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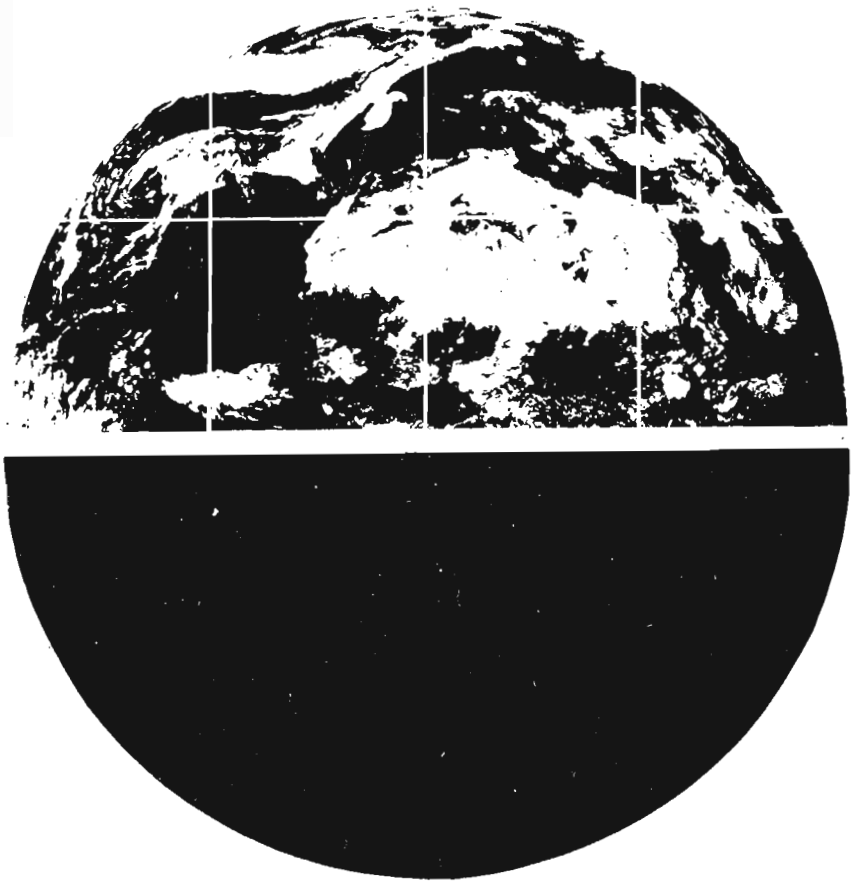

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JOURNAL TAP VOL. 2 pp21-23

New horizons in UFO research

PETER A HILL*

SUBJECTIVE OPINION IS AN OBSTACLE TO UNBIASED OBSERVATION OF A PHENOMENON BEING STUDIED. CONSCIOUSLY OR UNCONSCIOUSLY, OPINION CAN PREJUDICE DATA INTERPRETATION AND OBSTRUCT THE APPLICATION OF SCIENTIFIC METHOD. AT OUR PRESENT STATE OF IGNORANCE, HYPOTHESES ARE PREMATURE AND POTENTIALLY HARMFUL. ANALYSIS OF DATA, WITH ADEQUATE QUALITY CONTROL, BY EACH PARAMETER IN THE DATABASE, SHOULD PRECEDE HYPOTHESES. IT IS AN ABSOLUTE REQUIREMENT THAT SCIENTIFIC METHOD BE RIGOROUSLY IMPOSED, WITH A SEARCH FOR PATTERNS IN THE DATA AND CORRELATIONS WITH OTHER VARIABLES. A GLOBAL PROBLEM DEMANDS A GLOBAL SOLUTION; INTERNATIONAL CO-OPERATION, WITH COMMON METHODS IS, THEREFORE, CRITICAL; ANYTHING LESS IS PARTIAL, PAROCHIAL AND POTENTIALLY MISLEADING.

THIS PAPER WAS FIRST GIVEN AT THE SUFOI CONFERENCE IN COPENHAGEN IN 1980. IT IS PUBLISHED BY KIND PERMISSION OF SUFOI.

For some 35 years, reports of unidentified flying objects have been subject to investigation. Known by various names over the centuries, and in varying cultures, there is believed by some to be evidence of UFO reports being made in paleolithic times[1].

Cave-drawings and ancient texts are open to varying interpretation and there is no evidence of enquiries prior to the visual and photographic cases of the Second World War. Enquiries and investigations have been undertaken by, or on behalf of, Government authorities in various countries. Some of these may not have been made public, but they are known to include Canada, France, the German Federal Republic, the United Kingdom, the United States and the Soviet Union. The depth, quality and motivation of these studies appears to vary substantially. Taking the United States as an example, Project Bluebook was little more than a collection point, an input without a processor or an output. It was so grossly understaffed that it could barely catalogue the reports received[2]. Investigation in depth was virtually impossible.

In marked contrast, The University of Colorado study[3], directed by Condon for the United States Government produced a lengthy and detailed report. However, this report is curiously ambivalent for a scientific study. Some sections are excellent. Others, such as that on the history of the subject, appear to be based not on scientific evidence or deduction but on unsubstantiated speculation and opinion.

In a subject as complex as this, with data varying widely in detail and in quality, we must not permit ourselves the luxury of opinions. The critical need is reliable data. Given such data, we should let it lead us wheresoever it may.

It is my view that the formulation of hypotheses, at the present level of our ignorance, is a positive obstacle to UFO research. The risks of accepting the data which supports a specific hypothesis, while rejecting that which refutes it is too well known to need further emphasis. This risk, the selective data syndrome, albeit often unconscious, is too great, at our present level of research to permit.

How often do we see slogans, such as 'we are not alone', from research societies. Any research group which knows the answers has no place in research.

The urgent need today is the rigorous application of classical scientific method. Simultaneously, we must have better quality data and more thorough investigation. Analysis is of no value if our basic data is unreliable in quantity and quality. Can any of us, from whatever nation, honestly say that the data is sufficiently reliable for the deductions we may wish to draw?

Where, then, do we go from here? Firstly, it is a *sine qua non* that training of investigators and analysts be improved globally to at least the present level of the best. It is my subjective impression that training in Scandinavia is probably the best in the world. I ask you to bear in mind, in any data comparison you may do with other countries, that this data may well be less reliable than your own.

This is a situation which must be corrected. In Bufura we have already started to do so. You can assist us, for ours is a global problem and demands global examination.

With some notable exceptions, the work undertaken in many countries consists primarily of investigation of individual reports. Nothing has been learned in 30 years from individual reports; nothing will be learned over the next 30 years in this way. How long does it take for this to be appreciated?

Progress can and will be made not by the minutiae of individual reports but by the statistical analysis of groups of reports.

Progress is there for the taking by comparison of all the attributes of reports through space/time and by examination of the characteristics of UFO reports compared with those classified as IFOs. In what ways do these differ? Our experience is that some 93 per cent of reports are explainable in mundane terms. Where these are stars, planets, satellites, meteor showers and civil aircraft, they should be predictable. Such predictable events should be put onto a computer to see to what extent we can predict the pattern of reports prior to their being made.

Comparison of all the parameters of UFO reports with findings elsewhere is essential. To do so demands common terms, definitions and classification. It also demands a common minimum database. To achieve such common standards is one of the main objects of The Provisional International Committee on UFO Research, born in London in 1979 and here in Copenhagen in 1980, to continue this work.

It cannot be stressed too strongly that data collection alone does not constitute research. Research demands analysis of groups of reports, with quality control of the data, to search for patterns and correlations in all the parameters of the database. Where patterns are identified, science can enter.

Firstly, the process begins with a causative stinulus, be it UFO, ball lightning, hallucination or Venus. (No Freudian symbolism is implied, although British police are believed to have chased Venus, presumably because of her brilliance.)

The stimulus affects the percipient, visually, aurally or otherwise. Subjective interpretation of the data received is made by the percipient, often from minimal data. Bias, albeit unconscious, inevitably enters here, according to assumptions influenced by the percipient's culture, beliefs and prior experience. Assumptions are based on perception processing and deduction; a value judgement completes the highly subjective interpretation of stimuli received.

Let us assume that the percipient reports the case after 24 hours, following loss and further distortion of the data by memory imperfection, and that it is duly investigated. The investigator introduces additional bias as data are over-simplified to fit the limitations of language and of questionnaire design. The investigator's report should always be subject to independent evaluation by a panel of experienced persons, to minimise investigator bias. This panel should allocate a strangeness/credibility index. This should be an international standard and is on the Agenda of The Provisional International Committee.

Conventionally, an arbitrary over-simplification is made at this point. Cases are usually divided into IFO and UFO. This can hardly be realistic and is a convenient, but subjective, fiction. Instead of such a simplistic view, I propose that we attempt to devise a strangeness/credibility factor as a measure of probability.

It is less valid to classify a case as a UFO than as having a defined probability of possessing the characteristics of a UFO.

The natural human desire to label each case and file it in one of two main categories gives the spurious impression that evaluation is an exact science; before long we even believe it ourselves; yet, clearly, this is nonsense.

Classification is also under scrutiny internationally as a global issue. Neither the Hynek nor the Vallee classification is suitable for research and a matrix-based principle, first proposed by Esterle, is favoured by the Provisional Committee.

At this point, some UFO societies are content to file their case reports. This in no way resembles research. It is akin to a collecting mania with interface to a black hole: everything goes in - nothing comes out.

The next step should be statistical analysis of the data to seek patterns and correlations. Identifications of patterns of UFO reports' parameters are the key to progress in the subject. Each parameter in the database should be scrutinised for non-random distribution, subjected to standard tests for randomness and the findings made available to others in the field.

