

gravity, air drag while traversing the atmosphere, fuel reserve for maneuvering, landing and return journey, would only be required to reach a maximum velocity of 100,000 MPH, corresponding to a mass ratio of 1.065. Thus the fuel weight would merely be 6-1/2% as much as the final landing weight of the ship, a decided improvement over the best chemical rocket estimates.

The author does not attempt a discussion of the third method, viz., the use of a working fluid ejection, which is now believed to be the one within the realm of technology. He speculates that perhaps some new method will finally provide an answer to efficient, practical atomic drives for rockets. He is careful to point out that all his figures are so hypothetical that their relative accuracy is quite uncertain.

This early article provides little that has not been discussed in greater detail by others in more recent papers. It apparently was prepared in an effort to stimulate interest in the subject. No practical devices are discussed and the author (purposefully) avoids consideration of fission product reflectors of radiation shield problems, of availability of materials capable of withstanding extremely high temperatures, and of rapid heat transfer devices.

G. J. Mueller  
February 14, 1955



## NUCLEAR PROPULSION

Title: NUCLEAR-ENERGY PROPULSION (An Examination of its Possibilities for Aircraft and Rockets)

Author: L. N. Thompson, B. Sc. Hons. (Eng.) G. I. Mech. E.

Source: Flight, No. 2235, Vol. LX, p. 656-658, 23 Nov. 1951

AUTHOR'S CONCLUSIONS

"The discussion may be summed up as follows:

- (1) Atomic rocket motors using nuclear fuel to heat an inert propellant are not feasible.
- (2) Atomic rocket motors using nuclear fuel to heat an inert propellant are feasible, but their future as a serious competitor to chemical motors depends on their being developed so as to be capable of operating at gas temperatures over 3,500 deg. K. There appears to be very little hope of this objective being attained in the near future.
- (3) Turbo-nuclear motors offer great advantages in fuel economy and flight range as compared with existing aircraft power plants, and the development problems involved are much less severe than for the rocket application in all respects - temperature, pressure and mass flow.
- (4) Compared with (3), there is a relatively weak case for developing atomic rocket motors for general-purpose applications."

DAC COMMENTS

Explaining that the efficiency of nuclear fuels is extremely low, e.g. for uranium the efficiency is only 0.0731%, the author shows that a mono-propellant atomic rocket motor would give off almost 3,000 times the waste energy as would a chemical rocket motor. The use of other nuclear fuels than uranium would not alter the order of magnitude. Since the waste energy per unit of thrust of existing chemical motors is already about the maximum that can be accepted, it appears that monopropellant atomic fuels would be useless for rocket propulsion.

Other conceivable indirect applications of nuclear energy, such as high-jet-velocity, low-thrust, electronic ion-beam drives, are not discussed, as their only use, should it prove feasible to develop them, would be for the futuristic purpose of space-drives between interplanetary sub-orbits. The following constructional considerations are briefly discussed and briefed here.



- (a) Temperature - Temperatures approximating  $3500^{\circ}\text{K}$ , which could be attained, greatly exceed the destruction temperatures of materials presently used in reactor construction. Turbo-nuclear motors, operating at  $1,000^{\circ}\text{K}$  (or less), will not present such problems.
- (b) Pressure - Should not be any more severe than in chemical motors.
- (c) Pumping - A problem of considerable magnitude due to the high rates required through long, narrow passages in honeycomb structures.
- (d) Structural - As the ratio of mass of nuclear fuel to mass of inert propellant should be small, the fission material would have to be very finely diffused in order to provide the necessarily large heat-transfer surface thereby posing a difficult structural problem.
- (e) Radiation - Intense radiation might adversely affect the reactor and motor materials, already affected by high temperatures and erosion.
- (f) Specific Propellant Capacity - Nuclear rocket should not show an improvement over its corresponding chemical counterpart in this regard.

From these considerations it is concluded that the constructional prospects of high-temperature atomic motors are not very bright.

This paper is a brief, well considered summary of the general knowledge of such propulsion devices.

