

THE KETTERING TASMANIA, LANDING — A STUDY

THERMOLUMINESCENCE MEASUREMENTS THAT WERE AFFECTED BY A UFO

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This investigation was carried out by Mr. Roberts, Secretary of the Tasmanian UFO Investigation Centre (TUFOIC) and the laboratory analysis performed by Dr. Stevens, scientific consultant to the Australian Co-ordination Section of the Centre for UFO Studies.

EARLY one morning (about 1 a.m.) towards the end of February 1976 a dome-shaped object was observed close to the ground in the small town of Kettering, South-east Tasmania (about $147^{\circ} 16'E$, $43^{\circ} 07'S$). Figure 1 is a map showing the main features of the locality.

The witness (name withheld at his request) was attending a child when he looked out of a window of his home to the east and saw what he thought was an aircraft coming down at a 45° angle. He could see a white beam from an edge like a landing light. He watched this object approach for a couple of minutes and then went outside thinking it was an accident and perhaps he could assist. The object came down behind a small bank on the far side of a sporting oval that is opposite his house. The witness crossed the oval and climbed the bank and saw, about 23 metres down the other side of the bank which slopes down to Little Oyster Cove, a dome-shaped object emitting a bright white to yellow light through three or four "windows." He could hear an electric motor type of humming noise as he approached, and this increased in volume as the object took off to the east. He had a very good view of the object as it "gained elevation slowly" and then increased speed as it climbed away at a 60° angle. It receded into a point source and then disappeared. The whole incident lasted six or seven minutes.

He described the object as dome-shaped with ribbing from the top, and with a small ledge around the base which had a short vertical side. Through the "windows" he saw a tall cylindrical object similar to a ship's compass mounting and also motionless grey shapes (occupants?) that the witness described as similar to modern car seats (i.e. incorporating a head rest). His sketch of the object is presented in Figure 2. The witness is convinced that he saw a "secret government craft," and before his sighting had negligible knowledge of UFO phenomena.

The next day the witness returned and noticed that the rough grass beyond the oval had been scorched in a circular area. This grass later died and was replaced by a "tougher cutting grass." In April 1977, after the investigator eventually came to hear of the incident, the affected area was much greener than the surrounding vegetation (Figure 3). Presum-

ably the enhanced re-growth reflects the increased nutrient content in a soil in which the microscopic animal and/or plant life has been killed.

