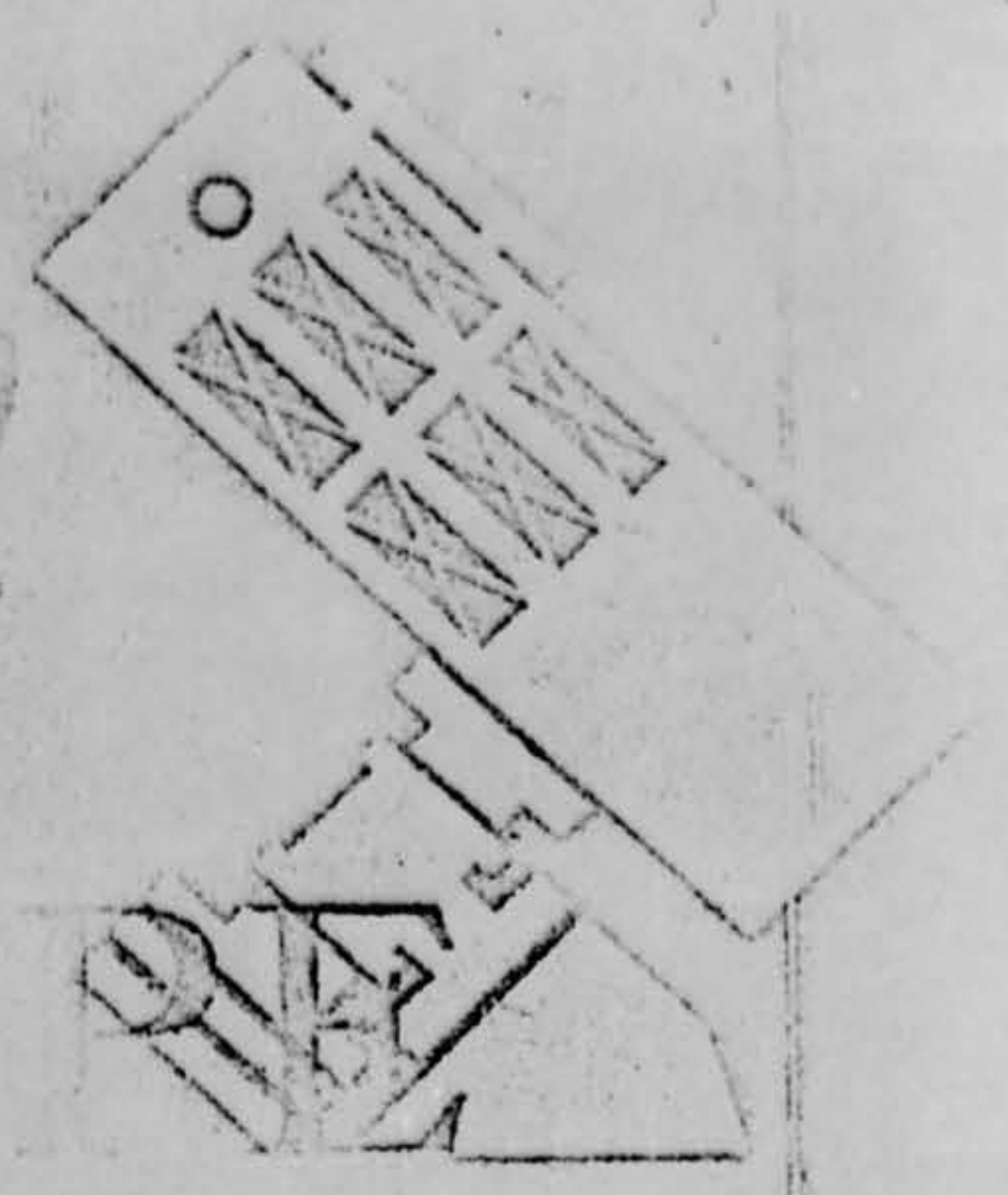


PROJECT 10073 RECORD CARD

1. DATE 26 September 1962	2. LOCATION Israel, Cairo, Egypt		12. CONCLUSIONS <input type="checkbox"/> Was Balloon <input type="checkbox"/> Probably Balloon <input type="checkbox"/> Possibly Balloon  <input type="checkbox"/> Was Aircraft <input type="checkbox"/> Probably Aircraft <input type="checkbox"/> Possibly Aircraft
3. DATE-TIME GROUP Local _____ GMT 26/1600Z	4. TYPE OF OBSERVATION <input checked="" type="checkbox"/> Ground-Visual <input type="checkbox"/> Ground-Radar <input type="checkbox"/> Air-Visual <input type="checkbox"/> Air-Intercept Radar		
5. PHOTOS <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6. SOURCE Civilian		<input checked="" type="checkbox"/> Was Astronomical Meteor <input type="checkbox"/> Probably Astronomical <input type="checkbox"/> Possibly Astronomical  <input type="checkbox"/> Other _____ <input type="checkbox"/> Insufficient Data for Evaluation <input type="checkbox"/> Unknown
7. LENGTH OF OBSERVATION 4-5 seconds	8. NUMBER OF OBJECTS one	9. COURSE Northerly	
10. BRIEF SUMMARY OF SIGHTING Luminous obj traveling SE to North. Observed fm Port Said trailing white smoke at approximately 81,000ft. Obj fell into Mediterranean Sea. Smoke visible for 5 minutes after descent. Same object observed fm Israel in several locations. Photographs of smoke taken. Trail persisted fm 1544Z until 1617Z. Photos taken at 1615Z		11. COMMENTS  Meteor.	

