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Bogies at Angels 100

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The trained airmen have a word for it. They call unidentified objects in the sky "bogies." Fliers estimate the height of bogies in units of 1000 feet and call this unit an Angel. Other people call the unidentified objects "flying saucers." As you know, there has been much excitement in the last three years over these objects. Magazine articles have been written about them; indeed, a book has been published entitled "Flying Saucers are Real." They are, in fact, real—but not in the fantastic design or with the supernatural properties ascribed to them.

I believe there are two reasons for all the excitement concerning these unusual objects. First, people like to be afraid. In our younger days we walked through cemeteries as an indication of our courage in the face of great danger. It does no good to tell a young lad that there are no ghosts; he knows that ghosts are real and that he is very courageous in entering the territory which is sacred to these ephemeral individuals. The second reason for the widespread belief in "flying saucers" is, in my opinion, a desire for a combination of a scapegoat and a saviour. We wish to ascribe all our troubles to the antics of "flying suacers." On the other hand, by mastery of these objects, we will presumably have an invincible weapon against a much feared foe.

The problem gets serious when people lose their lives in pursuing these ghosts and when they actually believe that such objects are real. I would like in this article to present factual information concerning what I believe to be the true origin of the "flying saucer" myth.

For several years the Office of Naval Research has sponsored a project aptly called SKYHOOK, which involves the use of large plastic balloons. The scientific justification for this is a need to know about particles called cosmic rays. You may know that the earth's atmosphere is constantly bombarded by particles from outer space (that is, from extraterrestrial sources). Because these particles were first thought to be similar to X-rays and to come from interstellar space, they were named "cosmic rays." One of the results of project SKYHOOK is the knowledge that they are atomic particles and that the distribution of the various atoms in these "rays" is the same as in the known universe. That is to say, hydrogen is the most prevalent element known in the universe. Hydrogen nuclei, called protons, are the most prevalent cosmic-ray particles. Helium is the next most prevalent element, and, also, the second most prevalent cosmic-ray particle. Iron nuclei are the heaviest identified in cosmic rays, but there is no reason to believe that other heavier ones are not present. They are just so rare they have not been observed.

SKYHOOK balloons are unusual. In size alone they are impressive, having a diameter of approximately 100 feet. It may seem to you that a

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diameter of 100 feet is not particularly large, but let me remind you that one of these balloons would envelop an eight-story building. And even though only about 250,000 cubic feet of gas is put into a balloon, it can lift more than 100 pounds payload to an elevation of almost 100,000 feet.

Because cosmic-ray characteristics vary as a function of latitude (and weakly with longitude), it is necessary to make flights from various places, including the ocean. Three cruises have been taken for this purpose, two in the Atlantic and one in the middle Pacific.

Many news releases concerning our cosmic-ray work have been given to the newspapers. In spite of this, ardent aviators have taken off in pursuit of "flying saucers." The most ambitious individual flew up and up until he ran out of air, collapsed from anoxia, and crashed. An immediate press release cautioning aviators against trying to catch balloons at 100,000 feet was published by only a few newspapers in the back pages in small print. Similar incidents, of not so tragic character, occur practically every month.

Although more than 100 balloons have been launched from the vicinity of Minneapolis, Minnesota, the sight of these balloons in the evening sun has been sufficient to stall traffic in that city for long periods of time. If the appearance of these objects causes such a sensation among people who should be accustomed to seeing them, it is easy to understand why the fantastic "flying saucer" stories have been circulated by observers unfamiliar with our work. While the great majority of the balloons are flown from Minneapolis, traveling various distances across the United States, it might be interesting to note that balloons are launched from various other locations as well, such as Chicago, Illinois; White Sands Proving Grounds, New Mexico; and Holloman Air Force Base, New Mexico. This accounts in part for their appearance in many locations.