G. J. Mueller  
2-8-55



## Astronautics Literature Review

Serial 045  
ELECTRIC PROPULSION  
IONIC PROPULSION

Title: POSSIBILITIES OF ELECTRICAL SPACE SHIP PROPULSION  
(Summary of Paper Presented at the 5th Astronautical  
Congress by E. Stuhlinger, A.R.S., Guided Missile  
Division, Redstone Arsenal)

Author: Eric Burgess

Source: Aircraft Engineering, October 1954, p. 358

### VERBATIM QUOTATION

"The feasibility and performance of an electrical propulsion system for interplanetary space ships was investigated. A system was proposed in which a suitable propellant such as cesium or rubidium would be vaporized and then ionized by impact with incandescent platinum surfaces. A temperature of several hundred degrees would be sufficient and the gas pressure at the entrance to the ion source would be of the order of 1 microbar. The ions would be accelerated by a potential of 9,400 volts and the electrons by one of 200 volts. The density of the ion current would be about  $0.6 \text{ mA/cm}^2$  and the ions and electrons would be expelled at equal rates in such a manner that they would recombine immediately they left the thrust chambers.

"The power for the accelerating fields would be obtained from the solar radiation converted through turbo-electric generators, because a thermoelectric pile would only have about one-tenth the efficiency for the same mass.

"Acceleration of a space ship equipped with an electrical propulsion system of this nature would be of the order of  $4 \times 10^{-5}$  gravities. A ship with a payload of 50 tons, total initial mass of 270 tons and a total flight time of one year, would cover a distance of about  $183 \times 10^6$  km. if it started with zero velocity and travelled through space without gravitational fields. It was calculated that such a vessel would take two years to complete the round trip Earth/orbit to Mars/orbit."

### DAC COMMENT

The configuration of the ion gun is not clear from this summary. Dr. Ernst Stuhlinger, who is one of the engineers of the German V-2 personnel now at Redstone Arsenal gave a talk about the same subject before the North Alabama Chapter of the American Rocket Society at Huntsville, Alabama, on (or about) December 16, 1954. A copy of this lecture has been promised to us but not yet furnished.

W. B. Klemperer  
2-28-55

See also Reviews Nos. 001 and 002 which are concerned with similar proposals by Prof. Hermann Oberth.



## APPENDIX II

MTM-622

## Interviews

1. INTERVIEW WITH DR. W. D. HERSHBERGER on December 6, 1954
2. INTERVIEW WITH DR. CLARK B. MILLIKAN
3. INTERVIEW WITH CAPTAIN WILLIYS T. SPERRY



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INTERVIEW WITH DR. W. D. HERSHBERGER \*)

Professor of Engineering, UCLA

on December 6, 1954

Dr. Hershberger's opinions regarding the possibilities of unconventional propulsion schemes and the degree to which the study of proposals in this realm should be seriously pursued were expressed essentially as follows:

All proposals which are based on the recoil of non-material particles such as Photons, Electrons, or on purely electromagnetic, electrodynamic, electrostatic or meson field phenomena must be regarded as speculative, and concerning at best only interplanetary or inter-satellite vehicles but none destined to be launched from any planet or to land on one. Because of the extremely small mass equivalent of the "particles" involved the momentum output per power expended will of necessity be very small. Hence this sort of thing is very "inefficient". Enormous amounts of power will have to be handled to produce even very modest thrust. The machinery necessary to harness this power and the structures capable of protecting it from the inevitably enormous waste heat and temperatures of hundreds of thousands of degrees are beyond present-day engineering conception. The authors writing of such schemes envisage ultra-efficient mirrors etc. but nobody can as yet design them. The entire scheme can be likened to the idea of riding a controlled and directional hydrogen bomb. While one may indulge in calculations of the phenomena involved in these concepts, the chasm between them and any engineering approach is still unbridged.

Proposals envisaging schemes to harness meson field phenomena for propulsion purposes must still be regarded as fantastic. Nobody has yet advanced any scientifically coherent theory of controllable meson field forces. The elucidation of the nature of gravity and its correlation with electricity, magnetism and nucleonic forces remains indeed one of the most burning questions of theoretical physics. However, scientists have not yet found any way of creating anti-gravitic forces \*\*) or of influencing the gravitational field of matter except by annihilation of matter and non-directional conversion to energy. The derivation of any momentum or impulse from energy requires either the expulsion of ponderable matter (rocketry) or direct radiation, the latter being very much less productive.