*Key and*

TELESCOPE



TELESCOPE

... and  
... of Milky  
... search

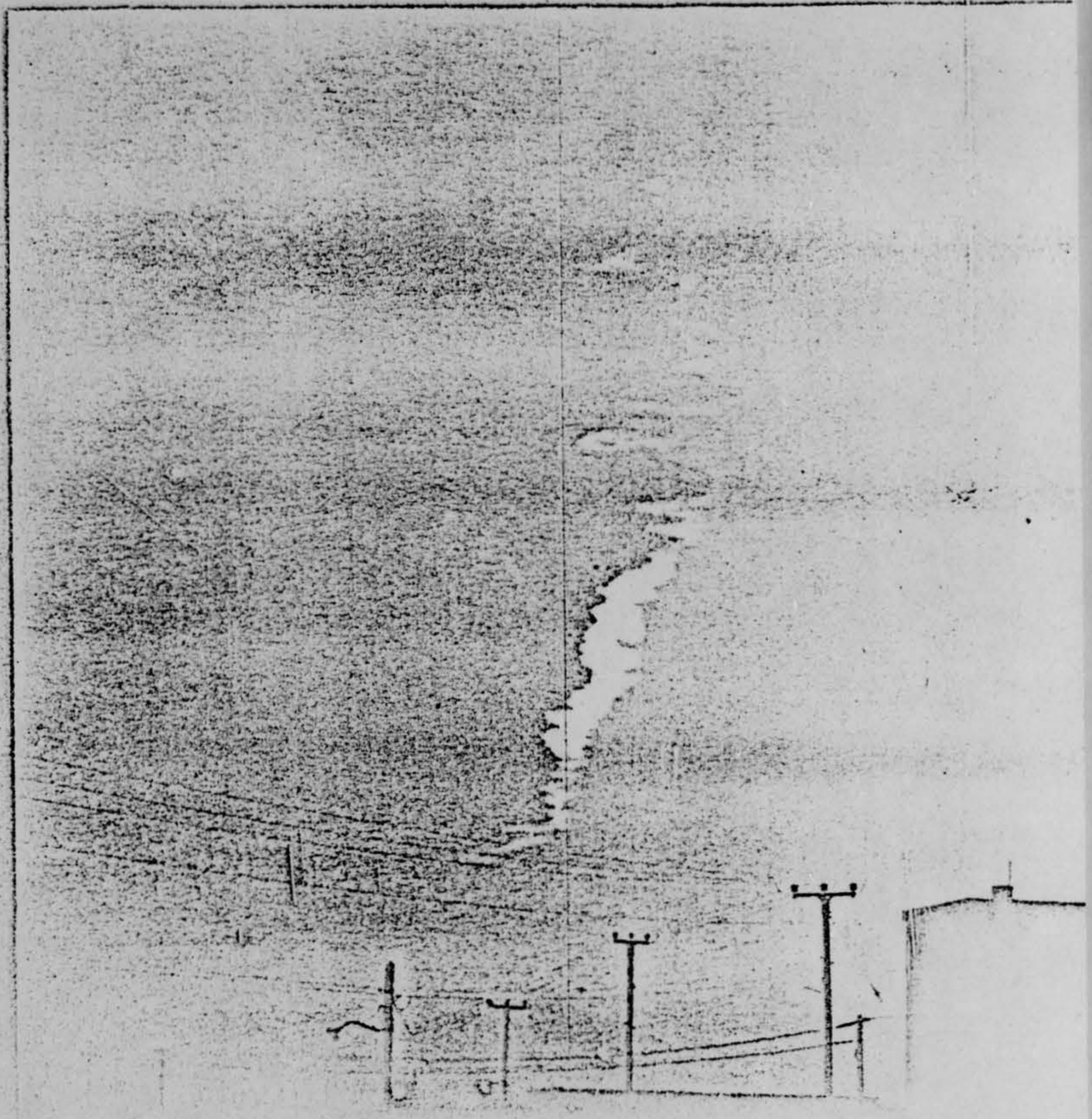
... as an  
... galaxy

... Radio Tele-  
... of Ohio State

... 9  
... Observ-  
... Mars

... Astronomers

... News



**COVER:** On September 26, 1962, shortly after sunset, a brilliant fireball was seen throughout Israel from places as widely separated as 400 kilometers. Nathan Sadan, at Beersheeba in southern Israel, took the front-cover photograph of the meteor's long-enduring train. He used a Roliflex camera at f/4, exposure 1/125 second on Ilford FP3 film. At his location the train was 30-40 degrees above the horizon. (See adjoining column.)

FIREBALL TRAIN OBSERVED OVER ISRAEL .....	3
AN INTERNATIONAL DISCUSSION OF MILKY WAY RESEARCH — Bart J. Bok .....	4
BARNARD'S STAR AS AN ASTROMETRIC BINARY — Peter van de Kamp .....	8
THE LARGE RADIO TELESCOPE OF OHIO STATE UNIVERSITY — John D. Kraus .....	12
RECENT VISUAL OBSERVATIONS OF MARS — Ernst E. Both .....	17
AMERICAN ASTRONOMERS REPORT .....	20
SPACE AND SATELLITE NEWS .....	23
<hr/>	
AMATEUR ASTRONOMERS .....	25