I have examined hundreds of reports of "flying saucers." One was even reported to be radioactive. Although the "radioactivity" was measured by a competent laboratory, exhaustive examination proved that it was, in reality, caused by a faulty contact in the electronic circuit, whose resistance varied as a function of mechanical vibration. This fluctuation in resistance registered as a large increase in apparent radioactivity.

But such logical explanations have not hindered the circulation of even more fantastic stories about "flying saucers." Just recently a professor of geology at the University of New Mexico attained considerable notoriety by revealing to the Associated Press that he had found a mystical object in the mountains. He did not wish to "trust" the FBI, who, incidentally, would have known what it was. The newspapers were able to make a considerable story by declaring that the Navy and the Air Force were both claiming control of the find. In the first few minutes of confusion it was not known to us whether it was one of our pieces of equipment or one flown by Wright Field operations. A few phone calls soon straightened out the matter, but the newspapers had already conveyed the impression that the two Services were "fighting" over this "secret" object. It was not secret; it was simply a cosmic ray measuring device.

With the aid of a telescope we recently obtained a picture of a "flying saucer" in which one can see the brilliant light of its "atomic" engine, the faint stream of hot exhaust gases pouring from it, and the long, thin lines of its structural members. In reality, the object was a SKYHOOK balloon, measured by theodolite to be at an altitude of about 80,000 feet. To the unaided eye the details shown in the picture would not be obvious. But the balloon was seen as an object moving in the sky with the speed of the winds. These velocities are by no means insignificant, for they sometimes are as great as 200 miles per hour.

In addition to single-cell flights, such as the one just described, balloons are also flown in tandem. These balloons range in diameter from 5 to 20 feet. Because they are tied to a single load line, they fly "in formation." This accounts for the stories of "squadrons of flying saucers."

Actually some of the fantastic stories circulated have occasionally served a rather useful purpose, for they have helped us to locate valuable equipment flown by the large SKYHOOK balloons. Ordinarily they are tracked by ground visual observations, by radio, and by airplanes. In addition, "reward" tags are attached to the apparatus with instructions to call or write the General Mills Aeronautical Research Laboratories in Minneapolis, Minnesota. These laboratories—prime contractors for this work—are constantly developing new types of balloons and doing research on better construction and performance and on better tracking methods. In spite of all these precautions, the balloons occasionally escape us, and in these cases equipment is sometimes located by reading newspapers for reports of "flying saucers." Even so, approximately five percent of the flights are lost for long periods of time or completely.

Of course Project SKYHOOK is not the only source of "flying saucer" stories. Reputable balloon observers have reported unknown objects in the sky as possible "flying saucers." They have forgotten the phenomenon of mirage, by which objects appear to be in positions and to be moving at velocities entirely different from those of the real objects. In some cases, however, pictures have actually been published of reported "flying saucers." The cameramen who took them have forgotten about the phenomenon of internal inflection in lens systems, which produces images on photographic film that have little relation to reality.

Those of you who have sailed the seas realize the difficulty of determining either the distance or the velocity of an unknown object on the ocean. If you recognize the silhouette of a ship to be that of a class you know then you can estimate the distance to that ship and its relative speed. One cause of the fantastic stories you hear about "flying saucers" is that the size of the objects and their distance from the observer are generally not known. People are not accustomed to seeing balloons having the size and velocity of those used in project SKYHOOK, and consequently interpret what they see erroneously.

Imagination is fun, but, as a series of cigarette ads pointed out several years ago, it's more fun to know.

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COVER PHOTO: The six chiefs of Naval Research. Left to right, top to bottom - VADM H. G. Bowen (1 Aug. 1946-31 Oct. 1946), RADM P. F. Lee (1 Nov. 1946-30 June 1948), RADM T. A. Solberg (1 July 1948-30 June 1951) RADM C. M. Bolster (1 July 1951 - 30 Dec. 1953), RADM F. R. Furth (30 Dec. 1953-31 Dec. 1955), RADM Rawson Bennett (Jan. 1956-)

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