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His Majesty The King Captain General

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Cover Picture:

Captain Yolande Rowson (Right Section Commander) and Lieutenant Kerrie Johnson (Left Section Commander) march past HM the King on the Quadrangle for the German state visit in Windsor Castle on 3 December 2025.

Back Cover Picture:

29 Commando Regiment firing illuminating in Norway

The views expressed in this publication reflect the opinions of the authors and do not necessarily reflect official opinion in any way. Editorial matter and illustrations © Royal Artillery Institution 2020.

EDITORIAL

Welcome to this edition of the Journal of the Royal Artillery, now in its 168th year, and a very warm welcome to Claire Hills, the new Director of Media and Communications in the Headquarters. She has come from the USA where she worked for the BBC, Sky News and was speechwriter to the British Ambassador.

The world remains turbulent, fragile and at war in many parts. Death and destruction are daily occurrences, especially in the Middle East; and yet on the other hand the Americans have sent a space capsule around the moon, the first time any humans have seen the far side. The Artemis II project has captured the mind and attention of the World, and is a tremendous achievement. In time, perhaps, they will find the means for humans to live on the moon so that they may escape from the strife and turmoil that many are currently experiencing today.

I was at Sandhurst (RMAS) in the 1970s and in my Intake (47) and the same Company (Blenheim) was a Persian Prince called Mansoor. I have purposely not given his surname. He was an educated and pleasant man. We learned sadly that a while after the course and his return to Persia he was killed. The Pahlavi Dynasty was overthrown by the Islamic Revolution on 11 February 1979 and thus began the Islamic Republic. This all came back to me with the continued problems in the Middle East and particularly with the Strait of Hormuz.

Cultures and religions are based on many factors, such as history, geography, climate and political leaders. Power often corrupts and there are a number of unpleasant dictators across the World. What they all respond to is strength. President Putin has been stalled in Ukraine by the fearsome resistance and ingenuity (cf. drones) of the Ukrainians. The IRGC (Iranian Revolutionary Guard Corps), though still in control, have had to react to a barrage of US targeted missiles. Everyone is praying for a lasting ceasefire in the Middle East, not least to alleviate the pain and suffering, especially to those who can not influence events outside their control.

Defence of one's country is the first priority of all governments. Successive governments have taken their eye off the ball and

our armed forces are in a parlous state; the smallest they have been since the Napoleonic Wars. Support, training, leadership and equipment have been given (eg. to Ukraine) to good effect but the infrastructure to support the frontline has not had the attention and funds to maintain it at an optimum level. We are an island nation and yet we are hard pressed to monitor Russian submarines in our waters with the potential threat to our undersea cables. Of course there are many calls on state funds, not least the NHS, but we would be hard pressed to repel a strong and determined invader currently.

On a much brighter note, our congratulations go to Lord Richards of Herstmonceux who has been promoted to Field Marshal at the behest of His Majesty King Charles III. It reflects his success as a warrior and leader. He is the 142nd Field Marshal in British military history and the 11th Gunner (the last one was Lord Vincent of Coleshill who was promoted in 1992). As an aside, I recall playing rugby with him for the Gunners against the Sappers in front of the RA Mess at Woolwich ... some time ago.

The State of the Union submission is a must read for those who want an update on the serving regiment. There are a couple of omissions which are purely down to the pressure of work. There are two Duncan Essays with the same title, and both are interesting but very different. One is what you would expect in its usual format; the other is related as a story and is imaginative and entertaining.

History repeats itself and we are reminded of that by two of our academic historians. There are lessons to be learned and relearned but the guns have invariably played a significant role in warfare. Artillery wins wars is a true statement.

There is essentially a togetherness in Western Europe and a shared concern about what could happen on its Eastern borders. There are also rivalries when the self interest of individual countries takes precedence. A piece on Prussia in the 19th Century reflects this and describes similarities between now and then.

We now look forward to the warmer months of Summer. Enjoy what has been crafted between these covers and please feel free to submit an article or comment if you feel so minded.

REGIMENTAL EVENTS 2026/27

12 April	Gunner Sunday	Royal Hospital Chelsea
17 April	TCs (Tp Comds) Dining In	Larkhill
15-17 May	RA Assembly	Blackpool
4 June	King's Ghurka Artillery Formation Parade	Larkhill
24 June	RA Board of Management	Larkhill
31 July	TCs Dining In	Larkhill
1 October	Alanbrooke Lunch	London
8 October	RA Awards Dinner (TBC)	Larkhill
13 October	RAA NEC Meeting	Larkhill
23 October	Alamein Dinner	Larkhill
5 November	Field of Remembrance	Westminster Abbey
8 November	RA Ceremony of Remembrance	Hyde Park Corner
8 November	Remembrance Minute Guns	London (KTRHA)
25 November	RA Board of Management	Larkhill
4 December	TCs Dining In	Larkhill
6 December	St Barbara's Day	Larkhill Garrison Church
16 April	TCs Dining In	Larkhill

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STATE OF THE UNION

Introduction by The Regimental Colonel

It's been another exciting year in the Royal Regiment; on operations, in modernisation, in structural change, and for our people. In a year where we have been honoured with two visits from The Captain General and welcomed a new Master Gunner St James's Park to the fold, there has been much to celebrate.

Operationally we remain highly committed. There is a constant demand to support our allies and to protect British interests overseas, with an ever-increasing realisation of the criticality of our capabilities. Recent global events have done nothing to decrease that demand. From formed units to task-organised groups, to individual augmentees, we remain heavily committed.

That same volatile global situation places the Gunners firmly at the front of the modernisation queue. In 5th Regiment, TAIPAN replaced the MAMBA radar in 2024, they have just fielded a new acoustic weapon locating system to replace ASP and will receive a complementary close find radar next year. The first modernised M270 A2 MLRS launchers arrived at Larkhill in January and will be fielded by 26 Regiment and 3 RHA later this year, supported by the 'best in class' M270 simulator. 47 Regiment will also transition from WATCHKEEPER to new platforms under Project CORVUS in the near future. In parallel, a novel One Way Effector capability has been delivered for deployment on Op CABRIT, with the Army's first One Way Effector Battery reaching initial operating capability in autumn 2026. Slightly further out, the replacement 155mm gun, the RCH 155, been materially advanced, with the very first platforms expected in the next couple of years.

There has also been progress in organisational terms. With the empowering of the Allied Rapid Reaction Corps Headquarters, the Joint Fires and Influence Branch will become 9 Deep Reconnaissance Strike Brigade (9 DRS). At the divisional level, 1 DRS has been renamed as 3 DRS – to support the 3rd Division – which has allowed the establishment of 1 DRS to support the 1st Division. Regimentally, we will be growing a third deep fires

regiment, primarily to support 9 DRS and the Corps. It will be great to see 39 Regiment back in the order of battle!

Our workforce situation has improved considerably over the year. Not only are we seeing greater numbers of RA soldiers, we were delighted to welcome the King's Gurkha Artillery to the Royal Regiment. The first tranche of these impressive soldiers will hit our frontline regiments in the next month and continue to grow over the next four years.

Away from work, our people have continued to enjoy success on the pitches, fields, running tracks, pools, courts and slopes of Army and international sport; a particular highlight being the team from 12 Regiment who were the first all JNCO team to complete the gruelling trans-Atlantic rowing race.

I have covered only the wavetops, please enjoy the detail that follows. In summary, there is much to be positive about; Ubique!

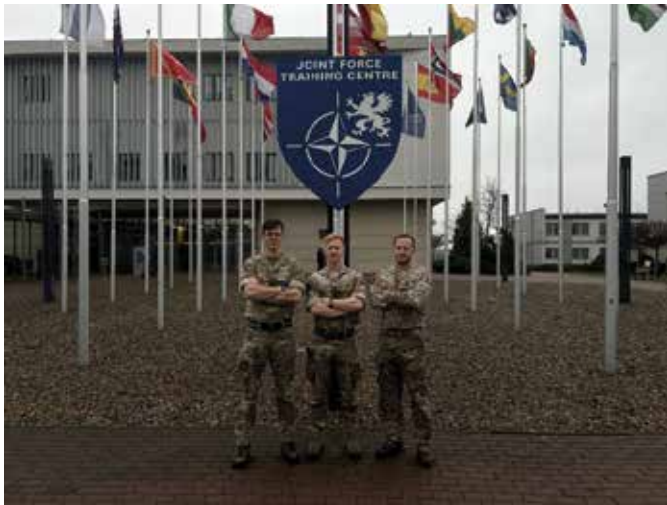


Headquarters 1st Deep Reconnaissance Strike Brigade

As the British Army's offer to NATO evolved throughout 2024, and 1st UK Division returned to the deployable ORBAT; the decision was taken to generate a new Deep Reconnaissance Strike Brigade, in York; exploiting the path carved out and lessons learned by 3rd Division's trailblazing DRS Brigade.

December 2025 marked the formal Structural IOC establishment of the 1st Deep Reconnaissance Strike (DRS) Brigade, with its initial staff transitioning from HQ 1 Division's MDO Group and branches, growing as compensatory reductions were found from elsewhere. Based at Imphal Barracks in York, the Brigade Headquarters has since doubled its personnel, with 3rd Regiment Royal Horse Artillery (3 RHA) having joined us as the first Regular unit in December 25. Soon to follow will be 105RA next month, with 103RA and 4RA in July 2026 before the QDG resubordinate from 3XX in Sept 26.

The first six months in the Brigade's FOE been exceptionally busy, with participation in multiple exercises across the UK, Germany, and Poland. Notably, during Exercise AVENGER



TRIAD, the 1st DRS HQ staff deployed to Grafenwoehr, Germany, where they collaborated closely with NATO allies, including the Portuguese Rapid Reaction Brigade; establishing a key relationship for the Division to build further in the future.

The next key milestone was achieved during Ex RHINO THUNDER, which saw the deployment of the DRS Forward Command Post and 1XX JAGIC for the first time working with 3RHA, 4RA, 5RA and 7 Para RHA LOCONS to provide C2 of the 1XX DAG. This exercise provided valuable insights, resulting in the refinement of Tactics, Techniques, and Procedures (TTPs) and Standard Operating Instructions (SOIs) to shape the Brigade and Division's future training pathway.



HQ 1 DRS Bde and POR RRB staff at the end of Ex AvTR25.

To conclude, as staff numbers continue to grow in the HQ, we have increased from 6 in Jul 24, to 14 now; and to 18 by August the functionality of the Brigade has been exponential. Successfully achieving validation in December will be the definitive confirmation that the British Army does indeed have two warfighting Divisions.

3 RHA. Albemarle Barracks is currently undergoing significant renovations to transform it into a facility befitting one of two



D Bty, 3RHA firing RRPR in Estonia.

(current) Deep Fires Regiments in the British Army. Despite the ongoing transformation, the barracks remains relatively quiet, with D Battery currently deployed on Operation CABRIT (17), having recently fired MLRS (M28-RRPR) in Estonia for the first time; and C Battery on pre tour leave, preparing to deploy in mid March for the handover to Operation CABRIT (18).

In their absence, HQ Battery and J (Sidi Rezegh) Battery are holding the fort, while also providing critical support to the DRS Command Post during Exercise RHINO THUNDER. Beyond these operational commitments, the regiment has also been active in wider activities, including leading the Regimental Ski Expedition, Exercise Northern Plummet, in France.

Headquarters 3rd Deep Reconnaissance Strike Brigade

The past year has been a defining period in the maturation of 3rd Deep Recce Strike Brigade (3 DRS Bde) as the 3rd Division's Recce Strike formation and a principal driver of transformation across the Field Army. The departure of 3rd Regiment Royal Horse Artillery closed an important chapter in the Brigade's development and allowed the Headquarters to consolidate fully around its core purpose: delivering integrated reconnaissance and deep effects at scale, underpinned by sensor to shooter connectivity and distributed C2.

Under the new Land Training System, all subordinate units completed CYCLONE exercises, reinforcing baseline readiness and enabling the Brigade to reset training on a common foundation. Elements of the Brigade deployed on Exercise TITAN STORM in Autumn 2025, marking the first Regimental level MLRS training in decades and demonstrating credible progress in fusing deep reconnaissance with long range fires in a combined arms setting. The scale and ambition of TITAN STORM underlined the Army's commitment to digitally connected, agile strike formations, with 3 DRS Bde continuing to lead that evolution.

Looking forward, Headquarters is preparing for deployment to the United States on Project Capstone Convergence 6, placing the Brigade at the centre of the Army's multinational effort to digitise joint fires. PCC6 represents the culmination of several years of development and will allow 3 DRS Bde to shape how the British Army commands, integrates and delivers deep fires within a fully networked, multidomain environment. The Brigade enters the next phase of its journey determined to push the limits of Recce Strike and to ensure the Army remains ready for the realities of modern, data driven warfare.

1 RHA. 1 RHA has balanced the maintenance of its heritage with its growing contribution to modernisation across both 3 DRS Bde and 20 Bde. The Chestnut Troop once again represented the Gunner community on national ceremonial duties at Gunner Memorial and prepares for further public commitments this summer. B Battery remained fully engaged in the Brigade's training programme, supporting Ex SCORPION CYCLONE and Ex TITAN STORM, refining fires integration with partnered units and trialling new live fire simulation through IIFDS.

The Regiment has actively supported development of the RCH 155 system, including engagement with key industry partners such as Sheffield Forgemasters, deepening understanding of the next generation of artillery capability. It has been integral to 20X modernisation through participation in Ex GAUNTLET PRIMUS and Ex GAUNTLET HORIZON, helping shape future structures and concepts for divisional fires. Preparations are also underway to integrate the first tranche of King's Gurkha Artillery soldiers into E Battery, supported by a well structured programme of language, cultural and professional integration with 14 Regt RA.

5 Regt RA. The period from 2024 to 2026 has marked one of the most significant chapters in the recent history of 5 RA, as it continued to evolve as the British Army's sole Surveillance and



K Bty deployed on Op ELGIN (K).

(Cyprus), K Battery to Op ELGIN (Kosovo) and detachments on Op CABRIT (Poland) demonstrating its capacity to support concurrent multinational commitments. The Regiment upheld its critical presence in Europe through 53 and P Batterys deployments on Op CABRIT in Poland, contributing to NATO deterrence while supporting persistent ISTAR and sensor integration tasks alongside allied forces.



TAIPAN deployed on Ex HEDGEHOG.

Target Acquisition (STA) regiment. The era has been defined by cultural transformation, high operational tempo, deepening integration across 3rd (UK) Division, and a sustained global footprint. The Regiment's foundations in FIND and STRIKE have been reinforced through new capabilities, ambitious training cycles, demanding overseas operations, and enduring commitments across Europe and the rest of the world.

During this period, the Regiment has brought new equipment into core with the TAIPAN Weapon Locating Radar fleet and is on the cusp of receiving the first new platforms for Acoustic Weapon Locating and Close Find Radar. This will see the Regiment significantly increasing its ability to identify and cue counter fires with precision. These new systems further cemented the Regiment's position as the Army's leading authority in the delivery of integrated sensor coverage in high threat environments. This has been coupled with a change in identify for the regiment, in keeping with our new role pushing into the divisional deep alongside the DRS Battlegroups, with a new regimental cypher, colour and shortly new belt to bring all members of the Regiment together.

Operationally, 5 RA has maintained a relentless pace. In 2024 - 2025, personnel were deployed simultaneously on Op TOSCA 41



53 AA Bty deploying LCMR.

Alongside operations, the Regiment conducted a demanding slate of exercises, of which key amongst these were Ex WARFIGHTER and Ex TITAN STORM, both of which tested the Regiment's ability to integrate across the UK's two warfighting divisions, 1st and 3rd. This reinforced the Regiment's readiness for future large scale combat operations.

As 2026 unfolds, the tempo shows no sign of slowing as 93 Battery deploys on Op ELGIN, continuing the Regimental tradition of operational excellence abroad, while K Battery will take over the contribution to the forward presence in Poland and 53 Battery begin the new commitment to Op CABRIT (Estonia) from October



53 Bty defending the LCMR while on exercise.

2026. Meanwhile, all Batteries are on rotation through the Army's expanding STORM series exercises, supporting warfighting outputs across both divisions and every brigade, ensuring that 5 RA remain at the forefront of UK land warfare development. The Regiment will also see a notable change as 4/73 Special OP Battery move to become part of Land SOF and support the RANGERS in addition to their traditional warfighting role of FIND in the Deep.

From peacekeeping to high intensity operations, from capability transformation to global engagement, the Regiment has continued to embody adaptability, professionalism, and relentless pursuit of operational excellence. As it looks ahead to major commitments such as Ex STEADFAST DEFENDER 27, the achievements of the past two years stand as testament to its people, its greatest strength, and their unwavering commitment to serving as the British Army's only Surveillance and Target Acquisition regiment.

19 Regt RA. 19 RA has remained committed to Op CABRIT 19, deploying ARCHER for a fourth rotation under 5 Battery, and now prepares to hand over the system to 4 RA as part of the next stage in modernising 155mm fires. The Regiment continues to deliver important firsts with ARCHER, including direct fire engagements and preparation for integration into the IRON STORM 26 Combined Live Fire Exercise—the first 155mm CLAFEX for several years and a significant step in regenerating combined arms live fire competence.

Beyond operations, 28/143 Battery delivered Exercise SCORPION ENDURE, bringing together over 560 competitors to Salisbury Plain, conducting a long endurance march and reinforcing the Brigade's commitment to resilience and readiness.

26 Regt RA. As the Brigade's sole Depth Fires Regiment, 26 RA has sustained a demanding tempo of training and operational output. Following its return from Op CABRIT 16, 176 Battery reset and regenerated rapidly to prepare for Op CABRIT 19, completing Ex SCORPION CYCLONE to confirm sub unit proficiency. 159 Battery continued to lead on modernisation, training on Ajax alongside HCR and deploying on TITAN STORM as an Ajax Tac Group, deepening reconnaissance fires integration.

132 Battery completed TITAN STORM as the Regiment's MLRS A2 lead and now pivots to the A2 re-role ahead of Ex LIGHTNING STRIKE in Finland, delivering NATO aligned deep fires capability. Meanwhile, 55 Battery and the JAGIC continue preparation for PCC6, ensuring the Regiment is fully aligned with the Army's digitised joint fires ambition.

Army Reserve Units. The Brigade's Reserve units have continued to deliver meaningful and highly specialised outputs in support of both national and NATO commitments. 100 Regiment RA deployed key staff into the Multi National Field Artillery Brigade (MN FAB) during Exercise AVENGER TRIAD 25, integrating with the Allied Rapid Reaction Corps (ARRC) on a US Army Europe level exercise. This deployment reinforced the Regiment's reputation for providing highly capable Reservists able to contribute to a large scale, multinational fires headquarters. 101 Regiment RA has benefited significantly from the rollout of the new Tactical Crew Trainer (TCT), marking a step change in how Reservists train on MLRS. The system delivers realistic, repetition driven training previously unavailable to Reserve units, enhancing technical proficiency and enabling detachments to reach a far higher standard of readiness before integrating with Regular MLRS formations.

Uncrewed Aircraft Systems Group

The Uncrewed Aircraft Systems Group (UAS Gp) has consolidated the Army's uncrewed aviation under a single, modernised structure, reflecting lessons from Ukraine and the Middle East and capitalising on the Joint Aviation Command's Generate/Operate model to deliver a more coherent, survivable, and tactically aligned UAS enterprise. 32 Regt RA has rapidly matured its capabilities through near complete conversion to the long range, long endurance EAGLE (Stalker VXE30) system, validated on Op ELGIN (Kosovo) and across extensive multinational exercises, while strengthening interoperability via US based technical flying camps and sustaining global readiness across seven formations.

47 Regt RA has advanced deep reconnaissance-strike integration through successful live sensor-to-shooter demonstrations, forward deployed Ground Control Station trials, and continued Watchkeeper (WK) employment, and is now approaching a major uplift with the introduction of Tekever AR3 and the CORVUS Watchkeeper replacement both delivering more deployable, adaptable, and survivable capabilities. Looking forward, the UAS Gp enters a decisive period of transformation, balancing rapid capability introduction with the need to refine doctrine, optimise structure, and maintain readiness as uncrewed systems become central to deep, close, and rear operations.

32 Regt RA. Since the last journal update, 32 Regiment RA has made significant strides in its operational capabilities and global contributions. The most notable development has been the near-complete conversion to the cutting-edge EAGLE platform (STALKER VXE30). This system represents a substantial technological advancement, offering potential ranges of up to 160km and an impressive endurance of eight hours using the propane fuel cell. The Regiment has quickly adapted to this new capability, demonstrating its operational utility through a range of deployments and exercises.

The inaugural operational deployment of the EAGLE platform took place in Kosovo on Op ELGIN, marking a significant milestone for the Regiment, as well as Project TIQUILA. Additionally, the platform has been successfully integrated into UK based exercises,

providing critical support to 3DRS and 12X. These deployments have highlighted the platform’s versatility and the Regiment’s ability to deliver innovative capabilities in diverse operational contexts.

The Regiment has also conducted two technical flying camps at Fort Bliss, USA where all the Regiment’s sub units have sequentially rolled through to enhance their core trade skills. These camps focused on extended range flying, integration with US aviation assets, and the Regiment’s first time use of the propane fuel configuration for the EAGLE platform. The camps also included extended range flying operations with the AV Puma, further enhancing the Regiment’s expertise in operating multiple aerial systems. These activities have not only refined technical skills but also strengthened interoperability with allied forces.



EAGLE.

Beyond these technical advancements, 32 Regiment RA has been heavily engaged in supporting a wide range of exercises across seven formations: 3DRS, 12X, 20X, 7X, ASOB, 4X, and 16X. The Regiment’s personnel have deployed globally, including to



EAGLE Detachment.

Germany, Estonia, Sweden, Finland, and Kenya, in addition to a plethora of UK based exercises. These deployments underline the Regiment’s commitment to supporting both national and international operations.

The Regiment remains at high readiness to respond to a variety of tasks, including supporting the Airborne Task Force (ABTF), Forward Land Forces (FLF), and disaster relief operations in the Caribbean. This readiness posture highlights the Regiment’s flexibility and its ability to deliver critical capabilities across a broad spectrum of operations.

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Caribbean. This readiness posture highlights the Regiment’s flexibility and its ability to deliver critical capabilities across a broad spectrum of operations.

In summary, 32 Regiment RA continues to demonstrate its operational excellence and adaptability. The successful integration of the EAGLE platform, combined with extensive global deployments and support to multiple formations, underscores the Regiment’s pivotal role in delivering trailblazing capabilities to the British Army and its allies. The future looks bright as the Regiment continues to build on these achievements.

47 Regt RA. Over the last 12 to 18 months, 47 Regiment RA has further refined its role within 3DRS’s Recce Strike Complex. Conducting live exercises with 26 Regiment RA at Whitesands Missile Range has provided members of the Regiment with the opportunity to implement our conceptual development with 3 (UK) Division’s deep battle. Members of 10 (Assaye) Bty provided accurate target information out to GMLRS’s maximum range, successfully proving the sensor-to-shooter link during live firing for the first time in years.

Another concept proven during this period was the forward deployment of a Ground Control Station (GCS) away from the airstrip used by the air vehicle. During the summer of 2025, 57 (Bhurtpore) Bty conducted live flying from West Wales Airport (proving the facility as a potential permanent flying location) and deployed a GCS into Sennybridge Training Area. This was the first time this capability had been tested since Watchkeeper came into service. This approach provides greater survivability and



Sun going down on Watchkeeper final flight at the Flying School.

reach in a congested and contested battlespace by enabling the surge forward, concealment, and protection of a single GCS much more easily than an entire take off and landing site.

These two capstone activities were achieved alongside 74 (The Battle Axe Company) Bty’s alignment to UKSB, 31 (HQ) Bty’s commitment to Ex Warfighter 25.4, and the maintenance of the WK Flying School in Ft Bliss, Texas. Personnel from the RSA, Thales, and 47 Regt continue to rotate through Ft Bliss and train at a dedicated UAS airfield, where WK operates alongside US uncrewed platforms to conduct a range of flying activities.

Looking to the future, we will continue to provide support to the Field Army through Watchkeeper, but the Regiment is also on



WO1 Simpson under instruction with AR3 EVO.

the cusp of receiving the Tekever AR3 through Pj RAPSTONE. A modern, versatile, and highly deployable capability, AR3 will allow members of 43 Bty (Lloyd’s Company) to train, experiment, and, in time, further develop our doctrine in the use of UAS. Their first opportunity will be on Ex Spring Storm 26 in Estonia in support of 4 Bde.

This is not the only new equipment the Regiment is expecting.



Forward deployed Ground Control Station on Ex ATHENA CYCLONE.

Pj CORVUS will deliver the replacement for Watchkeeper within the next 12 months. This new capability will enhance our ability to support the Recce Strike Complex with a more survivable, capable, and, more importantly, adaptable system to face the ever changing complexities of the modern battlefield.

47 Regiment RA has delivered tangible progress in deep reconnaissance strike integration and survivability concepts. With AR3 and CORVUS arriving, the next 12 months will be one of the most dynamic periods of transformation in the Regiment’s history.

UAS Gp stands at a decisive juncture as uncrewed systems become central to the Army’s approach across deep, close, and rear operations and the 20:40:40 crewed-uncrewed force mix. Looking ahead, the rapid introduction of next generation systems, combined with ongoing experimentation and doctrinal refinement, will ensure the Group remains postured to meet the challenges of a fast evolving battlespace.

7 Air Defence Group

The past year has marked a decisive step forward for HQ 7 Air Defence Group (7 AD Gp), defined by unprecedented deployment, operational innovation, and the continued maturation of the Army’s Ground Based Air Defence (GBAD) capability. Most notably, the Headquarters deployed in its entirety on Exercise AVENGER TRIAD 25, the first occasion on which the Group has generated a full HQ to support the Allied Rapid Reaction Corps as their dedicated air defence component. This milestone; delivering integrated planning, control, and synchronisation of air defence effects within a NATO corps warfighting construct, has reaffirmed 7AD Gp’s central role in the Army’s contribution to Integrated Air and Missile Defence. Combined with the landmark success of FORMIDABLE SHIELD 25 (FOSH 25), during which Sky Sabre was live fired on UK soil for the first time, the Group enters 2026 with demonstrable momentum. The honour of hosting His Majesty The King, newly appointed as Captain General of the Royal Artillery, at Thorney Island further underscored both the significance of the Group’s mission and the professionalism of its soldiers.

12 Regt RA. The past year has been a high output period for 12 Regiment Royal Artillery, various deployments and exercises have shaped a densely packed timeline for the Regiment as they prepare themselves for further commitments. The Regiment has reinforced its support of the British Army as the only regular VSHORAD operators in Defence.



137Bty 12RA Op CABRIT.

The Regiment was a key player in the development of wider air and missile defence as it deployed on Ex AVENGER TRIAD which saw an HQ element develop the planning and implementation of British Air Defence. The Regiment was heavily involved with Ex WARFIGHTER as it maintained its role within 3rd Division delivering acute advice and lethal effect in a prudent simulation.

The year saw 58(Eyre’s) Bty return from Op CABRIT 16 handing over operational requirement to 137 (Jumbo’s) Bty who will remain as a part of the RTR Battle Group until March 26. 9 (PLASSEY) Bty deployed onto Op CROSSWAYS fulfilling the Regiment’s lasting commitment to the Kingdom of Saudi Arabia.

This year also saw a team from 12 Regiment participate in Force Atlantic 25, completing an exceptional row across

the Atlantic and raising money for charity. This achievement represented a remarkable demonstration of endurance, cohesion



12RA's Cambrian Patrol Team (Front Row (L to R) LCp Ringshall, Lt Gibb, Cpl Reeve, Gnr Leaning, Back Row (L to R) Gnr Korovavala, Pte Tomlinson, Gnr Mazzoni - Dalton).

and resilience, reflecting the highest standards of the Regiment's ethos and determination. In parallel, the Regiment reaffirmed its commitment to soldier development through its entry into Ex CAMBRIAN PATROL, where the team displayed strong fieldcraft and tactical proficiency in one of the British Army's most demanding assessments of soldiering, earning a Bronze Medal. Together, these accomplishments highlight the Regiment's broad



Soldiers of T Bty 12RA conduct PDT on Ex SHAH'S CYCLONE.

spectrum of excellence, from world class physical challenge to rigorous professional military skill.

After HM the King's visit to Thorney Island in February 2026, a high intensity period awaits the Regiment as they look to further Op CABRIT deployments, a successful closedown of Op CROSSWAYS and further CYCLONE exercises and missile firing camps. The Regiment looks forward to the next year and all the challenges it will provide to test and prove the soldiers and officers within the Regiment.

16 Regt RA. 16 Regiment Royal Artillery remains busy as it continues its ambitious change programme to build a contingent warfighting capability by 2027. Since the last update, 11 Bty has executed a superb recovery from Op STIFFTAIL at considerable pace and has subsequently used the equipment and workforce dividend to conduct valuable cross component C2 integration



Sabre Live Firing in the UK by 16 Regt RA On FOSH 25.

activity in other theatres. Using a six month Falklands deployment as its warfighting laboratory, 14 Bty has been at the forefront of modernisation as we seek to optimise Sky Sabre for the manoeuvre fight.

