
LANDSCAPES THROUGH THE LENS
AERIAL PHOTOGRAPHS AND HISTORIC ENVIRONMENT

edited by
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Front cover: Étang de Montady, Languedoc-Roussillon in southern France. A remarkable pattern of field boundaries created in the 13th century on a reclaimed lake photographed on 6 August 1944. Drains converge on the circle which lies at the centre of the former lake, with water then transported out of the shallow basin through a tunnel 1.3km long under the Hill of Malpas. TARA_MAPRW_106G_1960_4175, © Crown Copyright, RCAHMS

Back cover: Erbil, the capital of Iraqi Kurdistan, is a claimant to the title of oldest continuously inhabited settlement in the world. The modern city is still dominated by the ancient tell, recorded here on 22 October 1948 when still a relatively small town. RAF_13A/131_3144, © Crown Copyright, RCAHMS

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21. Italian aerial photographic archives: holdings and case studies

Giuseppe Ceraudo and Elizabeth J. Shepherd

Introduction

The holdings of historic aerial photographs in Italy are substantial, mainly preserved in the two major archives of the Istituto Geografico Militare in Florence and the Aerofototeca Nazionale in Rome (Piccarreta and Ceraudo 2000, 189–92; Ceraudo 2004a; Castrianni and Ceraudo 2008). Amongst the holdings in the Aerofototeca, there is unique material that is not duplicated elsewhere, and together these archives form a valuable resource for the study of the Italian landscape and its cultural heritage. Following brief summaries of the major aerial photographic resources, their potential will be presented through two case studies – one documenting the damage to Montecassino during World War II, the other exploring the Roman city of *Casinum*.

Istituto Geografico Militare (IGM)

The largest collection of aerial photographs in Italy is preserved by the IGM in Florence, an Institute officially constituted in 1882. One of its tasks is to provide systematic coverage of the country with aerial photographs of photogrammetric quality, in order to carry out topographical surveys and to produce official cartography. Beginning just after World War II, the IGM has gathered aerial-photogrammetric coverage, planned on five yearly intervals, though it has occasionally been delayed, and this is used to update the Carta d'Italia at its different scales. In this way the IGM has been able to build up the largest aerial photographic archive, covering the whole country with black and white vertical aerial pictures in the traditional 23 × 23cm size. For archaeology the photographs taken before or during World War II are often most important. These can be either glass plates of unusual sizes (13 × 18 or 20 × 20cm) or large size films (30 × 30cm), mostly dating from 1942 to 1953.

The so called 'basic flight' (Volo Base, 1954–55) is indispensable to every topographical study of Italy. These aerial images, most of them taken with US aircraft, photogrammetric cameras and operators due to the post-war

condition of Italy, show the country before, or in the early stages of, the great agrarian transformations initiated in the early 1950s. These changes included the introduction of mechanised agriculture and extensive building programmes along the coast and in city outskirts. The comparison between historic flights and the subsequent photographic campaigns allows us to establish in detail the transformation in time of the landscape, and has a great documentary value.

Aerofototeca Nazionale (AFN – ICCD)

The Aerofototeca Nazionale is the Italian national archive of aerial photography in the Ministero per i Beni e le Attività Culturali (Ministry of Cultural Heritage and Activities). It holds photographs from the whole of the 19th century, and was established in 1958 as a branch of the Gabinetto Fotografico Nazionale (National Photographic Archive) and, since 1975, has been part of the Istituto Centrale per il Catalogo e la Documentazione (ICCD – Central Institute for Catalogue and Documentation), based in Rome. The Aerofototeca houses many collections produced by public and private organisations. Some of these have been purchased or donated and are the property of the Ministero per i Beni e le Attività Culturali while others are on loan to the Archive from military or civil institutions which retain ownership. Aerial photographs were produced by military bodies (Italian Air Force, Istituto Geografico Militare, Allied Forces during World War II), public organisations (research institutes, regional authorities) and private companies, most of which are no longer in existence. A few companies which are still operating have deposited their historical collections with the AFN, together with copies of recent flights, of which they hold the copyright.

The Aerofototeca also houses a large number of maps drawn from aerial photographs, most of them accessed through the purchase of the EIRA collection (= Ente Italiano Riprese Aeree). There are also a number of aerial cameras, acquired with the Fotocielo collection, and an exceptional array of aerial photography-based map-making

equipment, part of the Aerofoto Consult collection. They all illustrate the history of Italian aerial-photogrammetry since World War II.