Schemes based on the exploitation of electromagnetic or electrostatic forces without involving an expelled working fluid or the radiation pressure, deserve to be received with great skepticism, until they are proven not to be the result of some bootstrap fallacy.

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\*) He teaches courses on Communication Theory, Applied Electromagnetic Theory and Microwave Studies on Materials. Dr. Hershberger is also chairman of the Los Angeles subsection of the Institute of Radio Engineers (IRE). He has not made any special study of "Esoteric" propulsion methods but displayed much interest in their discussion and he is eminently qualified to discuss their theoretical soundness or fallacies.

\*\*) Of course, the balancing of gravitational and inertia forces on a satellite or freely falling body, is not the problem under discussion here.



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Interview with  
Dr. Hershberger  
10-6-54

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The idea of an ion gun or ion recoil propulsion scheme, however, must not be dismissed as chimeric. It is based on valid reasoning. Here the thrust is derived from the expulsion (or repulsion) of gaseous matter by electrostatic forces. The electric power required to ionize the gas need be only a part of the power devoted to impel the ionized gas atoms through the perforated cathode. The concomitant collection of a negative electric charge on the vehicle need not be considered as a serious difficulty; the electrons can perhaps be made to leak off with impunity without causing detrimental space charges, appreciable counter-momenta or other obnoxious effects. The action of the electric field between cathode and anode, can be likened to that of a centrifuge which separates the denser from the specifically lighter particles. The resultant exhaust velocity of the ion gas depends largely on the total potential difference through which it is impelled and on the mass of the atom per unit charge. The distance between the electrodes would be immaterial were it not for the greater ease with which the neutral gas molecules break up the greater the potential gradient. Hence close coupling would be advantageous for high efficiency. In order to hold recombination of ions with freed electrons down, the gas pressure in the "gun" or "chamber" must be kept at a low value, of the order of millimeters of mercury. If the ion propulsion principle could be applied to flight at high altitude through a thin atmosphere at pressures of the order of that found in Geissler tubes, then the ion gun would be analogous to a ramjet, the electric power supply playing the role of the fuel, air being taken in through an open mouth, passed through the permeable anode and cathode and discharged to the rear (positively charged instead of heated) with some excess momentum.

Unfortunately the momentum gain is but small -- not as minute as with photons, to be sure -- but much smaller per HP or kW than in conventional rocketry. Thousands of kW would have to be fed into several square yards of electrode area to generate a pound of thrust, a very poor efficiency by chemical rocket standards. Hence ion propulsion has no chance in terrestrial artillery. Only for purposes of eventual inter-satellite or interorbital traffic is the ion propelled vehicle an interesting object of speculation and mathematical exercise, allowing that a sufficient gas supply, presumably in liquefied form, and a prolific nuclear fuel source of energy or a very light solar heat engine would be carried along on the journey, and assuming that very low acceleration rates are acceptable. Clearly, the technological difficulties of building such a vehicle are stupendous. Nobody envisages a design strong enough to withstand the accelerations necessary to launch it completely assembled from the surface of the Earth or to land it on a planet's surface. One must assume therefore that we would first have to be in possession of permanent satellite space stations which may serve as a shop facility for the construction and assembly of the frail and tenuous ion beam vehicles from parts that must all be brought up there by a well organized fleet of gigantic freight and personnel rockets, an enterprise still entirely in the imagination stage.



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Interview with  
Dr. Hershberger  
10-6-54

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Allowing that in outer space, where things do not weigh anything and very low load factors should be acceptable, extremely daring constructions should be permissible, even so, the mere hydraulic and electric "plumbing" problems of piping the large flow of working fluid from the liquid container into the vaporizing and ionizing chamber and of conducting kiloamperes of electric current at kilovolt tension through the generators to the gossamer electrode screens without a flashover, loom very large. The proper control of the flow and the density in the chamber would similarly pose a very tough task to solve. Some more serious design studies to determine the actual dimensions of a complete ion beam engine might have a sobering effect on the thinking in this field.



