

## AIR FORCE ADVISORY PANEL BRIEFING

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UFO Study Project

Condon: At this meeting we would like to discuss our progress and future plans with you, and especially we hope to benefit from your opinions on where the emphasis should be placed with respect to policy questions the Study must deal with.

We have talked a great deal about the "spirit" of our approach. During the first couple of months we have been engaged in familiarizing ourselves with the problem and studying the pros and cons of various approaches to its solution. This has not yet brought us to a position at which we can say we have decided on a methodology. We have delineated a number of methodologies but cannot yet specify which one, if indeed it is any of those we have talked about to date, we will adopt.

As you might expect, we have received a great deal of mail, especially from the religious cultists. We have tried to reply with routine letters without getting involved. This had not been easy to do; some of these people are extremely persistent. I must say, however, that on the whole we have not had as much mail of this sort as I had expected. We have received a greater volume from school children requesting information. None of the sighting reports we have received by mail has as yet proved to be very fruitful. Under the stimulus of reading about us in the newspapers, people tend to write rather vaguely about old sightings. Someone will write, "I feel I ought to tell you about something that happened to me (or to a friend) ten years ago", etc. I can't think of any letter I have received reporting a recent sighting.

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We have made a couple of field trips, which were undertaken with the attitude that they would serve as learning experiences for us rather than be significant data-yielding investigations in themselves. Robert Low, with the assistance of J. Allen Hynek, consultant to Project Blue Book, visited and air base at Minot, North Dakota; and Michael Wertheimer went to Washington to in-

vestigate reports of the 1952 sightings that occurred there. While in Washington, Professor Wertheimer interviewed some of the air traffic controllers and confirmed what we had heard as a rumor--that the FAA and civilian airport personnel are terribly reluctant to get involved. They would not agree to speak with Wertheimer until official clearance had been received from FAA officials that it was all right for them to do so. These people are apparently worried about the possibility that their professional reputations and those of their personnel could be endangered thereby.

There is a case that just came to our attention, and I haven't had a chance to ask Major Quintanilla whether he has a report of it in his office. Apparently in early December (I have forgotten the precise date), the airport at Portland, Oregon, was shut down for a few hours by the personnel there who saw something peculiar that they considered hazardous. The fact that these men shut down the airport and later exercised their initiative in opening it up again when the object appeared to go away interested me. As we heard the story (and I haven't had a chance to verify it yet), these men were reprimanded by their superiors for their action and threatened with loss of their jobs if the incident were repeated. If this is the sort of mood prevailing in the FAA, we are naturally not going to get very good reports from that agency.

Along the same line, when Wertheimer visited Washington to re-investigate the '52 sightings, one of the airport personnel admitted to him that he had taken a razzing from his fellow workers at the time for reporting the sighting. He then decided not to report other sightings, although he claimed that peculiar objects have often been seen over National Airport since then. You can view this situation in two ways, it seems to me. One is that it is a terrible thing if anything in the slightest degree hazardous is not being reported because of the fear of airport personnel's being discredited. On the other hand, if these things have been seen over the years and if there nevertheless have been no

accidents in spite of the failure to do something about them, then whatever it is that is giving rise to these observations seems to be non-hazardous to air traffic.

One of the most difficult problems we have considered is the matter of field investigations. I can't think of any topic in physics where the given data are obtained by interviewing the citizenry. Nearly all of a physicist's research is done in the laboratory. Although a few UFO sightings are of appreciable time duration and may be repeated, generally a UFO is sighted for only a few minutes. Our work is further complicated because people waste considerable time before making their reports (especially if the sighting occurs in a rural area). Any physicist, of course, would love to have apparatus all loaded in a satchel--spectograph, camera, etc.--ready to go so that he could arrive at the scene to make his own observations as quickly as transportation permits. In my opinion, however, the greatest difficulty in planning anything of the nature of an on-the-site observation with physical apparatus is the extreme transientness of the phenomena and the time delays of travel and reporting. From there I don't necessarily draw the conclusion that one should not make the effort. One or two good field incidents which we ourselves can observe with a camera or spectograph or radiometer under our own control would be very good evidence. When one considers what is implied in attempting to do this, however, the feasibility is considerably reduced.

On this point, Allen Hynek is of the opinion that we ought to do our best to try to enlist the aid of amateurs. There are a number of amateur astronomers who seem to be interested in cooperating. He has suggested that police cruising cars might be equipped with loaded cameras kept in the glove compartments of their cars. Any officer called to the scene of a sighting might then be able to take pictures. This, of course, would run into a lot of money because of

the number of police cars and the cost of suitable cameras, which might be as much as \$100 each. Hynek believes that civic groups like Kiwanis and Rotary might be persuaded to support the cost of such cameras as local community projects.

Others have thought about placing diffraction gratings in front of the camera lens so that spectra could be obtained. This would necessarily produce very low-dispersion results. They may indeed be of such low dispersion that the spectra one gets aren't really useful. Joseph H. Rush has been making tests and giving some thought to this matter. Our efforts, of course, would be limited by the density of events (the rate of events for 1,000 square miles per day), which is very low. Even if one were able to use successfully a camera with diffraction grating over the lens (the kind of spectograph that is easily operated), one would still have the same problem of getting to a site while a UFO is visible. The question has also been raised as to whether this device might prove to be too sophisticated for the average policeman to employ; although it would seem that the camera operates the same way whether there is a grating in front of the lens or not. We have thought about such things, but have not come to any specific conclusions about what seems to be practical.