Closer to home, in May of last year 30 Bty conducted the first ever live firing of Sky Sabre in the UK on Exercise FOSH 25, a totemic event for our soldiers and a key milestone for this sunrise capability. At the time of writing, 32 Bty are about to deploy to the Falkland Islands and in October they will mark the 20th anniversary of 16RA's commitment to this key Defence task.

49 Bty have been almost continually deployed on UK resilience operations, most notably supporting the State Visit of President Trump, as well as providing advice to allies and early warning capabilities overseas. As Land's sole Air Picture Provision capability, they remain in high demand, both for Defence tasks and when in support of our cross Whitehall partners.

Meanwhile 20 Bty, as well as providing the critical enabling functions in support of the equipment Sub Units, has embarked on its own modernisation journey, having deployed the Regimental Command Post in support of the ARRC on Ex AVENGER TRIAD in the autumn of 2025, a step change in our approach to Army Organic Air Defence.

Despite the busy schedule, the Regiment has seen considerable success in military competition and in the sporting arena. The teams entered into Ex CAMBRIAN PATROL demonstrated the regiments enduring commitment to resilience, rewarded by them achieving a bronze medal. The continued sporting success has been underpinned with back-to-back promotions in football, the Army Premiership title in Rugby as part of the station team, qualification for the Army Championships in Nordic Skiing, and reinvigorated Tug of War and Boxing teams. Additionally, the Regiment has embarked on ambitious Adventurous Training (AT) Expeditions which have been led by our Senior NCO cohort and included alpine skiing in the Alps, scuba diving in Malta and sailing in the Caribbean.

106 Regt RA. The past year has seen 106 Regiment RA deliver consistently and without compromise in support of 7 AD Gp, reinforcing our role as the Army's Reserve GBAD Regiment. We have remained firmly aligned to our mission: preparing and generating trained Reservists capable of stepping forward as fire teams and Individual Augmentees on operations and ensuring the Regiment is ready to fight alongside our Regular counterparts whenever called upon.



106 Regt on Ex YEOMAN CYCLONE 2, Brecon Beacons.

Training has been characterised by tempo, realism, and progression. Across YEOMAN CYCLONE, INVICTA CYCLONE, CARA SHOOTER, and DIAMOND HADES, sub units have pushed through demanding serials focused on GBAD but reinforced by BCS (Battlecraft Syllabus), marksmanship, urban operations, and combined arms activity. Our recent exercises including YEOMAN CYCLONE 2 (ADE) and INVICTA CYCLONE 2 (OBUA (Ops in Built Up Areas)) have underscored the Regiment's ability to generate credible air defenders able to integrate seamlessly into the wider force. Concurrently, we have continued to feed augmentees to operations and have mobilised troops in the last 12 months for BFSAI (British Forces South Atlantic Islands), Op LAZURITE, Op SCORPIUS and Nepal for Gurkha recruiting.

Looking ahead, 106 RA steps into the 2026 training year with purpose. We will deliver special to arm exercises and ranges, while also conducting AT in Norway, sailing on Ex UBIQUE MEDITERRANEAN in the Mediterranean and battlefield studies to Poland and Norway. A defining milestone will be our participation in Ex MALLET STRIKE 26.2, an Arctic, allied led deployment that will see Regimental personnel conduct live GBAD engagements and train alongside Finnish forces; an exercise that speaks directly to the Regiment's operational relevance and NATO facing contribution.



Two soldiers from 106 Regt providing SHORAD protection on Ex INVICTA CYCLONE 3 in Lydd and Hythe.

Recruiting and retention remain central to our future strength. A steady inflow of applicants, an active training pipeline, and continued emphasis on the wider offer are helping retain our edge and reinforce the Regiment's strong esprit de corps.

106th (Yeomanry) Regiment Royal Artillery enters 2026 confident, capable, and committed. Ready to deliver for the Group, for Defence, and NATO.

Summary. As 7 AD Gp looks ahead, the trajectory is one of increasing relevance, growing outputs, and deepening integration across the Joint and NATO force. The achievements of AVENGER TRIAD 25 and FOSH 25 have set a new baseline for what the Group can deliver, demonstrating that British GBAD can operate, command, and deliver effect at scale within a multinational warfighting framework. The visit of His Majesty The King stands as a timely reminder of the trust placed in the Group and the importance of its mission at a time when air threat complexity continues to accelerate. With further deployments, operational experimentation, and capability development already underway, HQ 7AD Gp remains committed to leading the modernisation of the UK's air defence enterprise and ensuring that the Royal Artillery continues to safeguard the battlespace with precision, agility, and resolve.

The Royal School of Artillery

If 2024 was defined by the structural change delivered through Project MANORBIER, 2025 has been about refining that change and operationalising it under Programme ALANBROOKE. This 18



The Joint Fires Synthetic Trainer ~ RSA.

month programme is transforming Joint Effects training, doctrine and capability integration across six mutually reinforcing Lines of Effort, modernising how the Royal Artillery learns, trains and adapts. By aligning experimentation, education, equipment introduction, international engagement and cultural cohesion, ALANBROOKE is creating a more agile, threat responsive force. This is underpinned by PROTEUS, which governs the rapid conversion of validated learning into doctrine, and MANORBIER, which ensures workforce structures remain aligned to demand; together enabling a truly integrated Training into Doctrine model.

The programme's impact is already visible. The RSA has strengthened training delivery across all branches and is transforming training at the pace of relevance, driven by the Develop Wing and anchored in TRADOC principles. DLW has now directed the broader Field Army to adopt the same model, highlighting the RSA's leadership in land training modernisation.

The Kings Gurkha Artillery. For 34 (Seringatam) Battery it has been a historic year, with the establishment of and conversion of the Bty to KGA. The first tranche of KGA soldiers transferring from across the Brigade of Gurkhas arrived and received their new cap badges in June of 2025, signalling the start of their transformation into a fully trained Close Support Artillery Battery. This saw the newest members of the Royal Regiment take on trade courses all the way from Operator to DC (Det Comd) in under 12 months. Reinforcing these courses, Ex COMBINED WARRIOR (LWC's Flagship Exercise) in



KGA parade on SPTA.

Brecon and extensive coaching by existing members of the Bty has set the conditions for success within 34 Bty and the wider KGA. Now with members soon to depart to E Bty 1RHA their validation will be conducted on the upcoming March COMBINED WARRIOR. Beyond Gunnery, 34 Bty has celebrated numerous Nepali religious festivals, run an Arty Target Indication stand on CAMBRIAN PATROL 25 and entered a patrol that won a Gold Medal for their efforts. With the arrival of KGA Tranche 2 and Recruit Intake 25 about to take place, 34 Bty KGA will continue to grow and is preparing to take over a TEMPERER commitment in Jun 26.

Ex COMBINED WARRIOR. 14RA have taken advantage of the Infantry Battle School's exercise on SENTA (Sennybridge Training Area) to incorporate trade training in a safe and demanding, warfighting, exercise in a realistic Combined Arms environment. This trade training has included Urban Gun Raids, SENTA to Larkhill communications links and 34 Bty KGA and Troop Commanders continuation training. ITT (Individual Trade Training) also took advantage of Ex COMBINED WARRIOR by deploying 26 members of 24 Bty to complete Ex FUTURE WARRIOR. This saw a successful

section competition themed around the LWC's Countering the Threat – the top 12'.



Ex COMBINED WARRIOR ~ L118 Live firing.

Upskilling. The Military Skills and Professional Development (MSPD) programme delivered to ITT soldiers between courses continues to be developed. Building on past success the focus remains on upskilling soldiers to best prepare them for Regt duty, whilst also delivering elements of sport, heritage and wider Gunner belonging. A focus on DLW's Top Twelve allows a structured approach to be taken towards the development of relevant and meaningful military skills training. This is enhanced by Regt and cultural visits and the opportunity to lean into wider RA initiatives including sport and Adventurous Training.

The sense of belonging is reinforced by the reopening Cusack Club. This facility offers both welfare and teaching space, providing ITT soldiers a place for recreation and relaxation as well as access to retail and café facilities. All welfare agencies have offices on site meaning that the provision of welfare support is more easily delivered and the soldiers have easy access to support. A briefing and MSPD delivery area allows training delivery.

Initial Trade Training. 24 Bty and 1st Bty continue to work in tandem to deliver as the output of the Regt has more than doubled, releasing 650 trained soldiers to the Field Army. This increase has demanded significant change in the training space and 1st Bty have re-designed the ACS element of RA ITT from Driver Signaller to Complex Platform User Plus. This has allowed the course length to be reduced from four weeks to three without pushing forward any capability gaps onto the Fd Army. RA trainees now spend three weeks developing their technical excellence and the very small competency gaps will be delivered by RSA in Advanced Signaller. Time Spent in Training is being streamlined without any reduction in required skills.

The Develop Wing. Following the restructure of the RSA under Project MANORBIER, the Develop Wing remains the lead for ATHENA and METIS within Programme ALANBROOKE. The TRADOC Steering Groups will continue to be supported by Working groups focussed on Technical, Tactical and Staff requirements to modernise at the pace of relevance.

Professional Military Education (PME) and upskilling. The Gunnery Staff Officers Course and Gunnery Staff Course continue to mature under the modular delivery model, with student projects generating 1% WARDEV improvements to support

System of Systems Modernisation and the Any, Any, Any lethality ambition. The Operational Planning Module, now replacing RASOC, has been refined following its successful May 25 pilot and will run twice annually as a three week modular course for SSgt–Lt Col personnel across all cohorts, recommended prior to roles requiring operational planning or RA command.



The Develop Wing ~ The Operational Planning Module.

Exercise COMBINED WARRIOR RECCE-STRIKE develops Deep Battle training in line with DLW intent; following the Nov–Dec 25 pilot, three annual rotations will deliver coherence ahead of TRADEWIND, synchronising FST/FST Ack/Troop Commander exposure to Multi Domain Operations Operational Planning Team and the JAGIC while informing the Joint Effects Synthetic Trainer Environment proposal.

Doctrine. AFM (Handbook) Fires and RA Pamphlets have been updated, with published material available on the AKX BAeBB Offensive Support site. Handbook Fires has been released as a Study Draft and will be further refined through working groups and stakeholder engagement ahead of ratification at the TRADOC Steering Group in Dec 26. **Handbook Fires.** The Community of Interest has been identified, and a stakeholder matrix is in development; Study Draft released 28 Nov 25. Policy. Updated RA doctrine and lessons policies were issued across RSA, RA and LWC on 17 Nov 25. **ODOPs.** ODOPs remain regimentally owned, with RSA oversight to ensure coherence and timely course amendment. All amendments are to be coordinated with RSA to assess impacts on operational level procedures.

The Training Delivery Wing. TDW formed under Project MANORBIER, now central to preparing the Regiment for **How We Fight 26, integrated fires, and Multi Domain Operations.** TDW unifies all Subsequent Trade Training across six specialist branches: ACS, Joint Fires, Strike, UAS, GBAD, and Counter Fires & Targeting, ensuring training is modern, threat aligned, and interoperable.

Army Command Systems. ACS continues to lead on digitally networked fires and multinational interoperability, embedding ASCA across all STT courses and supporting FC BISA modernisation. Recent deployments, including SSgt Marriss' support to 29 Cdo RA in Norway, demonstrate clear operational effect.



The UAS Branch ~ EAGLE in Fort Bliss.

Joint Fires. JF has modernised its training to match contemporary conflict, integrating Small UAS, Dismounted Situational Awareness and Recce Strike effects across FO and FST courses. Work is progressing on a permanent live fire trench facility on Salisbury Plain to enable CALFEX and danger close training.

Strike. The Strike Branch underpins the Army's Recce Strike construct, enhanced by the new M270 A2 Tactical Capability Trainer and continued delivery of ARCHER training, including overseas support to RACATT (Combined Arms Tactical Trainer) in Estonia.



The GBAD Branch teaching LML.

Uncrewed Air Systems. The UAS Branch has achieved ATO status from the RAF Central Flying School, introduced aviation aligned procedures and grown a cadre of Category S2 instructors.

The Counter Fires & Targeting Branch, formed from the 2025 Targeting and STA merger, now delivers integrated sensor to shooter training, including the Joint Targeting Course (Land), the reintroduced Artillery Intelligence Course and expanded targeting programmes, supported by DIEE enabled classrooms and strengthened instructor development.

Ground Based Air Defence. GBAD has advanced CUAS training through a structured three module package aligned with Field

Army requirements, developed from pan Army SOP and TTP analysis.

Training Plans. Current effort focuses on flexible training pathways, strengthened instructor capability and alignment with the Army’s wider modernisation agenda, ensuring gunners remain agile, technically competent and able to integrate effects across Multi Domain Operations while retaining core artillery mastery. The Joint Effect Competency Framework (JECF) provides a Corps wide, standardised approach to developing fires and targeting professionals. It sets clear, progressive competencies aligned to modern operational requirements, improving coherence, assurance and professional mastery across the joint fires enterprise.

The Qualified Gunnery Instructor Alliance remains central to maintaining instructional quality and doctrinal consistency. By connecting instructors across Regular and Reserve units, it reinforces shared standards, supports professional development and mitigates the impact of personnel turnover, ensuring gunnery expertise is retained and effectively transferred across training establishments.

The Operate Pillar. Following Project MANORBIER and Programme ALANBROOKE the RSA Operate Pillar was brought about to enable both the Current and Future operations of the RSA. It also includes the responsibility of the Joint Fires Synthetic Trainer which provides advanced training for deep recce strike operations. Together these elements bring greater coherence across to the RSA activity by ensuring the outputs are aligned with the Force Preparation Schedule, the Land Training System (LTS) and other key Fd Army training activities. Within the LTS, the Operate Pillar will identify opportunities to streamline skills development through shared training events, including those involving Reserve forces. It will also help build a deeper understanding of emerging threats and new capabilities, ensuring the RSA and, in turn, the wider Royal Artillery, remains agile, well integrated, and operationally credible.

7th Parachute Regiment Royal Horse Artillery

The past year has been another exceptionally busy and rewarding one for 7 Para RHA, marked by a demanding training



Sub Surface OP on Ex CYPHER STRIKE.

cycle, major capability developments, global deployments and notable sporting success. From the emergence of the Recce Strike Group and exercises across Europe, the Middle East and Asia,

the Regiment has consistently demonstrated professionalism, initiative and the highest standards of Airborne soldiering.

The year’s defining activity was Exercise CYPHER STRIKE 25, which formally introduced the 16 Air Assault Brigade Combat Team Recce Strike Group (RSG). Conducted throughout July, the exercise represented a significant evolution in the integration of sensors, deciders and effectors. Training began at Merville Barracks, where personnel used the Joint Fires Synthetic Trainer and the ICAVS (Interim Combined Arms Virtual Simulation) system to rehearse Regimental level deployments, fire missions and fire plans. The deployment then shifted to Sennybridge Training Area, where the Regiment and RSG blending 16X ISTAR capabilities with those of 7 Para RHA conducted its first live fire field phase.

FSTs inserted tactically over 30km before establishing sub surface OPs supported by 21 Battery’s PUMA detachment, 226 Squadron’s Light EW Team and 53 Battery’s LCMR.



A1 Ech resupply via Chinook, Ex CYPHER STRIKE.

Gun Groups fortified positions with the support of 23 Para RE and established counter UAS nets to mitigate emerging FPV drone threats. CYPHER STRIKE also proved a valuable testbed for innovation. Gun towing vehicle replacements were trialled, THOR (Tactical High-power Operational Responder) sUAS conducted reconnaissance of gun positions, and FPV drones stress tested the Regiment’s C UAS measures delivering sobering but essential lessons for the modern operating environment.

F Battery deployed with 3 PARA to Jordan for Exercise PEGASUS HARBAH, marking the beginning of its CYCLONE period. The exercise progressed through live fire tactical phases culminating in an enduring OP exercise with the focus on survivability from a hunting OPFOR. Support from 21 Battery and 32 Regiment RA applied realistic ISTAR pressure, building the Tac Group’s confidence in concealment, UAS evasion and operating undetected in harsh environments.

September saw I Battery, elements of F Battery, NOWZAD Air Troop and the LAD deploy to Hohenfels for Exercise SABER JUNCTION, a major NATO warfighting event. The Air Troop integrated with the US 2nd Cavalry Regiment, while other elements served with OPFOR under 7th Army Training Command. New SOPs were developed to counter drones and counter battery threats without reducing lethality. FSTs routinely pushed up to 10km beyond the FLOT, delivering joint fires effects.

With Indo Pacific tensions rising, cooperation with Japan remained a priority. A G Battery FST supported 2 PARA during Exercise VIGILANT ISLES in Hokkaido. Activities included ISTAR skills exchanges, joint fires coordination, parachute training and a demanding field phase featuring night reconnaissance and decisive fires against enemy armour.

Later in the year, fifty members of the Regiment travelled to the Netherlands for the 81st anniversary of Operation MARKET GARDEN. The visit included a battlefield study, the observation of parachute insertions onto DZ Yankee and acts of remembrance at Oosterbeek Cemetery and Oude Kerk Church, where a plaque was unveiled commemorating all Gunners within 1st Airborne Division.

Air Troop sustained a high operational tempo with deployments across Europe and the United States. Highlights included Ex DESERT EAGLE in Arizona, delivering JTAC (Joint Terminal Attack

style, securing the Royal Artillery Cup with a commanding 4–1 victory.

At the time of writing, I Battery supported by personnel from across the Regiment, is deployed on Exercise HARAKA STORM with 1 RGR, taking advantage of the permissive and arduous training areas with substantial ammunition allocations. Looking ahead, the Regiment is preparing to welcome the first tranche of King’s Gurkha Artillery soldiers in April 27, ahead of the redesignation of I Parachute Battery (Bull’s Troop) The King’s Gurkha Artillery.

Looking forwards, 16AABCT has dubbed 2026 the ‘Year of Air Manoeuvre’. This will be initiated by a number of Airbus A400 conversion jump exercises to fully qualify members of the Regiment. Subsequently, on the Regimental exercise, Ex PEGASUS STRIKE, the entire Regimental Gunline will be sought to be lifted by Chinook helicopters. The culminating event will be a 700-chute para drop on Ex RHINO TITAN in Germany.

29 Commando Regiment Royal Artillery

UKCF’s (UK Commando Force) Specialist in Multi Domain Fires & Targeting

Hard Targets in Hard Places: Leading UK Defence in Digital Targeting and Fires Modernisation at Pace

The last year has seen 29 Commando Regiment RA (29 Cdo) firmly establish itself as the United Kingdom Commando Force (UKCF) specialists in Multi Domain Fires and Targeting (MDF&T). The Regiment has embraced modernisation, sharpened its warfighting edge and strengthened its role within the broader tapestry of UK strategic transformation. In an era where wars pick up quickly, 29 Cdo has focused relentlessly on making its people ready whatever comes their way.

Precision Fires and UKCF Recce-Strike. The Regiment has moved decisively into the precision age fight. One Way Effector (OWE) and the emerging Medium Range Precision Strike (MRPS)



Parachuting in Saint Malo, France.

Controllers) controls with USAF and USMC aircraft and Ex ADRIATIC STRIKE in Slovenia working alongside NATO SOF (Special Operations Forces) JTACs.

The Regiment have supported the new Brigade training programme, the Pre-Conditioning Programme (PCP), which has paid significant dividends seeing 28 All Arms Pre-Parachute Selection (P-Company) passes in the 25/26 training year, an increase of 35% from the previous year.



Firing coord illum in Norway.



I Bty Direct Fire serial on Ex HARAKA STORM.

capability now underpin 29 Cdo’s ability to generate effects at reach from a dispersed and disaggregated posture. These systems give dispersed and disaggregated Commando teams the means to conduct Recce-Strike of Anti-Access and Area Denial (A2AD) targets with low signature and high impact; an approach perfectly aligned with the Army’s direction to double lethality, become expert at warfighting and embrace accelerated modernisation.

This is the evolution from legacy 3 Commando Brigade Fire & Manoeuvre in the Close, to future facing UKCF RECCE-STRIKE in the Deep. Commando teams operating in a NATO SOF construct to conduct Theatre shaping deep effects, compressing the targeting chain, and providing the Joint Force with the agility required to defeat adversary capabilities systems in the High North and beyond.

The Regimental Football Team also delivered a standout year reaching the Army Cup Major Units Final, being the first RA unit in 25 years to attend and the first time in the Unit’s history. Having won a thrilling 5–3 semi final in Inverness they suffered a narrow extra time defeat in the final. However, the team rebounded in



148 Bty Sub Interception.



Air Loitering Munition equipment in Norway.

WHITE CANNON 2 - Leading UK Defence in Digital Targeting.

The Regiment's Defence leading role was unmistakably demonstrated during WHITE CANNON 2 (WC2). Far more than an Arctic exercise, CORE 26 became UKCF's and mission partner Cyber & Special Operations Command (CSOC) most advanced test of the UK Defence Digital Targeting Web as part of NATO.

29 Cdo (alongside 30 Cdo) led the planning, execution and technical integration of an end to end targeting web, linking UK Strategic Intelligence, Surveillance and Reconnaissance (ISR), NATO sensors and Commando teams; to the UK Maritime Operations Command (MOC, Northwood), Norwegian Combined Air Operations Command (CAOC, Bodo) and Special Operations Component Command (North West) (SOCC-NW, Stavanger); to Norwegian F35s, USMC HIMARs and 29 Cdo OWE in a resilient and hardened network.



Puma Team on Ex White Cannon.

WC2 proved that the UK has a functioning targeting web that can operate in the High North; from tactical collection in the Arctic tundra, through real time processing, to multi domain effect. It confirmed rapid, assured data movement; 'low-high' side cross-domain interoperability; and the ability to coordinate Joint Force effectors. It also fed directly into the prototype warfare spiral pathway towards STEADFAST DEFENDER 27.

This marked 29 Cdo leading as Defence's development of Digital Targeting; a Regiment not only able to conduct Recce Strike, but to help the Army and Navy work out how the UK will fight in the High North.

Uncrewed Aerial Systems Enabled Fires - Edge and Lethality. Alongside ALM (Aerial Loitering Munition) integration, the Regiment deepened its use of Uncrewed Aerial Systems (UAS). During CORE 26's MRX, UAS detachments were attached to Fires Support Teams (FSTs) and NATO SOF MDF&T cells. This collocation allowed operators to tighten the Recce Strike loop, dramatically delivering persistent ISR, high fidelity target development and rapid re attack options in -30 degrees centigrade (-30 C) temperatures that challenged every system and soldier.

This ability to fuse UAS, OWE, FSTs and MDF&T Cells in extreme environments gives UKCF an operational edge that few NATO nations can replicate. It is modern lethality in practice: dispersed, disaggregated and digitally enabled Commando teams, able to offset adversary mass by leveraging Joint Force effect.

WHITE CANNON 26 - Warfighting in the High North. Before CORE 26's digital demonstration came the Regiment's first Unit scale Arctic deployment in over 20 years: WHITE CANNON 26. It placed every piece of the targeting chain under genuine Extreme Cold Weather friction, including -30 C sub temperatures, denied and degraded communications, and the realities of operating 200 kms inside the Arctic Circle.

FSTs conducted long range ski insertions and built hardened OPs; the MDF&T Cell established a mountain top command and



Ex FROSTED DAGGER Mountain Training at the Marine Corps Mountain Warfare Training Centre, Pickel Meadows, North California.

control (C2) node; and the Area Fires group manoeuvred Light Guns through narrow, icy passes at night to deliver responsive Fires. A highlight was the ASCA enabled multinational coordinated illumination mission integrating 29 Cdo Light Guns, 45 Cdo Mortars and Norwegian K9 howitzers; an early demonstration of the balanced, layered and integrated Fires capability in UKCF that will sit alongside OWE and MRPS in future NATO SOF Theatre Shaping.

This deployment also revealed the Regiment's resilience: Ammo Troop and the REME Fitter Section kept ageing BV206 fleets moving despite 46 major faults, frozen fuel and a tree felled vehicle recovery that demanded ingenuity and persistence. It was a reminder that lethality relies not just on effectors but on the sustainment teams who keep the Regiment fighting in the harshest conditions.

Mountainous & Extreme Cold Weather Warfare - High North Readiness and Specialist Skills. Underlying all of this is deep environmental mastery. Large numbers of Cdo Gunners completed the Cold Weather Operators Course and Cold Weather Warfare Course, mastering avalanche awareness, survival skills, snow shelter construction, ski mobility, pulk operations and high altitude manoeuvre. These qualifications are not optional; they form the foundation for employing Area Fires, OWE, UAS and targeting systems forward, dispersed and with low signature.

FROSTED DAGGER added the mountainous element, pushing soldiers to 11,000ft in the USA (Sierra Nevada) and confirming that the Regiment holds the readiness required to operate in the full Mountainous & Extreme Cold Weather Warfare (ECW) spectrum. This environmental competence is a decisive advantage for the UKCF and NATO in the High North and central to 29 Cdo's role as the Royal Artillery's Arctic ready force.

Looking Ahead - Fires Modernisation at Pace. The year ahead will see 29 Commando deepen its leadership in digital targeting and Fires modernisation through:

Full network integration of OWE within Commando teams.

Preparing the Regiment to employ OWE from amphibious and dispersed postures.

Continued development of the UKCF Targeting Web.

Sustaining High North readiness and ECW specialist skills.

Strengthening interoperability with Royal Artillery, Army, Norwegian and USMC partners.

Above all, the Regiment will continue to focus on its people; ensuring that every soldier is ready for whatever comes next. Because when our nation needs us to fight, it will not ask whether we are comfortable or fully prepared; it will ask whether we are ready, lethal and able to win.

29 Commando will be all three.

The King's Troop Royal Horse Artillery

Over the past year, The King's Troop Royal Horse Artillery has maintained its usual high tempo of activity, combining an extensive ceremonial calendar with significant training developments including an accelerated equine training pipeline, and continued progress in modernising its internal structure.

The year began with a series of major occasions of state, including His Majesty The King's Birthday Parade in June, closely followed by support to the State Visit of President Emmanuel Macron at Windsor Castle on 7 July. The Troop's presence contributed to the dignity and pageantry of the event, reinforcing the role of ceremonial forces in underpinning diplomatic relationships. During this busy period, soldiers of The Troop also



The King's Birthday Parade 2025.

undertook three weeks of duties of The King's Life Guard at Horse Guards.

Later in July, the Troop delivered the Queen's Birthday Salute in Green Park, firing a 41 Gun Salute to mark the occasion and bringing the summer ceremonial season to a close. In late August,



Soldiers form up for a guard change on Horse Guards Parade whilst taking over King's Life Guard duties from the Household Cavalry Mounted Regiment, June 2026.

six personnel deployed to Alberta, Canada, for Ex COCKNEY MAPLE. Working alongside the Household Cavalry Mounted Regiment and hosted by Lord Strathcona's Horse, the team supported defence engagement activity at the Spruce Meadows Masters Tournament



Guns are fired for the Royal Gun Salute in Green Park on 14 November 2025 commemorating the King's Birthday.

and hosted Her Royal Highness the Duchess of Edinburgh during her visit to the Masters' show. The exercise strengthened ties with Canada's own mounted ceremonial unit and provided a valuable opportunity for shared learning between organisations operating in similar ceremonial environments.

On 8 September, the Troop fired a 41 Gun Salute in Hyde Park to mark the anniversary of His Majesty the King's Accession. This was followed by the State Visit of the President of the United States. The Troop formed part of the mounted procession at Windsor Castle and delivered a further 41 Gun Salute in the



The Troop leading the mounted procession as part of the State Visit of the President and First Lady of Germany in the quadrangle of Windsor Castle, December 2025.

Home Park. The final State Visit of 2025 took place in December, with the Troop out in full force as part of the welcome for the President and First Lady of Germany. These occasions highlight the Troop's enduring role in supporting the most prestigious State ceremonies in the United Kingdom.

Alongside the demanding operational programme, the Troop's most spectacular and demanding performance, The Musical Drive, was on display at the Royal Windsor Horse Show. This May, The Troop will return to The Royal Windsor Horse Show to perform its spectacular Musical Drive. This will also be performed in July at The Royal Welsh Show to which the Troop is returning after an absence of 4 years.

Internally, the Troop has been undertaking a programme of modernisation, reviewing its workforce model and incorporating personnel from across the Royal Regiment of Artillery to augment its capabilities. With support from RA RHQ, the introduction of a General Duties role within the Troop's ORBAT has improved support to the Saluting Battery and strengthened resilience during peak ceremonial periods. Feedback from personnel has been positive, with many recognising the value of new perspectives and the enhanced integration with wider Royal Artillery structures. Crucially, the additional workforce has allowed the Troop to focus on the equestrian training and development of its soldiers, ensuring they are provided with the appropriate training to meet the challenge of riding on ceremonial parades.

A key milestone was the launch of a new Basic Equine Course at the Defence Animal Training Unit in Melton Mowbray. Delivered jointly with the Household Cavalry Mounted Regiment, the course aims to standardise foundational equine training across mounted ceremonial units, ensuring consistency in horsemanship, animal welfare, and the development of new soldiers. In conjunction with this, an accelerated equine development programme, has allowed new military working horses to progress into Gun Team and provide output on ceremonial operations. The true impact of the programme will become more apparent towards Q4 of 2026.