The H. P. Wilkins Observatory in Texas — Thomas Jones	
Comet Hunting During the Eclipse — Francois V. Dossin and Bertram Donn	
BOOKS AND THE SKY .....	41
Astronomy	
William Herschel	
Tables of the Moon and Sun	
Films and the Sky — The Story of the Universe, Unit IV: The Universe	
CELESTIAL CALENDAR .....	54
T Coronae Borealis — A Recurring Nova	
GLEANINGS FOR ATM's .....	48
A Polar Adjustment Device for Portable Mountings — Hans Pfeumer	
Fabricating a Grinding Tool — Ronald A. Zussman and Richard Monnier	
A Cream-Separator Mounting with Manual Drive — Richard O. Thomas	
IN FOCUS .....	19
LETTERS .....	24
NEWS NOTES .....	10
OBSERVER'S PAGE .....	33
News of Comet Alcock (1963b)	
NGC Numbers for Norton's "Star Atlas" — William H. Meyer, Jr.	
Deep-Sky Wonders — Walter Scott Houston	
Observing the Moon — Jansen — Alike K. Herring	
Photographing the Moon on High-Contrast Film — John T. Hopf	
QUESTIONS .....	16
RAMBLING THROUGH JULY SKIES .....	55

**FEATURE PICTURE:** A close-up of the Altai Scarp region of the moon, photographed March 25, 1962, with the 120-inch reflector of Lick Observatory. (See page 19.) .... Center

