

- History and Historic Photographic Technologies

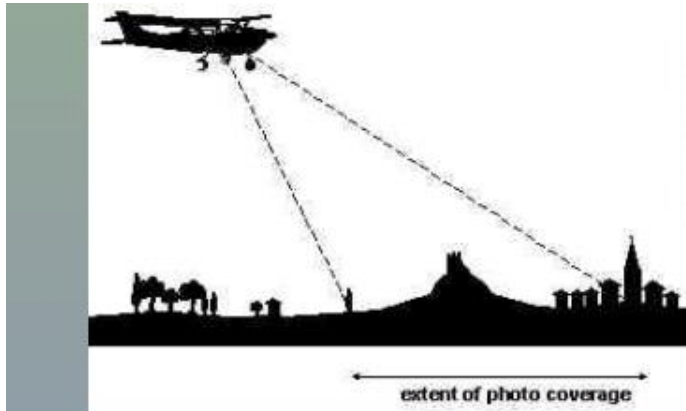
***Aerofototeca Nazionale
The National Archive
of Aerial Photography***

- Part B -

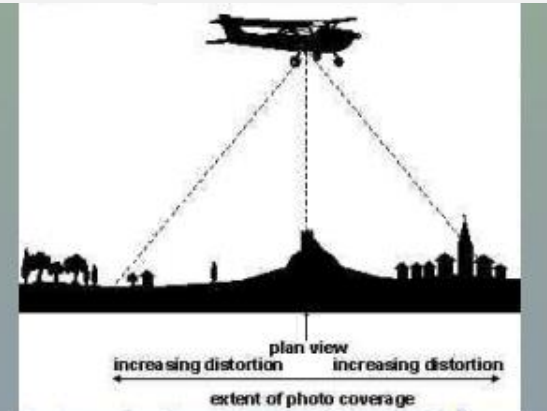
Different cameras... for different purposes

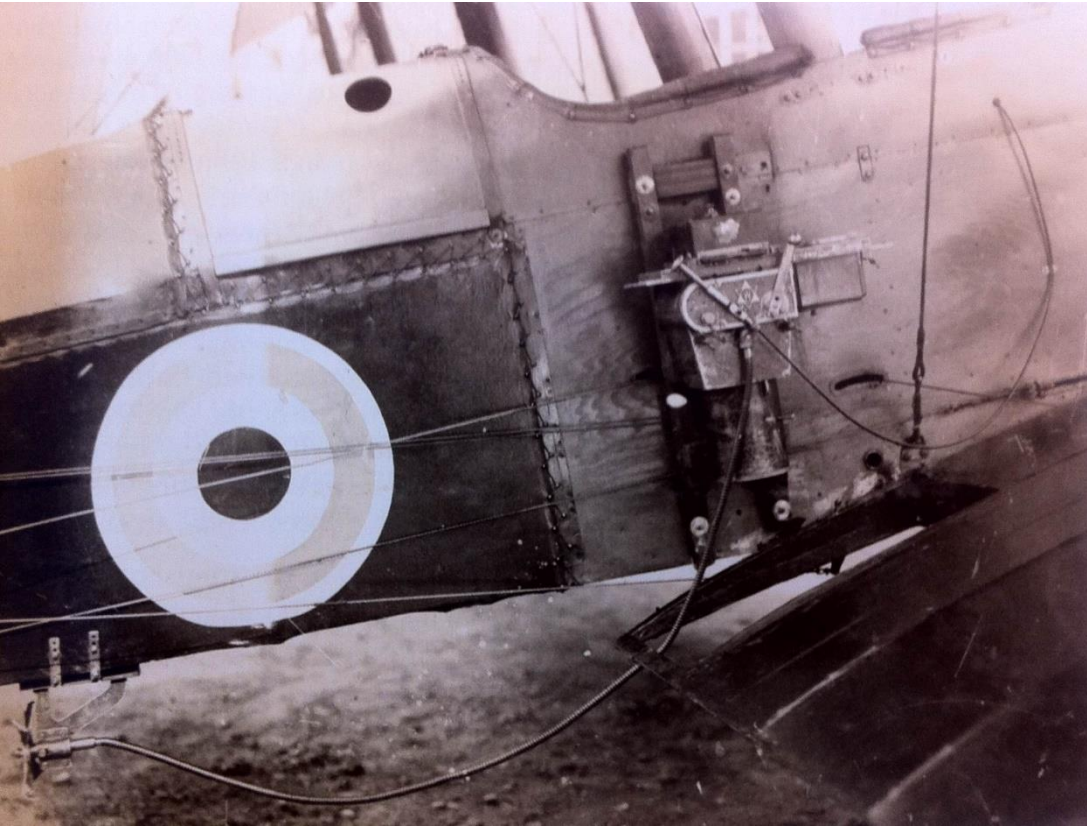


Oblique



Vertical





'L'-type camera (patent 1917)
with its **wind powered** device





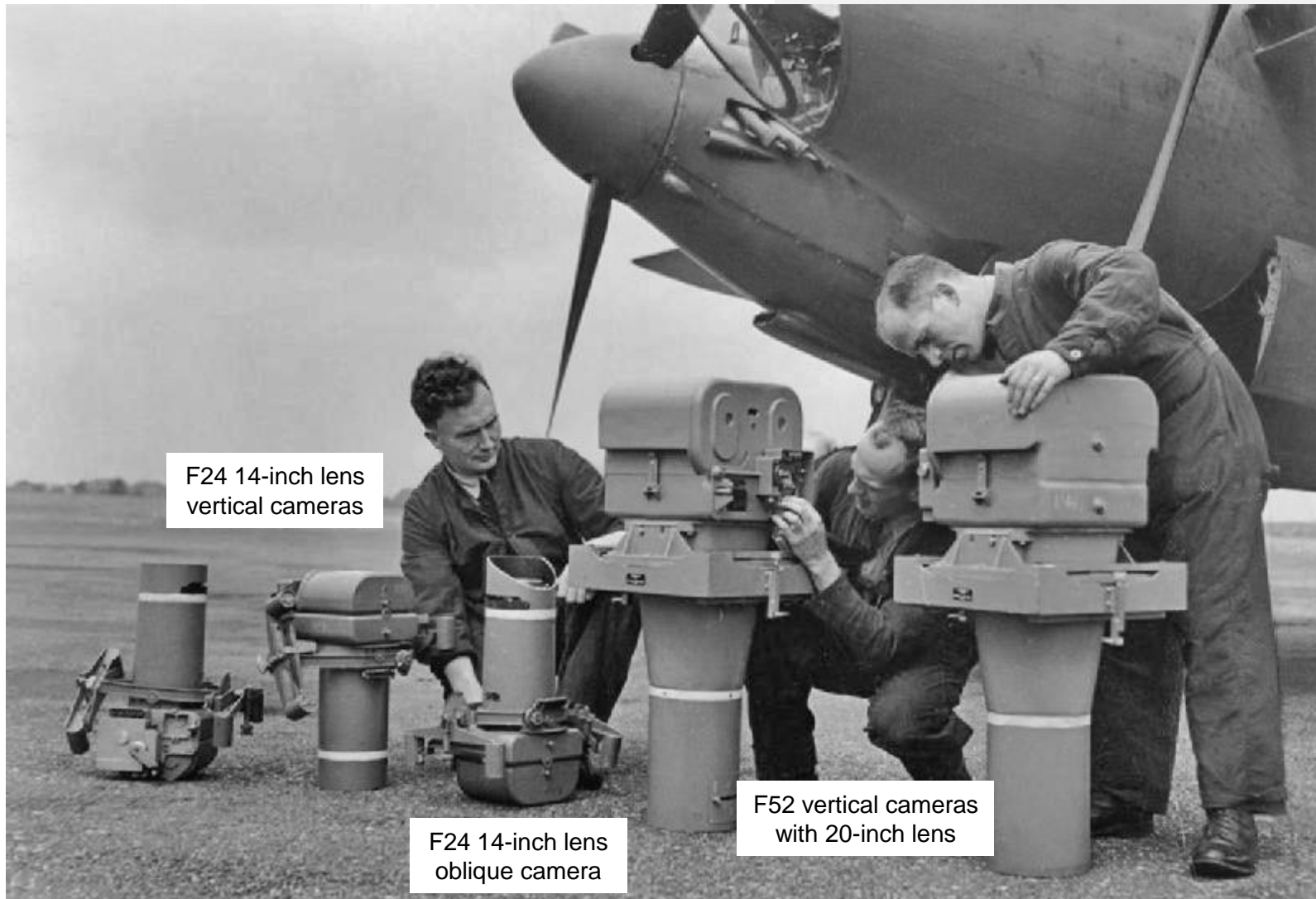
Williamson propeller powered airplane camera (invented in 1915), was probably the first camera to be specifically made for aerial photography.