The large collection of aerial photographs of Italy taken for military reconnaissance purposes by the Allies during the Italian campaign of 1943–1945 are of course of historical interest. The images were produced by strategic photo-reconnaissance units of the Royal Air Force (RAF) and the United States Army Air Forces (USAAF), part of the Mediterranean Allied Photographic Reconnaissance Wing (MAPRW). The sheer quantity of the photographs (roughly 2 million) and their historical significance make this the most important collection of aerial photographs in Italy. This material includes unique imagery that is not duplicated in the large holdings of photographs of Italy held by NARA and TARA (R. Standring, pers. com.).

Just as large is the historical collection of the Aeronautica Militare Italiana (Italian Air Force) deposited in the Aerofototeca since its foundation. The initiative of General Domenico Ludovico was crucial in this regard, since he arranged for the transfer to the archive of a large number of military photographs which included areas of archaeological interest; the collection was subsequently enlarged with other photographs, taken up to the 1970s. As well as General Ludovico, an important contribution to the birth of the Aerofototeca was made by the archaeologist Dinu Adamesteanu, who was its first director, and General Giulio Schmiedt of the Istituto Geografico Militare in Florence. A photographic analyst of international standing, the then Colonel Schmiedt spent the whole of 1960 organising the photographic collections of the Aerofototeca into an accessible archive. In establishing a system that functions to this day, Schmiedt sought to put into practice the aims of the founders, which were, in the words of Adamesteanu, to “gather, coordinate and make available to the archaeological authorities all the aerial photographs in our possession that may be useful in streamlining surveys of the terrain”.

In the half-century since its creation, the fundamental task of the Aerofototeca has been to gather aerial photographs from all available sources, provide for their conservation, cataloguing and study, thus making them available for a wide range of research and survey purposes. Over time this has become an irreplaceable resource for both historical research in various disciplines and regional planning, providing fundamental documentation for many of the activities of regional organisations in Italy (Shepherd 2010).

The main sources of historical Italian aerial photographs

During World War II reconnaissance flights by RAF and USAAF proved decisive to the advance and victory of the Allied Forces; however in southern Italy, immediately after the Allied landing in Sicily in July 1943, there were flights by the Regia Aeronautica (Italian Royal Air Force) and the German Luftwaffe. These flights are today a powerful historical record of the appearance of the country before the great infrastructural works and urbanization that, from the

early 1950s, have often deeply altered the Italian agrarian landscape (Boemi 2003).

Regia Aeronautica (Italian Royal Air Force)

Since 1923 every Italian army corps had a group for aerial observation, assigned aircraft already in use during World War I. In 1943 Guidonia (a military airport near Rome) was chosen as the base for the 310th Photographic Recognition squadron, equipped with panoramic cameras mounted on the Macchi MC 205 aircraft.

German Luftwaffe

Some of the German photographic reconnaissance flights were carried out before the beginning of World War II, and the Luftwaffe supplied Italy with various kinds of aircraft, so that after four years the Italian Air Force stood at 700 aircraft. War time reconnaissance was carried out over Italy by both German and Italian crews. The Aerofototeca Nazionale holds in its archives about 100 images in a 30 × 30cm format, generally taken after the landing in Sicily and covering various strategic areas in Southern Italy, such as harbours and airports. Aerial coverage in the same format carried out by the Regia Aeronautica with the same equipment has been acquired by the Aerofototeca.

British Royal Air Force (RAF)

Photographic reconnaissance by the RAF over Italian territory began as early as September 1940, covering southern Italy and Sicily from Malta and went on until the end of hostilities. This included the aerial reconnaissance by Adrian Warburton on 10th November 1940 in advance of the large-scale attack on the Italian Fleet the following day (Conyers Nesbit 2003) – the *Night of Taranto*.

The RAF collection was transported from Puglia to Rome at the end of World War II and deposited nearly entirely in the British School at Rome, from where it was loaned to the Aerofototeca in 1974. The RAF aerial photographs in the Aerofototeca holdings cover the years 1943–44. RAF imagery was also taken by aircraft from the Allied Air Force base at San Severo (Puglia, Italy) and mostly covers southern and central Italy. These missions generally maintained high altitudes (c.27,000 feet) in order to avoid flak and used a 24-inch focal length camera (c.1:10,000) and a 6-inch focal length camera (c.1:50,000), generally carried by Spitfires and Mosquitoes. The RAF photographs are identifiable by the squadron numbers (e.g. 680, 683 and 684) and are mostly of a 7 × 8 inch format. The makeshift airports of the *Tavoliere delle Puglie* were used in order to photograph the effects of the earlier attacks, and these images focus on those areas where the British military missions were directed. They are a unique and irreplaceable document for the study of a historical situation of the Italian territory in a particular moment of its evolution, before the great urban and agrarian transformations (e.g. see Alvisi 1980).

