to support his wife and two children.

He moved to Medford in 1860 and, pursuing a personal interest of his in natural science, began to experiment with silkworms.

He raised caterpillars on five acres of woodland behind his Medford home. Within five years he had raised about one million silkworm caterpillars. However, the silk production was not to his satisfaction, so Trouvelot began experimenting with the eggs of the gypsy moth, brought back from a trip to Europe between late 1868 and early 1869.

One night he lost a gypsy moth egg cluster by way of a breeze through an open window. He realized the danger of



FIGURE 1: MEDFORD "METEORS"

losing the eggs (essentially infesting the woodland with a prolific foreign species that is damaging to trees), but could not retrieve them. Over the next seventeen years, the gypsy moth population exploded, becoming a familiar scourge to the northeastern U.S. to this day, thanks to Trouvelot's carelessness as an amateur entomologist!

Probably discouraged by his goof, Trouvelot shifted his interests to astronomy. It was here that his true talents as an artist and observer would grow and flourish. He produced many detailed drawings of astronomical phenomena, like colorful auroral displays. This attracted the attention of the director of the Harvard College Observatory, Joseph Winlock. Trouvelot joined the observatory staff in 1872.

Based upon his usage of Harvard's 15-inch refractor, he produced many fine color sketches of the sun and planets that, even in the light of modern discoveries, are breathtaking. They are also quite practical in that the fine detail introduced into the sketches were not exaggerations, but extremely accurate renderings of the subtle effects seen with a sharp eye. Trouvelot produced what he described as pictures that "represent the celestial phenomena as they appear to the trained eye and to an experienced draughtsman through the great modern telescopes."

His work was of such quality that astronomer Edward Holden tested a rendering by Trouvelot of the great Orion nebula. He measured star positions in the image, comparing them to photographs of the actual image, and found that any errors were not more than 1/20 of an inch off of reality. And much of that error was attributed to discrepancies in the telescope's drive mechanism.



E.L. TROUVELOT



TROUVELOT'S HOME

Trouvelot's reputation grew after having produced thousands of drawings. He contracted with a publisher to issue fifteen of his best images, along with a manual detailing the story behind the images. These appeared in 1882. (THE TROUVELOT ASTRONOMICAL DRAWINGS MANUAL, Charles Schribner's Sons, N.Y., 1882)

Included in these was one titled, "The November Meteors (As observed between midnight and 5 o'clock A.M., on the night of November 13-14, 1868)," displayed in Figure 1. The meteors illustrated were not all seen at once but displayed in the drawing collectively. Trouvelot described what he saw in the Manual:

"My observations were begun a little after midnight, and continued without interruption till sun-rise. Over three thousand meteors were observed during this interval of time in the part of the sky visible from a northern window of my house. The maximum fall occurred between four and five o'clock, when they appeared at a mean rate of 15 in a minute."

"In general, the falling stars were quite large, many being superior to Jupiter in brightness and apparent size, while a few even surpassed Venus, and were so brilliant that opaque objects cast a strong shadow during their flight. A great many left behind them a luminous train, which remained visible for more or less time after the nucleus had vanished. In general, these meteors appeared to move either in straight or slightly curved orbits; but quite a number among them exhibited very extraordinary motions, and followed very complicated paths, some of which were quite incomprehensible." (emphasis added, Editor)

"While some moved either in wavy or zig-zag lines, strongly accentuated, others, after moving for a time in a straight line, gradually changed their course, curving upward or downward, thus moving in a new direction. Several among them, which were apparently moving in a straight line with great rapidity, suddenly altered their course, starting at an abrupt angle in another direction, with no apparent slackening in their motion." (Manual, pgs. 116-117)

As can be seen in the image in Figure 1, several of the meteors demonstrate anomalous motion, some of which is rather difficult to explain. Three of them can be seen leaving wavy paths without turning. Such an appearance can be attributed to "autokinesis," an illusion created when involuntary eye movements give the impression of a source of light at night travelling in a "bumpy" manner across the sky. It is not true motion but perceived motion. These can be ruled out as anomalous.

One object with a wavy path makes a short, 90-degree turn. This may be a meteor emitting a glowing fragment a moment prior to the main body extinguishing. Again, not particularly anomalous.