We have recently been in conference with H. E. Roth, of Denver, who trains pilots for United Air Lines. In addition to his professional career, Mr. Roth has an amateur interest in astronomy. As I mentioned before, one of the problems we have encountered is the reluctance of civilian airline personnel to get involved. This is understandable. If we were to be associated with a bizarre incident resulting from a UFO sighting, the matter would not prove devastating to our status in the community. However, the status of airline pilots as employable individuals depends on their being thought of by the public and their employers as responsible men. Mr. Roth is attempting to pave the way for us to establish a better relationship with airline personnel. He has had consid-

erable working experience promoting such cooperation. Recently he organized a volunteer pilot network to track satellite reentries. NORAD predicts the place and time of various satellite decays in the atmosphere, and this information is radioed to pilots in flight in the vicinity of the predicted burn-ins. With the assistance of Mr. Roth, we hope to set up a working pattern of cooperation with the airlines.

We have also discussed other means of obtaining cooperation, especially the possibility of setting up teams in other universities to help investigate sighting reports. At different times we have held different opinions on the feasibility of this. The advantage of bringing in people at other universities is that it would shorten travel time and reduce travel expense; but of course these people would be part-time affiliates, and problems might arise because they are less fully oriented. I do not believe it is expected or desired that we make full-coverage investigations of all cases, so we tend to argue against that line of action.

On the other hand, some thought has been given to university specialists, irrespective of whether they are used on field trips, who could make contributions in particular areas. We have considered using these people, and we have already used some, to advise us on various subjects rather than serve as members of field investigating teams. I have been terribly impressed by the difficulty of setting up the kind of team that is really going to get to a sighting area in time. The famous Michigan case was an exception, of course, since the phenomena did last for several nights. If a UFO is seen on two consecutive nights, for example, then it might be worthwhile to hop a plane to get there, since the chances have increased that it will be seen again..

We have already consulted an ignition specialist to investigate a recognizable category of reports of ignition failures in cars. Ford Motor Company has assigned two of its engineers to research the matter. There must be at

least two or three dozen reports in which people say that when they saw a UFO (something usually reported to be big and near and not just a distant light), their cars went dead. Despite their efforts to use starters, they claim they were unable to get the cars started again until the UFO went away. One might suppose that the people became excited and flooded or stalled their engines, or one may visualize a real effect.

There is another topic, similar to the ignition one, which we hope to get some medical people interested in. As Major Quintanilla knows, reports are commonly made by people who claim they feel quite feverish at the time a UFO is sighted (as if there were a sort of radiation diathermy field generating heat within themselves). We have had a report from an as yet unverified source that is very peculiar: Ten years ago a man in Idaho supposedly saw a UFO, experienced a feverish sensation and felt that he was about to die as a result of watching the object. The man then saw his attorney to make a will, was later admitted to a hospital, and died within a few days. The death certificate stated that he died of massive internal burns, whatever that might mean. It may be a distorted narration, or there may be something to it, but at any rate this type of report does not comprise a negligible category in the records.

There may be 10 or 20 reports that I know of, and perhaps Major Quintanilla knows more.

We have given a lot of thought to interview techniques, and Professor William Scott has supervised the preparation of some interview questionnaires. We have also had a very interesting discussion with Dr. E. L. Quarantelli, of the Disaster Research Center at Ohio State University. The people of the Center are organized to go out and observe how a community deals with a disaster. Their research is conducted with the intent of drawing conclusions and generalizations about how communities ought to be organized for disasters. Because a disaster has an extended time duration, however, Dr. Quarantelli's

group is not faced with the same field problems we are. For example, when Anchorage, Alaska, was hit by an earthquake the disorder remained for some time.

I think these are the main points of a quick survey I wanted to make of our problems and how we are facing them. I will ask Professor Wertheimer to outline what we have called among ourselves the "Wertheimer Hypothesis". Because it deals with a difficult question, I would like to focus our attention on it first. Briefly, he has hypothesized that regardless of how many reports we receive and how many we are able to dispose of, we are almost certain to find a residue of unexplained ones. The existence of the residue, however, does not prove that anything is coming from outer space. To prove that, one needs direct evidence that some objects are really from outer space and that they are intelligently guided; the existence of a residue of unexplained sighting reports does not constitute such proof.

Wertheimer: The usual way social scientists are trained in the scientific method is to begin with some kind of informal observation in order to develop a "feel" for an area, an immersion in it that leads to the development of some form of conceptual analysis of the problem. It doesn't have to be anything so formal as a model in the early stages. From this preliminary analysis, one derives a set of problems, a hypothesis--things to check out empirically. The problem itself dictates the method (the way in which the data will be analyzed and the kinds of conclusions that might result).