SKY AND TELESCOPE is published monthly by Sky Publishing Corporation, Harvard College Observatory, Cambridge 38, Mass. Second-class postage paid at Boston, Mass.  
Subscription: \$5.00 per year in the United States and possessions; \$9.00 for two years; \$13.00 for three years. To Canada, Mexico, and all countries of the Pan American Postal Union, \$6.00 for one year; \$11.00 for two years; \$16.00 for three years. To all other foreign countries, \$7.00 for one year; \$13.00 for two years; \$19.00 for three years. Canadian and other foreign remittances should be made in United States currency. Single copy 60 cents. Back issues: November, 1959, to present, 60 cents per copy. Vols. I through XVIII (November, 1941, to October, 1959), order from Walter J. Johnson, Inc., 111 Fifth Ave., New York 3, N. Y.  
All notices of change of address must be sent one month in advance and accompanied by old and new addresses. When sending your renewal order, or writing in regard to your subscription, your current mailing address must be given. Return our bill form with renewal payment. Circulation manager, Nancy R. Bolton. Office staff: Sarah E. Bulger, J. Caroline Nason, Mary Silva, John Simmons, Stacia Strong, Catherine Wentzell. Editorial and advertising offices: 49-50-51 Bay State Rd., Cambridge 38, Mass. Phone 617 UN 4-7360. Assistant editors: William E. Shavercross, production and advertising: Raymond N. Watts, Jr., features. Editorial assistants: Virginia K. Cox, Leif J. Robinson. Advertising rates are listed in STANDARD RATE AND DATA SERVICE. sent upon request; closing date is 20th of second month preceding date of issue. Unsolicited articles and pictures are welcome, but prompt attention or return is not guaranteed.  
The principal articles are indexed in THE READERS' GUIDE TO PERIODICAL LITERATURE.  
Although the contents of this magazine, its text, pictures, diagrams, and charts, are copyrighted with all rights reserved, we are pleased to give permission, upon request, for the use of SKY AND TELESCOPE material for educational, scientific, and literary purposes. Permission to use matter from signed articles, and illustrations for which credit is given, must also be obtained from the person or institution concerned.

## Fireball Train Observed Over Israel

EVERY meteor observer's dream is sometime to witness a really great fireball. My dream became true on the evening of September 26, 1962, at the village where I am a science teacher, about 20 kilometers south of Haifa and three kilometers from the coast. It was about 15 minutes after sunset, and I had gone on a short walk to enjoy a fine, perfectly cloudless evening.

At 15:46 Universal time, I was looking toward the point where the sun had set, when suddenly my attention was caught by a burst of light to my left. Turning, I saw a great drop of brilliant white light descend slowly down the sky, leaving an extremely intense sharp train, whose brightness swiftly spread backward along its length.

I estimated the duration of fall as three seconds, but perhaps it was much less. The fireball first appeared 12 or 18 degrees above the horizon (I could not be sure as I was facing in another direction), and disappeared at four to five degrees. The path was inclined 70 degrees westward to the horizon, and the azimuth of the point of disappearance was 15 degrees west of south, as estimated afterward from Polaris.

This fireball was intermediate in brightness between Venus and the full moon, probably nearer the latter, and its hue resembled the white of burning magnesium ribbon.

The train was at first intensely white, but within seconds it changed into a column of very strongly red and orange clouds, these tints undoubtedly influenced by the sunset. The train thickened and slowly became distorted into zigzags. As a whole, the train did not drift, but remained suspended without movement in the sky.

Slowly fading and becoming white once more, the last scattered clouds of the train could be seen until 16:22 — that is, 36 minutes after the fall. Undoubtedly I could have traced it longer if I had had a field glass.

I informed the press and radio, and my report was broadcast with the 9 p.m. news. From the extensive accounts in the next morning's newspapers, I learned that this phenomenon had been witnessed by many people throughout Israel.

Fortunately, one of these observers was Nathan Sadan, in Beersheeba, about 250 kilometers south of Haifa. I first saw his picture of the train (see front cover) in a newspaper, and he kindly supplied a print for SKY AND TELESCOPE.