At this point, but not before, development of an hypothesis is valid in attempts to explain the patterns identified. Hypotheses should be reserved until we have specific facts to explain; not dreamed up prior to research, based on modern mythology.

Ways must be found of testing hypotheses in due course, leading at long last to new information and new knowledge; the process has a loop as it is cyclical and constantly progressing. Finally, I make a plea to all to encourage and support international co-operation, the application of scientific method in UFO research and to achieve more in the next five years than in the last 30.

*Peter Hill AMR, FMS, FSS is Chairman of the Provisional International Committee on UFO Research and is a Bufora Council member. *The paper is based on a presentation to the SUFOI (Skandinavisk UFO Information) National Congress held in Denmark in 1980 18 to 19 October.*

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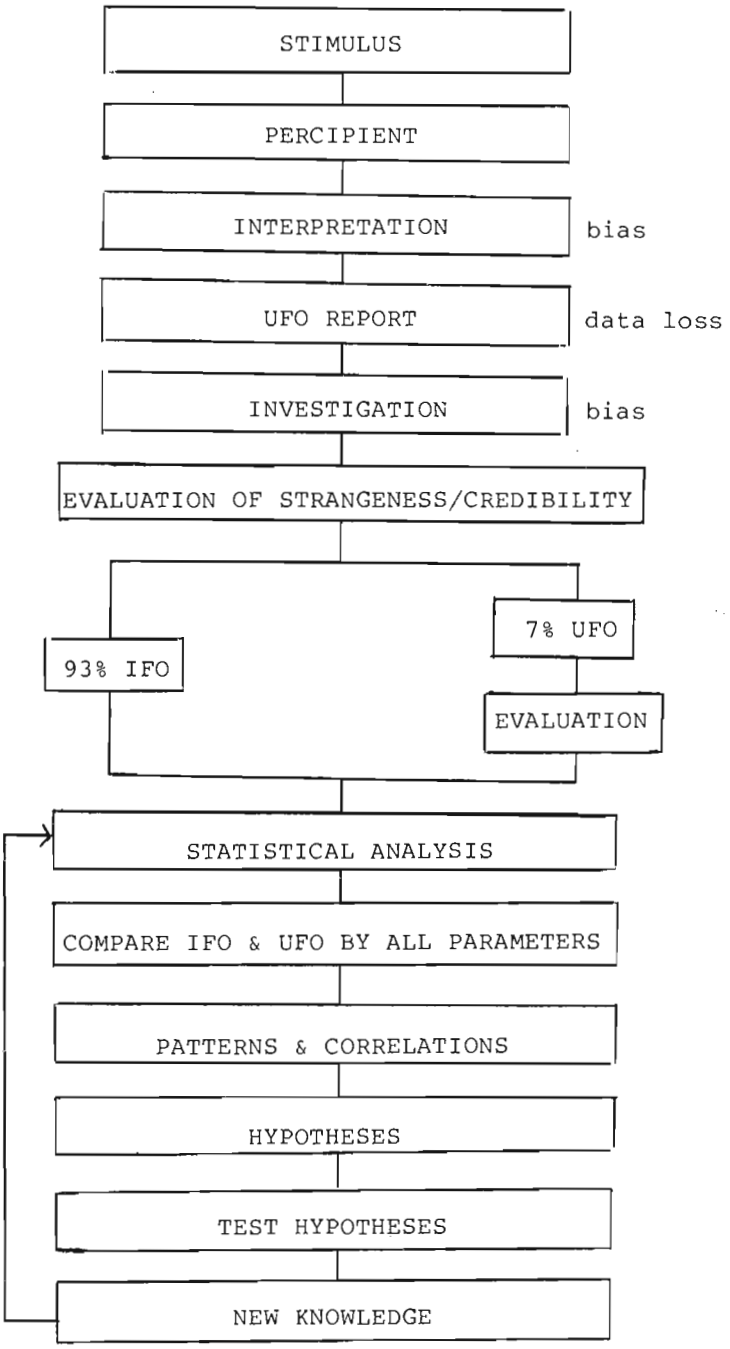
Figure 1



Flowchart of a scientific analysis of UFO reports

JOURNAL TAP VOL. 2 pp24-26

Meteorological flying objects

E W CREW*

A SUGGESTED METEOROLOGICAL EXPLANATION OF CERTAIN TYPES OF FLYING OBJECTS WHICH WOULD OTHERWISE BE DESCRIBED AS UFOs, HAS BEEN PUBLISHED (1) AND AS THIS HAS IMPLICATIONS IN ASTRONOMY THE HYPOTHESIS IS BRIEFLY DESCRIBED IN THIS LETTER.

A stroke of lightning is an electrical discharge in the atmosphere arising from a voltage gradient. This electric field acts on both positive and negative charges, but the acceleration and average velocity is far greater for electrons than for any other particles, since their mass and volume are much smaller. When free electrons in the atmosphere are accelerated to velocities high enough to produce more free electrons in collision with the atoms of atmospheric gases, the process is called cascade ionisation. There is a very large and rapid increase in the current flow, causing the general small leakage current to become a massive filamentary discharge, resulting in sudden high temperatures, emission of light and considerable acoustic noise. This is a very much simplified description of the processes responsible for terrestrial lightning, based on the detailed accounts in recent literature(2).

The voltage gradient which causes the flow of current acts on all charged particles, but it is generally assumed that 'all current is carried by electrons since the mobility of positive ions is low'(3). The main constituent of the gas in the discharge channel is nitrogen, which has a molecular mass of 2.34×10^{-26}kg. Electrons have a mass of 9.11×10^{-31}kg, so they would rapidly drain from the lightning channel to the zone of positive charge. The voltage gradient in a lightning channel is initially about 1 kV m^{-1} and as the force on a charge of 1e is 1.6×10^{-15}N, the theoretical acceleration of a singly ionised molecule of nitrogen would be

$$\frac{1.6 \times 10^{-16}}{2.34 \times 10^{-26}} = 6.84 \times 10^{9} ms^{-2}$$

A typical discharge duration is 40 μs, and the theoretical final unimpeded velocity of the ionised molecule would be 274kms^{-1} , and the distance travelled 5.5m. These figures, of course, ignore many factors, such as the effect of the electrons travelling in the opposite direction and collisions with neutral atoms and the few negatively ionised atoms. Nevertheless, they indicate that a high longitudinal velocity of particles having relatively high mass is both possible and likely in a current discharge channel, even when the voltage gradient has appreciably declined during the discharge. A realistic estimate of the velocity is that of sound at standard temperature and pressure (STP), namely 330 ms^{-1}, and if the acceleration to this velocity is linear, the distance travelled in 40 μs is only 6.3mm. There would be a long string of ionised particles all acted on by a force in the same direction, pushing along with them a mass of neutral particles, following collisions in the channel. The kinetic energy of this long streak of gas, compressed by its own magnetic field, would be considerable and one would expect it to be projected like a lance into the atmosphere far beyond the thunderstorm area.

It must be admitted that the evidence for such jets of matter arising from strokes of lightning is at present rather minimal, but in science it is often the case that certain features which later seem obvious are not noticed until observers expect to see them. There are, however, a few reliable terrestrial examples supporting this hypothesis and there are, in my view, many more in astronomical atmospheres, as described below.

One afternoon in 1971 July, a retired general practitioner, Dr. L.H. Worth, climbed to the rounded summit of the Puy Mary, 1770m, in Central France. He could see a storm in the valley below him about three kilometres away, and he heard thunder. A few seconds later he felt a blast of hot air, so powerful that he had to lean against it, and this occurred three times in the next few seconds. He noticed that other people on the mountain near him rushed away for shelter. Some time later a friend persuaded him to write to *Nature* about his experience and the letter was published under the title 'Atmospheric mystery'(4). His letters with more details were also published in *Weather*(5) and *New Scientist*(6), but only one suggested explanation of this event appears to have been published(1). This is that the jets of air were caused by the successive strokes of lightning, and Dr. Worth happened to be in the very restricted area above the level of the lightning where these jets impinged.

There may have been many such unreported incidents and there are many cases of unexplained accidents to aircraft in apparently still air conditions in flight some distance from thunderstorm areas which may have been caused by sudden violent disturbances caused by such jets. High voltage discharges in thermonuclear research show similar characteristics.

'No high pressure discharge in practice is free of gas flow'(7). Photographs showing a stroke of lightning rising from a point on the ground to meet a secondary stroke(8) also indicate that positive ions are active in a discharge channel. In another incident, an observer saw what appeared to have been luminous material ejected from lightning, followed by discharges from the ionised matter into zones of opposite charge(9).

If a stream of ionised air is ejected from a lightning discharge channel and approaches a grounded conductor, a charge of opposite sign would be induced in the latter, and if the jet stream has sufficient velocity and charge, a steady discharge would take place, which may be luminous. This seems a reasonable explanation of certain types of ball lightning (10) offering further evidence for discharge-generated jets. A similar process would occur in an encounter between two oppositely charged streams of air, as indicated by another theory of ball lightning(11).

Jets travelling in a roughly vertical direction into the upper atmosphere, produced by a stroke of lightning, seem likely to give rise to a phenomenon which I shall describe as a meteorological flying object, or MFO for short. An appreciable mass of water vapour is likely to be entrained in the compressed discharge channel, and this would cool and condense in the upper atmosphere. Such streaks of misty material, following a parabolic trajectory, would be particularly conspicuous when lit by morning or evening sunlight, and their shape and position would constantly change, so that if they were seen from a high-flying aircraft it would be very difficult to judge their distance and velocity.

