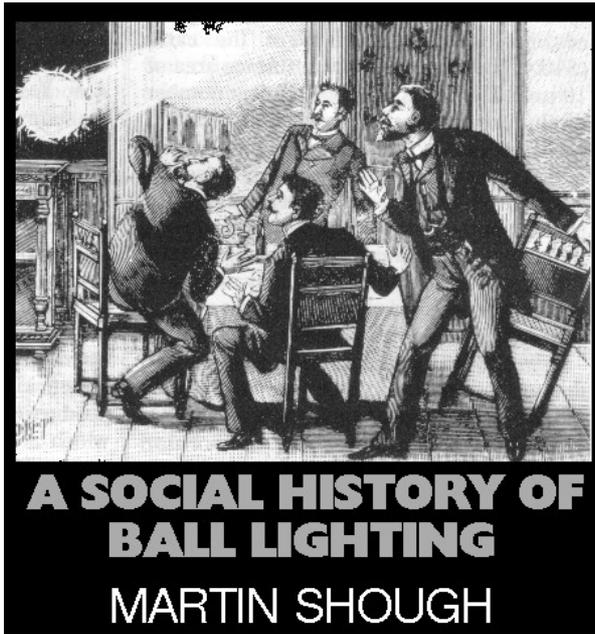


A Social History of Ball Lightning



Martin L. Shough



Originally published in *Magonia*¹

Back in 1967 the astronomer Gerard Kuiper dismissed a 10% residue of unexplained “UFO” reports with a wave of the hand, thinking it “reasonable to assume” that this testimony must be “so distorted or incomplete as to defy all analysis”. Inconsistently, however, he advocated a major Defence Department/FAA programme to research “very rare natural phenomena” such as ball lightning. Why? Because “no adequate data yet exist of ball lightning”, even though its existence had been “known for at least a century”.(1)

This raises a very interesting question: How was it possible for science to “know” anything with “no adequate data”? The answer is that science did not “know”, and as a whole declined to have anything to do with such stories “for at least a century”. Unpicking some of the reason and unreason behind this curious condition of scientific double-think is instructive.

Logically and evidentially speaking, there is

¹ Shough, M., 'A Social History of Ball Lightning', *Magonia; Interpreting Contemporary Vision & Belief*, #81, May 2003, pp.3 – 8.

<http://magonia.haaan.com/2010/balllightning>

precious little difference between a “very rare natural phenomenon” which is unexplained and an unexplained phenomenon characterised as a “UFO”. Even more subtle is the distinction sometimes drawn between “a unique natural phenomenon never before observed” and a UFO. Because there will always be unique combinations of natural phenomena never before observed (in practice), how is a distinction to be supported between such effects and UFOs?

One approach to this difficulty is to abandon hope of fording any distinction. But why does this collapsing of the phenomenological distinction not translate into a collapsing of the epistemological distinction? How can there then be “unexplained natural phenomena” which we say are allowed to be distinct from mere combinations of natural phenomena never before observed, and “unidentified flying objects” which are not allowed to be distinct? Is this classification a matter of sense or mere semantics?

The difference appears in practice to arise because there are two levels of “explanation” whose meanings are weighted differently in the two cases. There is a level of detailed physical understanding, i.e. a link-by-link chain of observed processes accurately modelled in theory; and there is a level of conceptual classification. When either of these levels is satisfied we experience a sense of accounting, and when both are satisfied there is a closure which we experience as “explanation”. Neither in the case of “unknown natural phenomenon” nor in the case of “unidentified flying object” is the level of detailed physical understanding satisfied, by definition; the difference enters in the conceptual classification and has to do almost exclusively with the way these ideas are emotionally connoted. Specifically, it is the mechanistic aura of the former and the animistic aura of the latter that sets them apart. The history of science associates mechanistic models with productive explanations, animistic models with backward-looking resistance to explanations. The ETH and its analogues are for practical purposes regarded as examples of relict primitive animism.

Ball lightning (BL) emerges with some sense of “explanation” out of the primary category of “rare and unexplained phenomena” inversely as it replaces (these days) animistic with mechanistic connotations. The collective term is emotionally neutral, the terms “ball lightning” and “UFO” are not individually so, and parity is broken; a coupled particle-pair of overall neutral charges, so to speak, dissociated into two particles of opposite charge which fly in different directions in the social field potential. The positive “ball lightning” particle is eventually scavenged by surrounding atoms of incomplete theory; the “UFO” particle is left to wander, a free negative ion in a lonely search for an appropriate – and approbatory – theory with which to recombine.