Italian Geographic
Military Institute (IGM) –
preparation for
photogrammetric aerial
survey



F24 14-inch lens vertical cameras

F24 14-inch lens oblique camera

F52 vertical cameras with 20-inch lens

Photographers at RAF Benson base testing cameras before installing them



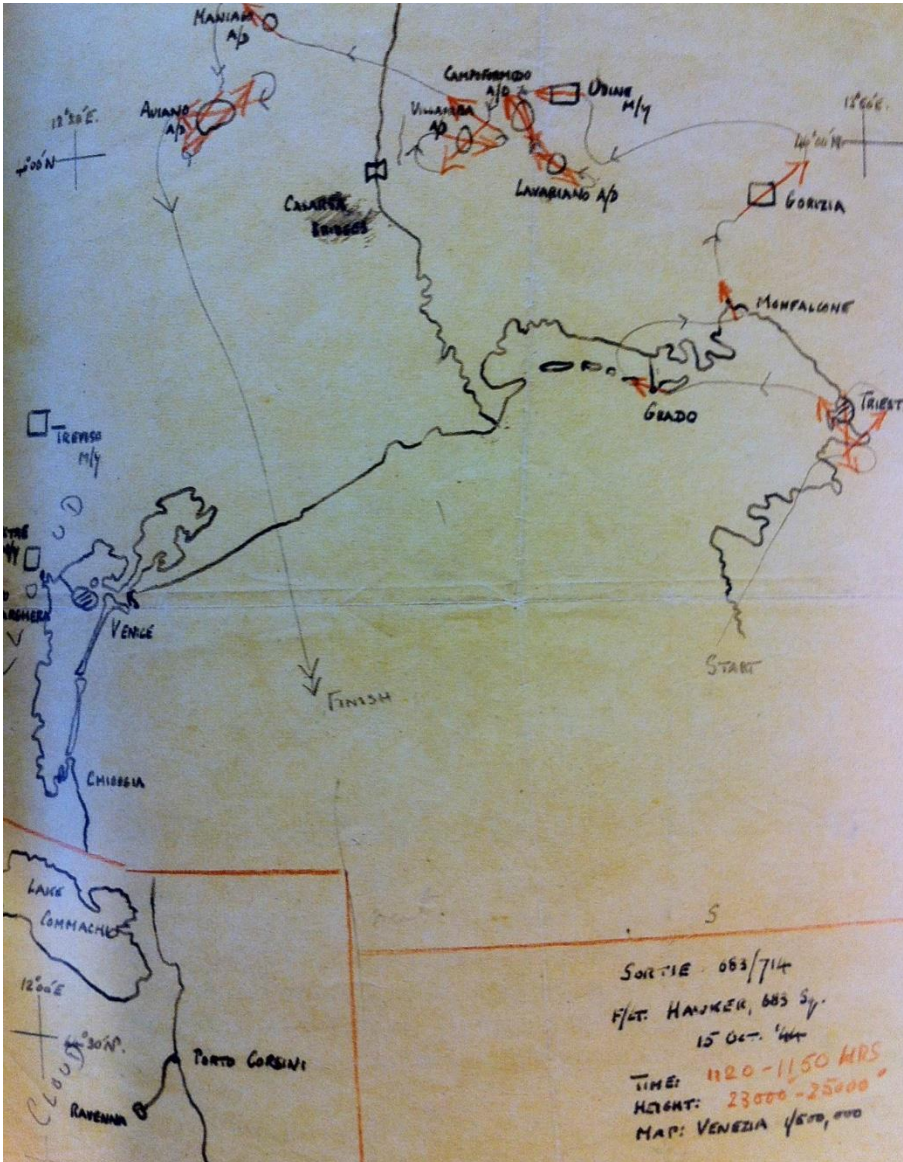
Post war F96 camera
[Photo courtesy: RAF
photographers memorial]



Oblique photos
(left or right window)