As is clear in Trouvelot's description, two of the objects make curving, U-turns and reverse direction. In the past this publication has considered tangential meteors (i.e. meteors that can "bounce" off of the atmosphere as a rock can be skimmed off of water) as an explanation for odd meteors. In those cases, we did not see evidence of severe turns. Here we have turning so extreme that it would strain credibility to suggest that these were normal meteors. Consider that normal meteors are free-

falling bodies travelling at between 30,000 and 50,000 MPH. Most of the streaking bodies in the illustration show objects that are entirely consistent with meteors. Why are these two objects different? What is effecting their movement at the level at which the turns occur? Imagine trying to throw a rock into the air yourself and cause it to behave in this manner. And these bodies are moving far faster. One would think that the atmosphere suddenly turned into Jell-O! It would be easy to blame Trouvelot for inaccurately observing these two bodies had one not known of his reputation as an observer.

Did the meteors come from a different direction, approaching the observer on a soar toward him before extinguishing, like an aircraft diving at a point at a distance from the viewer, then leveling off or pulling up? This would explain the impression of a U-turn, the curve being not so severe. But the turn is still far too large to imagine being the creation of a free-falling body, especially at the almost vertical angle at which the body dives. And an approach from another direction would rule out a connection to the meteor shower. They seem to travel in the same direction as the shower members, according to the illustration, so the odds of two random approachers coming from a different direction and acting strangely are remote.

The oddest meteor of the group comes in like the others but shoots away at an acutely sharp angle without any curve whatsoever. It is as if the meteor suddenly hit an impenetrable wall and ricocheted away. Did the meteor burst at the point of the angle and shoot a glowing fragment off from the original direction of movement, extinguishing the remainder of itself at the point of divergence? It is possible but there is no evidence of a burst or even brightening at the point of the angle where disruption should have occurred. Furthermore, the continuation of the trail has the appearance of the main body instead of a smaller fragment. By whatever angle of approach one can imagine, the change of direction is quite anomalous. Could another meteor have struck the original body from a different direction, diverting it in the way it appears? Such a collision might be as rare as actually seeing a flying saucer! Anyway, a body large enough to do that to another falling body and keep its original form intact should have been visible as well. Trouvelot recorded nothing of the sort.

Again, can one simply state that Trouvelot applied his imagination frivolously to the image in the drawing and dismiss what is seen out of hand? He said the following about this particular body:

“One of them, which was a very conspicuous object, was moving slowly in a straight course, when of a sudden it made a sharp turn and continued to travel in a straight line, at an acute angle with the first, retreating, and almost going back towards the regions from which it originally came. As nearly all the meteors, which exhibited these extraordinary motions, left the trace of their passage in the sky by a luminous trail, it was easily ascertained that these appearances were not deceptive. On one occasion I noticed that the change of direction in the orbit corresponded with the brightening up of the meteor thus disturbed in its progress.” (Manual, pg. 117)

Trouvelot left the U.S. for France shortly after the first gypsy moth blitz in 1882 (perhaps wisely!). He died in Meudon on April 22, 1895.

Extreme motions for what seem to be meteors is not limited to this incident. During the great meteor storm of November 12-13, 1833 (another Leonid shower!), almost exactly 35 years earlier, more anomalous paths can be seen in a rendering of the shower over Niagara Falls (see Figure 2). Several drastic changes of direction are visible near the mist rising from the falls and in several areas on the left half of the illustration (from SMITH'S ILLUSTRATED ASTRONOMY by Asa Smith, 1864).



FIGURE 2: NIAGARA FALLS "METEORS"

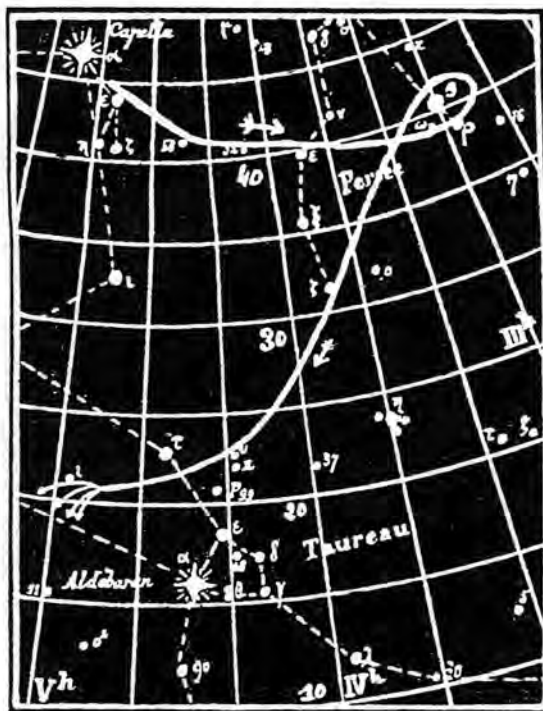


Fig. 81. — Bolide observé le 9 février 1902, par MM. L. et M. Libert, Schoux et Briand.