In attempting to follow this method, it seems to me that we are in danger of getting to the middle without having done the first part. With NICAP and some of the other groups that are interested in UFO's, the typical procedure has been, "Here are some data: see what we can conclude from them", without examination of the issues to which the data are relevant. Now it is much too presumptuous to call this a model, but it is a kind of conceptual analysis of the UFO phenomenon (defining the UFO phenomenon as the reporting of experiences

that people cannot explain at the time that they experience them, and if we want further filtering let's say experiences that can't be explained by competent technical personnel after careful examination). If we limit it to the first, the definition of the UFO phenomenon, then, is the reporting by someone of something going on in the atmosphere that he doesn't understand. It is a long complex process between the event "out there" and the production of the report. I would like to point to a few of the steps in that sequence.

First there is the event, which in psychological jargon we call the distal stimulus. This is the physical agent which could be any of a number of different things: conventional and unconventional aircraft of various kinds, dirigibles, balloons, or balloon fragments, rockets, satellites and satellite decays, together with such astronomical things as stars and planets, comets, meteors, or icy cometoids, and such meteorological phenomena as clouds, temperature inversions, ball lightning, the aurora, or dust devils, and a miscellaneous category of such things as marsh gas, insects, groups of birds, beacons, flares, reflections on windows, spider webs, a fly or smudge on a window that the observer misidentifies as something that moves in a compensatory way opposite his own motion and relative to it, and finally even hoaxes.

There is still another category that I will discuss later, which at one point we call framasands. This includes other events: natural, physical events that we don't yet understand sufficiently to be able to use in trying to account for a given sighting.

These types of phenomena form the distal stimulus, an event which is transmitted to a sensory surface through a medium that can distort the input. And there are various air-turbulence effects, mirages and the like, which can produce a less than perfect relationship between the event and the physical stimulus directly on the sensing mechanism. Within the sensing mechanism, too, there are such things as after-images and other phenomena which are real in a

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physiological sense, but which do not correspond to anything "out there". The so-called proximal stimulus, the physical energy right in the eye or the eardrum or whatever it is, is the result of this filtering of an energy change in object space and can result in a sensory event where, again, all sorts of distorting phenomena can occur. For example, the degree of light or dark adaptation can greatly affect the visibility of something--its apparent brightness, for instance. Also, there are sensory anomalies, entoptic phenomena--visual experiences that are generated by mechanical events within the eyeball itself (which might be produced, for example, by rubbing on the eyelid).

From the sensory event, which is a change of some physical energy to a neural impulse, one has an afferent process, getting the information up to the higher centers. This afferent process can be distorted by a number of things: drugs, fatigue, the general state of the nervous system in terms of a particular activating system and its state of excitement. Eventually one gets sensation, which leads to perception, or identification that there is something there with a given color and particular size. Finally, one gets cognition, or the attempt at identification of what that thing "out there" must have been.

Perception is known to be distorted under normal conditions. There are all kinds of standard illusions. A given visual stimulus, especially if received monocularly or from a fairly great distance, could be either a rather small object close by or a large object at a greater distance. It is very difficult, of course, to judge the distance of an unfamiliar object or its size, under most conditions, at greater than 50 to 60 yards. Autokinesis is one phenomenon that is quite well known and seems to play a role in at least some UFO reports: it is a stationary pinpoint of light in an unstructured field, which will be seen to move by most subjects if stared at for a half minute or so. There are, also, closure phenomena: if an object is fairly fuzzy and unclear, the perceptual process is such as to clarify it--a slight exaggeration from which, of

course, photographs would be free.

Between perception and cognition one often gets elaboration of some kind. A person tries to make sense out of what he is seeing with whatever system he has available. Past experience (what he may have read about UFO's for example); expectations, suggestions--all of this can affect the way in which a person actually experiences what he has seen, the kind of sense he makes to himself out of it, and the kind of sense he will then make to someone else when he reports it. Delusions and hallucinations, though they are probably rare, also occur and may be a source of UFO reports.

At this point one gets into the question of reasons for reporting. On the basis of my limited experience, I would guess that less than one percent of all my sightings are actually reported. (I don't know whether this would fit Major Quintanilla's estimate.) The form of the report is greatly affected, we know, by the form of the questions and the character of the interview that produce the report--whether one uses an open question (tell me about it) as against the closed question (what size was it--you don't mean to tell me it was really such and so). This is going to affect the way in which the final report comes out.

This is a summary of at least some of the classes of variables that I think enter into the UFO phenomenon, if one conceives of it in the way I have tried to define it.

Returning to the framasands and/or X class, as we called it at one point, if a sighting is unexplained (or in the X class), it is impossible to tell whether it is a framasand in the sense of something that could eventually be explained once we have more data and know enough more about physics, psychological matters, and the like, or whether it is of extraterrestrial intelligent origin. So--except possibly if there is a very clearly authenticated landing and Edward Condon himself touches a craft and talks with its occupants--unless

we have such a sighting, I think it is impossible to say anything about the tenability of the ETI (extraterrestrial intelligence) hypothesis merely because we happen to have some cases left in the X class.

