Subject: Project Argus Report - Crop Circles
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Project Argus Report by Michael Chorost

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103 Oldtowne Rd.
Seguin, TX 78155-4099
(210)379-9216

In the summer of 1992, Project Argus investigated one of the most remarkable mysteries of the century, the sudden and baffling appearance of hundreds of huge, magnificent shapes - dubbed "crop circles" - in the fields of England each summer. Made of grain flattened methodically to the ground in intricate pattens, they were a form of landscape art which quickly attracted worldwide attention. But the "artist" was unknown. Where did they come from? What agent or force routinely generated them ovenight? Could they be products of something other than human activity? It seemed appropriate to seek to answer such questions with the instruments and methods of science.

Project Argus was preceded by at least three attempts to study the phenomenon with scientific instruments. There were the "White Crow" and "Blackbird" surveillance watches organized by Colin Andrews and Pat Delgado in 1989 and 1990, which used night-vision video cameras and human observers in an effort to capture the formation of a crop circle on film. And there was Project "Blue Hill," mounted by Terence Meaden in 1991 in conjunction with Japanese universities to detect evidence of "plasma vortices" (Meaden's proposed naturally occurring causative mechanism) by radar. The goal of all three was to record a crop circle event at the moment of formation. None succeeded as their organizers had hoped, although all came up with a small amount of equivocal data which could be interpreted
as "hints" that a non-hoaxed phenomenon had been observed.

Project Argus had the different objective of making a minute and extensive study of the soil and crops after an event had occurred. Without requiring prior assumptions about the agent which might be at work, it made a sustained and well-instrumented investigation of a large number of events, undeterred by the probability that some would be hoaxes (and, indeed, sampling from known and suspected hoaxes for comparison). It drew together a number of physicists, biologists, and engineers, several of whom were prepared to

accept that we might merely be witnessing the traces of human activity and/or "blind" natural forces, but whom were ready to lend their expertise for no more than the cost of travel and accommodation.

Briefly stated, the project's goal was to learn if some crop circles exhibited physical effects which would be difficult, if not impossible, to generate by casual human activity. Indications that there might be such effects in the form of short-lived radioactive residues in the soil and significant changes to the crops had turned up late in

1991, thanks largely to the dedicated work of Marshall Dudley and Dr. W.C. Levengood. Slenderly based though these indications were, it was a scientific imperative to follow them up on as large a scale as could be managed, using better equipment and a more exhaustive methodology.

Project Argus was a joint effort initiated mainly by two organizations, the North American Circle (NAC) and the Centre for Crop Circle Studies (CCCS.) The CCCS was established in 1990
in England with the aim of encouraging orderly scientific investigation. The NAC was established a year later in the United States, with the same goal. By the end of 1991, it was becoming clear that the two organizations had, between them, accumulated enough scientific expertise to design and carry out a joint research project. The CCCS gave the project 2,000 lbs as seed money and committed itself to logistical support, and a fundraising drive by the NAC brought the total funding to over $34,000 by May 1992. Significant contributions were made in particular by the Robert Bigelow Holding Corporation, the Fund for UFO Research and MUFON. Logistical needs such as housing and ground transportation were quickly arranged, and the project
formally began its fieldwork in England on July 9th, 1992.

Project Argus's array of experimental instruments and methods was as follows:

* Electron microscopy to examine plant cell walls for evidence of unusual physical stresses or heat-related damage.

* Gamma spectroscopy to examine soil for shortlived radioactive isotopes.

* Gel electrophoresis to examine plant DNA for evidence of denaturation.

* Fluxgate magnetometry to assess magnetic variations in soil.

* Studies of plant cell tissue to assess the effects of the flattening force on the plants.

* Seed germinatioll trials to test growth rates of seeds harvested within crop formations.

* A scintillation counter and geiger counter to detect abnormally high levels of ambient radiation.

* Various electromagnetic field detectors.

* Visual analysis of "crop lays" for comparison of crop circles in different nations.

* Recording of daily rainfall to correlate formation dates with weather conditions.

* Recordkeeping of reports of unidentified luminous aerial phenomena.

* Support of surveillance and surveying operations 0 Recordkeeping of dates and locations of formations.

The first six of these objectives were accomplished with instruments situated in laboratories in the U.S. an U.K., using samples collected and processed by the Project Argus team. The rest were performed on-site by team members using the appropriate equipment.

SUMMARY OF FINDINGS

Project Argus has not, at this writing, found the "smoking gun" clearly showing that some crop circles are not the product of human activity. But it has ruled out several previously held hypotheses and, potentially more importantly, discovered some apparent regularities which seem well worth following up. What it has found are the following (each is discussed in greater detail in the 115page Report on the Results of Project Argus: An Instruniented Study of the Physical Materials of Crop Circles, edited by Michael Chorost, and available from North American Circle (NAC):

A.. A greater incidence of microscopic "blisters" on plants inside crop circles than in controls outside them. It is not yet clear whether this is due to the fact that the plants inside the formation experienced a different regime of temperature and humidity than the controls, or to some more exotic cause (e.g. a "genuine" phenomenon). A number of unusual molds and types of cellular damage were also detected.

B..No evidence of anomalous radioactive traces in any o the tested formations.

C.. No evidence of anomalous DNA degradation in any of the tested formations.

D..Results indicating that further testing with fluxgate magnetometers may be productive, with due attention given to potential sources of methodological error. Experiments appeared to show that soil within many of the formations tested had a higher degree of magnetic flux intensity than the soil outside them. Notably, the one known hoax we were able to test did not show this effect.

E..The possibility that there are significant anomalies in plant cell tissues and seed germination rates relative to controls. ...Due to the complexity of living plant systems, and the methodological difficulties imposed by collecting samples under highly variable conditions, this research has progressed especially slowly.

F..Hints that testing with electromagnetic detectors may be productive. The ad hoc nature of the testing in 1992 makes it necessary to undertake better testing in future seasons.

G.. The continuing presence of complex crop lays in formations in England and Canada. Formations in both countries exhibited features such as standing stalks, underlying lays, off-axis centers, and plant braiding.

H..Rainfall data suggesting that some of the formations in the immediate vicinity of Alton Barnes may have been made during or immediately after wet weather, which complicates the hoax theory.

I. Several accounts of unidentified luminous events in the low atmosphere resembling those which have been described (occasionally with photographic collateral) in Dr. Terence Meaden's Jouirnal of Meteorology and John Macnish's video Crop Circle Communique.

J. No success in photographic surveillance. A formation which was made within the theoretical range of the camera went undetected, probably due to low light and an unfavorable camera-to-ground angle.

K..The continuing existence of the phenomenon itself, in considerable numbers. George Wingfield's database lists 197 formations for Great Britain for the summer of 1992 (published in Report as Appendix 11).

We thus have some potentially very interesting and significant data from our magnetic flux scans and electron microscopy, and it is our hope that outside scientists competent
in these areas will review our data and make comments.

The absence of positive data in the other test regimes does not mean that the phenomenon must be a hoax. As the old adage goes, absence of evidence does not mean evidence of absence. It
is entirely possible that we were, in those cases, looking for a
real phenomenon in the wrong places. There were thousands of tests we could have run, but we could only select a few out of that huge set. When facing the unknown, one must essentially start anywhere, since no prior research exists to indicate the most productive paths. In (probably) ruling out radioactivity and several other effects, the project did essential work which will save its successors considerable time and expense.

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"You can lead a horse to water but you can't
make it drink"
...Author unknown

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