An interesting situation arises if the water vapour in such streaks of mist freezes. The solid particles at the head of the moving column would encounter atmospheric resistance and their speed would reduce more than that of the following particles, causing the ice to bunch together, forming a solid lump, which would eventually fall to the ground shortly after the stroke of lightning responsible for the formation of the jet. Many cases of the fall of large lumps of ice have been reported and these are often considered to have been large hailstones or falls from aircraft. This is not a satisfactory explanation for many of the incidents, however, since hailstones do not fall as single isolated lumps of ice and aircraft did not exist at the time of most of these observations, or they produce quite different ice specimens from those found.

In one such case, the observation and report (12) were made by a qualified scientist who was a physicist of UMIST and a lightning observer for the Electrical Research Association, Dr. R.F. Griffiths. He noted the time of occurrence of a single violent flash of lightning, then exactly nine minutes later an object crashed to the ground about three metres from where he was standing. The pieces indicated that the object had been a large piece of ice estimated to have weighed between one and two kilogrammes. From the largest intact piece it was seen that there were 51 layers of alternating clear ice and air bubbles. Careful subsequent investigations by Dr. Griffiths showed that there were many reasons why the ice was unlikely to have grown on and fallen from an aircraft. A suggested explanation of this event, with rough calculations, is described below.

The ice was formed from the water vapour entrained in the discharge channel of the single powerful stroke of lightning. The layers were formed by the variation in density along the discharge channel because of the intermittent nature of the stroke of lightning, each layer being equivalent to 50-100m of channel. The total length of the channel would therefore have been between 2.5 and 5.0km. The total weight of the ice lump was estimated to have been 1.4kg from deductions about its probable shape. The amount of water vapour in the atmosphere is generally about 10g per kg. of air, and the density of air at STP is 1.2kg m^{-3}. The volume of air which contains 1.4kg of water vapour would then be 117 m^3 and if it is in the form of a lightning channel 2.5-5.0 km long, its diameter would be 240-170mm. This is very close to the estimated diameter of 220mm based on the shape of the ice lump.

The interval of nine minutes between the flash of the lightning and the crash of the ice can be obtained by many combinations of the probable values of height and velocity of the jet stream, as in the following example.

Initial height of jet 6km
Vertical speed 550ms^{-1}.
Calculated time to apogee 56 s.
Vertical distance to top of trajectory 15.5 km.

Total height 21.4 km.
Terminal velocity 44.4 ms^{-1} (160 km hr^{-1}).
Calculated time of fall to this velocity 4.5 s.

Distance dropped 100m.
Time to fall remaining distance to ground at the terminal velocity 480 s.
Total time from jet formation to ground contact of ice 540 s, that is nine minutes.

It is very rare that an observation of this type is made by an observer with all the requisite qualifications for accuracy and investigative skill. If the claim that the ice could not have fallen from an aircraft and was not a giant hailstone, as stated by Griffiths (12), is correct, then it seems most probable that the stroke of lightning was responsible, giving further

strong support to the view that in some cases lightning can produce powerful jets which are liable to be dangerous to aircraft.

These comments are intended to show that many UFO sightings probably have a natural physical explanation, not involving the less acceptable hypothesis of actions by extraterrestrial intelligences(13), and secondly that these characteristics are worth further study in relation to the much more extensive atmospheres in astronomy. There is a remarkable number of close similarities between electrical discharge characteristics and many astronomical phenomena (14), and although there are difficulties in relation to the charging processes involved, some answers to these problems have been published (15) and at least one other theory in the astronomical literature (16) is on similar lines.

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JOURNAL TAP VOL. 2 pp27-29

Are we alone, or could they be in the asteroid belt?

MICHAEL D. PAPAGIANNIS*

THE OBSERVATIONS THAT LIFE HAS A NATURAL TENDENCY TO EXPAND INTO ALL AVAILABLE SPACE, THAT ADVANCED TECHNOLOGICAL CIVILIZATIONS SHOULD BE ABLE TO ENGAGE WITH RELATIVE EASE IN INTERSTELLAR TRAVELLING, AND THAT ONCE THIS THRESHOLD IS CROSSED THE COMPLETE COLONIZATION OF THE ENTIRE GALAXY WILL BE ACCOMPLISHED IN A VERY SHORT INTERVAL RELATIVE TO THE AGE OF THE GALAXY, LEAD US TO THE FOLLOWING DILEMMA : EITHER THE ENTIRE GALAXY IS TEEMING WITH INTELLIGENT LIFE AND HENCE OUR SOLAR SYSTEM MUST HAVE BEEN COLONIZED HUNDREDS OF MILLIONS OF YEARS AGO, OR THERE ARE NO OTHER INHABITANTS IN OUR SOLAR SYSTEM AND HENCE MOST PROBABLY NEITHER ANYWHERE ELSE IN THE GALAXY. BEFORE ACCEPTING, HOWEVER, THE BLEAK VERDICT THAT WE ARE ALL ALONE IN THE GALAXY, WE MUST SEARCH CAREFULLY THROUGHOUT THE SOLAR SYSTEM FOR ANY SIGNS OF OTHER TECHNOLOGICAL CIVILIZATIONS. THE MOST LOGICAL PLACE TO LOOK FOR THEM SEEMS TO BE THE ASTEROID BELT BECAUSE OF THE MANY ADVANTAGES IT OFFERS TO A GALACTIC SOCIETY LIVING IN SPACE COLONIES.

The euphoric optimism of the sixties and the early seventies that communication with extraterrestrial civilizations seemed quite possible (Sagan 1973), is being slowly replaced in the last couple of years (Hart 1975; Jones 1976; Shklovskii 1977) by a pessimistic acceptance that we might be the only technological civilization in the entire Galaxy. This change of heart has been happening as a result of the following observations :

(1) Life seems to possess a natural tendency to expand like a gas to occupy all available space. This is evident, for example, when algae rapidly take over an unattended swimming pool, and certainly has been the characteristic of man who after conquering the entire planet is now ready for new ventures in outer space.

(2) Interstellar travelling seems easily attainable, especially in the 0.01-0.1c range, by advanced technological societies. The building of permanent colonies in space, as envisioned by O'Neill (1974), will make it possible for people living all their lives in these colonies to disengage emotionally from the mother planet. Such colonies would have the emotional strength and coherence to undertake trips to the nearby stars that would last for several generations. Nuclear fusion, with a $0.007mc^2$ yield, can become a most attractive energy source for such trips even at an efficiency ε as low as 10 to 20 per cent. As seen from the relation

$$\frac{1}{2}MV^2 = 0.007\ \varepsilon mc^2$$

a spaceship of mass M will be able to reach speeds $V = 1\text{-}3 \times 10^{-2}c$ with a fuel load m not larger than M.

(3) In the last 100 years or so, the velocities of long, non-stop voyages (trains to spaceships) have increased from $\sim 10^3$ to $\sim 10^6$ cm/s. It seems reasonable, therefore, to anticipate an additional increase by a factor of 300 to 1000 in the next 100 to 200 years, especially with the use of nuclear fusion. One can be optimistic also about self-sufficient space colonies, which according to the computations of O'Neill could be a reality even before the turn of the century. It appears, therefore, that with steady technological progress and without the need of any new major discoveries, we should be able to undertake stellar missions in a few centuries. This is an interval in cosmic terms as brief as a few minutes in the life of a man, which means that our civilization is extremely close to this critical moment.

(4) Once the threshold of interstellar travelling is crossed the entire Galaxy will be colonised in only a few million years, which is a very short period relative to the 10 to 15 billion year age of our Galaxy. Even by assuming an expansion rate of one light year per century (say 500 years for a 10 light year trip to a suitable nearby star, and 500 years for the building of the new colony before it can undertake further stellar missions), we see that the entire Galaxy can be conquered in less than 10 M yr. It is also clear that as new colonies join the colonization wave, there will be so many interstellar travellers that there will be no reasonable place in the Galaxy that will remain unoccupied.

(5) The many attractive features of our solar system (a single, well-behaved, long-lasting, hot star surrounded by a multitude of diverse planets, moons and asteroids) could have not been missed by the colonisers, and therefore our solar system could have not been bypassed as the colonization wave swept through the Galaxy.

(6) The likelihood is that the extraterrestrial colonisers of our solar system, especially after their long interstellar voyages, will have become accustomed to space living. As a result, not only will they not need a habitable planet to settle on, but most probably they would prefer to continue living in space colonies. The orbits of their choice would obviously be these that provide the most efficient access to material and energy resources. From the above it follows that if

ARE WE ALL ALONE, OR COULD THEY BE IN THE ASTEROID BELT?/MICHAEL D. PAPAGIANNIS

hundreds of millions of intelligent civilizations did evolve in our Galaxy over the past several billion years, as suggested by the integration of the Drake-Sagan probability formula over the entire history of the Galaxy (Freeman & Lampton 1975), then it seems inevitable that some of these galactic civilizations would have achieved interstellar travelling and the whole Galaxy, including our solar system, would have been teeming with advanced technological societies. Conversely, if we are the only technological inhabitants of our solar system, then most likely we are also the only ones of the entire Galaxy. This deduction implies that the values commonly used for one or more of the probability factors of the Drake formula (Shklovskii & Sagan 1966; Kreifeldt 1971; Sagan 1973; Oliver 1975) must have been grossly over-estimated (Papagiannis 1978).

COULD THEY BE AROUND?

We have reached, therefore, the stage where the acid test for our dilemma seems to be whether or not our solar system is inhabited by an advanced extraterrestrial society. Of course there are in the literature several reports of UFO sightings and even stories of dramatic encounters with extraterrestrials. There are also several popular books, such as those of von Däniken (1969), in which the intervention of extraterrestrials in this planet is envisioned on countless occasions. Still, however, there is no convincing proof to any of these stories or suggestions; in accordance with the Shklovskii principle that "all events should be considered natural unless proven otherwise", the scientific community remains unconvinced about visits to Earth by extraterrestrials. As a result, and in accordance with the presently available evidence, we tend to believe that we are the only advanced civilization inhabiting our solar system.

