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INDEX

Item	Author	Pages
Editorial	Frank Gillespie	1,9.
Meteorites	Paul Sowiak-Rudej	2-6.
The UFO Verdict	reviewed by Frank Gillespie	6-7.
I Spy, with my Little Eye, Something Beginning with "S"	John Prytz	8-9.
ACUFOS Bibliography Service	John Prytz	10-15.
Of What Use the Bibliographies	John Prytz	16.

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EDITORIAL

by Frank Gillespie

THAT WHICH IS UP MUST COME DOWN

Before the ufological investigator can have confidence in his 'identification' of any UFO, he must first know the characteristics of the phenomenon he is citing as the 'identification'. In some cases, such knowledge is specialized, and not readily available or enderstandable to the non-specialist. It is therefore a landmark in ufology when one of these phenomena is written up in a comprehensive yet basic manner, so that the average ufologist has access to a convenient and authoritative reference on the subject.

In this issue, Paul Sowiak-Rudej deals with the subject of meteorites; and he brings to light a lot of material which would certainly not be common knowledge. So much so in fact, that I now know that a 'meteor' which I observed some twelve years ago could not possibly have been a meteor - at least not any of the types currently known and acknowledged. This raises a very interesting point. We know that various ice objects exist in space, both water ice, and mixtures of

(continued on page 9.)

METEORITES

by Paul Sowiak-Rudej

As man has progressed and developed from one generation to another, so too has his knowledge and awareness of the environment that surrounds him. Prior to the Twentieth Century, it was almost inconceivable that meteorites could even exist, witness the well-known story of Thomas Jefferson, then President of the United States and also a respected scientist, who on hearing the news of the large meteorite fall in Connecticutt in 1807 exclaimed: "I could more easily believe that two Yankee professors would lie than that stone would fall from the sky." (Brown, 1973: 13) Ironically, it was the scientific community itself which, in its ignorance, stifled and retarded man's understanding of his world.

The transitory luminous streaks of meteors seen in the sky are now known to be the result of atoms, stripped from the surface of an extraterrestrial solid body, or meteoroid, as it passes through the atmosphere. Collisions with air molecules disintegrate the particles, thus forming an incandescent trail of hot gas.

Meteors are classified by their behaviour into two groups: those which are sporadic and may appear from any direction at any time, and those which occur in showers at regular intervals. Referring to Appendix 2, each shower is classified in terms of its radiant, the focal point from which the incandescent trails appear. Such periodic showers seem to be related to comets. For instance, Biela's Comet did not reappear as predicted in 1872: instead, a meteor shower, now known as the Bieliids, was seen for the first time. Although fading annually and regarded as slow, these meteors are still visible from 17 to 27 November. The name given to other meteor showers often refers to the constellation in which the radiant lies.

The earth's atmosphere resists penetration by meteoroids, and the energy of motion, represented by $\frac{1}{2}mv^2$, is therefore transformed into heat and light. For a small cosmic mass, the luminosity is derived mainly from the velocity, whereas for a larger meteoroid it is generated by ablation of the mass of the object. Bright meteors of -4 magnitude (mag.), approximating that of Venus, are termed 'fireballs', while those less bright (greater than -4 mag.) are called 'bolides'. (Brown, 1973: 160)

A meteorite is the remnant of a meteoroid that survived its passage through the atmosphere and, contrary to speculation, landed on the surface of the earth at comparatively low temperature and velocity, a point which I will later discuss in more detail. The world's largest unfractured meteorite is the Hoba meteorite at Grootfontein in South West Africa. It measures approximately 3m x 3m x 1m, consists of 16% nickel and weighs about 60 tonnes. (Witherell, 1942)

Meteorites can be grouped by composition into three main types: siderite (iron), siderolite (stony-iron) and aerolite (stone), with each group further divided into subcategories, shown in Appendix 1. The siderites have predominantly metallic constituents. Acid etching, to determine the nickel/iron ratio, reveals a nickel content which ranges from 4-12%. The most common siderites are octahedrites, in which the nickel alloy exhibits a widmanstätten structure, as a precipitate occurs in the grains due to slow cooling. The siderolites, representing only 4% of all meteorites, are classified on the basis of mineralogy and chemistry, and form a still largely unknown group. The aerolites are the most common type, representing 85% of all meteorites. (Cousins, 1972: 201) This group is usually divided into chondrites and achondrites. The former, and most numerous, are characterised by their grain, or chondrules (Greek), which appear as special structures varying in size and colour, with the smallest approaching perfect spheres. These chondrites are chemically classified by the levels of free and oxidised iron. Achondrites, on the other hand, are heterogeneous structures lacking chondrules, which are classified according to the calcium content, the richer specimens containing 5-25% CaO. (Mason, 1962: 104)