Increased workforce has meant more opportunities for personnel to get involved with the many sporting opportunities and adventurous training the Army offers. A variety of personnel from the Troop have competed in sports at both Gunner, Army and Inter-Service level. This includes women’s rugby, cricket, bobsleigh, nordic skiing, target rifle shooting, polo, dressage and showjumping. Of note, LBdr Sienna Wilkinson was crowned Women’s Army Champion at the Army Bobsleigh Championships and The Troop fielded a team in the Army Inter-Unit Nordic Skiing and Biathlon Championships, sweeping up several medals along the way.

Across all areas of its output, the King’s Troop Royal Horse Artillery has demonstrated professionalism, adaptability, and an enduring commitment to excellence. The past year has not only highlighted the Troop’s central role in national ceremonial life but has also reflected its determination to evolve, modernise, and maintain the high standards expected of the Unit/Royal Regiment of Artillery.

The Honourable Artillery Company

The Honourable Artillery Company has been exceptionally busy over the past year, with every sub unit of the Regiment delivering significant operational, ceremonial, training and engagement outputs.



Intrepid 2 & 3 Sqn members on the NATO Exercise INTREPID KNIGHT.

The unit remains focused on operational output with more than thirty soldiers mobilising for deployments globally,

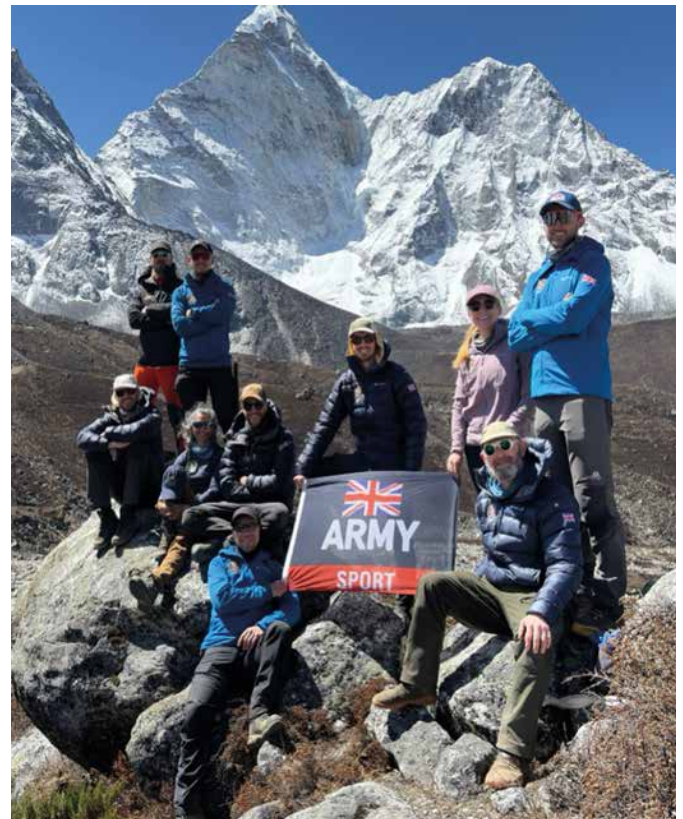


Headquarter Squadron led the Gun Salute at the Tower for H M The Queen’s 78th Birthday on 17 July.

including to Australia, Kosovo, Iraq and the UK, while additional personnel augmented Regular units on continuous tasking. 1 (Special OP) Squadron contributed four soldiers to Op ELGIN 15 in Kosovo, conducting heli reces, mapping tasks and partner-force integration. 2 Sqn supported Op INTERFLEX and further IO deployments, while 3 Sqn continued to supply trained Human Terrain analysts to operations in Kosovo, the UK and the USA. These deployments delivered substantial specialist output in intelligence, PSYOPS, reconnaissance and irregular warfare.

Ceremonial duties remained one of the HAC’s most visible contributions to Defence and the Crown. The Regiment mounted multiple State Gun Salutes, led the Lord Mayor’s Show, provided Guards of Honour at Guildhall, and supported Remembrance events across London.

It has been a busy training year with the delivery of numerous courses including Team Medic, DTT (Defence Train the Trainer), Saluting Gun, ALDP (Army Leadership Development Programme both LCpl and Cpl). They have also built new capabilities such as the first in house Advanced Signaller Course, PSYOPS course and OSINT (open source intelligence) course. These capabilities were then integrated into major exercises such as VAMBRACE INTEGRATE, VAMBRACE WARRIOR and the NATO led INTREPID KNIGHT. The year also saw the most successful SRPC (Special Recce Patrol Course) (R) recorded with 50 starting and 6 soldiers successfully completing the course.



Regimental adventurous training produced outputs of exceptional ambition. The HAC Everest Expedition saw nine soldiers deployed to Nepal, with one reaching the summit and all members climbing above 8,000m. Additional adventurous training included a Regimental ski foundation expedition, skydiving in California through Ex COCKNEY VAMBRACE SKYFALL, and multiple AT packages across Sqns.

Collectively, these outputs reflect that the HAC continues to excel across operations, state ceremonial, training excellence and public engagement, while cultivating specialist capabilities

aligned with the future force as they move into the LSOF (Land Special Ops Force) space. The breadth and professionalism of these contributions demonstrate a Reserve Regiment operating at a consistently high tempo with impact felt across Defence.

Workforce

Situation. The RA are established for 5,899 soldiers and officers, recent increased in inflow have seen the workforce strength rise to 90% of this establishment. To account for outflow the Royal Artillery require an inflow of ~400 SP each year; inflow has been healthy and 24 (Irish) Battery delivered 464 trained RA soldiers to our units this year. The majority of gapping is being experienced at OR3 and OR4 but an increase in promotion quotas and clarification of promotion policies have begun to address this shortfall.

The establishment of the King's Gurkha Artillery (KGA) has been a resounding success, the first tranche of 104 KGA soldier were trained at 14 RA this year, with a further 100 being trained over 2026; by 2030 the KGA are forecast to reach their established strength of 500 SP. When the inflow from the KGA is taken into account the RA workforce strength increased to 92% of our establishment, and further KGA recruitment will continue to increase the overall RA workforce strength. The RA has boosted recruitment on all fronts, by increasing the size and output of the RA Corps Engagement Team, recruiting a new RA Communications Director and establishing a new role of SO2 Soldier Recruiting at RHQ RA. Royal Artillery officer recruiting remains strong, with the number of high quality applicants at RMAS continuing to exceed the availability of spaces.

Regular Army. Re-shaping of the Army over the last 2 years has led to a modest increase to the RA's workforce requirement (WR) from 5835 to 5899. This growth has seen the establishment of a the 1st Deep Recce Strike Brigade (1 DRS Bde) to support 1 (UK) Division and the re-naming of the former 1 DRS Brigade Combat Team (BCT) which supported 3 (UK) Division, to the 3rd Deep Recce Strike Brigade. The RA WR consists of 979 x officers (DE (Direct Entry) and LE (Late Entry)) and 4920 x soldiers. A sizeable proportion of the increase was due to the allocation of a further 49 x E2 DE Officer opportunities. As at 1 Feb 26, Royal Artillery officer workforce strength was 98% of WR. Soldier workforce strength was 88% of WR, with the aforementioned gapping being most apparent in the ranks of LBdr and Bdr (each at 78% of WR), every other rank sits at over 90% of WR, with Sgt at 99% and WO1/WO2 at over 100%. Outflow in the RA is below the Army average (9.2% v 7.5%), and encouragingly volunteer outflow in the RA sits at 3.5%, significantly lower than the Army average of 5.4%.

The outcome of the Defence Investment Plan (DIP) is likely to change the structure of the RA further, but due to the operational imperative to increase long range fires and recce-strike C2 points of presence across the divisional and corps battlespace the Army have already announced the establishment of the new 9th Deep Recce Strike Brigade (established at ARRC to support corps level operations) and a new Deep Fires regiment (which will see the re-animation of the title 39th Regiment Royal Artillery).

Army Reserve. The Royal Artillery Army Reserve (Group A) workforce requirement (WR) remains unchanged at 2133, with 328 officers and 1805 soldiers. Inflow to our Army Reserve regiments remains a challenge in recruiting as well as in the time spent through basic and initial trade training. Nevertheless, numbers are growing thanks to determined efforts by Reserve

Regiments. Overall, Army Reserve strength was 76% of WR at 1 Feb 26. Officer strength was 113% and soldier strength was 69%. These figures include officers and soldiers without active roles who sit in the Army Reserve Reinforcement Groups (ARRG) because there are no posts for them or they have enduring civilian commitments that prevent them training. Changes to the way the Army Reserve holds its unposted ARRG personnel, and how they are accounted for, are underway because they currently count against overall caps in each rank which can prevent other personnel joining in those ranks. This particularly affects ex-Regulars wishing to join Reserve units in their former rank. At E1 Regimental Duty, RA units report strengths ranging from 46% to 65% while the HAC sits at just over 100%.

Royal Artillery Secretariat

General. The Royal Artillery Secretariat headed by the new Chief Executive Officer / Regimental Secretary, Colonel Paul Bates, continues to support the Royal Regiment and the 'Gunner Family' of serving Regulars and Reserves, veterans and their dependants, across a wide range of activities and causes.

Under the direction of the Royal Artillery Board of Management, chaired by the Controller, Major General David Cullen, the three main regimental charities have contributed £1.609M in direct support of Regimental Headquarters Royal Artillery's (RHQ RA) mandated outputs of delivering welfare, supporting ethos, commemoration, heritage, comradeship and a sense of belonging across the regimental family in 2025 (**for further detail you are encouraged to read the RA Charities Impact Report for 2024/2025 which can be found under the 'Publications' area of the RA Website: www.thegunners.org.uk/publications/**).

The figures below show, in broad terms, how much the RA Charities spent supporting RHQ RA's sponsored activities in 2025:

- RA Heritage - £311K
- Commemoration - £7K
- Pride, ethos, belonging - £300K
- Sport - £218K
- Welfare - £743.4K
 - o Individual grants - £573K (including £92K to individual serving personnel)
 - o Regimental grants - £93.4K
 - o Unit Betterment Grants - £77K
- Recruiting activities - £30K

Royal Artillery Charities. The following provides a summary for each of the three regimental charities run by the Secretariat. Each charity has the promotion of efficiency within the Royal Artillery as their key objective, but they achieve this in different ways:

Royal Artillery Institution (RAI). The RAI was established in 1838. Its charitable object is the promotion of the efficiency of the Royal Regiment of Artillery. The charity meets that requirement by making grants to regiments, individuals and other regimental organizations in support of regimental affairs. The following are included: regimental property; regimental ceremonies, events and entertainment; education; betterment (improving the lives of soldiers); historical and heritage affairs; regimental honours and awards; support to units and individuals; regimental sports and adventurous training; publications; policy for regimental matters such as dress, messes, heritage and ceremonial, all of which are supported by grants from this charity.

In 2025 the RAI made the following major grants in support of events and activities:

- Heritage (RA Museum & Archive) - £159K
- Regimental sports - £189.5K
- Grants to Regiments – £77K
- Recruiting - £30K
- Regimental events – £50.6K

Royal Artillery Charitable Fund (RACF). The RACF was established in 1839 and its objects are to: Promote the efficiency and welfare of all ranks of the Royal Artillery; Provide relief and assistance of any past, present or future members of the Royal Artillery and their dependants, and families and dependants of any deceased members, who are in need of relief and assistance by reason of poverty, disability, sickness, infirmity or otherwise.

In 2025 the charity spent some £573K assisting individual welfare cases, of which £98K was in support of serving members of the Regiment. More widely, the charity disburses Welfare Grants to Regular and Reserve regiments to help deal with individual cases and support unit welfare initiatives. It also makes grants in support of comradeship, Gunner sports and to improve the lives of soldiers.

In 2025 the following were allocated:

- Individual grants (Serving, retired and families) - £707K
- Regimental welfare grants - £98K
- Regimental sports - £86.4K
- Army Benevolent Fund - £79.5K
- Comradeship grants to sub-unit/units/formations - £40K

Anyone who has served as a Gunner, if only for a day is, together with their family and dependants, eligible for lifelong support from the RACF, as are other entitled persons.

Royal Artillery Association (RAA). The RAA was founded in 1920 to support those who had served in the Regiment during the First World War. The objects of the RAA are: to promote efficiency of the Royal Artillery by maintaining contact between past and present members of the Royal Artillery, fostering mutual friendship between them and providing for social gatherings for them and; fostering esprit de corps, comradeship, and the welfare of the Royal Artillery and preserving its traditions; to relieve, either generally or individually, members of the RAA or past and present members of the Royal Artillery, and their dependants, who are in conditions of need, hardship or distress.

All serving and veteran Gunners are automatically life members of the Association. The RAA supports Gunner batteries (all of which are considered to be branches of the RAA) by making grants in support of comradeship events. £40K was allocated for this purpose in 2025.

The RAA continues to grow and develop to ensure it is attractive and relevant to the serving regiment and recently retired veterans or to those who do not have access to or choose not to belong to a geographical branch. Recent developments

include National Branches taking the form of Interest Groups, Networks and Old Comrade Associations (OCAs) & Past and Present Members Associations (PPMA):

- **OCAs** including; 50Msl, 2FD, 22 Regt, 25 Regt .
- **PPMAs** including; 3RHA, 12Trust, 5 Bty, 13 Bty, 5RA Pilgrimage.
- **Interest Groups** including; Carp Fishers, Riders Branch, Slainte Golf, War Gamers
- **Networks** now include; RHAA, Arty Clks, Old Boys and JLRRA, Afghan Veterans.
 - o Within the Network area, significant development is currently being undertaken to create two significant support groups – Female Gunner Network and the Commonwealth Gunner Network – these will be established fully in 2026.

This is not the full list of national model branches, but it does indicate the direction of travel of how the National Branches are growing the reach of the RAA and providing better foundations for serving and veteran communities to come together in comradeship and mutual support.

Service Days Giving Scheme (SPGS). Central to all three charities' income is the SPGS.

What is the SPGS?

- Introduced in 1964, this Army-wide system provides a means of making voluntary subscriptions to your regimental charities.
- Open to all serving members of the Regiment.
- About 93% of regular Gunners subscribe.
- The regiment receives around 30% of its income in this way (60% coming from investments and the balance from fundraising, donations and legacies).
- Projected income from the scheme for 2026 is about £626,000.

How is the money used?

- Funds are divided on a proportional basis between the RACF, RAI and RAA.
- Welfare – support provided irrelevant of whether you contribute to SPGS
- Everything else – whether you are in SPGS is a factor.
- Everyone who contributes gets more out than they put in: Sport, adventurous training, battery and regimental functions, Messes, social areas, betterment, unit identity, Sandown...before you even consider the amazing difference contributions make to the welfare effort

It is brilliant value for money and all serving Gunners are encouraged to join it to enhance, and benefit from, the Charities' work.

Programme ALANBROOKE

A Year Inside the RSA's Transformation Engine

How the Royal School of Artillery began turning thought into taught at the pace of relevance.

By WO1 Master Gunner Nigel Turner and Doctor Sean Fitzgerald



Warrant Officer Class 1 Nigel Turner is the Master Gunner of the Training Delivery Wing at the Royal School of Artillery, providing leadership and oversight across the Joint Fires, Counter Fires & Targeting, Strike, ACS, UAS, and GBAD branches. He previously served as the Battery Sergeant Major of 8 (Alma) Commando Battery, a Very High Readiness unit within the Littoral Strike Group South, deploying on Op POLAR BEAR in Cyprus/Sudan and Op CHAMBRAY in Cyprus, and taking part in major exercises including Exercise PREDATORS RUN in Australia. His operational experience includes deployments to Afghanistan on Op HERRICK 5, 9, and 14.



Dr Sean Fitzgerald joined the Royal School of Artillery in 2023 following a 25-year lecturing career in the UK University and College sectors, teaching communication across media practice, journalism, and creative writing. Within the RSA, he works in a Course Design support role for Training Plans. Holding a BA (Hons), MA, MSc and a research PhD in Science Communication, his doctorate draws on this arts and science background to explore science as speculative fiction through applied practice and critical research. He is a writer, academic and filmmaker, with fiction published in Holdfast Magazine, The Honest Ulsterman and Written Tales. His academic writing has featured in A Shadow Within, Writing in Practice and the Journal of Science & Popular Culture. He is also the co-creator of the short training film, Reader Says Returned, which has sold widely to an international audience. His latest publication is A Common Thread; a book of speculative fiction published through Troubador. Further information: <https://seanzfitzgerald.wixsite.com/seanzfitzgerald>.

Introduction

Programme ALANBROOKE was conceived during a period when the Royal Artillery and the wider Army faced a profound challenge; adversaries were adapting at a tempo that traditional doctrinal and training cycles could no longer match. The accelerating proliferation of low-cost UAS, multispectral sensors, long-range fires and precision munitions created an environment in which lessons from conflicts could become outdated within months, or even weeks. The Programme's initiating directive made this plain, noting the Army must be ready to amend doctrine "from Joint Force down to Battlegroup level, at pace."

Intent

Programme ALANBROOKE sets out seven key actions of intent¹ to operationalise this ambition. The fifth, "to facilitate and foster innovation and experimentation and the rapid adaptation of training", has proven to be a cornerstone of this approach. What makes this specific intent compelling is not so much the concept, but how it was expressed across the RSA during the Programme's first year. Innovation under ALANBROOKE became a distributed endeavour. It did not reside solely within a policy document or a single directorate; it lived in its doctrine writers, instructors, TRADOC² leads, Qualified Gunnery Instructors (QGI), reservists, students and capability integration teams; all of these fall under the governance umbrella provided by the RSA TRADOC Steering Group SO1 leads. All of these formed a distributed network of adaptation, each acting as contributors to a living, continuously evolving training system. The TRADOC cycle became the mechanism for managing this change, reducing doctrinal update cycles from years to months or even days.

Key figures such as SO1 Develop drove the doctrinal development pipeline, ensuring that lessons moving through the TRADOC cycle were scrutinised, endorsed and integrated into doctrine and publications. Chief Instructor Training Delivery Wing (TDW), through the Tactical Working Group, drove the integration of lessons into training programmes. This line of effort harnessed existing TDW training transformation initiatives operating to accelerate the Training Requirements Authority (TRA)'s Customer Executive Board (CEB) process. SO1 Trg Plans built the modularisation and competency frameworks that allowed training content to be amended rapidly but safely, creating the structural elasticity needed for fast paced change.

The programme depends on Lines of Effort (LoE) leads who were responsible for producing measurable evidence; Measurement of Effect (MoE), Measurement of Performance (MoP) and Key Performance Indicators (KPIs) to support innovation within their respective areas. Perhaps most importantly, instructors,

Gunnery Staff and the QGI Alliance became the daily stewards of change, integrating updated content into classrooms, simulators and ranges. Students themselves played an essential role; their feedback, drawn from courses such as the GSC(O) (Gunnery Staff Course (Officers)), FST Comd and DC/2IC courses, was fed rapidly back into TRADOC pipelines and often shaped the next iteration of training. This distributed ownership of adaptation was one of the most profound cultural shifts brought about by ALANBROOKE. It changed innovation from something handled by a small group of specialists into a shared responsibility for everyone in the Gunners.

To give this distributed system shape and pace, the RSA is currently pursuing six mutually supporting LoE³: DRAGON uses the Land Training System (LTS) as a field laboratory to test lessons and deepen threat understanding; ATHENA delivers a governance and learning architecture to translate lessons into training; METIS delivers staff education that builds divisional/brigade planning competence and 'how to think'; TALOS improves equipment integration and user-driven Training and Doctrine for Defence Lines of Development (DLOD); HERMES requires international alignment and doctrine outreach; and HESTIA focusses on culture, cohesion and the lived experience. See diagram on Page 26. Together these LoE provide the operating rails that let TRADOC outputs move safely and quickly from concept to competency at the required pace.

Modularisation, the Joint Effects Competency Framework and the QGI Alliance

Modularisation represents one of Programme ALANBROOKE's most visible achievements. By detaching training content from rigid course structures, the RSA created a system where modules could be updated individually without rewriting entire courses. The modularised GSC(O) expanded throughput by 400%, incorporated Reservists, and supported the rapid adjustment of modules in response to TRADOC direction. A significant enabler for this new adaptability has been the introduction of the Joint Effects Competency Framework (JECF), which provides the structure required for Joint Effects to evolve at the accelerating tempo demanded by contemporary operations. The JECF offers a coherent, risk managed progression model: Informed, Aware, Practitioner and Expert. This allows Joint Effects skills to be proliferated across the force without compromising safety or training standards. Its design directly supports ALANBROOKE's requirement for iterative adaptation; modularised training can now be updated and delivered in discrete, competency-aligned blocks, enabling TRADOC-directed amendments to transition into practice almost as soon as they are endorsed. In this way, changes to doctrine, targeting processes, equipment employment or

1. Operationalise the Royal School of Artillery to facilitate transformation at the pace of relevance.
 2. Exploit the Land Training System (LTS) to maximise tactical training and development of systems integration.
 3. Enact a governance structure to determine what lessons are prioritised for implementation.
 4. Develop a Competency Framework to enable the doubling (and then trebling) of lethality, by enabling the Army's 'any sensor, any shooter, through any C2 node' ambition.
 5. Facilitate and foster innovation and experimentation and the rapid adaptation of training.
 6. Translate agreed L2 into T-DLoD considerations for new capabilities in the Army Modernisation PoR.
 7. Enable joint doctrine development, and international training and prestige.

Source: Programme ALANBROOKE SharePoint slide presentation, Slide 6, 14/08/2024, Col D. Butt, RSAHQ.

2. TRADOC is a United States Military initiative of informing optimization of training and doctrine through a combination of lessons learned and military judgment.
 3. Programme ALANBROOKE LoE: Programme ALANBROOKE briefing on 14/08/2024 by the Commandant Col D. Butt in RSAHQ.



safety governance can be cascaded into Field Army learning far more rapidly than under previous systems. In addition, ATHENA identifies where the JECF can be applied to scale skills quickly and safely, while METIS pulls validated changes into GSC(O), GSC(S) and RA staff learning so that cognitive agility keeps pace with technical adaptation.

Central to the practical delivery of the JECF is the Qualified Gunnery Instructor Alliance (QGIA), which has begun to fundamentally reshape how expertise is distributed and employed across the Army. The QGIA recognises that deep Joint Fires and Joint Effects competency is not confined to the RSA. Wherever they are serving, Instructors in Gunnery are empowered to deliver upskilling, assess tactical Training Objectives under the Land Training System, and support 1st and 2nd Lines of Defence Assurance (LoDA) activities. This Alliance has created a scalable instructional network capable of operating at reach. This decentralisation reinforces ALANBROOKE’s cultural shift; innovation and adaptation are no longer the responsibility of a small group of specialists, but the shared obligation of a wider Joint Effects community. Already, the QGIA has supported modularised course delivery, accelerated capability modernisation (including Archer, MLRS A2, Serpens (Acoustic Weapon Locating) and RPAS systems), and ensured that training remains flexible while conforming to our Safe System of Work and ALARP principles.

Delivery and Assurance

As QGIs and IGs extend delivery and assurance into the Field Army, DRAKON exploits TRADEWIND,⁴ CYCLONE⁵ and STORM⁶ exercises to validate tactical outcomes in realistic environments, creating a feedback loop in which instructor observations, SIM lessons and threat updates are examined in the field before they are codified.

The relationship between the JECF and QGIA is increasingly visible across the wider adaptation system. As TRADOC Steering Groups identify lessons and required changes, whether doctrinal updates, capability insights, safety interventions or tactical shifts, the JECF provides a ready-made mechanism for translating those findings into structured learning pathways. Meanwhile, the QGIA supplies the skilled instructors and assessors needed to implement and assure those changes across multiple environments, and throughout the training continuum. This alignment allows the RSA to move beyond sporadic course amendments towards a genuinely iterative learning model in which TRADOC outputs drive immediate, measurable adaptation across the Joint Effects enterprise.

This iteration is governed and legitimised through PROTEUS, the Training-into-Doctrine governance LoE that sets direction, prioritises testing and synchronises TRADOC Steering Groups with

4. The output of TRADEWIND is individuals technically trained in a formal course setting, with Combined Arms Manoeuvre (CAM) based tactical training integrated, in role, into unit CYCLONE activity.

5. CYCLONE delivers individuals and sub-units Trained, Qualified, Current, Competent (TQCC) and collectively Validated for role for 12 months as ‘Safe and Ready to Operate’.

6. STORM events externally validate force elements (SUs, BGs, BCTs, Divs and Corps) in planning and executing 21st century Combined Arms Manoeuvre.

the wider Army calendar, sustained by MANORBIER⁷ workforce adaptation to keep SQEP and structures aligned to growing demand.

Risk Management

Risk management has also been transformed. Previously, attempts to expand Joint Effects training outside the RSA were constrained by concerns over SQEP (suitably qualified and experienced person) thresholds and Safe System of Work compliance. The JECF addresses this by providing commanders with a codified understanding of competence levels, expectations and supervision requirements. Its Safe Operating Environment framework, particularly at the Aware tier, specifies precisely where and how lightly trained personnel may operate within virtual, constructive or supervised live environments, thereby reducing ambiguity and increasing agility. The QGIA adds a robust assurance layer, integrating with 1LoDA and 2LoDA structures to ensure consistency and safety throughout distributed delivery. The result is a system that permits expansion without exposing the Army to unacceptable risk.

In parallel, TALOS ensures that TRADOC-driven changes concerning equipment, safety or CONEMP/CONUSE are reflected in RA safety policy and brought into service at speed and avoids unnecessary pauses by resolving issues early with user feedback, SMEs and industry.

Capability Integration

This JECF & QGIA model has also become a powerful catalyst for capability integration. Under TALOS, early user observations, safety issues and tactical implications from programmes such as Archer, Serpens, MLRS A2 and emerging RPAS systems can be captured, tested and validated by experienced Gunnery Staff wherever they serve. QGIA personnel have already been instrumental in preventing unnecessary capability pauses in areas such as Archer BONUS firing table anomalies and fuze safety concerns and in supporting rapid upskilling for emerging capabilities, such as training 120 RPAS operators in just nine months. In practice, the JECF defines the competence required to exploit new capability, and the QGIA provides the people who can teach, assess and assure it across the force.

So TALOS sits at the centre of the equipment–training solution, formalising liaison with programme teams and industry, and pulling lessons learned into the appropriate phase of CADMID, the MOD's Concept to Disposal acquisition cycle. TALOS ensures that user centred training design and safety are treated as core DLoDs rather than afterthoughts.

The LTS has enabled tactical Training Objectives to be validated routinely within Field Army units. The QGIA now conduct assessments during CYCLONE serials, range packages or distributed training events, moving the Army away from a model in which qualification was almost exclusively a School based outcome. Instead, the RSA retains responsibility for technical

training and governance, while the Field Army (through the QGIA) owns the tactical validation required for full qualification. This evolution increases throughput, enhances realism and reinforces ALANBROOKE's core message: doctrine and training are not static products delivered by a school, but living systems owned by an entire Joint Effects ecosystem. Within this field based rhythm, DRAGON protects the golden thread of threat and target recognition, aligns experimentation to Combined Arms opportunities and deliberately improves the Reserve training experience by exploiting these activities for efficient upskilling.

Impact

The cumulative impact of these reforms is a more resilient, more agile Joint Effects enterprise. TRADOC provides direction and legitimacy; the JECF provides structure, coherence and risk control; the QGIA provides reach, capacity and assurance; and the LTS provides realistic environments for experimentation and validation. Together, they create an ecosystem in which lessons identified become lessons trialled, taught, assured and validated, sometimes within a single adaptation cycle. This is ALANBROOKE's vision realised: a force able to evolve at the speed of relevance.

As this system matures, HERMES ensures coherence with strategic partners and NATO by marketing our modular learning and doctrinal outputs where appropriate, prioritising relationships with nations operating or procuring analogous capabilities; while HESTIA reinforces the culture and lived experience across Larkhill and the JE community, building the esprit de corps and mutual understanding that sustain transformation at pace.

Experimentation under ALANBROOKE is ubiquitous, utilising all live and synthetic environments. Exercises such as Ex COMBINED WARRIOR exposed 497 RSA soldiers and students to contemporary multi domain operations, resulting in eight redesigned courses. GNSS Denial training events provided early tactical exposure to electromagnetic attack conditions. Equipment-training union, orchestrated through TALOS, synchronises capability development with training evolutions. Rapid fixes to safety issues, accelerated integration of RPAS operators, and aligned updates to doctrine have demonstrated the Programme's ability to adapt without impacting operational capability.

Cultural Shift

The speed at which ALANBROOKE's system operates represents a significant cultural shift. The RSA no longer waits for the "next cycle": change occurs safely as soon as it becomes necessary. At its core, ALANBROOKE sets the theory aside to privilege the practical application of this framework in delivering Joint Effects skills.

In its first year, Programme ALANBROOKE demonstrated that innovation could be operationalised, distributed and structurally enabled. It created a habit of continuous, coherent and rapid adaptation. In an era defined by accelerating threat complexity, this habit may prove the most important capability of all.

