

# The Belgian Wave and the photos of Ramillies

By Auguste Meessen

*Abstract.* We restore the truth, since two UFO-skeptics distorted basic data concerning the beginning of the Belgian wave in 1989 and the observations made at Ramillies, in 1990. We also provide more detailed information about these observations and the associated photos. Their analysis confirms that the visually observed lights left no trace, while other lights were documented. We explain these facts by means of the Herschel effect, with intervention of infrared and ultraviolet light. Results of complementary photographic tests are also reported.

## Introduction

Jean-Michel Abrassart claimed<sup>1</sup> that the “psychosocial hypothesis” is sufficient to account for the beginning of the Belgian wave on November 29, 1989. Actually, he assumed that a single misperception led to a contagion process, nourished by mass excitement and other false observations. He believes, indeed, that the whole UFO phenomenon results only from human errors. Roger Paquay tried<sup>2</sup> to discredit a particular UFO observation, made at Ramillies during the night of March 31 to April 1, 1990. Although one of the three witnesses took very remarkable photos, Mr. Paquay claimed that the passage of a Boeing 747 would be sufficient to explain these observations and the photos. Moreover, he tried to discredit the observers and investigators by stating that “in the excitement of the moment, (they) immediately adopted an ETH interpretation and neglected important data.” *Is this true or not?*

This question is relevant for a much larger debate, concerning the *reality* of UFOs. They can have various forms, but constitute a distinct class of flying objects, characterized by outstanding performances and a specific behavior. Their origin is unknown and they produce phenomena that we do not understand. However, the central difficulty is that *UFOs display a very advanced technology, suggesting an ET origin*. This raises complex problems that some persons try to solve by simply negating the reality of this phenomenon. Nevertheless, it is attested by a great amount of converging evidence, derived from observations that were made on a worldwide scale and throughout history. *Is this fact of fiction?*

The first authorized answer came from the Headquarters of the American *Air Material Command*. In September 1947, it issued an evaluation<sup>3</sup> that was based on observations made by pilots and competent ground personnel. These reports were analyzed by Intelligence officers and engineers of the Air Institute of Technology as well as various Research and Development establishments. The primary conclusion was that “*the phenomenon reported is some-*

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<sup>1</sup> Abrassart, J.M. (2010): The beginning of the Belgian UFO wave, SUNlite, vol. 2, 6 pp.21-23, [http://home.comcast.net/~tprinty/UFO/SUNlite2\\_6.pdf](http://home.comcast.net/~tprinty/UFO/SUNlite2_6.pdf)

<sup>2</sup> Paquay, R. (2010): The March 31, 1990 Ramillies UFO observation, *ibida*, pp.24-26.

<sup>3</sup> Twining, N.F. (Sept. 23, 1947): AMC Opinion Concerning “Flying Discs”. Letter to the Commanding General of the Army Air Forces, for instance in D.M. Jacobs: *The UFO Controversy in America*, 1975.

*thing real and not visionary or fictitious*". General Twining said nothing about the possible origin of these "Flying Discs", but recommended to the Commanding General of Army Air Forces to "issue a directive assigning a priority, security classification and code name for a detailed study of this matter". A Russian origin was not excluded, but this confirms only that the material reality of these objects was not questioned anymore. After the Manhattan Project and during the arms race of the Cold War era, the study of very advanced technologies was a matter of National Security and subjected to strict secrecy. However, other reports, like those of Ruppelt (1956) and Hynek (1977), emphasized the need of independent scientific studies.

This is still true today, but some authorities are now afraid of telling the scientific community and the whole world that the UFO phenomenon became a classified matter for Secret Services. The resulting strategy of concealment and debunking is more and more counterproductive, since *world politics is also a matter of credibility*. Moreover, the UFO phenomenon raises questions that could be very important for science and the future of mankind, as exemplified by the energy problem we are facing. UFOs seem to have solved it. The cover-up causes at least confusion, since uncritical persons think that anything could happen, while so-called "skeptics" ardently defend their belief that real UFOs cannot exist. Instead of promoting an objective and rational study of observed facts, they *distort* them. The articles of J.M. Abrassart and R. Paquay provide instructive examples of this attitude.

Mr. Abrassart claims that I got interested in the UFO phenomenon, since my son asked me "if it was possible to *explain* it". No, he was then 13 years old and asked me only whether "flying saucers" are *real* or not. I told him that I didn't know, but that I would try to answer his question. When I studied the data, I realized that numerous and apparently very trustable persons had seen flying objects that display very unusual properties and consistently produce very peculiar physical effects. The most obvious characteristic property of UFOs is that *they are able to fly without wings, propellers and visible motors*. Nevertheless, they can remain stationary and move with tremendous accelerations in complete or nearly complete silence, but the surrounding air can be luminous. Some witnesses reported even that the intensity and color of this light changed during sudden accelerations. I concluded<sup>4</sup> therefore that *the propulsion system of these objects could involve plasma effects*. As physicist and University professor, I thought that this raises interesting problems and that they should be studied.

J.M. Abrassart and R. Paquay pretend that I am *a priori* in favor of the ET hypothesis, but it can easily be verified that I examined all conceivable possibilities<sup>4</sup>. Some persons advocated already the "psychosocial hypothesis". It requires that *all* UFO observations result from misperceptions or hallucinations, which is unrealistic when one considers the ensemble of known facts. Thus, I rejected this hypothesis. A terrestrial origin of these mysterious objects is excluded for the same reason. The "paranormal hypothesis", generalized to include also parallel worlds and other purely speculative statements, is unverifiable and therefore *useless*. The "ET hypothesis" requires that technically very advanced civilizations could have emerged elsewhere in our Universe. This is *plausible*, since physical laws and possible types of matter are the same everywhere in our Universe. Biochemical processes and neurological evolution

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<sup>4</sup> Meessen, A. (1973): Réflexions sur la propulsion des ovnis, Infoespace, 8, pp. 31-34 ; <http://www.meessen.net/AMeessen/ReflexionPropulsion.pdf>

should thus also be very similar<sup>5</sup>, but stars and planetary systems did not appear simultaneously, everywhere. The *possible* existence of much older and more advanced civilizations than our own is thus a logical consequence of present-day knowledge.

Could they have discovered how to manage interstellar space travel with the easiness suggested by the frequency of UFO observations? That is the key question. We are unable to answer it by reasoning alone, since *we don't even know what we ignore!* However, we can observe, analyze and try to understand what happens in the terrestrial atmosphere, to find out if the UFO phenomenon could be a cautious, but perceptible demonstration of their presence. They are not in a hurry and it would be rather wise, to avoid direct contact until our society is ready to accept it. This possibility deserves to be considered, but I insist that for me, it is only important that *the ET hypothesis allows for rational scientific studies*. It is a “working hypothesis” and nothing more, but this means also that we have to prove or to disprove it.

Some persons think that we would be unable to understand the science and technology of very advanced ET civilizations. They would know much more than we do, of course, but their technology would also have to involve *known physical laws*. We can thus try to understand at least a part of the UFO phenomena in terms of our present knowledge, eventually applied in innovative ways. In this regard, the basic problem would be the same if UFOs were products of some secret, but very advanced terrestrial technology.

The attitude of so-called “skeptics”, claiming that UFOs cannot exist, simply obstructs clarification, but purely speculative statements are also inadequate. My first intervention in this field consisted thus in rejecting propulsion theories that did not agree with basic physical principles. It is not acceptable, for instance, to postulate the existence of some kind of anti-gravity force that would allow an object to act on itself. I had already learned enough about observed facts, however, to realize that they cannot be discarded because of inadequate explanations. The search had to go on. Actually, the fundamental question was and still is for me: *are the propulsion systems that we are using today the only possible ones?* Aviation resulted from observing and thinking about bird flight. Now, we can do the same for UFOs. Combining observed facts with known physical laws, I progressively developed a model of Pulsed EM Propulsion<sup>6</sup>. It uses normal concepts<sup>7</sup> and remains a tool for further investigations. Since J.M. Abrassart and R. Paquay tried to impute me another motivation and defended their conceptions in a rather antagonistic way, we have to examine their arguments.

## **The beginning of the Belgian wave**

J.M. Abrassart pretended<sup>1</sup> that when this wave began in 1989, I “took it, *a priori*, as a unique opportunity to have, at last, conclusive proof that the *origin* of the phenomenon is well and truly extraterrestrial”. No, I had to convince myself of the *reality* of the alleged facts, by inter-

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<sup>5</sup> de Duve, C. (1994) : *Vital Dust, Life as a cosmic imperative*, Basic Books.

<sup>6</sup> Meessen, A. (1985, 1986) : Des signes de civilisations extraterrestres ? *Revue des Questions Scientifiques*, 156, pp.443-481 ; 157, pp. 149-178 ; (2009) : <http://www.meessen.net/AMeessen/RQSc.pdf>

<sup>7</sup> Meessen, A. (1988) : Analysis of physical aspects of the UFO problem, *First European Congress on Anomalous Phenomena, SOBEPS*, pp. 128-150.

rogating trustable witnesses. Progressively, I arrived at a more global picture of this unusual wave. Its *sudden and very massive start*, combined with the fact that so many witnesses consistently described *a new type of UFOs*, imposed the conclusion that so many persons could not simply have invented what they told us. Their own perplexity proved also that their observations were genuine. Moreover, these objects had common characteristics. Thus, I wrote<sup>8</sup> : *“the sociopsychological hypothesis has to be definitely abandoned”*.

J.M. Abrassart refuses to accept the evidence, since he is radically opposed to the ET hypothesis, without explaining why. He is free to believe what he wants, of course, but not to claim that *all UFO witnesses have “fantasy-prone personalities”*. This term allows, by definition, for misperceptions, uncontrolled imagination and distorted or false memories, but this does not prove that it applies to all witnesses of UFO phenomena. They belong, indeed, to the general population and have social responsibilities in various professions. To assert that they are so suggestible and influenced by hearsay and media reports that this could lead to an accumulation of erroneous UFO observations, in particular for the Belgian wave, is *an extraordinary claim that requires extraordinary proof*.