Tektites consist of a silica-rich glass, containing 70-80% SiO_2. Their appearance is similar to that of obsidian, but they are not related in origin. Weighing from 200-300g and characterised by a spherical or elongated structure, tektites are territorial, found only in Australia and the equatorial zones. Those found in this country are called Australites. Their origin is still subject to debate, the theories ranging from glass meteorites to lightning-fused terrestrial sediments or lunar lava bombs. (For further reference see Page, 1965: 232)

The fall of a meteorite is usually accompanied by light and sound effects. At night, a fireball may be seen to change in light intensity along its trajectory, or even to disappear, phenomena which occur when the fireball is buffeted by the tropopause, a dense zone of the atmosphere, usually located at an altitude of about 12km. This layer considerably retards the meteorite's fall, reducing its initial cosmic velocity. Consequently, the burning ceases as the now-cooled meteorite, further decelerated by air resistance to its shape, plunges earthward under the influence of gravity. Naturally, the larger the meteorite, the less the buffeting and air resistance per given area.

The colour of a meteor is directly related to the temperature at which it burns and hence its velocity. The colours usually observed, in order of descending velocity are: blue, white, green, yellow, orange and red. A white meteor decelerated by the tropopause would become predominantly redder.

A smoke trail accompanying a meteorite is a combination of ionized air and solid particles. The trail of the Sikhote-Alin Meteorite contained 200 tonnes of debris and lasted for several hours, obscuring the sun to a dull, red ball. (Mason, 1972: 12) The luminosity of a meteorite is due mainly to the luminous gas and dust clouds created when it reacts with the atmosphere. This can occur at altitudes as high as 150km (Mason, 1972: 11), as the meteorite begins to encounter air molecules, the collisions becoming more violent and more frequent as it penetrates into the denser, lower atmosphere. The outer layer of the meteor, like the nose cone of a re-entry rocket, disintegrates and gives off incandescent gas, which is produced by the high temperature and trapped by the velocity of descent. Mason (1972: 19) suggests that, since none have been found weighing more than 100 tonnes, a meteorite would vapourise if more than 10% of its total energy was consumed by heating in this way. The volume of gas thus generated by friction can be several times greater than the parent mass, giving an illusion of increased size, an error sometimes strengthened by the persistence of luminosity in the upper atmosphere for some time, until the ionized atoms recombine into molecules.

Fedynsky's studies of meteors' luminosity with respect to altitude suggest that -5 to 2mag. fireballs begin to luminesce between 110-68km, and terminate between 100-55km, while far fainter meteors of less than 6mag., 85% of those detectable on radar were luminous at the mid range of 96km. Astapovitch, another Russian astronomer, suggested that the maximum luminosity for faint meteors lies in the 60-40km range.

In the case of bolides (large meteors), those which penetrate to below 55km without being completely disintegrated are said to produce sound effects, while those penetrating further, below 25-20km, are said to give rise to meteorites. (McCall, 1973:40) The sound effects produced by a meteorite vary from buzzing noises to explosions, as compression waves preceding the object are built up. Sonic booms usually occur after the luminous path has ceased and the meteorite fragmented. It is suggested that an electrophonic noise, which precedes the fireball, is heard by animals. These sound effects exhibit a pattern of noise zones surrounding the impact site, the sound level at the site itself being intense, while closely surrounding it is a silent zone. McCall proposed that these sound zones are elliptical for an oblique trajectory and circular for a zenith incidence. Such sounds may be heard up to 2.6 times further along the axis of the flight path than on either side of it. (McCall, 1973: 46)

Sound effects can be used to determine the impact point of meteorites. As McCall points out, sound effects appear in reverse order to an observer near the point of impact: "He hears the arrival sounds, then tearing noises and lastly the detonations. The sounds appear to move away from him along the approach path, the early produced sounds, the detonations, reaching him last. The observer directly beneath the luminous part of the trajectory will experience shock wave detonations first.". (McCall, 1973: 47)

The large impact craters seen on earth do, however, suggest that the meteorites causing them largely maintained their cosmic orbital velocities. The first velocity parameter to consider is whether the meteorites belong to the Solar System. Krinov, a Russian scientist, has shown that the Pribram chondrite was in an elliptical orbit about earth prior to impact. If this were so in all cases, meteorites would be limited to a cosmic velocity of 42km/sec, equal to the escape velocity of the Solar System. The second parameter is that of earth's orbital velocity, 29.77km/sec. (Brown, 1973: 168) As a result of the diurnal effect on meteors colliding with earth, shown in Figure 1 below, this velocity may either be added to or subtracted from that of the meteorite.