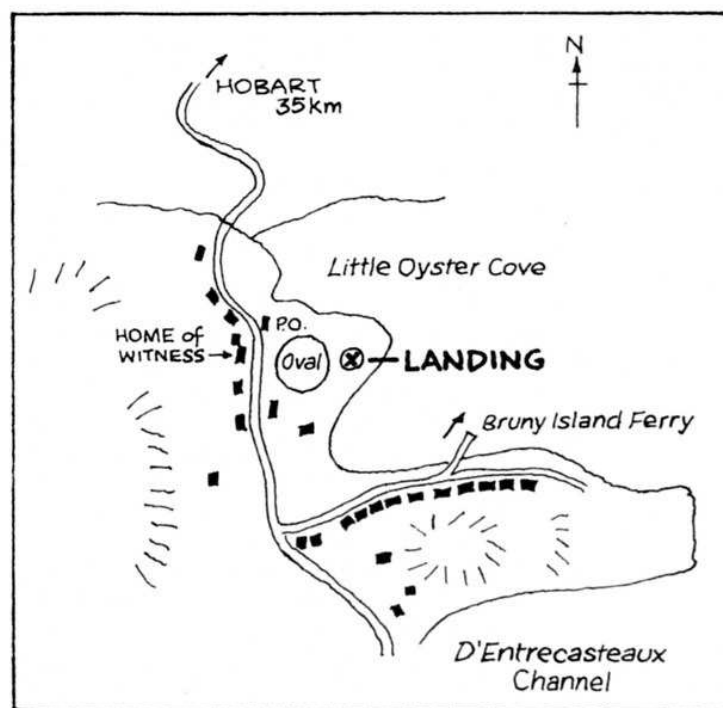


Figure 1: Kettering and surrounding area

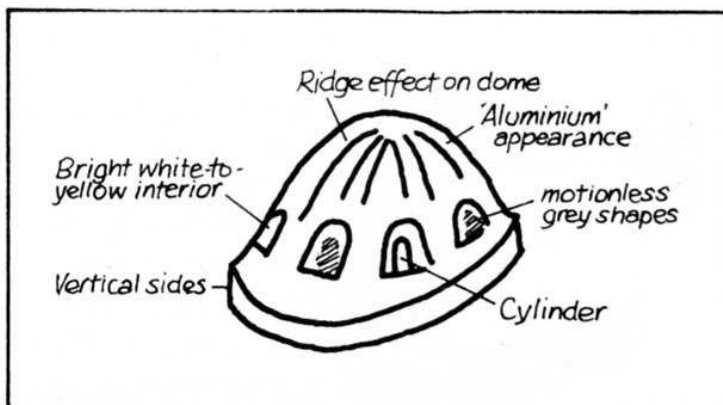


Figure 2: Sketch of object seen at Kettering

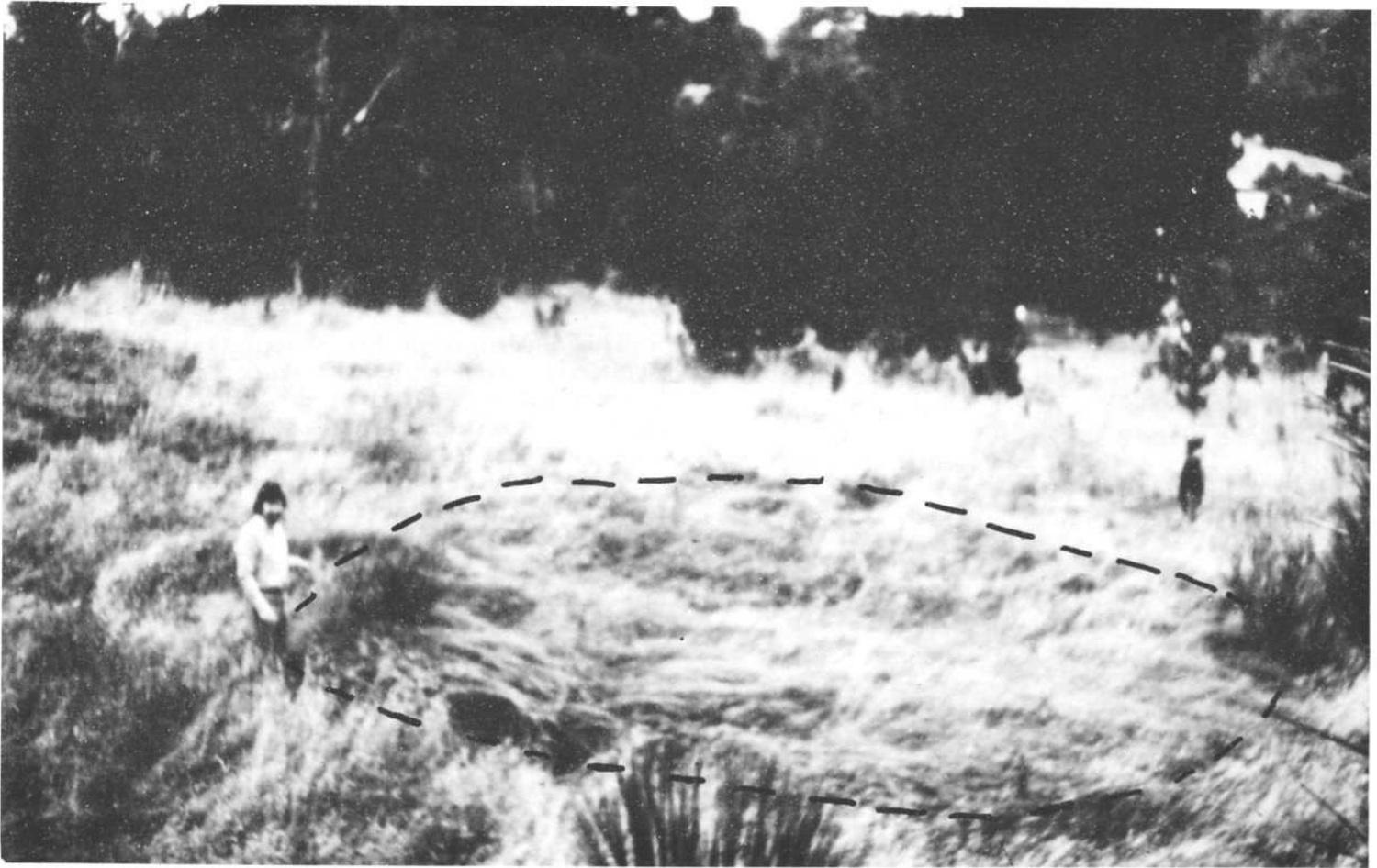


Figure 3 — Photograph showing region of stimulated grass growth that replaced grasses that were killed by the presence of the UFO. The sighting occurred in February 1976 and the photograph was taken in April 1977. In the original colour transparency the affected area stands out as a rich green region in straw-coloured background

Even though the event occurred some time ago, it was felt that in view of its high strangeness, and the good correlation of the sighting with the effects on the grass, that an investigation of the thermoluminescent properties of the soil might contribute something to the solution of the UFO mystery. Samples were obtained on October 24, 1977 by TUFOIC, and by that time the colour difference had disappeared, but the vegetation within the affected area was still noticeably thicker than the surrounding grass.

Thermoluminescence

When a non-conducting material is irradiated with ionizing radiation, some of the electrons are promoted to higher energy levels. Some of these electrons become "trapped" at certain sites and so remain at the higher energy. If the material is subsequently heated, then these electrons may receive enough thermal energy to escape from the trap. The electrons give off their excess energy as light — thermoluminescence (TL). The measurement of this TL involves heating a sample of the material and recording the light given off as a function of time or temperature.

Since most natural materials contain small amounts of radioactive elements there will be a certain natural thermoluminescence. This natural TL will depend on the age of the material and in the case of geological materials such as soils or rocks it can become substantial. Measurement of TL from these materials can give an indication of whether the material has been heated (in which case the TL would be low in comparison to a control sample) or has been exposed to an additional irradiation.

Description of samples

Five samples of soil designated A to E were taken from the surface by a small trowel according to the plan shown in Figure 4. TL measurements were carried out on the soil in three conditions:—

- (i) as received, from the top one centimeter of the clod of earth,
- (ii) after washing with water to remove clay and organic matter,
- (iii) after digesting with hydrofluoric acid (HF) to remove the more soluble mineral grains.

The samples were dried at room temperature in a vacuum desiccator and passed through a 500 μ m aperture sieve prior to TL measurement on November 10, 1977.