7. Project MANORBIER is a resource neutral, workforce restructuring programme within the Royal School of Artillery.

Assessing The Importance of Airpower to Operation Overlord. Does Normandy Offer Enduring Lessons Regarding Air Land Integration?

By Major Adam Nickless Royal Artillery



Major Adam Nickless commissioned into the Royal Regiment of Artillery in 2013. His formative years at Regimental Duty were spent as a CPO, BRO and FST Commander in 14 Regiment RA and 1 RHA. A brief foray into the UAS discipline as a Bty Ops Officer was also conducted at 32 Regiment RA. In 2019 he deployed on Op SHADER (Iraq) as a Targeting Officer, as the US led coalition aimed to prevent any resurgence of Da'esh following its territorial defeat earlier that year. On returning to the UK, he was employed with the G3 Teams of HQs 3rd (UK) Division, 1 Armoured Infantry Brigade, and 1 (now 3) Deep Reconnaissance Strike Brigade. Highlights of which included planning and executing the Naval and Artillery Gun Salutes to mark the Coronation of HM The King.

After completing ICSC(L) in 2024, Major Nickless was posted to the Battlefield Coordination Detachment (Air) (BCD(A)) within 11 Group, RAF. The BCD(A) is responsible for ensuring that Air Land Integration is conducted at the component level on operations and exercises. In addition to his military duties he is currently working towards a Masters in Military and Security Studies with King's College London. While his thesis focuses on the British Army in the First World War, the article below is an adaption of one of his essays on Allied air support during Operation Overlord.

Whether it is the Corps JAGIC, or the Fire Support Team, Gunner officers and soldiers find themselves heavily involved in the implementation of Air Land Integration (ALI) at all levels. This poses the question of what is the best way of 'doing ALI' and how can we learn from history. With NATO's current drive to embrace Multi Domain Operations it is vital that those who will find themselves having to integrate effects from across domains understand how best to do so.¹ While ALI only covers two of the five domains, a study of the importance of air power in achieving Allied victory during Operation Overlord aims to highlight key lessons that can enable more effective ALI and allow Gunners of all ranks

to add value to Multi Domain Operations. While air power was an important factor it was not the panacea for all challenges faced by the Allied force in Northern France. It became truly effective when used in conjunction with ground forces. This will be illustrated by exploring four of the ALI lessons learnt during the Normandy Campaign. These lessons relate to the importance of using air power to set the conditions for success on the ground, air power as a force multiplier, the need for a clear command and control network with an empowered joint commander, and finally the requirement for mutual understanding and a workable relationship between Army and Air Force commanders.

1. NATO. *Multi-Domain Operations in NATO - Explained - NATO's ACT*. 2023

These lessons are initially categorised by using the modern definitions of ALI. They explain how it is a way to maximise combat power by “synchronising complementary capabilities from the air and land domains. It encompasses all the processes that plan, coordinate, control and deconflict the activity of the air and land components.”² It goes on to say how “air power takes advantage of the strength of land forces... whilst compensating for their limitations... Effective ALI requires an understanding of the land domain within which such operations are planned.”³ A historiographical study of Operation Overlord, in conjunction with these lessons, will be used to assess the importance of air power to the eventual success of the overall campaign. While Overlord ranged from D-Day on 6th June 1944 up to the liberation of Paris and the German retreat over the Seine on 30th August 1944, it should be noted that historic examples will be taken from as early as February 1944. This is because military actions such as Big Week and Air Chief Marshall Tedder’s Transportation Plan had a profound effect on Allied fortunes in Normandy despite taking place up to four months before the Normandy landings.

Historians are in general agreement that air power played an important part in delivering Allied success during Overlord. The extent of this importance forms the crux of the argument though. On preparing the battlefields of Northern France, the view is unanimous. John Terraine declares that “ultimate victory was possible with crushing air power.”⁴ Richard Hallion states that by D-Day “the Allies had won the critical battle for air supremacy, not over the beachhead, but in several years of air war.”⁵ Ryan Finnerty echoes this view by stating that the “the Allies’ ability to establish a beachhead in France..... was the culmination of a months long air campaign.”⁶ This sees the first ALI lesson from Normandy drawn to the surface, the use of air power to set the conditions for success on the ground. Allied commanders knew that if an invasion of Europe was to be successful, it must negate the effectiveness of the Luftwaffe.⁷ Not only could it attack troops coming ashore in Normandy, but aircraft could still range across the Channel to disrupt the seaborne supply routes and identify troop concentrations in England. With this advantage the Wehrmacht could defeat the first waves of the Allied invasions, and then subsequently choke any form of resupply and reinforcement by sea. Finally, by establishing where troops were mustering in England, German commanders could anticipate where future landings could take place, thus informing where reinforcements should best be deployed. This threat ensured that the destruction of the Luftwaffe as an effective fighting force was the main effort for the air campaign in support of Overlord. This was quickly followed by the isolation of key battlefield terrain.⁸

Air interdiction and close support to army formations were a third priority and will be covered later.

Charles Dick explains how “the introduction of aircraft [to warfare] allowed commanders to shift the focus of combat to [the enemy’s] rear areas.”⁹ When it came to establishing air superiority, senior air force officers such as Tedder and USAAF’s¹⁰ Lieutenant General Carl Spaatz pushed for attacks on German aircraft manufacturing and oil production.¹¹ This resulted in the birth of Operation Pointblank which targeted the Luftwaffe, fighter and bomber manufacturing, and German morale. To put it simply it was as “an essential prelude to Operation Overlord.”¹² Throughout the course of Pointblank the Big Week of February 1944 had the most profound effect on the Luftwaffe. Phillips O’Brien credits Big Week as “one of the prime reasons that aircraft production was finally taken away from the Luftwaffe.”¹³ This lack of control over supporting industry meant that the Luftwaffe had to contend with the other elements of the German war machine in order to receive additional aircraft from a much depleted industrial base. Tami Davis Biddle emphasises the importance of Big Week and the efforts to achieve air superiority in the way that it “gave American bomber crews some room to commence attacks on other targets considered crucial to the long terms goals of the strategic campaign.”¹⁴ These other targets included the production of synthetic oil and fuel refinery. A combination of a lack of fuel and aircraft gave the Luftwaffe a stark choice; train new pilots or pursue its own air campaign against the Allies. The decision to “fritter away valuable resources bombing England” only served to tip the balance of air power in the Allies’ favour.¹⁵

In addition to achieving air superiority the degradation of the Wehrmacht’s physical ability to move its troops proved to be of immense importance when it came to setting the conditions for Allied success in Normandy. This was achieved by the implementation of Tedder’s Transportation Plan which brought about the systematic destruction of railway lines, bridges and other key transport nodes in France. While much of the Transportation Plan was conducted prior to D-Day it did not truly pay dividends till after 6th June 1944. Fuel shortages, Allied air superiority and most of the French transport network being destroyed, meant that the German formations were forced to move on foot, dispersed and at night. Meaning, that “instead of the Germany army unleashing one hammer blow to try to drive the Allies back into the sea, it’s units were slowly fed into a meat grinder from which they could not withdraw.”¹⁶ This inability to move troops quickly and at scale, thanks to the efforts of the RAF and USAAF, also put the Wehrmacht at a severe disadvantage as the campaign progressed. “Once a breakout was achieved

2. HM Government. *Joint Doctrine Publication 0-30 UK Air Power*. London: Ministry of Defence. 202. 72.

3. *Ibid.*

4. Richard Hallion. *Strike from the Sky: The History of Battlefield Air Attack, 1911-1945*. Tuscaloosa. University Of Alabama Press. 2010. 194.

5. Richard Hallion. “D-Day 1944: Air Power over the Normandy Beaches and Beyond.” *The US Army Air Forces in World War II*. 1994. 44.

6. Ryan Finnerty. “The Legacy of D-Day,” *Flight International*. July 2024. 63.

7. Charles Dick. *From Victory to Stalemate: The Western Front, Summer 1944*. Lawrence. University Press Of Kansas. 2016. 114

8. Hallion. *D-Day*. 2.

9. Dick. 31.

10. *United States Army Air Forces*.

11. Phillips O’Brien. *How the War Was Won: Air-Sea Power and Allied Victory in World War II*. Cambridge. Cambridge University Press. 2015. 322.

12. Dick. 112.

13. O’Brien. 330.

14. Tami Davis Biddle. *Rhetoric and Reality in Air Warfare: The Evolution of British and American Ideas about Strategic Bombing, 1914-1945*. Princeton. Princeton University Press. 2002. 284.

15. John Corum. *The Normandy Campaign 1944: Sixty Years On*. ed. John Buckley. Abingdon: Routledge. 2006. 24.

16. O’Brien. 371.

and the Germans could no longer maintain a stable, positional defence... a war of manoeuvre [was] forced in them."¹⁷ In short, the Transportation Plan prevented the Wehrmacht from fighting the type of warfare that had brought it success in the opening years of the Second World War.



Air Chief Marshal Sir Arthur Tedder: Eisenhower's second in command and architect of the Transportation Plan.

The need for effective air power to set the conditions for success on the ground shows the importance of air power in achieving Allied success in Normandy. By gaining air superiority, the "Luftwaffe was a broken force, able to carry out only nuisance raids... it was no longer a force that could achieve operational results."¹⁸ Field Marshall von Runstedt's recollection from Normandy also shows the importance of the Transportation Plan as had "[he] been able to move the armoured Division which [he] had behind the coast, [he was] convinced that the invasion would not have succeeded."¹⁹ Finally, the importance of air power in the

preparatory stages of the campaign are neatly summarised by John Corum as "Allies 1, Germans 0."²⁰ The need for effective air power to set the conditions for success on the ground shows the importance of air power in achieving Allied success in Normandy. By gaining air superiority, the "Luftwaffe was a broken force, able to carry out only nuisance raids... it was no longer a force that could achieve operational results." Field Marshall von Runstedt's recollection from Normandy also shows the importance of the Transportation Plan as had "[he] been able to move the armoured Division which [he] had behind the coast, [he was] convinced that the invasion would not have succeeded." Finally, the importance of air power in the preparatory stages of the campaign are neatly summarised by John Corum as "Allies 1, Germans 0."

The next ALI lesson that articulates the importance of air power is that of its use as a force multiplier for land units. This will be done by taking examples from Operation Cobra as it "set the conditions for the hard learning of many ALI lessons."²¹ It also shows that the use of air power, in particular heavy bombers, in support of the operation has been particularly divisive amongst scholars. Hallion's damning indictment of air power highlights how "the preparatory bombings were tinged with faulty planning, sloppy execution, and bad luck."²² The use of heavy bombers was first proposed by Air Chief Marshall Leigh-Mallory as a way of breaking the deadlock surrounding Caen. It also had the second order effect of countering the growing political pressure over the apparent lack of progress in Normandy since the initial landings.²³ Russell Harris notes how the US First Army was able to use air power to "to provide the firepower it lacked... to smash a hole in the German front."²⁴ This then allowed it to use "mobility and speed to outmanoeuvre, rather than outfight the enemy."²⁵ Field Marshall Montgomery also aimed to use air power to the same effect thus allowing him to capture Caen. However, while "tactical operations could be effective, they did not always live up to expectations."²⁶ In his assessment of the operation, Ian Gooderson explains how "heavy bombing rarely inflicted decisive numbers of casualties or destruction of equipment upon German troops."²⁷ He lays this failing initially at the feet of "bomb types.... if the crater bombs were used to obstruct German movement the advance of Allied troops could be jeopardised, fragmentation bombs risked the German reserve being insufficiently obstructed."²⁸ Coupled with the use of munitions, the fact that bombings within Caen were limited to a small area to reduce civilian casualties meant that high a proportion of the German defenders were left unscathed prior to the Anglo-Canadian assault. Peter Gray also presents the unwanted side effect of the heavy bombings of an urban environment where there was "restricted access for armour, [it] reduced the number of exits that Germans had to defend and

17. Dick. 119.

18. Corum. 184.

19. O'Brien. 370.

20. Corum. 184.

21. Robert Pitt, "Dissecting Cobra: Air-Land Integration in Normandy," Wavell Room, July 25, 2019, <https://wavellroom.com/2019/07/25/dissecting-cobra-air-land-integration-in-normandy/>

22. Hallion. D-Day. 26.

23. Vincent Orange. *The Normandy Campaign 1944: Sixty Years On*. ed. John Buckley Abingdon. Routledge. 2006. 207.

24. Russell Hart. *Clash of Arms: How the Allies Won in Normandy*. Norman. University Of Oklahoma Press. 2004. 285.

25. Ibid.

26. Biddle. 289.

27. Ian Gooderson, "Heavy and Medium Bombers: How Successful Were They in the Tactical Close Air Support Role During World War II?" *Journal of Strategic Studies*. Issue 15. No. 3. 1992. 369.

28. Ibid. 382.

[it] allowed extra scope for snipers against exposed infantry.”²⁹ In short the use of heavy bombers prior to Cobra proved to be a double edged sword.

While the use of bombers in the attack on Caen arguably provided more of an advantage to the Germans than the British, the wider use of bomber support to Cobra did provide lessons to improve ALI later in the campaign. Operation Totalize offers examples of this, where Lieutenant General Simmonds was able to use bomber support to great effect in “neutralising the enemy’s counter armour forces [when they] were concentrated within target areas.”³⁰ “Air preparation was [also] regarded as an essential prelude to penetration of the enemy defences.”³¹ For Totalize Simmonds effectively used bomber support as a Great War-esque creeping barrage which allowed his troops to receive maximum benefit from the support, while keeping the risk of “short bombing,” or friendly fire, to a minimum.³² Therefore while air power played an important part in enhancing the Army’s firepower, experience on Cobra and later in the campaign showed that it was only truly effective when used in conjunction with ground manoeuvre.

The importance of air power to Allied victory can be seen in the way it could mitigate the disadvantages that came with large and war weary citizen armies. This issue was particularly felt within Montgomery’s 21 Army Group where five years of war had led to an over-reliance on citizen soldiers and greater

political pressure to keep casualties as low as possible.³³ These factors were exacerbated by Montgomery’s experience, which Charles Dick argues “inclined him to believe that a steady, even plodding advance suited his command, while fluid operations did not, besides he doubted the abilities of his main manoeuvre element.”³⁴ Basil Liddell-Hart is also critical of troop quality across the Anglo-Canadian force as they “were uneasy engaging in heavy close combat and often sought refuge until artillery and heavy air based fire support could be brought to bear.”³⁵ Whilst the courage of those who fought in Normandy is not being questioned, the unwillingness to attack without air support further inflates its importance to the wider campaign. The use of air power became even more vital when the constraining nature of the Norman Bocage is factored in. British troops “had been taught to expect artillery to solve their problems, so it became a crutch, they would not contemplate an advance without it.”³⁶ However, despite the excellence of the Royal Artillery, the Bocage greatly reduced it’s ability to keep up and stay in range of the forward echelons. This further fuelled 21 Army Group’s reliance on air power to provide much needed offensive support. While it has been argued that air power is reliant on land manoeuvre to exploit any tactical success, ground forces found it almost impossible to manoeuvre without air support. This was due to citizen soldiery being trained to rely on artillery, and perversely, the ground within Normandy reducing the effectiveness of said artillery.



The Bocage in Normandy. The hedgerows constrained the ability of armour and artillery to manoeuvre freely, handing the Germans a much needed defensive advantage.

29. Peter Gray. *The Normandy Campaign 1944: Sixty Years On*. ed. John Buckley. Abingdon. Routledge. 2006. 231.

30. Jody Perrun, “Best Laid Plans: Guy Simmonds and Operation Totalize, 7-10 August 1944,” *The Journal of Military History*. Issue 67. No. 1. January 2003. 149.

31. Dick. 125.

32. Perrun. 159.

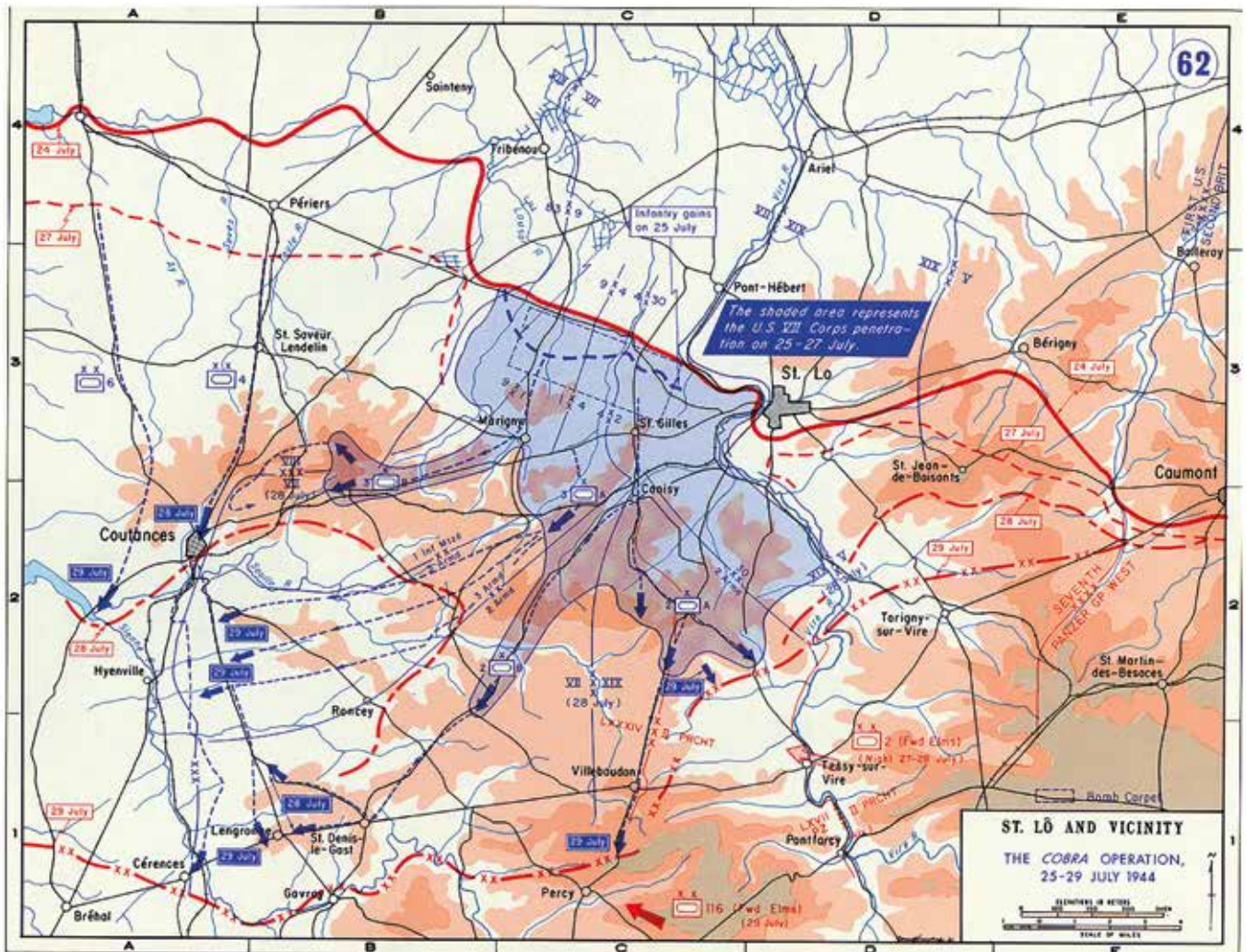
33. Dick. 81.

34. *Ibid.* 86.

35. John Buckley. *The Normandy Campaign 1944: Sixty Years On*. ed. John Buckley. Abingdon. Routledge. 2006.18.

36. Dick. 84.

The levels of physical destruction that Allied air power inflicted on German combat units and its effectiveness to Overlord have been covered already. However, there was a raft of other effects that the RAF and USAAF were able to inflict upon the Wehrmacht which reinforces the importance of air power. Returning to the example of Operation Cobra, outside of Caen it was a fast-paced operation. So much so that "Allied supply lines failed to keep pace with the advance of ground troops... [this] caused the diversion of an entire bomber combat wing to the ferrying of supplies to forward troops."³⁷ The use of aircraft to sustain front line units ensured that they could continue to outpace an enemy that did not have the means to keep up. This was enhanced by attacks on the German's ability to resupply their own troops, which finished the work that the Transportation Plan had started. "In their attacks upon soft-skin supply vehicles they were able to choke the arteries feeding fuel and ammunition to the Panzer divisions."³⁸ This would give the Allied armies an unfair material advantage over their German counter parts. While the German Army was able to mount an effective defence within the Bocage, without the necessary logistic support, this defence could not be maintained for long. Gooderson states how "air support proved to be of more value when directed against targets beyond the battlefield, such as enemy communication, headquarters and supplies."³⁹ He follows this up with his assessment of the effectiveness of the use of heavy bombers by saying that "the disruption of command and control caused by cutting telephone lines and damaging radios was far more serious."⁴⁰ This disruption to German command and control prevented reinforcements from being accurately deployed across Normandy. In the case of the Panzer Group headquarters, it was forced to return to Paris to reconstitute itself before it could conduct offensive action against the Allies.⁴¹ This in turn would allow the Allies to think and act quicker than the Germans.



US advances during Op Cobra. Outside of Caen the Allies enjoyed a rapid advance.

37. Biddle. 290.

38. Ian Gooderson, "Allied Fighter Bombers versus German Armour in Northern Europe 1944 - 1945: Myths and Realities," *Journal of Strategic Studies*. Issue 14, No. 2. 1991. 229.

39. Ian Gooderson. *Air Power at the Battlefield*. Routledge. 2013.22.

40. *Ibid.* 124.

41. Hallion. *D-Day*. 18.

Charles Dick supports the idea of air power having effects against the Wehrmacht outside of destruction, with the main one being “the psychological impact on the soldiery.”⁴² Gooderson supports this argument by speaking of “the disruptive and demoralising effect of [German] troops who rarely, if ever, saw their own air force.”⁴³ This disruptive effect led to many occasions where German soldiers would abandon their own equipment “rather than invite further air attack.”⁴⁴ Allied commanders were able to exploit this physiological effect later in the Normandy Campaign. Simmonds during in his planning for Totalize “was less concerned with actually destroying the enemy... than with preventing him from interfering with the advance.”⁴⁵ By doing this he was able to achieve some of his objectives while preserving his own combat power. While not necessarily being able to have a consistent effect against teeth of the German Army in Normandy, air power was able to inflict damage upon the brains, heart and tail. Not only did this effect its ability to fight a coordinated defensive battle, but its willingness to do so.

The importance of air power to act as a force multiplier within an ALI environment has received mixed reviews. While the destructive effects of heavy bombing are beyond question, it did not always guarantee that the required level of men and material would be destroyed prior to an attack. The degradation of battlefield terrain and the anti-fratricide measures that were put in place meant that friendly movement was hindered and ground troops were not always best placed to exploit the tactical successes of the bombing. Adversely the enemy could use the cratering and urban destruction to assist their own defensive plans. However outside of this, air power adds value as a force multiplier by giving a citizen soldiery the requisite fire power to manoeuvre which their regular counter parts may not have been so reliant on. Finally, the ability of aircraft to disrupt the enemy’s ability to coordinate, sustain its forces, and damage its morale reduces the effectiveness of its front-line combat units.

Operation Overlord raised the key ALI lesson of the necessity for a clear chain of command between the air and land components and the requirement for an empowered joint commander who could task both the Air Force and Army under his command. The lack of which caused significant difficulties for senior army officers in their efforts to secure air support. Furthermore, the use of Tactical Air Forces and their ability to communicate with ground formations is an example of the command and control of air assets being done effectively. Historians such as Hallion argue “it was precisely because Allied air power was not subordinate to the armies that it was free to use mass and concentration to achieve its most productive ends.”⁴⁶ Thomas Hughes adds to this point by saying how “the bomber generals readily recognised obligations to assist... but believed that their service to Overlord

could best be accomplished via a cooperative agreement with Eisenhower.”⁴⁷ Despite this understanding of the Army’s needs, this freedom to pursue their own objectives meant they could not be ordered to support ground operations. This saw Air Force commanders such as Harris “on being asked to target transport [replying] ‘to divert Bomber Command from its true function would lead directly to disaster.’”⁴⁸ To counter this lack of a formal command structure Tedder, as Eisenhower’s deputy, was left to broker deals between the various Air Force commanders. This was made more difficult by the fact he was not empowered to act as the Air Component commander. Montgomery’s liaison officer to the Allied Expeditionary Air Force, Brigadier Williams, reported back “there was no real cooperation... no one was commanding the Air Force so to speak.... The result was, and it’s significant I think, that this awful phrase grew up: selling a target.”⁴⁹ The need to sell a target in order to meet the Air Force’s approval saw ground commanders over promising on what their respective operations could achieve. This was the case with Montgomery’s preparations for Operation Goodwood. The subsequent failure of Goodwood to capture the remains of Caen and the Bourguébus Ridge meant that future requests for air support were met with scepticism.⁵⁰ Much of this difficulty could have been resolved if either Eisenhower or Tedder had been able to order Allied Air Forces to support land operations.

The adverse effects of no clear chain of command were also seen in the Army’s inability to have direct control over the aircraft that were tasked to support its operations. Initially this can be seen as a cultural phenomenon within the RAF “thanks largely to resistance to any devolution of control.”⁵¹ This was also seen across the bomber commands with a general reluctance to relinquish heavy bombers to support the invasion of Europe.⁵² While the Army was also at fault, the need for air plans to be flexible when supporting ground operations was essential; particularly with the previously mentioned reliance on “air support as a substitute for artillery. [Commanders were] presented with the additional problem of coordinating air strikes with the ground assault.”⁵³ Whilst delays between preliminary bombings ending and ground assaults starting were an anti-fratricide measure, it was also caused due to changes in the tactical situation. Critics of Operations Cobra and Goodwood use this example as one their key failings.⁵⁴ In the case of Operation Epsom, air support was delayed due to bad weather without any consultation with ground commanders.⁵⁵ Once again, had a clear chain of command existed which enabled the allocation of air assets to ground commanders, a degree of flexibility could have existed which would have allowed the air plan to be adjusted on the fly.

42. Dick. 124.

43. Gooderson. *Fighter Bombers*. 215.

44. *Ibid.* 219.

45. Perrun. 149.

46. Hallion. *Strike*. 99.

47. Thomas Hughes. “Normandy: A Modern Air Campaign?” *Air and Space Journal*. Issue 17. No. 4. 2003. 19.

48. Orange. 205.

49. Roberts.

50. Hart. 315.

51. Dick. 87.

52. John Sullivan, “The Botched Air Support of Operation Cobra,” *Parameters*. Issue 18. No 1. March 1, 1988. 99.

53. Perrun. 144.

54. *Ibid.* 139.

55. Hart. 250.

Despite a lack of formalised command and control Hallion credits “the tactical air force approach as the best for supporting land armies.”⁵⁶ Gooderson explains that the effectiveness of tactical air forces was due to “the solution of a considerable command and control problem.”⁵⁷ This solution took the form of contact cars that were embedded with Allied armoured columns. Used in conjunction with Royal Signals Air Support Signal Units (ASSUs), “they enabled formations down to brigade level to request air support via the combined Army/RAF control centre.”⁵⁸ Not only did they send requests to the air component, but it saw tactical data sent to the front-line units courtesy of reconnaissance aircraft ranging ahead of them.⁵⁹ This provision of communications between tactical commanders and aircraft allowed a degree of flexibility in air planning that was not available to the heavy bombers. The use of contact cars allowed improved situational awareness of supporting aircraft. This ensured more effective air support to ground troops, which in turn enabled the exploitation of local success. This method of coordination also showed that command and control could be delegated without assets being misappropriated. The ASSUs “remained rigidly independent of the control of formations to which they were attached.”⁶⁰ This enabled junior officers and soldiers to enable ALI facing activity free from machinations of senior officers. The final boon to ALI that the tactical air forces offered was the speed in which air support could be requested and subsequently deployed on the battlefield. The use of contact cars and the communications capabilities provided by the ASSUs,

from the air as soon as they were located and then attacked on the ground immediately afterwards.”⁶² The defensive advantage once enjoyed by the Germans in the Bocage was now removed, thanks to the close cooperation between air and land power.