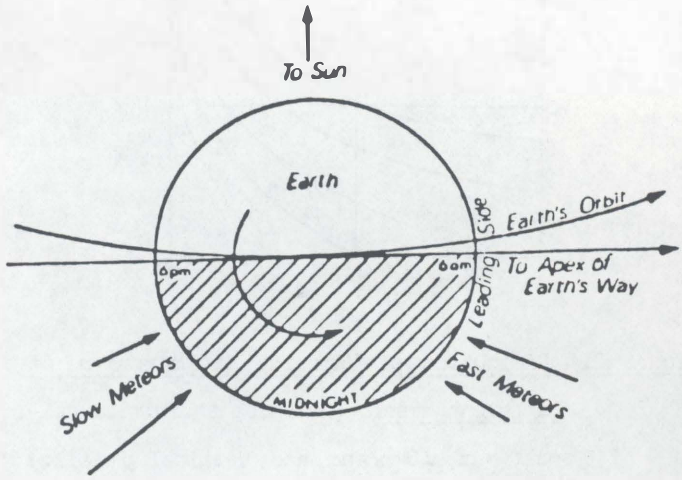

Figure 1. The Diurnal Effects on Meteors Encountering Earth. (Brown, 1973: 169)

"All meteorites which fall from noon to midnight have the same direction of motion as earth, while those falling from midnight to noon either collide with the earth head-on or are overtaken by it." Those meteors overtaking the earth have the earth's velocity subtracted, leaving a residual entry velocity of 12km/sec or less, whereas those colliding with the earth have the velocities added, totalling about 72km/sec. As mentioned earlier, smaller meteorites are greatly retarded by the atmosphere, which Krinov termed the region of decay, having an impact velocity of 0.1-0.2km/sec, due mainly to earth's gravitational attraction. The high-velocity, head-on collision meteorites ablate more rapidly due to the high temperature and velocity of erosions in the dense atmosphere, usually leaving a trail of dust fragments.

Examining Figure 2, it can be seen that the larger the mass of a meteorite, the greater the momentum, and consequently the higher the retention of its initial cosmic velocity towards the end of flight.

If the structure of the meteorite is sufficiently weakened on passing through the Roche limit, or by atmospheric resistance, it will disintegrate, usually strewing fragments in an elliptical field, with the larger fragments flying further than the small ones, allowing the direction of the trajectory to be calculated. It can also be shown that a higher degree of elongation in the scatter field represents a more horizontal descent.

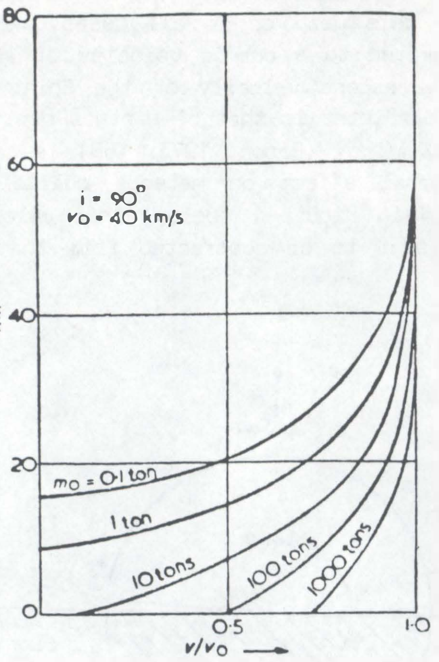

Figure 2. Diminution of Velocity of Meteorites of Different Mass. (Assuming an initial velocity of 40km/sec and vertical infall.) (McCall, 1973: 39)

Despite the high velocities predicted by some scientists, in reality meteorites on impact are only moderately hot, indicating a low impact velocity. One explanation, put forward by McCall, is that large meteoroids are related to asteroids, which are concentrated near the plane of the ecliptic. These would not collide with earth unless they were in retrograde motion, and, since few solar orbits are of this type, the probable initial velocity would not exceed 20km/sec. (McCall, 1973: 42)

The impact of a meteorite on the earth's surface will depend on its mass, velocity and mechanical strength, and on the topography and soil consistency of the site.

Meteorite craters are usually found in clusters, as opposed to individual impact sites; the Australian Henbury Craters are a good example of this. It can be seen in Figure 3 that there are thirteen, possibly fourteen, craters in the group, the largest being crater 7. Its basin measures 157m by 112m, and the rim is raised, on average. 4.6m above the surrounding plain and 16m above the crater floor. Crater 6, next to crater 7, and forming what is termed a double punchbowl, is the second largest, spanning 79m and with the floor 6m below the rim. Crater 5, a rimless, 57m hollow, contained the largest meteorite, which weighed 18kg and was found about 0.8m below the surface. (Simmons, 1975: 288)

The great Arizona or Barringer Meteorite Crater is the largest in the world, with a diameter of 1282m and a depth of 173m from the floor to the rim, which rises 49m above the plain. Finds of coesite (formed under high pressure from silica) support its proposed meteoritic origin. It is estimated that excavation by the meteorite on impact removed 62,000,000m³ of material, a weight of 300 megatonnes. Studies by Nininger and Rinehart, among others, concluded that the parent mass, which had a flight path from the north west and vapourized on impact, initially weighed 12 kilotonnes, and had a radius of 31m (based on the specific gravity of nickel/iron, 7.703). (Cousins, 1972: 206)