Mr. Abrassart knows that his dogma is severely challenged by the Belgian wave, since it began on November 29, 1989 with *143 reported observations* for this evening and early night. Thus, he tries to minimize the impact of this fact, by claiming for instance that these 143 observations are worthless, since they were not collected “on the same day, but later on”. This is irrelevant, since it would be equally absurd to require that all or at least most of the witness accounts for a given criminal affair have to be collected the day the events occurred. Moreover, many other observations were made and investigated during the Belgian wave, but he claims that even the ensemble of all these UFO observations resulted from misperceptions or hallucinations. He assumes that this is possible because of *psychosocial contagion*.

The validity of this “hypothesis” can be checked by applying the usual scientific procedure. It requires that we draw logical consequences of the proposed hypothesis and compare them with actually observed facts. I explained already (on June 27, 2009) how this can be done to the members of *EuroUfoNet*, including Mr. Abrassart, but he continues to spread his former ideas as if nothing ever happened. Thus, I recall the core of my argument. The psychosocial hypothesis implies that the total number  $N$  of reported observations should vary in the course of time in such a way that  $dN/dt = aN(1-bN)$ . This means that on the average, every reported observation has a certain chance  $a$  to generate other observations, but the increase of  $N$  is only proportional to  $N$  as long as  $N$  is small compared to  $N_1 = 1/b$ .

This relation necessarily leads to *an initial exponential increase*. It starts with  $N = 1$ , since the contagion process had to be initiated by one event, assumed to be erroneous. However, when  $N$  increases, the media and the public get more critical or simply tired. *The rate of increase diminishes and finally, vanishes when  $N$  tends towards  $N_1$* . This equation applies to a limited region, like Belgium, where a progressive spatial diffusion of rumors does not have to be considered. The resulting equation has a nice mathematical solution, but it is sufficient to consid-

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<sup>8</sup> Meessen, A. (1991) : Les observations décisives du 29 novembre 1989, Vague d’OVNI sur la Belgique (VOB1), SOBEPS, pp. 11-49.

er a typical curve (figure 1). It corresponds to  $a = 0.04$  per day and  $N_1 = 400$ . The initial exponential increase would be faster for a greater value of  $a$ , but the inflection point will always be situated at the level  $N_1/2$ . Any other number  $N_1$  would preserve the shape of the curve for a given value of the contagion probability  $a$ . To end up with 400 purely fictitious reports would already be highly extraordinary, unless we are ready to believe that a lunatic asylum is a good model for the general population. However, the essential point is that the shape of the predicted curve cannot be adapted to the actual evolution of reported observations. It corresponds to the continuous curve of figure 1, well-established for the Belgian wave<sup>9</sup>. The obvious conclusion is that *the rumor theory is unable to account for real statistical data*.

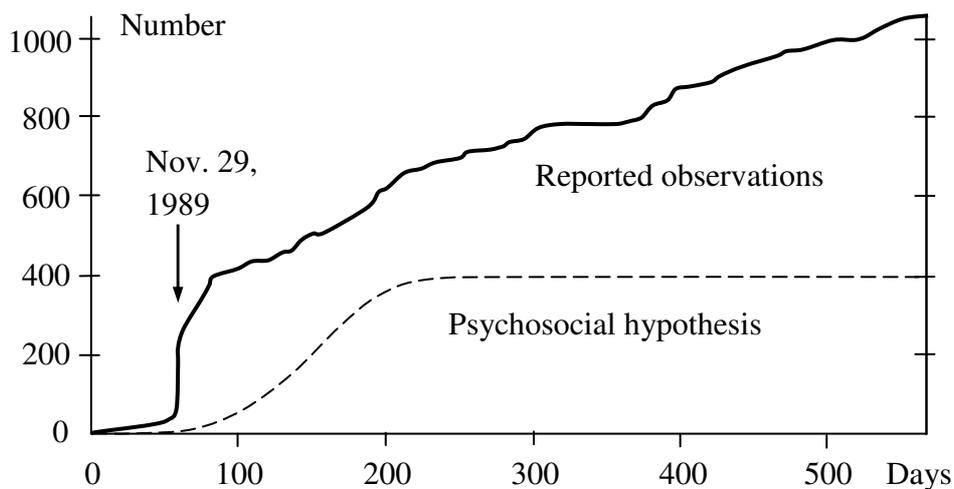


Fig.1: Evolution of the number of actually reported observations and the number of erroneous observations, according to the psychosocial hypothesis. It fails the test.

Many of the 143 observations, made on November 29, 1989, occurred in a relatively small part of Belgium. Later on, other parts became involved and after 20 months, SOBEPS had gathered more than 1000 observations (figure 1, for September 1, 1989 until May 1, 1991). The *daily statistics* are even available up to December 1, 1993 (VOB2, illustrations). They reveal that more observations (of the order of 25) were reported and investigated for some particular days. These singular peaks cannot be attributed to contagion processes, since these observations were independent from one another and did not result from media reports<sup>9</sup>. We should also take into account the fact that in the vast majority of cases, the witnesses saw the object at sufficiently close range to perceive structural details. They were amazed about the complete or nearly complete silence of these objects. This *made them more critical* in regard to their own perceptions, which is surely not in favor of the psychosocial hypothesis, but Mr. Abrassart never considered possible objections to his beliefs and categorical assertions.

He simply postulated that witnesses of UFO events *have to be* in error, since what they report can't be true! Having studied psychology, he claimed even<sup>1</sup> that they are "*schizotypical*". He never met them, but assumed that they are "filled with hope" to see extraordinary things, that

<sup>9</sup> Bougard, M. (1994): Media et phénomène OVNI. Approche statistique sur un éventuel effet de rumeur, Vague d'OVNI sur la Belgique (VOB2), SOBEPS, pp.323-386. The figure appears on p. 360.

could be of ET origin. This is not verified by interviews with the witnesses. Moreover, we notice in figure 1 that UFO observations occurred already before the official start of the Belgian wave on November 29, 1989, but these observations remained unreported until later on. The reason is that *these witnesses could not make sense of what they saw!* I interrogated a witness of this group who was particularly trustworthy, since he had a technical education and high social responsibilities in Eupen. He had seen a triangular platform near Raeren. It was flying slightly above treetop level and descending over meadows, in complete silence. It could not be a conventional aircraft and at that time, it was generally believed that UFOs are round, disk-like objects, called “flying saucers”. This witness did not talk about his observation, because of his own perplexity. Such a reaction contradicts the psychosocial hypothesis.

### The police officer’s sightings

When the gendarmes *Hubert von Montigny and Heinrich Nicoll* of Eupen discovered on November 29, 1989 a strange triangular platform, they were very surprised. They did not expect (or hope) to see a craft of ET origin, but thought that it had to be some new type of military aircraft<sup>8</sup>. My drawing (figure 2) corresponds to their description, but Mr. Abrassart tried to minimize the strangeness of this object and the trustworthiness of the police officers. He *concealed*, for instance, the information that this object was motionless when they discovered it, and that they saw it at close range. Its center was less than 150 m away from them, while they estimated the length of its basis, between the cut-off edges, to be 30 to 35 m and the height of the symmetric triangle to be 25 m.

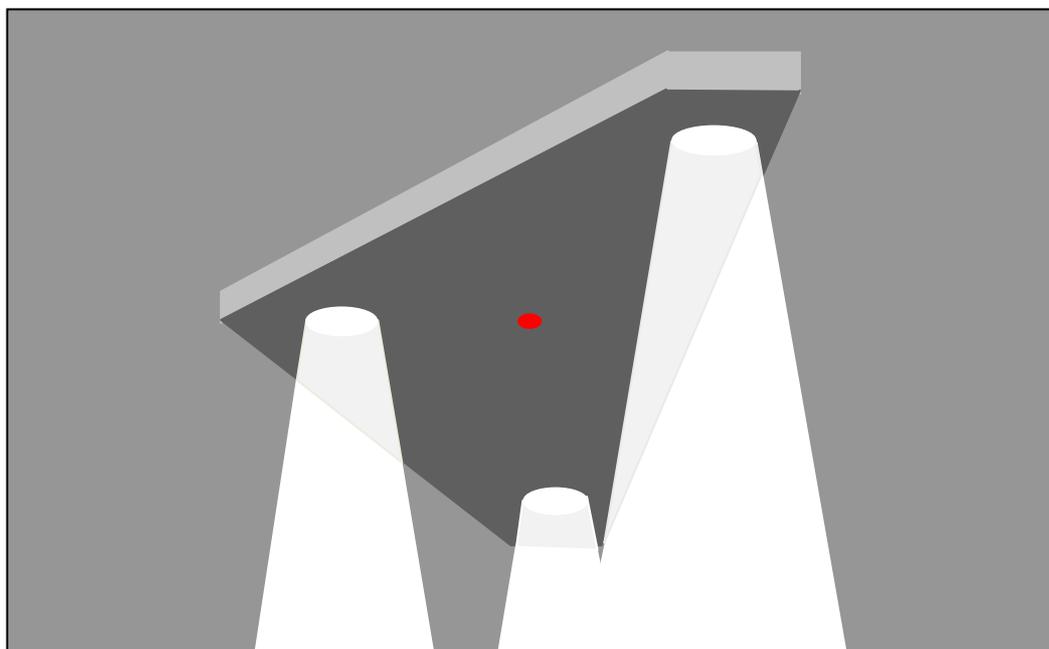


Fig. 2: The object discovered on November 29, 1989 by the gendarmes von Montigny and Nicoll.

