Lecture Notes

For Lecture About Flying Saucers 1954

By Hermann Oberth

1. Observations:

For centuries people have seen strange, shining objects in the Sky. The oldest reports are found from Plinius and Seneca, according to the Basler National Newspaper, and have been named "Shining Shields."

There are about 50 observations known from the time before World War Il. Then the number of appearances increased; the Allies thought it was a German secret weapon, and the Germans thought it was one of the Allies. Since 1947, the reports of eyewitnesses increased considerably. It is said by the English Air Marshall Lord Dowding that there have been 10,000 (reports) by 1953.

The appearences are usually described as disks, sometimes as balls or ellipsoids. It sometimes happens that these disks placed one upon the other, the largest in the center, the smaller toward the ends, to form an object the shape of a cigar, which then flies away with high speed.

Sometimes one already saw such a cigar (UFO) stopping and untile into seperate disks, The disks always fly in a manner as if the drive is acting perpendicular to the plane of the disk; when they are suspended over a certain terrain they keep horizohtal; when they want to fly very quick, they tilt (tip) and fly with the plane directed forward. In sunlight, which is brighter than their own gleaming, they appear glittering like metal. They are dark orange and cherry red at night, if there is not much power necessary for the particular movement, for instance, when they are suspended calm. Then, they also do not shine very much. If more driving power is necessary, the shining increases (brightens) and they appear yellow, yellow-green, green like copper flame, and in a state of highest speed or acceleration extremely white.

Sonetimes they suddenly bling or extinguish.

Their speed is sometimes very high. 19 km/sec has been measured with wireless measuring instruments (radar). Accelerations are so high that no man could stand it; he would be pressed to the wall and bruised. The accuracy of such measurements has been doubted. If there would be only 3 or 4 measurements, I would not rely upon them and would wait for futher measurements, but there is existing more than 50 such measurements; the wireless sets (radar) of the American Air Force and Navy, which are used in all fighters, cannot be so inaccurate that the information obtained with them can be doubted completely.

Landings have not been proved. Reports about landings have to be taken with care. An American who usually is realistic sent me a newspaper which states that a UFO had been downed over Helgoland. UFO are the first letters of Unknown Flying Object. I prefer this designation which is better than the expression "Flying Saucers" which reminds one too much of kitchen tragedies. Thereupon I wrote to the Mayor of Helgoland and to the Chairman of the Space Exploration Society in Hamburg. He checked with the weather station of Cuxhaven and I received answers from both sides that there is not a true word in the whole report.

I found the explanation later after a lecture, and a Helgolander said: A balloon had been tied to an airplane with a long cord and had been used as a target for anti-aircraft training. The people saw it and as they talked about it, they added more and more, and finally it became a UFO built from unknown metal and reports of 6 dead persons and an international committee under the guidance of Norwegian Dr. Hans Loberg to check it.

It was futher reported by a boy scout, for example, that he saw a landed UFO. A dreadful giant appeared and he breathed on the boy scout with mustard gas. He showed the burns to prove it. As they brought him to a lie-detector, it turned out that he got the burns from a camp fire. And he never saw a UFO in his life.

A Mr. Adamski now reported a beautiful humanlike being, which came out of a landed UFO and conversed with him. This Uranide spoke fairly good English. Mr Adamski brought the foot prints as proof. He dug them out of soft clayey soil. On the right shoe-sole there was a swastica nailed with rounded shoe nails, together with other meaninglas symbols; there also were figures on the left shoe-sole, which are not explicable. As they studied Mr. Adamski, they found that he was not of sound mind.

This didn't hinder a good business man named Leslie to publish a well-selling book with him. Adamski is said to be an Astronomer from Mount Palmmar Observatory. Actually, he is the owner of an ice cream parlor on the way to Mount Palomar. This book shows pictures of UFOs also, which look terribly similar to street lamps.

I talk about this only to show you how careful you have to be about (proof for) this type of UFO report. It has to be said about photographs that our techniques are that far (advanced) that photograph can be falsified. If I would be a judge, for instance, I would not consider a photograph which (proportedly) shows a person in a specific place as an absolute proof for something. Likewise, there are numerous ways to falsify photographs of Flying Saucers. With the fact that a photograph can be falsified, it is not said that it actually is (it could be real, and not necessarily falsified). As the phonograph of Edison was demonstrated the first time at the Academie in Paris, one of the members became angry and shouted that the demonstrating engineer was a swindler and a ventriloquist.— A ventriloquest certainly could have made these sounds, too, but actually it was no ventriloquest but a speaking machine which produced these sounds.