FIGURE 3: FRENCH "METEOR"

Figure 3 illustrates another anomalous body seen by three witnesses in Havre, France at 7:40 P.M. on February 9, 1902. The chart traces the bolide's movement through the constellations Perseus and Taurus, showing an amazing contortion before breaking into fragments. Duration: 12 seconds. (BULLETIN DE LA SOCIETE ASTRONOMIQUE DE FRANCE-1902).

Trouvelot left us with not only a superb legacy of astronomical art respected throughout the world but (besides the gypsy moth!) he left us with an enduring mystery that heretofore has only been slightly recognized by UFO research. It is interesting that few astronomy texts deal with these odd, bending bodies, relegating the reports to observational errors. UHR has only dealt with a few of the incidents, there are many more. Somehow simplistic explanations just do not seem to come that easily for this phenomena!

UHR invites additional examples of well-observed meteor anomalies like this, particularly if photographs exist. Sky cameras have recorded meteor showers and fireballs in great detail in recent years. If the "bending meteor" is genuine, evidence

may exist in observatory or even military files. Can astronomical legends become fact so quickly. See the next story.

## TLPs: PROVEN BEYOND DOUBT

Before the modern UFO era, reports of mysterious lights in the sky, though not as abundant as in recent decades, still were occasionally the subject of discussion by citizens of those times. One class of these strange lights had been dubbed "TLPs," or "Transient Lunar Phenomena," referring to the unusual flashes of light often seen on the surface of the Moon by amateur and professional astronomers through their telescopes during the 18<sup>th</sup> through 20<sup>th</sup> centuries. The reports have long been logged in science literature, leading to speculation that the Moon was not the dead world we had thought it to be when we went to school. The phenomena of TLPs could also include reports of strange physical or color changes and obscuration of surface detail, as if the Moon had an atmosphere and/or significant volcanic activity.

While astronomers generally believed that TLP reports were due to either natural causes, or were in fact not real at all – springing from the imaginations of the observers, a small number of enthusiasts believed that TLPs were evidence of intelligent activity. The flashes and changes were used to prove theories as wild as alien mining operations, base building for Trans-Earth operations by flying saucers, and attempts to communicate with Earth by Moon occupants.

Now, the debate about TLPs has become academic. On November 18<sup>th</sup> 1999, at the height of the Leonid meteor shower (there are those Leonids again!), multiple, independent observations of strange lunar flashes were recorded visually and on videotape for the first time in history, verifying the existence of one form of TLPs. The cause: meteor impacts from the Leonid shower on the lunar surface. It is very likely that this can explain many of the flash observations in the past, vindicating those observers as pioneers (rather than crackpots or poor observers) of a new class of astronomical observation: documenting meteor impacts as they happen.

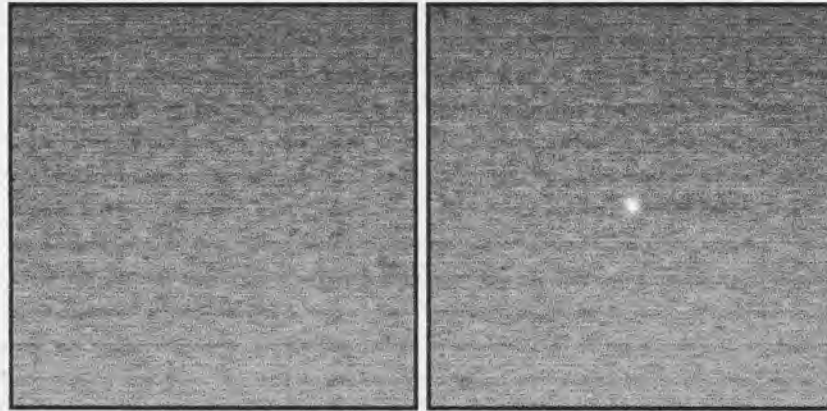
The proof came this way: Dr. David Dunham, president of the International Occultation Timing Association (IOTA), reported that Brian Cudnik of Houston, Texas, a member of IOTA, was observing the Moon with his 14-inch telescope when he saw a bright flash of light on the unlit portion at about 10:46 P.M. Central Standard Time. At the same time, Dunham was videotaping that portion of the Moon, using a 5-inch telescope at Mount Airy, Maryland. His purpose was to time the occultation (eclipse) of stars by the Moon for his organization.

When Cudnik contacted Dunham to report his flash observation, Dunham rewound the tape to attempt a verification of the observation. The flash was seen on the B&W tape recording, and precisely timed at 11:46:15 Eastern Standard Time, exactly the same time as Cudnik's report, allowing for the time zone difference of one hour.

