

$(0.23)(0.0022) = 0.05$  percent chance of photographing a single, fixed UFO of 3 candle power. If the UFO moves as much as 1000 miles this probability is increased to 0.07 percent; if it is fixed at low altitude between the cameras, the probability is less.

The Dominion Observatory (Ottawa) is building a similar meteor network in western Canada, using shorter focus lenses (53 mm) at stations 120 miles apart, expected to be in full operation in 1969. The Czechs have had a photographic network operating for several years covering the sky over Czechoslovakia with single wide-angle lenses at each site, focal lengths about 1 cm. No UFO's have been reported. The worldwide photographic detection probability therefore seems to be about 0.1 percent, and the probability of  $F$  UFO's per year escaping detection is  $(0.999)^F \approx \exp(-0.001 F)$ . It is therefore unlikely that  $F$  can be more than 500 luminous UFO's per year, worldwide. In fact, if only sightings in the United States are considered (an area of more than 3,550,000 square miles), the Prairie Meteorite Network has detection probability  $P = (0.23)(0.12) = 2.8$  percent, and the probability of no detection is  $\exp(-0.028 F)$ , limiting  $F$  to 18 luminous UFO's or less per year in the U.S.

Although these estimates do not rule out the residual of truly unidentified objects in the U.S. Air Force file for 1966 and 1967, they cast some doubt on the claim that UFO sightings indicate extraterrestrial visitors, and such estimates should be improved by authors (6) who criticize UFO theories. As an avenue of further discussion on both sides, I have proposed that several sections of the AAAS (Physics, Astronomy, Biology, and Meteorology) sponsor a special symposium on UFO's at the Dallas meeting this December.

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#### References and Note

1. T. Page, *Science* **158**, 1397 (1967).
- 1a. After this note was written, W. T. Powers of Northwestern University Astronomy Department informed me that "several" of the Smithsonian-net photographs show "anomalous trails."
2. T. Page, *Observatories of the World* (Smithsonian Astrophysical Observatory, Cambridge, Mass., 1967), 40 pp.
3. J. A. Hynek, *Science* **156**, 329 (1966); also *Look Magazine*, 1967; R. M. L. Baker, *J. Astronaut. Sci.*, **15**, 31 (1968).

4. J. E. McDonald, "UFO's Greatest Scientific Problem of our Times," Pittsburgh NICAP Subcommittee (P.O. Box 701), 1967.
5. R. E. McCrosky and A. Boeschenstein, Smithsonian Astronomical Observatory, Special Report 173, (24 May 1965).
- 5a. After this note was written, R. E. McCrosky of the Smithsonian Astrophysical Observatory informed me that no thorough search has been carried out.
6. W. Markowitz, *Science* **157**, 1274 (1967); D. H. Menzel and L. G. Boyd, *The World of Flying Saucers* (Doubleday, Garden City, N.Y., 1963); P. J. Klass, *UFOs—Identified* (Random House, New York, 1968).

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### UFO in 1800: Meteor?

In gently mocking the UFO controversy, Cannon (1) informed us of a sighting by William Dunbar in the year 1800; he reported that Dunbar's object was in the shape of a *house*, and suggested that since Dunbar saw square UFO's and we see round ones, the next stage should be triangles. I have consulted the source given by Cannon, and it seems that he was misinformed about the nature of the Dunbar report. The following is a reprint of Dunbar's original manuscript, with one added paragraph, which appeared in *Transactions of the American Philosophical Society* (2).

A phenomenon was seen to pass Baton Rouge on the night of the 5th April 1800, of which the following is the best description I have been able to obtain.

It was first seen in the South West, and moved so rapidly, passing over the heads of the spectators, as to disappear in the North East in about a quarter of a minute.

It appeared to be of the size of a large house, 70 to 80 feet long and of a form nearly resembling Fig. 5 in Plate, IV.

It appeared to be about 200 yards above the surface of the earth, wholly luminous, but not emitting sparks; of a colour resembling the sun near the horizon in a cold frosty evening, which may be called a crimson red. When passing right over the heads of the spectators, the light on the surface of the earth, was little short of the effect of sun-beams, though at the same time, looking another way, the stars were visible, which appears to be a confirmation of the opinion formed of its moderate elevation. In passing, a considerable degree of heat was felt but no electric sensation. Immediately after it disappeared in the North East, a violent rushing noise was heard, as if the phenomenon was bearing down the forest before it, and in a few seconds a tremendous crash was heard similar to that of the largest piece of ordnance, causing a very sensible earthquake.

I have been informed, that search has been made in the place where the burning

body fell, and that a considerable portion of the surface of the earth was found broken up, and every vegetable body burned or greatly scorched. I have not yet received answers to a number of queries I have sent on, which may perhaps bring to light more particulars.

Hynek (3) has suggested that there may be scientific paydirt of many kinds buried under mountains of UFO trash. The Dunbar report may represent an example, the possibility of a very unusual meteorite impacted near Baton Rouge and large enough to make recovery of fragments conceivable. Dunbar's drawing is not greatly different in shape from some of the "phenomena" that are reported in modern times; we cannot yet be certain that Dunbar's object was in fact a meteor. I suggest that, here as in other UFO cases, mockery, however gentle and well-phrased, is not going to answer our questions.

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#### References

1. W. F. Cannon, *Science* **154**, 1503 (1967).
2. W. Dunbar, *Trans. Amer. Phil. Soc.*, **6**, 25 (1804).
3. J. A. Hynek, *Science* **156**, 329 (1966).

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The original publication of William Dunbar's report fortifies my primary contention very well. I should not have said that the phenomenon was in the form of a house, nor that it was square, but that it was the size of a house and was sketched as being more rectangular than any other regular shape except for protrusions fore and aft. As Dunbar did not see the event himself, it is interesting that he integrated the reports of observers into a more or less rectangular shape and used the word "house" as his first verbal image. I suggested that perhaps persons of that day had a culturally conditioned unconscious partiality for imposing square (now read "rectangular") shapes to order disparate phenomena; and that in the 1950's our culture had shifted to favor circles, or saucers, among certain groups. I still believe that triangles are the coming thing, although my reasoning, being more Freudian than documentable, is not such as to convince a skeptical astronomer.

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