The majority of the images taken of southern Italy and the larger islands from North Africa appear to have been



Figure 21.1: RAF aerial photograph of 29 September 1943, with the Abbey still intact and the slopes of the mountain not yet subject to bombing (AFN-ICCD, Fondo RAF).

taken to Britain after the war, though some of the 1943 imagery in the Aerofototeca will have been taken by Allied units based in North Africa. It is also worth noting that there may be some mixing of the RAF collection and that of the USAAF (below).

United States Army Air Force (USAAF)

USAAF started its strategic reconnaissance in Italy during the spring of 1943 when the Allies Forces began preparing for the invasion of Sicily, following the *Trident Conference* in Washington. This imagery mostly covers north-east Italy,

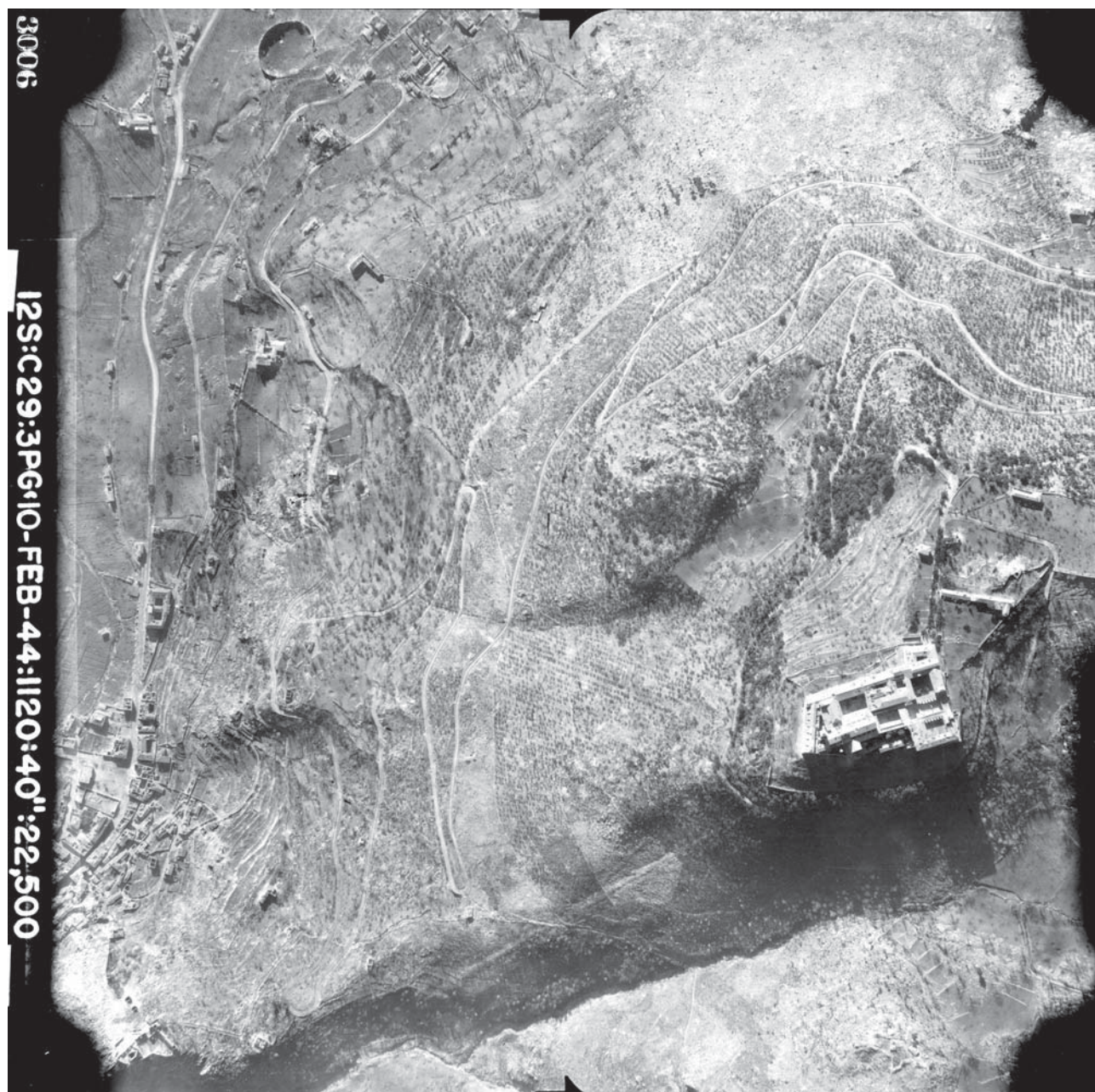


Figure 21.2: RAF aerial photograph of 10 February 1944, showing the heavily bombed town of Cassino; though the Monastery is apparently intact, there are signs of damage to the roofs caused by artillery fire from the two opposing armies (AFN-ICCD, Fondo RAF).

complementing RAF coverage which is concentrated in the south. They were donated by the American Academy in Rome to the Aerofototeca in March 1964, and are arguably the most important parts of the collection as they fill large gaps in the holdings of NARA and TARA of photographs taken after air raids. However, they are not as accessible as might be desired, as they are stored in their original boxes making consultation difficult and conservation an absolute priority. The USAAF produced square prints at 9 × 9 inches with prefixes in the style of 23PS, 32S, 15SG, 5PRS and 12PRS indicating squadrons.