Three very luminous beams emerged from enormous round sources, situated near the edges of the triangle. The beams had sharply defined boundaries and their internal volume was luminous. This is remarkable, since it had frozen and the air was dry. In the middle of the lower

surface, there was a red blinking or pulsating light. The police officers had stopped their car. Expecting to hear engine noise, they lowered the window on the side of the object, but to their great astonishment, there was no sound. Nevertheless, an addendum of Abrassart's article<sup>1</sup> pretends that "it seems entirely plausible" to explain these facts by assuming that the two gendarmes simply saw a helicopter! This assertion stems from *Renaud Lecllet* and a group of UFO skeptics, who proclaimed this absurdity in 2008. They applied it even to the entire Belgian wave, including the observations made at Ernage on December 11, 1989. One of the three witnesses was a colonel at the Belgian Staff. We reinvestigated this case with great care and provided detailed information. Our report<sup>10</sup> has been written in collaboration with *General De Brouwer*, who was Head of Operations of the Belgian Air Staff during the Belgian wave and is himself an experienced pilot. He proved that *the helicopter hypothesis is irrational and totally inadequate*. Neither Mr. Abrassart nor the editor mentioned our report, which shows that their aim is not to allow everyone to evaluate the evidence, but to propagate their beliefs.

Concerning the observations of the gendarmes von Montigny and Nicoll, Mr. Abrassart mentions some erroneous statements of journalists, who investigated this case only in a very superficial way. He also repeats the assertion of *Wim Van Utrecht* that near the barrage of La Gileppe, the police officers were not observing the luminous object, but *the planet Venus*. Actually, they saw the object moving towards the illuminated tower and stopping over it. Venus was then somewhere else in the sky and did surely not stay over this tower during about one hour, as the object did. I provided detailed data on the second part of the observations of the gendarmes and even the verbatim transcription of a long interview of Hubert von Montigny<sup>11</sup>. I discussed also the erroneous attempts of Wim Van Utrecht to account for these observations in terms of meteorological effects. However, Jean-Michel Abrassart prefers to repeat flawed conjectures, to sustain his own preconceptions and to go on with lobbying.

He did not mention that 8 other persons saw the same object before it arrived at La Gileppe. The observations of the two gendarmes lasted two hours (from 5:20 to 7:23 PM) and not only "a certain amount of time". They did not observe "red filaments" emanating from the object, when it stayed over the tower of La Gileppe. They saw two narrow red light beams that emerged from it and became progressively longer in a symmetrical way. It is very astonishing that these beams were laterally visible over a distance of 4.3 km. Moreover, they suddenly disappeared, while two red-orange *balls* subsisted at their extremities. These balls went back to the object, turned around it and disappeared. After a pause, the same process was repeated and this happened about every 5 minutes. J.M. Abrassart simply stated that the *beams* came back towards the object, "went round about it and went away again". He did not mention the balls and the pauses. This misrepresentation seems to indicate that he is still hoping for some meteorological explanation, but this is impossible for the really observed facts.

The ability of careful and responsible observations belongs to the basic professional skills of gendarmes, but as we mentioned already, Jean-Michel Abrassart proclaims that they had a

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<sup>10</sup> Amond, A., De Brouwer, W., Ferryn, P. and Meessen, A. (2009): Ernage 1989: The Facts and their Analysis, [http://www.cobeps.org/pdf/ernage\\_rapport.pdf](http://www.cobeps.org/pdf/ernage_rapport.pdf) (COBEPS, études, recherches, réflexions: English version).

<sup>11</sup> Meessen, A. (1997, 2008) : Étude approfondie et discussion de certaines observations du 29 novembre 1989, Infoespace 95, pp. 16-70 ; <http://www.meessen.net/AMeessen/Gileppe.pdf>

“fantasy-prone personality” and even calls them “schizotypal”. How can he combine this outrageous assertion with their very strong insistence<sup>8,11</sup> that their colleague *Albert Creutz*, who was in charge of radio dispatching, should contact the Belgian Air Force to verify if they knew something about the object they had discovered? Jean-Michel Abrassart invents himself a story when he claims that the gendarmes “greatly enhanced the strangeness of this sighting” and even that *only one of them* had seen the beams and “explained” to the other one what he saw. The truth is that Heinrich Nicoll was sitting in the car, to remain in radio contact with the dispatcher, while Hubert von Montigny was standing outside, but both of them observed the “show” over the illuminated tower. I reported that they made different comparisons. Nicoll thought that the beams could be measuring systems, while von Montigny compared the rapid progression of the beams and the returning balls with the harpoon of underwater divers. This indicates independent thinking, but *Mr. Abrassart replaces facts by fiction*.

He distorts not only the information that I provided, but pretends even that I “just put the final touch to the deformation of witness statements”. He wants to believe that I am only looking for “proof in favor of the extraterrestrial hypothesis!” This is patently false, as everyone can verify through my analysis of the radar signals detected by civil and military ground stations or the scrambled F-16 jets<sup>12</sup>. J.M. Abrassart declares even that I “committed a gross methodological error” or knowingly omitted information about the beginning of the Belgian wave, to “manipulate the reader”. He also tries to criticize my fact-finding interview of the gendarmes, by suggesting that I asked “leading questions” when I simply asked for more details.

He tries to justify his idea of *psychosocial contagion*, by assuming that “people who saw something strange in the sky that night” were inclined to think that it “might be from another world”, since policemen had also seen such things. This assertion disregards that the gendarmes never mentioned the ET hypothesis. Moreover, the media and the public knew only a minor fraction of reported UFO observations, when they occurred. The probability (a) for psychosocial contagion has thus to be reduced in the same proportion. The frankness of the gendarmes, when they described some of their observations on TV could encourage other persons to *report* what they had seen, but not to *invent* similar stories. There is a difference.

J.M. Abrassart ends his article<sup>1</sup> with the statement that “we can *quite simply say* that (...) the beginning of the Belgian wave is entirely compatible with the idea of sociopsychological contagion”. It may be simple to say this, but it is flatly contradicted by well-investigated facts. They concern the statistics, the global convergence of witness accounts and their scientific implications. Some of them will be illustrated by means of the following analysis.

## **Visual and acoustical observations at Ramillies**

*Patrick Ferryn, Lucien Clerebaut and the student José Fernandez* made these observations during the night of March 31 to April 1, 1990. They had interviewed the gendarme *Renkin*, who caused the scrambling of two F-16 jets of the Belgian Air Force during the preceding

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<sup>12</sup> Meessen, A. (1991) : La détection radar, VOB1, SOBEPS, pp. 351-396 ; (1994) : Observations, Analyses et Recherches, VOB 2, SOBEPS, pp. 387-432 ; (2007) : Étude approfondie des mystérieux enregistrements radar des F-16, <http://www.meessen.net/AMeessen/radarF16.pdf>

night. Since Patrick Ferryn was responsible for the evaluation of alleged UFO photos and videos, he wanted to profit from this occasion to take pictures of airplanes under favorable conditions. The gendarme advised the investigators to go to a place in his vicinity, far away from street lights, but situated under an air-traffic corridor. Patrick Ferryn described what happened there<sup>13</sup>, but *Roger Paquay* attacks this case<sup>2</sup> by modifying the facts according to his beliefs.

The first example of the liberties he takes with available information concerns the place where the observations occurred. It had only been described in general terms, to keep the account as short as possible, but Mr. Paquay is not short of imagination. He states that the witnesses were “located at the crossroads of N91 and N29”. These national roads connect Namur to Leuven and Gembloux to Jodoigne. Their crossing could not be a quiet place, protected from street-lights. It does not even belong to the municipality of Ramillies. The actual place is situated at the center of the gray circle on figure 3 (50°37'59"N and 4°53'47"E on Google maps). This corresponds to the intersection of the *village street* and a rectilinear street that belongs to the *Ravel* system (Réseau Autonome de Voies Lentes). These streets follow former rails and are reserved to bicycles, pedestrians and horsemen. At this place, there were and still are no houses, but there are trees at *La Taignère* (LT).

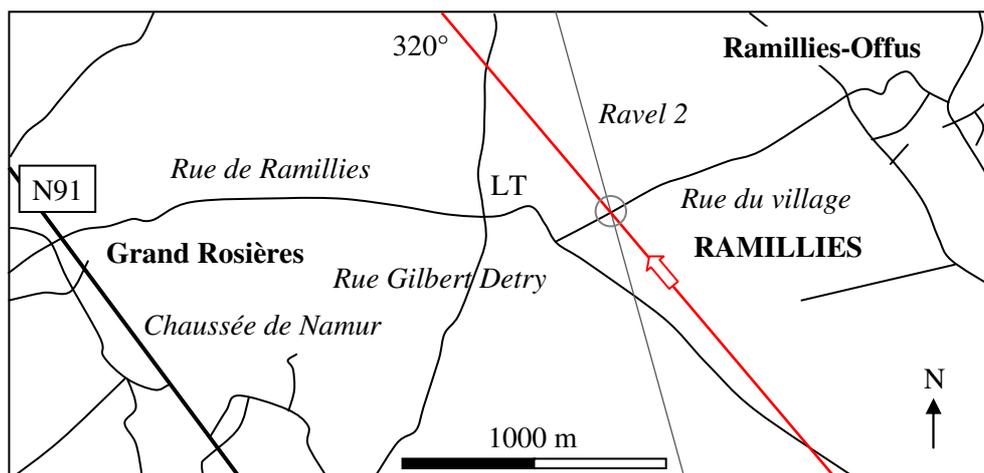


Fig.3: The object flew at low altitude along the red line, exactly over the witnesses.