## INTERVIEW WITH DR. CLARK B. MILLIKAN

California Institute of Technology

by phone on 12-28-54

Dr. Millikan has not read any of the articles on anti-gravitics which have appeared in various publications of reference. He has, however, participated in various Air Force briefings in at least one of which representatives of the Glenn L. Martin Co. research team has given a talk about their studies in the realm of electromagnetic propulsion and of Einstein's unified field theory. Dr. Millikan said it had left him with the impression that nobody in the audience was able to form a clear picture of what the Martin group claimed to have accomplished. He feels that there is no imminent prospect of anybody realizing any of the variously envisaged electric or other nonchemical-thermal schemes for developing useful rocket thrust. He doubted that any one else at CalTech would make a different assessment of the situation. For further inquiry, if desired, he referred me to Dr. Robert F. Bacher, Chairman of the Division on Physics, Mathematics and Astronomy and Director of the Norman Bridge Laboratory of Physics.

W. B. Klemperer  
1-18-55



# INTERVIEW WITH CAPTAIN WILLYS T. SPERRY

by W. B. Klemperer

(in the presence of Mr. Al Chop of DAC Public Relations)

on February 4, 1955 p.m.

at Mr. Sperry's home, 14 Barkenstine St., Portugese Bend,  
Palos Verdes, California

1. Captain Sperry has been a pilot with American Airlines since 1939, for 16 years. He flies all types of commercial airplanes. Presently he is on regular DC-6 coach service between Los Angeles and Chicago. He has about 15,000 flight hours, accumulated at the rate of approximately 1000 hours per year. He is considered extremely reliable and experienced. During the war he flew DC-4's regularly between New York and England. (In 1945 I met him at Prestwick, Scotland. - I have known Willys Sperry since when he was a high school boy in Tallmadge, Ohio, in the late twenties; I knew his parents well, and his older brother was one of my closest friends. I taught Willys a few things about gliding in those days.) Capt. Sperry has traveled a great deal, also flies light airplanes on vacation trips with his wife within the USA as well as into Central and South America.
  2. Captain Sperry related from memory, which is still vivid, his experience of an encounter with an UFO on 29 May 1950. He was flying (in the left seat of the cockpit of) a DC-6. The airplane had left Washington Airport at about 9:10 p.m. and was steadily climbing towards a 20,000' level. The weather was clear aloft but the ground was covered by haze. There was a full moon about 25° above the horizon. He was headed 240°(mag) for Nashville, Tenn. At about 9:30 p.m., some seven miles west of Mt. Vernon (while Sperry was fishing for a map), the copilot, William Gates, suddenly shouted: "Watch it, watch it!" and drew his attention to an UFO ahead of them, growing rapidly bigger. It was a brilliant bluish light. To avoid a possible collision they sharply banked and veered about 45° off their course to the right while the object passed by on their left side slightly higher in opposite direction from an 11 o'clock position to a 7 o'clock apparent position. During this maneuver the UFO happened to pass between the observers and the upper half of the moon, showing a dark silhouette of a slender hull remindful of a submarine, its length about half the moon's diameter, its height a fraction of that. The bright blue light appeared to be at the tail end.
- As the object had passed behind their wing the pilots banked the plane to the left and returned towards their old course. Even so, the copilot discovered the object again through the right window "as though it had circled behind them and come up after them". He then banked to the



right again for a better view but the UFO streaked across towards the East behind them. Capt. Sperry saw it once more through the pilot's window to the rear as it went off into the distance towards the Atlantic.

Two or three passengers also saw a light pass by and one stewardess "saw something go by".

Capt. Sperry reported the observations to the Washington tower by radio but neither the tower personnel nor the Washington radar picked up anything significant to confirm the sighting.

The press heard of the incident through the Washington tower. On the following morning Sperry was interrogated by reporters at his home in Tulsa, Oklahoma. He showed us newspaper clippings which he has preserved in an album among personal photographs. He made no report to the Air Force but answered questions posed by a major who called him at Tulsa long distance from the Pentagon on 30 May.