Case studies

As has been stated above the historic aerial photographs are a valuable and often unique record of the Italian landscape before the massive changes of the mid and later 20th century. These also record historical events and document events and can contribute to the writing of history and the documentation of cultural heritage. Aspects of this potential for aerial archives are illustrated below in two case studies.



Figure 21.3: Detail of a sector of the city razed to the ground in a photograph by the RAF, 10 February 1944 (AFN-ICCD, Fondo RAF).

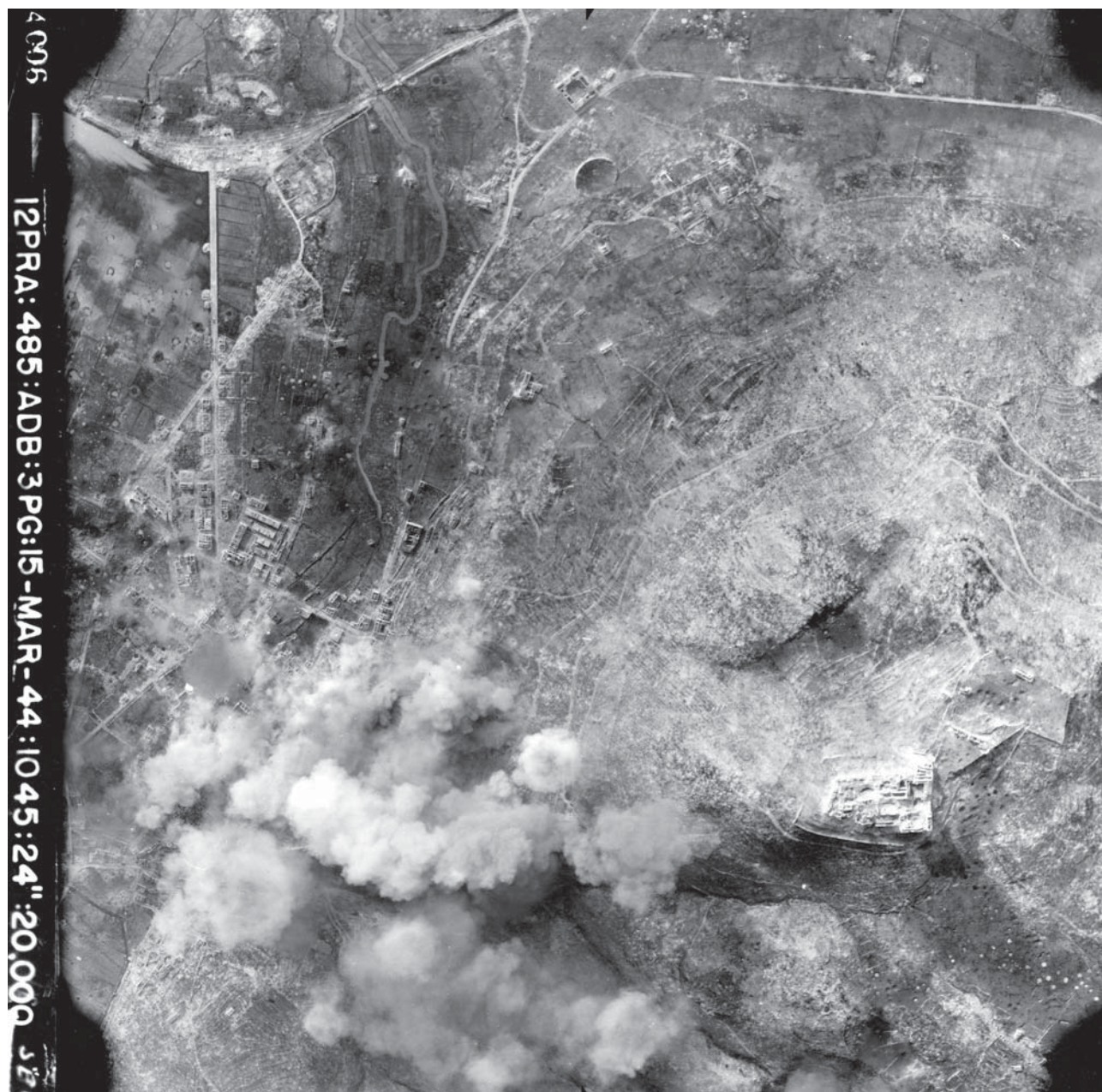


Figure 21.4: RAF aerial photograph of 15 March 1944. At the foot of Montecassino, with the Abbey already heavily damaged, the area of the town has been bombed to devastating effect. The damage is clearly visible through the dense smoke and dust (AFN-ICCD, Fondo RAF).