Ferryn, Clerebaut and Fernandez arrived there at about 9:30 PM on March 31, 1990. The photographer Patrick Ferryn installed his camera (a Nikon F2) on a tripod and took some pictures of airplanes. He used a sensitive film (1600 ASA) and decided to keep the same exposure time (1/125 s) for all pictures he would take that night. The focal distance of the telephoto lens system (Super-Komura 1:5) was 300 mm. The sky was clear and ideal for taking pictures of airplanes. All pictures were taken with a setting at infinity. The silence of the night at this isolated place was so complete that *the sound of the planes was clearly audible, although they were flying at high altitudes*. Having observed the sky for more than two hours, the group reentered the car. It was facing the SE and SEE. Patrick Ferryn spotted there *a yellowish light* that appeared in front of them at the local horizon. He had observed many planes in the past, but never saw one with lights of this color. Thus, he wanted to take pictures of this “plane”.

<sup>13</sup> Ferryn, P. (1991): Videofilms et photographies, VOB1, SOBEPS, pp. 397-422 and figures 7.18 a,b and c.

They immediately left the car and observed the approaching light. While it slowly rose above the horizon, the single light got progressively resolved in a pair of two lights and then *two pairs of lights*, which is normal for approaching light sources. P. Ferryn took already *two* pictures of this object when it was still quite far away. Then he looked very carefully during 10 to 15 seconds through the viewfinder of his camera, to take the best possible picture at about 45°. Since he expected to see a plane, he was very astonished to see that the front part of this object was *a large illuminated arc*. It carried two pairs of very brilliant sources, projecting “four impressive beams” of white light in the forward direction. The lower surface was dark, but well visible, because of its luminous boundaries. There were no structures on this surface. The rear part was brighter and the center was reddish. When I met Patrick Ferryn in the afternoon of the following day, which was Easter Sunday, he showed me drawings of the object when it came closer (figure 4a) and when it flew overhead (figure 4b). The object was *a great triangle with curved sides and round corners*.

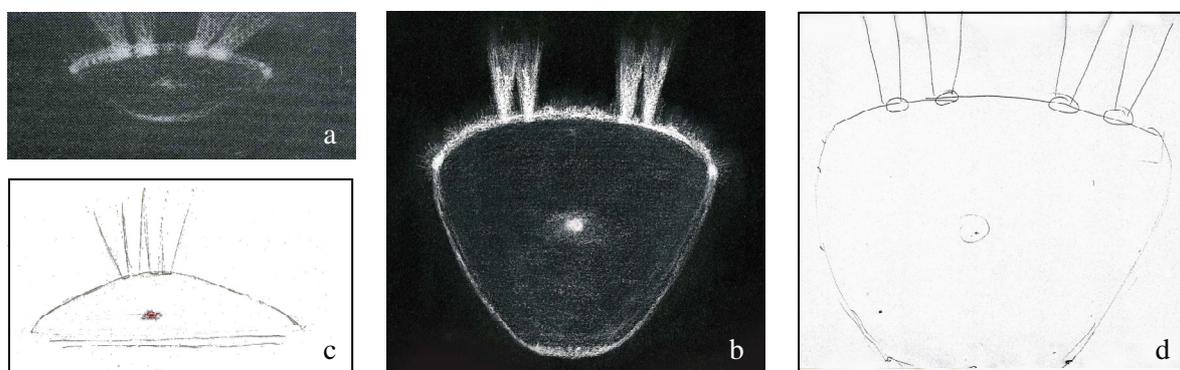


Fig.4: Drawings by *Patrick Ferryn* of the flying object at 45° (a) and overhead (b), by *José Fernandez* (c) and *Lucien Clerebaut* (d). This was not a plane, as they had expected.

P. Ferryn had already asked José Fernandez and Lucien Clerebaut to make a drawing of the object, as they had seen it. Their drawings (figure 4c and 4d) are independent, but the essential features are identical. Fernandez had focused his attention on the curved frontal part, on the divergent and progressively attenuated beams and on the central light. He remembered that there was *no tail*, but not precisely, how the rear part was shaped. Thus, he drew two lines to indicate that the object did not have the typical tail of airplanes.

Lucien Clerebaut, the General Secretary of SOBEPs, who received numerous phone calls from witnesses and asked them if they had seen structural details, observed the object with powerful (10x50) binoculars. Nevertheless, he saw no wings, no tail and no other elements that are characteristic of planes. During my investigation<sup>14</sup>, he told me that he wanted to be “absolutely sure” that this object was not a plane. José Fernandez told me that he had expected to see a plane and was therefore very astonished to discover a large curved front side instead of the fuselage and lateral wings. Patrick Ferryn visually observed the object when it flew overhead and took a picture of the departing object, again at about 45°. After that, the contours were still visible during a short time.

<sup>14</sup> Meessen, A. (2000) : Analyse et implications physiques de deux photos de la vague belge. Infoespace **100**, 5-40 ; (2001) : <http://www.meessen.net/AMeessen/Photo1/>

Since the witnesses thought that the approaching object was a plane, they expected to hear engine noise, and were very astonished that *they did not hear it*, although the environment was very silent. Patrick Ferryn still remembers that before this event, he heard dogs, barking far away. In general, he became only aware of planes, flying at high altitudes, because of their sound. Clerebaut told me that he began to hear a very light whistling sound when the object was already overhead. The two other witnesses noticed it only when they saw the rear-side of the object. Nevertheless, Patrick Ferryn still thought at this moment that it could be a prototype of a new class of aircraft, since it followed a straight path at constant velocity. In spite of all these facts, R. Paquay claims that the witnesses were “biased towards interpreting this as an extraterrestrial/exotic object (thereby invoking the Extraterrestrial Hypothesis)”. This should suggest that the witnesses were not objective, but expresses only his conviction.

Since the witnesses saw the arriving object, they could estimate quite well that it was flying at an altitude of 300 to 500 m<sup>13</sup>. It was even so low that *Patrick Ferryn verified if it would not be better to change the focal distance*, but he returned to the initial setting at infinity. The triangular object flew over them at a velocity of 100 to 150 km/h<sup>14</sup> and its size was so impressive, that it seemed to be comparable to that of a Boeing 747, the “jumbo jet” of that time.

After the departure of the object, the three witnesses discussed, of course, what they had seen. *Their perceptions were independent*, but since they agreed in their descriptions and evaluations, Roger Paquay claimed that this was “ONE UNIQUE testimony” (his emphasis). This reveals again how he treats testimonies and witnesses. He did that also for the case of Ernage<sup>10</sup>, but omitted even to mention the second drawing of Patrick Ferryn (figure 4b), which was available to him (7.17b in VOB1). It could have cast some doubt, of course, on his claim that the witnesses simply saw a conventional aircraft.

### **Paquay’s airplane hypothesis**

His apparently rational argumentation is mainly based on a “measurement” that Patrick Ferryn made when he was carefully looking through the viewfinder of his camera towards the arriving object. The object was centered and when he took the third picture, *the clearly visible luminous arc extended slightly beyond the reference circle* that contains the frosted part for distance adjustments. It is limited (for type K of Nikon F cameras) by a circle that occupies exactly one third of the length of the rectangle of 24x36 mm pictures. On the negative, the third image of the object, taken at about 45°, should thus cover *a width  $w = 12$  to  $13$  mm*.

Since the picture was taken with a setting at infinity and since the focal distance was fixed at 300 mm, the distance between the film and the optical center of the lens system was  $d = 300$  mm. This allows us to determine the ratio of the horizontal size  $S$  of the object and its distance  $D$  from the camera:  $S/D = w/d = 0.040$  to  $0.043 = \text{tg}\alpha$ . The angular width of the object ( $\alpha = 2.29^\circ$  to  $2.46^\circ$ ) was thus 4 to 5 times larger than the apparent diameter of the Moon. Roger Paquay tried to distort these facts. He stated (in more complex terms) that the width of the image was 1/3 of the *diagonal* of the negative, which yields  $w = 43.27/3 = 14.4$  mm and  $\alpha = 2.7^\circ$ , but the object was not inclined that way. Since P. Ferryn had mentioned<sup>13</sup> that “the span

of the object was estimated to be comparable to that of a Boeing 747”, Mr. Paquay *postulated* that it had to be such a plane. It could not be a B 747-400, where  $S = 65$  m, since this type entered only in service in 1989 at Air New Zealand, while the first B 747-300 flew in 1982 for Swissair and then for the Belgian company SABENA. Its wingspan  $S = 59.5$  m. Mr. Paquay used this value, but *assumed that the distance  $D = 300$  m*, so that  $S/D = 0.2$  and  $\alpha = 11.3^\circ$ .

This result should suggest incoherence, but the witnesses had stated that the object was flying at an altitude of 300 to 500 m. At  $45^\circ$ , the distance would be greater by the factor  $\sqrt{2}$ , which yields  $D = 400$  to  $700$  m. Moreover, we can only assert that the ratio  $S/D \approx 0.04$ , because of Ferryn’s viewfinder measurement. It follows that the size  $S \approx 16$  to  $28$  m. These values are lower than the wingspan of a Boeing 747, but this was merely a guess, since no direct comparisons were possible. Moreover, a full triangle (figure 4) is much more impressive than a slender plane (figure 5). Anyway, Patrick Ferryn had verified if it was necessary to change the distance setting. He found that this was not necessary, which was equivalent to another measurement: the object was not closer than the front limit of the field of depth for a setting at infinity. This *hyperfocal distance* can be calculated<sup>15</sup>, but its value depends on the accepted diameter for the “circle of confusion”. Usually, one requires 0.03 mm for 24x36 mm negatives. For  $f/5$  and a focal distance of 300 mm, the hyperfocal distance is then 596 m. The lowest value of the distance  $D$  would thus be close to 600 m and the altitude could be as low as 425 m, which is *compatible with the estimated upper limit of 500 m*.