When word had spread, another observer reported having seen the flash with a 4-inch telescope at Cameron, Missouri, but he didn't time the sighting.

Two more members of IOTA, Pedro Valdes Sada of the Universidad de Monterrey in Mexico and David Palmer of the Goddard Space Flight Center in

Greenbelt, Maryland, had been running B&W videos attached to 8-inch and 5-inch telescopes respectively. Neither could confirm the Cudnik flash at 10:46 as they weren't pointing to that part of the Moon at the time, but each found two more flashes and reported them to Dunham. Dunham found all four of these on his video recording!



TLP: NOV. 18, 1999, VIDEO BY D. PALMER,  
GREENBELT, MD.

Furthermore, Sada found the first of Palmer's flashes on his tape, as did another observer, Rich Frankenberger in Texas, providing quadruple confirmation of that flash!

Needless to say, this doesn't settle every last TLP incident on record. But it does desensationalize the perception of these events by extremists ascribing weird explanations to the flashes of light. It also argues for renewed interest and scrutiny in a topic that heretofore has been dismissed as nonsense.

Ironically, a recent article in SKY AND TELESCOPE magazine (September 1999, "The TLP Myth: A Brief for the Prosecution" by William Sheehan and Thomas Dobbins) called the interest in TLPs "the result of a lack of critical judgement reminiscent of the fairy tale of the emperor's new clothes." They added, regarding the efforts by researchers to monitor TLP activity, "Their ongoing vigil bears tribute to the powerful allure of ideas about the Moon that are as much of a flawed anachronism as the canals of Mars." (!) This from, as the magazine described, "renowned experts on the history of solar system observation." What is worse still is that the two authorities never seemed to consider meteor impacts as a possible cause of the flashes in their analysis, something which should have been near the top of any list of possibilities for some aspects of the TLP topic.

It is always difficult to deal with isolated observations by single witnesses of unusual, short-term events that defy the norm. How does one do anything with the information except to log it and hope a future development will change it from soft data to hard data? For this reason, one cannot be completely dismissive of the SKY AND TELESCOPE article in light of current events. The information they had studied was inadequate, flawed, and incomplete. Unfortunately for the article's authors, some of it was true!

The November meteors were not the first ones to have hit the Moon during a shower. They did in the past, and were certainly witnessed by observers who were hard pressed to prove their genuine observations. It is now possible to correlate the dates and times of TLP events with the arrival of meteor showers to see if reports cluster at those times. If they do, a good percentage of those TLPs could be the result of meteor hits.

## TWO OLD PUZZLES SOLVED

On page 3 of the previous UHR, under "Two Old Puzzles," I inquired as to the origin of a pair of sketches published in early books, illustrating peculiar, saucer-shaped objects flying over landscapes. Several European sources have contacted UHR, clarifying the information.

The sketch labeled "The Black Invasion" was from an 1895 French science fiction work, *L'INVASION NOIRE* by Capitaine Danrit.. The sketch labeled "The Infernal War" was from a 1912 French science fiction volume, *LA GUERRE INFERNALE* by Pierre Giffard. The construction of the illustrations was said to have been inspired by proposed aeronautical projects of the era. According to French researcher Pierre Lagrange, the Danrit object was based upon unfulfilled experiments by aeronaut Louis Capazza in 1890.

As mentioned in the article, if the objects were illustrations for fiction works, they represent a curious, pre-modern-era expression of flying saucers long before they were popularized in the culture. There are efforts ongoing to explore the influence of historical cultural images on the modern perception of flying saucers, UFOs, or whatever one chooses to call them. Early science fiction literature is replete with such imagery, within the stories and especially within the cover art of the old science fiction pulps. "Flying saucer" images were well known to the average citizen walking by a newsstand in the 1920s and 1930s. A 1978 French work, Bertrand Meheust's *SCIENCE FICTION ET SOUCOUPES VOLANTES*, explored these influences, but unfortunately it has never been published in English for a wider audience.

It is not known, and may never be known, how much influence the various popular cultures of the world have exerted on our beliefs in the possibilities of extraterrestrial life visiting our planet. Even the most ardent believer would have to admit at least some influence from such quarters. It is a topic that UHR plans to explore in the future.

## FINAL WORD

There are several things laid over until next issue that I couldn't squeeze in here, so there will probably be an issue coming fairly soon after this one. I am always restricted by the amount of free time I have to research and produce UHR, which sometimes is none for long periods. Look for new information on the Great Falls, Montana UFO film soon.