Recording an aerial survey

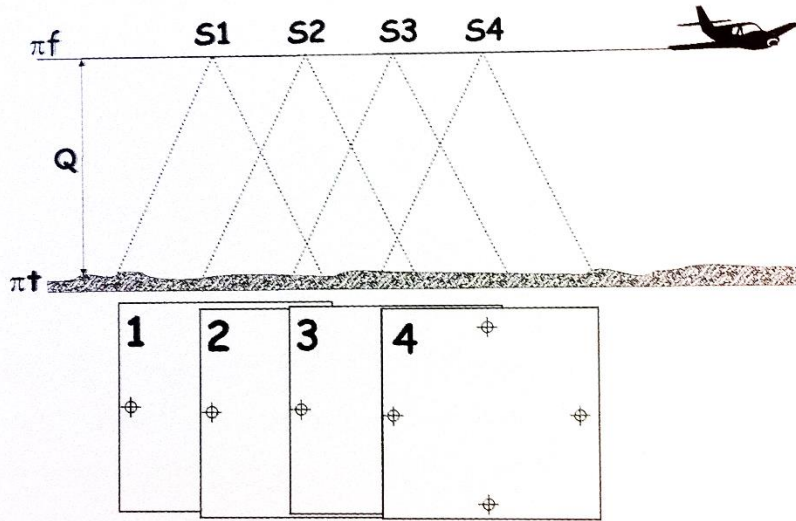


AIR PHOTOGRAPHY RECORD FORM								FilmType	Ref Nos	
source/Authority	HEGERFERNANCE AEROPHOTOLOGY			Flight No	04-001-08			645 B&W	04-MB-1304/1333	
Copyright	HER			Repository	HER			Colour neg	04-M-1304/1337	
photographer	C.E. MURPHY			Report by	E.E. MURPHY			Colour slide	04-C-1241/1271	
Date	11 JUNE 1944			Sheet	1 of 2					
645 B&W	Film-FrameNo	Colour neg	Colour slide	NGR	County	Community	SiteName/SiteType/Comment	SMRNo	SAMNo	Code
1340	1302	1241	1302	582	Verona	Leominster	Leominster Industrial Estate/ industrial estate			B
1341	1303	1242	1303	582	Verona	Leominster	Unlocated/ agricultural/ field boundary?			E
1342	1304	1243	1304	582	Verona	Edwin Lendale	Frame Valley/ landscape/ 1/5 from Broomfield			L
1343	1305	1244	1305	582	Verona	Northway	Frame Valley/ landscape/ 1/5 from Broomfield			L
1344	1306	1245	1306	582	Verona	Northway	Frame Valley/ landscape/ 1/5 from Broomfield			L
1345	1307	1246	1307	582	Verona	Northway	Frame Valley/ landscape/ 1/5 from Broomfield			L
1346	1308	1247	1308	582	Verona	Northway	Frame Valley/ landscape/ 1/5 from Broomfield			L
1347	1309	1248	1309	582	Verona	Northway	Frame Valley/ landscape/ 1/5 from Broomfield			L
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1350	1312	1251	1312	582	Verona	Northway	Frame Valley/ landscape/ 1/5 from Broomfield			L
1351	1313	1252	1313	582	Verona	Northway	Frame Valley/ landscape/ 1/5 from Broomfield			L
1352	1314	1253	1314	582	Verona	Northway	Frame Valley/ landscape/ 1/5 from Broomfield			L
1353	1315	1254	1315	582	Verona	Northway	Frame Valley/ landscape/ 1/5 from Broomfield			L
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1356	1318	1257	1318	582	Verona	Northway	Frame Valley/ landscape/ 1/5 from Broomfield			L
1357	1319	1258	1319	582	Verona	Northway	Frame Valley/ landscape/ 1/5 from Broomfield			L
1358	1320	1259	1320	582	Verona	Northway	Frame Valley/ landscape/ 1/5 from Broomfield			L

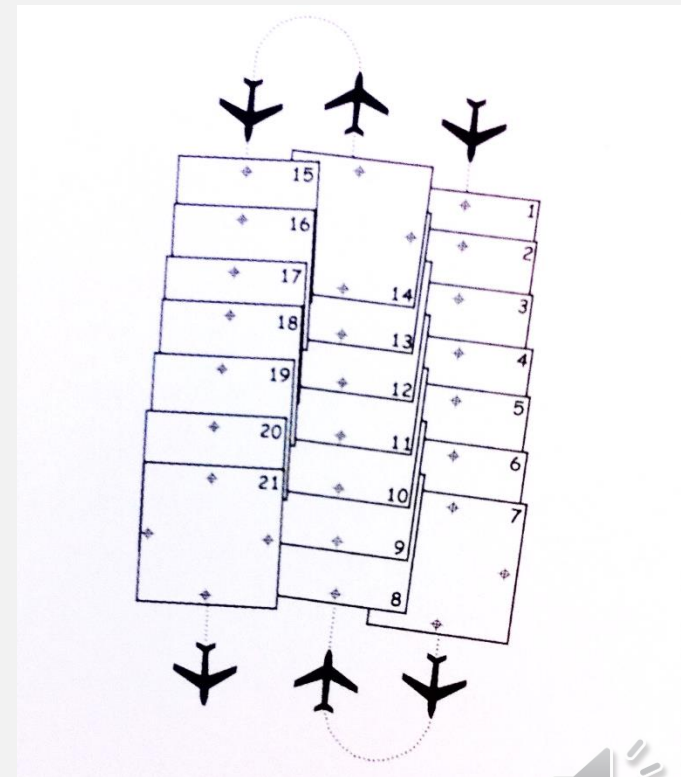


Modern systematic (unbiased)
aerial survey





Modern systematic (unbiased) aerial survey



Overlapping

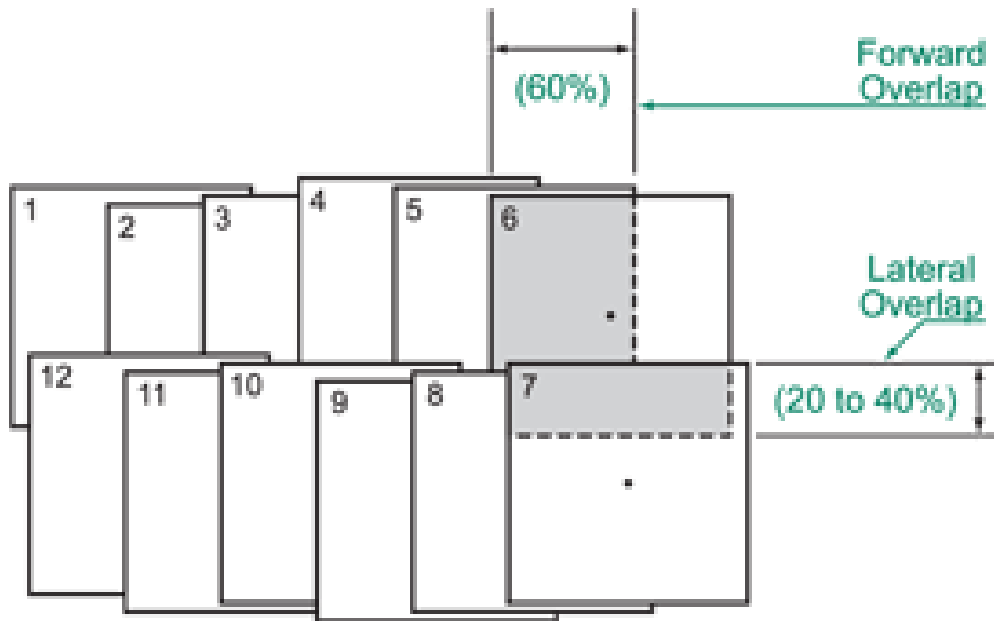


Photo printing and “reading”