Absence of evidence however, should not be taken as evidence of absence. Before we resign therefore, to a pessimistic acquiesence that we might be the only technological inhabitants of our Galaxy, we have the responsibility to search exhaustively in our solar system for other advanced societies. The supposition that we are alone in the solar system is based essentially on the assumption that if others were here they would have already made contact with us, or at least we would have become aware of their existence. Neither of these assumptions, however, is necessarily true, though it is possible that some of the thousands of UFO sightings might deserve some further consideration as suggested by Hynek (1972).

The most intriguing question in the whole problem is the following: if our solar system is indeed inhabited by extraterrestrials, where are they most likely to be found? In earlier days people had tried to identify one of the other planets of our solar system, most frequently Mars (Lowell 1908), as the abode of an extraterrestrial society. From the above discussion however, it follows that the colonisers of our solar system are likely to continue to live in space colonies, probably at reasonably close distance to the Sun so as to have a sufficient supply of solar energy for their needs, and most likely near celestial bodies of weak gravity from which they would obtain all the natural materials needed for the continuous prosperity of their civilization.

THE ASTEROID BELT CHOICE

Within this framework, it seems that the asteroid belt would be an ideal place for the extraterrestrials to set up their space colonies. Not only would they have an easy access to all natural resources by mining the asteroids, but they would also be close enough to the Sun to have ample solar energy for their needs. Some years ago this suggestion would have sounded unreasonable, mainly because we used to think that the asteroid belt must be full of debris which can be very hazardous for any spaceships permanently stationed in their vicinity. The *Pioneer* 10 and 11 missions, however, (Kinard *et al* 1974) have found that the density of meteroids in the asteroid belt hardly differs from any other place in the solar system, and therefore, the colonization of the asteroid belt seems quite feasible. There are, of course, also the Kirkwood gaps in the asteroid belt which are practically free of any asteroids. A spaceship could remain there almost indefinitely by simply compensating against the tidal effects of Jupiter with its own propulsion system.

One can even consider the possibility that the large fragmentation of the components of the asteroid belt might be the result of mining projects by the extraterrestrial colonies. It is even conceivable that they have tried to keep the region clean of free floating debris for their safety. The identification of space colonies 1 to 10 km in size hidden in the asteroid belt would not be an easy task for a terrestrial observer because from a long distance these colonies would be practically indistinguishable from the thousands of natural asteroids. They would also follow the same orbits around the Sun as the asteroids, which would be much more numerous and therefore it would be almost like searching for a needle in a haystack. Still with careful observations in the radio domain we might be able to detect some leakage of radio noise, infrared observations might reveal a higher effective temperature than that which is justified by their distance from the Sun and finally, properly planned space missions to the asteroid belt might do some successful eavesdropping and might even return some direct photographic evidence. The search project, therefore, though admittedly

quite difficult, is still within the capabilities of our present technology and in view of the far-reaching consquences of either positive or negative results, should be given a serious consideration.

WHY ARE THEY SILENT?

As to why they have not yet made contact with us, one can think of several answers, including the zoo hypothesis of Ball (1973). The simplest explanation, however, and hence maybe the most probable one, might be that of confusion and indecision. Our hypothetical neighbours were probably acquainted for millions of years with a lethargic Earth inhabited by life forms not worth any effort of communication. Suddenly, in the last 50 years or so, which probably is a very short interval for a well-settled galactic society, they have been confronted with an exponentially mushrooming technological society (aeroplanes, radio-communications, nuclear bombs, spacecraft) which undoubtedly must be causing them some serious concern. It is possible, however, that faced with such a sudden technological explosion, a serene cosmic civilization would be perplexed and undecided as to how to handle the situation. They might be debating on whether to crush us or to help us, and therefore they might be simply postponing their decision, waiting to see what we are going to do with ourselves. Meanwhile, the asteroid belt provides a natural hide-out where they can remain inconspicuous for a long time until we decide to search for them.

In conclusion, though the idea that the asteroid belt might be harbouring a number of extraterrestrial colonies sounds like science fiction, the arguments presented above suggest that *if* there are any extraterrestrial colonies in our solar system then the asteroid belt seems to be the most logical place to look for them. Before accepting, therefore, the bleak verdict that we are all alone in the Galaxy, we have an obligation carefully to investigate this possibility, remote as it might seem.

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JOURNAL TAP VOL. 2 pp30-32

Dog meets UFO - a brief survey

D. G. BUTCHER*

REPORTS OF ENCOUNTERS BETWEEN DOGS AND UFOs ARE BY NO MEANS UNCOMMON. THERE MUST BE MANY CASES ON RECORD. THE NATURE OF THESE ENCOUNTERS, TO JUDGE FROM MY RATHER LIMITED SOURCES, FALLS UNDER FOUR MAIN HEADINGS:

Cases of fright on the part of the dog

(a) Mild alarm.

(b) Severe Fright.

Cases of defiance on the part of the dog

(a) Fear of dog shown by UFO entities.

(b) Positive defensive action taken against dogs by UFO occupants.

The attempted abduction of dogs by UFO occupants

Traces of a giant dog in the vicinity of a UFO sighting

Cases of mild alarm among dogs at a UFO encounter usually results in barking and howling which draws the attention of the human witness to the scene. The four following reports are typical :

At Poncey-sur-l'Ignon, 1954 June 02, dogs started baying and the witness saw a 'great cloud cigar' (1).

At Premanon, (Jura), 1954 September 27, a barking dog drew children's attention to a UFO entity (2).

At St Alexis de Montcalm, Montreal, 1964 November, a dog awakened a Dr Lebel in the early hours of the morning. Witness saw a large luminous ball hanging stationary above the tree tops near his home (3).

Dogs awakened a man who was sleeping in a Florida swamp, some date in 1966. A lighted object was seen in the distance. The man tried to communicate with it but was knocked unconscious (4).

It is difficult to judge, from these reports, the degree of fright experienced by the animals, but they were disturbed enough to bark or bay. There are, however, instances on record of dogs howling in the presence of a UFO.

When the famous 'airship' appeared at Paris, Texas, in 1896, a dog howled until it passed from sight (5); and howling dogs were reported to have awakened a couple of boys on two consecutive mornings in August 1965, near Sydney, Australia, and on each occasion a UFO was seen (6).

At Clifton Hampden, in North Berkshire, in 1966, a UFO came into view while a woman was shutting up her Corgis for the night. The dogs started to whine, making a 'dreadful noise' (7). Running dogs, as if fleeing from a UFO, can be seen in the Cappoquin photograph.

In 1965, September 09, a girl was out in the evening walking with her dog between Tongham and Ash Green, Surrey. Suddenly the dog sat down and refused to move. It was then that its mistress saw 'two headlamps' in the sky. The girl was disinclined to attribute the dog's action to the UFO, but we cannot be sure that such was indeed the case - it could conceivably have been a temporary paralysis, though that seems unlikely (9).

Cases of severe fright

At Weston near Runcorn , (no date/1967) a girl saw something in the sky, and sought refuge in a nearby house. It was reported that the hair of a dog stood on end (10).

At Morriston, South Wales, 1965 August 25, a woman was standing at the window when a bright light in the sky approached with such a glare that it seemed to burn her skin. Her neighbour's dog became very frightened and for ten minutes, refused utterly to go out (11).

At Quarouble, France, 1954 September 10, M. Dewilde's dog was "howling loud enough to wake the dead". A UFO was seen on the railway lines near his house. Just then, his dog came crawling up to him on her belly, and began to bark again. Shortly afterwards two UFO occupants were seen (12).

At Ringstead Bay, near Weymouth, 1967 October 26, a UFO arrived overhead and hovered there for some time. The witness' Alsation dog was very distraught, and refused to 'sit'. She pestered her master to move on. On each of four subsequent visits to the area, she became very distressed (13).

The dog in the following report, from Valence, France, as in the previous two examples, was a bitch. 1954 September 26 the witness' dog first barked, and then howled miserably. A UFO was then seen, and its occupant. The witness, a woman, fled. The dog continued to howl, with all the dogs of the village joining in. The dog was still trembling with fright three days later (14).

In the following case, it is reasonable to suppose that the crowd, who were throwing bricks at the UFO entities, contributed

to the dog's panic. When a UFO landed on a sports field at Monza, Italy, a man set his Boxer dog on to the creature who was in a sort of diver's suit. The dog turned on its master and bit him (15). Perhaps we have here not only a case of severe fright, but also of disorientation. It may even have been an example of positive defensive action on the part of a UFO entity.

UFO occupants show fear of dogs in some instances, as in the case of an American working in Austria in 1951. The report has it that the memory of the witness was preserved only because a dog's barking frightened the occupant away at the last minute (16).

1954 September 30, Valence, France. A woman with a dog met a form 'swathed in cellophane'. Seeing the dog, it climbed back into a UFO and took off (17).

Perpignan, France - 1954 October 15. Customs offic ial attested on oath that a reddish object landed near him, and that a man came out of it who was apparently scared by the barking dogs. He climbed back in, and took off (18).

Positive defensive action taken against dogs by UFO entities. 1954 October 17, near Corbierres, France. A man was out hunting with his dog. A UFO appeared, and two beings emerged from it. The man fled, but his dog ran towards the aliens. The man then noticed that the dog was retreating, walking in an awkward manner, as if partially paralysed (19). What seems to be the same story, but with a different time and place attributed to it, tells of a man who came upon a UFO when out hunting with his dog. The man fled, and the dog went for the object, but became semi-paralysed, and was hardly able to get back to its master. According to this account, the incident took place at Manosque, near Valensole, in France, 1954 October 14 (20).