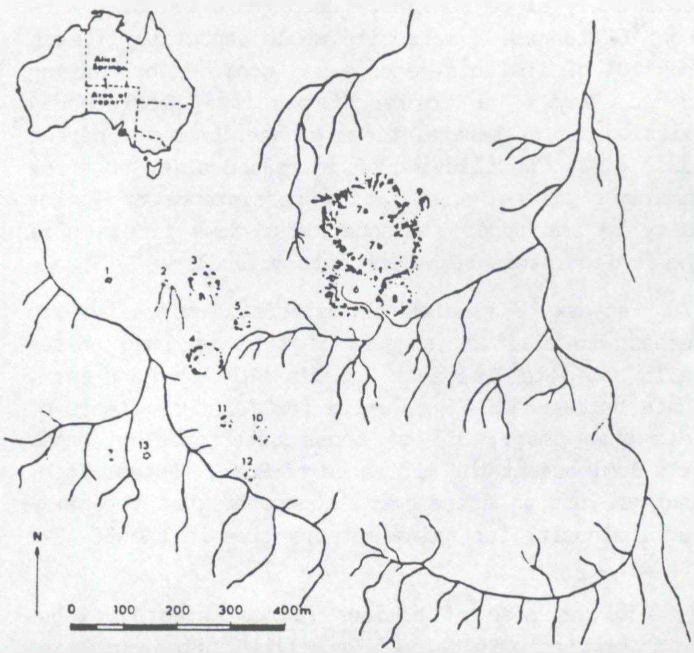

Figure 3. The Henbury Craters. (McCall, 1973: 257)

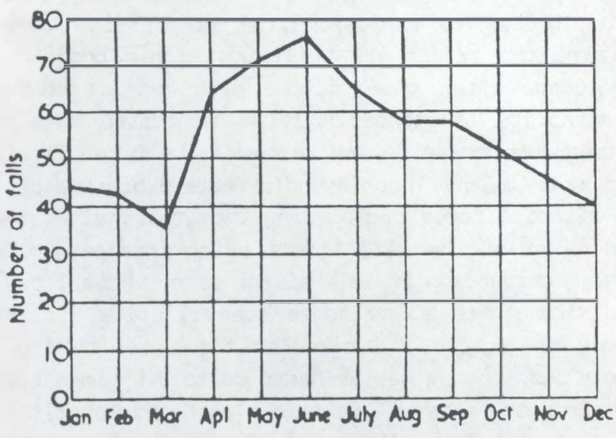

Figure 4. Monthly Variation in the Incidence of Meteorite Falls, 1800-1960. (after B. Mason). (McCall, 1973: 43)

Despite the unequal distribution of meteorite sightings and recoveries, no special areas are any more favoured than others in the frequency of falls. Brown (1973: 167) has determined an average global rate of one fall per million square kilometres per year, representing a total of 500 meteorites annually. Of these approximately 70% are lost over the oceans, and the seeming bias in the pattern of those reported from the remainder is merely a reflection of population density and culture. However, Figure 4 does show a very real seasonal variation in meteorite falls, which are at a maximum from April to July and at a minimum from September to March. This could be the result of favourable observing conditions during the northern summer, or perhaps the earth passes at this time through an especially dense meteoroid swarm. As Figure 5 demonstrates, there is also a marked diurnal cycle in fall frequency, with the peak incidence at 3pm and the least recorded activity at 3am.

This paper has attempted to outline some of the basics of meteorites, concentrating mainly on the fall and impact characteristics of meteorites, since in this area of study popular beliefs are often far from the truth. I hope that the examples discussed have conveyed some idea of the results to be expected when a large object strikes the earth. The sections on associated phenomena, besides indicating some of the ways in which such information can be used to analyse the event, should have cleared up any confusion as to what is, and what is not, likely to be seen and heard when 'stones fall from the sky'.