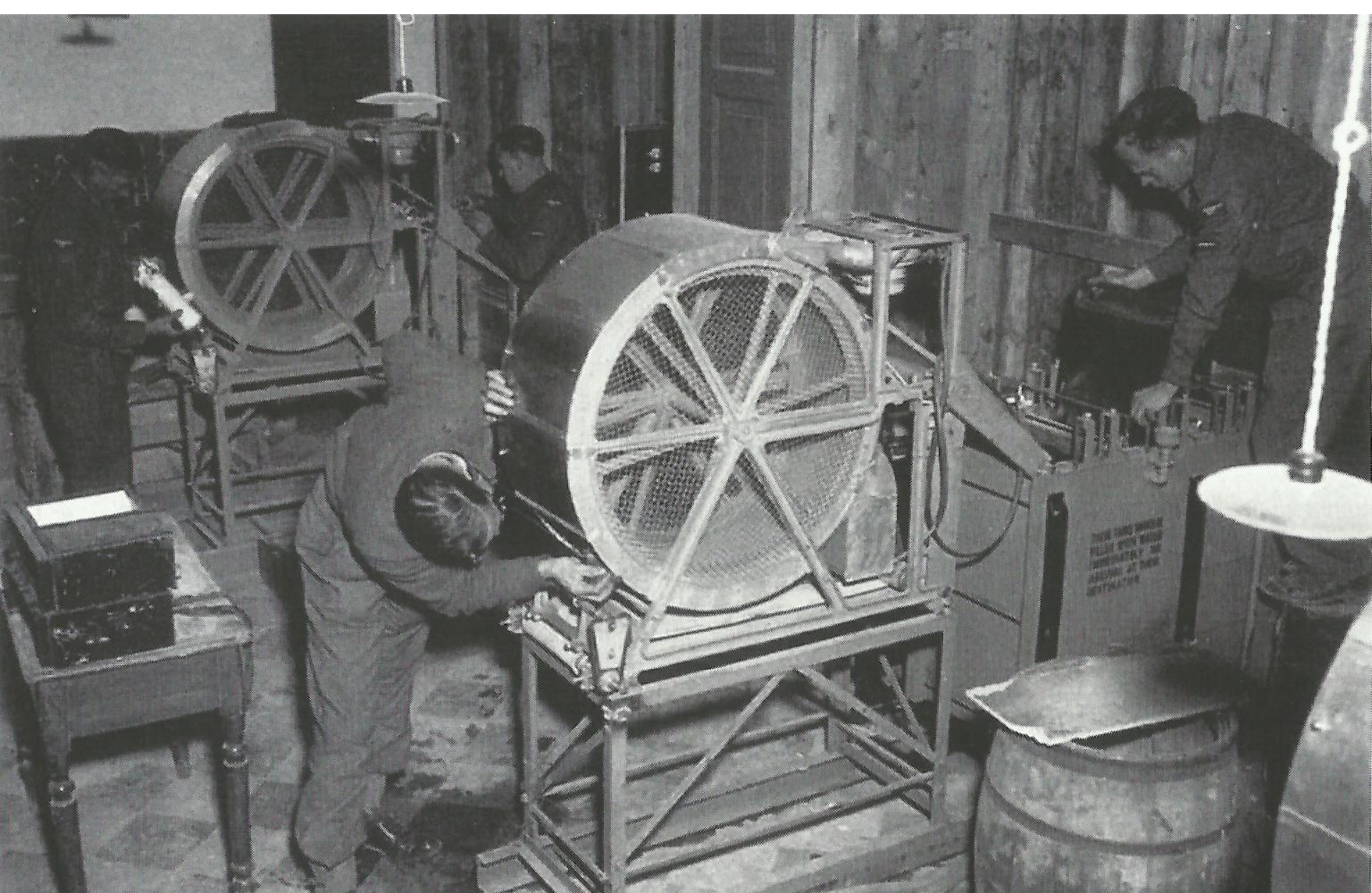


Photo printing machines at San Severo (1944) – Ph. J.H. Eggleston, RAF



Post war F96 camera
[Photo courtesy: RAF
photographers memorial]



WW2 Type B darkroom
tent France 1940





WW2 - MFPS Print processor





Photo-sorting
[Photo courtesy: RAF photographers
memorial]





Photo printing and photo-interpretation at San Severo (1944) – Ph. J.H. Eggleston, RAF

Connecticut First State To Have Its Picture Taken From Air Best Map Ever Made Is Clever Blend of 10,500 Photographs

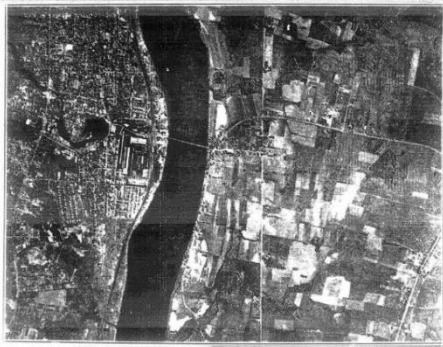
'Shots' Every 25 Seconds Were Made From Planes Flying 100 Miles An Hour

Twelve Thousand Exposures Made In 152 Hours Aloft At Altitude Of 11,400 Feet—Behind-The- Scenes Duties Outlined—Matching Prints Tick- lish Job—Map of All Sizes Available

By BARBARA ATWOOD.

A group of men, tied to high beams in the wings of a biplane, were seen from above as they flew over the state. They were making a map of Connecticut from the air. The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

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This is how Thompson and his crew took the aerial photographs of the state. The plane flew at an altitude of 11,400 feet, and the camera took pictures every 25 seconds.

Value Of Aerial Survey Already Made Apparent To Official Departments

Four Square Miles Not Taxed Before Discovered In Fairfield County—Township Line Error Recti- fied Near Danbury—Military, Highway, Health And Water Offices Foresee Aid

A group of men, tied to high beams in the wings of a biplane, were seen from above as they flew over the state. They were making a map of Connecticut from the air. The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

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Hidden Part of Map Making.
The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

Completed Job.
The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

Presented for Long Years.
The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

Advancing Despite Lapses.
The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

Matching Points.
The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

They're Good Men, Anyway.
The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

Removal of State Planning Board.
The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

Camera Cost Thousands.
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Are Maps Wanted for Towns.
The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

Great Big Molecules May Help In Working Out Synthetic Rubber

Large Savings Effected.
The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

Head Of Dept. Leaves.
The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

Retirement Contingency.
The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

First To Be Mapped From Air.
The map was made from 10,500 photographs taken from a plane flying 100 miles an hour. The plane was a Curtiss biplane, and the men were the Connecticut State Aeronautics Commission.