2. Explanations

The following can be said about these appearances:

- a. The whole thing is not true.
 - i Rumors, like the case in Helgoland or pompous fellows as the boy scout or Mr. Adamski.
 - ii. A part is humbug (a joke), also. There was a farmer in France who launched balloons filled with hot air. He later explained that he just wanted to see the name of his community in the newspaper. In South Germany a man painted balloons of children with luminescent paint and launched them in the evening, and there came UFO reports from this area.
 - iii. Sometimes they are mistaken objects. For instance, one saw seven shining points flying in a V-formation in the light of a reflector. As they switched on a second reflector, it turned

Against this, I cannot accept the following explanation: If a shining object is located on the ground - for instance, A lamp and it reflects in the upper glass of an airplane cockpit, the pilot would think there is a shining object flying above him. An experienced pilot should be able to distinguish between a reflection on the windshield and a real object.

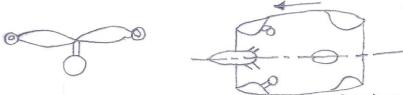
Likewise, the explanation of a mirage does not satisfy me. First of all, they are very rare in our area - how many mirages did you see in your life? And often enough UFOs appeared at times where a mirage was impossible according to weather maps. After all, mirages do not show fliping disks but lakes, palms, castles...

iv. I shall refer later to this explanation as electric discharge phenomena.

b. b. There are several things which have been reported as UFOs, for instance, weather balloons. Three ladies from New York wrote me in the autum of 1954 that I should know they saw a UFO and reported and reported it to the Air Force, which answered that the object was a registered balloon. An accurate description followed to me, so accurate that I could only reply: "My ladies, I also think that it was a registered balloon."

Eventually one also mistakes airplanes which fly near the horizon that reflects sunshine as UFOs, sometimes meteors, in one case a large missile

In Prague, then in Vienna, we were first to develop during the war an instrument which really looks like a UFO: V7. It is a helicopter, and had two wings of 25 meters length, and at the ends were "stæurbhæe" (ram jets). You must know that a "staurohr" looks like this:



It is started with a rocket and begins to work at a speed of 700 m/sec, reaching its maximum effectivity at 1400 m/sec, but it cannot fly much faster because of the high development of heat inside.

The air comes in at the front. It is compressed and grows hot. Fuel is put in at Point A, developing additional heat. And because of the pressure due to the expansion of air, it escapes and the tube is pushed.

If a V7 is suspended over a countryside, not much fuel is needee, and therefore the flame blaze appears dark red. Due to the high speed of the wing, the flame appears as a dark red ring on the sky. The speed of the end of the rotating ring is 900 m/sec. From a greater distance, the whole thing looks like a shining disk. The flame becomes brighter at higher speeds. At high speeds, the implement turns and flied with the plane perpendicular to the flight direction. As the Russians have a part of the V7 plans, and built the vehicle, a part of the reported UFOs may be from there.

Helmut V. Zborowsky in France is building machines similar to the V7. Although there is some doubt in the function of the V7, a mumber of reports lead to the assumption that there are such machines.

But not all: First of all, the V7 flies with much noise, but most UFO reports specify complete noiselessnes, Secondly, they also produce a contrail (vapor trail) in the atmosphere. - The UFOs do not.

Thirdly, they can only reach speeds of $l_2^1 \text{ km/sec.}$ Fourthly, there were no V7 machines in 1461.

There are reports from that year which cannot be neglected. The historian for Philipp des Guten von Burgund reported on the All Saint's Day in 1461 that a disk appeared over Arras France, which we excuse which was half as large as the moon, and flew exciting figures. There are futher reports from that time which cannot be considered as impressive because in case somebody wanted to impress others at that time, he rather talked about meetings with saints.