Montecassino

After the Allied landing in Sicily in July 1943, the German army was ordered to retreat and resist the enemy advance from behind fortified lines near the river Volturno in central Italy. This is the narrowest part of the Italian peninsula between the Tyrrhenian and Adriatic Seas and was therefore easier to defend. In this area the Germans built various defensive lines: the “Reinhard line” from the mouth of the Garigliano on the Tyrrhenian across to the river Sangro on the Adriatic; the “Gustav” line along the rivers Rapido and Garigliano; and the “Senger-Riegel” line, better known as the “Hitler” line. The nerve centre of this system was the valley of the Liri, along which ran the Casilina highway,

the only road running through the interior able to provide smooth passage for Allied motorised units heading for Rome. The south-eastern end of this valley was blocked by the Germans, who were able to secure the area thanks to their control over the two mountain ranges of Montecassino to the north and Monte Majo to the south.

Until September 1943, the monastery of Montecassino, founded by Saint Benedict, had not been involved in the conflict in any way. Not even after the Italian surrender and the Allied advance from the south did the Germans occupy the complex. It was only after the first aerial bombing (February 15 1944) and the destruction of the Abbey that the holy place became part of the German defence system.

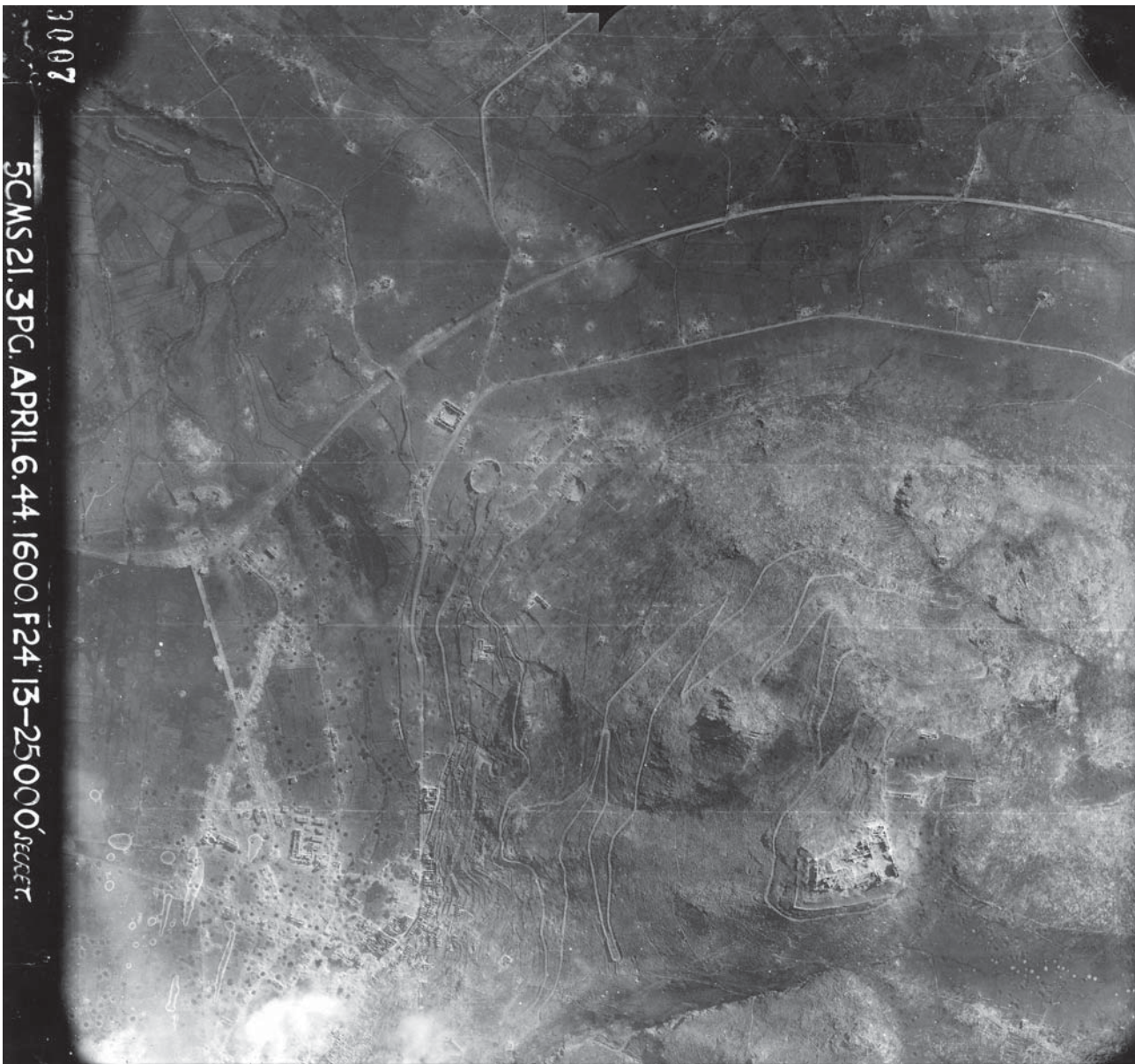


Figure 21.5: RAF aerial photograph of 6 April 1944 recording the devastated condition of Cassino and Montecassino, now reduced to rubble (AFN-ICCD, Fondo RAF).

The ruins were occupied (February 17 1944) with the aim of resisting attempts by Allied troops to break into the Liri valley. The events that led to the destruction of Cassino and the Abbey of Montecassino as result of the frequent aerial bombings are well known; there is a wealth of literature on the subject providing a detailed reconstruction of what happened between September 9 1943 and May 18 1944 when the monastery was at the heart of the battle. Rather than seeking to analyse events and issues which do not lie within our specific field, this paper aims merely to present certain aerial photographs taken by the RAF, some of which are still unpublished. These images show the unfolding of a series of events in the war with great realism and from an unusual point of view for those who do not have expert knowledge of the subject.

The first aerial photograph dates to July 29 1943

(Figure 21.1), when the situation in the area was quiet and the battle still a long way off – this image shows the Abbey still intact and the slopes of the mountain not yet bombed (Figure 21.6 top left). The second image, taken on February 10 1944 (Figure 21.2), five days before the great bombing of the Abbey, shows an already changed situation, with the town of Cassino badly damaged and the historic town centre completely destroyed (Figure 21.3). The monastery is still apparently intact, although careful examination shows that the roofs of the buildings had already been hit by artillery fire (Figure 21.6 top right). The third photograph was taken a month after the first aerial attack (Figure 21.4). On March 15 all the senior officers from the Allied forces gathered at the field headquarters of the US II Army Corps in Cervaro to watch the carpet bombing of Cassino, during which the town would be