It is a pragmatic fact that an animistically connoted interpretation of an unexplained phenomenon is not supported by the usual social-institutional legitimations of science as a valid “explanation”. This is quite separate from the question of evidence.

lightning experts declared that their long surveys with panoramic cameras had never so much as caught a glimpse of anything like ball lightning; and anyway, darting, drifting spheres of light were physically impossible

It was also in 1967 that the distinguished British physicist and erstwhile intelligence mandarin R. V. Jones opined that most witnesses in cases which could not be explained had probably made “substantial errors”, and that “flying saucers” were therefore almost certainly a “fantasy”; whereas the same corpus of “substantial errors” allowed him to conclude that “an as yet unrecognised natural phenomenon” was

“distinctly possible”. In illustration of this he noted that BL “has long been both asserted and disputed” and could perhaps be a similar sort of case. But he objected that unexplained UFO cases, in contradistinction to BL, were never reported by scientifically trained observers, finally declaring that “little short of a tangible relic would dispel my scepticism of flying saucers.” (2)

The error of fact here (a great many unexplained UFO reports have been made by scientifically trained, indeed scientifically illustrious, observers) seems almost negligible beside the tangle of category mistakes, non sequiturs and imported assumptions in which it is embedded.

Exactly similar objections continue to be heard regularly as the 21st century dawns, and it is fascinating to be able to record that it has all been said before. Respected authorities such as Humphreys, Hagenguth and Berger in the 1930s, '40s, '50s and even into the '60s regularly dismissed BL in much the same language.

Of course no one has ever recovered a “tangible relic” of ball lightning; photographs and films have all been refuted by these sceptics as hoaxes, lens flares, streetlights, fireworks and so forth; eyewitnesses were regarded as an unreliable source of data, and were said to have misreported ordinary lightning, burning debris or retinal afterimages; reports of burns and damage were said to be due to ordinary lightning strikes, unrelated fires or hoaxes; there were no concrete data in new reports and “fantastic stories” from the past were hardly scientific evidence; reports rarely seemed to be made by scientifically trained observers, often by peasants, labourers and other credulous laypersons; lightning experts declared that their long surveys with panoramic cameras had never so much as caught a glimpse of anything like ball lightning; and anyway, darting, drifting spheres of light were physically impossible, as no small volume of atmospheric gases could sustain the reported energies of the balls for even a moment by combustion or ionization, let alone move around for many seconds or even minutes against the wind, pass down chimneys and squeeze through keyholes. In

short the authoritatively sanctioned view, shared by the dominant majority, was that the whole thing was utter nonsense, belonging with tales of sulphurous demons and sea serpents.

Then along came the early days of research into nuclear fusion, and the concept of electromagnetic containment of hot plasmas. Lightning channels were such plasmas, confined in one dimension: could stable plasmas, confined in three dimensions, form in nature? The idea was no more than an analogy, but one which prompted a few physicists to look again at the reports. It turned out that self-confinement in the free atmosphere by means of electromagnetic forces alone would not work, and realistic energy densities could not be found; but it was a start, and gradually more people began to talk as though the reports were not quite so wild after all.

Perhaps, suggested Peter Kapitza in 1955, such a plasma could be externally fed by the energy of intense, high-frequency radio fields associated with storms? No such radio fields were discovered, and calculations showed that the energies available would be too small to support a lightning ball in this way, but the principle was a breakthrough. There were still no unimpeachable films, photographs or instrumental data; no "baby Kugelblitz" had been captured and analysed. But suddenly it was no longer preposterous to think of lightning balls floating down chimneys to terrorise people in their kitchens, for example, because the radio energy sustaining the ball would tend to be ducted as in a wave-guide.