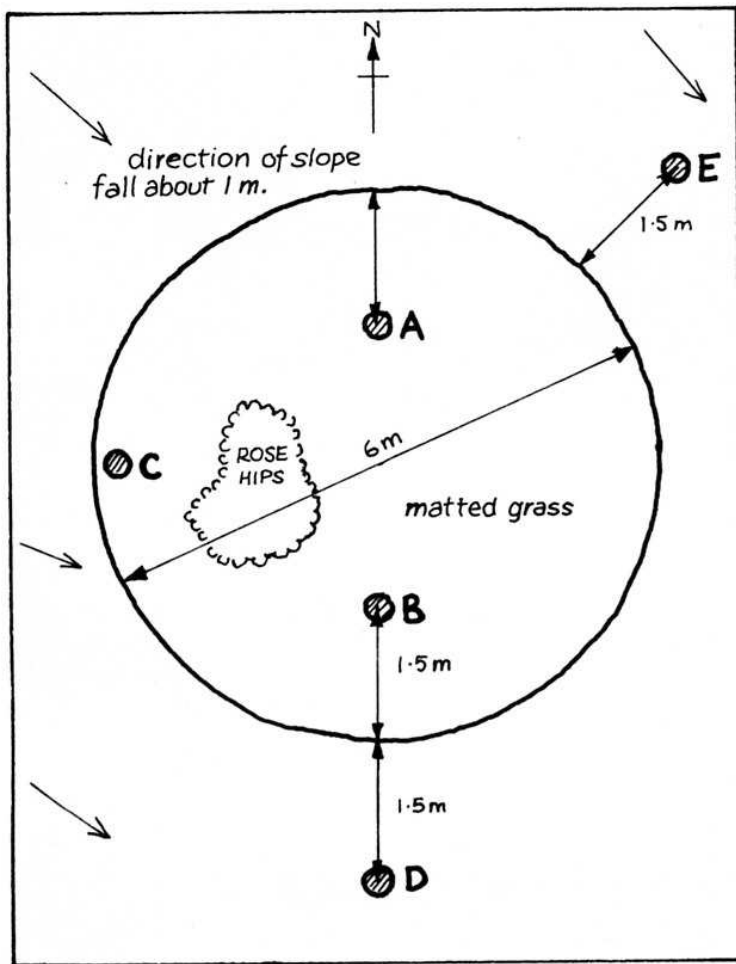


Figure 4: Location of sampling points

Results

A Harshaw 2000 A TL reader was used and the TL output plotted against specimen temperature on an X-Y recorder. The heating rate was about 3 Ks^{-1} and the specimen chamber was flushed with "high purity" nitrogen.

In general, two runs were made on each of the five samples in each of the three conditions. A typical curve from condition (ii) is given in Figure 5. The following parameters were taken from the TL curve:

- (i) the temperature at which the TL output commences,
 - (ii) the temperature of the peak or peaks in the TL plot,
 - (iii) the peak height,
- and listed in Tables 1-3.

The results show no unusual features:-

(i) The as-received soil shows a low broad peak at about 300°C with the TL output becoming apparent at about 170°C . The low TL output is typical of an opaque soil.

(ii) The washed soil shows a higher TL output due to improved light transparency. In general the output was detected at about 155°C and two peaks could be resolved (Figure 5) indicating the presence of at least two main mineral constituents.

(iii) After digesting in HF the lower temperature peak was not readily resolved indicating the dis-

appearance of the mineral fraction giving rise to the lower temperature peak in condition (ii).

Although there is some scatter, presumably due to TL sample size variations, it would seem that there are no significant differences between the three samples A, B and C from within the affected area and samples D and E from outside and the results show no unusual features, i.e. are typical for soils.

Discussion

This investigation has shown that there are no significant, systematic differences in the thermoluminescent content of soil and mineral particles taken from within the affected area and from outside.

The TL output from samples taken from the top one centimeter of the soil generally commenced at about 170°C with variations from about 155° to about 200°C . The TL from the washed samples was generally first detected at a lower temperature i.e. about 155°C with variations from about 136° to 162°C . This improvement in TL detection is presumably due to the improved transparency of the washed sample.

Because heating removes the thermoluminescence from the sample, we can be sure that the same have not been recently (in geological terms) heated above the temperature at which the TL is first detected, i.e. above about 155°C .

Because there are no significant differences in peak heights (and TL output generally) we can conclude that the radiation exposure of the five samples is similar. Furthermore, the amount of TL recorded is not unusual for a soil. The amount of radiation required to kill plants and to cause stimulated re-growth is possibly around 5000 rads and most likely higher. (The short term effect of only 500 rads on an adult human is severe sickness, with 50% chance of death without treatment). The effects of such large irradiation doses would be expected to be detectable in the TL output from the soil minerals despite the long delay between the event and the investigation.

We can thus conclude that no large doses of ionizing radiation were associated with the object seen in February 1976 and probably none at all.