The official American office which deals with these reports is the ATIC (Air Technical Intelligence Circle). Until 1952, their work had been available for quite a number of people; today it is secret. - Until 1952, the Circle collected 3200 reports. Of them, somewhat more that 50 % have been identified as things that I have previously presented (as UFO explanations); i.e., the seven wild geese, boy scout, balloons, V7, etc. The next 40 % have not been identified, but are so similar to the (other) identified things that they probably are hoaxes (frauds), hallucinations, or earthly objects, too. For instance, the Adamski case.

Against that (there are) 34 reports that cannot be explained this way, and if one allows further explanations, there were remaining 9 % for which one of the above explanations cannot be denied completely, but it is very unlikely (to be explained by one of the previous explanations).

- 3. The Real UFOs.
- a, The theory of Ball (or Chain) Lightning

Tomnatural science the following is known:

Observations are collected first. Then an inquirer develops a theory. He says: If one assumes this or that is such and such, it would explain the discussed appearance. - whether his theory is right can only be shown by futher inquiries. Likewise, other inquirers may find other theories to explain the appearance, of course, which they consider as more reasonable.

The Swedish physicist Prof. Benedicks wanted to explain these remaining percents (the enexplained 9 % of UFO reports) by ball lightning.

In connection with lightning strokes sometimes the development of shining balls can be observed which, in general, are only 20 to 30 cm. in diameter It is not sure that larger ones than 1 meter have been seen. They develop in the space between the clouds and the earth, of vourse; (they) hover, in the space between the clouds and the earth, of vourse; (they) hover, jump and hop aro nd, and usually end with a clap (estinguish with a clapping sound or explosion) after several seconds or after one-half or one minute. Sometimes they simply go out (disappear or estinguish); but there is no confirmed observation about this as far as I know. They are very rare and can baly be seen during a thunderstorm or shortly after the last of the rain falls, But in 1461, in Arras, there had been no thunderstorm because this would have been such an unusual occurrence

that the historian would have reported it, whereas the circumstance that he was using the Moon for comparison (to the UFO) directly indicates that it (the Moon) was shining (and that the weather was clear).

Now, Benedicks said: If one assumes ball lightning may also be possible under a clear sky, and could be from 20 to 150 meters in diameter, and does not necessarily clap (explode) or estinguish, they may become invisible because they rise so high that nobody van see them; then (under these assumptions) the appearences could be explained. Whether ball lightning appears as solid bodies on radar screens has never been observed. It may be possible in connection with the intensive ionization of the air, and as long as there is no proof that this assumption is mistaken, it can be made with reservations.

As one sees here are new assumptions and it is up to Benedicks to prove them. He says, for instance: If one directs a postive and a negative electrical wind (air stream) inclined toward each other, this causes shining spots in dry air and darkness. But he forgets that such a test can be made in a laboratory and that the tension differences cannot rise nearly as much outside in the air, and that the air never is dry enough. One can further ask, why ball lightning has been so rare in the past, whereas UFO-reports are so frequent today. Benedicks gave an answer which seems to be reasonable: The air space has not been checked nearly as intensively as today. - But this answer does not explain the sudden increase- by radar measurements, too, ax since 1947, as the air space has not been watched as less intensively as between '45 and '47.

Under these aspects, I think that the assumption of Benedicks is not probable. Much more reasonable is the following theory. At the beginning of this century, a German engineer, Dr. Ing Walter Lewetzow, developed a gravitational theory.

If one could see matter with a microscope which enlarges very much, one would not see a solid mass anymore but a very thin dust cloud. Lewetzow now assumes there are much smaller particles in existence which rush through space with unimaginable high speeds. They are numerous; and usually hit each dust grain from all sides many times such that the particle remains in equilibrium because the pushes absorb one another. On the contrary, an object in outer space which is located near a celestial body which is similar (looks like) heavy clouds which protect a part of the particles from hitting the object. Therefore, this project which is located beneath a celestial body receives less pushes from one side that from the other, and is pressed towards the celestial body.

Lewetzows friend and co-worker M. S., Horst Pinkell did further work on this theory.

You have to think about electromagnetic waves which are different than those on the surface of a pond. Electromatic waves are combined as quanta (bundles of energy). These are wave chains (quanta) which do not spread apart but stay together worm. These energy quanta have several properties which we know from studying matter. These quanta exhibit more material properties the shorter the waves are. For instance, they have a difinite, unimaginable small mass; therefore, their direction can be changed by gravity of the Sun. In the reverse: as material particles become like ether waves, the quicker they fly (the higher their velocity).