At about this time military scientists began to conceive the idea of an energy weapon based on plasmoid projectiles, synthetic thunderbolts which would be capable of vapourizing the toughest armour, and research began during the next few years to generate controlled "lightning" balls in the laboratory. By the early 'sixties, the Berkeley Radiation Laboratory of the University of California had developed a prototype plasma-weapon that expelled annular deuterium plasmoids at impressive velocity. It was thought that military applications of such weapons might be found in space, either in "killer" satellites

for disabling the new generation of spy satellites or as defences against ICBMs. The US Air Force Office of Scientific Research (AFOSR) began funding expensive secret programmes which were mirrored by similar efforts in the Soviet Union.

Meanwhile other theories of natural BL came and went, such as cosmic rays focussed by the electric fields in thunderclouds. There was a quantum-mechanical model involving a cold, dense electron gas self-confined by exchange forces, and even one which proposed spontaneous thermonuclear reactions: An unsuccessful, but nonetheless remarkable, efflorescence of ingenuity springing from what until recently had been (and to some still was) so much mere "humbug". Slowly the barometer of professional opinion continued to swing, so that despite a notable paucity of concrete evidence and an observational database inevitably corrupted by misinterpretations, hoaxes and old-wives' tales, the once-derided "ball lightning" began to exist in the very practical sense that there was a widespread and growing consensus. At last scientists could start doing science.

Then in 1964, working on a grant from AFOSR administered through the Air Force Cambridge Research Laboratories (AFCRL), two physicists at Yeshiva University in New York built on Kapitza's idea and came up with the first nearly-workable theory based on dielectric inhomogeneities in d.c electrical fields which remained the basis of further developments for many years. Now, thanks to the thirst for militarily useful ideas and the efforts of Finkelstein and Rubenstein, it was possible to give mathematical form to a model which explained many of the shapes, colours, movements, odours, noises, temperatures and durations which had been reported and scorned for generations. Spheroidal and ellipsoidal forms turned out to be the only stable solutions of the field equation. These plasma forms could also be shown to behave somewhat like elastic solids, which explained the oft-reported "bouncing" motion of lightning balls.

Later refinements based on low-frequency a.c. fields, such as have been observed in association with lightning, were developed by Edmond Dewan and others working at

AFCRL.(3) This explained the reported persistence of BL indoors by getting round the problem that in d.c. fields even non-metallic building structures tended to behave like conductive Faraday Cages. The fit between theory and observation was improving, and although a completely satisfactory theory remained (and still remains) to be worked out, it was at last permissible for lightning balls to behave much as, in fact, they had always behaved: bouncing, swooping, hovering, “investigating” chimneys and rooms, “pursuing” objects and people, sneaking through windows, keyholes and drainpipes.

By this time many physicists had begun exercising some creative hindsight, and history, as always, was written by the victors. Ball lightning began to be cited as the sort of novel phenomenon that objective science was always ready to embrace, provided only that there was good, reliable evidence. One began to hear about the fine qualifications of witnesses who had previously been ignored and derided.

In 1967 R V. Jones was now able to point out that BL had been reported by no less an observer than a former Deputy Director of the UK Meteorological Office, although the worthy Mr. Durward’s two separate experiences with ball lightning back in 1934 and 1938 had singularly failed to impress the scientific world at the time, and years later had been dismissed by Swiss lightning expert K. Berger as one of those unevaluable “fantastic stories from the past”. (4)

University of California physicist Leonard Loeb now felt secure enough to pronounce that lightning balls “have been too often seen and described by competent observers to be classed with flying saucers. They are not illusions.” (5) And aviation journalist Philip Klass confidently explained in articles in 1966 (6,7), and in a book two years later (8), that many puzzling reports of so-called UFOs could in fact now be explained as ball lightning.

Besides having unimpeachable witnesses, ball lightning could boast quantitative data, too. Back in 1936 a Mr. W. Morris, a resident of Dorstone, near Ross-on Wye, Herefordshire, reported that a fireball “the size of a large

orange” had descended into his water butt, which he said had contained “about four gallons of water”. The water boiled for “several minutes” and even after twenty minutes was too hot to touch. Few people took much notice of Mr. Morris in 1936, but this feast of observational data has been richly savoured in more recent years. In 1966 the University of Colorado was contracted by the US Air Force to assemble a Report which would be a grand epitaph to its 20-year role as UFO report collection centre for the American public, a study known as the Condon Report about which much has no doubt been heard in these pages. Not surprisingly BL made its appearance therein and Mr. Morris’s immortal fame was once more celebrated.