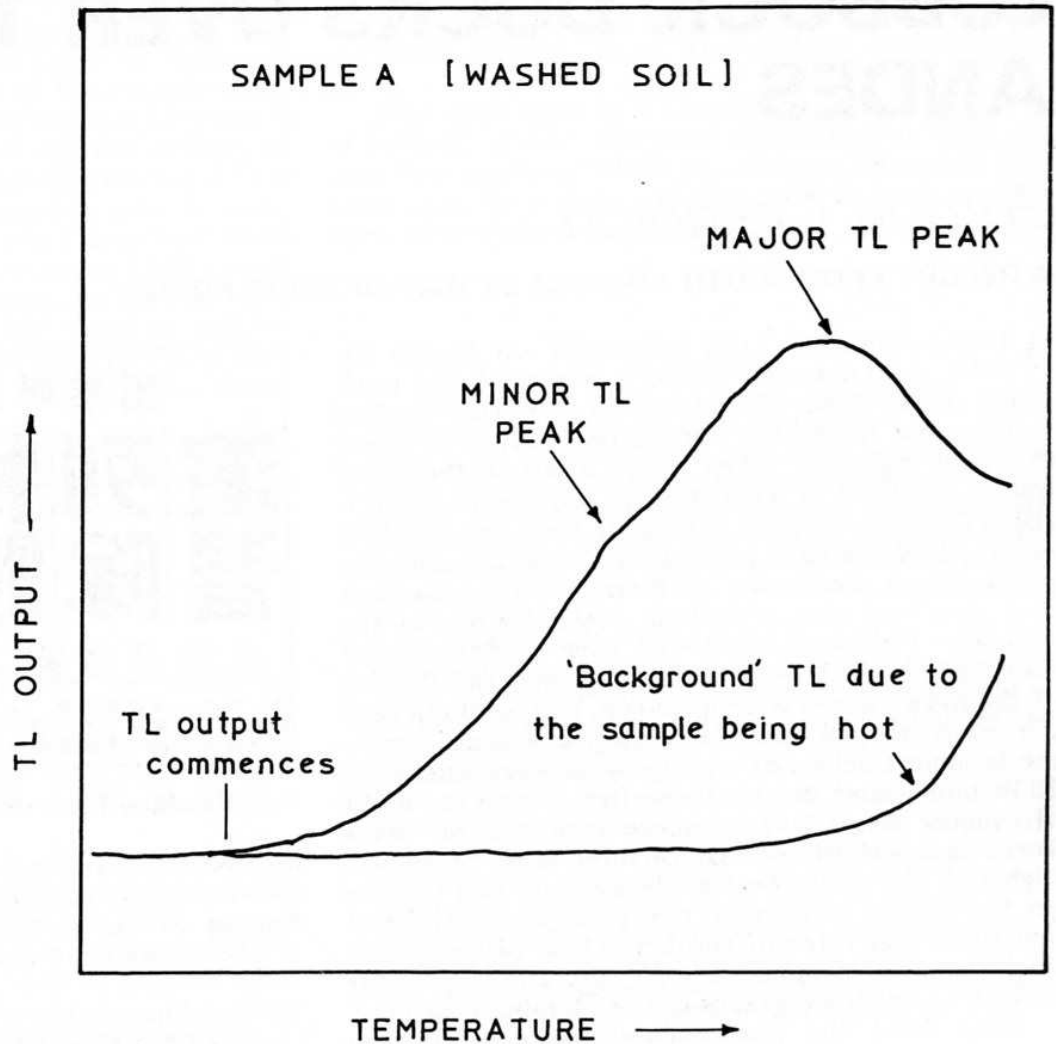
In contrast to many soil analyses, while these tests have revealed no detectable differences between the affected area and the controls, we can state:-

(i) The death of the grasses was not caused by substantial heating of the soil. The soil on the surface had not been heated above about 170°C and soil about 5 cm down had not been heated above about 155°C .

(ii) The death of the grass and subsequent stimulated re-growth was not caused by large doses of ionizing radiation.

These observations have consequences for certain models of UFO propulsion. For example, J.M. McCampbell (*Ufology*, Celestial Arts 1976) has estimated that UFOs generate about 1 MW of microwave energy. Such energy would be expected to cause substantial effects in a soil directly beneath the

Figure 5: Tracing of TL curves. The background curve is obtained on a second heating. This is the authors' own graph.



object, but confirmation of these effects was not found in this study.

Conclusions

An apparently reliable witness has described the landing of a metallic, dome-shaped craft which emitted light through three or four "windows" and through which he could see internal details. The object made a humming sound similar to an electric motor. The manner in which the sighting was un-

covered seems to rule out the possibility of a hoax and the event has received no publicity.

Measurement of the thermoluminescence from soil and soil mineral samples from the area where vegetation had died as a result of exposure to the UFO were carried out about 20 months after the sighting. The results showed that the soil had not been strongly heated (not over about 155°C) and also that large amounts of ionizing radiation were not involved. No evidence was found for any ionizing radiation.

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