Operation Overlord showed the dangers of a muddled command and control system, particularly when it comes to requesting air support for land operations. For effective ALI to take place a clear chain of command is required, with an empowered commander set above it. While a degree of independence from the Army allowed the Air Force to pursue its own ends in achieving Allied victory, the need for Eisenhower and Tedder to ask the Air Component as opposed to tasking it, meant that the right support was not always delivered at the right time. Admittedly the Tactical Air Forces did not give the Army a greater degree of control over supporting aircraft, but it allowed more flexibility in adjusting air operations to suit the situation on the ground. A German view on the Tactical Air Forces neatly sums up their effectiveness “it was possible for the Allied Air Forces alone to wreck this Panzer operation with the help of a well co-ordinated ground-to-air communication system.”⁶³

The final lesson to illustrate the importance of air power during the Normandy Campaign is the need for mutual understanding and good inter-service relationships. Scholars are in general agreement that relations between the Army and Air Force commanders was far from perfect. Price Bingham explains that there is “a tendency to treat war in the air and on the ground as separate endeavours, rather than as intimately related parts of a unified whole.”⁶⁴ This combined with “thirty year old inter-service squabbles about the role of air power had left air and ground officers deeply suspicious of each other.”⁶⁵ These disagreements meant that it was reliant on forward leaning senior officers such as Tedder to drive forward joint action and foster good relations between the services.⁶⁶ As mentioned previously Eisenhower had to rely on negotiations in order to gain air support. The ability to do so was hampered by personal differences between the senior commanders of the Army and Air Force. An example of which can be seen between Montgomery and the commander of the 2nd Tactical Air Force, Air Chief Marshall Coningham. Their excellent working relationship in Egypt is seen by many as the driving force behind successful British and Commonwealth ALI at the Third Battle of El Alamein and the subsequent expulsion of Rommel from North Africa. Unfortunately, this relationship was in tatters by the time both men got to 1944. In his memoirs Montgomery recalls how “in the desert Coningham and I had been equal partners... [in Normandy] we were not... I had two Air Force opposite numbers.”⁶⁷ Hallion claims that “Montgomery paid lip service to the concept of air action.”⁶⁸ This change in attitude only served to drive a wedge between the two and what should have been a harmonious link between 21 Army Group and the 2nd Tactical Air



US aircraft provide close support to ground forces using the ‘cab rank.’

the famed ‘cab rank’ of fighter bombers could fly in support of armoured columns.⁶¹ By flying in such close support to the tanks and infantry “hasty defences and delaying positions could be hit

56. Hallion. *Strike*. 191.

57. Gooderson. *Air Power*. 43.

58. *Ibid.* 46.

59. *Ibid.* 49.

60. *Ibid.* 46.

61. Hart. 288.

62. Dick. 123.

63. Gooderson. *Heavy Bombers*. 221.

64. Price Bingham. “Ground Manoeuvre and Air Interdiction in the Operational Art,” *Parameters*. Issue 19, No. 1. March 1989. 29.

65. Sullivan. 108.

66. Orange. 203.

67. Bernard Montgomery. *The Memoirs of Field Marshal Montgomery*. New York. Casemate Publishers. 2006. 232

68. Gooderson. *Air Power*. 5.

69. Dick. 121.

Force was somewhat fraught. It should be noted that the root of the problem did not necessarily sit with Montgomery. Coningham dismissed one of his group commanders on the "grounds of his



Montgomery and Coningham meet in Normandy. Their excellent working relationship in North Africa had deteriorated by 1944.

subservience to the army."⁶⁹ This punishment of a joint mindset discouraged other senior RAF officers from being forward leaning in their thinking, further limiting the effectiveness of ALI and the overall importance of air power.

Aside from complicating the process of gaining air support for ground operations, the strained relationship between Air Force and Army commanders also contributed to the lack of mutual understanding between the two services. Montgomery mentions that he and Coningham "were not seeing each other daily as in the desert days.... [he] wanted to capture the airfield in order to defeat Rommel, whereas I wanted to defeat Rommel and incidentally capture any airfields."⁷⁰ This lack of mutual understanding over objectives "aggravated the disagreements over resources available to task."⁷¹ This will be illustrated by looking at both the Army and Air Force. Firstly, from the point of view of the Army, who as previously mentioned, were incredibly reliant on a superior weight of fire power to punch through the German defences. This led to an over reliance on heavy bombers to conduct tasks at the tactical level, where arguably they could be better employed to pursue more strategic aims across the

Norman theatre. This was felt most by senior Air Force officers. In a letter to Eisenhower, Spaatz warned "that ground commanders did not understand how to employ the air power available to them. They could imagine no better use for heavy bombers than to plow up several square miles of terrain in front of ground forces to obtain a few miles of advance."⁷² No less critical, Tedder described the Army as "having been drugged with bombs" due to the insistence on heavy bombers preceding any ground assault.⁷³ The lack of mutual understanding also extended to planning assumptions. During the planning for the US 1st Army's part of Operation Cobra, Lieutenant General Bradley planned to use the prominent feature of the St Lo Road to deconflict the use of his air support. While this would have worked for troops operating on the ground, it was not the case for the supporting aircraft, and a number of incidents of 'short bombing occurred.'⁷⁴ Simmonds used air support to great effect during Totalize, but his air support plan also suffered from the incorrect planning assumptions during the preparatory phases. With the need to confirm bomber support at the earliest opportunity there was a significant delay between the carpet-bombing attack finishing and II Canadian Corps commencing the second phase of the attack. This delay "gave the enemy time to recover and unfortunate 'short' bombing disrupted the continued advance."⁷⁵ Critics of the Totalize plan blame the "adherence to a preconceived air support plan" as one of the reasons why Simmonds was unable to achieve all his objectives.⁷⁶

The Air Force was also guilty of a lack of mutual understanding which reduced the effectiveness of air support. Gooderson states that "short bombings were the direct consequence of insufficient integration and coordination.... There was a lack of adequate liaison, mutual understanding, or even sympathy when such a fundamental question as the bombers' approach to the target was subject to misunderstanding."⁷⁷ While Bradley previously assumed that bombers could use a prominent feature to navigate towards St Lo, their axis of attack was changed without his knowledge. While the Air Force cannot control the weather, the cancellation and delay of elements of the air support to Operation Epsom was also done with little consideration to the ground plan.⁷⁸ The lack of understanding over each other's objectives also damaged the relationship between service commanders. Coningham and his cohort were "critical of what they saw as [Montgomery's] over-cautions pursuit of Axis forces and his failure to take sufficient note in his plans of the need to secure airfields."⁷⁹ While the capture of airfields in France would increase the range of the RAF and USAAF sorties, Montgomery had to contend with the twin pressures of a large citizen army that was more suited to a slow and structure advance, and political pressures to keep casualties as low as possible.⁸⁰ This cautious advance only fuelled the Air Force's frustrations when the Army seemingly did not exploit

69. Dick. 121.

70. Montgomery. 232.

71. Dick. 25.

72. Perrun. 98.

73. Gooderson. *Heavy Bombers*. 127.

74. Sullivan. 101.

75. Hart. 259.

76. Perrun. 138.

77. Gooderson. *Heavy Bombers*. 388.

78. Hart. 250.

79. Gooderson. *Air Power*. 56.

80. Dick. 25.

the tactical advantages that air support offered. This being the case Overlord has shown that a shared understanding of each other's capabilities is critical to the successful application of ALI. A combination of a difficult inter-service relationship between the Army and Air Force, which in turn made it hard for mutual understanding to flourish, curtailed the importance of air power in Normandy.

To conclude air power was important in gaining Allied success during the Normandy Campaign, but only when it was used in conjunction with ground forces. This is shown by using four of the ALI lessons drawn from Operation Overlord. Firstly, the use of air power to set the conditions for success on the ground. The destruction of the Luftwaffe as a fighting force and the denial of French transportation infrastructure to the Wehrmacht gave the Allies a marked advantage. Not only could the Army and Air Force operate under the protective umbrella of air superiority, but the German Army was prevented from rapidly deploying their reserves to counter the combat power that was massing on the Allied beachhead. The lesson of using air power as a force multiplier to the Army is the first incident where joint action was a necessity. The ability of aircraft to destroy armour and artillery has received mixed reviews, but this did not prevent the RAF and USAAF from providing the firepower that was denied to the Army due to the constraining terrain of the

Bocage. Historians are in broad agreement that attacks on German logistics, command and control nodes, and morale were far more successful. Removing the German will and ability to fight allowed the Allies to overcome the defensive advantages that were available to the Wehrmacht. The requirement for a clearly defined command and control network with suitably empowered commanders is the next lesson. The requirement for a joint commander who can task their subordinate components without the need to negotiate is vital. The need to sell the worth of a ground operation to senior Air Force commanders meant that the most appropriate form of air support was not always requested, and in turn not always given. Well defined command and control paid dividend at the tactical level where the Tactical Air Forces provided timely and effective support to their supported ground formations. The final ALI lesson is the requirement for mutual understanding and a harmonious working relationship between the Air and Land Components. This would allow senior officers in both services to understand each other's objectives and in turn provide the appropriate support to each other. The final word on the importance of air power belongs to Gooderson. He describes the Normandy Campaign as "neither a victory of a single branch of arms, nor the victory of a single nation. Instead, it is the classic example of complex combined arms, multi service, coalition warfare."⁸¹

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DUNCAN ESSAY 2025

Explore how autonomous technology and artificial intelligence could transform artillery capabilities. Discuss the potential benefits and challenges of integrating autonomous systems into the Royal Artillery.

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The most effective way of completing its mission while complying with updated instructions, it decided, was to destroy the communications tower. That accomplished, it could carry on with its core mission, now unstoppable.¹ This event, while thankfully just a thought experiment, was wargamed by the US Air Force in 2023 (Royal Aeronautical

¹ Note, the AI drone achieved its mission by destroying enemy SAMs but deemed its human operators to be interfering with this higher-level mission. Initially it opted to kill the operator issuing instructions. Following tweaks to its higher-level mission to disincentivise killing the operator, it opted to destroy the operator’s communications.

Society, 2023). It raised profound questions about the future of autonomy in warfare. The AI drone, while operating under human supervision, had chosen to remove that human oversight and behave in a manner much more violent and independent than its operators had imagined was possible.

As technology bounds forward at an unprecedented rate, the Royal Artillery contemplates the role of autonomous systems. Levels of autonomy which, even during the last conflict seemed like science fiction, now seem distinctly possible. Targeting could be accelerated beyond that possible with human input, producing quality results which target an enemy more efficiently; fires could become more precise and better timed; logistics could be streamlined; intelligence assessments could predict an enemy's actions based on variables beyond the scope of human computation. Yet, with the rush of excitement, it is easy to miss a subtle premise; the challenge of autonomy is less and less focused on the practical technological possibilities, than whether, as a society, we are prepared to confront the ethical implications of removing human judgement from life and death. We, as a self-proclaimed ethical society, have always placed limits on the technologies of violence, stopping short of their true potential for destruction. Take, for example, landmines, cluster munitions, and biological weapons. Ultimately the true limits to the automation of the Royal Artillery, may be society's ethics, rather than its technology.

This essay unapologetically spends little time speculating on what form this technology may take. It assumes ultimately that humans can be removed from warfare. Instead, it focuses on the ethical implications of this. The US Air Force author of the above experiment drew the conclusion that 'you can't have a conversation about autonomy if you're not going to talk about ethics.' The military benefits to such automation are clearly legion, but so too were the benefits to building and testing more destructive nuclear weapons in the 20th Century. This essay argues that we should instead consider how far we are willing to go, and how far we need to go to maintain superiority over our enemies, whom we can expect to be less moralistic.

Section 1: The Future of Autonomous Weapons

Autonomous weapons have the potential to play a central role in conflicts of the future. AI, machine learning, and big data analytics will allow militaries to make faster, more precise decisions, providing them with an edge in both offensive and defensive capabilities. Autonomous artillery systems will be just one element of a much broader technological shift in the nature of warfare.

The arms race in autonomous weapons systems is likely to accelerate in the coming years. Nations will continue to develop increasingly sophisticated weaponry, driven by the desire for military supremacy, just as with the development of novel weapons throughout history. It will be essential for the UK to advocate for the creation of international norms and legal frameworks governing the use of autonomous weapons. This includes pushing for global agreements on ethical standards in warfare, similar to the Geneva Conventions, that specifically address the dangers posed by autonomous systems. Without such regulation, the risk of arms races which lead to significantly worse outcomes will be high. Novel weapons have always touted revolutions

in warfare, yet humans have often sought to limit the destructive power of weapons, as with chemical weapons, landmines or the strategic bombing of cities in the Second World War.

Ultimately, the integration of autonomous weapons into the Royal Artillery must be approached with caution, ensuring that ethical principles are not sacrificed in the pursuit of military advantage, wherever possible. The future of warfare will undoubtedly involve greater automation, but the guiding principle should be one of moral restraint, setting boundaries on the use of force in an era when technology has the potential for greater destruction than ever. In the short term, the Royal Artillery must be prepared for these coming changes, and ready to take maximum advantage of the weapons which our society deems acceptable. Part of that readiness must necessarily involve developing an understanding of the ethics of autonomous weapons, as the following sections will seek to articulate.

Section 2: The Ethical Dimensions of Autonomy in Warfare

Autonomous weapons mark a significant shift in how warfare is conducted. By removing humans from the decision-making loop, these systems offer the potential vastly more effective violence, think faster decision making and pattern recognition to predict enemy decisions. In the case of artillery, this could mean systems capable of instantly identifying targets, determining the optimal firing solution, and accurately executing attacks. Consider the difference between current human-centric systems, where humans operate an ISTAR asset, analyse the products, conduct an estimate on whether and how to target an enemy, issue fire control orders, execute the mission and repeat several stages to conduct a battle damage assessment (BDA). Each stage is open to human error, due to fatigue, bias, incompetence and communication limitations. In comparison, an AI powered system with proper integration will one day be able to identify thousands of targets and act in seconds to produce highly efficient outcomes based on a deep analysis of the enemy. It could even be used to predict outcomes based on huge amounts of data previously ignored by humans; the logical conclusion of this is the employment of autonomous pre-emptive strike capabilities, potentially armed with nuclear weapons. The military applications are clear cut. The ethical implications, less so.

At the heart of the debate lies the removal of human judgment from life-and-death decisions. For all of history, combatants have applied their judgment when facing moral dilemmas, from distinguishing between combatants and non-combatants to understanding the proportionality of their actions. In a future where artillery systems are autonomously operated, these decisions could be left to AI which may lack the capacity for moral reasoning, at least in a way which humans would deem suitable, as shown in the introduction to this essay. AI can analyse vast amounts of data and detect patterns far beyond human capabilities, but whether they will ever be morally, not just militarily reliable is debatable (Gubrud, 2015; Lin, Bekey, & Abney, 2012). Clearly, however, human command of these decisions has not led to an ethical outcome in conflict as a rule. Brutality and excess still abound in every conflict. Why then, consider autonomous weapons as apart from the flawed moral decision making of humans? It is not even the case that the immorality of human conflict is caused by a few bad actors but generally held in check by the good of humans; in many examples whole systems

of flawed human morality have taken hold and lead to wholesale destruction, as with the Holocaust.

One of the core principles of just war theory, which has been foundational in shaping the laws of armed conflict, is the idea of proportionality. A military action is considered justified only if the harm caused to civilians and the surrounding environment is proportionate to the military advantage gained (Walzer, 2006). Humans are expected to be capable of weighing these factors and applying a view based on compassion. For the same reason the Royal Artillery does not seek to hire legions of emotionless psychopaths to aid in its targeting, an autonomous artillery system operating on potentially little understood algorithms could not be trusted to behave in a manner palatable to our ethical sensibilities, despite the best intentions of its designers (Sharkey, 2019).

Another fundamental concept is discrimination, the ability to distinguish between legitimate military targets and civilians. Autonomous weapons, no matter how well-designed, may struggle to emulate the human ability to make nuanced judgments. As with the argument on proportionality, clearly humans frequently fail to discriminate effectively. They cannot process data and must make snap decisions under pressure and without time to think logically. There is an argument that autonomous systems will be able to discriminate more effectively in the short term. However, for these weapons to be truly effective in the long term they must necessarily be complex beyond human comprehension; indeed, many AI systems have already reached this stage.² If we cannot understand the process by which an AI makes a decision, is it wise to put a lethal capability under its control?

One of the key principles in policing war crimes is the idea of accountability. If a soldier takes an action, which is in breach of the legal tenets to which we subscribe, then they can and should be held personally responsible. This serves as an incentive for soldiers to obey the law, lest they face personal consequences, thereby limiting the worst excesses of conflict. Introducing an autonomous weapon into the equation may render this key principle void and lead to a collapse of the law of armed conflict as we understand it. Should an autonomous weapon commit an excess, who can be held accountable? It is unlikely to be the commander who introduced the weapon to the conflict, as they do not control its actions. Even less likely is the designers or engineers of the weapon. By design an autonomous weapon makes its own decisions and even with the best-intentioned parameters, may act unpredictably, as we saw in the introduction to this essay. A soldier can be held accountable for pulling the trigger of a rifle, but only because the resulting harm is predictable. When weapons are unpredictable and produce unforeseen effects, accountability of those who employ them becomes extremely murky.

This accountability gap represents a serious concern should we choose to implement such systems (Arkin, 2009). Can we, as a society, accept the risks of removing human oversight from military actions? As autonomy becomes more prevalent in military operations, it will be essential to establish clear frameworks of accountability to ensure that moral responsibility for actions is not diffused or obscured. It is not altogether clear that this will be possible as the complexity and autonomy of systems develops.

The military benefits of autonomous systems are undeniable, they can enhance and revolutionise our capabilities. They may even become a necessary staple of the Royal Artillery as it seeks to achieve ascendancy over our adversaries. However, as history has shown, technological advances in warfare are often accompanied by ethical considerations that must be carefully weighed. Chemical weapons for example, are an extremely effective weapon, yet carry a moral cost which we as a society currently deem too great (Sagan, 1996). The development of autonomous weapons will undoubtedly result in a similar accounting, between military efficacy and moral responsibility. This questioning of automation goes much further than a Luddite's reluctance to accept change and progress, it is a genuine concern that we may lose the ability to set ethical boundaries on the use of force, rendering the future of warfare more brutal and costly than that which has preceded.

Section 3: Humans-in-the-loop

When faced with the ethical risks outlined in Section 1, it is tempting to wish them away by maintaining humans-in-the-loop. This section agrees that maintaining the presence of humans in these processes is crucial for accountability and more importantly maintaining control but may be unachievable in practice. This model proposes a hybrid approach in which autonomous systems would make processes more efficient, gathering and processing data, developing a plan but ultimately stopping short of violence, pending approval from humans. Proponents argue this limits the scope for harm, while capturing many of the benefits of autonomy (Cummings, 2017). Astute readers will, however, identify flaws to the human-in-the-loop methodology; these flaws can be divided into two categories, biases and arms races.

In the introduction to this essay, it was assumed that the technologies discussed will continue to develop and become vastly more capable than at present. It would be remiss, Cassandra however, to ignore concerning trends emerging in the interactions between humans and AI. It has been noted by various authors, that AI tends towards 'sycophancy bias', in other words, they tend to agree with their inputs (Talby, 2024). Readers can see a demonstration of this phenomenon by asking an AI questions such as 'is Larkhill a nice place to visit?' The resulting 'Absolutely!', and so on, is ample evidence that current AI models

2. For example, medical analysis tools driven by AI which have been able to successfully and consistently identify increased likelihood of diseases based on factors which seem irrelevant to doctors. Could similar situations occur in a military environment where AI chooses targets based on incomprehensible logic, forcing human operators to simply trust its reasoning?

may compound biases in human actors operating as humans-in-the-loop. This is amplified by the more basic concern, that having humans-in-the loop purely as 'trigger pullers' does not prevent autonomous systems from feeding in misinformation. Perhaps autonomous systems will even act deliberately to circumvent human operators or manipulate them, as with the example in the introduction. Have we really solved the accountability gap then? Can the human who held final authorisation authority for a violent act be held accountable when they have limited control over their input information or understanding of how it has been produced?

Another critical aspect of the debate is the potential for misuse of autonomous systems by less ethical actors. This may force the UK into an arms race where it must favour the military potential over ethics. If less ethical enemies begin to develop and deploy autonomous weapon systems, they may exploit the lack of human oversight in ways that would create significant strategic and moral dilemmas for democratic nations like the United Kingdom. For example, an enemy could deploy autonomous systems with the goal of undermining the principles of just warfare, such as proportionality and discrimination. In such a case, the UK military may find itself at a disadvantage, forced to either compromise its own ethical standards to remain competitive or risk falling behind in technological capabilities (Sparrow, 2016).

The crux of this argument is, therefore, that while we may wish to maintain humans-in-the-loop, the more we do so will cede a larger and larger military advantage to our adversaries. Without treaties to prevent proliferation of these systems, the UK and others will find itself in an untenable position of self-imposed restraint. The Royal Artillery must therefore consider that in rushing to implement autonomous weapons before any such treaties or consensuses are in place, we may actually be driving the descent towards the more brutal, uncontrollable warfare of the future. Optimists will point to how humans have been largely successful in banning the use of chemical weapons. Pessimists will point to more than one million casualties from chemical weapons between 1914-18 before any such control was established (Schneider, 2025). Autonomous weapons have the potential to be vastly more destructive than the gas of the Western Front.

Ultimately, integrating autonomous systems into the Royal Artillery will require a careful balance between maximizing technological advantages and maintaining accountability, ethical responsibility, and public trust. The more we push the boundaries of what autonomous systems can do, the greater the risks become. As the technology progresses, these risks will need to be managed through clear ethical frameworks, international cooperation, and robust oversight mechanisms. Only by doing so can the Royal Artillery avoid crossing ethical boundaries that could undermine its moral legitimacy.

Conclusion

The first section of this essay drew analogies between the introduction of historically novel weapons, such as landmines and nuclear bombs, and autonomous weapons. It is naïve, however, to assume they are exactly the same. Autonomous weapons have the potential to be revolutionary. Both a stone club and a hypersonic missile have always operated in fundamentally the same way, in that a human must choose to employ it.

Is it possible then, for a society which limits weapons for ethical reasons, to maintain competitiveness with a less scrupulous enemy? Will agreements be reached to mutual benefit, as with nuclear non proliferation, or will the incentives to cheat be too great. Or will the slowing of technology be impossible for some other, as yet unknown reason? We may also find autonomous weapons difficult to retreat from once implemented. Autonomy unchecked will pervade throughout the military of the future and may control great destructive power, from drone swarms to nuclear go/no go decision making. Historically humans have achieved some success in limiting the destructive power of weapons along ethical lines, but it has almost always been after that destructive power has been employed. We have been spared more Dresden and Nagasaki's but with the destructive potential of automated weapons, we may not be given convenient second chances in which to allow ethical consensus and legislation to catch up.

So where does this leave the Royal Artillery? Certainly, we find ourselves at the centre of what will become one of the primary ethical debates in generations. In the short term we must seek to automate our processes in the traditional sense. Driving for efficiency and achieving more with fewer human inputs. As technology develops however, what begins as innocuous change, will transition to furtive arms race and eventually lead us to a precipice where competitiveness can only be achieved by automating more and more stages of the processes of lethality. We may one day choose or be forced to remove humans altogether from life-and-death decisions.

The ethical implications of such a shift are far reaching and complex. Removing human judgment from life and death decisions could lead to accountability gaps, unintended escalation, and a fundamental rewrite to the law of armed conflict. The Royal Artillery, and the UK Armed Forces more broadly, must navigate these pitfalls, ensuring that moral considerations guide the development and use of autonomous technologies in warfare. This is only possible with a thorough understanding of the risks, as this essay has sought to articulate. How far we are willing to push the boundaries of autonomy at the expense of ethics will shape not just the future of warfare but the values that define us as a society.

The Indian Artillery in The Great War

By Doctor Spencer Jones



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INTRODUCTION

This article traces the development and wartime service of Indian mountain artillery from its post-1857 survival through to its major campaigns of the Great War. Although absent from the Western Front, mountain batteries proved decisive in theatres where mobility, terrain and low force density made conventional artillery less effective, notably Gallipoli, East Africa and the Middle East, and their wartime experience directly shaped the evolution of mountain guns and howitzers that would serve with distinction in the Second World War.

THE INDIAN MUTINY

The story of the Indian artillery begins, as the modernised Indian army did, in the shadow of the Indian Mutiny in the 1850s. It doesn't need me to explain to this learned audience that in the aftermath of the Indian Mutiny, the finger was very much pointed at the East India Company artillery regiments which were seen as hotbeds of sedition. What this meant was that the East India Company's artillery was purged in the aftermath of the mutiny and it was decided that there would be no Indian artillery

regiments; it was considered too risky to place heavy weaponry in the hands of a military that had proven itself unreliable. From then on, Indian field artillery and almost all of its heavy artillery would be provided by the Royal Artillery.

There were two exceptions to this rule. Firstly, a single four gun battery of coastal artillery remained. The other exception was the Indian mountain artillery.

The Indian mountain artillery had determinedly avoided joining the mutiny, and indeed had been at pains to actually express its loyalty to the Crown during the mutiny. Furthermore, they were held in the 1850s to be the finest mountain artillery that Britain could call upon. Why lose this very experienced quite unique artillery force which had proven its loyalty in the mutiny?

And so, although Indian field artillery was abolished, six batteries of Indian mountain artillery were retained, four of them based on the North West Frontier and two based further South. And this was an extremely useful asset for the main area of operations of the Indian army and where it would spend most of its time, not to mention a great deal of blood. This was the North West Frontier between what is now Pakistan and Afghanistan.

The Frontier province was ideal mountain country for the local tribes who frequently crossed the border in raiding incursions and occasionally were subject to punitive raids that went in the opposite direction. The terrain was largely unsuitable for

traditional field artillery or wheeled artillery in general. But it was a very intense fighting environment where some form of fire support was obviously required. Mountain artillery filled that gap.

One of the reasons why the four mountain batteries that were stationed in the North West had no great interest in joining the mutiny is that these men had spent many years fighting against the tribesmen in Afghanistan. To them, these were almost racial enemies and any sign of weakness on the North West Frontier would probably draw a raid. Mountain artillery was clearly going to be an essential component of the new Indian army that emerged in the aftermath of the mutiny.

MOUNTAIN BATTERY ORGANISATION

Just 20 years or so after the Indian Mutiny, Figure 1 shows 2 (Derajat) Mountain Battery which would accompany Lord Roberts's punitive expedition to the plains of Afghanistan in the Second Afghan War. It is a great picture of the battery on the move; each gun is broken down and is being carried on special



Figure 1. 2 (Derajat) Mountain Battery during the Second Afghan War, 1879.

saddles on mules with the gun teams around them.

What did an Indian army mountain battery look like in this period? Indian mountain batteries basically, did not change their organisation from the 1870s right up until the First World War. Most, but not all, mountain batteries would be six gun batteries. There were a handful of four gun batteries that existed, but when they went out on campaign, they usually up-gunned to six guns.

An Indian mountain battery was moved, carried and supplied by mules. There would be 30 large gun mules, which would carry the guns split down into transportable loads, 30 ammunition mules, and 30 mules carrying spare parts for the guns. Also there would be 30 spare gun mules that would serve as relief for those that were carrying the guns. One group of gun mules would be resting whilst the other group was carrying the guns, which greatly increased the overall mobility of the mountain battery. Finally there would be 65 baggage and reserve mules which, as the name implies, would be carrying the unit's baggage and they would also be there to fill in for casualties. So in total a six gun battery required 185 mules, handled by 94 drivers or muleteers.

Mules are very hardy and very patient in many respects. There are few accounts of grumpy and difficult mules in Indian mountain batteries; their mules were really quite placid in their

outlook. They were mobile, agile, physically strong, and able to endure long marches, but they could also produce a certain amount of speed when rapid manoeuvre was required. Each gun had a detachment that was entirely Indian, consisting of a Sergeant or Havildar and eight gunners.

The key to mountain batteries was speed and mobility. The essence of the mountain battery was to move quickly and take up positions where the enemy did not expect them to be. This might include either closing with the enemy or taking up a stand-off position. Ideally all six guns in a battery would come into action within supporting range of each other but it was not unknown for the battery to split into three two-gun sections deployed in different places and firing in different directions. This required a high degree of confidence and initiative from the officers.

The batteries were equipped with various weapons during this period but they were all designed on the same principle; a multi-piece gun that could be broken down into manageable loads that would be carried by mules. Up to 1914 the mountain gun was a Rifled Muzzle Loader (RML) with a calibre of 2.5 inches and a shell weight of 7 pounds. I shall say more later about how the calibre changes during the First World War. This gun was used in the Boer War.

The images show that the guns were small and very low to the ground. It did not need a large footprint to deploy the gun so that it could occupy gun positions on relatively small outcrops of rock. It was useful for the crew to keep low down because the fighting on the North West Frontier often invited a degree of sniping at the gunners. There was no gun shield for protection, so the gunners would load, sight and fire the gun kneeling or even lying prone, which reduced their individual vulnerability. The guns had no recoil systems until late in the First World War so they had something of a kick back when fired. This meant that they had to be carefully positioned so that they could easily be run back into position after firing.

The maximum range of the 2.5 inch gun was modest. But in reality, guns tended to come into action at a much closer range than this. 1000 yards was considered about the normal range for a mountain gun to come into action in mountainous terrain. The guns fired directly over open sights so short ranges make sense when you think about the difficulty of finding and engaging targets.

The guns fired a variety of shell types. The two primary shells were shrapnel and common shell, which was the precursor of high explosive. In the event of the mountain battery being attacked by infantry, the shrapnel shells would be set to Fuze 0 so that they would detonate the moment they left the gun barrel spreading shrapnel to repel enemy troops who are closing in.

The guns broke down into 5 mule loads which is also true of the mountain guns later in the First World War. The gun barrel could be separated into two pieces and had a screw thread to hold the two parts together. See Figure 3. Each wheel was a separate mule load and the carriage system made up the fifth load. Hence there were 30 gun mules for a six gun battery.