ELI METZGER  
21 Rosen St.  
Ramat-Chen (Tel-Aviv)  
Israel

[REDACTED]  
UNCLASSIFIED

Detachment 3 (European Office)  
Foreign Technology Division  
UNITED STATES AIR FORCE  
APO 633, New York, N.Y.

5. Okt. 1962

REPLY TO  
ATTN OF: ITIME

SUBJECT: [REDACTED] - Entry of Unknown Space Object as  
Reported by USAIRA, Tel Aviv

TO: FTD (TD-B1)  
Wright-Patterson AFB, Ohio

1. [REDACTED] Reference ITIME message (C) 41903X dated 27 Sep 1962. Thermofax copy of Operational Immediate message, C-059, received from the Air Attache, Tel Aviv, is attached.
2. [REDACTED] A preliminary analysis indicates that a meteor or decaying artificial space object was apparently consumed prior to ground impact. This Detachment has no information or rumor of actual impact of an object at that time. Reports from the Air Attache, Cairo, which could help locate the nadir point, are presently being requested. Any further collection will be forwarded.
3. (UNCLASSIFIED) This correspondence is classified [REDACTED] since it reflects intelligence information, the unauthorized disclosure of which could adversely affect the national defense.

FOR THE COMMANDER

*Walter W. Long*  
WALTER W. LONG  
Lt Colonel, USAF  
Chief, Missiles &  
Electronics Division

1 Atch  
(CONF) Fax cy CCT-36467

Copy to TD-A2d

Classification Cancelled  
(or changed to UNCLAS)

Auth. *Director OP*

By

Date *12 MAY 1989*

*AFR 2054, par 2-17c*  
*3 Jan 68*

UNCLASSIFIED

DOWNGRADED AT 12 YEAR  
INTERVALS; NOT AUTOMATICALLY  
DECLASSIFIED. DOD DIR 5200.10

[REDACTED]

30036-467-I  
4  
OPDIDS



UNCLASSIFIED

ME

OPERATIONAL IMMEDIATE  
CR 38-28-9  
TOO 281300Z

(SECTION 1 OF 11)

Classification Cancelled  
(or changed to UNCLAS)  
Auth. Director TOP  
By  
Date 12 MAY 1969

AFR 2057, par 247e  
3 Jan 69

Meters  
let me know

FM USAIRA TEL AVIV  
TO HQ USAF LINDSEY AS  
INFO 1127 USAFLDACTYSGP FT BELVOIR



[REDACTED] CITE C-059. USAF FOR IDCA. REF UR  
TIME 41905 AND MY C 056. ADDITIONAL INFORMATION ON  
SIGHTING BY AIRA. LOCATION FIRST OBSERVED FROM 32 DEGREES 24 MINUTES  
NORTH 34 DEGREES 52 MINUTES 30 SECONDS EAST. AIRA CONTINUED DRIVING  
SOUTH TO 32 DEGREES 07 MINUTES 30 SECONDS NORTH 34 DEGREES 51  
MINUTES EAST. TIME OF FIRST SIGHTING WAS 1544Z AND TIME OF ARRIVAL AT  
SECOND POSITION 1615Z. VAPOR TRAIL WAS VISIBLE UNTIL APPROX 1617Z.  
AZIMUTH OF FIRST SIGHTING WAS APPROX 50 DEGREES ABOVE HORIZON WITH  
SLIGHTLY ARCED DESCENT TOWARD EAST AT OVERALL ANGLE OF 18 DEGREES  
FROM VERTICAL. DESCENT APPEARED AS WHITE FALLING STAR TO APPROX 35  
DEGREES ABOVE HORIZON, CHANGING TO GREENISH BLUE AND DESCENDING TO  
APPROX 25 DEGREES ABOVE HORIZON, CHANGING TO ORANGE FIREBALL  
EFFECT DESCENDING TO HORIZON. TOTAL LAPSED TIME OF DESCENT WAS 4 OR 5  
SECONDS. DIRECTION WAS APPROX 190 DEGREES FROM OBSERVER AND TRAIL  
VISIBLE THROUGHOUT TIME AIRA  
WAS DRIVING TO 2ND POSITION. 3 OTHER PERSONNEL IN CAR OBSERVED  
EVENT IN SAME MANNER. WEATHER WAS CLEAR, VISIBILITY UNLIMITED AND  
NO RPT NO SOUNDS WERE HEARD. TRAIL THAT FOLLOWED EVENT LEFT THIN  
PENCIL-LINE VAPOR FOR UPPER HALF OF VISIBLE TRAJECTORY BROADENING  
TO FAIRLY THICK VAPOR TRAIL APPROX 25 DEGREES ABOVE HORIZON. ASST  
AIR ATTACHE DID NOT RPT DID NOT SEE PHENOMENON DURING DESCENT.