Martin D. Altschuler, a solar physicist then working at the National Center for Atmospheric Research, prefaced his discussion of UFOs and atmospheric electricity in the Condon Report by noting that BL “although witnessed and reported many times in the past, has only with difficulty been established as a genuine scientific problem. Years of patient effort,” explained Altschuler, “were required to distinguish ball lightning from retinal after-images and optical illusions.” One may doubt that the witnesses, after years of patient and thankless reporting, would much appreciate the “effort” of science in this regard. But it is certainly true that years of patient effort have since been devoted to theoretical analysis – most of it based on the world-famous 60-year-old rain barrel observation of Mr. Morris.

Describing This antique report as a “singular” piece of evidence upon which much research has focused, Altschuler proceeds to assume that the initial water temperature in Mr. Morris’s barrel was 20C, that 1 litre of water evaporated from the barrel, and that the remaining 17 litres was raised to 90C, concluding that a plasma 10 cm in diameter must have had an energy density of 5×10^9 joule/m, an order of magnitude greater than the energy density of an equivalent volume of singly-ionised air. Much depends, says Altschuler, on reliable energy estimates of such fireballs, and although these data have serious implications for some theories of ball lightning formation there are sufficient well-documented

reports implying very high energy densities to “make the water barrel report very believable”. (9) It may be doubted whether water standing outside in a barrel in Herefordshire in October would be at 20C, but never mind; one is impressed by how much may be inferred from so little, and is led to wonder in turn why, so consistently, nothing whatsoever can be inferred from reports of other aerial phenomena currently languishing in the holding category of “unidentified flying objects”.

The Condon Report characteristically stopped thinking about any such story the moment that it became evident that it could not be explained, appending the conclusion that it “cannot be verified or refuted” or that the lack of tangible evidence rendered it “of no probative value”. This has been the extent of scientific ingenuity for fifty years and is plainly less than helpful. True, certain promising “unknowns” were considered at a special conference of atmospheric and plasma physicists to see if they had any relevance to the study of BL and related phenomena. The general conclusion was that they probably did not, which of course put a stop to curiosity. “All participants agreed,” records Altschuler, “that the UFO cases presented contained insufficient data for a definitive scientific conclusion.” End of story. Oh, but Altschuler invited people to write or `phone in with any sightings of ball lightning.



The Condon Report made space for Gerard Kuiper to peer down his nose at “this odd and discouraging assemblage of data”, an ill-perfumed rabble beside the seemly decorum of BL reports;

“The size of an orange”? “Several minutes”? Surely we can do better than this. The amount of latent information in large numbers of still-unexplained UFO reports is colossal by comparison. Perhaps some of the phenomena would turn out to be relatives of BL, and perhaps some would not, but certainly we will never know if we exert disproportionate negative pressure on efforts to find out.

The Condon Report made space for Gerard Kuiper to peer down his nose at “this odd and discouraging assemblage of data”, an ill-perfumed rabble beside the seemly decorum of BL reports; and made space for R. V. Jones to perpetuate the dual myth that BL gained scientific sanctity due to reports from trained observers, whereas “flying saucers” were sadly less fortunate in being so often sponsored by hoaxers, liars, the deranged and the merely dull, never by wholly reliable people. Of course, added Jones as a rider, it was quite possible that the tiny residue of unexplained reports from those few who were somewhat less dull could easily have been ... yes, misinterpretations of ball lightning.

Now every conscientious sceptical investigator would recognise that there are some intriguing reports among that fluctuating residue of “unknowns” that represents the “evidence for unidentified flying objects”. Simple logic says that a conscientious response must allow it to be possible that remarkable phenomena are observed. However, he or she might well feel that “intriguing” was slim evidence on which to found an animistic theory of extraterrestrial incursions. This is a very honourable position to take. But it is a difficult position to maintain, under tension between the opposite lazy equilibria of “debunking” and “believing”.