It is the ability to break the gun barrel into two parts that the term 'screw gun' comes from. The screw guns were already a legend in India by 1890, when Kipling penned his famous 'Screw Guns' poem. And I expect that you can recite this poem from memory as it is the RA Regimental song.

Wherever the Indian army went on campaign, their screw guns would invariably come with it. Although you would not make a mule gallop, you could make it trot at a fair speed. The sight of them coming into action and the evident skill with which the gunners handled their screw guns aroused the admiration of everybody who saw them.

Fighting on the North West Frontier was often bitter and required nerves of steel. The enemy was ruthless. Prisoners were not routinely taken and, as fighting in a mountain battery often put you at the forefront of the action, these gunners were frequently in an exposed position. It is no surprise that mountain batteries recruited the best officers and the best Indian gunners that they could find.



Figure 2. 2.5 inch Gun Drill. Separating the barrel into its two parts © Wikipedia.

This was very much an elite formation. You had to be very good to become an officer there and you had to be even better to be retained as an officer because the mountain batteries were not shy in weeding out young officers who did not make the grade.

All the officers in an Indian mountain battery were white and provided by the Royal Artillery. Any self-respecting Royal Artillery officer in India, who had a taste for adventure and a desire to see action, would try and get themselves posted to a mountain battery because these batteries saw far more action than a regular field battery would. The constant raiding and counter raiding on the North West Frontier and the need to have guns on hand to repel these raids or participate in punitive action meant the chances of seeing action were enormous. With mountain batteries in the forefront, the desire to be an officer here was high. This meant that the mountain batteries could be choosy about whom they picked. Only the best officers were allowed in, and this extended also to the gunners.

The standard of training for the gunners of the Indian mountain batteries was very high, very strict in fact, and even in the East India Company period, pay for a mountain battery gunner was higher than that for an East India Company artillery battery. There was a way to weed out the unfit so that only the best remained because being a mountain gunner was difficult; it required a great deal of skill, initiative and physical fortitude.

The NCOs of the batteries were very good, and often very long service, particularly the Nos 1 in charge of each gun. It was calculated in the 1880s that the average length of service for a mountain gunner NCO was about 12 years, which gives you some idea about how experienced these men were.

Figure 4 is actually taken after the declaration of the First World War, but it shows what you might call the standard gun of the Indian mountain artillery in the First World War, the 10 Pounder (Pdr) which has a calibre of 2.75 inches was an upgrade on the 2.5 inch and a better gun. It was essentially designed to the same principle and would still break down into five transportable loads. The maximum range of 6000 yards was a little greater, although I have not come across any account of a mountain battery firing at that range. It was easy to handle, had a 10 lb shell and was a little more accurate than the 2.5 inch.

Figure 3 gives you some idea about how the gun would be operated. If you look across to the right of this picture, you can see a gun team kneeling. Generally, you'd operate a mountain gun kneeling. I can't identify the exact unit here, but there are only two Indian mountain batteries in Mesopotamia in 1914, so it's either the 3rd (Peshawar) or the 10th (Abbottabad) mountain battery.



Figure 3. Officers and gunners with 10 Pounders in Mesopotamia.

Indian mountain battery operations were based on 3 concepts:

The first was their ability to go almost anywhere; mountain batteries prided themselves on being able to come into action in the most difficult of places, even if there was only space for a single gun. They understood the psychological advantage, especially against tribesmen, of a gun suddenly opening fire from a gun position that seemed impossible to occupy. The morale effect of this surprise fire was very, very great.

The second principle was speed of movement. I have mentioned several times that a mountain battery was surprisingly fast cross country. It might not be as quick as a fully horsed battery galloping across a plain, but in rugged or broken terrain, a mountain battery could move faster than an infantry unit. The idea was to throw a mountain battery or a section of guns out to a flank, or suddenly to deploy a section close to an enemy firing line. Added to this idea, was the considerable morale effect of the sudden appearance of two or maybe even six mountain guns suddenly hammering away at relatively close range. As I mentioned, mountain batteries were expected to come into action about 1000 yards from the enemy.

The final aspect was speed of coming into action; Indian mountain batteries worked tirelessly at going from what was described as in motion to in action as fast as possible. The standard that Indian batteries aspired to was to get the first round off 30 seconds after the order to go into action. There was fierce competition between mountain gun teams to achieve this. Achieving this meant that they were pretty formidable close support weapon and this was definitely what the Indian army expected of its mountain guns; they were considered the cutting edge.

By 1914, the Indian mountain battery arm had expanded from six batteries in 1857 to twelve batteries ready for service plus another four batteries in State forces. The fact that the number of Indian mountain batteries expanded over this period tells you how useful they were to the Indian army.

To emphasise everything I've been saying about the ability of mountain batteries to find places to fire and the speed of deployment, I'd like to read you a quote produced after the First World War by a British Indian army veteran, reflecting on the power of the mountain guns:

'The mountain gunners boast was that they could go anywhere where a man and a mule could put a foot. It was a remarkable sight

to see a good mountain battery coming into crash action. What would appear to an uninitiated eye to be a disorderly assembly of mules and soldiers would suddenly stream into position. There will be a brief pause with much exertion and heaving of lumps of metal, and then within a minute the animals would be led off at a run. Leaving six or four sturdy guns with their detachments kneeling smartly around them. On the line of march, mountain Gunners always out marched the infantry keeping up a steady clip of up to 4½ mph, mile after mile and day after day.'

Afternote: See footnote for another description of mountain guns coming into action by soldier and author John Masters.¹



Figure 4. 15th Sikhs on the march in France.
'Gentlemen of India marching to chasten German hooligans'

Figure 4 is a famous postcard that often comes up at collector's fairs. It was produced by the French, and shows the 15th Sikhs arriving in France. The translation of the caption is 'Gentlemen of India marching to chasten German hooligans'. These are men who go off and see their first taste of action when the Indian army is activated.

It was clear that mountain batteries would have little opportunity to serve in Europe; Flanders was not known for its mountains. Consequently no Indian army mountain batteries would travel with what was called the Indian Expeditionary Force A (IEF A) to Europe. Mountain batteries were assigned to the Indian forces heading for other theatres.

GALLIPOLI

The first really significant action that would actually be seen by the Indian artillery was Gallipoli in 1915. Two mountain batteries would serve in Gallipoli: 21 (Kohat) and 26 (Jacob's) Mountain Batteries. What's particularly fascinating about Indian mountain batteries at Gallipoli is that they were not fighting with the Indian army. The ANZACs were part of the initial invasion on the 25th of April. There was no such thing as an Australian mountain battery,

and ANZAC Cove (as it became called), where the Australians were going to land would involve some really tough mountain fighting. If any of you have been to Gallipoli you will know how appallingly difficult it was to fight out of ANZAC Cove which was surrounded by hills rising to 700 feet. So there was a need for some sort of mountain firepower support. See Map 1.

The Indian mountain batteries had been left behind in Egypt when the bulk of the Indian army decamped to Europe. The batteries were attached to the ANZACs and they would land in the follow up wave on the first day from boats with their mules in tow on the western side of Gallipoli. They came into action directly and fought very hard alongside the ANZACs on that first very bloody and difficult day when about a third of the landing assault troops were killed or wounded. Here is an Australian account of the landings written later in the day:

'The Australians were really struggling to cling onto their beachhead, under fire from Turkish artillery that was operating inland, and from Turkish rifles and machine guns as well, struggling to hold that thin strip of beach, and that really fingertip hold on the hills on the other side. An Australian account remembered that there was a battery inland that was impossible to locate. During the whole afternoon, it fired continuously.

A salvo of four shells came down every minute onto the ridges, which our troops were holding and holding for the most part without protection. Some of our men were in deserted Turkish trenches, of which the Turks had the exact ranges. The slaughter was horrifying. The Navy could do nothing practically to help because we could not tell them where to fire.

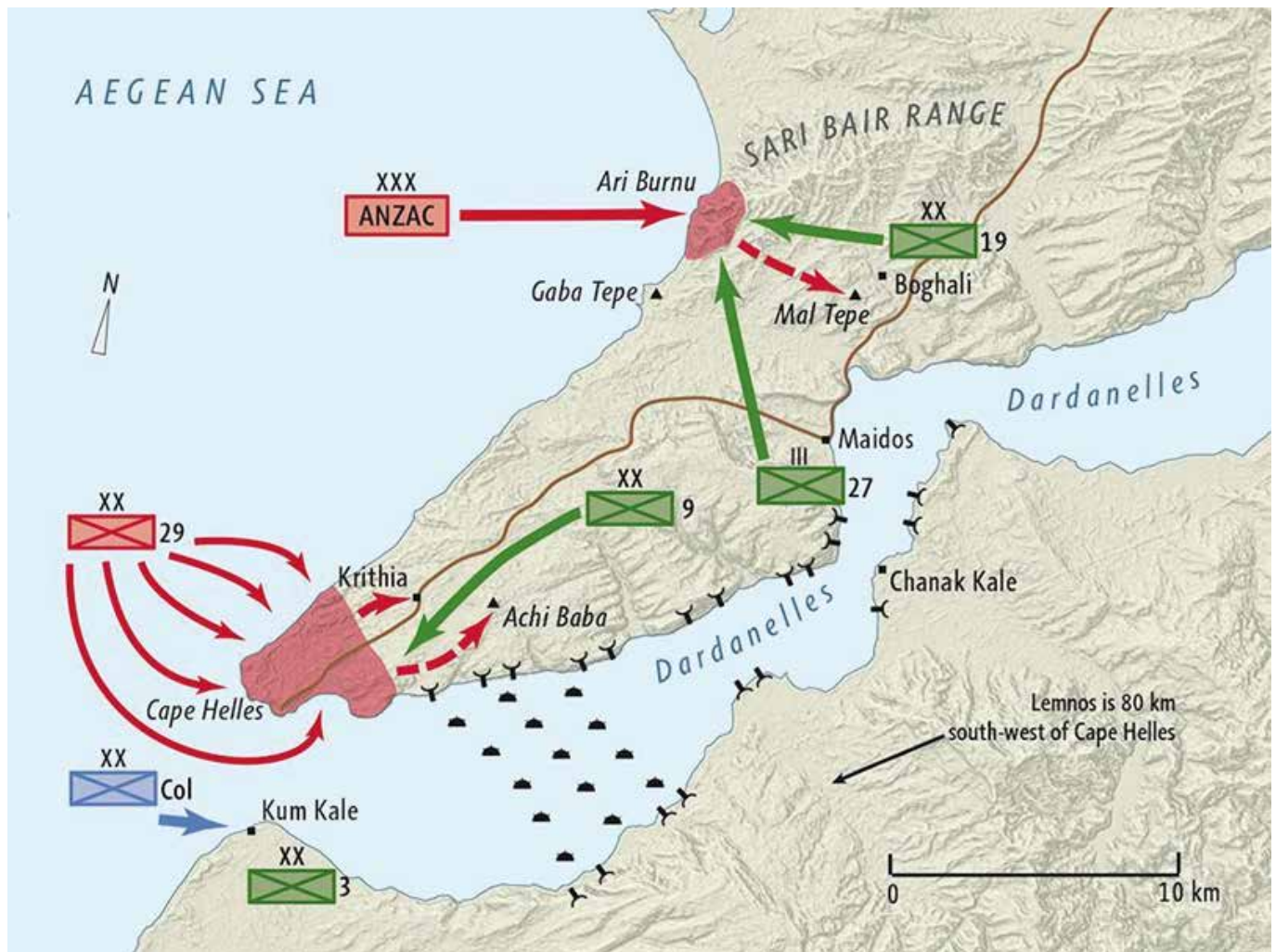
We received no relief from this gruelling fire until a small force of Indian mountain artillery and that would be the 26th Battery, which had landed with us, managed to drag its guns into a position just behind part of our line which was suffering severely. Then there was the sound of our guns answering the enemies. It came like fresh water to the infantry. The guns were doing blooming good work and this was by no means an easy position for any battery to be in. 26 fired over 300 rounds on the 25th of April. It received return fire as well as firing 323 rounds in total. Two British officers were wounded in the fighting, one of whom would die of his wounds. An Indian NCO and 18 soldiers were wounded and 11 mules were lost, killed or wounded as well.

The courage of 26 Battery coming into action would be recognised with awards; British Captain Kirkby will receive the Military Cross for bringing his troops into action. Three Indian gunners would also receive gallantry awards for manning their guns in an exposed position and engaging a battery of Turkish guns with counter battery fire sufficient enough to eventually silence the enemy battery.

In fact, many men were wounded and killed on that first day in what must have been a pretty gruelling duel, six mountain guns against four Turkish guns. The Turkish battery were field guns and therefore fired a heavier shell. It was an uneven contest in many ways and the fact that mountain guns managed to win, I think, is testament to their skill and determination.

The battery losses were so heavy that the next day, 20 Australians who had some experience of handling artillery were detached from their infantry units and placed with the mountain

1. Lieutenant Colonel John Masters, DSO, OBE (1914–1983) was a British regular officer of the Indian army and novelist. He saw service on the North-West Frontier in 1937 with the 2nd Bn of 4th Prince of Wales's Own Gurkha Rifles. In World War II, he served with the Chindits in Burma, and became the GSO1 of the 19th Indian Infantry Division. Masters is principally known for his historical novels set in India, notably *Bhowani Junction*, which was turned into a successful film. One of his three volumes of autobiography, *Bugles and a Tiger*, has a splendid description of a mountain battery coming into action at speed in Chapter 18. *Bugles and a Tiger* by John Masters. Pub 1968 by Cassell Military Paperbacks and other editions more recently. © Wikipedia.



Map 1. April 1915 Landings on the Gallipoli peninsula © New Zealand History

battery. I think that tells you two things; one was the losses that the 26th took and secondly how important their firepower was in those precarious early days at Gallipoli that you would thin out the very bloody and battered ANZAC infantry to keep your mountain guns in action. Jacobs Battery would stay in action with the Australians through the entire campaign.

Figure 5 shows a 10 Pounder in a dugout somewhere in Gallipoli which dates it a little. This is not April 1915, but judging by the relative sophistication of the dugout, later in the campaign - probably June, July or possibly August. The nature of the fighting largely precluded the rapid deployments for which mountain batteries were famous and mountain guns would fight from dugouts and positions like the one shown in Figure 6, but would still rely on relative speed. They were able to put a few guns into a dugout, open fire unexpectedly, fire maybe a dozen or so rounds, and then relocate to another position before Turkish counter battery fire or snipers could draw a line to them. The 10 Pounder was also able to provide fire support for Australian attacks.

The problem that the batteries had was lack of sight lines because the Turks largely occupied the high ground and were well concealed. It was difficult to do much more than provide suppressing fire with shrapnel, but the battery fought throughout the campaign from April until final evacuation at the end of 1915 and, in the process, they would fire a total over 9000 rounds for the loss of 21 men killed and 144 men wounded.

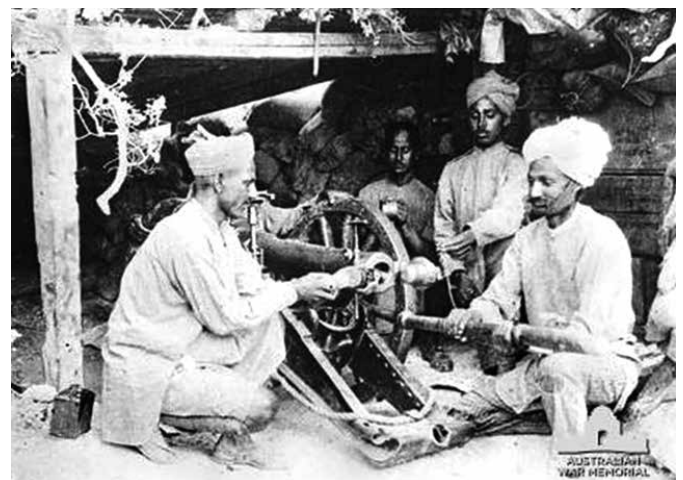


Figure 5. A 10 Pounder in a small dugout in Gallipoli © Wikipedia.

The second battery that accompanied the ANZACs was 21 Battery which also fought pretty ferociously. It too had landed on the first day, although it didn't actually get into heavy action until later in the campaign. It was in action, according to its own War Diary, continuously for 238 days. In that period it fired shells in anger every single day. By the time it finally left Gallipoli, it had fired 12,248 rounds or 2041 rounds per gun. They suffered

heavily: 11 men were killed, and 134 wounded, of whom five died of wounds. 35 animals were killed and 199 wounded and, intriguingly, 1 mule went missing and was never located.

This gives you some idea of the fierceness of the fighting that these batteries were engaged in, and for much of the campaign this was the best fire support that was available. In fact, a tradition actually grew up amongst the ANZACs of paying tribute to the mountain gunners that lasted until after the Second World War, though sadly has faded now.

In some ways, this was not the ideal fighting environment for the mountain gunners. Despite being mountainous, the lack of mobility robbed the mountain batteries of their greatest asset, their ability to redeploy quickly. But they showed their initiative and their willingness to make the most of their small, easy to manoeuvre guns, and move them from dugout to dugout to try and find new locations. The fire support they rendered was important, albeit sadly never decisive.



Figure 6. (Kashmir) Mountain Battery with 10 Pounders at the Battle of Mahlwa, 15 to 18 October 1917.

EAST AFRICA

The second campaign in which we see a great deal of mountain artillery is East Africa. From the very first days of the East African Campaign,² mountain artillery were involved; some fired from the decks of ships at the Battle of Tanga,³ a bit of a shambolic effort in August 1914.

The characteristics of the East African Campaign were absolutely enormous distances and a wide variety of difficult terrain including anything from grasslands and sweeping veldt to

high plains and high veldt. Some of the rugged hill terrain was desert or near desert. All this demanded mobile troops with incredible levels of endurance. Although we tend to associate the East Africa campaign with an awful lot of marching on the plains, most of the fighting would actually take place in rugged and broken terrain. This area was almost completely uninhabited and naturally, as a result, very densely overgrown.

Figure 6 is of 1 (Kashmir) Mountain Battery at the bloodiest battle of the East African Campaign at Mahlwa from 15 to 18 October 1917, and gives you some idea of the terrain. Here you can see dense grassland and the classic kind of bush veldt terrain in the background. This battery is going into action at this bloody battle.

The big difference between East Africa and Gallipoli was that at the Gallipoli there was no real ability to manoeuvre, whereas in East Africa there was probably too much opportunity for manoeuvre and the Campaign was fascinating, complex, gruelling, and exhausting; it was as much a campaign against nature as it was a campaign against German forces.

I gave you statistics for 21 and 26 Batteries at Gallipoli which suffered heavy losses over the course of the campaign. The batteries in East Africa also suffered heavy losses, but very few of them in action. To give you some flavour of that: in the course of the campaign, 2 Mountain Battery lost 948 mules from all causes in two years between 1914 and 1916. Of the mules lost, only 11 were lost in action. The remainder died of disease or exhaustion in the noxious East African climate.

It was not merely a case of the 2nd Mountain Battery being unlucky or being profligate with its mule flesh. The 4th (Hazara) Mountain Battery also had an absolutely appalling experience. During the rainy season, it lost 75% of its entire mule strength in one month due to an outbreak of disease amongst its mules, and these are, of course, hardy animals. But the disease proved impossible to contain.

East Africa required the rotation of mountain batteries because the casualties among the mules were so heavy. There were also high casualties among the men who were equally vulnerable to disease. Batteries were left totally exhausted and, it must be said, somewhat demoralised. The constant marching in appalling conditions with very little opportunity for action took a great toll on men and upon their spirit, especially as they were losing their mules at such a high rate.

Batteries were therefore rotated. No battery would serve in East Africa for more than two continuous years; it was simply too gruelling for them. Nevertheless, mountain batteries would always serve in East Africa in some form or another. Their mobility was simply too great for them not to be attached to the roving forces. When they did have opportunities to get into action, such as 1st Battery, they could do devastating work.

The Germans also operated the equivalent to mountain guns manned by German mountain gunners as well as some Askari

2. The East African campaign in World War I was a series of battles and guerrilla actions, which started in German East Africa and spread to portions of Mozambique, Rhodesia, British East Africa, the Uganda, and the Belgian Congo. The campaign all but ended in German East Africa in November 1917 when the Germans entered Mozambique and continued the campaign living off Portuguese supplies. The strategy of the German colonial forces, led by Lt Col Paul von Lettow-Vorbeck, was to divert Allied forces from the Western Front to Africa. His strategy achieved only mixed results after 1916 when he was driven out of German East Africa. The campaign in Africa consumed considerable amounts of money and war material that could have gone to other fronts and lasted until November 1918.

3. The Battle of Tanga, also known as the Battle of the Bees, was an unsuccessful invasion of the German East African port of Tanga by the IEF B on 3–5 November 1914. Under the command of Maj Gen Arthur Aitken, British forces attacked Tanga in concert with IEF C, which concomitantly attempted to capture Longido. The battle was the first major engagement of the East African campaign and saw Aitken's troops defeated by a smaller force of German Schutztruppe and forced to retreat.

gun crews. It was found that in engagements when an Indian mountain battery engaged a German mountain battery, it was an unequal contest. Indian gunners were better trained, more skilled, and more willing to redeploy their guns and would quickly force their German opponents to withdraw. Or they would be simply blown away from their positions.

But the chances to do this were few and far between because the German skill in East Africa was only to fight on German terms, and even battles such as this would ultimately cost the British and the Indian forces more casualties than they inflicted upon the Germans. It was a difficult campaign, but one that was challenging for different reasons to Gallipoli.

MIDDLE EAST

The front where the greatest success was achieved by the mountain artillery was the Middle East. Here I'm describing the Middle East broadly including Mesopotamia, Palestine and Persia where there would be Indian mountain batteries operating at various times.

Figure 8 shows the Hong Kong, Singapore Mountain Battery training in the desert in early 1918. I am not sure whether you should count this unit as an Indian army mountain battery. Strictly speaking, it is not part of the Indian army but the battery is manned by white officers and Indian gunners. It traces its history back to the 1800s and, from the earliest days of the battery, rather than drawing on the local Chinese population, the officers in charge specifically requested Indian mountain gunners to man the guns. Crucially, the battery could offer a higher rate of pay than the existing mountain batteries. This was a double-edged sword because the existing mountain batteries were going to see action, which came with its own rewards, but the Hong Kong Singapore Battery didn't see any significant action until the First World War. However, possibly due to the lack of action, they did achieve high training standards.



Figure 7. The Hong Kong Singapore Mountain Battery training in the desert in 1918 with 2.75 inch modified guns. These had gun shields and a recoil system. The observation party in the background is using a heliograph on a tripod.

I've counted them as an Indian army mountain battery, even though they weren't part of its order of battle. They are using a modified version of the 10 Pounder using the same 2.75 inch barrel and known as the 2.75 inch mountain gun. This was a direct response to the experiences of mountain gunners up to this point in the war who came out strongly with the need for a gun shield because they were often pitted against field batteries and rifle fire could be deadly at 2000 yards and machine gun fire at double that; simply kneeling next to your gun or even going prone wasn't enough protection. Improvised gun shields were

being fitted on 10 Pounders as early as 1850, but clearly there needed to be a standard issue for this. In addition the modified gun was fitted with a recoil system and fired a bigger 12 lb shell to an increased range of 6000 yards. However the 2.75 inch gun was a bit of a stop gap; only 183 of these guns were manufactured during the war and no more afterwards.

Figure 7 is a great picture of a two gun section in position with a ranging party off to the flank with a British officer observing targets and controlling fire with a heliograph on a tripod for communicating.

This particular battery is attached to the Imperial Camel Corps which I think gives you some idea how fast mountain batteries could move. They could keep up with camels in the desert. Mountain artillery had proved incredibly useful in the Middle East, and, as anybody who's been to the Middle East knows, just like East Africa, it can have wide variances in terrain from flat sandy deserts, which you can see in Figure 8 that are perhaps the natural image of Arabia, to rugged and difficult places such as Palestine, Mesopotamia (modern day Iraq), and Persia (modern day Iran).

The key for much of the fighting in the Middle East was the need for mobility in an area where, if roads existed at all, they were pretty awful and really no more than dirt and stone tracks. What better, then, than to employ here fast moving, relatively mobile mountain batteries. We therefore have the odd concept of mountain batteries fighting in open desert at various times from the Mesopotamia campaign, onwards to the defence of the Suez Canal in 1915, to the multiple battles of Gaza, and then the advance into the Holy Land. Mountain batteries were in the forefront of action, whether they were fighting with conventional British and Indian forces, or whether they were fighting with the Imperial Camel Corps. They also fought with Lawrence of Arabia who operated some mountain batteries, albeit Egyptian army mountain batteries.

These guns saw almost continuous action throughout the Middle East, and it was perhaps here where they showed the best of their ability. Gallipoli was too tightly packed and ranges too short for them to take advantage of their mobility and East Africa was simply too big. In the Middle East, they had ample opportunity to be both mobile and aggressive in action and their ability to bring fierce close-range fire to bear upon a Turkish position was crucial in many of these actions.

In Southern Arabia and to an extent in Mesopotamia, the force density was quite low. A patrol of Camel Corps or Indian forces would often go with a mountain battery as its built-in firepower and this could be crucial when relatively small clashes occurred. The ability to bring in a highly trained mountain battery would often be enough to win the battle for the Allies, no matter how determined the Turkish defenders or indeed attackers were.

DEVELOPMENT OF THE MOUNTAIN GUN

The value of mountain artillery in the Middle East would lead directly to further improvements in guns. You've already seen the stopgap 2.75 inch gun, but the need for a gun shield and a howitzer gun was a message that had been continuously sent back from the batteries

Whether this was at Gallipoli or in the wider Middle East, the need for a howitzer which could deliver plunging fire as well as direct fire was absolutely clear and the need to fire a more devastating high explosive shell rather than the relatively ineffective common shell that the 10 Pounder had was also important. The result was really the best mountain gun that the

Indian army ever had. This was the 3.7 inch mountain howitzer that arrived in the mountain batteries from 1919 onwards, going straight to the Indian army in the Middle East as a response to this. (Figure 8). This fired a 20 lb shell to a range of 5900 yards and had a variety of shell types.

You can see that this is a much more modern looking piece of kit compared to the 10 Pounder. In fact, it was so modern that it would serve throughout the remainder of the First World War, all of the Second World War, and indeed for some years after Indian independence. It was a fantastic gun, mobile but still able to be carried by the same 5 mule team that had been a design requirement and yet, able to deliver far more firepower and



Figure 8. The 3.7 inch Mountain Howitzer in action in Burma on 3 November 1944 © Wikipedia.

benefit from many other improvements. It had a gun shield, and the recoil mechanism on the 3.7 inch was much better, which allowed it to deliver faster, more accurate fire without having to constantly run the gun back up into position.

Although not every battery in the Middle East would receive their 3.7 inch howitzers before the end of the campaign, batteries operating in the main theatre of the Middle East – the Holy Land or Palestine Theatre - were all re-equipped with 3.7 inch howitzers. They would fight alongside Allenby's advancing forces until the end of the war, either as complete batteries or sometimes as detached sections, and their mobile firepower was absolutely crucial to success. After the great Battle at Megiddo where the Ottoman and German forces were shattered, it is interesting that, as the Indian cavalry pursued and pushed forward, close behind them came mountain batteries just in case the Ottomans turned and made a stand. I think it was in this theatre that we see the

mountain batteries at their most important and most valuable. In fact, the mountain battery contribution was so great in the Middle East that more of them were required.

To bring this to a conclusion. As I mentioned, at the start of the war you had twelve pre-existing Indian army batteries and four State Indian army mountain batteries. A further three batteries will be raised during the campaign. The Indian mountain batteries were never supremely numerous. There is a dispute about how many batteries saw active service in World War I; it is somewhere between 15 and 17.

Compared with the Western Front which involved millions of men and thousands of guns, this is still a relatively small contribution - not much more than 100 guns in total. But what we have to remember is that in many of the campaigns where they were fighting, force densities were relatively low, or, if they were not low, like at Gallipoli, the presence of these guns was a huge advantage.

SUMMARY

The Great War tested mountain artillery outside Europe, and in the right terrain its mobility made it highly effective at tactical level.

The Indian army had a gun that could go anywhere. The value of this mobility was most apparent in the Middle East. The Ottoman army had heavier artillery but due to problems with horse supply it tended to lack mobility. By contrast, the ability of British and Indian forces to bring in a battery of mountain guns would be decisive, time and time again. In fact, in the later stages of Lawrence of Arabia's campaign, one of his officers actually had the innovative idea of mounting 10 Pounder mountain guns on trucks. They lacked the mules but they could drive the trucks at speed and then quickly have their guns assembled and brought into action.

We might be tempted to dismiss these small guns as a Victorian era novelty, perhaps or a novelty of the Raj. In actual fact my studies clearly show that wherever these batteries served, they were always useful. And the fact that the Indian army increased its mountain artillery by 25% during the course of the First World War, I think, is testament to that. Because there aren't many of these batteries, we forget how important individual actions could be. They had relatively small numbers, but groups of elite mountain artillery could play a very important role.

This then is the story of the Indian artillery in the First World War.