AZIMUTH

BUT SIGHTED TRAIL APPROX 1546Z. BETWEEN 1549Z AND 1551Z HE TOOK 9  
EXPOSURES OF TRAIL WITH 13.5CM LENS FROM HIS  
HOME AT 32 DEGREES 10 MINUTES 10 SECONDS NORTH, 34 DEGREES 48  
MINUTES 55 SECONDS EAST. DESPITE FACT THAT SKY WAS BECOMING QUITE DARK,  
PHOTOGRAPHS TURNED OUT WELL AND CLEARLY SHOW ANGLE OF DESCENT TO BE  
ONLY 18 DEGREES OFF VERTICAL. PHOTOS TO BE FORWARDED BY IR. FROM  
HIS POINT OF OBSERVATION DIRECTION AGAIN WAS APPROX 190 DEGREES AND

AXIMUMTH OF THE TOP OF THE TRAIL APPROX AS REPORTED ABOVE. PICTURES  
 CONFIRM AIRA'S OBSERVATION THAT UPPER HALF OF TRAIL DISPERSED  
 FAIRLY RAPIDLY BECAUSE OF WIND VELOCITY AND WIND SHEAR BUT LOWER HALF  
 OF TRAJECTORY REMAINED FAIRLY CONSTANT THROUGHOUT TIME TRAIL WAS  
 VISIBLE. PRESS REPORTS IN ISRAEL REVEAL THAT THIS PEHNOMENON OBSERVED  
 BY THOUSANDS OF PEOPLE ALL THE WAY FROM METULLA TO EILAT. A SCIENCE  
 TEACHER, MR. [REDACTED] WHO IS MEMBER OF BOTH  
 AMATEUR ASTRONOMERS SOCIETY IN JERUSALEM AND AMERICAN METEOR SOCIETY  
 OF PENNSYLVANIA REPORTED HE SAW FROM A POINT NEAR HAIFA A LUMINOUS  
 BODY AT 5:45 PM FALL SLOWLY IN SOUTH SOUTHWESTERLY DIRECTION AND  
 VANISH 4 SECONDS LATER AT ABOUT 5 DEGREES ABOVE HORIZON. ITS WHITISH  
 LIGHT HE SAID WAS ALMOST AS BRIGHT AS THAT OF THE MOON. JUDGING  
 BY TAIL OF THE LIGHT THAT REMAINED FOUR 40 MINUTES HE THOUGHT WAS  
 EXCEPTIONALLY LARGE METOR. [REDACTED] AN ENGINEER WATCHED A BRIGHT  
 LIGHT AT A DISTANCE OF "30 KILOMETERS". IT BURNED A BLUISH WHIE AND  
 LEFT A TRAIL OF SMOKE VISIBLE FOR 50 MINUTES. PHENOMENON WAS  
 DESCRIBED AS A FIREBALL BY PRO YA ACOV BENTOR, DIRECTOR OF  
 DEVELOPMENT MINISTRY GEOLOGICAL SURVEY. HE EXPLAINED TO REPORTERS  
 THAT IT WAS A PIECE OF COSMIC METAL OR STONE ATTRACTED BY THE EARTH  
 GRAVITY. IN GENERAL THESE REPORTS TEND TO CONFIRM OBSERVATIONS AS  
 REPORTED BY THIS OFFICE ALTHOUGH THERE ARE MORE SPURIOUS REPORTS BY  
 PEOPLE WHO THINK THAT THEY SAW PHENOMENON GOING UP RATHER THAN COMING  
 DOWN, THAT PHENOMENON WAS ROCKET LAUNCHED FROM JORDAN, ROCKET LAUNCHED  
 FROM SAUDI ARABIA, ETC. AIRA 100 PERCENT POSITIVE AND PICTURES  
 PROVE THESE SPURIOUS REPORTS INCORRECT.