Here is an excerpt from a memorandum I sent to the UFO Study:

"I think the Blue Book attempts have been superb--that the Blue Book personnel are badly overworked, that considering the small amount of time and staff available they have done a superb job. Chances are that a substantial proportion of the cases, though, that are now carried as explained in the files would on closer examination not be very convincing after all. There are probably some also which are now unexplained which more careful analysis might find a fairly plausible explanation for. But I am also convinced that, however much time we or any other group spend studying these detailed reports, there will still remain some that are unsatisfactorily explained. The big question is how to interpret the remaining group in the X class. Unfortunately, I think it is becoming clear that the fundamental question that the public wants answered is simply unanswerable. The assertion that at least some of these are actually caused by objects of intelligent extraterrestrial origin is neither proof nor disproof, nor made less likely by the existence of cases in this X class. While the data are consistent with such a hypothesis, they are no more consistent with that hypothesis than an infinity of other alternative hypotheses (e.g. the framesand) of the origin of these reports. There is no question that sincere and reliable people are reporting complex phenomena that they clearly did experience and that nobody can now explain, but it is a vast jump, from my point of view a logically indefensible jump, between the assertion that people are seeing things that they don't understand and the assertion that these reports constitute proof or evidence for an extraterrestrial intelligent origin of the objects reported". Rather than looking for more and better reports, what one ought to do is develop a model, perhaps somewhat along the lines I was

suggesting, and do some empirical investigations.

Condon: I agree with what Professor Wertheimer has said, and his hypothesis had such a shattering effect on me when I first realized the implications of it: if we were to make a general study of the type previously done (perhaps a little more thoroughly than Major Quintanilla's group has been able to do), we would still end up with a few hundred cases that are really quite puzzling. The logical position isn't going to be greatly altered if one expands the program and gets a few thousand reports that are just as puzzling. More cases do not provide greater proof of some extraordinary hypothesis like ETI. A few thousand make it no more provable than two hundred because we are not looking for some sort of frequency rate out of a definite class. Merely to go on with field studies much along the same general line that has been followed for years, even if somewhat improved, will not pay unless we can determine some really new characterization of UFO's. To have a few hundred cases that can't be explained or a few thousand, the problem remains.

Roach: But we're assuming that this is a problem of logic. Perhaps it is not a problem of logic at all, but a problem of simple observation. If one were studiously to look at the observations and humbly try to find out what they are trying to tell us, then perhaps that approach would be useful.

Condon: In all seriousness, what would any one of you require as evidence before you believed in extraterrestrial intelligence being here? I wouldn't be satisfied with anything other than actually getting a vehicle, with or without occupants, so under my control that I could take it and exhibit it to something like this committee so that all of you saw it, or take you to the place where I had it "captured". Anything less than that, I wouldn't believe. I think it is essential to try to think through the question of what would constitute proof of such an extraordinary conclusion as the one that there are visitors from outer space.

Cook: Another implication is that what the schema does is draw attention to the kinds of information that might be important. Some of these are a description of the conditions under which the sighting took place, a description of the background of the person who made the sighting, the circumstances under which a sighting reporter may function. In other words, the schema allows one to look at the classes of things that might enter into the eventual record that is made of the study of a sighting and tells one whether he is developing a complete and adequate record. There is a wide range of things that one would like to get.

Now, by contrast, if we look at records of sightings, we find them erratic. Very often we don't know most of the elements that we would like to. This, then, leads to the question, which is not original with us, whether there isn't some way of gathering and having on record more complete and systematic data for a number of sightings than we now have available. Does one want to pay any attention to available data on sightings? Does one have enough information to start with to get anything out of it? How can one get out of records of the sightings something if it is not there to begin with?

Wertheimer: Let me add a footnote. This would involve quite a reorientation. Rather than looking at old sightings or even looking for good new ones, what we might try is simulation, try to induce sightings using some less-known phenomenon preferably on a population about which something is already known, send something up and see who reports and under what conditions, what kinds of reports one gets, how they are altered by the conditions under which the reporter is interviewed, and so forth.

Cook: That is one alternative. The other one is to go into the concept of record building. It might become possible that reliable observers, such as the airline pilots, have available to them a record form, which makes them aware of the kind of information that we would like to have. But even that leads to the sort of alternative that Professor Condon has described, using investigating

teams which could get to the sightings as quickly as possible and obtain information that takes into account the considerations I have mentioned.

We have tried to think out the implications for getting the kind of data that would tell us something. Let's assume that we can get a comprehensive body of data. There is still the question of having it recorded in such a form that we can ask it questions.

Saunders: There may be a way of looking at what we might do regardless of the questions that we decide we want to ask. If we are to deal with a rather large number of data which have characteristics of being incomplete, often ambiguous, stated in a variety of forms by a variety of people--very ~~and~~ much open ended in the sense that at no time do we have complete specification of reports or events or variables that we may be interested in--then the problem is viewing efficiently such a mass of material. I visualize essentially an organized automatic data processing with a two-dimensional entry of possible information: let us say that the rows of this matrix correspond either to reports or to events--it doesn't matter which we use for this labeling--and the columns represent various kinds of variables that can be attributed to these reports or events. There may be tens of thousands of possible rows in this matrix, if we were to pursue the problem with any attempt to be comprehensive, no matter whether we regard the proper row-entry as a report (by one person) or as an event (possibly with multiple witnesses). And we might have of the order of hundreds of cells. The entries in the cells of this data matrix will not always be numbers. Most of the cells will be empty. In any given cell, depending on the type of variable we are concerned with, we might be able to plug in a number, we might be able to plug in a yes or a no response to a question, or we might be able simply to plug in a phrase that comes out of some report that we can see may have a bearing on the question that is in the column heading. In many instances, we simply know that there is a cell that

doesn't have anything in it, and we may have to ask ourselves whether it is an empty cell because it is irrelevant or because we have not, and perhaps could not have, observed it or because we have not investigated it thoroughly enough.