A group of UFOs landed on the railway line near Trancas, Province of Tucuman, South America, 1963 October 21 and directed beams of light on a nearby house. The occupants of the house were terrified. Three fierce dogs were affected by the rays, and became listless and enervated; but when the beams fluctuated, or played on another part of the house, they seemed to come to life again and began to howl. They kept this up for some time after the UFOs had left (21).

Attempted abduction of dogs by UFO entities. The following case may point to an attempted abduction. At Point Pleasant, in the Ohio Valley, USA, 1967 January 10, barking dogs drew attention to a UFO which was descending a hill and edging along a ravine which led down to some kennels. It then changed direction (22).

In the Autumn 1966, three dogs disappeared, the incidents coinciding with the appearances of UFOs in the Point Pleasant area (23).

Everittstown, New Jersey, 1957 November 06. A non-human, gnome-like entity, associated with a luminous egg-shaped object, spoke to John Trasco in 'broken language', saying "We are peaceful people. We don't want no trouble. We just want your dog." The dog was a six-year old Belgian police-dog tethered to the side of the house. It was barking furiously, and frothing at the mouth with excitement and terror (24). Earlier on the same day, at Dante, Tennessee, a 12-year old boy got up to let his dog out of the house. Twenty minutes later he went out to fetch the dog, and saw it with a group of other dogs near an elongated egg-like object. One of the men (associated with the object), grabbed at the dog who growled and backed away. The man then picked up another dog - an anonymous, small, dark-brown one - but it started to bite him, and the man put him down (25).

Traces of a giant dog in the vicinity of a UFO sighting. This is a special category, and can hardly be classed as an encounter. On the evening of 14 December 1963, on the road to Vereeniging, South Africa, two men, Messrs. Muller and Immelmann, saw "an exceptionally large dog... as big as a buck". A little later, as they were still travelling along the same road, they decided to return and investigate. At the spot where they had seen the dog they were persistently buzzed by a UFO (26).

1967 January 19 on the Interstate Highway 64, at about ten miles outside Charleston, West Virginia, USA, a large metal sphere was seen hovering at about four feet above the road surface. Three months later, investigator, John Keel examined the precise spot and found a series of "very strange footprints in the mud beside the road... They looked like hugh dog tracks.. except that they were not dog tracks and were so deep that the animal which made them must have weighed from 200 to 400 pounds". None of the wildlife authorities in Charleston were able to identify the tracks (27).

Three coinciding elements are to be noted in these two stories - the UFO, the road and the trace of a giant dog. In those Black Dog legends which tell of a spectral animal having a light, or lights, where its head should be, a similar triad is implied: a mysterious light, a road, and a very large dog. The tracks mention in the last case might be compared with some of the alleged footprints of the 'Surrey puma'. Those discovered in the vicinity of a 'puma' sighting on Hurtwood Common were of a very large dog, according to Maurice Burton, writing in the Surrey Advertiser in 1965.

Leaving aside numerous instances of mild alarm among dogs encountering a UFO, we may straight away deal with a few cases of more severe fright, such as that of the dog whose "hair stood straight up" when something like two red reflectors were seen in Doddrige County, USA in November 1966. The animal ran into a field and

was not seen again. An abduction? (28)

Similarly, in 1967 June 16, dogs panicked and took to the fields in Argentina when a hideous rumble was heard overhead and mysterious glaring lights seemed to emanate from the sky (29).

In the case of the 'UFO nests', or circular depressions found in swamps at Tully, in Queensland, Australia, a witness who had previously dreamt of UFOs landing on his property, said that on the morning of the incident, his dog suddenly went made and bounded off into the swamp (30).

Perhaps the case of the little dog of Betty and Barney Hill could be classed as severe rather than mild fright. Its ears pricked up at the onset of the beeping sounds heralding the contact, but at the end of the affair it was trembling (31).

John Keel reports the case of a shepherd dog having been crushed to death in a field in Ohio, USA, every bone in its body having been broken. The knee-high grass around it was flattened in a perfect circle, reminding us of the 'UFO nest' case in Queensland, mentioned above (32). Keel said that he had examined a number of dogs which had been mutilated as if by a scalpel (32).

In the early Maury Island UFO sighting incident, the witness' dog was killed by a slag falling from the object. This was in June 1947 (33). And in the affair of the boy, Oscar Iriart, in Argentina in July 1968, a dog was paralysed (34).

Disappearances of dogs in the vicinities of UFO sightings, according to John Keel, were very common in West Virgina and Ohio in 1967 (35).

A number of encounters between dogs and errant hairy monsters have been reported from Florida. Sometimes the dogs have refused to pursue the thing; at other times they have been the aggressor. Once, when a dog chased one of these monsters into a wood, it returned with a chunk out of its hide, and was weak from loss of blood (36). As for evidence of a giant dog associated with UFO phenomena, Charles Fort mentioned, among similar cases, that of a wolf or large dog which ravaged sheep at Hexham, North Wales, in 1904. Bloodhounds and foxhounds could or would not pick up its trail. This was during a revivalist period in Wales when many mysterious lights were seen, such as that which at one time followed the car of Mrs Jones, a revivalist leader (37).

An unclassified case concerns the favoured little dog belonging to Charles Garreau. At Chalais, France in November 1954 it was patted by UFO entities (38). That was one little dog that had its day!

D.G. Butcher was an active member of the Surrey Investigation Group on Aerial Phenomena until his death in 1971.

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MAPIT resources centre

DAVID REES, MARK TYRRELL, STEPHEN CLEAVER*

THE NEED FOR INFORMATION IS AS BASIC A REQUIREMENT FOR MANKIND AS ANY OTHER. INFORMATION AS A RESOURCE HOWEVER, IS INCREASING AT AS FAST A RATE AS NATURAL RESOURCES ARE DECREASING, PERHAPS EVEN FASTER.

UFO RESEARCH IS A SUBJECT WHICH IS GENERATING AN EVER-INCREASING POOL OF INFORMATION. THE FOUNDATION STONE FOR ALL OBJECTIVE RESEARCH IS INFORMATION - FOR WITHOUT IT NO REAL RESEARCH CAN CONTINUE. ONE OF THE MAIN REASONS PEOPLE ARE DETERRED FROM BECOMING INVOLVED IN THIS TYPE OF ENDEAVOUR IS THE LACK OF ACCESSIBILITY TO THE DATA THEY MAY REQUIRE.

Science has long established channels of access to proper library facilities, which enable individuals to acquire items of interest. To quote Robert Morrell "Ufology, whilst claiming a status within various disciplines, has not even managed to provide itself with elementary research facilities of this type." Since our joint 'Statement of Intent' was published in 1979, MAPIT and FUFOR have discussed the possibility of setting up a 'resources centre'. Both organisations fully recognise the problems this involves and we would like readers of this article to understand that it was not a decision taken hastily by overenthusiastic individuals likely to lose their interest in the project after a few months. We intend to establish the Centre and wish to appeal to you to assist us.

There are many good reasons for starting such a 'centre', for example:-
(1) It will offer a comprehensive collection of reference material in one central location, which will include subjects other than UFO research; (2) The information stored at the Centre will be available to all interested parties and (3) Over the long-term it will establish a much needed, long overdue, archival collection of items which will provide a historic record for the use of future generations of researchers.

Any collection of material must be fully indexed and catalogued for easy reference. To assist the Centre we have ordered 'Sinclair ZX-81' computer, which will allow us to utilise the latest technology for setting up three main indexes. These are a General Index; Subject Index and an Abstract Index. The potential for forming new indexes will be greatly enlarged with the help of the 'ZX-81'; as John Prytz has said, "any information that can be stored on a piece of paper can be stored in a computer." Examples are bibliographies, names of authors, titles of books, articles from journals with specific dates and edition, cross-references, indexes from alternative sources and data from other UFO researchers, including their names, addresses and telephone numbers.

The Centre will be a facility to which everyone will have access, whether or not they are involved in serious research, the media, free-lance writers or just ordinary individuals who require an answer to a particular query. The methods of obtaining the material will be via the telephone, writing to the Centre and in some cases, photocopying the material required and sending it to the enquirers. Information can be obtained from personal visits. There are many things to be organised. The formation of a regular team of translators can be planned as a long-term project, as can the purchase of a quality photo-copier to be housed at the Centre. The Centre will have to charge for supplying any information in order to cover running costs.

This article has been compiled to make you aware of the project and we would like to hear from you about the Centre. We would like to see many organisations and individuals supporting us. This can be done in various ways. It is, for example financially impossible for us to subscribe to every magazine, newsletter and journal published therefore, we would like to hear from Editors who are willing to donate copies (both back numbers and future issues) of their publications for inclusion in the Centre records. Any donations will be greatly appreciated, e.g.: newsclippings, old magazines, tapes, photographs, case-histories and so on.

To aid the purchase of collections and individual items - a support fund has been formed and persons wishing to send any donations are asked to forward them to the MAPIT address:-

MAPIT, C/o David Rees, 92 Hillcrest Road, Offerton, Stockport, Cheshire, SK2 5SE, England (Tel. 061-4834210).

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JOURNAL TAP VOL. 2 pp34-36

NASA news

'LIFE IN SPACE' WATCH ENDS

The United States Government's six-year old project to listen for other civilisations elsewhere in the galaxy ended amid severe criticism on 30 September.

American astronomers condemned the budget cut as "penny pinching" and as showing "a tragic lack of imagination". The project was an attempt to detect, using large radio telescopes, signals from possible civilisations among planets circling the galaxy's 150,000 million stars.

Astronomers especially deplore the scrapping of a computer programme to separate any artificial signals from the vast amount of natural radio emissions. Not yet finished, the programme would have been ready within six months for linking to receivers.

An official of NASA commented: "If you don't look for anything, you never find it."