If the object really were a B 747-300, we would get  $S \approx 60$  m,  $D \approx 1500$  m and an altitude of about  $1000$  m, but such a plane is very noisy. The witnesses should thus hear it before it was overhead. Moreover, they would necessarily have seen the red and green position lights, the fuselage, the wings, the protruding turbo-jet engines and the tail of the alleged plane. Roger Paquay did not show the profile of a Boeing 747 (figure 5). We provide also a recent picture of the observation site and the landscape in the direction where the object appeared (figure 6). The Moon was partially visible in the opposite direction ( $304^\circ$ ) at low elevation ( $7^\circ$ ). With Patrick Ferryn, I determined that the heading of the object was close to  $320^\circ$  (figure 2).



Fig.5: The B 747 seen from below.



Fig.6: The observation site seen in the SEE direction.

<sup>15</sup> <http://www.dofmaster.com/dofjs.html>

When I consulted *General De Brouwer*, he insisted on the fact that “the B 747 is a large aircraft and is very expensive to operate. Such aircraft fly on strict mission and are not used for training or sightseeing flights. It is excluded that such an aircraft would land at Beauvechain, since this military airport is not equipped to accept jumbo jets. Moreover, it is closed on Sundays”. April 1, 1990 was even Easter Sunday. Only two of the F-16 jets would be on standby.

“When preparing to land at Brussels airport, any aircraft has to proceed to a point that is in the axis of either runway, at approximately 10 nautical miles from the runway threshold. At Ramillies, the *lowest possible* altitude for the Brussels TCA (Terminal Control Area) would be 4000 feet or 1200 m above sea level.” Since the local altitude is close to 150 m, the aircraft would fly at least at an altitude of 1050 m above the ground, which is higher than the reported value. “At this stage, the normal speed of a B 747 preparing to land at Brussels airport would be 250 Kts or approximately 450 km/h. To be able to fly, the speed can never be lower than 250 km/h.” This is also incompatible with 100 to 150 km/h, estimated by the witnesses.

Since the landing lights of a B 747 are situated on the wings, close to the fuselage, they would illuminate its sides. By contrast with the darker sky, this would facilitate identification. Mr. Paquay was not concerned about possible inconsistencies in his statements. His only justification of the plane hypothesis was that he observed the landing lights of an approaching B 747 (at the airport of Bierset, near Liege). At a distance of 15 to 20 km, he saw a single light. When the plane approached, he saw 2 and then 4 lights. This happened also at Ramillies<sup>13</sup>, but does not prove that the object had to be a plane, since increasing angular resolution is a normal property of visual perception for approaching light sources of given diameter. *Paquay’s airplane hypothesis is unrealistic and unable to explain the observed facts.*

### The photographic documents

When the film was developed, it appeared that airplanes passing at high altitudes had left small spots. This was also true for the first and second picture of the object, but *the third and fourth pictures of the object were anomalous*. A positive copy of the negatives (figure 7) shows that there were only small spots and not what should have appeared. Indeed, Patrick Ferryn had seen in his viewfinder that the illuminated front curve of the arriving object covered at least *one third* of the width of the negative. The fourth picture should also yield a similar result, but this was not true!

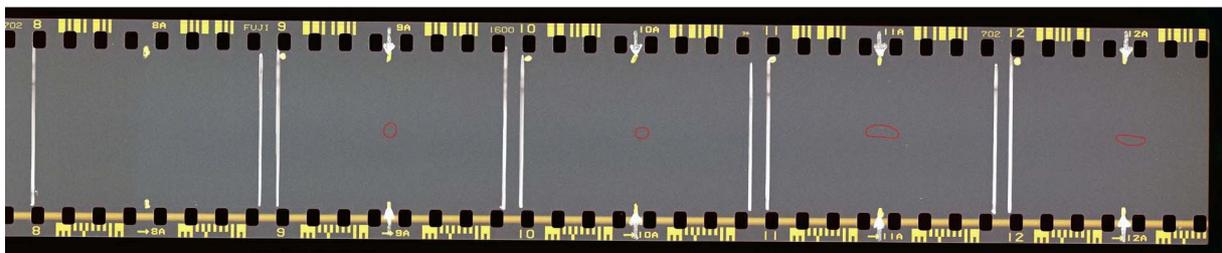


Fig.7: The sequence of negatives 8 to 12, where 9 to 12 correspond to the triangular object.

Close-ups of paper copies of the four pictures of the object (figure 8) show that there was only one point on the first picture and two points on the second one. That seemed normal, since the object was still far away, but the third and fourth pictures were startling. The curved arc, which had to be luminous to allow for the viewfinder measurement, did not show-up. *Even the two pairs of brilliant front lights were absent on the third picture.*

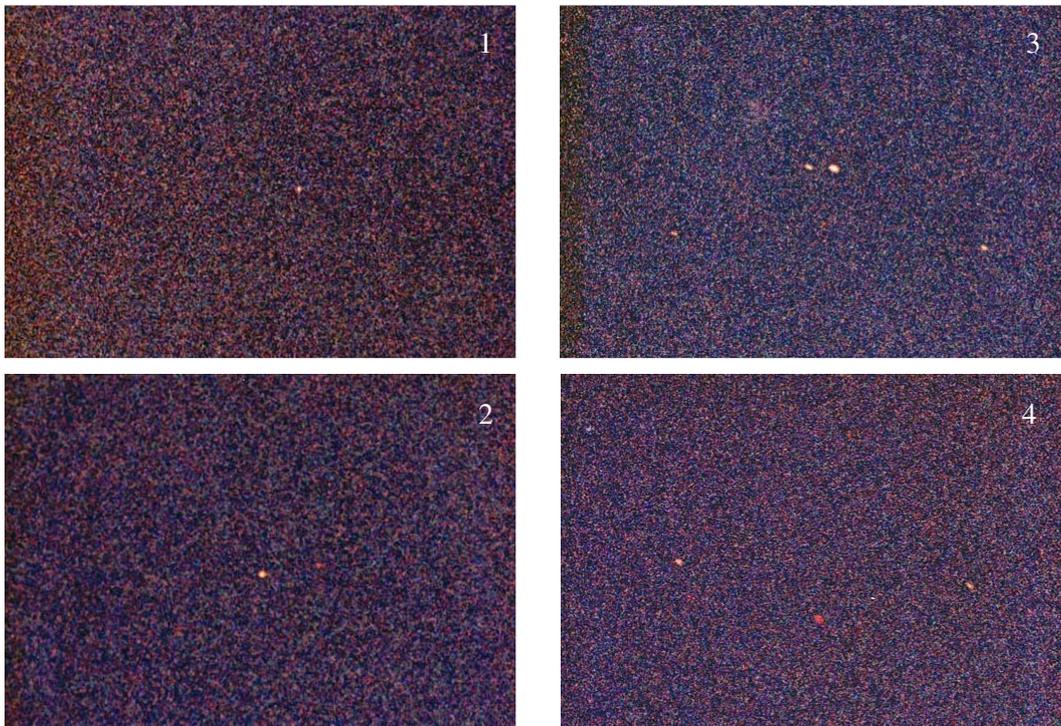


Fig.8: Close-ups of the lights in the four pictures of the object, taken at Ramillies by Patrick Ferryn.

The negative for the *third* picture (figure 9a) shows that the group of lights covered only 4.2 mm instead of the expected 12 to 13 mm. Underexposure was excluded, since planes left traces for the same exposure time, although they were flying at high altitudes. One of these traces (figure 9b for the negative 7) corresponds to two separate lights (figure 9c). There appear more lights for somewhat lower altitudes (figure 9d for the negative 19).

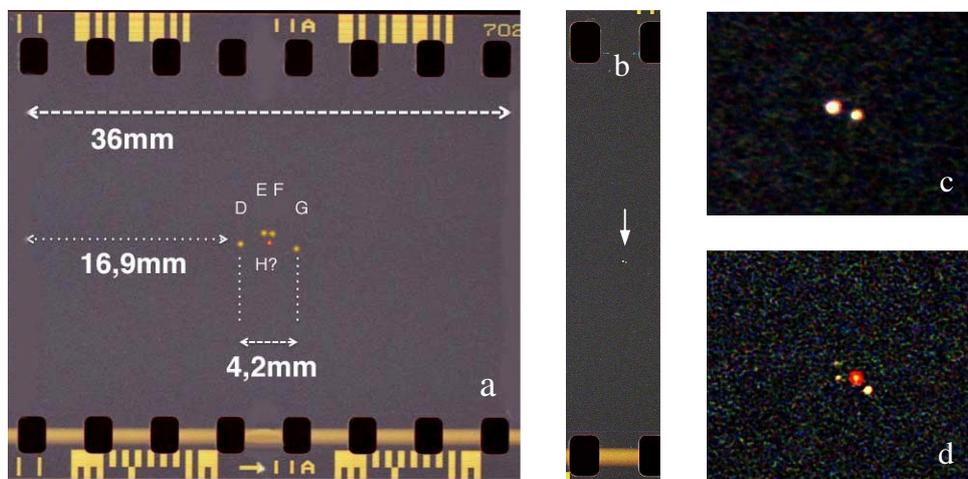


Fig.9: The negative of the third picture of the object and pictures of airplanes.

Designating the spots on the two first pictures by A, B and C, we get D, E, F, G on the third picture and perhaps a smaller red spot (H?). They are reinforced on figure 9a, but appear more clearly on a close-up of the negative (figure 10). The lines EF and DG are parallel, but the distances DE and FG are not equal and the red point H is not centered. Since  $DG = 4.2$  mm on the negative, it follows from figure 10 that  $EF \approx 0.3$  mm. However, if the curved arc (figure 4a) did correspond to 13 mm on the negative, the external *spotlights* should there be separated by 6.6 mm and the internal ones by 4.5 mm. The spacing and even the relative positions of the recorded lights are different. Thus we have to conclude that *visible lights left no trace, while photographed lights were not visible*.