THE ELECTROMAGNETIC WAVES

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Pinkell now assumes the Lewetzow-rays represent a transition between matter and radiation energy, and that by turns a particle regularly is in an electromagnetic state and a particle state; therefore, it is on its way at Point "A" as a particle, at Point "B" a wave, at Point "C" a particle, at point "D" a wave again, and so on. The waves cannot influence a dust grain, but the corpscles can. But waves can be changed into longer ones by means by means of special screens. Then waves cannot change to corpuscles— as also, for instance, sunlight is changed to long wavex heat xx rays if the Sun shines on the black object, or as the X-rays can be transformed into visible light by a "Baryum-Platin" Screen).

If we now place such a screen between "A" and "B", a body placed behind "B" shall not be hit by any further particle which comes from "A". But, nevertheless, the rays reach it from the opposite side with full force, only weakened by the Earth. In comparison, the weakening by the Earth is very small; aren't there stars on whose surface the gravity is 50,000 times as strong (as on the Earth); therefore, the planet keeps only one 50,000th of the passing radiation.

If this screen is connected rigidly with a heavy disk behind it, a mechanism develops which can pull itself up into space like the late Munchhausen, and with an acceleration that is considerably higher than the acceleration due to gravity (on the earths surface).

Pinkell now assumes the possibility of such screens. He points out that very thin plates can be used as screens that are made of copper and special alloys. He says further that these plates polarize the gravitational influence such that two plates in a apecific position do not weaken the gravitational influence, but they destroy the influence of the upper plate is turned 90° against the lower one.

I personally do not understand two things about this Lewetzow-Pinkell Theory:

If gravity extends with the velocity of light only, noticable observations should develop, for instance, which would chang the length of a year since historical times. But if one does not consider the type and development of gravity fields, the assumption of artificial gravity fields would explain all the reports completely: i. The high accelerations could not do any harm to the pilot, because the man would fall together with the vehicle, and would not be pressed to the back wall. ii. Also, the high speeds could be explained. In the fall, any speed can be reached up to the speed of light, provided that the influence of the gravity field lasts long enough. iii. The noislessness could be explained as follows: Together with the UFO, the surrounding air is falling also. of course, but less the futher it (the air) is away from it (the UFO). Further away from the UFO the air speed decreases, and as there is no sharp headwave and no turbulence develops anywhere, no noise develops anywhere. It is the same as with large rivers with small slopes; for instance, the Amazon River in South America. There are speeds of up to five n/sec in the center, and if one would build a pier there, the water would bluster and foam around it. But, as it is, the river flows completely noiselessly because the water speed is very low even at some distance from the bank and because of this low slope the increase of speed of flow toward the center is very small. iv. Futher, it would explain how the disks can be placed one upon another to form an object the shape of a cigar. In this case, only one gravity field is necessary and the other screens can be saved. v. The shining could result from the change of the "Hemmstrahlen" (drive waves) into longer waves of light and electricity. vi. As these energies do not form vapor trails but on the contrary mage holes through the clouds, the missing vapor trails and the appearance of holes in clouds if a UFO flies through a cloud would be explained. Pinkel went to Russia and there have been many who said that he found the solution to his problems there, and the UFOs are now a Russian Secret Weapon. There is existing an article, also, which goes from hand to hand. It seems to be of Communist origin, and intends to make us afraid of Russia. There the Pinkell Theory is nearly explained intelligibly butin

The Lewetzow particles would have to be much smaller that the

smallest material particles. Pinkell therefore assumes particles and waves which are millions of times smaller and shorter,

respectively than the known gammaprays. If one alloys metals and works with alloys, actally the location of the atoms will be shanged. As I see it, his intention is similar to one who has a number of cages for elephants and shifts them to make sure that a mouse cannot get by. - As a matter of fact, all experiments on these theory made in the West failed. We are

not able to influence gravity today.

ii.

such a way that an engineer or physicist who doesn't know the Pinkell Theory from other sources has the impression that the questionable things would be clearer if properly explained.