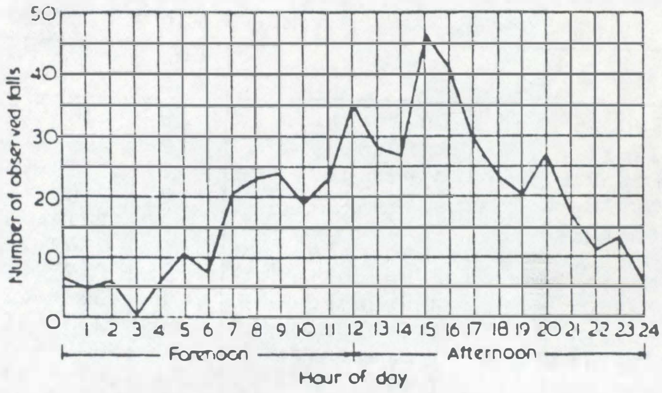

Figure 5. Hourly Variation in the Incidence of Meteorite Falls, 1790-1940. (after Leonard and Stalin, 1941) (McCall, 1973: 43)

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APPENDIX 1. (Cousins, 1972: 201)

PRIOR'S CLASSIFICATION OF THE METEORITES (FIGURES IN PARENTHESES ARE THE NUMBERS IN EACH CLASS)

Group		Class	Nickel	Principal Minerals
Stony meteorites	Chondrites commonest of all meteorites 85 per cent	Enstatite (11)		Enstatite, nickel-iron
		Olivine-bronzite (~900)		Olivine, bronzite, nickel-iron
		Olivine-hypersthene (~900)		Olivine, hypersthene, nickel-iron
		Olivine-pigeonite (12)		Olivine, pigeonite
		Carbonaceous (17)		Serpentine
	Achondrites rare falls	Aubrites (9)		Enstatite (calcium poor)
		Diogenites (8)		Hypersthene (calcium poor)
		Chassignite (1)		Olivine (calcium poor)
		Ureilites (3)		Olivine, pigeonite, nickel-iron
		Angrite (1)		Augite (calcium rich)
		Nakhlites (2)		Diopside, olivine (calcium rich)
		Eucrites and howardites (39)		Pyroxene, plagioclase (calcium rich)
Stony-irons minor group 4 per cent		Pallasites (40)		Olivine, nickel-iron
		Siderophyre (1)		Orthopyroxene, nickel-iron
		Lodranite (1)		Orthopyroxene, olivine, nickel-iron
		Mesosiderites (22)		Pyroxene, plagioclase, nickel-iron
Irons second largest group		Hexahedrites (55)	4-6+	Kamacite
		Octahedrites (487)	6-14	Kamacite, taenite
		Ni-rich ataxites (36)	> 12	Taenite

APPENDIX 2. (from Ephemeris, New South Wales)

METEOR SHOWERS

Date	Shower	Cul hrs	Radiant R.A.	Decl	Speed etc.
Jan3-5	Quadrantids	9	230°=15h20m	+53°	Medium
Jan17	κ Cygnids	12	295°=19h40m	+53°	Slow, trained
Feb5-10	α Aurigids	20	75°= 5h00m	+41°	Very slow, fireballs
Mar10-12	ζ Bootids	3	218°=14h32m	+12°	Swift, streaks
Apr20-22	Lyrids	4	271°=18h04m	+33°	Swift, streaks
May5	η Aquarids	7	334°=22h16m	-02°	Very swift [3]
May11-24	ζ Herculids	1	247°=16h28m	+28°	Swift, white
May30	η Pegasids	6	333°=22h12m	+27°	Very swift, streaks
Jun2-17	α Scorpiids	0	253°=16h52m	-22°	Very slow, fireballs
Jun27-30	ι Draconids	21	228°=15h12m	+57°	Very slow [4]
Jun-Sept	γ Draconids	21	269°=17h56m	+48°	Slow, trained
Jul18-30	α Capricornids	0	304°=20h12m	-12°	Very slow, bright [5]
Jul-Aug	α Cygnids	0	315°=21h00m	+48°	Swift, last long
Jul25-Aug4	α-β Perseids	7	48°= 3h12m	+43°	Very swift, streaks
Jul15-Aug10	δ Aquarids	2	339°=22h36m	-11°	Slow; long paths
Aug10-12	Perseids	6	45°= 3h00m	+57°	Very swift [1]
Aug12-Oct2	α Aurigids	6	74°= 4h56m	+42°	Very swift; streaks
Aug-Sept	Lacertids	0	332°=22h08m	+49°	Medium, short
Aug10-20	κ Cygnids	22	290°=19h20m	+54°	Medium, bright
Aug21-23	ο Draconids	21	291°=19h24m	+60°	Very slow; max 1879
Aug21-31	ζ Draconids	19	263°=17h32m	+62°	Slowish, bright
Sept7-15	ε Perseids	5	61°= 4h04m	+35°	Swift, streaks
Oct2	Quadrantids	15	250°=15h20m	+52°	Slow. In 1877
Oct12-23	ε Arietids	1	42°= 2h48m	+21°	Very slow, fireballs
Oct15-25	Orionids	4	92°= 6h08m	+15°	Swift streaks
Oct30-Nov17	ε Taurids	1	64°= 4h16m	+22°	Slow, fireballs
Nov3-15	e Taurids	0	55°= 3h40m	+13°	Very slow, bright
Nov14-17	Leonids [2]	6	150°=10h00m	+22°	Very swift; period $33\frac{1}{3}$y
Nov17-27	Andromedids	22	25°= 1h40m	+43°	Very slow [6]
Dec9-14	Geminids	2	112°= 7h28m	+33°	Medium, white, rich