Much later Sperry learned that "Hank Myers, later pilot of President Truman's plane, was flying an AAL airplane on the same evening and observed a brilliant bluish object between Nashville and Knoxville at such a time that it could well have been the same UFO".

3. The possibility that the UFO seen by Captain Sperry and his copilot was a meteor was emphatically discounted by both. Capt. Sperry does not believe that the seemingly erratic apparent movement of the object could have been an illusion produced solely by the three veering maneuvers of their own aircraft. The observation of the bright light being at what they called the rear of the oblong or cigar shaped silhouette of the object as it passed for a fleeting fraction of a second in front of the disk of the full moon seems hard to reconcile with the brilliant visibility of this light during the earlier head-on approach phase, unless it is assumed that the luminous area was much larger than the cross section of the body.

NOTE: According to the Almanac the moon was full on May 30, 1950. WBK



## APPENDIX III

## REVIEW OF FLYING SAUCER BOOKS

<u>Title of Book Reviewed</u>	<u>Author</u>	<u>Serial Number</u>
ABOARD A FLYING SAUCER	Truman Bethurum	01
BEHIND THE FLYING SACUERS	Frank Scully	02
IS ANOTHER WORLD WATCHING?	Gerald Heard	03
SPACE, GRAVITY AND THE FLYING SAUCER	Leonard G. Cramp	04



## Review of Flying Saucer Books

Serial 01

Title: ABOARD A FLYING SAUCER  
Author: Truman Bethurum  
Source: Book  
(De Vorss & Co., Los Angeles, 1954)

Although the author claims and repeatedly affirms that this book is not fiction but a true story of personal experiences, there is ample evidence that this claim is false. The book is either the rendition of dreams, hallucinations or a vivid imagination, or an outright hoax.

The author claims to have been, at eleven separate occasions, a lone human visitor permitted to board a 300 ft saucer landed on a desert mesa by its crew of small men headed by a beautiful lady captain from planet "Clarion" invisible from Earth because it is hidden behind the Moon. The crew spoke English as well as other languages, appeared to be well versed in Earthly and human affairs and told of visits to other planets where earthlike atmospheres, beautiful landscapes and an abundant and advanced life exist.

The author is a road construction workman of very limited education. He admits that his account was published with the aid of a ghost writer in order to cash in on a literary "good bet", and in an attempt to convince unbelievers, realizing full well that his story will sound weird.

The book gives no significant technical details of the structure or of the power plant of the alleged space vehicle, beyond the conjecture that magnetism has something to do with it.

NOTE: The publishers of Truman Bethurum's book, the DeVorss and Company, Los Angeles, publish many books of a metaphysical nature. One of these, a four-volume story titled "The Life and Teachings of the Masters of the Far East" tells a story of elaborate miracles in India.



Title: SPACE, GRAVITY AND THE FLYING SAUCER

Author: Leonard G. Cramp (member British Interplanetary Society)

Source: Book, published by British Book Centre, New York, Feb. 1955

This book was written by an ardent "believer" in flying saucers of extra-terrestrial origin. It contains dramatized second hand accounts of saucer sightings, politely contradicts Prof. Donald Menzel's explanations of most sightings as terrestrial phenomena, indulges in a mixture of science and speculation on space travel dynamics, aerodynamics of the disc and gyroscopic effects. The author presents a fanciful design analysis of famous saucer photographs (which other agencies have denounced as fakes). Several chapters are devoted to unscientific explanations of the nature of gravity, confusing the lay reader with a vague "G-field theory" sprinkled with ill-disguised misconceptions of trick anti-gravity devices, allusions to control of inertia and centrifugal force. This hodge-podge is given an air of authenticity by frequent but incoherent quotations from the works of famous physicists. This is topped by a mystifying presentation of a "Unity of Creation Theory" of one Antony Avenel. A chapter deals with psychokinetic levitation, citing from the vast literature in this field and referring to the Yoga of India, winding up with a confused interpretation of radiation pressure. The author takes Adamski seriously. The book must be considered as scientifically worthless.