There are two major ways in which we can begin to look at such data. One would be to orient our attention to the columns of the matrix and the interrelationships that could exist between one column and another or between several columns considered as a pattern. One could look for configurations of information in reports that tend to occur simultaneously, things that, when they recur repeatedly, begin to suggest the existence of distinctive patterns. I think that one could then begin to classify, or one could ask, what are the conditions of observation that facilitate or tend to go together with the occurrence of certain features in reports. One could immediately begin to classify such things as all reports in which electromagnetic interference with car ignitions may have occurred and then see what are the other things that happened at the same time. There is a host of ways of looking at the columns, but there is a problem with any of these, perhaps, and that is that different investigators with different purposes looking at the whole data in this way may have different ideas as to the relative importance of different events. Many of these sightings have possible explanations which are more or less acceptable to people.

Low: Are you talking about credibility of the observations?

Saunders: That is an aspect of it, too. For example, if one is an astronomer, he will be particularly sensitive to the possibilities that there are astronomical explanations for a given thing; if he is a psychologist, he will be sensitive to the characteristics of the observer. I think the advantage of this conception may be that it becomes possible for anyone dealing with the mass of data to be explicit as to how he wants to assign weights to the

events and how to specify the rules he is following in giving greater weight to one part and lesser weight to another. At the level of pure observations we could say that we are all dealing with the same thing, and yet at the level of beginning to pull something out of them we could begin to go in different ways, so that we could reproduce, by knowledge of the rules of weighting or selection, what we were following.

The other major way of looking at this is to concentrate on selectivity. This means, in effect, that we try to pick out particular sightings or events that are of apparently greater importance than others. Given a great number of data organized for automatic data processing, it would be possible to generate from the data available a listing of events that look most promising, this again based on explicit rules as to how we are going to define "most promising". We could disagree about this and yet could conceivably follow a strategy of constantly looking to see which events are toward the head of some list and have gotten there because they seem least explicable by conventional modes of explanation and are, therefore, the most likely to fall into category X, whatever they may then later turn out to be. If we isolated a group of these and found some kind of recurrent pattern within them, we might be in the position to suggest a particular direction for further investigation that would help us either to explain them or to extend the range of their incomprehensibility.

Cook: The one question that is perhaps raised by these comments is whether or not at any time, especially in the coming year, a study should be focused on the sighters.

Condon: There is another set of problems that one can identify, too, which lies in the social area: the behavior of the communications media in reporting UFO's. Commonly, people say that there is a great undercurrent of, one might almost say, fear in the public because of UFO's. I am now thinking not so

much about characteristics of individuals but whether there is any identifiable way in which one can ascertain whether the public at large really is concerned and worried.

\*           Hippler: I think this can be answered very easily. They come to us about things in the sky, so they must be concerned.

\*           Condon: Perhaps there are legitimate things to study other than studying the phenomenon itself: the psychology of the individual sighters, the social question, whether concern is being magnified by the attitude of mass communications media. Is there anything politically possible to do about it? I suspect that a lot of people think that their sightings might be the key, and so they report them in the public interest. I think the vast majority of them are well-intentioned.

Quintanilla: I think they are patriotic citizens who are mystified by something which they cannot explain to themselves, and they go the "the Great White Father" to try to get an explanation.

Condon: And because of the possibility of its being something from outer space perhaps it could therefore be a hazard and different from some peculiar natural event like a mirage. It really does appeal to their sense of responsibility.

Quintanilla: That is right.

Condon: We have expressed some ad hoc views about how we think of this. The question arises whether some kind of social-psychology, as contrasted with individual psychology, is worth following up.

NAS           Coleman: This group has been "employed" in effect by the Air Force in the public mind. If you were employed to prove that UFO's do exist, I wonder if you would advance the same arguments that you have. For example, how can you rationalize a sighting? If you are able to say that we have looked very hard but we could find no evidence, that is somehow more convincing in the

public mind than if you do it the other way around.

Hippler: I do not think that the simulation technique, whereby you attempt to fool people and see what kind of reports you get, is going to work out at all to your advantage. You see, first of all, we (the Air Force) have not charged you, and you have not promised, to prove or disprove anything. You have to look into the problems, and you may come to no more solid conclusions than we have. But we hope that in the course of this study, you will come up with some rationale as to where we go from here. Now, of course, in the meantime, if you do manage to prove or disprove, so much the better. But, to simulate, to see if one can really "fool" people, is not going to go over very well.

I think I would also be a little leery of studying people. Now, you may have to, to some extent, but you can do this in many ways. For example, you are asking why you should make a field trip if the event is all over. One thing of interest is that if you get there very quickly you get one story, and then six months later the story may be repeated completely embellished. And if you weren't there the first time you don't know which part of the story is embellishment and which part is the original. Under this kind of circumstance you can then be studying people or studying the phenomenon as to how the stories change. You could do this kind of thing, I think, perfectly straightforwardly. And certainly, if you get people to agree beforehand to be studied, I think this is also useful. I don't think you ought ever to try to fool anybody on any of this.