The column headed "Cul" gives the radiant's approximate hour of culmination on central date. [1] The Perseids are visible during July and August, a rich display max. Aug 12; the radiant moves 2°+41° to 68°+61° (Androm. to Camelop.). [2] The Leonids or November meteors are seen at their best about every 33 years; plentiful in 1799, 1833 and 1866, but the 1900 display was not brilliant owing to the disturbance of their orbit by Jupiter. [3] Long paths before sunrise; Halley's Comet. [4] Pons-Winnecke's Comet. [5] Comet 1881 V. [6] Beila's Comet. [From Norton's Star Atlas]

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THE UFO VERDICT

Examining the Evidence

Author: Robert Sheaffer
Publisher: Prometheus Books

reviewed by Frank Gillespie

The UFO Verdict is a remarkable book by a truly remarkable man. Robert Sheaffer combines the ability to perform the most thorough and objective UFO investigations, with a weakness for arguments based on false information, irrelevancies and corrupt logic. Needless to say, his book is a mixture of both good and bad; but it is all very well written, and very very convincing. Sheaffer rightly criticises the mass media for its stupid and sensationalised reporting of UFO events; but when it suits him, he accepts these same media reports as completely factual. He demonstrates effectively that the top UFO personalities are the worst possible judges of the merits of UFO cases; but the only cases he selects to debunk are the ones most favoured by those same personalities. The Jimmy Carter UFO is a case in point - a trivial event upon which Sheaffer expended considerable time and effort. Nevertheless I am personally grateful to him for finally laying this incident to rest.

It is significant that very little of this book is actually devoted to debunking UFO reports. The major portion consists of what looks very much like a double smoke screen, to cover up the basic weaknesses in Sheaffer's anti-UFO case. Neither the weird antics of many UFO personalities, nor the beliefs in witchcraft, fairies and the like, have any relevance to the reality or or otherwise of the UFO phenomenon. The former are indicative only of some unfortunate failings in human nature; the latter are a product of a single broad cultural group, not to be compared with a simultaneous worldwide phenomenon. Sheaffer also relies heavily on concepts like Occam's Razor and Sir Karl Popper's 'falsifiability' to rubbish current UFO theories; and it is here that his logic goes most astray, to be replaced, at times, by sheer fanaticism.

Naturally the chapter on photographic cases was of special interest to me, although the quality of photoreproduction left much to be desired. Even so, I am happy to report that the string supporting the model is still visible in the 1958 Almira Barauna photograph. Sheaffer makes three errors in his arguments on photographic cases; he overestimates the exposure needed to photograph Jupiter by a factor of about 20; he grossly overestimates the proportion of people likely to have a camera at the ready at any particular time; and he states erroneously that there has never been a two witness two camera UFO photographic case. He makes considerable mileage out of these mistakes, so a lot of his arguments are not soundly based. On the other hand, his opinion of current computer analysis of UFO photographs is both expert and well-informed.

In the chapter on a Jealous Phenmenon, Sheaffer sets himself up as an authority on the workings of alien minds. Strangely, it does not seem to occur to him that aliens might want to avoid positive detection for reasons which are good and sufficient to them, but quite incomprehensible to us. If one rejects Sheaffer's claims as a xenopsychologist, then his logic is no longer valid. In the succeeding chapter, Sheaffer makes another (rather comical) error in logic. He demonstrates ever so convincingly that if both UFOs and the Easter Bunny don't exist, then we should be getting plenty of reports of Easter Bunny sightings. This just goes to show the folly of trying to compare parental misdirection of children with a phenomenon which is no respecter of age.

Another comparison in which Sheaffer errs, is the consideration of ufology in the same terms as one of the objective sciences. Ufology is currently almost entirely subjective; and in the field of subjective science, a theory may be considered satisfactory if it explains just some of the data without any conflict - it need have no predictive potential at all. Yet again, he compares the UFO hypothesis with ESP theories; and claims that both are pseudoscientific because neither is falsifiable, even in principle. Unfortunately for this argument, there is no such thing as the UFO hypothesis! UFOs are a fact of life; and until every flying object is identified, it will remain so. Add to this the fact that the reality of ESP has been proved repeatedly by normal statistical criteria (and rejected by the scientific establishment as not sufficiently significant), and this comparison becomes even more damaging to Sheaffer's case.

Occam's Razor is frequently invoked by Sheaffer to condemn the extra-terrestrial hypothesis, but the Razor actually supports an up-to-date version of that hypothesis. What could be less speculative than the idea of intelligent beings (we know intelligent life exists) travelling by one or more of the means possible but not yet provable or practicable according to currently acceptable scientific theories (this would include time travel, alternate time lines, alternate universes and the fifth dimension). Space travel as we know it is not a necessary component of the extra-terrestrial hypothesis.