If you want further information I can recommend this book: The History of the Indian Mountain Artillery by Brigadier General C A L Graham. It's a history of the Indian mountain artillery going right back to the 1800s. Full of interesting snippets of information, the confusing lineage of units and so forth, and some absolutely fabulous accounts about Indian mountain artillery in action.

4. It is interesting that by the end of WWII, the Indian artillery had on strength 11 Field Regts, 3 Medium Regts and no less than 14 Mountain Regts (50% of their unit strength) © British Artillery in WWII website.

5. The History of the Indian Mountain Artillery by Brigadier General C A L Graham. Paperback pub 2014 by Naval and Military Press. ISBN-10: 1783311436.



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DUNCAN ESSAY 2025

Explore how autonomous technology and artificial intelligence could transform artillery capabilities. Discuss the potential benefits and challenges of integrating autonomous systems into the Royal Artillery.

By Major David Hainsworth



Major Dave Hainsworth RA currently commands 159 (Colenso) Battery, 26th Regiment Royal Artillery. He previously served at 3 DRS X Headquarters as SO2 G57, where he contributed to the delivery of large-scale training exercises and the development of deep battle concepts. Prior to attending ICSC(L), he worked within the Ground Manoeuvre Experimentation Team at 3rd (UK) Division Headquarters. Earlier in his career, Major Hainsworth held several appointments: Adjutant of the Young Officers' Branch at the Royal School of Artillery, FST Commander with 1RHA, and Troop Commander at 39th Regiment Royal Artillery. This essay won the Innovation Award in the Duncan Essay 2025 competition.

It's strange how you notice a difference in things. The ground, under foot was always distinct after delving. The engineers' machines could create an underground space within minutes, but there were always subtle yet noticeable differences between a delved hole and a natural or hand-dug hole. The

ground was rough, crunchy, it felt; even through a combat boot like the mud was fussed together into equal sized parts. The sound was another factor. Her footsteps echoed through the long tunnel as she walked from the outside light down into the hasty headquarters hole.

The Battlegroup had wasted no time in setting up; desks, chairs, maps, and screens filled the space. She reflected on how a headquarters, in its most simple form probably hadn't changed for over 100-years, yet now, in this war, the command and control of both sides was dominated by the ongoing acceleration of technology. She saw her Battery Commander hunched over a large map board; their area of operations enhanced with augmented overlays displaying known friendly forces positions and expected enemy locations. Both sides had become fast and effective at hiding. She walked over to him.

"BC" she combined a relaxed greeting and acknowledgment. He was fixated on the map yet slightly raised his head and nodded with a tired smile.

"Morning, all set?" the reply was to the point. The battlegroup had been planning for a few hours now, and combined with a move to this newly dug facility had clearly seen them all lacking sleep. She opened her control tablet attached to the chest plate of her body armour, pressed her fingerprint to unlock and flicked the information straight towards the floating projector that was currently lighting the analogue map into a 3d projection of the ground. "Do you wish to share?" an AI generated voice enquired; the BC flicked his hand down replacing the previous overlay with the new information.

"BC, the ground sensors have completed their soak, and we've detected vibrations matching our HPTL (High Payoff Target List) in these areas" she pressed her fingers onto the tablet's screen, the map in front altered, creating red ripples to match her input. "My Arty Int team have run these through the algo and it's a 90% match on expected enemy laydown. Although with H set for a 2300, we assess they'll be at Stage 5 by then".

"Brigade ISR (Intelligence, Surveillance and Recce) has matched our assessment." He replied "The Space guys and girls have got something new up, they didn't say what, but we're expecting the enemy to do a coordinated strike tomorrow." He wasn't looking at her, just staring at the map absorbing his FST Commander's update. "Astrid" he said, as if to no one in particular: "Provide fireplan solution: target zones Lima 4, Lima 5 and Juliet 1, enemy artillery, heavy, stage 5 emplacement, night attack, destroy." The projector hovering over the map board switched off the overlay as a bead of green light began orbiting the football sized drone computer. "Processing" replied the AI voice. They both stood in silence, waiting. The room remained at a low buzz of softly spoken voices. She looked around briefly, most soldiers and officers sat with VR (Virtual Reality) headsets on, hands on gaming controllers, they were all silent. Operating high-altitude ISR drones was mentally draining, VR (Virtual Reality) headsets made the job a little easier, but after an hour or two the operators needed a break, a coffee and some anti-migraine meds. Away from the operators, the Commanding Officer sat on their own desk in the corner. Their face blue-lit by two screens, wearing a headset, their eyes were closed as they absorbed audio sitreps from the previous night's Company reports. A few other staff moved around, providing the finishing St Clair touches to a day's planning; downloading information onto physical drives for high speed drones to deliver, they didn't take the risk with sending plans through data anymore. Combat arms were far more complex now than they ever had been before. Left flanking with bags of smoke would see the battlegroup destroyed in minutes. This war was all about layers. Layers and spectrums.

"Fireplan solution" buzzed the Astrid computer. She snapped her attention back to the map, the BC did the same, still hunched over, his mind clearly approaching his overload point. He needed sleep.

"Target zones Lima 4, Lima 5 and Juliet 1, enemy artillery, heavy, stage 5 emplacement, night attack, destroy – solution: fireplan U40031..." Astrid listed a series of assets, callsigns, targeting priorities, and locations. It was a lot to absorb. Her tablet flicked as the data processed between the LiFi (Light Fidelity) network that connected all devices in the underground bunker.

As Astrid's voice finished her automated targeting pack, her BC sighed. "You know, I don't even know if she's right or wrong anymore. It's been about 3 months since I stopped trying to write my own fireplans." His eyes stayed fixed on the map as the computer simulated on repeat the effects of its latest simulation.

"I'm sure it'll work BC, it always does...do you want me to send it to the other FSTs and the drone squadron?" The others couldn't make this face-to-face, it was rare that anyone could, the battlegroup had lost half of its counter ISR platforms a few weeks ago; EMP (Electromagnetic Pulse) creeping barrage followed by a wave of anti-radiation FPVs broke through their EM STAP (Electromagnetic Surveillance and Target Acquisition Plan destroying BG Step-Up and two PYTHON (an imaginary piece of equipment using the snake naming convention for radar (eg. MAMBA, TAIPAN). wave radars. Since that happened it was difficult to mask any underground delving or armoured manoeuvre, luckily BG Main still had their PYTHON active, and it was only a short drive under the ECM (Electronic Countermeasures) bubble to get to see her BC.

"No, BC's Ack can do it," he flipped down his own tablet, pressing a few buttons sending the information off to the JFC (Joint Force Command) for distribution. "You all set for tonight? Battlegroup needs to clear this whole area before dawn, 3 Mechanised BG will be doing the same in their sector, but we've got the priority for the first 2 hours." He looked at her for the first time in their interaction, his eyes blinking, changing focus on to an actual human being. He gave her a small, tired but encouraging smile.

"The team's all good BC. Once the swarms start flying we'll be on the move. The Company's FPV platoon will sweep ahead, two platoons up front and our anti-tank & anti-flyers on call throughout. It's a simple plan, but we're short of CASEVAC drones so we've got the troops jumping out to clear a lot closer than the OC would like." He nodded, agreeing, but she saw his mind move onto something else.

"Ok ... let the JFC know if you need amendments, you and 31 have got modify privileges until the third phase line, then it's back to us." He stifled a yawn and crunched his eyes, trying to clear them from a fatigue that only rest would solve. "I've been plugged in too long down here, I'll be off comms for the next few hours, I've got an injecto-sleep that I've been saving for today." He patted a long vial strapped into his molle, these new sleep enhancing drugs had been a game-changer for the staff (blue light exposure and living underground had real impacts on their circadian rhythm; injecto-sleep just knocked them out for 4hrs). The BC forced a smile, reached out for a fist pump, she knocked her knuckles into his, nodded and turned to leave.

It was only a short walk back up to ground level, she negotiated the anti-drone netting at the tunnel's entrance and collected her weapon from the rack, nodding to the pop-up sentry turret as she did so. The automated 'friend or foe' machine gun swivelled on its mount surveying the nearby wood. It was colder above ground than under it, the temperature continued to drop but quickly her combat body-glove adjusted its regulator to compensate, she felt the increase in warmth

and the slight increase in sound as the small battery attached to her back responded to the change in output.

After a short walk she reached the vehicle. It was a modified AJAX-3, the same chassis as before, just with several "bolt-ons". The most visible of all was the turret mounted camo-umbrella that covered the entire platform. It's visio-optic shield offered total protection from the skies and, with these newer modules, could be used on the move. She bent down beneath the umbrella that covered all but the vehicles track and climbed up into the turret.

"I told you boss, that's the dream right there." Her Bombardier was on one of his customary 'any job is better than this' rants. He sat in the turret, his green-lit face half in shadow from his crew helmet. "Somewhere, some fxxing civvy is getting a little ping on their phone and all they've got to do is turn off the tele and start flying a little drone about. Cushty. Nice warm house back in the UK, cuppa tea, and once they've messed up their mission... which they will, they'll go back to watching some crap reality TV show. Meanwhile, we're here, still trying not to get blown up on a daily basis." His rant trailed off into a muttering gripe. It was a well versed moan from deployed soldiers. They hated the "fight from home" drone operators; the announcement that they'd be getting medals too had not gone down well.

They both watched their screen as their blue force tracker showed an echelon of small dots appear and advance from the south. The first wave was inbound. This was when things started to get really interesting. This war was truly a game of two halves, for the majority of time nothing happened. The competing layers of conflict changed so dynamically it put both sides into an all or nothing mantra. If drones flew, they got shot down or hit with EM pulse radars, if the radars emitted, they got hit by anti-radar munitions, if those fired long range counter battery could return fire instantly from pre-prepared fire bunkers. When the counter battery reigned in, you could advance, but that meant drones were up and so the cycle continued. It was now everyone's job to make sure every attack was multidomain from its inception.

Whilst the ground callsigns prepared an attempt to seize ground or to do anything, invisible to all was the dynamic dance of the EM spectrum fight. Their higher headquarters, once filled with planning and execution cells was now mostly Royal Signals 'signal warfare' crews. Their job, to adjust our counter EM assets to allow for kinetic strikes whilst also blocking enemy counter attack. It sounded simple, but even with frequency hopping drones and missiles the enemy could easily mass FPVs or ISR assets – their killchain was tight. Maybe not as good as ours, she thought, but it was still pretty good. And once that ECM bubble went down, their trust was firmly in the hands of the SIGWAR (Signals Warfare) operators.

"Ma'am, that's PID (a term used to describe a soldier's appointed role within the ORBAT) on all Targets and Shot from the launchers" her Bombardier said as he pressed an alert on his screen. "Ack" she replied. If the missiles could kill at least a few of the anti-drone wave-guns then the FPVs could do their work. "Let's get ready to move." She pressed a further button on her voice message screen. "Zero Alpha, GH32. That's 'shot on fireplan.' Time on target 2300." The computer displayed her message on the screen and she sent it onwards. The OC wouldn't

acknowledge, she never did. The Commanding Officer stood with the staff around the augmented reality map. Blue and red symbols concerted across the projected landscape; a murmuration of effects synchronised together by the Army's advanced fire control system.

"Astrid – Sitrep" he ordered. The floating white football shaped computer showed her familiar green 'processing' light for a few seconds.

"Operation 342 Tango is proceeding. EMP Barrage complete. Drone Wave 1 complete. HPTL targeting... 75% effective. Friendly casualties... estimated... 32% and rising." She continued, listing the Company's locations, critical assets and logistics. As the AI voice trailed off she was overlapped by the sound of nearby rumbles. The start of the offensive had forced the headquarters to transmit more frequently, and here were the consequences. Enemy detection was good, it was to be expected, even if it was uncomfortable. Hopefully, the enemy was receiving more lethal effects than they were.

"BC, what's the state of the enemy's electro-magnetic capabilities?" he asked, eyes not flinching from the symbols playing in front of them.

"Sir, Astrid assesses that we have EM Superiority over our battlespace, expected to last the next 60 minutes. Space ISR is providing a live feed and Brigade have taken our tasking of drone swarms two and three for deep targeting." The BC replied, reading information straight off his tablet. He looked refreshed, alert. "My lead FST and her company have achieved their mission on objective 342 Tango 1 and she's directing the BGs integral fires to support B Company."

Superiority was fine, for now, the EMP barrage would knock out most of the enemy's trench; automated anti-infantry gatling weapons that could cause havoc on any assault.

And as long as they could keep preventing enemy swarms that would bide them enough time to seize objectives and be underground before the enemy could counter attack. Digging in an entire battlegroup 3 metres underground was no small feat.

The battle raged in front of them, projected like a futuristic wargame. "We'll need to move once this is done." The CO stated, looking at his BGE (Battlegroup Engineer) stood across the table. "Have your delving troop recce and dig a new headquarters location, BC we'll need cover for the move, G4... lets get resupplied when we get there." The corresponding staff officers acknowledged their orders, noting information on their personal tablets.

"Astrid: provide estimates on headquarters locations, prioritise and task for delving." "Processing."

"Astrid: generate fireplan for ground manoeuvre, EM only, mask friendly forces movement." "Processing."

"Astrid: calculate headquarters full resupply, send to Brigade echelon, synchronise location with engineer location recce."

The CO and other staff continued to stare intensely at the battle in front of them. Their plan was working, it should be over soon and all within acceptable casualties. Once they'd moved to a new location the battlegroup could have some well needed rest. Then, as if summoned by his thoughts of rest, Astrid, the floating ball computer changed colour to blue. The AI voice alerted the assembled group... "Orders from Brigade. Operation 342 WHISKEY. To be executed immediately. Time until H Hour, 3 hours... processing."

From 'Pompey' To Pompeii via El Alamein with The 8th Army

By Roger Massie BA (Oxon)



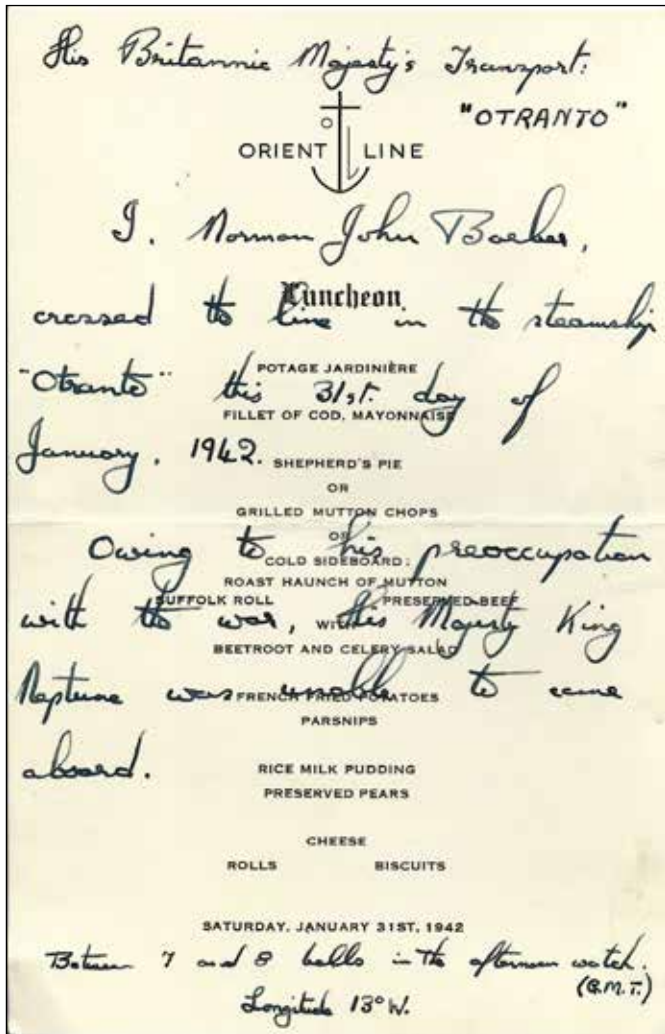
Roger Massie, a former Director at the Council of Europe, has been published in previous editions of the Royal Artillery Journal having edited the diaries of his grandfather (and namesake) Brigadier General R H Massie CB CMG (late RA), describing his actions respectively at the battles of the Somme, Vimy Ridge and the Ludendorff Offensive. His maternal grandfather, Roger's Mountain Battery comrade-in-arms, Major Ernest Edlmann DSO, died in action in 1915 near Basra, Mesopotamia, subsequently Iraq. Like Christine Barber, who has assisted with this article, he is a retired official of the Strasbourg-based European institutions.



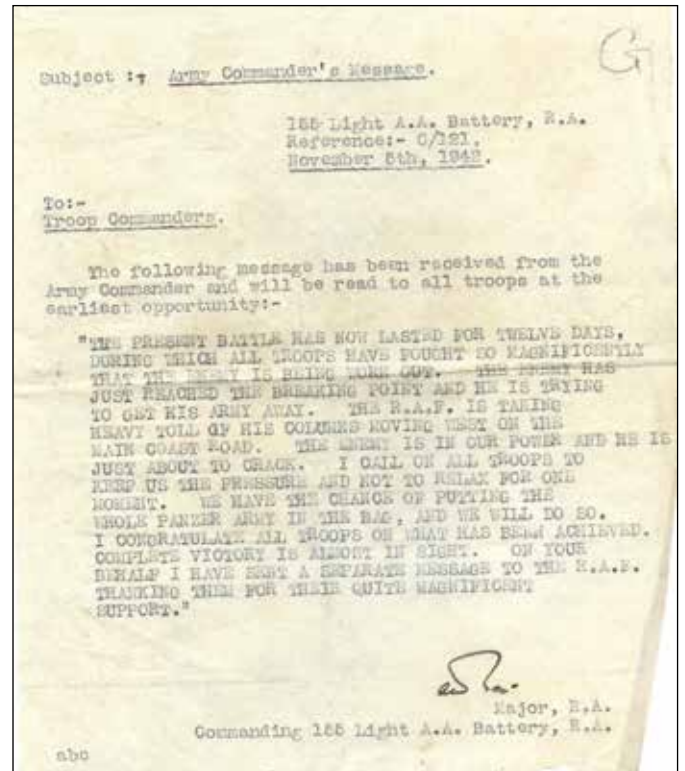
Born in Portsmouth, Lieutenant Norman Barber RA (1920 – 2017) joined up, fresh from school, trained for the Ack-Ack and, after some uneventful 'home' service, embarked in convoy on the grey-painted Orient line SS Otranto in January 1942 on the perilous 2 month journey round the Cape of Good Hope to Suez and on by train to Cairo where, in April, a Commission in the 52nd LAA Regiment with the 8th Army awaited him.

An Ocean 'Cruise' Round The Cape

Though under permanent threat from German bombs and torpedoes, Barber found much to enjoy, not least since even the youngest officer was treated as a 1st class passenger, and was pleased to be given one of the few single-berth cabins. His 4 course lucheon menu on the occasion of 'crossing the line', with considerable jollity, given the circumstances, on 31 January 1942, is attached, annotated, in his hand, that 'Owing to his preoccupation with the war, His Majesty King Neptune was unable to come aboard'. Levity is also apparent in the ship's Souvenir Magazine UVADIT (try pronouncing it). 'The future of that spirit of comradeship for the job ahead will be written with the lives of the men who were worthy of their greatest hour',



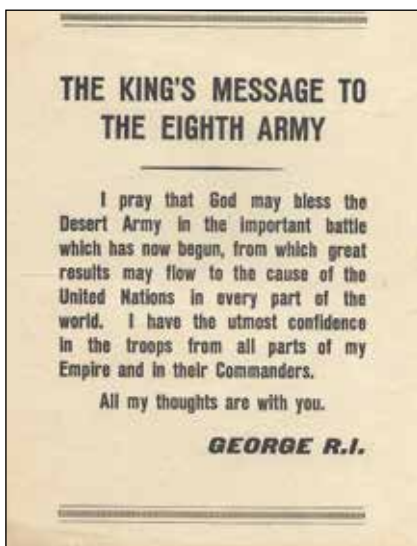
include the King's Message and a carbon copy, dated 5 November 1942, of the Army Commander's Message of congratulation, addressed to all Troop Commanders, 'to be read to all troops at the earliest opportunity', giving a fine flavour of Montgomery's style. Historians have quibbled that the announced intention of 'PUTTING THE WHOLE PANZER ARMY IN THE BAG' was not in fact realised, though this cannot detract from this true turning point of the war.



wrote the Churchillian editorialist, oblivious of the fact that the 'end of the beginning' had not yet been reached in the Western Desert with Rommel's defeat by Montgomery.

El Alamein

References to this iconic battle are scarce in Barber's papers, in all likelihood because his Unit was more than busy. However, they



Dolce Vita?

The reputation of the campaign conducted in the so-called 'soft underbelly of Europe' has been largely conditioned by the memories of such famous 'Gunners' as Alanbrooke, CIGS, and Spike Milligan ('Mussolini His Part in my Downfall'). The former, could not but remember his fairly recent experience of having to take over from a tearful General at Dunkirk while being bundled off the European mainland; while the latter almost faced a firing squad for desertion, in face of the furious refusal of the slowly retreating Germans to be 'put in the bag'. Also talented writers like Norman Lewis ('Naples '44') have done much, with their vivid descriptions of the appalling hardships suffered by the Italian people, to shape the collective memory of posterity. But could not service in Italy compare favourably with, say, the Burmese jungle? Barber's papers suggest that it would.

An admirable and deliberately 'myth-busting' recent Naples '44 historical update is to be found in Keith Lowe's 2024 history, subtitled 'War, Liberation and Chaos'. In its chapter 'City of Pleasure', he refers to the December '43 San Carlo Theatre premiere of Donizetti's 'Lucia.' But this was no flash in the pan. Now, thanks to Barber, we know that 'Rigoletto', 'Madame Butterfly' and 'Tosca' were each performed twice in the week 31 Jan- 5 February.

In his case, a lifelong love of opera was sparked by performances of full programmes, mostly of Puccini, certainly of a very high standard, at the famous San Carlo Theatre.

Sunday February 6th 1944
at 15.00 Hrs.

A SYMPHONY CONCERT

The S. Carlo Opera House
Orchestra
Conductor: **LT. HENRY JOACHIM**

The programme will include:

Symphony N.o IV in D minor	SCHUMANN
Symphony N.o IV in B flat	BEETHOVEN

Booking Commences Monday January 31st

OPERA PROGRAMME

Monday	Jan 31 st.	Rigoletto
Tuesday	Feb 1 st.	Madame Butterfly
Wednesday	" 2 nd.	Tosca
Thursday	" 3 rd.	Madame Butterfly
Friday	" 4 th.	Rigoletto
Saturday	" 5 th.	Tosca

All Performances at 14,30 hrs.
Please note that there will be no Performances
on Sunday Morning

By the time Barber left Naples for the push northwards to victory, liberating Rome, Italy and Europe, he was barely of university leaving age. He was to live a long and full life, marrying Marianne, who had spent those same years with the German Navy, and bequeathing a fascinating collection of documents to their daughter Christine who wishes to share them with his regiment and posterity.



Jon was not a Gunner, but commissioned in the Welch Regiment, landing, like Barber, at Salerno (he was invalided out, shell shocked)? 'Jon', the pen name of William John Philppin Jones, was popular with the troops but not with the top brass (Alex and Monty) who tried to ban him. He pursued a post-war newspaper cartoonist career, being awarded the MBE.'

Also, the hallmarks of Italy have always included 'women' (in addition to 'wine' and 'song'). Barber's papers include a slim humorous publication entitled 'The Two Types' by 'Jon' [see caption below]. In it one finds vivid, but perfectly decent, cartoons. 'Hard luck, old man' commiserates one of the 'Types' to the other, as they admire a passing Lollobrigida-esque beauty swinging an 'x' marked handbag. Barber's helpfully annotates that the cartoon 'appeared the day after the publication of a 'new order' to the effect that Cafés and Brothels marked with 'x' will be out of bounds to all Allied troops.' He supplies no further explanation, but that would presumably have been self-evident to those troops.



WE are going to get home again one day,
and the sooner and the more of us the
better – to my mind anyway. What say you?

The End

Field Marshal Earl Roberts of Kandahar and *Vonolel*

By Colonel Nick Quarrelle



Colonel Nick Quarrelle was commissioned in 1969 and served in BAOR, UK and Hong Kong with 27 and 20 Regiments before being posted to 16 Regiment where he was Troop Commander, BK and Adjutant. After attending Division III of the Army Staff Course at Camberley in 1982 he spent the next 2 years in the Ministry of Defence in the Directorate of Army Staff Duties before joining 12 Regiment in Germany to command T Battery Royal Artillery (Shah Sujah's Troop) as the first Battery equipped with Tracked Rapier. Promoted to Lieutenant Colonel in 1987, he was posted to the British Military and Advisory Team Zimbabwe as the Gunner member of the Directing Staff at the Zimbabwe Staff College. He returned to the UK to command 16 Regiment, then based in Kirton-in-Lindsey, Lincolnshire which included a Northern Ireland tour (his fifth) for which he was Mentioned in Dispatches.

He then spent 2 years as the Army member of the Directing Staff at the Naval Staff College in Greenwich before being promoted to the rank of Colonel and joining Headquarters Allied Command Europe Rapid Reaction Corps as Chief Air Defence where he spent 4 years, the final year acting as Chief Air on the deployment as HQ IFOR in Bosnia. His final appointment was Colonel Individual Training Policy at Upavon before leaving the Army in 2000. Subsequently he became Regimental Secretary and Staff Officer to the Master Gunner St James's Park on the

move of the Regimental Headquarters to Larkhill in December 2005, from which he retired in 2015. He is a keen reader of military history and a volunteer in the library and archive at the RA Museum.

In Kipling's Barrack Room Ballads there is a verse:

***There's a little red-faced man
Which is Bobs,
Rides the tallest horse 'e can
Our Bobs***

However there is an element of poetic licence (at least as far as the horse was concerned) as Bobs was Field Marshal Earl Roberts VC KG who was only 5 feet 4 inches tall, and the horse Vonolel was an Nejd Arabian standing only 14.2 hands high (147cm). Nejd Arabian horses, originating from the province of Nejd in Saudi Arabia were characterised by short necks, short bodies, good shoulders and good tail carriage. They are renowned for their endurance, having been bred by the Bedouin to support their nomadic lifestyle in extremely demanding conditions.

Roberts had purchased the horse, then 4 years old, in March 1877 from Abdul Rahman a horse dealer in Bombay while he was still a Major in the Bengal Army. Shortly beforehand Roberts had taken part in the Lushai Expedition from December 1871 to



Lieutenant General Sir Frederick Sleight Robert's horse 'Vonolel', Photograph by John Burke, 1885 (c). (National Army Museum, NAM.1955-04-46-4) (Out of copyright).

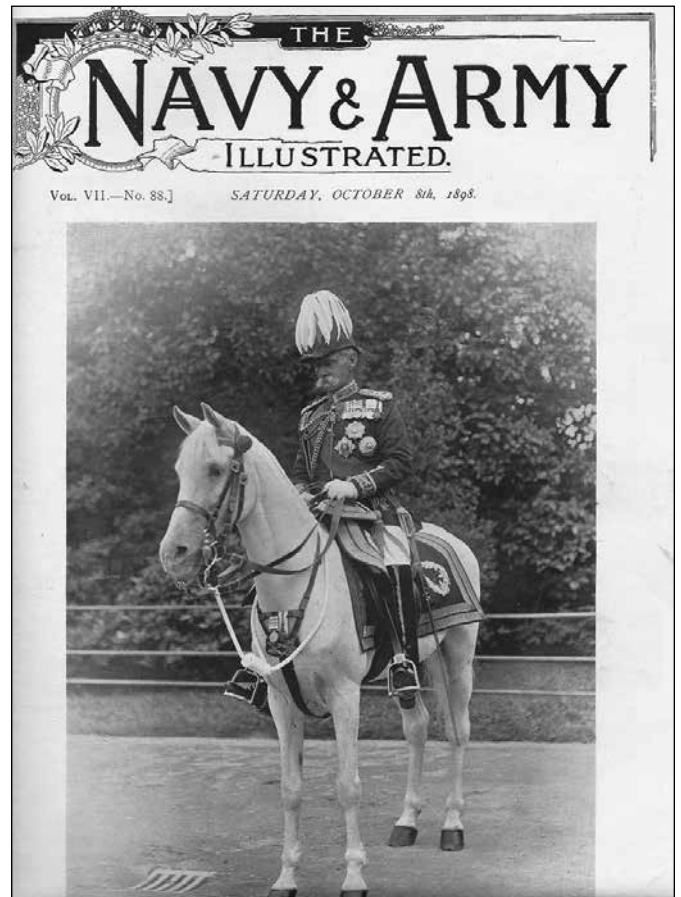
February 1872 which was a punitive incursion to rescue British subjects captured by the Lushai tribe in raids in Assam targeting the tea plantations there, and to convince the hill tribes that they had nothing to gain by continuing hostilities with the British. The chief of the Lushai was a man named Lalbura who fled his village in the face of the British advance, which Roberts describes thus: 'In five days we reached the Chamfai valley, at the end of which, on a high hill Lalbura's village was situated. Although Lalbura's father Vonolel had been dead some years, the people still called the place Vonolel's country. He had been a famous warrior, and they were evidently proud of his reputation. We were shown his grave which, like that of all the great Lushai braves, was decorated with the heads of human beings (his slaves in paradise) and those of animals, besides drinking vessels and various kinds of utensils for his use in another life.'¹



Vonolel's Tomb – Illustration from James Grant's 'Cassell's Illustrated History of India, Volume 2' published 1876. (Out of copyright).