VOYAGER DISCOVERIES

Unexpected discoveries about Ganymede and Callisto, Jupiter's largest moons, have triggered debate over their origins and development. Scientists had previously believed the sibling satellites would look alike, equally devoid of atmosphere or activity except for craters left from meteorite bombardment.

But Voyagers 1 and 2 in their 1979 flybys of Jupiter have unveiled a surprisingly different, bimodal face on Ganymede, apparently the result of internal heating, which contrasts with Callisto's uniformly cratered surface.

Ganymede, though Jupiter's largest satellite - about 1½ times the size of our Moon - is only slightly larger than Callisto and occupies an adjacent orbit around Jupiter. Thus, Ganymede was expected to look like Callisto.

Voyager pictures show that Callisto is, as predicted, a frozen, pock-marked sphere without atmosphere or evidence of internal activity. In fact, scientists have found that Callisto holds more craters than any other body in the solar system. The craters are remnants from four billion years ago, when meteors showered through our forming solar system. This ancient terrain, found on both Ganymede and Callisto, appears dark and dull, not bright. And parts of Ganymede's surface are light and covered with grooves which seem to overlap the older terrain.

The darkness of this cratered ground seems to come from contamination of the ice. Some scientists believe a uniform mixture of rock and ice frozen together, with rock particles in the ice, is responsible for the darkness. Others advocate a two-layer model, with an ice shell encasing a rocky centre with the darkened surface caused by collected dust and cosmic particles.

The brighter terrain is considered to be a younger surface most likely caused by internal heating which might have melted or weakened the ice, producing flow, grooves and overlap.

Three likely sources of this extra heating which changed Ganymede's face, according to NASA Ames scientists Cassen and Ray Reynolds and Stanton Peale of the University of California at Santa Barbara, are formational heat, radioactive energy and tidal dissipation. These researchers believe the radioactive effect was the most important heating factor, despite controversy.

VOYAGER 2 REACHES SATURN

NASA's Voyager 2 reached Saturn on August 25, 1981, its closest approach occurring at 8.25 p.m. PDT, as it passed 101,000 kilometres (63,000 miles) above the planet's cloud tops.

Voyager 1 flew past on November 12, 1980 and is moving out of the ecliptic plane of the solar system, searching for the heliopause, the limit of the solar wind. Despite some camera problems which prevented the spacecraft from carrying out some of its experiments, Voyager 1 could continue to return scientific data into the next century, arriving at Uranus in January 1986, then on to a rendezvous with Neptune in August 1989.

Before Voyager 1's Saturn encounter, project officials planned that Voyager 2's studies of Saturn, developed over two years, would be revised based on scientific data returned by the first spacecraft. So many unexpected and unexplained phenomena were observed by Voyager 1 in the Saturnian system that Voyager 2 was extensively reprogrammed in flight to tailor its encounter to further explore the results from the first Voyager.

Saturn's rings, for example, unparalleled in the solar system, were found by Voyager 1 to be even more complex in their structure and dynamics than previously believed. Voyager 2 has taken an even closer look at the ring system.

Unlike Jupiter, Saturn's dark belts and light zones are muted by a thick haze layer above the planet's visible cloud tops.

NASA NEWS

Saturn generates almost two-and-a-half times the amount of heat it receives from the Sun, a phenomenon which is probably due to gravitational separation of helium (which accounts for above 11 percent of the upper atmosphere) and hydrogen.

Winds as high as 1,800 km (1,100 miles) an hour blow eastward at Saturn's equator. The velocity decreases to near zero at about 35 degrees latitude north and south.

The planet takes 29.46 years to complete one orbit around the Sun, which is approximately 1.42 billion km (886 million miles) away. A day on Saturn lasts 10 hours, 39 minutes, 26 seconds (as determined by Voyager 1 last year).

Until four years ago, Saturn was believed to be the only planet encircled by rings. But both Jupiter and Uranus were discovered to have thin, barely visible rings. (The Jovian ring was discovered by Voyager 1.) Saturn's rings, however, are much richer in material, mostly chunks of ice and rock ranging in size from dust grains to huge boulders many tens of meters in diameter.

Before Voyager 1's arrival at Saturn last year and the discovery of several hundred 'ringlets', the rings were thought to consist of perhaps six individual rings; from the planet outward they are the D-, C-, B-, A-, F- and E-rings. The dusty G-ring, which was first photographed by Voyager 1, is the innermost ring orbiting about 109,000 km (68,000 miles) above Saturn's cloud tops.

The Cassini and Encke Divisions visible in Earth-based telescopes were thought to be empty of material, but Pioneer 11 detected material within the gaps, which Voyager 1 discovered to be ringlets. Voyager 2 will study the detailed ringlets within the Cassini Division to see if their structure has changed in the nine months since Voyager 1's visit.

NEW THEORY ON ORIGIN OF SOLAR SYSTEM

Two scientists at NASA's Ames Research Centre, Mountain View, California, Dr. Theodore Bunch and Dr. Sherwood Chang, have contributed significantly to changing scientific thinking regarding the origin of the solar system.

Previously, the solar system was thought to have originated from part of a huge, thin and cold cloud of interstellar matter that contracted into a more dense uniform cloud of hot gases and dust called the solar nebula. As the solar nebula cooled, mineral grains formed by condensation. The dust and grains aggregated into small, solid bodies - these were consolidated into the planets, moons, comets and asteroids. According to this theory, the first formed 'planetesimals' of the solar system should contain roughly the same proportions of the rock-forming elements as are found in the Sun.

Earlier studies found such a similarity in a special class of meteorites called carbonaceous chondrites, once considered by scientist to be primitive or unchanged examples of these first formed planetesimals.

But recent findings of the two Ames researchers revealed that these chondrites were not primitive but in fact had gone through chemical changes.

The findings by Bunch and Chang open the doors to new ideas about the origin of these meteorites and, therefore, about what happened in the earliest stages of the origin of the solar system.

The rocky pieces of matter that hold the clues to the origin of the solar system are called carbonaceous chondrites because they contain the element carbon, one of the building blocks of life. They also contain other building blocks - hydrogen, nitrogen and oxygen - and complex organic molecules. They are among the oldest rocks yet discovered, some being 4.65 billion years old, and have been likened to archaeological artifacts.

The researchers found at least three different kinds of clays in the carbonaceous chondrites. The conventional theory hypothesized that these clays formed by reactions between gas and dust in the solar nebula prior to consolidation into small bodies. However, the clays show no evidence of this gas/dust origin. Instead, evidence indicates they formed in ways similar to those of some clays on Earth. (In some Earth environments, water reacts with some water-free minerals to form clays. The water dissolves and transports some minerals away, leaving clay minerals in their places.) These sorts of processes could only have occurred in the parent body of the meteorite (the body the meteorite broke away from) - perhaps, on a comet or asteroid - and could not have occurred in the solar nebula gas/dust cloud.

The three different clays also had three different chemistries. If the solar nebula theory were true, the clays should have more or less a uniform chemical composition. The differences in the clays could be readily explained, however, by the action of water on the minerals in the surface of a small body.

The two researchers now believe the carbonaceous chondrites probably broke away from asteroids or comets after this process had taken place. Thus the chondrites are not unchanged, primitive samples of the past.

This raises the possibility that the water and some of the water-soluble material, including organic compounds, in these

meteorites were originally formed in interstellar space before the origin of the solar system.

Thus, scientists, through the study of carbonaceous meteorites, may be able to look backward in time and determine what was occurring in interstellar space before the solar system was beginning to form, more than 4½ billion years ago.

Bunch and Chang admit that the mystery gets bigger the further they look. They suggest a new model labelled the 'cosmic raisin muffin' model. In this model, when the solar system was forming, the bodies that aggregated at great distances from the Sun in the very low temperature regions - possibly comets - were composed mostly of ice mixed with rocky material and dust, like raisins in a muffin. Nearer the Sun, as close as the outer regions of the asteroid belt, the carbonaceous meteorites formed. They were made of mostly rocky matter with chunks of ice imbedded in them like raisins.

In many of the carbonaceous chondrites, the clays surround small regions of unchanged, relic material. The two scientists theorise that the parent body, aggregated from both rocky and icy building blocks, was heated, causing the ice to melt and the water to react with rock minerals forming the clays. For some reason, perhaps a cooling of the parent body or insufficient water, alteration of the rocky matrix was incomplete, leaving relic islands of rocks.

Work by other researchers supports the new model. Scientists discovered the decay products of aluminum 26, a radioactive isotope of aluminum, in carbonaceous chondrites. It is possible that the heat caused by the decay of this isotope could have melted the ice in bodies consolidated in the low temperature regions of the solar system. Chemical reactions involving the resulting water could have formed the clays discovered in the carbonaceous chondrites.

Bunch and Chang also theorise that during the aggregation of solid matter into asteroid-sized bodies (tens to thousands of kilometers in diameter), the associated collision of building blocks with the growing bodies could have produced enough heat to melt the ice.

The scientists plan to continue their studies of meteorites. "We have to search for a few clues here, a few clues there", Bunch said. "We are like detectives. The more data we collect, the more able we will be to test assumptions, draw conclusions or say that's nonsense."

DIAMONDS FOUND IN ANTARCTIC METEORITE

Tiny crystals of diamond, formed in an ancient cosmic catastrophe, have recently been found in a 10.4-kilogram (23-pound) iron meteorite collected from the Antarctic ice cap in 1977. The discovery was reported in the magazine *Nature* by Roy S Clarke Jr, Daniel E Appleman and Daphne E Ross, all of the Smithsonian Institution's National Museum of Natural History.

This is only the second iron-type meteorite discovered to have diamonds within it. The other meteorite, the Canyon Diablo, was much larger on impact.