Laboratory Work Started.
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Map of State Available.
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Photo-map made of 10,500 photographs

March 31st, 1935





Photo-mosaic
(tethered balloon
from a boat in the river)





Photo-mosaic

Steel mat runway and taxiways constructed by Corps of Engineers
Spots in adjacent fields are wheat shocks



Photo-mosaic
(detail)



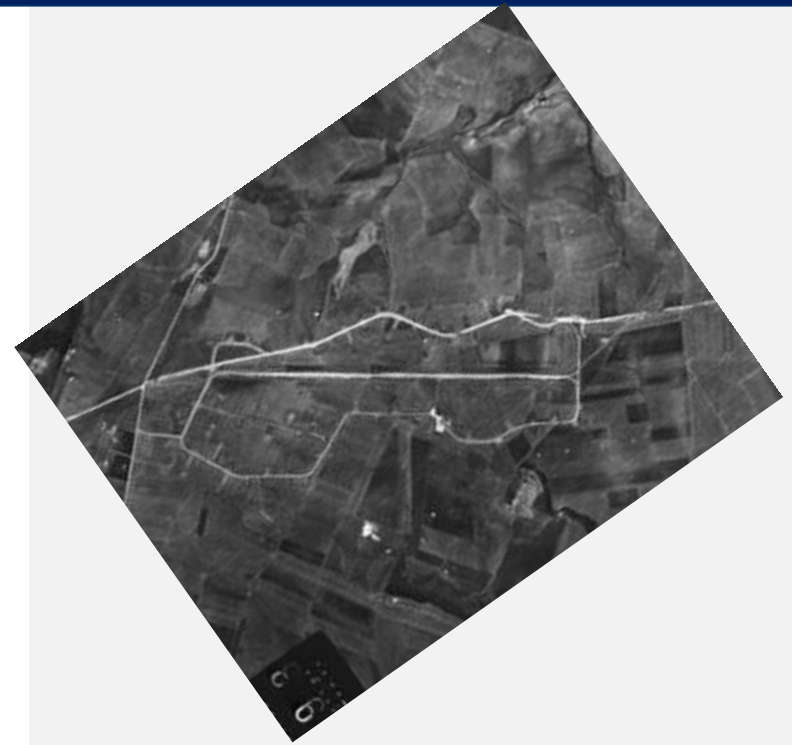
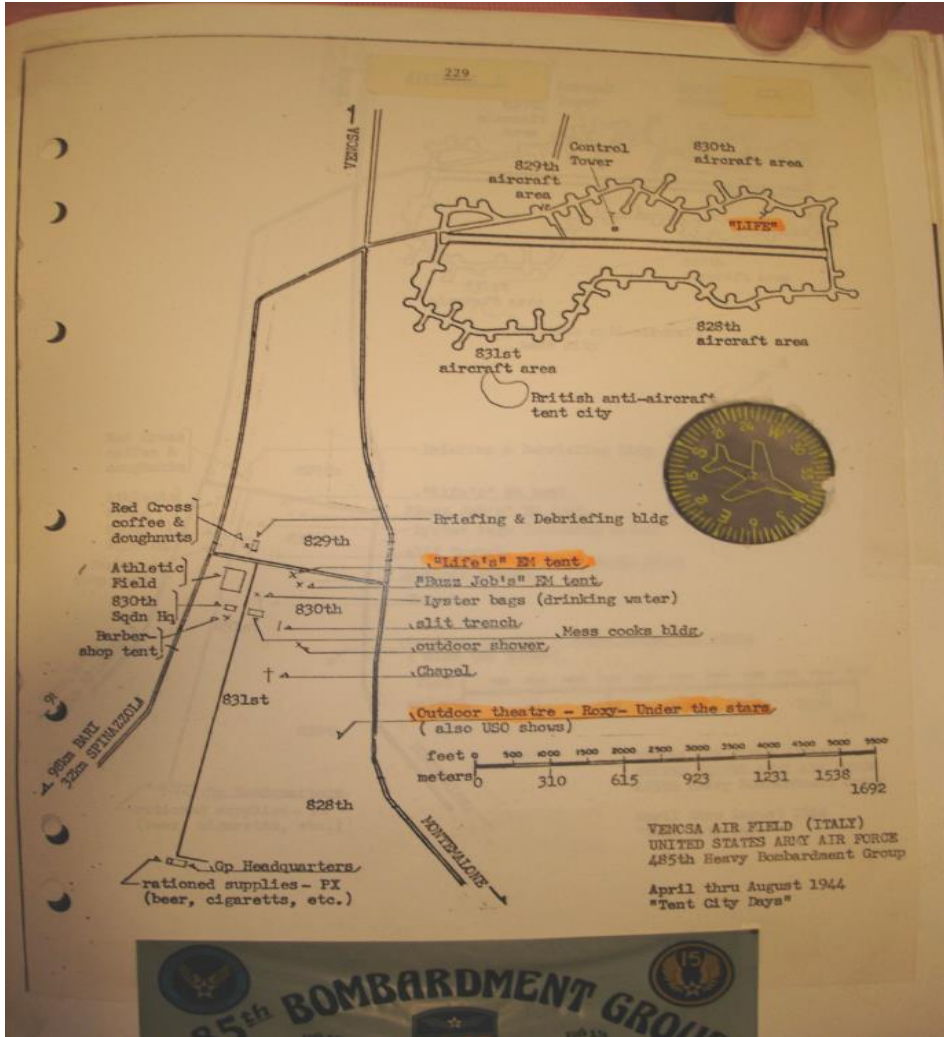


Abandoned WWII airfield (base for the *485th Heavy Bombardment Group* US Airforce) in use between 1943 and 1945, still visible in 1953.

Very little memory remains today about the airfield between the locals.

[The research has been undertaken in collaboration with the Faculty of Archaeology at the University of Leiden (NL)]

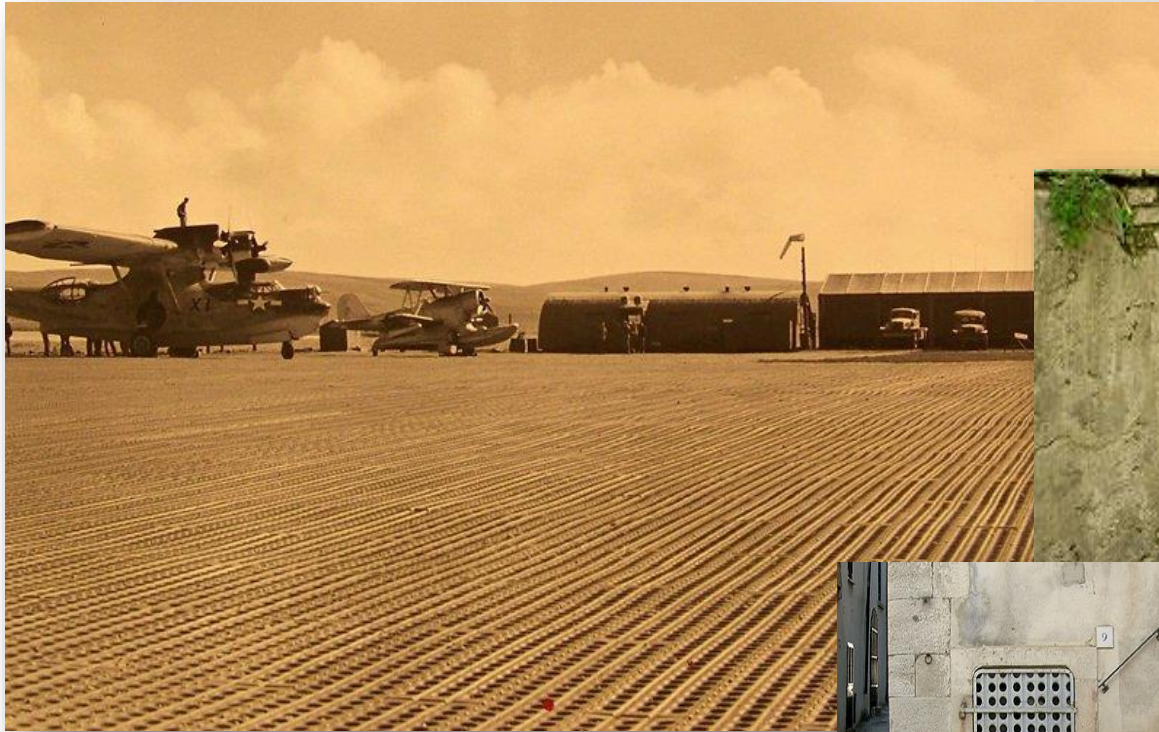




From the private (unpublished) diary of
Sergeant Clarence "Deacon" Miller
[nose gunner for the 485th Heavy
Bombardment Group]