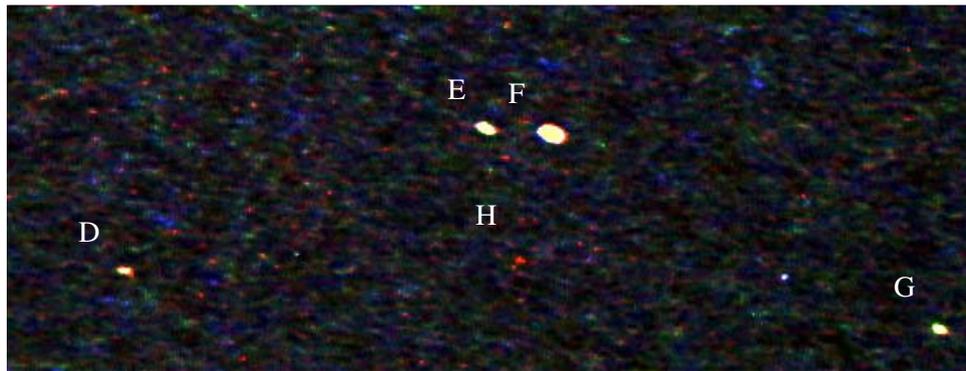


Fig.10: Close-up of the lights on the negative of the third picture.

A close-up of the fourth picture of the object (figure 11) reveals that there are only three lights instead of five and the red spot J is more pronounced than H. It is situated below the line IK, while H was situated above DG. The relative disposition of these lights is neither identical, nor symmetric ( $IJ/JK = 0.98$ , while  $DH/HG = 0.92$ ). We could imagine a central bulge on the underside of the object, so that the lights E, F and H were only detectable from the front side, while the light J was seen from the rear, but none of the witnesses saw this structure. Thus, we conclude that *different invisible lights were photographed at different moments*.



Fig.11: Close-up of the rear view of the object on the negative.

The single spot A on the first picture (figure 8.1) and the two spots B and C on the second one (figure 8. 2) can be explained by increased resolution of fixed light sources when the distance is decreasing. The visual acuity of the human eye is usually limited to an angle  $\theta$  of about  $1'$ .

This value can be determined in a phenomenological way, but it results from the *wave nature* of light. Even if light were scattered by an ideal point, it would not produce a point-image when this light is collected by a lens. There is *an interference effect* that limits the angular resolution to  $\theta = 1.22 (\lambda/A)$ , where  $\lambda$  is the wavelength and  $A$  the aperture or diameter of the lens. The angle  $\theta$  is expressed in radians. For the eye and a brilliant light source  $A \approx 2$  mm, but  $\lambda \approx 550$  nm for visible light, while  $1 \text{ radian} = 180.60'/\pi$ . Thus,  $\theta \approx 1.1'$  for human vision.

This applies to the visual observations at Ramillies (VOB1, 7.18a), but the same formula is also valid for a photographic lens or lens system. For the telephoto objective<sup>16</sup>,  $f = 300$  mm and the maximal aperture  $A = f/5 = 60$  mm was used, of course. It follows that the value of  $\theta$  is 30 times smaller than for human vision. The same formula applies to IR light ( $\lambda > 700$  nm) or UV light ( $\lambda < 400$  nm), with obvious adjustments. The angular resolution would always be limited, so that the appearance of one or two spots on the two first pictures does not prove that visible light was photographed. Moreover, the right spot on the second picture (figure 8.2) reminds us of the red spots H and J. We have thus to expect that the four pictures of the object displayed the same properties: *only optically invisible light was photographed*. The distance is irrelevant, since air is transparent to IR and UV light. Can these facts be explained or are they physically impossible?

### Paquay's assumptions

He strongly believes that the object was a plane and that the pictures were *underexposed*. He attacks even Patrick Ferryn, by stating that “a professional photographer should have known (that) if the exposure time is too short, the film may not have been exposed and there would be nothing to see.” Sorry, even the four brilliant light sources were not photographed and planes that were flying at much higher altitudes produced small photographic traces, although the exposition time was always the same (1/125 s). Only four of the 19 pictures that were taken at Ramillies during that night concerned the object. High flying planes appeared on 7 negatives (5, 6, 7, 14, 15, 18 and 19), while no traces was found on the eight remaining ones. Either these planes were too high or more probably, the camera was not pointed in the right direction. Indeed, the lights were very small for visual perception, but it is sure that some planes were photographed (see figure 9 b, c and d). They were flying at customary high altitudes, while the triangular object passed at about 500 m above the ground.

Although Mr. Paquay had not seen the two first pictures of the object, he declared that nothing did appear on them. His claim is contradicted by figure 7 and 8. He disregarded even the published fact that high flying planes had produced small traces. He reproduced the third picture (figure 8.3), but *assumed* that the witnesses must have seen the four prominent lights that appear there, without verifying at least if they could correspond to the four brilliant light sources of the object (figure 4) or at least the landing lights of the hypothetical Boeing 747. For him, *only visible lights could have been photographed*. The dark adapted human eye may have detected more structural details, of course, but if the object had been a plane, why did

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<sup>16</sup> [http://www.bidorbuy.co.za/item/27037133/CANON\\_FL\\_Mount\\_SUPER\\_KOMURA\\_Sankyo\\_Kohki\\_Uni\\_Auto\\_300mm\\_F5\\_Lens.html](http://www.bidorbuy.co.za/item/27037133/CANON_FL_Mount_SUPER_KOMURA_Sankyo_Kohki_Uni_Auto_300mm_F5_Lens.html)

the witnesses not see structural details and the position lights? They have to be present and sufficiently brilliant to be perceptible by other pilots at rather large distances. Mr. Paquay knew that the illuminated frontal arc appeared also on Ferryn's second drawing (figure 4.b), but he concealed this document, while he treated the witnesses as if they were lying or inventing fables. He claimed, indeed, that the frontal arc was "a pure mental interpretation (pareidolia) that occurs when an observer mentally links points of light that are separate in a dark sky". He insisted: this was an "*illusion*". How could he know? He was not there and can't prove that there were only separate lights. He simply expresses what he believes, but assails the witnesses. If the object had been a Boeing 747 or some other plane, the witnesses should have seen at least the red and green position lights and have heard loud engine noise.

Roger Paquay claims that "the yellowish light seen initially probably was due to *atmospheric refraction*, because after that, the witness referred to it as white light." P. Ferryn answers that the lights of planes, appearing at the horizon in the same direction, did not appear yellowish. From a physical point of view, it is well known that color dispersion by atmospheric refraction would require very special conditions and much greater distances. I recently found that such effects are possible for UFOs, but the essential point is now to find out if it is possible to account for the photographic documents without denying or distorting anything?

### **Explanation by means of IR and UV light**

After the development of the film, Patrick Ferryn immediately saw that the third and fourth photographs of the object did not correspond to what he had seen through the viewfinder. At first, he thought that nothing was on these pictures. In a long phone discussion, we considered and rejected many possibilities, but there remained one logically acceptable solution<sup>17</sup>. The object could have emitted *infrared light* that the witnesses could not see, but that could pass through the lens system, together with visible light, and eventually *erase the latent image*. I discovered the following day that such a process does exist. It is the "Herschel effect", but I wanted to understand how this is possible. Thus, I undertook an extensive study of the scientific literature concerning the physics of photographic processes.

It was fascinating to unravel the secrets of this magnificent machinery. Indeed, the formation of a latent image is a "technical wonder", in the sense of cooperative coincidences. It requires a great number of *minute silver-halide crystals*, dispersed in gelatin. The crystallites of AgX, where X stands for chlorine, bromine or iodine, are arrangements of Ag<sup>+</sup> and X<sup>-</sup> ions. They alternate along three orthogonal directions, but *the silver ions are easily dislodged* by thermal agitation. Some of them are thus in interstitial positions, which leads to temperature dependent "ionic conductivity" when an electric field is applied. Moreover, photons of visible light liberate electrons from X<sup>-</sup> ions. They are excited (from the valence band to the conduction band) and can then easily move inside the crystal. This *internal photoelectric effect* leads under the action of an electric field to high "photoconductivity". Another essential element is that small AgX crystals have many surface defects.

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<sup>17</sup> Meessen, A (1991) : L'effet Herschel, VOB1, SOBEPS, pp. 423-435.

A local excess of  $\text{Ag}^+$  ions leads there to an effective charge  $+e/2$ . A free electron resulting from illumination will thus be attracted to this place. By capturing a free electron of charge  $-e$ , it acquires the charge  $-e/2$  and attracts then a silver ion. The captured  $\text{Ag}^+$  ion restores the initial charge  $+e/2$ , so that another photoelectron and a second  $\text{Ag}^+$  ion can be trapped. These cycles are repeated until all photoelectrons liberated during the exposure time settled somewhere. Finally, we get an ensemble of surface defects, where free electrons and silver ions were alternatively trapped. This yields *small metal grain that contain  $n$  silver atoms*, where  $n$  can have any value between 1 and about 10, but these grains are only numerous and relatively great in those crystallites that were illuminated. They constitute the “latent image”. During the development, the size of the metal grains is enormously increased by means of chemical processes and the resulting silver particles are very efficient light absorbers.

Why can the latent image be *erased by infrared light*? Photons of IR light do not have enough energy to liberate electrons inside  $\text{AgX}$  crystals, but it is sufficient to liberate more weakly bound electrons from silver grains. When such a grain contains  $n$  Ag atoms and has acquired the charge  $-e/2$  by trapping an electron, an IR photon ejects one electron from this structure. It acquires the charge  $+e/2$  and liberates an  $\text{Ag}^+$  ion. This happens spontaneously to reduce the energy. The new charge  $-e/2$  makes this center ready for ejection of another electron. It appears thus that *photons of IR light dismantle what photons of visible light had constructed*.