The best chapter in this book is undoubtedly that on the Kaikoura (New Zealand) incidents. Sheaffer justifiably and impartially criticises everybody connected with the case - witnesses, investigators, debunkers, the lot. His analysis is shrewd and penetrating; and probably the most accurate assessment of the affair yet published. It is marred a little by Sheaffer's reliance on media of the standard of 'Australian Playboy', as well as numerous newspapers. This is the only case in the book where Sheaffer does not offer an explanation which is both reasonable and complete.

Sheaffer may well be correct when he claims that 'scientific' proponents of UFO research have little in common with genuine scientists; but this comment applies equally to UFO debunkers. Nobody has yet submitted one physical sample to isotope analysis - the technique which ACUFOS consultant Dr Herbison-Evans pointed out would positively finger any material of extra-terrestrial origin. Nobody has yet applied himself to a study of the UFO phenomenon as a whole, using tried and tested statistical techniques to partition the data into sections attributable to different causes, or to assess the reality of the phenomenon itself. In particular, Sheaffer does not apply any statistical tests to his own 'null hypothesis' (UFOs don't exist because they are imagination, anomalous radar propagation, hoaxes, atmospheric changes and mass hysteria). If he had, I suggest that this book would never have been written.

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I SPY, WITH MY LITTLE EYE, SOMETHING BEGINNING WITH "S"

by John Prytz

While working on an unrelated project, I recently came across a news item from late 1976 which, to some, has a quasi-relevance to ufology. The story involved the sighting of a USO - unidentified submarine object. While such sightings have been frequently reported overseas, in particular in Scandinavian regions, they are rare in Australia - which may be more a function of our long coastline and low population density. Anyway, although I am fairly sure that this particular USO was in fact a terrestrial submarine, there is room for doubt and debate. It makes for interesting telling.

On Tuesday, 28th December 1976, a party of about 20 Aboriginals saw a "submarine" surface about 200 metres off Coomlieyna Beach, near Ceduna, in the far west of South Australia. The Aboriginals, from the Yalata Lutheran Mission, had gone to the beach for an afternoon's fishing, when, about 3 p.m., "this thing popped out of the water", according to the Mission manager, B. R. Lindner, and "scared the living daylights out of them". The party "ran from the beach to the sandhills". Press reports then differ as to whether the object stayed on the surface and sailed out to sea, or immediately submerged, then reappearing far out to sea before submerging again. The length of the sighting was not stated, but apparently all but one witness agreed the object was about 90 feet long. So far there is nothing overly mysterious about the report. However...

All the witnesses agreed that whatever the object was, it had a white conning tower, with a ladder going from the tower to the deck, a black centre line and a red stripe or bottom at the water-line. Alas, the reported markings and description did not match the colours of any submarine in any of the world's navies. According to a Royal Australian Navy (RAN) spokesman, the sighting was being treated seriously, even though there were some official doubts that the object was a submarine. "Submarines tend to be black or a dark blue in colour so they can hide in deep water and not be seen from the air" according to the RAN official. "A white conning tower would stick out a mile."

Further, there were no known submarines, or underwater exploratory craft - from the RAN or from other nations - operating in waters off the S.A. west coast. Thus, commercial aircraft, the Royal Australian Air Force (RAAF), shipping, and even local police patrols were alerted to be on the lookout for the mystery vessel in the Great Australian Bight. However, over a day had elapsed between the original sighting and official notification to the Defence Department in Canberra, so it perhaps should not be surprising to learn that nothing was ever seen of the strange submarine again.

Although the Defence Department did not speculate on the nature of the object sighted by the Yalata Aborigines, others weren't as reserved. The "obvious" solution was that it was Russian or from some other foreign, and one would presume unfriendly, nation, and on a spying mission. However, for the submarine to have been that close to shore, near reefs, and caught-in-the-act in broad daylight, suggested to the RAN spokesman that "the sub was in trouble, or it's got a lousy captain". If the submarine had been from the RAN, the captain would have faced a court-martial according to the spokesman, for operating that close to reefs. Further, the remote west of S.A. doesn't appeal as a likely espionage-targeted region. Thus...

A spokesman for the Marine Operations Centre in Canberra, suggested a theory that the object was an overturned vessel, possibly a large yacht. However, there were no reports of any vessels missing or overdue in the Bight area.

The officer-in-charge of the Ceduna police station, Sergeant J. F. Furnell, while agreeing that the upturned yacht theory was feasible, was personally inclined toward believing that the object was a large whale. The "conning tower... could have been the whale's spout" according to the Sergeant.

Yet, according to the Yalata Mission manager, "there is no doubt they saw a sub. They know what a sub looks like. They have seen them on films and what-have-you".