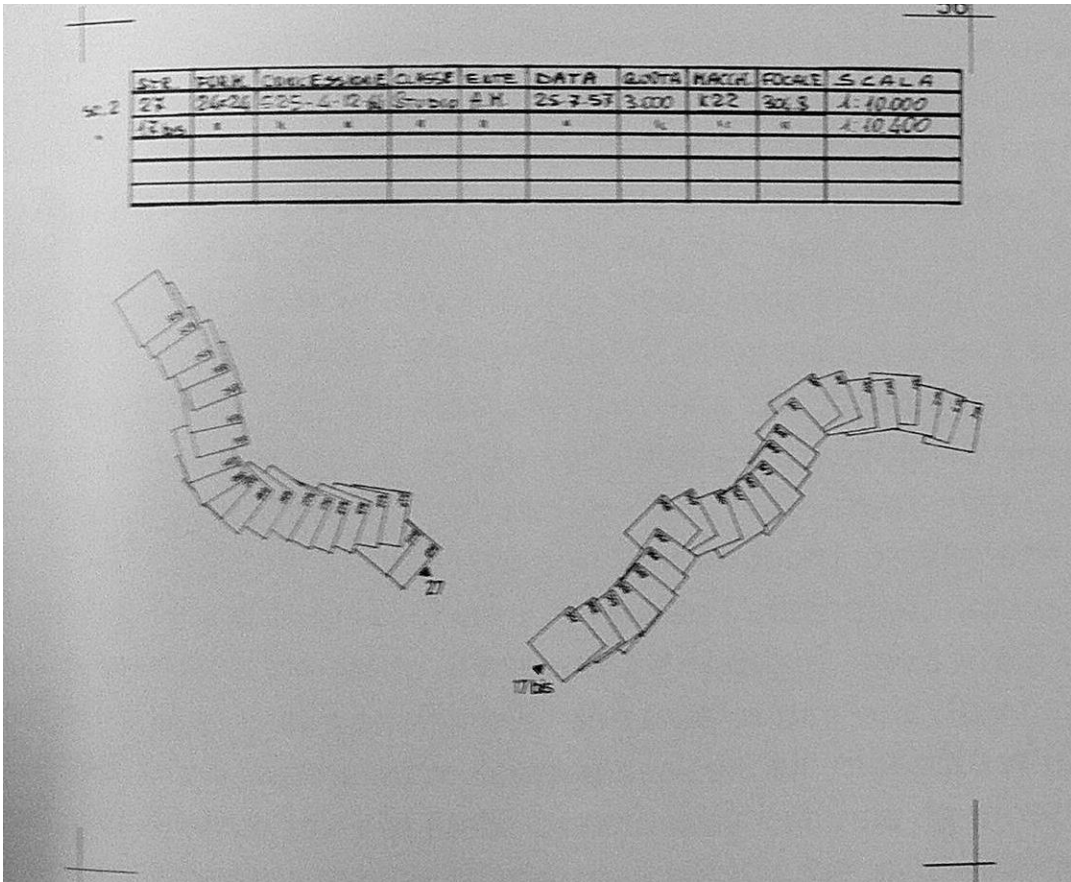


The Marston Mat (or PSP, Perforated Steel Planking), employed for the muddy soil of the airfield...



... were then reused at the nearby village





Transparency layer with photo-footprints







Time

Focal Length

Negative Number

Lens Serial Number

Project Number and Name

Flying Height (Altitude)