It is also important to know that the chemical development of the latent image is only possible when the metal grains contain at least 2 or 3 silver atoms. Because of this *threshold*, very small metal grains will not react to chemical development. Since hopping of  $\text{Ag}^+$  ions towards negative surface defects is thermally activated and therefore somewhat retarded, great silver grains are quite numerous when a latent image is formed before a subsequent exposition to IR light. *Simultaneous exposition to visible and IR light, with short exposure times* will only leave very small metal grains that will not react to chemical development. The Herschel effect is then more efficient and can even be complete. This would account for the observed facts.

Roger Paquay claims that my experiment “proves only the existence of the Herschel effect”. No, that would not be necessary, since this had been demonstrated, but only for specially prepared films, used in laboratory experiments<sup>17</sup>. I had thus to check if the Herschel effect could be complete for modern film material and an exposure time of 1/125 s. It is true that we have no direct evidence of an emission of IR light by the triangular object at Ramillies, but we got *convergent indirect evidence*. This is usually sufficient, in science.

Mr. Paquay wants to defend his “plane hypothesis” and tries therefore to show that my experiment was irrelevant, but he makes two important errors. The first one is that he claims that “the Herschel effect is weak. In the laboratory, it required 150 W at 30 cm, without the lens”. He seems to ignore that *glass is transparent to IR* as well as to visible light. I eliminated the lens only to determine at once the effect of IR light for all frequencies of visible light<sup>17</sup>. The lamp was a commercial one, with a heated filament, emitting light with a large (nearly black body) spectrum. I had thus to realize the experiments with *one or two filters*, to eliminate all visible red light and more or less of the close IR light. Mr. Paquay did not mention these filters, but the Herschel effect was demonstrated in spite of them. The second error is that he

believes that *if* the object had emitted sufficiently strong IR light, it should have heated the skin of the witnesses. *They would have felt it.* This applies to IR sources of the heated filament type, since our skin contains C-H and C-N bonds that are most strongly set in vibration at about 1200 nm. IR light of this wavelength is present in sunlight and heat radiation, but IR light begins at 700 nm, and today, we use solid-state LED systems that emit IR in a relatively narrow band at 880 or 940 nm, for instance. Their energy conversion is very efficient and they prevent detection by thermal sensations inside the skin. You can easily verify this by means of television remote controls, while most digital cameras are able to detect this IR light.

Mr. Paquay claimed also that “the Herschel effect hypothesis is not very probable and inconsistent with the data”, since the emission of IR light would require a “*very advanced technology*”. UFOs cannot exist for him, but we might expect that he heard about heat-finding (IR sensitive) missiles, belonging now to conventional military technology. He claims even that the UFO would have to know that “a camera (was) pointed at it” and that the craft cannot project IR light in the direction of the camera “in a time shorter than 1/125 s”. That is not necessary. On the contrary, it would be very logical that an object, flying at low altitude in the darkness of the night, was *exploring the ground by means of IR light and IR cameras.* We do that also to observe animals without disturbing them. The IR light would then be projected on a relatively large region on the ground in the forward direction. This could also be done towards the rear or even all around the object.

Satellites are exploring the Earth with IR cameras, but they don't have to emit IR light. Thermal radiation is sufficient. By the way, this proves that the terrestrial atmosphere is very transparent to IR light. Roger Paquay thinks that military satellites should have observed an IR emitting object, but its radiation had not to be directed towards the sky. Satellites could detect IR light that was scattered by the ground, but they are not observing every spot on Earth, all the time. Even if this happened at Ramillies, how could we know? Paquay's objections to the Herschel effect are futile and astonishingly naïve.

Initially<sup>17</sup>, I tried only to solve the puzzle of *visible light that had not been photographed.* In the meantime, Patrick Ferryn discovered that some minute traces were present on the third and fourth pictures. The film had thus been exposed, but it was still necessary to explain why the latent image formed by optically visible light was not “revealed” by the development process. We solved this puzzle, but the more detailed analysis of the photographs, presented here, made us aware of another important fact. *There were photographic traces that did not correspond to visible light.* This could even apply to all four pictures of the object.

It is thus not sufficient to consider the Herschel effect for visible light. There had to be *other sources*, emitting invisible light, leading to the formation of latent images that were not completely erased by IR light. *UV light would be adequate*, since it is strongly absorbed in AgX crystallites (by exciting electrons from the valence to the conduction band). This process is so efficient that during only 1/125 s, it would already lead to the formation of *greater metal grains than for visible light.* The simultaneous exposition to IR light is then not sufficient to reduce all these grains below the threshold for photographic development. The Herschel effect is operative, but *not complete.*

Can the presence of UV light be justified? Yes. This is very easy, once we have realized that UFO propulsion calls for *pulsed ionization* of the ambient air, so that an oscillating EM field can efficiently act on the resulting charged particles. The direction of the applied forces will change, indeed, according to the sign of the applied electric and magnetic fields. The ionization has thus to be pulsed at the adequate rate, but the charged particles disappear by recombination. Free electrons will be accelerated, however, and become able to excite molecules of atmospheric air. Their de-excitation will mainly lead to an *emission of UV light*. This yields strong photographic traces, as demonstrated by our analysis of the Petit-Rechain color slide<sup>14</sup>.

The model of Pulsed EM Propulsion allows also for an emission of UV light at different places, with different intensities *at different instants*. The sources of UV light did not have to coincide with those of visible light, of course, and cascades of de-excitation processes can be somewhat different, so that this could lead sometimes to red traces. Moreover, UV as well as IR light would have the same effects *when the object was still far away*, since the propagation is always rectilinear and the terrestrial atmosphere is transparent to IR and UV light. It is true that UV light is absorbed by glass, but usually not for UV that is close to the limit of the visible spectrum, especially for good quality lenses<sup>14</sup>. We learned thus something new that strengthens our previous arguments!

I exchanged already some emails with Mr. Paquay concerning the pictures taken at Ramillies (on September 8, October 9 and December 8, 2006). I corrected an error (by a factor 10) that he made in applying a law of geometrical optics and another error concerning the possible sources of IR light. Nevertheless, he presented (on August 24, 2010) nearly the same text on EuroUfoNet than on SUNlite<sup>2</sup>. I did not react, since I was busy with *research about the ball lightning phenomenon*. My momentary silence could have encouraged Mr. Paquay to think that he had succeeded in discrediting the Belgian wave and the photographic evidence of Ramillies pictures. Sorry, this is not the case.

It may be interesting to note that Ball Lightning (BL) is also a very mysterious phenomenon. It is different from the UFO phenomenon, but in both cases, we get *plasma effects in air at normal atmospheric pressure*. Any clarification that can be achieved on one side could thus be useful on the other side. Actually, I could develop a theory that explains all known properties of the BL phenomenon, even those that seem to be paradoxical (ISBL-10). It is interesting to note that there were also “skeptics” who tried to solve this problem by simply *negating the reality* of BL. They proposed that it has to be a visual after-effect of ordinary lightning or that it results from an action of the magnetic field of a lightning stroke on the brain. These claims prove, however, that they did not even care to study the observed facts. There are thousands of reports and even statistical laws concerning the very remarkable properties of BL.

It is useful and even necessary to mention that in 2006, Mr. Paquay asked Patrick Ferryn to get the negatives of the Ramillies photos. This was impossible, however, since they were then in Paris, for examination by the late *Professor André Marion* of the “Institut d’Optique”. When they came back, Roger Paquay did not request them anymore and his negativistic attitudes did not favor further contacts, but everyone can now judge himself by means of the data that we presented and analyzed here.

## Complementary photographic tests

We have proven in various ways that the object, observed and photographed at Ramillies, could not be a Boeing 747 or some other plane. Nevertheless, we wanted to verify Paquay's "plane hypothesis" in a more direct way. *How would planes visually appear and be photographed, if they were flying at low altitudes?* In February 2011, Patrick Ferryn went thus to a place in Kraainem that is only 3 km away from a landing strip of Brussels airport. He was accompanied by *Leon Brenig*, physicist and professor at the Free University of Brussels. They observed arriving planes, preparing to land, and P. Ferryn took there a set of pictures at about 45°. He used the same camera, the same type of film (Fujicolor 1600 ASA) and the same exposure time (1/125 s) as in Ramillies. The sky was also cloudless and completely dark.

The first essential conclusion was that it was practically impossible to see the external circle of the unpolished part of the viewfinder, even for planes that had lit their landing lights. This confirms that in Ramillies, the object carried not only separate lights. *The frontal arc was luminous* and visible in the viewfinder up to its edges (figures 4.a and 4.b). This was not an illusion, as Roger Paquay dared to claim. No plane displayed such an illuminated arc, of course. We show only two negatives and a magnified excerpt of another negative (figure 12 and 13), since they are representative of the ensemble of pictures, taken that evening

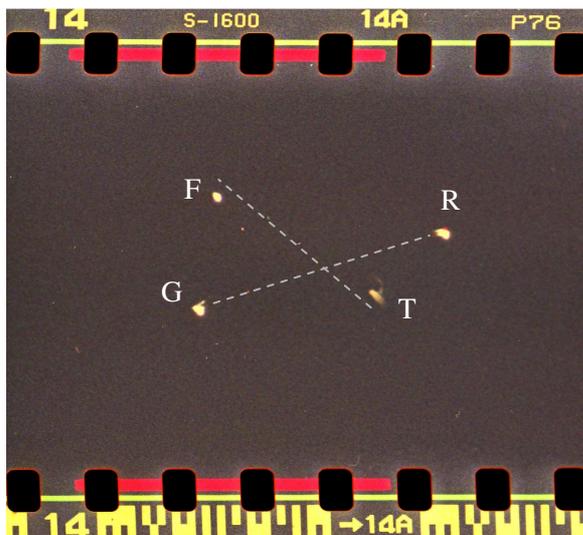


Fig.12: A Boeing 747-300 or 400.