Ratchford: I would like to make a comment or two. The first point is, in the structure of the Wertheimer hypothesis, the underlying question seems to be are these ETI's or not? In other words, you are going after the jackpot question. I would like to suggest that perhaps there are other questions which should be properly asked, questions which might come from such people

as Franklin Roach and the NCAR people. In other words, do the data which are currently available, or will become available, reveal or suggest answers to valid physical science, especially atmospheric science, questions? And also, will perhaps the data or the pattern of the data even indicate questions which should be asked and perhaps could be answered by specific experimental attempts? Now in regard to the problem of the rows and columns, the matrix: I think the key thing there, is, again, what questions are you going to put to the data. You obviously don't want to ask or answer a lot of irrelevant questions because, not only do you not gain anything, you drown the possible relevant questions in a mass of irrelevant data. So the key question seems to be, how are you going to determine the questions which are to be asked, and, again, the answer to this, in a simple way perhaps, is that you have to have people who are experts in their fields who can at least scan the data to look for a type or for a pattern that might be of some use for their own particular questions.

The term explain has come up rather often, and the question which one immediately asks is, explain what? Do you want to explain a particular report, or do you want to use perhaps a small part of an otherwise unreliable report to explain a particular phenomenon which may be of interest either from the life science standpoint or from the physical science standpoint or, even more, from the standpoint of the UFO phenomenology itself? The latter would be good, but I am not sure that it can be done. It is a very difficult question.

Now, one further comment: Columbia University has done a study on press coverage of UFO's and an article has been published of which I have a copy that I will send you.

I was impressed by Professor Wertheimer's conclusion that one would probably not be able to prove anything. It seems to me that what we are trying to do is narrow down a set of unexplained phenomena. Several times we have referred

to investigating the people who see them. I should think that would be most essential, actually, because there are two extremes that might come out of such study, each one of which could be a real step forward in our understanding. One would be, as you say, actually finding something concrete that could be shown obviously to come from outer space, that could be documented to show conclusively that people saw something that was very definitely a spaceship. The other extreme would be to take a case in which several people made a sighting simultaneously and prove that there was really nothing there. In other words, even one such instance well documented would prove that the human mind, after all, is at all times a peculiar mechanism which, I am sure, we don't understand, and when you look at the whole population, the aberrations of various people's mentalities or group mentalities are certainly not known. If you could document this aspect of the problem you could also throw new light on it because you might then, I think, proceed to the conclusion that a great many of these sightings really have been some kind of a mental image which didn't come from the appropriate sensors--there was no external stimulus; there was something psychological about it. It would be a real step forward toward a solution if this could be demonstrated.

Condon: I agree that we should study the observers, but to what extent and how is the big problem. There is another question, too. The Air Force has rather confined its attention to that which goes on within the United States. And as a practical matter, we should also. On the other hand, sightings are made all over the world and receive a lot of attention in other countries. We have wondered to some extent how we ought to follow that and work with it. I have had a conference with Herman Pollack (Office of International Science, Department of State), acting Director of Science Attachés. He has asked all the attachés to be alert to the more serious aspects of the phenomenon. Almost every country has groups following flying

saucers as a hobby that are more or less religious and more or less uncritically enthusiastic. You find them in all countries, in all languages--magazines by the dozens devoted to this. I don't think it particularly pays us to try to follow all the reporting in foreign countries or even in this country, but I do want to make sure, that if the attachés hear about some new serious investigation in Italy or Sweden or elsewhere, we could have the information and keep in touch.

\* Ratchford: Has anyone ever done simple things with the data such as, for example, looking at the distribution of reports between men and women, comparing that with the general population, looking at the age distribution of the people who turn in the reports--things like this that don't involve psychological problems but that could be suggestive. If one were to discover, for example, that all the reports of a particular kind came from elderly ladies, there could be an explanation. Has anyone ever looked at these random events and followed them up?

Wertheimer: Some of this has been done in a superficial way, never detailed and never for the data as a whole, only for certain countries. At any rate, I believe the data are not readily available.

Condon: There is a very incomplete present knowledge about the extent to which people report their sightings and the reasons why they do or do not report. Without trying to make a quantitative assertion, just from the little contact we have had with people since we began this study, I think that there are many people who will tell you a good story, just as good a yarn as any in Major Quintanilla's files, and yet when you ask did you ever report this, they will say, no. When asked why, they give various reasons: didn't want to be bothered, didn't know anybody was interested, etc. At any rate, that which is in Blue Book's files is only a small sample of that which might be in those files if the public reported more completely. I went through a certain phase

of thinking that a part of our job ought to be a massive publicity campaign to get more work for Blue Book, but then I thought that was of little use. Wertheimer's approach makes one feel that it is of doubtful value merely to stimulate the getting of more such reports.

Saunders: Yes, we don't know what kind of sampling we are getting.

Cook: That is what an induced sighting might produce--knowledge about the sampling.

Condon: One of the things that we have thought of is to make use of experimental studies of the upper atmosphere already in operation, not for the purposes of inducing sightings but to focus attention on seeing to what extent a NASA experiment or something of the sort did induce sighting reports.