Diamonds within it are believed to have been produced as a result of the shock pressure of impact when it hit the Earth. The antarctic meteorite is much smaller and would not have produced a sufficient shock when it hit the Earth - the diamonds therefore must have been produced as a result of a collision in space.

The tiny amounts of diamond found by Dr. Clarke and his colleagues have no commercial value. The meteorite is probably a fragment of an asteriod, and the diamonds in it bear witness to a great collision that probably took place in the asteroid belt many millions of years ago. Diamonds only form at high pressures, such as those existing deep within the Earth. In a small object like a meteorite, such high pressures can only be supplied by intense shock waves produced as asteroids collide with each other - or with the Earth - at speeds of tens of thousands of miles an hour.

The diamond-bearing meteorite was collected in 1977 from the Allan Hills region of the antarctic, where more than a 1000 new meteorite specimens have been found since 1976. Only nine of these meteorites are of the metallic (iron) type; the remainder are various kinds of stony meteorites.

Some of the special meteorites found in the antarctic include an extremely well-preserved carbon-rich specimen, a new family of stony meteorites, another puzzling stone that seems almost three billion years younger than other meteorites, and one that was preserved in the antarctic ice for almost 1½ million years.

BUFORA news

NATIONAL CONFERENCE 1982

The 1982 Bufora National Conference is to be held in Edinburgh on March 13 and 14 at the George Hotel, George Street, Edinburgh.

Registration will commence at 18.00h on the evening of March 12, with a reception for those who arrive at that time for an early start on the following morning.

Registration will continue from 09.00h on Saturday morning, at which time a bookstall and exhibition will open. The official opening will be at 10.00h and it is hoped to have several papers from professional scientists. Already Dr. J. Allen Hynek and a group of colleagues from CUFOS in the United States have announced their intention to come. Replies are currently awaited from some invited speakers and names cannot be disclosed until all these replies have been received.

It is hoped to include a symposium on the close encounter by Mr. Robert Taylor of Livingston which occurred on 1980 November 09. (S. Campbell, *Journal TAP*, 1/2, pp 43-46; Mr. Keatman and A. Collins, *Flying Saucer Review* 25/6, 26/1 and 26/3).

The Livingston case is particularly interesting for its features and is likely to be studied for several years yet.

Later, at 20.00h on March 13, Bufora will hold a special dinner for delegates and guests at the hotel.

On March 14, Sunday morning, it is hoped to arrange a trip to the site of the close encounter at Livingston. Although the grand evidence has long gone, it is still of great interest to visit such sites personally.

Applications to attend the National Conference should be addressed to Peter A. Hill, Almond Brae, 47A Easter Bankton, Murieston, Livingston, West Lothian, Scotland EH54 9BD.

KENSINGTON LECTURES 1982

Saturday January 09, 1900h
Southern Stranger
Speaker: Omar Fowler, MISM

Saturday February 06, 1900h
Substance and shadow in the ETH
Speaker: Robert Morrell BSc, FLS.

Saturday March 06, 1900h
Seeing and believing - religious responses to UFO experience.
Speaker: Kevin McClure

Saturday April03, 1900h
The interface between the UFO report and new information.
Speaker: Peter Hill, AMR, FMS, FSS.

Saturday May 08, 1900h
Alien intelligence
Speaker: Stuart Holroyd.

All meetings are held in the lecture theatre of Kensington Central Library, Campden Hill Road, London W8 - opposite High Street, Kensington Underground Station.

THE POWER OF THE MEDIA

Following a mention on London Weekend Television 'Area Information' spot for the 1981 Congress, the switchboard at the Mount Royal Hotel was 'flooded' with calls from viewers seeking more information.

The short item included stills of illustrations used by Mr. R.S. Digby to present his lecture.

SECOND LONDON INTERNATIONAL CONGRESS

One of the more important events in 1981 for BUFORA was the Second International UFO Congress, which was held at the Mount Royal Hotel, near Marble Arch on Sunday May 24th and Monday, the 25th. The Congress itself was preceded on the Saturday, by a meeting of the Provisional International Committee for UFO Research (PICUR). Nearly two hundred delegates from all parts of the world attended the Congress.

Proceedings on the first day were under the chairmanship of BUFORA Chairman, Leslie Bayer. Sunday morning started with a presentation entitled "Are you sure you have your facts right?". This was given by Bob Digby and his colleagues in the Physical Data Section. Bob's talk was given against a background of over 200 slides.

Coffee was followed by the formal opening of the Congress by the President, Lord Kings Norton. The text of Lord Kings Norton's address was published in full in the first issue of the BUFORA Bulletin. The final paper of the morning session was on "The link between the investigator and the scientist", and was presented by Bertil Kuhlemann of Project URD, Sweden. Bertil described project URD and its aims as well as how UFO organisations could interface at various levels to the scientific community.

After lunch Charles Bowen, editor of the

"Flying Saucer Review" began the afternoon session with his paper "Reflections of an Editor". This dealt with some of the problems and interesting incidents that Charles had encountered during his time as editor of FSR. Charles' talk has also been published in full in the BUFORA Bulletin.

Charles Bowen was followed by Stuart Campbell BUFORA RIC for Scotland and a member of the Edinburgh branch. Stuart gave a very interesting talk concerning the close encounter witnessed by Robert Taylor, at Livingston, West Lothian. Mr. Taylor, a forester, came upon a strange object near the ground, whilst walking along a forest track. During the sighting Mr. Taylor lost consciousness and his trousers became torn. The 'object' also left strange markings on the ground. Stuart was able to show delegates the trousers and point out the holes in them which occurred at the time of the sighting. A summary of this case appeared in JTAP Volume 1, number 2 (pages 43-46).

After tea there was a discussion session lead by Hilary Evans from the Society for Psychical Research. The theme of this discussion was "Psychic phenomena and UFOs. Is there a connection?". Hilary gave a short introduction and then the subject was thrown open for discussion. The lively debate that followed well overran the end of the session.

On Sunday evening the delegates had chance to talk to the speakers and other delegates at a special Congress dinner. The Congress dinner was followed by a fascinating talk on the film taken by an Australian TV crew off the coast of New Zealand. Dr. Bruce Maccabee, who has carried out extensive work on this film, had a copy with him and agreed to give a brief outline of the case to delegates before showing them the film. The New Zealand film was followed by a collection of films on the subjects of remote sensing and the search for extra-terrestrial life.

Monday morning got off to an early start under the chairmanship of vice-president Tim O'Brien. A short paper on the Fatima case from Portugal was presented by Joaquim Fernandes of the Centro De Estudos Astronomicos E De Fenomenos Insolitos (CEAFI). The paper was based upon research that Joaquim had undertaken since 1975 in association with Dr. Fina d'Armada. The case concerns the events witnessed by three young girls on the 13th May 1917. They claim to have seen on three occasions, both acephalous and angelic entities. This incident was thought to be an apparition of the Virgin Mary and the details of these events were kept in the archives of Fatima's sancturary. In 1978, Dr. d'Armada received authorisation to study the original documents on the events experienced by the three girls. The new and surprising material uncovered suggested to the researchers possible extra-terrestrial interference in Fatima and this forms the basis for their recently completed book *Extra-terrestrial Interference at Fatima - The Apparitions and the UFO Phenomena*. Delegates then split into several small discussion groups, topics included vehicle interference cases and formulation of a code of ethics for investigators. Norman Oliver gave a short presentation on Close Encounter Experiences and then delegates were invited to discuss their own experiences.

The coffee break was followed by a presentation by Nigel Henbest, astronomy consultant to the "New Scientist" on the subject of "The Possible Influence of Black Holes on Space Travel". The morning session was concluded by a report on the PICUR meeting held on the Saturday.

The delegates reassembled after lunch to be treated to a lively and entertaining talk by Bruce Maccabee about theories of UFO origin. Bruce is the chairman of the Fund for UFO Research Inc. based in Maryland. By profession he is an optical physicist. Philippe Schneider of France gave a talk about the Isosoles Theory, which was a possible method of predicting where sightings would occur.

The final formal talk of the Congress was given by David Haisell, Director of U.P. Investigations Research Inc. of Canada. David took as his subject "The Need for Collaboration - The Canadian Experience". All the major groups in Canada have jointed in a venture called Project UFOCAN. By way of this association they hope to combine resources and adopt common standards for investigator training and documentation. David was attending the London Congress and the PICUR meeting as the elected representative of all the groups which had come together in UFOCAN.

Before the Congress closed reports were received from each of the discussion groups held earlier in the day. The chairman summarised the events of the preceeding day and thanked all the delegates for their support and interest.

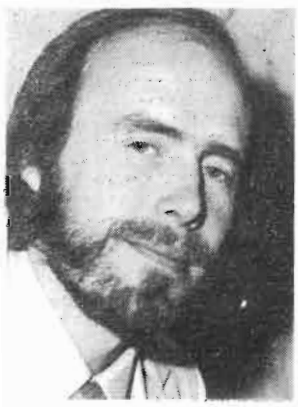
During the course of the Congress there were displays of material in the exhibition area including posters on the work of FUFOR, the BUFORA Punched Card System (presented by Peter Hill) and on the forthcoming Edinburgh Conference. As well as the Bufora bookstall, a variety of publications were on sale from Lionel Beer and also Journal UFO, from Canada had a display.

No report of the Congress would be complete without expressing thanks to all the members of BUFORA and the staff of Grand Metropolitan Hotels, who did so much to make the Congress a success, only space prevents me mentioning them each individually.