Take the “Lakenheath-Bentwaters case”, a famous *cause celebre*. It remains a fascinating microcosm of the whole debate nearly half a century after the first investigation, still unresolved despite a huge amount of new information. By this I mean, of course, that it isn’t resolved either as a simple and well-understood event or as a spaceship. The most one ought to say about the “rare and unexplained phenomena” in this case is that radar-reflective somethings in the atmosphere probably behaved in ways that stretch the theory developed to explain other radar reflective somethings in the atmosphere. That isn’t to say much. For most people it isn’t enough. And because the information needed to explain in terms of link-by-link physical processes is lacking we tend to skip to the explanation-level of conceptual classification. On this level the issues become cathected and “important”, primitively polarised between mechanistic and animistic tendencies, and here the psychological desire for closure pulls us in the direction of incredulity or of credulity. Some give in to their sense of wonder, others to their sense of disgust. If it were a report of “ball lightning” everyone can see that the debate would have a wholly different complexion: Enchantment would not be embattled with its self-generated alter ego Disenchantment. The problem would be able to remain on the level of “physical process” explanation because the “conceptual classification” issue has been resolved in the act of naming.

This sounds such an attractive proposition that one is tempted to jump in on the side of sceptics, because surely one is saying that without the animistic ETH and similar tosh we could get on with some science. But this is not correct reasoning. The success of this strategy in the case of BL does not guarantee that it will translate to the case of UFOs despite the centuries of momentum behind the success of naturalistic theories everywhere else in physics. The fact is that today extraterrestrial intelligence (and a boggling array of hyperspatial analogues) is a naturalistic concept with wide currency in physics. Like the principle of self-contained stable plasmas in the free atmosphere in 1930, it isn’t yet a valid explanation of anything. But it could be.

This is the door which somehow has to be held open against the pressure of what feels like irresistible improbability.

It is understandable – even, in some way, commendable – that an incompatible idea transplanted into the body of science risks triggering a sort of psychological tissue rejection. Modern minds are accustomed to classifying and systematising the world around them in a more focused way than “natural philosophers” were once wont to; the scientific trophy cabinet is packed to the doors, and there is little room today for the sort of vague tolerance that in centuries past might have been happy to call these events “tropospheric pseudo-meteors” and leave them be. Today we either understand phenomena (broadly speaking), or we are in the process of polishing up our understanding, or else we are clearing them out with all the uppish vigour of a house-proud hostess appalled by the discovery of a piece of cheap china behind the silverware.

Tropospheric pseudometeorites? If such a classification had any sensible scientific meaning then we would no doubt chorus, “Ah yes, of course!” and it would no longer be necessary to whinge on about the fallibility of human perception, the absence of material evidence, of films and instrument readings, and people could simply get on with the job. The incident would suddenly be snatched from the fuscatory darkness into the light of Science, who would smoothly claim it for her own and build an academic discipline of Tropospheric Pseudometeoritics.

But then isn’t this the point? There is no such discipline precisely because there is no proof that it would have anything to study, and there can be neither proof nor progress without hard data. How can there be a science of memories, probabilities, paper histories, hunches and inferences? Okay, maybe something did leave its mark momentarily on a few human retinas in 1956, and maybe its radar echoes did leave their glowing traces for a few seconds on the tube phosphor of a few radar scopes. But how can we do research without something to get our hands on, something that absolutely cannot be gainsaid? Maybe something was there, and maybe not; but even if it was, it has long gone and we don’t know what it meant.

And perhaps we never will. But by a serendipitous quirk of fate, on August 12 that year – about 9.00 am GMT on the very day before our “UFO” reportedly pursued a jet over Lakenheath – an instructive and analogous event occurred 1800 miles away in the skies over the Lower Tambovsk region of what was then the USSR. A glowing reddish-orange sphere approached a commercial aircraft flying near thunderclouds at 10,000 feet. It was ahead of the aircraft off the port side and closing rapidly.

Watched by three aircrew from the flight deck it passed close by the nose then suddenly swerved back around the fuselage and impacted the port propellor with a flash of light and an audible explosion that rocked the aircraft. Upon landing nothing, reportedly, was found except a very small fused area at the tip of one propellor blade and a small patch of soot that could be wiped off with a finger. Doubtless some sceptical meteorologists at the time explained that a smudge of soot was not really proof of anything, that it was probably caused by a minor lightning strike of the usual kind and that the witnesses had mistaken retinal afterimages of a lightning flash for a swerving ball of fire.