Hippler: The reason why I have cautioned against induced sightings is that we don't want it ever to be alleged that the Air Force has hired you to make people look ridiculous so that we won't get "any more of this nonsense from them".

Condon: To give a example of a non-simulation approach: NASA is planning for June to make a legitimate experiment in an upper atmospheric research project, to send up a rocket that carries an electronic gun and accelerator that will send off a stream of electrons from a couple of hundred miles up. They will come down along magnetic lines of force and will sooner or later hit enough gas to excite luminescence. That struck me as a wonderful, natural "sighting" event. We asked the NASA people if they would not publicize in advance what they were going to do so that we could see what kind of reports were generated. But they couldn't do that; they already have publicized it. I think we should still try to make use of it. I can't predict what it is going to teach us. But at least there will not be the slightest doubt about our knowing when and where it was, and then we will see what people report.

Kissell: Is there any apparent correlation between the chemical luminescence experiments that have been conducted and sighting reports?

Quintanilla: Are you talking about the barium shots--at Wallops Island and at Ft. Churchill? Yes, we did have a number of reports arising from those shots.

Low: There is a consensus, I think, among the group that this kind of study will probably not solve the problem of explaining the mystery of the unexplained sightings. If that is a correct prediction, at the end of the project the problem will remain. The nation will still have the problem. What is our role in recommending what is to be done, how the problem is coped with, what group shall be recommended to work on it, how much effort should be expended to surmount it?

Ratchford: I think the only thing that we are really asking you to do is to take a look at the problem, first of all, and on the basis of what you determine recommend what the Air Force should do in the future.

Hippler: I don't think we want any recommendation from you unless you feel strongly about it.

Condon: There is an unexplained residue of UFO sightings. But there have been no evil consequences in the sense of actual hazard to the security of the United States. One of the arguments that could be advanced is to say it is better simply to ignore the residue.

Blumen: Hasn't this happened many times in history with the aurora and various phenomena nobody understood? The argument is not that it is unimportant scientifically or does not have some content worth following but that it is not an Air Force obligation. I think it has already got to the point that the Air Force handles it only because it is under pressure to do so.

Ratchford: It is conceivable that you would conclude that an organized, continuing UFO project is not worth the money but that specific areas, pointed out in your study, were worthy of further perusal.

Condon: Take, for example, ball lighting, which in its own right is a

rather poorly understood phenomenon, a mysterious thing and interesting. Quite in the spirit that the Air Force supports a lot of basic science independently of the UFO question, one could recommend that ball lighting be studied--but not because of an obligation to protect the status of the country against "hazardous" UFO's, which seem not to be a hazard.

Low: You can argue logically the following: that if additional data might help to answer the question--then where does one get the additional data? I think that a question of interest that could shed some light on this argument is, suppose one approaches this problem with the opposite hypothesis: that UFO's do exist, let's try to see whether we can prove it. If one makes this assumption, he is now trying to prove the positive hypothesis that UFO's are ETI's. If he fails to find this information, that in itself, I think is significant.

Condon: In other words, one doesn't find the answer by not looking for it.

Hippler: The implication has always been that, if one puts more effort into answering the question, he can. But if one puts more effort into it and still doesn't answer it, he still hasn't resolved the problem, but he has found a basis for a recommendation: you can say what do you want to do, spend billions of dollars and get nowhere, or do you just want to quit?

Low: The Hynek argument is this: that a UFO study should be a scientific study, and the question of whether it is scientific or not depends upon methodology. He said, for example, look at the problem in the 1800's, when people didn't know that meteors were extraterrestrial. How did they in 1800 solve the problem of what these things were? What are meteors? Well, it was solved. But I think you have to deal with the question of UFO's by saying that with them one is not studying something--he is not studying a phenomenon. Meteors can be described as a phenomenon; UFO's may be dozens of things. Therefore you can't study "it". You have to study "them". And science can only study "it".

I would ask whether additional data help very much because the question is, data on what? What is one getting data on? At least when one studies meteors, he is getting data on something: he can reasonably define the class of things he is studying.

Rush: But meteors became "it" only after we understood what they were.

Evans: I've been thinking that a small number of specific data, scientific data, could be significant when compared with what has not been, in any real sense, scientific data accumulated in the past.

Condon: That is right, but I think the argument is that what we really need is a good idea of quite a different quality rather than just an improved level of interview techniques. I don't quite know what that is, but we need some wholly new tool.

Evans: When I talk about additional scientific data, I am talking about observational data, not interviews. Going back to your idea that there should be some sort of instruments at well-chosen military bases or universities would be an attempt to obtain hard observational data.

Condon: Even though the phenomenon appears very transiently, one might finally be able to study one or two sightings while in progress; that would help significantly to arrive at a conclusion.

Roach: I want to point out that the rate of occurrence of these things (sightings that eventually fall into the "residual" category) per square mile per year is low.

Condon: It will be terribly expensive and take a long time before one is likely to get anything significant. Perhaps we could make a budget estimate for the cost of obtaining hard data on actual events.

Hippler: Let me point out that in essence we have the data, but we haven't done anything with them. We may already have sufficient sensors, but nobody is looking at the data from them.