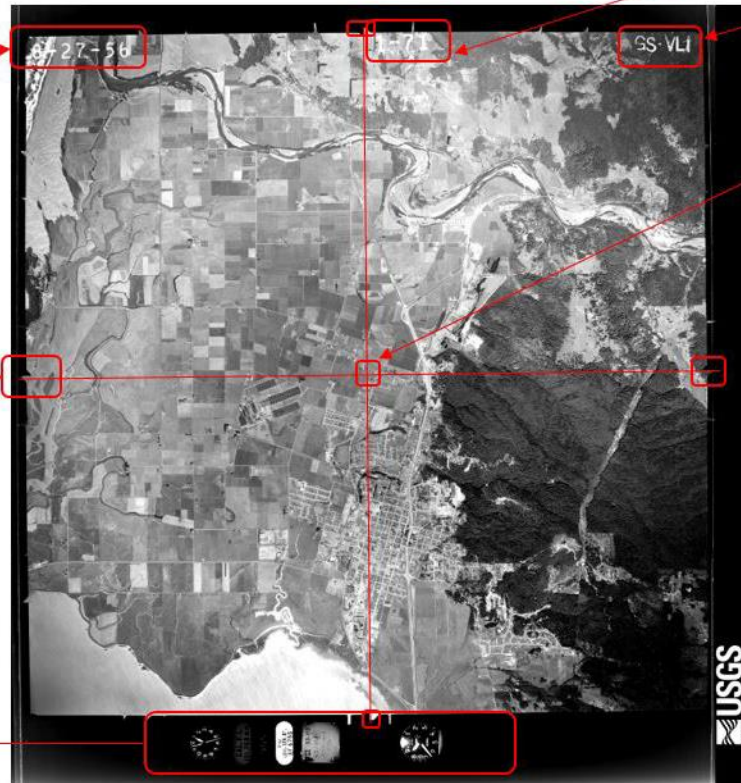
Date

Fiducial
Marks

Roll and Frame
Number

Project
Number

Principal Point



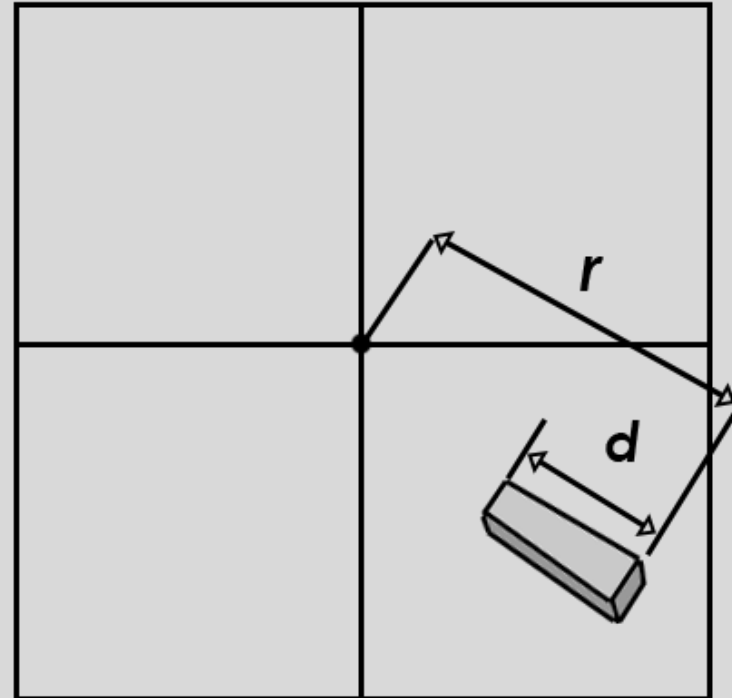
$$h^{\circ} = \frac{dH'}{r}$$

h° = height of the object

d = length of displaced object on the photo

r = radial distance from principal point to displaced image point

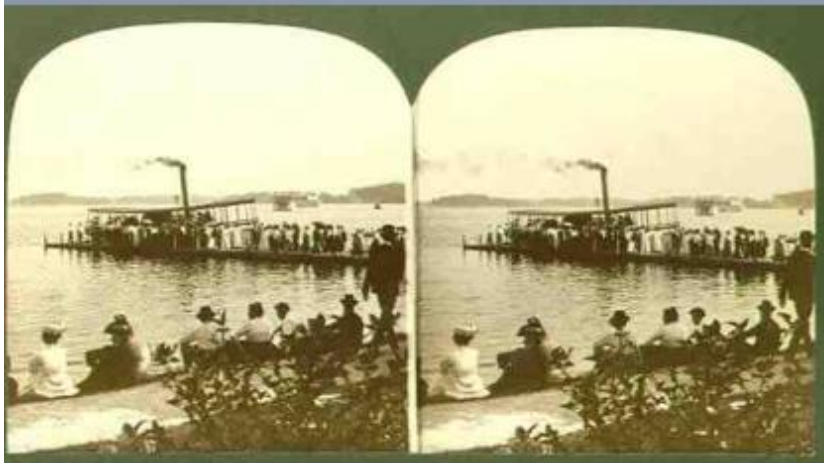
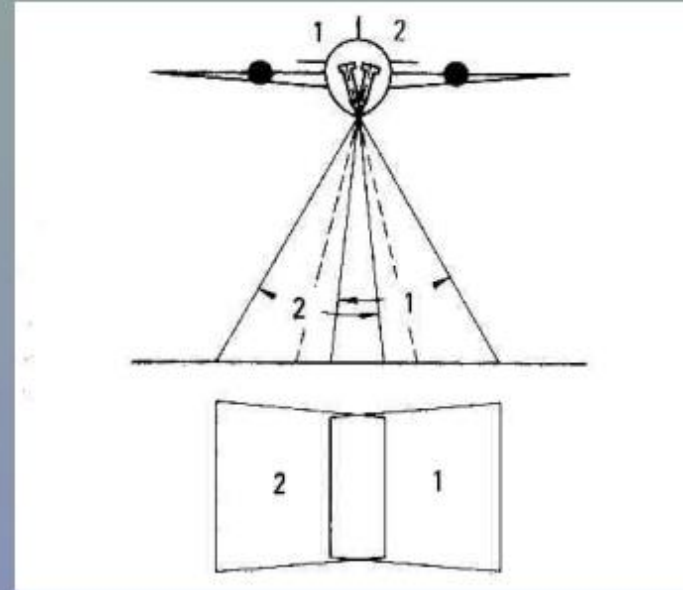
H' = flying height above the surface (flying height above sea level – average elevation)



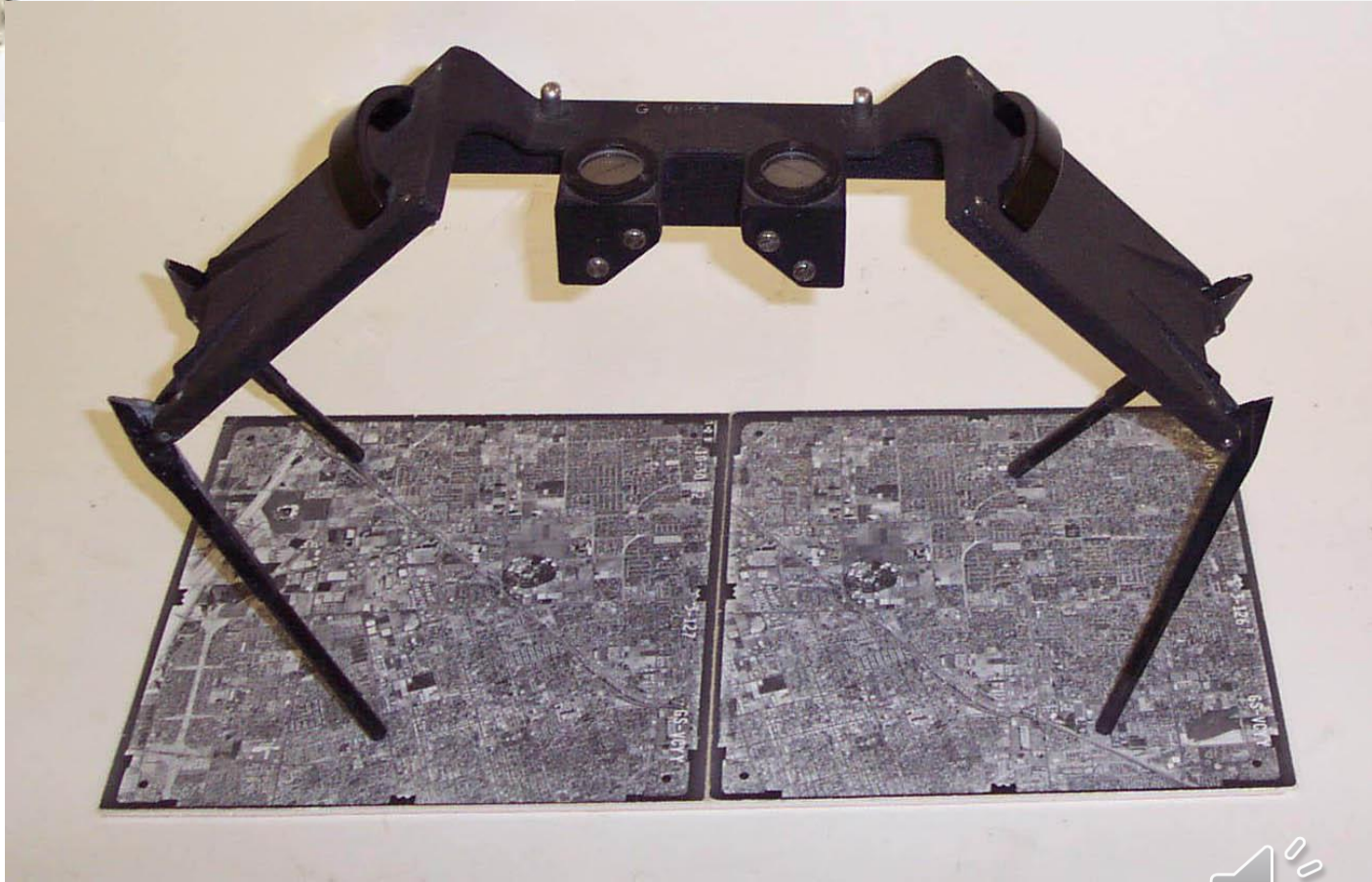
Using “fiducials” to measure object in the photo-frame



Stereoscopic images for stereoscopic view



Stereoscopic images for stereoscopic view



Aerial photographs.
What are we looking for?