UNCLASSIFIED

DCS/INTELL INCOMING MSG  
 ACTION: 2-IT/1  
 RFG: 1-101  
 1-1A1W  
 1-100  
 1-1EC  
 1-10L



Stech # 1

T  
 DOWNGRADED AT 5 YEAR INTERVAL  
 DECLASSIFIED AFTER 10  
 FOR DED 2010

100 5873003

CK 30-58-0

SECRETIONT INMETIIE

UNCLASSIFIED

REF 36467 - II

UNCLASSIFIED

14  
JAWH  
BBS  
28 SEP 62

US AIR FORCE  
AF 36-2000  
AF 36-2000 (SECTION 11 OF 11)

US AIR TEL AVIV  
TO US AIR FORCE LINDSEY AS  
INFO 2227 USAFLDACTYSGP FT BELVOIR

[REDACTED] CITE C-059. REPORT FROM EILAT BY UNQUALIFIED  
OBSERVER "A FIREBALL DESCENDED FROM THE HEAVENS AND DISAPPEARED BEHIND  
HILLS IN THE SINAI PENINSULA". ALL REPORTS GIVEN TO IDF INDICATE  
THAT DESCENT NOT IN ISRAELI TERRITORY BUT THAT DESCENT PROBABLY IN  
SINAI OR RED SEA AREA. BELIEVE THIS EVENT SHOULD HAVE BEEN OBSERVED  
IN CAIRO AND POSSIBLY JIDDAH AND KARTOUM. ALSO IT SHOULD HAVE BEEN  
OBSERVED FROM ALL SHIPPING IN RED SEA AND SUEZ AREA AT THE  
TIME. NO REPORT OBSERVER IN ISRAEL REPORTED ANY SOUND. SUGGEST  
PLACES AND SHIPPING TO BE VERIFIED. ASCP-3.

Classification Cancelled  
(or changed to UNCLASS)  
Auth: [Signature]  
By: [Signature]  
Date: 12 MAY 1963  
AFR 2057, Para 2-17a  
3 Jan 68

DIS/INTEL DIVISION  
ACTOR: [Signature]  
DTR: [Signature]  
1-1000  
1-150  
1-150  
1-150

UNCLASSIFIED

[REDACTED]

[REDACTED]

DOWN GRADE  
DECLASS

INTERVALS  
ARS.

INCOMING TELEGRAM

Department of State

[REDACTED] UNCLASSIFIED

53

Action AF IN : 22611 (28 Sep 62) L/dsk

Control: 21659  
Rec'd: September 27, 1962  
2:28 p.m.

ISA FROM: Port Said  
Info

G TO: Secretary of State

NEA NO: 7, September 27, 3 p.m.  
P

USIA  
NSC  
INR FOR SSA  
CIA

NSA Re CW 9986, luminous object sighted by Consulate member  
OSD near Port Said September 26 1600 hours GMT. Flaming  
ARMY object travelling southeast to north trailing white smoke  
NAVY at approximate 81,000 feet. Object fell into Mediterranean  
AIR Sea; north Port Fuad. Object not recovered but smoke visible  
NASA for five minutes after descent. Airgram report follows.  
RMR

WALTERS

MRJ

Classification Cancelled  
(or changed to UNCLASS)  
Auth [Signature] TDP  
By [Signature]  
Date 12 MAR 1983  
AFR 2051, par 2-17 a  
3 Jan 63

AF DIST: CIN-9, SAFS-3, XPD-3, OOP-CP-1, OOP-2 (18)

DOWNGRADED AT 1 YEAR INTERVALS  
DECLASSIFIED AFTER 12 YEARS  
DOR DIE 200010

UNCLASSIFIED

[REDACTED]

REPRODUCTION FROM THIS COPY IS  
PROHIBITED UNLESS "UNCLASSIFIED"