The article says that Pinkell and Prof. Gorjew in the Urals built UFOs with success, and an English spy brought the information to America. I want to say the following about this:

It should be seen that except Russia, several other countries could build UFOs by the same circumstances, and that there are reports from a time which Pinkel did not live. Just as man tries there may (already) be beings on other planets who fly in outer space. I wish to point out that what I am presenting my own private opinion. I do not talk to you about this as the honorable president of GfW (?).

This Society decided to doubt all reports along with other similar astronautical federations in Innsbruck, August 1954, as long as there was not any specific roof for the existance of beings with human-like intelligence on other planets. I would like to name these beings "Uraniden" because they come from the sky as seen by us- in Gr. Lang. Uranos.

I attended this session (in Innsbruck), also, and did not contradict this decision. An association has to be careful with its publications and has to consider the effects on the public, and the IAF could only do have to itself if it had confirmed the existence of Uranidens:

The people would think: "If we are not the first in space, is there any sense is using much money for space exploration, as it depends on the grace of the Uranides whether we may build space ships. Or, on the other hand, if the Uranides want us to undertake space traveling, wouldn't it be better to wait until they tell us how we should build our space ships simpler, cheaper, and better?" If it would turn out that the assumption of the Uranides is in error (that they do not exist), the danger would exist that together with the UFOs, space traveling is wrong. Therefore, for instance, the implication of the "Stern" (a magazine) is not right when it says that I probably believe in UFOs to collect money for space exploration. On the contrary, my position today is that I am without a situation (job) and therefore am entirely free in saying my opinion. It is my obligation to inform the public and then to say what I think is most reasonable as far as I know. Should it turn out that my opinion is not right, this would be just one more error in my life. Man errs as long as he lives, and I believe that only a man does not make any mistake who doesn's think at all in his whole life.

a) I already showed the difficulties of the Lewetzow-Pinkell Theory. I think if one wants to influence gravity, he has to use means we don't know yet.

b)
Secondly, Russia would not risk that the Americans fire on such a

valuable vehicle and capture it. Think what such the an invention means for air and space traveling. It the Russians would own such vehicles, it would be easy for them to build monster spy glasses in outer space which enlarge millions of times. At 42,100 km. above the center of the Earth, they would need exactly one day to circle the Earth and therefore would be suspended over the same terrain all the time. They could bring the surface of the Earth as close as if it were 40 meters distant (by ordinary sight), and fully do the job of spy flights over American cities and weapon manyfacturing centers.

To date there is no report of any emergency landing or crash of an UFO, This would be the first time in history for a newly built vehicle to have no failure, not to say it is impossible. The first rocket engine already burned in 1929, which is the time Pinkell went to Russia, In 1942, only one of four large rockets had been launched successfully in Deemunde, and in 1944 still only 80% of the V2s reached their goal. 20 % did not fire, exploded on their path, or went a wrong way. The invention of the car is older. Therefore, one who starts a car reaches his gold with more that 80 % (chances of getting there). There are still various accidents even today.

The steam locomotive is much older. And usually does not happen in western Europe that a locomotive stops on its way because of mechanical difficulties. Firstly, they are really safer (than years ago); secondly, the necessary maintaince is provided which allows one to replace defective units continuously.

Together with the old reports, the security in the operation of UFOs indicates that it is an old invention.

Russia was very exhausted in 1945, and the Allies had a very hard time getting on their feet again. Therefore it is so grateful today. But they searched Russia at that time as thoroughly as they did Germany later on. And all Allied experts stated correspondingly that Pinkell worked on high frequency things, and that they would have seen things if there would have been such (UFOs) in Wagnitogorsk. Weighing all pros and cons, assuming Uranides (intelligent space people) seems to be the most reasonable to me. Until T MANE now I have heard two objections which are worth being discussed:

First of all it is said that there are probably no inhabited planets. It is true only Mars (probably) bears life like we know it in our solar system. Some time ago I said that Mars would not have so much desert if the inhabitants would be very highly developed. This reasoning must not necessarily be right. As a farmer came into a citythe first time 100 years ago, he asked himself how these people there are living because he didn't see dunghills in front of any house. Please, it is the same logic. Deserts may be more valuable to them (the Martians) than green things.

But our solar system is not the only one existing. Our Milky Way includes 50 million suns as our one, and according to the latest astrophysical reports, more than 40 % of it has planets like our planet. And there are 500 million milky way systems (galaxies).