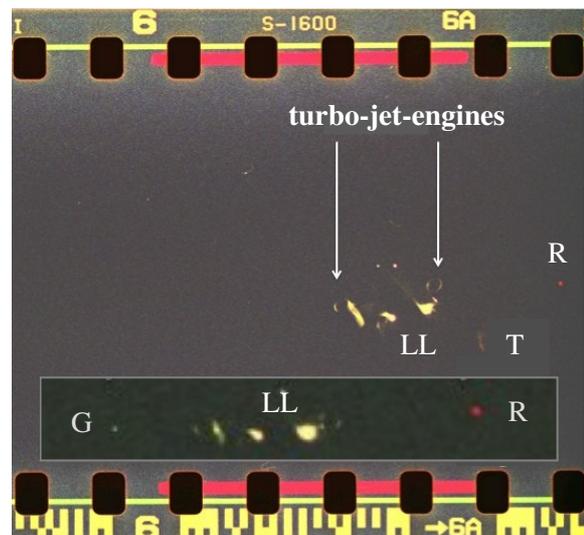


Fig.13: Landing lights and structures

The positive copy of negative 14 (figure 12) shows an arriving Boeing 747 that had not yet lit its landing lights. It was not possible to determine if it was a B 747-300 or B 747-400. It was photographed from below at about 45°, but at an instant where the strobe lights at the wing-tips were more powerful than the red and green lights. The red light is always situated on the left side of the axis of the plane, when one looks along the flight direction, like the pilot (figure 5). It is only slightly visible on this picture. Actually, *all characteristic structural elements of the plane were visible*. The logo on the tail (T) appeared even on the photograph, as well the front light (F), fixed on the lowered landing gear. The lights were white, but they appear yellowish on the 20-year-old film that Patrick Ferryn had saved.

On the negative, the length RG is 15.8 mm (since 8 complete holes correspond to the length of the negative, i.e. 36 mm), but the distance between the wingtips was shortened by projection. If this line had been parallel to the plane of the negative, the width of the image would be  $w \approx 16.0$  mm. Since the picture was taken with a setting at infinity, the distance between the negative and the optical center of the lens system was  $d = 300$  mm. We conclude that the size S or wingspan of this plane and the distance D between it and the camera were such that  $S/D = w/d \approx 0,053$ . Since the size  $S \approx 60$  m for a B 747-300 and  $S = 65$  m for a B 747-400, it follows that the distance  $D \approx 1132$  m or 1226 m. At  $45^\circ$ , the altitude was then 800 or 867 m. This plane was thus higher than the triangular object at Ramillies. Nevertheless, the red and green position lights, as well as other isolated lights and *all characteristic elements of the plane were clearly visible by the naked eye*. Paquay's assumption that the picture had to be underexposed is also not correct.

When the landing lights (LL) are on, even the front part of the closest turbo-jet engines can be photographed (figure 13). It should be noted that the landing lights are situated at different places for different planes. The red wingtip light (R) is also visible on negative 6, but not the green one. However, the green position light appeared on many other pictures, as shown by the insert for the negative 5. This photo corresponds to an *Airbus A320*, where  $S = 34$  m. It arrived head-on, but its image is magnified on figure 13. On the negative, the width was  $w = 8.41$  mm. We can thus calculate the distance  $D = S.d/w = 1210$  m. At  $45^\circ$ , the altitude of this plane was close to 850 m and thus also higher than the object at Ramillies, but the red and green lights at the wingtips appeared on the picture.

We have to stress the fact that Professor Léon Brenig *saw also the characteristic elements of these planes*. This applies not only to the steady red and green position lights or to blinking lights and the illuminated tail logo, but also to cabin and passenger windows, which did not appear on the photos. Even the front part of the fuselage, the engines and parts of the landing gear were clearly discernable when they were illuminated by landing lights. These photographically documented tests confirm that *the object of Ramillies was not a plane*.

## Conclusions

The articles of Jean-Michel Abrassart<sup>1</sup> and Roger Paquay<sup>2</sup> are very instructive and even of some historical interest, since they will document how so-called "skeptics" were still treating the UFO phenomenon in 2010. *They distort the facts*, to adapt them to their beliefs or preconceptions. They drop important elements for the cases they discuss and don't consider a large ensemble of observed facts, defining the UFO problem. Moreover, *they treat the witnesses and investigators as if they were liars or fools*.

Jean-Michel Abrassart did that for the beginning of the Belgian wave, since he claimed that the two gendarmes - who attentively observed an unconventional flying object during more than two hours - are not trustworthy. He stated even that they have "*fantasy-prone personalities*" and called them "*schizotypal*". A psychologist who qualifies persons in such a way,

without any thorough examination and without even having talked with them, violates all professional ethics. This is not simply a matter of freedom of opinion or speech. Mr. Abrassart does not consider the contents of numerous witness accounts and study their technical or scientific implications in an objective and rational way. He simply postulates that *all* UFO observations have to result from perceptual errors or imagination, facilitated by rumor propagation. He cannot and could never prove that this is true. Actually, he knew that his statement would be false, if it failed for some particular case. That's why he tried to show that the beginning of the Belgian wave is *compatible* with the psychosocial hypothesis.

We tested the validity of his “psychosocial hypothesis” in a rational way, by applying the usual scientific procedure. It is sufficient to consider the *logical consequences* of the proposed hypothesis and to confront them with actually observed facts. The mechanism of psychosocial contagion necessarily implies an evolution of the total number of reported observations that *cannot be fitted* to the statistical data for the Belgian wave. The hypothesis of an accumulation of erroneous reports, because of psychosocial contagion and rumor spreading is *patently contradicted*, in particular because of the sudden and very massive beginning of the Belgian wave. This is confirmed by its later evolution and by the fact that so many witnesses consistently reported a new type of UFOs. This argument is not biased by ideology, beliefs or preconceptions, but results from mathematical reasoning, book-keeping and interrogation of independent witnesses by many investigators. Other claims of Jean-Michel Abrassart were also contrary to observed facts and detailed reports. *The psychosocial hypothesis can thus not account for the Belgian wave* and all UFO observations do not result from errors or illusions!

Roger Paquay followed a different path, but his aim was also to negate the reality of the UFO phenomenon. He tried to attack the observations made at Ramillies and the associated photographic documents. He knew that in science, the validity of ideas must be justified by confronting them with actually observed facts, but *he does not want to accept facts that are contrary to his preconceptions or beliefs*. Thus, we presented and examined these facts in a much more detailed way. It appeared that the visual and acoustical observations made at Ramillies cannot be negated or distorted as M. Paquay did. His “plane hypothesis” and his assumption that the photos were “underexposed” are flatly contradicted by a series of controllable facts. It became also obvious that he concealed some facts that would have contradicted his ideas. This happened in particular for figure 4.b.

We provided also additional information, demonstrating that the object seen and photographed at Ramillies *was not a Boeing 747 or some other conventional aircraft*. The new analysis of all photographic documents revealed even that they are more interesting and instructive than we had realized until now. Indeed, we had only tried to solve the paradox that *visible light had been photographed, but left no traces*. We could explain this fact by means of the Herschel effect<sup>17</sup> and this was done in a scientific way, by considering *why* IR light can erase the latent image that had to be formed by visible light. We had experimentally verified that this process is effective for the film material and the short exposure time, used at Ramillies. Even the presence of IR was justified, as being useful for *observing the ground* when the object was flying over the countryside at low altitude in the darkness of the night. Moreover,

this IR light can be emitted in a narrow spectral band, so that it is not detected by heat sensations in our skin, as this would happen for traditional sources of IR light.

The enlarged analysis of the available data demonstrated that *there were also traces of light that was not visible*. This could also be explained by means of the Herschel effect, since UV light produces a more robust latent image. The required UV light results from pulsed ionization, belonging to the propulsion system. This study strengthens thus the idea that the triangular object of Ramillies was not a conventional aircraft and *confirms that UFO propulsion involves plasma effects*. Thank you, Mr. Paquay. Discussions can help to clarify ideas.

When Patrick Ferryn photographed the arriving object at about 45°, he made two comparisons that are equivalent to measurements. He determined *the angular size of the object* by means of the great circle, visible in his viewfinder. Moreover, he verified that a setting at infinity was sufficient to get *a sharp image*. The first element determined the ratio of the size S of the object and its distance D from the camera ( $S/D \approx 0.04$ ). The second element provided the lowest acceptable values for the distance and altitude of the object. It was compatible with the estimations of the witnesses, based on seeing the arriving object. It was most probably flying at an altitude of about *500 m above the ground*. If it had been a Boeing 747, the witnesses would surely have heard engine noise and have seen at least the red and green position lights, as well as the blinking lights. Its speed would necessarily be higher than 100 to 150 km/h, assessed by the witnesses. Paquay's hypotheses or claims are not correct.

Complementary tests proved that many structural details of planes, flying at altitudes of about 800 m near Brussels airport, were *clearly visible* with the naked eye. Some of them appeared even on photographs. This was different in Ramillies, although the object was observed with powerful binoculars and through the viewfinder, coupled to a telephoto lens of 300 mm focal distance. Paquay's statement that the presence of a large continuous illuminated arc simply was an "illusion" is unfounded and unacceptable. The main conclusion is that *so-called skeptics proved once again that they are not skeptical enough to be self-critical*.

The author thanks Patrick Ferryn for providing all necessary photographic documents and complementary information, General De Brouwer for comments, Jean-Marc Wattecamps for calling attention on the SUNlite articles and for some specific hints, as well as my colleague Pr. Léon Brenig for witnessing the tests near Brussels airport.