Now, I say all this happened. Possibly you even believe me. And why not? Today this story appears in scholarly discussions of BL, cited without question not as something that happened “reportedly” or “allegedly” but as a matter of historical fact. (7,8) You maybe feel an urge to go and interview ageing witnesses or translate yellowing maintenance logs scribbled in Cyrillic pencil. But I doubt it. And yet is this mysterious aerial phenomenon really much different from the phenomena we are considering here? Is that ambiguous mark which was “reportedly” found on the tip of a long-scraped Soviet propeller blade forty-five years ago, and which no one reading this has ever touched or seen, so very much more “real” than the luminous marks which appeared on US and British radar screens some hours later?

One’s instinct is to reply: “Ah, but we could have touched and measured that mark ourselves, had we been there, and someone

did. That it was not us is merely an historical accident.” Indeed. And we could have observed and measured the blips at Lakenheath, Bentwaters and Neatishead, too, had we been there; we could have flown that Venom, had we been there; maybe we could have seen that blur of light speed over the Bentwaters airfield, and seen the erratic manoeuvres of other lights over Lakenheath, had we been there. A number of people were there, and they say they did.

This is not to conclude that the Lakenheath/Bentwaters objects were ball lightning. There are certainly epistemological parallels to be drawn – and, it may be, physical ones too. But in comparison with many of the extrovert traits of so-called ball lightning, the “UFOs” we are concerned with seem relatively staid. None of them entered an aircraft cockpit to burn off the pilot’s eyebrows, for example, or inexplicably undid all the metal screws in a piece of telegraph apparatus, or spiralled around a domestic kitchen before carrying several curing hams away with it up the chimney and scattering them in the street – all of which have been earnestly and “credibly” reported by BL witnesses.

Instead we have to account for luminous bodies in generally linear (sometimes rectilinear) motion through the sky, one of which behaved as though drawn towards an intercepting aircraft. Why should this be so very preposterous? The luminous something that reportedly overflew Bentwaters did so at tremendous speed, but not faster than a charge might track along a conductor for instance. And the Lakenheath primary object behaved possibly in a capricious but not in a supernatural fashion. There is no reason to suppose that these behaviours could not be understood with a little effort, and it may be that the physics of BL is a good point from which to start.

One tactical reason is that calling a phenomenon “ball lightning” simplifies an agonisingly raddled epistemology – it does wonders for witness credibility. When scientists cite dramatic tales of BL they don’t apply forensic chain-of-evidence rules with the same pedantic rigour that they are wont to insist on in the case of UFO reports. This is not

because the eye-witness evidence they're citing is of a different character; it's because the existence of a consensus allows them to lighten up and start to think positively instead of curling up and thinking negatively of what they stand to lose.

In a letter John Rimmer suggests: "Misinterpretations, radical or otherwise, may well be as significant a part of BL sightings as they are of UFO reports. However, as science has established a comfortable phenomenological niche for such reports, perhaps the impetus to identify and eliminate misinterpretations from the data base is not as strong amongst BL researchers?"

This is very possibly true, and it would be interesting to suggest to BL physicists that they should study UFO research with a view to sharpening up their attitude to their data. What, I wonder, would they take from it? What would they make of the polarisation of psycho-social and physicalistic assumptions in this field? Would they be persuaded that the new physics they've begun to invent to explain BL was unnecessary? Would they conclude that if only they'd known about the Robertsonian RMP (Radical Misperception) theory earlier then they needn't have bothered?

Probably not, because they and RMP are old 'friends'. They've grown apart from it, and are embarrassed by that immature liaison. BL physicists don't really like to be reminded of the fact that RMP was the default position of science with respect to BL ever since it was first recognised. A century ago, or less, the suggestion that there was a genuine atmospheric phenomenon called BL – no matter how corrupted its database with misperceptions – would have been heretically *avante garde*. Then, there was no BL at all in the view of the orthodoxy of the day, and all reports of it were explained away by a Victorian equivalent of the RMP theory. If the present orthodoxy refers to this fact it tends to be in language that celebrates the success of scientific hard work, of which in fairness there has been a great deal. But I never hear an apology to the witnesses. I never hear an admission of any failing. Of course the "blame" lies at the door of a vanished – or

vanishing – era and one cannot take responsibility for the past.

