

- versions on National Institute for Discovery Science web site, <http://198.63.56.18/pdf/hessdalen.pdf>, and in *European Journal for UFO & Abduction Studies*, 2, 3–24). Accessed February 5, 2003.
- Teodorani, M., Strand, E. P., & Hauge, B. G. (2001, October). *EMBLA 2001: The optical mission*. Available at the Italian Committee for Project Hessdalen web site: http://www.itacomm.net/ph/embla2001/embla2001_e.pdf. Accessed February 5, 2003.
- Teodorani, M., & Nobili, G. (2002, October). *EMBLA 2002: An Optical and Ground Survey in Hessdalen*. Available at the Project Hessdalen web site: http://hessdalen.org/reports/EMBLA_2002_2.pdf. Accessed February 5, 2003.
- Turner, D. J. (1998). Ball lightning and other meteorological phenomena. *Physics Reports*, 293, 1–60.
- Turner, D. J. (2003). The missing science of ball lightning. *Journal of Scientific Exploration*, 17, 435–496.
- Vallee, J. F. (1965). *Anatomy of a Phenomenon*. Chicago: Henry Regency Co.
- Vallee, J. F. (1966). *Challenge to Science* (with Janine Vallee). Chicago: Henry Regency Co.

Hessdalen Research: A Few Non-Questioning Answers

M. Leone ("Questioning Answers on the Hessdalen Phenomenon", this issue) is convinced that the best way to make progress in Hessdalen research is to "question the hasty answers given so far". This is correct in principle, but his questioning is based on wrong information, assumptions, and data analysis. (Incidentally, the EMBLA 2002 mission (Teodorani, 2004a) has never been funded—even partly—by the CIPH association, but only by the SACMI Imola industry.)

Leone's claimed observation of a light-phenomenon caused by car headlights on a hill is no more than a personal anecdote since his telescope was not equipped with a camera. My collaborators and I could distinguish car headlights from the true phenomenon as a result of expertise acquired during 2 months of non-stop sky-watching at several spots in the area in 1994, 2000, 2001 and 2002. The road in the area was well known to me, thanks to prompt and precise information from our Norwegian collaborators (Teodorani, 2004a). Leone's observing experience in the area was limited to a few hours over several days, and he may well have confused the lights of a car with the true phenomenon that, by chance, was close in direction though not in distance. Therefore, his data analysis and interpretation are not well grounded.

Leone suggests that my research was limited to the specific light that he arbitrarily interpreted as car headlights. Not so; the many other phenomena that I investigated and recorded in the Hessdalen area, and that were seen in different directions, are described in my paper (Teodorani, 2004b).

That the stationary light was an isotropic radiator is not a conjecture; the conclusion is based on the documented clustering behavior of the phenomenon itself (Teodorani, 2004a,b). Clustering implies an approximately spherical symmetry and not a two-dimensional effect occurring on a plane orthogonal to the observer.

Concerning spectra, the LED hypothesis is simply that, an hypothesis. Though the best one so far proposed (Teodorani, 2004a,b), it must be checked by further measurements; but it is not an "ad hoc" assumption. The three-peaked spectrum

that Leone attributes only to a halogen lamp can be obtained with at least five other kinds of light sources than halogen lamps, when photographed with a Kodak film whose sensitivity curve has three typical peaks, as shown by comparative simulation tests (Teodorani, 2004a).

Leone claims that "*Teodorani did not time the duration of the phenomenon*"; I did record a minimum time using a chronometer, but did not always secure the beginning and end of observation owing to the practical problem of writing notes at night.

It is not clear why Leone regards "*the analysis of a ground sample and alleged infrared signature and recording in the HF and VLF ranges*" as "*of dubious relevance to the optical phenomenology*"; for instance, VLF ranges (as well as radar observations) might turn out to help explain some IR observations, if those happen to be the optical phenomenon frequency-shifted to a range invisible to the eye (Strand, 1985; Teodorani, 2004b). A strong motivation to analyse ground samples has been described (Teodorani, 2004b).

That I changed measurements of luminosity is just the shift from a preliminary report to a deeper analysis, as indeed Leone also did concerning the position and the distance of the road where his car was passing (Leone, 2003a,b).

Reliance on eyewitness testimony is fallible (Persinger, 2000). Leone quotes witnesses in Hessdalen but does not reveal where their statements are published.

Leone attributes to me definitive or "monolithic answers"; but I have simply proposed hypotheses that evolved or developed as more data were acquired. Some of the phenomena in Hessdalen are not yet explainable by a natural geo-physical mechanism, while some other phenomena—probably the majority—can be so explained (Teodorani, 2004b), especially those that occur at low height, which present very specific observational signatures and which occur where the geological nature of the territory highly favours the onset of piezoelectricity and subsequent plasma formation.

Leone collected no documented photometric and spectroscopic data of his own that could be compared with mine.

For all these reasons, his critique fails to serve a constructive purpose.

MASSIMO TEODORANI

Astrophysicist and Science Writer

Via Catalani 45, 47023 Cesena (FC), Italy

mlteodorani@alice.it

References

- Leone, M. (2003a). *A rebuttal of the EMBLA 2002 report on the optical survey in Hessdalen*. Available at the Italian Committee for Project Hessdalen web site: <http://www.itacomm.net/ph/rebuttal.pdf>.
- Leone, M. (2003b). *A rebuttal of EMBLA 2002 report on the optical survey in Hessdalen: further comments*. Available at the Italian Committee for Project Hessdalen web site: <http://www.itacomm.net/ph/leone2.pdf>.

- Persinger, M. A. (2000). The UFO experience: A normal correlate in human brain function. In: *UFO & Abductions* (pp. 262–302). University Press of Kansas.
- Strand, E. P. (1985). Project Hessdalen 1984—Final technical report. Available at the Project Hessdalen web site: <http://hessdalen.hiof.no/reports/hpreport84.shtml>
- Teodorani, M. (2004a). *Some final notes on the "rebuttal phenomenon"*. Available at the Camelot Chronicles web site: <http://www.camelotchronicles.com/Altro/teod2004eng.htm>
- Teodorani, M. (2004b). A long-term scientific survey of the Hessdalen phenomenon. *Journal of Scientific Exploration*, 18, 217–251.