Ph.: Rog Palmer



1. The main components of the picture;

2. Time of year;

3. Time of day?

4. Any shape to the ground? High/low places?

5. The "island"?



1. The main components of the picture; [a,b,c,d]
2. Time of year;
3. Time of day?
4. Any shape to the ground? High/low places?
5. The "island"?



1. The main components of the picture; [a,b,c,d]
2. Time of year; [e,f]
3. Time of day?
4. Any shape to the ground? High/low places?
5. The "island"?



1. The main components of the picture; [a,b,c,d]
2. Time of year; [e,f]
3. Time of day?
4. Any shape to the ground? High/low places?
5. The "island"?



1. The main components of the picture; [a,b,c,d]
2. Time of year; [e,f]
3. Time of day?
4. Any shape to the ground? High/low places? [g,h,j,k]
5. The “island”?



**TELL-UL MGURA, Teleorman
Romania
[44.040 N – 25.389 E]**



By so doing we have put the occupation site and its inhabitants in an **environmental context** that may help explain how they lived. The alternative description made by going directly to the archaeological site on the photo and describing it as a tell by a river would have given us less information and a lower level of understanding of what may have happened in the past.



- Aerial and satellite photographs/images come in two types:

- **Biased** (airborne observer to record what has been recognized and thought to be of interest)

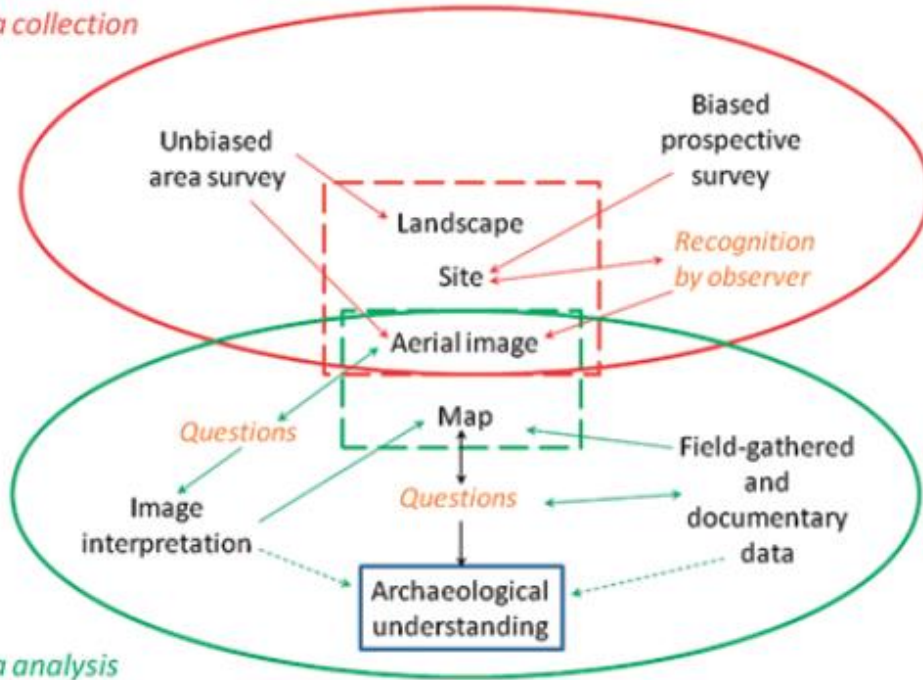
- **Unbiased** (large extent of the ground as completely as possible at the time of capture)

- Both types of image can be examined stereoscopically although our flying observers often do not take such suitable photographs.

- Image interpreters have to work with a mix information and, if they are able, to link this with knowledge gained by other means.



Data collection



Data analysis

The diagram (by Rog Palmer) outlines the processes of **data collection** (aerial and satellite photography) and its **analysis** (photo interpretation) and draws in other sources of information to seek greater archaeological understanding

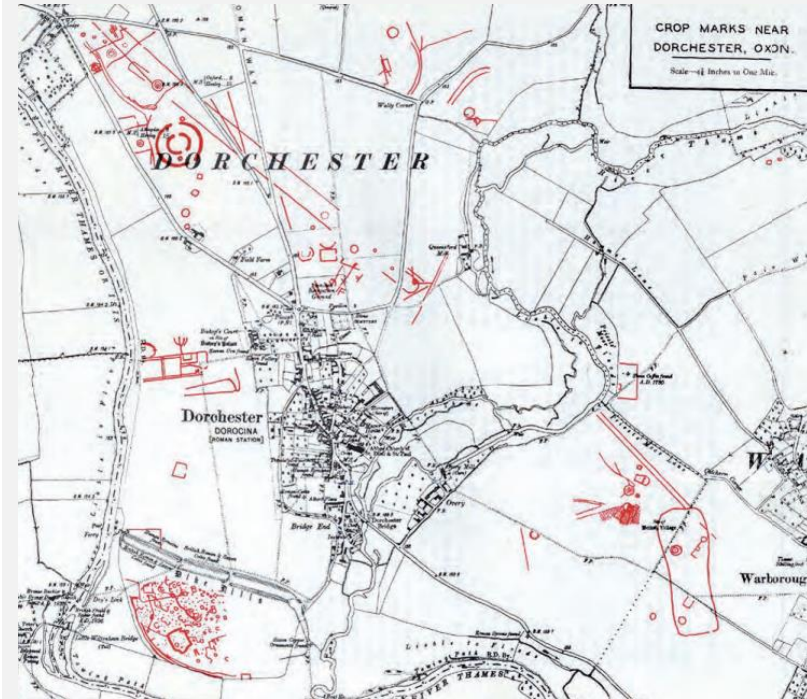


Photo-interpretation not only for
archaeology



Densities of forest cover: 1 closed, 2 semi-closed, 3 semi-open, 4 open and 5 deforested

- Many manuals identify several stages in the process of photo examination of which **'interpretation'** is the highest level.
- In most cases they note that interpretation must end with a **map** as this is a necessary part of interpretation.
- **Without interpretation**, aerial photographs, satellite images, airborne laser scans (and others) remain little more than **illustrations** – although this is one of their occasional uses.



An interpretative map of Dorchester by Major G. W. G. Allen



- History and Historic Photographic Technologies

Aerofototeca Nazionale
The National Archive of
Aerial Photography

- Part B -

Thank you!

*For any other
question or comment*

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