W. B. Klemperer  
2-16-55



Title: BEHIND THE FLYING SAUCERS

Author: Frank Scully (Columnist, Author of "Fun in Bed", "More Fun in Bed",  
etc. and former State Assemblyman)

Source: Book  
(Henry Holt & Company, N.Y., 1950)

The author admits never to have seen a flying saucer but he makes believe he is convinced of their reality. A large part of the book is devoted to writer's gossip and to scurrilous criticism of the military for their official lack of enthusiasm and for the alleged hamstringing of would-be reporters by security implications. Several chapters ramble from one thing to another with many half-understood scientific terms thrown in; others recklessly accuse the Air Force and the Pentagon of hiding facts from the public and distorting reports. A less sarcastic chapter on Astronomers' viewpoints paints an essentially correct picture discouraging the belief that there can be intelligent life on other planets or satellites of the solar system. An allegedly trustworthy story is related of three saucers landed in Arizona, containing the bodies of over thirty small men, all material evidence being secured, hidden or mismanaged by the Air Force. Propulsion is suspected to be of a mystic magnetic nature. A Goebel-like glossary of magnetic terms is given to confuse the reader. The last chapter is a hodge-podge of about 150 quoted newspaper and radio reports concerned with saucer sightings as well as debunkings.



Title: IS ANOTHER WORLD WATCHING?  
 Author: Gerald Heard  
 Source: Book  
 (Harper & Bros., N.Y., 1950, 1951)

Quoting a great number of newspaper and radio commentator articles and several books, listing and repeating many confused and unconfirmed reports of sightings, some of which have admittedly been debunked, the author maintains that the mysterious flying objects (shaped like saucers, disks, cigars and other forms) are vehicles of extraterrestrial observers who do not wish to harm the inhabitants of the Earth. He concludes that the propelling force of the vehicles is magnetic in nature and that the intelligent creatures guiding them may be insects. He is critical of the skepticism which pervades official reports of the Government.

Other books published by the same author are listed opposite the foreword, viz.

Morals Since 1900  
 A Preface to Prayer  
 Dialogue in the Desert  
 The Gospel According to Gamaliel  
 The Creed of Christ  
 The Code of Christ  
 The Eternal Gospel  
 Pain, Sex and Time  
 Is God Evident?  
 Is God in History?  
 Man, the Master  
 The Source of Civilization.

NOTE: Other books by the same author not mentioned in this list deal with similar topics, but one is on "Exploring the Stratosphere". The author was educated in Cambridge, England. His address was given in a 1941 Who's Who as 8766 Arlene Terrace, Hollywood, California.



Title: FLYING SAUCERS

Author: Donald H. Menzel

Source: Book, Harvard University Press, 1953

The author is an astronomer and Professor of Astrophysics at Harvard University, and as such eminently qualified to write with authority on the controversial subject of the nature and provenience of the manifold Unidentified Foreign Objects sighted by so many people and often described as Flying Saucers.

Dr. Menzel sets out to offer plausible physical explanations for most if not all of the mysterious apparitions that have been observed. He presents evidence to indicate that some are mirages, halos, reflections on mist or ice crystals, refractions, etc.; others are meteors or aurora effects, balloons, birds, lenticular clouds, searchlight beams impinging on clouds, and other mistaken but common phenomena. He discredits the popular belief that there are any space vehicles controlled or occupied by extra-terrestrial creatures.

He traces the history of UFO sightings to the past century and even back to biblical times. He quotes reports of sightings by airline pilots \*) and he carefully picks the accounts apart, trying to offer plausible explanations in terms of some natural phenomenon for each case. Menzel lucidly explains common fallacies and likely errors of observation or of their description. He quotes many interesting observations and experiences of his own, all subject to a "natural" interpretation. He attempts to reduce the stories of many mysterious sightings such as the Lubbock lights, Clyde Tombaugh's lights and others to natural causes.

Then he proceeds to debunk many tales and pictures of flying saucers as hoaxes, explores into the causes and mechanism of public hysteria, superstitions and misconceptions. He gives a detailed and authoritative account of the famous Denver University hoax of inhabited space ships from Venus.