Figure 21.6: Details of the Abbey as seen in four RAF aerial photographs show the successive phases of the war as it affected the Monastery and the surrounding area, particularly in the spring of 1944. 1) 29 September 1943; 2) 10 February 1944; 3) 15 March 1944; 4) 6 April 1944 (AFN-ICCD, Fondo RAF).

razed to the ground, the religious building along with it. The image shows that at the foot of the mountain bombs are still landing on Cassino; the devastating effects of the bombing are clearly visible through the dense clouds of smoke and dust. Although the monastery has been badly damaged, some parts are still standing, particularly the eastern side (Figure 21.6 bottom left).

The last aerial photograph is dated April 6 1944 (Figure 21.5). It shows an appalling situation – an almost lunar landscape where the ground has been completely devastated by repeated bombing over three months, the Abbey is razed to the ground (Figure 21.6 bottom right) and the town of Cassino reduced to rubble. By May 18 the hill of the Monastery was in Allied hands, occupied by Polish troops, and the battle of Montecassino was over at last (Ceraudo 2004b). This was a major event in the course of World War II and these images convey the magnitude and horror of the war to great effect, and can contribute to both the writing of history and the communication of that history.

The Roman city of Casinum

Casinum was situated on a patch of high ground, gently sloping to the south-east, on the south side of Montecassino

and on the south-eastern outskirts of modern-day Cassino. From that position the settlement controlled a narrow stretch of the valley of the Liri, at the junction of important routes linking Etruria with Campania and Samnium on the Tyrrhenian coast. *Casinum* flourished in the late Republic and early Imperial periods during which the city's main public buildings were built, of which the theatre, amphitheatre and so-called mausoleum of *Ummidia Quadratilla* remain.

In 529 AD Saint Benedict arrived in Montecassino. On the summit of the hill, on the site of a Roman building, he built the church of Saint Martin and an oratory dedicated to St John the Baptist – it is from this original complex that the famous Abbey emerged. In the 8th century the settlement which had grown up around the Abbey changed its name to *Castellum S. Petri in Monasterio*. In the 8th and 9th centuries, 1km to the north, at the foot of the hill known as Colle Ianulo, another town was founded, also controlled by the Abbey of Montecassino. Initially called San Germano, in 1863 it took its current name of Cassino. The development of this town marked the definitive decline of *Castellum S. Petri*, which was mentioned in the records until the end of the 12th century, but was abandoned and in ruins by the 15th.