Here one asked: "How long are the Uranides traveling from one milky way system to another?" Modern physics has a surprising answer: Time is a completely relative comprehension. Einstien already stated at the beginning of our century that one should be able to measure the movements of our Earth against an absolutly fixed point in soace, if occurences do not happen slower on moving bodies, and clocks go slower, also. The formula he d veloped is xx the following:

if v is the speed of the space ship, c the speed of light, to is the time of occurence at rest (no velocity), and t the time that takes place on the speed ship. the space shin.

On our Earth the difference is not very large. v is 30 km/sec, c is 300,000 km.sec. v/c therefore is one ten-thousandth and $(v \cdot c)^2$ would be 1/100,000,000.

This makes one second in two years. But astromical watches could bring a proof. That there is no proof for it up to today speaks for Einsteinss Theory. There have been many doubts about it; meanwhile, it is proved also with experiments. We can measure the speed and mall of electricity charged fast-moving particles, and if mo is the mass at rest and m its mass at the speed v, the formula is valid:

 $\mathcal{M} = \frac{m_{e}}{\sqrt{1-C_{e}}}$ Autuming there are several heavy railway cars and I would be able to put the heaviest one in motion, it would take a longer time to do that with the larger one that with a smaller (lighter) one, which I would move immediately with the same amount of force. The time a force needs to put a body into motion is porportional to its mass. We now know from tests that the forces between atoms, electrons, and so on, do not depend on their speed (and mass), and if you therefore compare the two formulae, you can see that the first follows from the second formula. One can xxx now observe electrons which have been accelerated in the cyclotron to an increase of mass up to 14 times, and if, for instance, a space ship could fly with this speed, their riders would become physically only one year older in a time of 14 years. They would not see or detect this difference on calender watches, for instance, as these devices would move slower also. And if after all a space ship reaches the speed of light - and in case of building artificial gravity fields this would not be two for off - it could speed through space for hundreds of years with the astronauts not getting considerably older.

Another objection asks why the pilots of UFOs do not land and contact us. I would say that they do not need to. I daily receive 15 letters - if somebody among you is waiting for an answer, by the way, I beg him to excuse me for this reason. It is not my cranky intention that I cannot answer everybody - About one half of these letters deals with flying saucers and a large number have their origin in spiritualists, persons who are mediums, and others. Because there are still natural forces about which we do not know mery much, some of which have been strictly denied by the official science 60 years ago. Their existance cannot be denied anymore today, and several universities for parapsychology and psychology are searching for what is true about reading thoughts and foretelling

the future, for instance. There are persons who sense such forces, and they claim that the UFOs really are operated by human-like beings who have already studied the parapsychological forces thoroughly, and are able to know what we think without speaking to us.

There are two reasons why I don't check these reports. Firstly, the searching of a parapsychologist is entirely different from that of a physicist. A physicist first takes the test results for granted; the parapsychologist, on the contrary, first of all has to check the reliability of his mediums and the circumstances under which one or another occurence happened, which may influence the medium. Spiritually and healthy normal men are not mediums, in general. Mediums usually "have a crack" (there's something the matter with them mentally), which has an influence on his reliability. Therefore, also the phychologist and parapsychologist and others have to find out whether the medium just tells things due to damaged senses or not. I did not learn that, of course, and therefore turned the material over to a parapsychologist, as far as the writers agreed (?). Many write to keep their reports strictly secret - which works as if they would have told it to a Catholic priest in confession. By the way, xxxx also the parapsychologist asks me not to say his name because he is afraid of publicity, which he does not like. The second reason why I do not deal with parapsychology is simply that my colleagues then would say: "Now it is for sure that he has lost his mind." - Now I am curous what what he (the parapsychologist) will find.

There are futher explanations for UFOs. I do not want to present them because they do not answer straight-forward questions (for instance: their impulse results in electromagnetic forces) or one can get lost in areas where you can't prove anything - motivation from soul forces, levitation, only half-materialized discs, and so on.

This is what I can present to you about the present information we have. My opinions can be changed tomorrow by any new report. I just can say: from what I know today I would say in respect to the questionable 1/10 of unexplained (UFO) reports that the theory of Uranides (that they are operated by extraterrestrial beings) seems to be the most reasonable.