Several chapters are devoted to explanations of the working of physical phenomena which are often misunderstood such as the rainbow, mock suns, sundogs, air lenses, mirages, aurora borealis, comets, meteors, meteor swarms, fireballs and radar ghosts. The last two chapters convey some sobering facts about the problems of space travel and the unlikelihood of any of UFO's carrying visitors from outer space who, if they got here at all, could be expected to be intelligent enough to make personal contact with the inhabitants.

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\*) Among them, on pp. 12-15, two whose descriptions have certain features in common with that given by Capt. W. Sperry, see last of series of interviews as of March 1, 1955.



All in all, the book is a valuable contribution to sober assessment of the bulk of the mysterious sightings previously reported and an aid to the serious observer of phenomena yet to occur.



Title: FLYING SAUCERS FROM OUTER SPACE  
Author: Major Donald E. Keyhoe (USMC, Retd.)  
Source: Book, Henry Holt & Co., N. Y., 1953

In this book, the author purports to convey an "inside dope" picture of the evidence of Flying Saucers and related Unidentified Flying Objects. This book is a sequel to an earlier publication entitled THE FLYING SAUCERS ARE REAL (1950). Major Keyhoe expresses his conviction that they are indeed space vehicles operated by intelligent extraterrestrial beings without hostile intentions. He acknowledges gratefully the cooperation of officials of the Pentagon and ATIC, notably of Mr. Al Chop \*) and other Air Force officials but he remains critical of Air Force generals and their alleged policies of keeping serious information from the public lest it cause hysteria.

In the book, Major Keyhoe narrates and dramatizes in great detail and with numerous personal direct speech quotations his personal experiences in ferreting out material for publication in TRUE magazine and in his own books. Major Keyhoe disagrees with Dr. Donald H. Menzel (Reference Review of Flying Saucer Book, Serial No. 05) and he endeavors to show that Menzel's explanations are inadequate and not widely accepted. Many saucer encounters are described in detail in a semi-chronological manner as information, rumors and analysis accrued, but usually the author spices the account with innuendo and criticism, especially of the reticence of the Air Force (whose ATIC has been acting as collecting agency for the vast amount of information that has come to hand but who, naturally had to keep a carefully objective and noncommittal attitude). Frequent quotations from secret conferences and unpublished files and a generous sprinkling of military fliers' jargon waft an air of authenticity, intimacy and suspense about the story obviously for the benefit of the sensation hungry type of reader, who is bound to be further impressed by out-of-context quotations from serious publications of famous scientists pertaining to radio, ionization, magnetism, astronomy, conditions prevailing on other planets, and various other physical phenomena. A whole chapter is devoted to quotations from "not yet classified" information personally divulged by a Canadian source who talked about rotating disc experiments, electromagnetic propulsion, magnetic sinks and Einstein's Unified Theory.

One of the key pieces of evidence causing much controversy whether it should be released or withheld, according to Keyhoe, is the so-called Utah film. (This is a motion picture film taken by a Warrant Officer, Delbert C. Newhouse, who has been 22 years with the Navy and is now stationed at Guam. He took the pictures while on a car trip across the continent with his family. After first sighting the UFO's he had to get his 3" B&H camera and new film out of

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\*) Who was then in charge of UFO press releases at the Pentagon and who is now with DAC, Public Relations.



suitcases in the trunk of his car. Newhouse reported that before he got the camera started the objects were overhead, looked bigger and had the appearance of dull grey metal double saucers. The film has been analysed for several months by both ATIC and Navy, but no report on this case has been published by either agency. \*)

Appendix II of the Keyhoe book is a list of 51 UFO sighting cases collected in 1951-1953 specifically cleared for that publication by Albert M. Chop, Air Force Press Desk of the Dept. of Defense. Most of the UFO's in this list were reported seen in USA, some in Canada, one in Japan, one in Panama, a few over the oceans, one in Korea, one in North Africa.

WBK

3-1-55

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- \*) I have seen this film run at a Hollywood studio - through courtesy arranged by Mr. Chop. The pictures show about 14 dots against the sky without any background scenery. The dots gradually scramble through changes of formation, but without any reference points photogrammetric analysis cannot be expected to yield any significant clues.