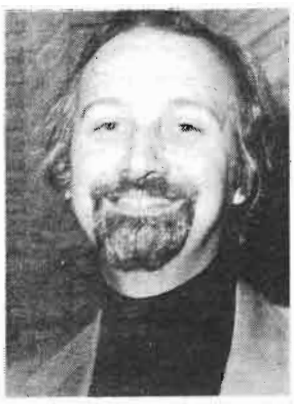
The great value of such international gatherings is the dissemination of fresh thoughts, revised attitudes and new information from widely separated sources and the realisation

that closer co-operation can only bring benefits for all those studying the UFO phenomena. It was anticipated that the Congress would again provide a focal point for international co-ordination and co-operation. In this respect it was very successful. Not only were many old friends seen, but many new ones made. Outside the lecture room new projects were formulated that not only transcended group boundaries but also national boundaries. So many new ideas came up at the PICUR meeting on Saturday, that several working parties had to continue on throughout the main Congress.

David Haisell is Director of Unexplained Phenomena Investigations Research Inc. and Editor of 'Journal UFO'. He has played a major part in bringing many Canadian UFO societies together and is a member of the Provisional International Committee for UFO Research.



Dr. Bruce Maccabee PhD has been appointed Chairman of the Fund for Research Inc. in Maryland, USA. He extensively investigated the New Zealand airborne sightings and is well known internationally as an optical physicist specialising in lasers.



Stuart Campbell is a member of the Edinburgh Branch of BUFORA and was leading investigator of the close encounter at Livingston.

Peter Hill, BUFORA Edinburgh and International Liaison

Bertil Kuhlemann is Head of Computer Services for IVA Administrative Department of the Royal Swedish Academy of Engineering Science. Connected with ufology for 20 years, and founder of the International UFO Reporting and Data System.

CORRESPONDENCE (from page 40)

Campbell's paper is a refreshing change from such negative attitudes.

Peter A Hill,
Chairman, Provisional International Committee on UFO Research.
Edinburgh
October 24 1981

References

(1) *Journal TAP*, 1981, 2/1 pp3-7.
(2) Hynek J.A., 1979, *The UFO Experience*, Corgi 18

Correspondence

'Natural' theory

I certainly am familiar with the works of Philip Klass; I thought it was obvious that my natural theory descends from his plasma hypothesis. I acknowledge a debt to him, although he may not now appreciate it. It appears that he has now rejected the ideas contained in *UFOs Identified*; in *UFOs Explained* (1974) he made no mention of plasmas, except to dismiss them as the explanation for the Socorro incident. I may have taken up the mantle dropped by Klass, but I am having it cleaned and examined! In fact I had come to similar conclusions before reading Klass, and have since developed a more rigorous theory. (Klass was not the first to propose that UFOs are a natural atmospheric phenomenon that is either yet unknown or very unusual.)

I believe that I have never encouraged anyone to believe that the natural phenomenon, which I postulate is responsible for most 'genuine' UFO reports, is 'simple'. Indeed, if it exists, it must be most complex. As to whether or not the natural theory is 'simplistic', that depends on the reliability and complexity of the data that is to be explained. Mr. Cassirer must know that the data on UFO reports is not, usually, of high quality nor, necessarily, very reliable. It would be unfair to ask any theory to explain data which is controversial and probably erroneous. But never mind generalities. I intend to ask the natural theory to explain the Livingston UFO event. I hope that Mr. Cassirer will accept that as a fair test. If it can explain that event then it can probably explain most UFO events.

No, I do *not* suggest that physical traces of UFOs and that mutilations of cattle are due to 'hallucinations, wishful thinking and fraud'. I suggest that traces are caused by a natural phenomenon and that mutilations are the work of hooligans or delinquents.

There has not necessarily been an "enormous increase in sightings since the start of the 'atomic age' ". The data to test that claim is not available. The enormous increase in the number of *reports* since 1947 may be due to many factors. One was the great publicity given to the Arnold report and the efficiency of the post-war news media. This released a great many reports, some relating to incidents that occurred before 1947. It is not yet possible to say whether or not UFOs are a modern phenomenon, they may be an age-old phenomenon that has only recently become well-known.

Stuart Campbell
Edinburgh
1981 August 14

UFO Definitions

Campbell has drawn attention to a number of valid points (1) concerning definitions and enquiries about the UFO. The results of opinion polls about 'belief' in UFOs are without statistical validity on two counts: (a) it is not an issue of belief and many UFO researchers would reply 'no' if asked whether they 'believed' in the UFO; (b) without definition, each subject is answering a question as interpreted individually.

On the difficult question of definition, the Provisional International Committee for UFO Research (PICUR) agrees with Vallee and Hynek that it is the UFO report that requires definition first, as it is reports which are the data which we must study. It would have been surprising had the definition adopted been accepted universally; this was not expected. Our starting point was that definition which seemed closest to our views, that of Hynek (2). This was modified to make minor improvements, by removing the word 'object' and the reference to 'in the sky or on the ground'. The Committee did not claim that the resulting definition was final; it is seen as a facet which must be refined as a by-product of research.

The exclusions refer first to such matters as (a) events such as experiments in outer space, (b) objects such as aircraft or (c) processes such as meteorological effects. It might be better to include 'events' and 'processes' in one word.

Psychological events include hallucinations and others. Again, 'events' and 'processes' might be replaced by one all-embracing word. Hind's concern with overlooking a true report of an alien craft by a person certified insane is low on any reasonable list of priorities.

Campbell's argument of 'open' and 'closed' definitions is valid and useful as a contribution to the evolution of a satisfactory definition. However, the Condon Report admits that the 'open' definition is untenable. The Campbell definition is as easy to take apart as the others: (a) the reported UFO may not be 'real'; (b) it may be heard and confirmed by radar but not seen; (c) it may not be in the sky or on the ground; (d) there is no reason to give 'alien vehicle' rather than other ideas for the nature of the UFO.

However, I make no criticism of Campbell but applaud him for a valid contribution to the evolution of a satisfactory definition. We suffer from too many snipers at all definitions and too few constructive contributions to an acceptable definition. (see page 39)

Aims and scope of the Journal

Research and investigation into unidentified flying object (UFO) phenomena has progressed from the early days of wild speculation into an area where scientific analysis and evaluation methods can be applied to a number of specified areas.

It is realised that ufological research is subject to a great deal of speculative comment, much of which lies on the boundaries of current scientific thought. Many existin scientific institutions accept limited discussion of UFOs and related phenomena where it has some bearing on their discipline. The Journal of Transient Aerial Phenomena (Journal TAP) offers a forum for scientists and researchers to present ideas for further discussion, results of investigations and analysis of statistics and other pertinent information.

Journal TAP aims to meet a wide range of discussion by incorporating an approach with breadth of scope, clear and topical comment conducted with scientific rigour. It intends to offer a truly international forum enabling researchers throughout the world to publish results in an authoritative publication which should serve to further knowledge of the cosmos and benefit mankind in so doing.

Notes for contributors

The Editorial Board will be pleased to receive contributions from all parts of the world. Manuscripts, preferably in English, should be submitted in the first instance, to the Editor-in-chief, 40 Jones Drove, Whittlesey, Peterborough, PE7 1UE, United Kingdom.

Manuscripts should be typed double-spaced on one side of A4 size paper with wide margins and submitted in duplicate. While no maximum length of contributions is prescribed, authors are encouraged to write concisely.

The author's name should be typed on the line below the title. The affiliation (if any) and address should follow on the next line. The body of the manuscript should be preceded by an abstract of around 100 words giving the main conclusions drawn.

All mathematical symbols may be either hand-written or typewritten, but no ambiguities should arise.

Illustrations should be restricted to the minimum necessary. They should accompany the script and should be included in manuscript pages. Line drawings should include all relevant details and should be drawn in black ink on plain white drawing paper. Good photoprints are acceptable but blueprints or dyeline prints cannot be used. Drawings and diagrams should allow for a 20 per cent reduction. Lettering should be clear, open, and sufficiently large to permit the necessary reduction of size for publication. Photographs should be sent as glossy prints, preferably full or half plate size. Captions to any submitted photograph or illustration should be appended and clearly marked.

In the interests of economy and to reduce errors, tables will, where possible, be reproduced by photo-offset using the author's typed manuscript. Tables should therefore be submitted in a form suitable for direct reproduction. Page size used should be A4 and width of table should be either 10.5 cm or 22 cm. Large or long tables should be typed on continuing sheets but identifying numbers should be placed on the upper right-hand corner of each sheet of tabular material.

Reference to published literature should be quoted in the text in brackets and grouped together at the end of the paper in numerical order. A separate sheet of paper should be used. Double spacing must be used throughout. Journal TAP references should be arranged thus :

(1) Jacques Vallee: 1965. *Anatomy of a Phenomenon*, vii, Henry Regnery, Chicago.

(2) David Haisell: 1980. Working Party Report, *Journal TAP* 1/2, pp36-40

With the exception of dates which should be presented in the astronomical convention viz : 1977 August 06, no rigid rules concerning notation or abbreviation need be observed by authors, but each paper should be self-consistent as to symbols and units, which should all be properly defined. Times however should be presented in astronomical form using the 24 hour clock and Universal Time (UT) where possible. If local time is used, this should be specified viz 19h 15 GMT.

The Editorial Board shall have the right to seek advice from referees on suitability for publication and may, on their recommendation, accept, seek revision of or reject manuscripts. If considered unsuitable for Journal TAP, the Editor-in-chief reserves the right to forward manuscripts to the Editor of Bufora Journal for consideration. The Editor-in-chief's decision will be final.

Book reviews and letters for publication will also be considered.

Where permission is needed for publication of material included in an article, it is the responsibility of the author to acquire this prior to submission. All opinions expressed in articles will be those of the contributor and unless otherwise stated, will not reflect the views of Bufora, its Council or the Editor-in-chief.

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CONTENTS :

40 Jones' Drove, Whittlesey, Peterborough PE7 2HW