There the matter rests. To the best of my knowledge, nothing has been solved in the nearly eight years since those Aboriginals went on a fishing trip on a summer's day to a remote beach. The story died a quick death - a bit of a silly season filler.

Except for an interesting postscript. Maybe the object was seen again! According to an Adelaide woman, Mrs Barbara Best, of the suburb of Stonyfell, she sighted the conning tower of a submarine offshore from Robe, in S.A.'s southeast. "We watched it for some minutes, then it moved quickly out to sea. The conning tower was painted white, but we did not see the submarine surface." (my emphasis)

Another mystery of the sea, even if not an unidentified flying object report. What common factor, if any, links the two, remains to be resolved.

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THAT WHICH IS UP MUST COME DOWN (continued from page 1.)

frozen gases; therefore it is axiomatic that pieces of this ice enter the earth's atmosphere from time to time, even though none have ever been reported. How do these ice meteors behave - so like other meteors that no difference has yet been detected, or so unlike other meteors that they are simply not recognized as such? It must be one or the other!

Many years ago, I published a speculative account of the way a frozen gas meteor might behave. Rather than push my own ideas again, I invite readers to submit their thoughts on this most intriguing subject. It is particularly intriguing, from the point of view that here is one obvious straw which UFO debunkers have so far failed to grasp, in their efforts to explain away what they cannot explain in rational terms! Debunkers don't usually miss any such opportunities - so this is a rare chance for ufology to get in first and show the way. Don't let this challenge slip away!

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ACUFOS BIBLIOGRAPHY SERVICE: BIBLIOGRAPHY UPDATES: PART TWO

(by) John Prytz

Compiler's Note: A major concentration in this "update" has been non-UFO articles in Ray Palmer's long running journal Flying Saucers. Apart from that, references have continued to arrive at such a rate that a lone "update" section will probably be the order of things for a 3rd consecutive issue of the ACUFOS Journal.

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OF WHAT USE THE BIBLIOGRAPHIES?

by John Prytz

I have often wondered as I compile and type up the "ACUFOS Bibliography Service" column whether or not my time, and the space required to devote to the final result, wouldn't be better spent on something else completely different. Depending on my mood, I sometimes think to myself "yes". However, more often than not, I answer back something akin to "probably not". But then again, I'm biased actually! Besides, if I'd often thought otherwise, I'd have given up the "ACUFOS Bibliography Service" for Lent long ago - and I wouldn't really be writing this now, would I? Never-the-less, I now and again feel I have to justify my time, and the space taken in this journal. Hence, this article.

Okay, that by way of introduction, of what use the bibliographies?

The obvious first answer is that it alerts the reader to one or more documents which could be of relevance to that reader, on a fairly regular basis. The relevance could relate to a short-term research project, or a long-term general interest that needs updating regularly. The unsaid assumption is that the bibliography (or update) acts as a supplement to whatever source(s) the reader employs in the normal course of events to supply them with references to relevant documents - if not the documents themselves. The interested reader hence goes from reference (which I supply) to document retrieval (which others supply).

Akin to that, the references supplied in the "ACUFOS Bibliography Service" serve as a checklist to any reader's personal document library - given a state of coincidence between the subject of the references and the subject of the personal document library.

There is no reason to base any justification on just the status quo. There is the future to consider. Our interests now will not of necessity equal our interests tomorrow. Thus, when tomorrow comes, the collective references provide a data base on which to build up a document library in this new field of interest. Of course the service I provide is a piecemeal one, in terms of both time and the total sources available. Thus, the wise user will - given a before-the-fact inkling of need - integrate my references over time, and also with those of others. How?

It would be relatively easy, and useful, to integrate all references of relevance (past, present, or (suspected) future). The two best ways would be via a transfer of bibliographic details to either a home computer system, or a manual 3 X 5 card (catalogue) system. In either case, additions, deletions and shufflings are straightforward.

The major reason why I suggest this is that I make no claim to even attempting to be all-inclusive in my search for references, hence in my final product - the bimonthly "ACUFOS Bibliography Service". There would be little point if I covered the exact same ground as the average reader. Thus, I concentrate on the 95% of material that ends up providing 5% of total interest, as opposed to the "average reader" who is, as a matter of course, exposed to the 5% of material that provides 95% of their information and references. Through an integration of the two, the average reader will have as close to 100% of information documentation as makes no odds.

There are a couple of other uses my (or equivalent) bibliographies could be put to. The first is that the bibliographical references give the full details of what would otherwise be ill-referenced lightning mentions of sources, so often found in books, papers, or articles. I don't think it's necessary to give examples - we've all encountered the problem. The other is that the bibliographies can provide the raw material from which enterprising ufologists can conduct interesting research - from the references themselves. The bibliographic references are a micro-cosmic surrogate of the broad-brush field.

And that's just about enough personal justification in the here-and-now.

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