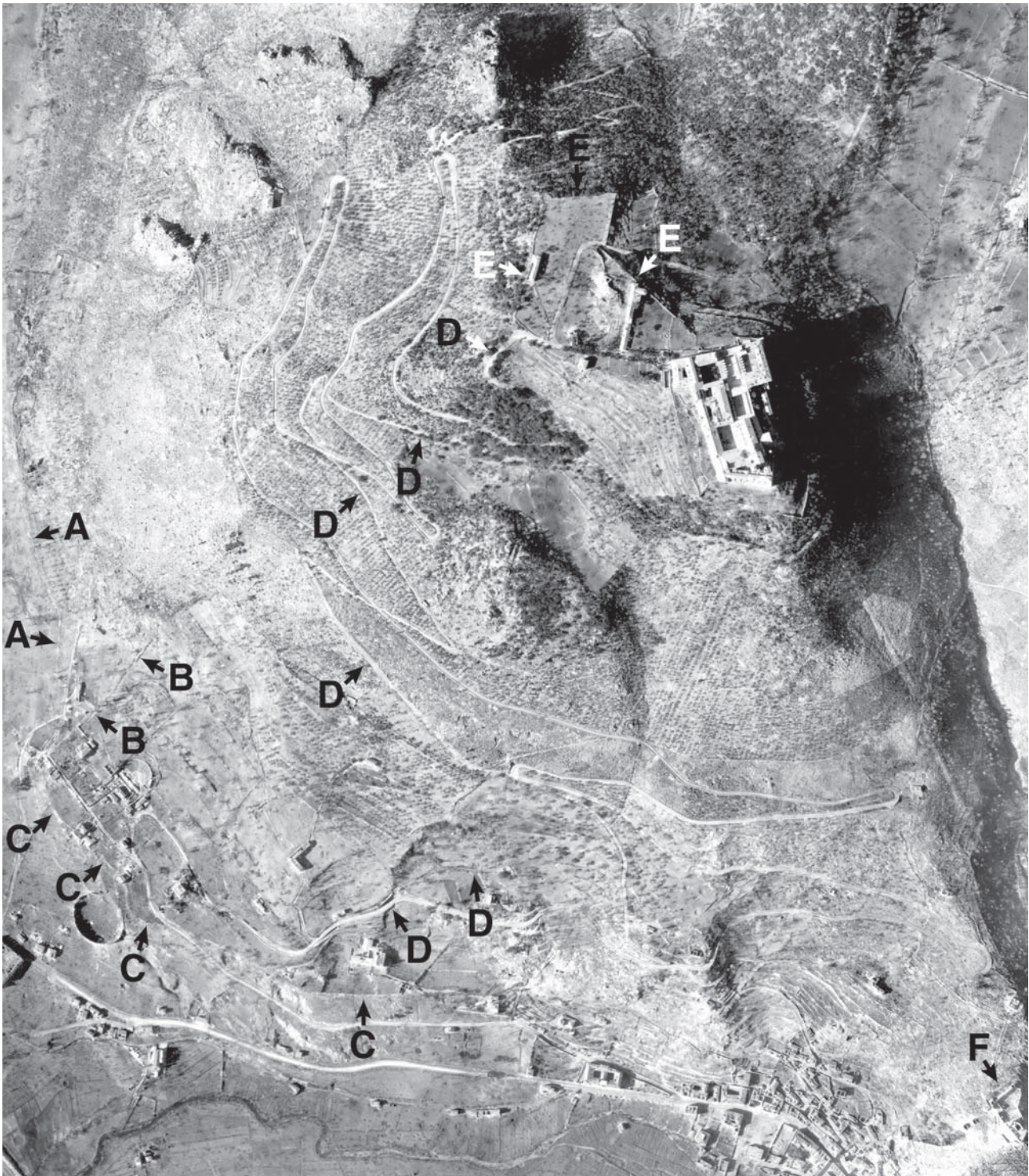


Figure 21.7: Mosaic of vertical RAF photographs taken on 10 February 1944 showing the Abbey of Montecassino and, on the slopes, the remains of the Roman city of Casinum. Apart from the amphitheatre and the theatre, also visible are the Via Latina (A), stretches of the circuit of defensive walls (B–C), the ancient road that linked the lower part of the city with the acropolis (D) and the remains of the pre-Roman walls that surrounded it (E) (AFN-ICCD, Fondo RAF).

The Roman city was protected by a circuit of walls extending to a length of 4.5km, enclosing a larger area than that of the settlement itself, including the summit of Montecassino and perhaps also the rocky spur on which the Rocca Ianula fortress was built in the mid 10th century AD. The settled area of some 300m by 400m on the eastern

slopes of the mountain was laid out on terraces set parallel to the slope. The public buildings were also concentrated in this area, along what is believed to have been the urban section of the *Via Latina*, today the *Via del Crocifisso*, which is the modern town's main street.