Ratchford: There is, however, a completely different class of questions. Let me give an example. I understand that the question has arisen as to what, for optical frequencies, are the maximum values for changes in the index of refraction in the atmosphere. It is a question not answered. It seems to me that this is a rather important question. It is conceivable that this type of question will be the really solid contribution from this study. It is not just the UFO's that are important.

Condon: Yes, I think one can identify questions of that sort which are likely to have what one might call scientific by-product value and as such are worth studying. They don't, however, really solve the UFO problem in the originally conceived sense.

Hippler: No, but they could serve as a rationale for whatever your recommendations might be. I would say that they do narrow the field.

Kissell: Is there any way of extracting more information from the observers who provide the data, especially the people who are presumably careful observers, professional pilots and the like?

Condon: That is perhaps a possibility when Blue Book personnel investigate a report. To what extent do you try to discover other witnesses than the ones you are investigating? To what extent have you looked for witnesses even though they didn't come forward voluntarily?

Quintanilla: It depends on the size of the town or city. Usually, when I have gone out myself, I have talked with the sheriff, deputy sheriff, highway patrol. These are all good sources because they are usually out at all hours of the night, and if anybody calls a law enforcement official about a sighting he usually calls one of them. Also, you can contact the newspapers or even ask the person who submitted the report whether anybody else that they know of saw it, but the law enforcement officials are good leads to other people.

Condon: Is what terminates the interview of a sighting reporter that you

personally become convinced that it is not profitable to talk any longer to him?

Quintanilla: One reaches the point of diminishing returns: people do get tired.

Low: Zero returns or just diminishing returns?

Quintanilla: I call them diminishing. A lot of times they are zero to start out with. I have found that, when you talk to a person at length, after a while he just repeats, and sometimes he trips himself and sometimes he doesn't. Highway patrolmen I have found a good source of information; they often will tell one things that are confidential as far as they are concerned, about the observer, or about the locality, or what other people think about it. This information we don't publish.

Low: Do you have any figures on whether pilots and people who are flying on airplanes see UFO's more frequently than, for instance, law enforcement officers?

Quintanilla: Since I've been on the project, for three and a half years, I've had very few reports from airlines pilots except that they often use the UFO channels to report satellite decays and meteors. These they openly report. In three and a half years I have never seen a report submitted by a pilot that said "I saw a flying saucer" or "I saw a flying disc". This type of report I have not seen.

Low: Do you get this type from the law enforcement officers?

Quintanilla: I have from time to time.

Condon: Can you make another comparison, perhaps not directly from your experience? I have been led to believe that Blue Book around 1950 did get a lot of reports from airline pilots but that after that they quit reporting. I don't know whether that is true or just a legend. Do you think they have quit reporting for any particular reason?

Quintanilla: I have looked at some of the earlier reports, and I know

that airline pilots did report more frequently back in those days. The Air Force didn't shut them up. Whether the airlines themselves discouraged reporting, I don't know. I have heard that they have, but there is no way to prove it. I have had reports from pilots who report missiles in the air quite often, especially out in the Pacific.

Condon: Do they recognize them as missiles?

Quintanilla: Not at the time.

Condon: They are UFO's then?

Quintanilla: To them they are UFO's at the time. Sometimes when we pinpoint the launch time and the impact time we find they are missiles. We also get reports of satellite decays in the Pacific. Of course, we like to get these reports because we want to obtain satellite decay information anyway. We get very few meteor reports--every once in a while a report of a burning fireball. Some of them are close and they do light up a cockpit once in a while. But reports from airline pilots alluding to flying discs or flying saucers, I haven't seen.

Hippler: When they report something, they usually have really seen something.

Quintanilla: That's right.

Evans: If they are reporting something and admit that they don't know what it is, it seems to me that this is the kind of data one would want. If one can show that such reporters are reliable, I would think it would pay to concentrate on a group like this.

Hippler: That is probably right. Another interesting thing happens. I have been sending out lots of letters and regulations and so forth, which must be signed by many people in the Pentagon. Invariably, if they are on UFO's, I get some sort of comment from others, and it falls into one of two categories. The first tends to disregard sightings as if they were the natural hazard of

the game, as if when one gets up there he doesn't really know what he is seeing. The other kind comes occasionally when a person will say, "Yes, it is surprising, we do see some things up there". Most of them seem to think that one can get all kinds of phenomena up in the air, what with clouds and lights and that sort of thing, and while they may not recognize them they are not bothered because they are beginning to get used to them. It is just that they are in an environment with poor lighting, and they expect the unusual. It doesn't even confuse them very much in the ordinary act of piloting.

Ratchford: There is a widely circulated legend that pilots and radar controlmen are "believers" in UFO's but that they do not report sightings to the Air Force for fear of ridicule.

Wertheimer: As for control tower operators, I have talked to several of them who had actually seen UFO's (both visually and on the radarscope) and did not report them. It is very puzzling.

Condon: It is a very puzzling problem, gentlemen. The methodology we should pursue is not obvious. We may be delayed in coming to a final determination of what detailed steps we actually follow in our study. We said we would have an answer on this phase of the work--methodology, revised budget, and the like--by the end of January. But it does not appear that we will make that deadline.