Still, this loud silence does to me speak of a lesson not learned. The lesson of BL for ufology is twofold. Firstly, that one needs to be careful about drawing a general conclusion from the fact that a theory of misperception is plausible in general and demonstrable in particular cases. A catalogue of resolved cases is not a theory. As John Rimmer points out: "If BL, like UFOs, only exists via eyewitness reports, it seems to me that the general scientific acceptance it has received, vis-a-vis UFO reports, is probably unjustified, and perhaps here is an area where some UFOs might be reclassified as UFOs with sufficient investigation."

This is probably quite true. There is nothing in science or logic that says signal cannot coexist with noise. In fact the situation in any sampling is that noise is universal, and a set of data which has too-sharp a peak of pure signal with no noise would typically suggest fraud, or a filter due to some artifact of the measurement process.

Secondly it is not enough just to assemble catalogues of mysteries. The unsolved mysteries open the door to the possibility of new knowledge, but they do not constitute new knowledge. A list of unresolved cases is not a theory either. The sceptics are right that they do not have to take a residue of intriguing mysteries seriously until someone comes up with a link-by-link chain of evidence matched to a testable new theory that predicts specific measurable effects. But at the same time that doesn't mean that it is the sceptic's role to discourage such efforts – that is the debunker's role and it can be done without. It is useless to science. No testable theory was ever produced by negativity and pessimism.

On methodology in science Percy Bridgeman wrote: "The only possible attitude to the facts of experience as it unrolls is one of acceptance... In particular, since there is no means by which we can foresee the future we cannot tell in advance whether any mental device or invention will be successful in meeting new situations, and the only possible way of finding out is to try it."

This is what happened with BL. Cerrillo in the '40s and Kapitsa in the '50s, then others, began to explore the “what if?” questions. They “tried out” the idea that at least some witnesses were describing something real and novel and came up with sketches of theories. Some of their peers then started to get the idea that maybe physics could model BL after all, and that’s how the stories changed from old-wives’ tales to reports. All of a sudden, what had previously been hearsay of no probative value now became a fit subject for research grants. Serious analysis was begun on collections of BL tales – the same tales, not new and instrumentally validated ones.

The world-famous “rain barrel observation” wasn’t an experiment in a refereed journal but was the subject of a letter to a newspaper in 1936! I still get a shiver of delicious irony from recalling Altschuler’s sober contemplation of the constraints placed on physical theory by the implied energy density of Mr. Morris’s “orange”-sized lightning ball. No one at the CU Plasma UFO conference seemed concerned that Mr. Morris may not have known a tangerine from a pomegranate or that his heirloom fob-watch might have stopped

Are the BL theoreticians wrong? Is there no ‘new empirical phenomenon’ called BL? Or did they make a good judgement call on “insufficient data” and thereby generate a scientific conclusion whose definitiveness is self-justifying? If they are right – and a virtual consensus now says that they are – this emphasises the importance of helping to facilitate a climate of productive and original theorising in ufology alongside a rigorous winnowing of the noisy evidence base. The past rejection of BL was an exaggerated inference – but a very plausible inference –

from natural caution that we need to understand if we are not to be condemned to repeat it.

References

1. Kuiper, G., Presentation at Arizona Academy of Science Meeting, Apr. 29 1967, in: Gillmor, D.S. (ed.), *Scientific Study of Unidentified Flying Objects*, Vision Press 1970 pp.839-43.
2. Jones, R.V., “The Natural Philosophy of Flying Saucers”, in: Gillmor (ed.), op.cit. pp.922-33.
3. Cade, C.M. & D. Davis, *The Taming the Thunderbolts*, Abelard Schuman, London 1969, pp.93-104.
4. Lane, F.W., *The Elements Rage: The Extremes of Natural Violence*, Vol. 1, revised edition, Sphere Books, London 1968 p.141.
5. Ibid., p.121.
6. Klass, P.J., “Plasma Theory May Explain Many UFOs”, *Aviation Week & Space Technology*, Aug.22, 1966, p.48.
7. Klass, P.J., “Many UFOs are Identified as Plasmas”, *Aviation Week & Space Technology*, Oct.3, 1966, p.54.
8. Klass, P.J., *UFOs Identified*, Random House, NY 1968.
9. Altschuler, M.D., “Atmospheric Electricity and Plasma Interpretations of UFOs”, in: Gillmor, D.S. (ed.), op.cit., pp.723-55.