The aerial photographs taken by the IGM in 1942 (see

Figure 21.1) and by the RAF in early 1944 (Figure 21.7) before the devastating Allied bombings that destroyed Cassino and the Abbey, clearly show the main nucleus of the Roman city with the conserved monuments – the theatre with the *cavea* partially resting on the natural slope of the hillside; the mausoleum traditionally held to be the tomb of *Ummidia Quadratilla* and recently attributed to *Marcus Terentius Varro*, which was transformed into a church dedicated first (11th century) to Saint Nicholas and then (17th century) to the Crucifix; and the amphitheatre, built just outside the walls, with its north-western side resting on the rocky slope. The Forum was located roughly 100m to the east of the theatre, immediately to the west of the *Porta Campana* gate; the aerial image shows the presence here of a rectangular space marked off by boundaries between separate properties, which have the same orientation as the theatre and other Roman structures on the terraced slope.

The aerial photographs show the traces and the remains of the circuit of walls: the southern stretch at the point where it starts to rise towards the summit of Montecassino; the south-eastern section, along which the ground is higher on one side than the other, the wall functioning as a revetment for the urban area on the upper level; and the south-western section, situated half-way up the slope, which is among the best conserved. Also visible is the route of the old path that led up into the mountains, which is probably a relic of the ancient route linking the lower part of the city to the acropolis, the summit of Montecassino. This was a sort of citadel, occupied by Roman temples and enclosed by a pre-Roman perimeter wall which was connected to the circuit of walls that protected the city, the western stretches of which can be clearly seen in the aerial photograph (Scardozi 2004).

The aerial images are a unique view of the remains of the Roman city and its later structures before the damage caused during World War II and before the changes of the mid- and later-20th century.

Conclusions

Italian archives of aerial photographs have rich and varied holdings, which are a valuable source for the study of the

landscape and cultural heritage, especially in the large parts of the country that have been affected by significant change during the second half of the 20th century. It is worth stressing that these holdings include unique imagery from World War II, that are not duplicated elsewhere, despite the large numbers of photographs of Italy held in archives in the UK and USA. These include ‘post-strike’ photographs taken to help assess the success of bombing raids. These highlight the potential importance of this imagery in helping to write history, recording as they do events, alongside ongoing processes and landscapes now changed in many ways.

Bibliography

- Alvisi, G., 1980, *L'aerofotografia da materiale di guerra a bene culturale. Le fotografie aeree della R.A.F., Catalogo della Mostra organizzata dall'Istituto Centrale per il Catalogo e la documentazione Ministero per i beni Culturali e Ambientali*, Roma 1980.
- Boemi, M. F., 2003, L'Aerofototeca Nazionale, in Guaitoli, M. (ed.), *Lo sguardo di Icaro: le collezioni dell'Aerofototeca Nazionale per la conoscenza del territorio (Catalogue of the Exhibition)*, Roma, 17–42.
- Castrianni, L. and Ceraudo, G., 2008, History of Military Aerial Photographs in Italy and Addressed Archives, in Stichelbaut, B., Bourgeois, J., Saunders, N. and Chielens, P. (eds), *Images of Conflict: Military Aerial Photography and Archaeology*, Cambridge Scholars Publishing, 165–84.
- Ceraudo, G., 2004a, Un secolo e un lustro di fotografia aerea archeologica in Italia (1899–2004), in Ceraudo, G., and Piccarreta, F. (eds), 2004, *Archeologia Aerea. Studi di Aerotopografia Archeologica*, I, Roma, 47–68.
- Ceraudo, G., 2004b, Montecassino, in Ceraudo G. (ed.), *Ager Aquinas. Aerotopografia Archeologica lungo la valle dell'antico Liris*, Marina di Minturno (LT), 99–102.
- Conyers Nesbit, R., 2003, *Eyes of the RAF: a history of photo-reconnaissance*, Sutton Publishing, Stroud.
- Piccarreta, F. and Ceraudo, G., 2000, *Manuale di aerofotografia archeologica. Metodologia, tecniche e applicazioni*, Bari.
- Scardozi, G., 2004, Casinum, in Ceraudo, G. (ed.), *Ager Aquinas. Aerotopografia Archeologica lungo la valle dell'antico Liris*, Marina di Minturno (LT), 85–91.
- Shepherd, E. J., 2010, Cinquanta anni di Aerofototeca Nazionale (1958–2008), in Ceraudo, G. (ed.), *Archeologia Aerea. Studi di Aerotopografia Archeologica*, IV, Roma.