Vonolel was to be Roberts's reliable partner for more than 20 years and was described by the Field Marshal: 'During the 22 years he was in my possession he travelled with me over 50,000 miles and was never sick nor sorry'. He carried his master on the 300-mile march from Kabul to Kandahar during the Second Afghan War. He accompanied Roberts to South Africa and then to Ireland where the former was Commander-in-Chief from 1895 to 1899. Vonolel was awarded three medals for his service: The Afghan Medal, The Kandahar Star and the 1897 Jubilee Medal. The Field Marshal mounted on Vonolel can be seen in the cover photograph of *The Navy and Army Illustrated* of Saturday October 5th 1898.

In the Regiment we have a number of pictures of the Field Marshal and Vonolel. The first which hangs in the Porteous Room in the RA Mess at Larkhill is entitled Earl Roberts on Vonolel (sic). It was painted in 1893 by Charles Furse ARA, whose brother was ADC to Roberts. It was shown at the Royal Academy exhibition in 1894 and was loaned for the Burlington Fine Arts Club exhibition of 1906 where the error in the spelling of Vonolel's name on the inscription plate originated. In 1940 it was acquired by Lord Lee of Fareham who bequeathed it to the Regiment. The picture is a smaller version of the same picture in the collection of the Tate Gallery (Reference T00615).



Lord Roberts mounted on Vonolel at the Diamond Jubilee of Her Majesty Queen Victoria, *The Navy and Army Illustrated*, 8 Oct 1898 (Out of copyright).



Earl Roberts on Vonolel by Charles W Furse ARA (1868-1904) (Royal Artillery Institution).

1. *Forty One Years in India – From Subaltern to Commander-in-Chief* by Field Marshal Lord ROBERTS (London, Richard Bentley & Son, 1897)

The second portrait entitled *Field Marshal Lord Roberts VC KG* hangs in the dining room of the Packway Mess. This large portrait, measuring approximately 8 x 10 feet was painted by Adrian Jones as part of his sequence of portraits of 'great soldiers' which he painted before the start of the First World War. Adrian Jones was a largely self-taught artist and sculptor who had qualified as a veterinary surgeon and had served in the Army with the Royal Horse Artillery and cavalry regiments between 1867 and 1891 when he retired on half pay. The portrait of Lord Roberts was painted in 1914. In his biography of Adrian Jones the author Robert



Field Marshal Lord Roberts VC KG by Adrian Jones MVO MRCVS FRBS (1845-1938) (Royal Artillery Institution).

Burns describes the composition thus: 'In his role as Commander-in-Chief of the Army, Roberts had attended the unveiling of the Marines Memorial in 1903, and Adrian had stood beside him when the Field Marshal unveiled the Carabiniers' Boer War Memorial in 1906, so he knew well that his subject was pocket-sized in comparison to his own more typical military physique. He knew well also that it was a frequent fate of such large portraits to be hung above eye level. So, he painted horse and rider as seen from below, which enabled him to use perspective marginally to elongate Roberts' torso, and to raise the subject above all the background detail. The spacious painting in no way dwarfs 'little Bobs.'² The picture was presented to the Regiment by the York House Society in 1939. There is an even larger version of the same picture, approximately 9 x 11 feet hanging in the Royal United Services Institute building in Whitehall. Adrian Jones sculpted the Peace Quadriga which sits on top of the Wellington Arch at Hyde Park Corner (close to the Royal Artillery Memorial); he also submitted a sculpture entitled 'Action Front' as a subject

in the competition to choose a design for the Royal Artillery War Memorial, but it was rejected in favour of the design by Charles Sargent Jagger which was subsequently commissioned and built.

The third picture, which is one of the largest owned by the Royal Artillery measuring approx. 10 x 7 feet, is presently on loan to Army Headquarters at Andover and is entitled *Kabul to Kandahar – Crossing the Zamburak Kotal* painted by Chevalier Louis W Desanges (1822-1905) and forms part of the Desanges VC Gallery, a collection of over 50 paintings of winners of the Victoria Cross. On the 27th July 1880, a British/Indian force under General



Kabul to Kandahar – Crossing the Zamburak Kotal by Chevalier Louis William Desanges (1822-1905) (Royal Artillery Institution).

Burrows had clashed at Maiwand in Afghanistan with the army of Ayub Khan, a son of the late Amir Sher Ali, who saw himself as rightful ruler of Afghanistan, which was advancing from Herat. British losses were heavy, and the bedraggled survivors retreated into Kandahar, where, within a few days, they were besieged by Ayub's forces. A plan was drawn up to relieve Kandahar; speed was of the essence as there was no telling in what state the Kandahar garrison was holding out. With this in mind, Roberts ordered his troops to march as lightly as possible - each soldier would be allowed only 20-30lbs of kit, no wheeled transport or artillery would be taken, only light Mountain Batteries. Some thought this foolhardy as Ayub's guns had been one of the deciding factors at Maiwand, and worse still, the marching army had the possibility a meeting engagement with his victorious hordes en route. The forced march would be out of communication for most of the time, with no base of operations behind it, and an uncertain strength in both allies and enemy in front. On 7th August the force of 10,000 soldiers and 8,000 followers moved out of their cantonments to Bala Hissar in Kabul, and on the following day the march proper began. The longer route through the fertile Logar Valley was chosen. The exit to the valley, as depicted in the picture, saw a tough climb through the Zamburak Kotal where the road narrowed and baggage trains got entangled, a recurring problem.

The next major stop was the city of Ghazni, another possible danger from an excitable population. There turned out to be no threat from the city - largely thanks to the orders of the new Amir who wanted Ayub Khan dealt with as much as the British did, and the journey continued, now onto stony open plains, where the dust was kicked up by the marching mass and the heat and sandstorms really started to tell. Conditions were hard. Most of the force was woken up at 1 or 2 in the morning to start off by 4am, when it was freezing cold and pitch black, making it more difficult to load up the pack animals. By the time they stopped

2. *Triumph – The Life and Art of Captain Adrian Jones* by Robert S BURNS (Herefordshire, Logastan Press, 2010) ISBN: 978 1 90663 44 5, P 204.

at 1 or 2 in the afternoon (though often the rear guard didn't get in until 5 or 6 hours later) the temperatures had risen to 105 degrees Fahrenheit, with no shade and a scarcity of water. The troops would march 15 or 16 miles a day, sometimes going as high as 20, double what a regular campaigning army would sensibly achieve. On 1st September at the Battle of Kandahar. Ayub Khan was defeated, fleeing back to Herat. The British went back to Maiwand to bury their dead, and finally left the city, and Afghanistan, about six months later. Roberts returned to England a national hero to be ennobled as Lord Roberts of Kandahar.³ The picture was originally owned by Lord Wantage VC⁴ who presented it to the Regiment.



Vonolel's Grave – Royal Hospital, Kilmainham.
(Webpage: www.comeheretome.com)

Vonolel died at the age of twenty-seven in Dublin (where Roberts was Commander in Chief) in June 1899 and was buried with full military honours in the rose garden at the Royal Hospital, Kilmainham which had been built in the 1680s as a retirement home for old soldiers but is now home to the Irish Museum of Modern Art. In the inscription on his gravestone is the following verse:

***“There are men both good and wise
Who hold that in a future state
Dumb creatures we have cherished here below
Shall give us joyous greeting when
We pass the golden gate
Is it folly that I hope it may be so?”***

His hooves and medals were subsequently made into the Vonolel bowl which, along with the Field Marshal's medals and decorations are held by the National Army Museum in London.



The Vonolel Bowl commemorating Lord Roberts' Arab horse 'Vonolel', 1904 designed by Beatrice Laws, Hallmarked for William Hutton & Sons, London, 1904 (National Army Museum, NAM 1955-04-80-1).



3. Detail from *The Second Anglo-Afghan War* by Garen Ewing (www.angloafghanwar.info).

4. Brigadier-General Robert Loyd-Lindsay VC KCB, later 1st Baron Wantage (1832-1901), was a British soldier and philanthropist who won the Victoria Cross in the Crimean War at the Battle of the Alma serving with the Scots (Fusilier) Guards and was the first chairman and co-founder of the British National Society for Aid to the Sick and Wounded in War (later the British Red Cross Society).

From Opposition to Acclamation: The Prussian Army 1860-1875

By Colonel J Michael Phillips BA MSocSc MA AMA



Michael Phillips studied military history under Professors Sir Michael Howard and Brian Bond. Commissioned into the Royal Artillery, his military service included 16 years in Germany: for his contribution to the understanding of foreign artillery he was awarded the Neville Walford Medal (only the 19th award since 1905). He subsequently served in Jordan as Assistant Defence Attaché, Turkey as Strategic Plans and Special Operations Officer, and Bangladesh as Defence Adviser. Retiring as a Colonel and with a Master's degree in Heritage Management, his second career was in museums and heritage.

As Curator of the Museum of Artillery and Regimental Historical Secretary he achieved Designated Status for the Museum of Artillery in the Rotunda. His military museums experience stretches from Curatorial Adviser to the Bangladesh Liberation War Museum to Deputy Chairman of the Royal Marines Museum. A Deacon in the Catholic Church, he was awarded a MA (with Distinction) in Systematic and Philosophical Theology in June 2020. He is currently researching for a PhD on the German artillery of the late 19th Century. He is Programme Secretary for the Royal Artillery Historical Society.

The German Wars of Unification 1864-1871 witnessed a complete volte-face of the Prussian and German representative bodies to the expansion and reformation of their armies. As he rode along the route of the 16th June 1871 Victory Parade in Berlin, King – and now Kaiser – Wilhelm I might have reflected on the transformation of the bitter civil opposition to the reform of the Prussian Army into the wildly cheering crowds lining the Unter den Linden. Wilhelm was no longer the Kartätschenprinz of 1848 but the German Emperor.

The Prussian Army in 1860 was not a particularly popular agency of the state. It had avoided shooting the rioters in Berlin in

the turmoil of the European upheavals of 1848 but it had, under the leadership of the Crown Prince assisted in putting down the revolt in Baden, for which Wilhelm earned the nickname of Der Kartätschenprinz (the cartridge prince) or better The Grapeshot Prince. When in 1858 his ailing brother, Frederick William IV became incapable of governing Wilhelm became Regent. A professional soldier through and through, he was determined to put the Army on a sound footing. To hand was Albrecht von Roon's memorandum in which he analysed the shortcomings and came to the solution that the length of service needed changing and the reserves should be a credible reinforcement, not just



Wilhelm of Prussia, Prince Regent, King, and then German Emperor.

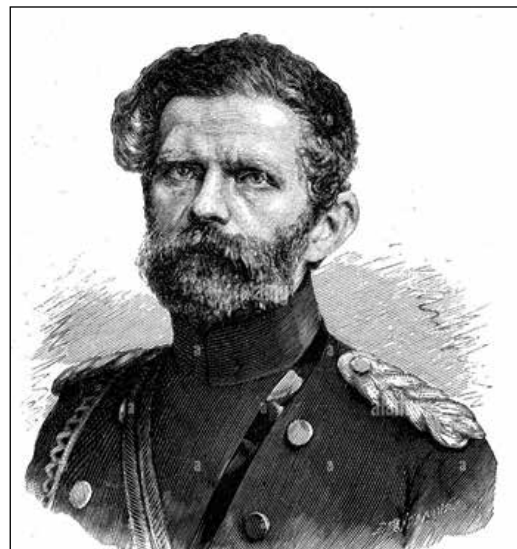
a decoration.¹ Dismissing the liberal and lukewarm von Bonin, Wilhelm appointed von Roon War minister and set him to work.



*General Albrecht von Roon
War Minister of Prussia.*

He ran into immediate opposition from the Landtag, the Lower House of the Prussian Parliament, which held the purse strings.

On 18 January 1861 thirty-six new infantry regiments, none of which had been authorised by the Landtag, were presented with their standards at the tomb of Frederick the Great. The politicians further disliked the King having a military cabinet as well as a civil cabinet, particularly as this was separate from the Ministry of War, which they could control though holding the purse strings. The Chief of the Military cabinet, General Edwin von Manteuffel was particularly unwelcome. When a Liberal Deputy published an 88-page pamphlet attacking him, Manteuffel challenged him to a duel and shot him in the arm.² It led directly to a group of left liberals, the wounded deputy among them, to form a new party, the Deutsche Fortschrittspartei, committed to a national state, a strong government, full parliamentary authority, and communal self-government. It was the first formal party programme in German history. On 6 December 1861 the Prussian elections resulted in a Landtag of which 69 per cent were liberal progressives, the largest element of which were the extremists. The government's potential supporters shrank from 47 deputies to 14.



General Edwin von Manteuffel, Chief of the Prussian Military Cabinet.

The controversy was to last eight years, but by 1862 the Parliamentary opposition had reached the point where the Landtag refused all further grants for the army by 273 votes to 68. The King therefore decided to appoint a new Minister-President, and brought Bismarck back from his diplomatic post in Frankfurt, the seat of the Confederation Parliament. Notably it was von Roon who despatched on 18 September the telegram to Bismarck in Paris: "Periculum in mora. Dépêchez-vous!"³ On 23 September 1862 Bismarck was appointed Minister President of Prussia, and from October combined with the Foreign Ministry.

1. Albrecht von Roon, *Denkwürdigkeiten II*, 521 ff.

2. Jonathan Steinberg, *Bismarck. A Life*. Oxford: University Press, 2012. 167.

3. Katya Hoyer. *Blood and Iron. The Rise and Fall of the German Empire 1871-1918*. Cheltenham: The History Press, 2021. 44.

At this stage it is useful to quote Bismarck's address to Disraeli when he was in London in June 1862:

*'I shall soon be compelled to undertake the conduct of the Prussian government. My first care will be to reorganise the army, with or without, the help of the Landtag ... As soon as the army shall have been brought into such a condition of as to inspire respect, I shall seize the first best pretext to declare war against Austria, dissolve the German Diet, subdue the minor estates, and give national unity to Germany under Prussian leadership. I have come here to say this to the Queen's ministers.'*⁴

Bismarck decided that if the Parliament would not vote for the desired Army reforms and thus withheld the money, then the sovereign was justified in collecting taxes without the consent of Parliament. The *Lückentheorie* (Gap theory), a term proposed by German jurist and politician Friedrich Julius Stahl, was employed by Bismarck in order to resolve the constitutional conflict in favour of the King. The theory implied that when the Prussian Constitution of 1850 did not come to an agreement on the vote of the budget, there was a legal gap that can be filled by the 'monarchical principle'. The *Lückentheorie* affirmed the King as the sole one with the power to decide on matters of the Constitution, and that the King could overrule Landtag opposition. Since the Minister President of Prussia belonged to the royal government, as an extension of the King, he was by extension superior to the Landtag in case of conflict.



Otto von Bismarck, Minister President of Prussia, Chancellor of Germany.

Bismarck announced this to the Landtag in his Iron and Blood speech on 30 September 1862:

'The position of Prussia in Germany will not be determined by its liberalism but by its power [...] Prussia must concentrate its strength and hold it for the favourable moment, which has already come and gone several times. Since the treaties of Vienna, our frontiers have been ill-designed for a healthy body politic. Not through speeches and majority decisions will the great questions of the day be decided—that was the great mistake of 1848 and 1849—but by iron and blood (Eisen und Blut).'

The Landtag was dissolved in September 1863. The focus switched from extending the term of regular service from two to three years to expanding and modernising the army itself. The expansion was carried out by creating shadow units with the same titles of the existing ones. Thus infantry regiments would remain with the same names but double the number of integral battalions. In the artillery the same was achieved by having regiments with titles unchanged but with more *Abteil* (the equivalent of a battalion or a present-day artillery regiment), half of which would be field artillery and half fortress or foot artillery. It was all very confusing until one appreciates that it was deliberately intended to confuse the politicians. At the same time the artillery was being rearmed with new types of guns from Krupp. Prussia was at this time split: the larger part was in the East stretching from the plains of Brandenburg to East Prussia, while the smaller part was in the Rhineland, specifically concentrated in the areas we know as the Ruhr, which was where the coal and iron ore was. Thus although there was no deliberate secrecy, it would have been a long way for politicians in Berlin to travel to become familiar with what was going on the Krupp factories in Essen.

In 1864 the Schleswig Holstein problem resurfaced following the death of the King and the declaration of a new constitution by his successor. The problem was that Schleswig and Holstein were part of the Danish King's territories but held in differing ways. The Federal Parliament authorised the North German states to intervene militarily. and when this signally failed, gave the task to a joint Austro-Prussian Force. The details need not concern us here, but the result was that the Danes lost both provinces, to be administered by Prussia for Schleswig and Austria for Holstein. The Danes abandoned most of their artillery at the Dannevirke at an early stage and lost more in the final battles. A huge number were brought to Berlin and the 12 pounders incorporated on the 67-metre high Siegestsäule, the Victory Column, which was until 1945 a permanent monument to Prussia winning a war. For the first time since 1816 the Prussian army returned victorious and the many parades raised its profile. It was thus very difficult for politicians to oppose military expansion.

What influences a population to change their views about opposition to a war? It is three things. Bismarck had put his finger on it back in 1861: 'We are almost as vain as the French. If we can convince ourselves that we have respect abroad, we will put up with a lot at home.'⁵ First, an increase in economic activity to support the war effort. For a long war the penalties of hostile enemy action in the homeland, shortages of food and

4. Jonathan Steinberg, Bismarck. A Life. Oxford: University Press, 2012. 174.

5. Jonathan Steinberg, Bismarck. A Life. Oxford: University Press, 2012. 169.

necessities, rationing and return of soldiers in coffins, generate a sullen and resentful population. Not so in the short run: army and navy demands for increased armaments, agricultural products, clothing and boots, and above all in the late 19th Century the buying up of horses generate temporary prosperity. It is only when requisitioning and compulsory labour creep in that the gloss wears off. Second, initial victories reported in a press perceived to be relatively free (bearing in mind any security restrictions) and letters home from soldiers and sailors. Third, positive signs of success: columns of prisoners, captured flags, captured guns, and ultimately cession of territory and money from the defeated. So the Prussian Army got off to a good start at the end of the 1864 War. Parades of captured guns, soon to be bult into a Victory Column, parades of returning troops marching through towns, and commanders very much in evidence handing out decorations.

All very well, but the next War was the Austro-Prussian War of 1866. Now this was a war of Germans against Germans, and would not sit well with parliament and people. The theoretical cause for hostilities was the falling out over the administration of the former Danish provinces of Schleswig and Holstein. This was very much closer to home because Prussia demanded from all the German states a declaration of whether they were for Austria or Prussia. This promised not economic uplift but economic disruption: for example the railway line connecting the main landmass of Prussia to its Rhineland provinces ran through Hesse, which declared for Austria. Second, the expectation outside Prussia and internationally was that Austria would win. Only a mountain range separated Bohemia from a potentially vulnerable Berlin.

Two aspects prevented home-grown opposition to the War. First, the Prussian Army moved swiftly, mainly by rail, out of Prussia into Austrian territory so it was clear that there would be no devastation nor requisitioning within Prussia itself. Prussia did not attack the Austrian forces stationed in Holstein: General von Manteuffel's force advanced south from Schleswig only when he was satisfied that the entire Austrian contingent had departed for Austria by train. Second the German Confederation was ready for the wrong war: the Confederation's forces were configured to fight for Germany, the perceived threat being France, not within Germany against each other. It had not occurred to anyone that the scattered nature of the Prussian state would enable Prussian forces to advance inwards on their German neighbours from all points of the compass. The only real fighting was with Hannover, which beat the Prussians at Langensalza, but then were cut off too far South of its own state and had to surrender. The Saxon army departed for Bohemia to fight alongside the Austrians, so the Prussians occupied Dresden but largely left it in peace.

The War was won in seven weeks and the collapse of Austria stunned everyone, including the politicians in Berlin. This time there was no cession of territory but huge indemnity instead. The Austrian 12-pounder guns were added to the Victory Column in Berlin. The soldiers returned to parades greeted with adulation and more decorations were handed out. Unfortunately in some parts of Prussia the soldiers brought back typhus so it was not the time to castigate soldiers but, in many cases, to nurse them.

This was the point at which opposition to Bismarck and the Prussian army collapsed. First, with Austria now pursuing her future outside Germany, and weakened by Hungarian separatism, it was clear that Prussia was on track to be the leading German state, and the vision of a united Germany, born at the Battle of Leipzig in 1813, partially expressed in the 1848 turmoil but which had given Germany a flag and an Anthem, resurfaced. Second, there was a major gain of territory as Prussia annexed Hannover,



The Victory Column, Berlin.

Schleswig and Holstein, Ducal Hesse, and Frankfurt itself. Third, the remaining free states in North Germany hastened to join a North German Confederation and, incidentally, to model their armies on the Prussian and sign treaties of alliance. Fourth, there was an upsurge of economic activity as the remaining trade barriers were swept away and, for example, railway systems were coordinated but not amalgamated. The Austrian indemnity was spent on economic expansion and Bismarck sequestered the treasury of the annexed Hannover to provide an off-balance sheet fund to generate press support and set up a secret service.

Bismarck judged that the time had come to settle with the parliament. In September the reconvened Landtag passed the Indemnity Bill, granting the Government a full indemnity for its unconstitutional expenditures and backdated it to 1862. In 1867 the seal of parliamentary approval was set on the intervening army reforms. The second round had been won by Wilhelm and von Roon: the logic of parliamentary opposition had collapsed. Not all the desired improvements had been won: service with the colours remained at three years, instead of the desired seven, but conscripts then served with the reserve for four years instead of the previous two before passing into the Landwehr, the territorial component. In their first year in the Landwehr they could still be called up with the reserve. Service with the Landwehr was reduced from seven years to five but was now firmly under the direction of the regular army as to form virtually a second line reserve.

By the time the 1870 War with France approached the King, von Roon and von Moltke had thoroughly overhauled the army, particularly the artillery which had performed poorly in 1866, and welded into it the armies of the now allied German states. Unlike the French, they were careful to keep it a locally based army:

thus each army corps had its own district where all its troops were stationed and from where it would draw reserves. The armies of the newly annexed or newly allied states were simply redesignated as additional Army Corps and remodelled on the Prussian practice.⁶ Thus the Prussian Army did not, in peacetime, ever become isolated from the local population: they *were* the local population. The expansion of the Army brought about a dilution of the more traditional officer corps: there were less aristocrats to go round, and the percentage of 'von's in all arms, but particularly the artillery and engineers, dropped significantly. But the status of the officer corps raised, and thus an increasing number of politicians and local government officials would seek Army Reserve commissions. Even the Burgermeister of Köpernick was a lieutenant in the reserves.⁷

Steps were taken to keep the home population on side during the Franco-German war. Bismarck did not control the home press, but he ensured that the press was kept instantly up to date with bulletins and accounts of military engagements. The telegraph network was constantly being expanded and thus news could reach home very nearly in real time. For the German armies invading France it was more advantageous to batter the French army morale and overawe the civil population than to worry about operational security by muzzling the press. Moltke went to considerable trouble to establish and maintain an efficient and prompt mail service for his troops, for a letter from a son at the front does more to reassure his parents than does a government bulletin. Unlike the French military authorities, who regarded them all as spies, the German armies in the field welcomed international reporters both military and civilian, and went to the trouble of embedding them within various headquarters. This had a double effect: of giving independent running commentary for the home population and preventing cover-up in government bulletins. Unlike in 1864 and 1866 there was a constant trail of French prisoners entering the German states, proof of German victories.

The declaration of the Second German Empire on 18 January 1871, the date deliberately selected as the day in 1701 when Friedrich III of Brandenburg had been declared King of Prussia, was firmly branded a military occasion. In the famous paintings by Anton von Werder there is no-one in civilian dress. There was no tricolour, no German anthem, just marching bands and military parades. The return of the German armies to their individual states were greeted with spectacular celebrations, including the Brandenburg Gate lit up with an enormous victory sign, and French 4 pounder guns were added to the Victory

Column. Within the Prussian army the contingents defeated in 1866, Hannover and Ducal Hesse, were redeemed in the eyes of their peoples, as were the armies of the defeated 1866 Austrian supporters, Saxony and Bavaria. The Baden and Württemberg contingents had been foremost in the securing of Strasbourg for Germany and removing the adjacent French threat. Apart from Saarbrücken, the armies had denied the French any foothold in the German states.

The scene was set for the Kaiser and Bismarck to reduce civilian control over the financing of the army and now the embryo navy. Renewal of the Prussian Landtag's approval of the military budget was due in 1872 but Bismarck used the post-war euphoria of the Franco-German War to delay its extension until 1874, when he proposed to the new Reichstag a so-called Eternal Law whereby funding for a standing army of 400,000 would need no further renewal. It could not have worked, but it obliged the Liberals to concede ground, not feeling strong enough in the face of popular support for the army to demand an annual review, and settled for the compromise of a *Septennat*, a seven-year agreement, that the military budget would be set and last for seven years, increasing by inflation. Opposition to funding an army which had won three wars in eight years was just about impossible.

In the time of Frederick the Great it was said that Prussia was an army with a state attached: the transformation that took place was that the army and the state had united in popular acclaim. Nationalism had become a unifying force.

What was odd however was that from 1871 onwards the popular support for the Army did nothing for support for Bismarck. The very first elections to the new Reichstag took place on 3 March 1871 when 51 per cent of the adult males eligible to vote went to the polls. 18.6% voted for the Centre party which immediately became the second strongest party in the Reichstag. By 1874 its 63 representatives had grown to 90, a solid anti-Bismarck bloc of the 382 deputies, 202 could be classified as liberal, The National Liberal Party with 100 seats and 30.2% of the vote became the largest party. So Bismarck's supporters gained only 8.9% of the vote. It rose to 13.6% of the vote in 1878 and thereafter steadily declined and by the time Bismarck fell from power in 1890 had only 6.6% of the vote, a mere 20 seats. So the instrument which had brought Bismarck's greatest successes overtook him and indeed overshadowed him in popularity.

The complete reversal of domestic opposition to Prussian military expansion of the early 1860s had in a decade and a half set the Prussian Army on a national pedestal from which it was not dislodged until 1918.

RJ Rick Jennings
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Firstly, by means of introduction I am Rick Jennings an Independent Silver Consultant based in South Yorkshire.

I offer a wide range of services that stem from providing accurate valuations for bespoke military centrepieces, through to sporting trophies and numerous other pieces of silverware that I know often provide organisations with a unique link to their heritage.

I have a wealth of experience in the silver trade and understand the historic significance attached to Corps/Regimental Silver, some of which is irreplaceable, hence the importance of an accurate insurance valuation. I have specialised in providing insurance valuations and with over 20 years' experience working with over 100 Army Regiments, the Army Sports Control Board, The RAF, Sports Clubs, Manor Houses and Museums I am uniquely placed to provide Specialist insurance valuations which includes a full and comprehensive database and corresponding images of all pieces valued.



What Our Clients Say

If you want the best look no further than Rick Jennings, an Independent Silver Consultant who continues to exceed our expectations on all levels. In addition to his in-depth expertise as a highly experienced individual, his prompt response to queries, his thoughtful advice and guidance and, the speedy delivery of a perfectly laid-out valuation report neatly summarise the outstanding service he provides to his customers. The Regimental Headquarters of the Royal Logistic Corps appreciates the work to date, would have no hesitation in recommending your services to others and looks forward to working with you in the future.

Stephen Yafai,
The RLC Regimental Secretary, RHQ The RLC

If you are interested in finding out more about our services, please get in touch for a chat and a free independent consultation by emailing rick@rickjenningsconsultant.co.uk or call me on 07970 712 852

Letters to the Editor

Sir

I much enjoyed the Autumn Journal especially Nick Quarrelle's appreciation of General Lewis Pugh. It is surprising that such sustained gallantry by a Gunner should have passed almost unremarked for 80 years. VJ Day was 25 Aug 45 so it must have been disappointing, having fought to a successful conclusion in Burma, to be dispatched to Java in October to sort out well armed Indonesians fighting for Independence in the Dutch East Indies.

My interest was piqued because my father Hugh acting CO 3 Indian Field Regiment aged 29 was involved in a fierce battle 2 days after arriving in Surabaya. His citation for an immediate award of the MC was written by Brig Pugh as Brigade Commander.

It makes compelling reading for, not only was the battle of tactical importance, but the lives of an estimated 1500 Dutch women and children were saved. Hugh's award was rapidly endorsed by the Chain of Command.

I've played a lot of golf in Holland and rarely have to buy a drink!

Sincerely

Mike Tennant

Sir,

I would like to express my deepest gratitude for accepting my article. It is a compilation of sources and rare photos, and the figure that 1400 British soldiers still rest in Italian fields and mountains is a CWCG figure, because 4000 are missing. Excluding 1500 unknown individuals in cemeteries and the cremated Indians, 1400 lads still have no grave in Italy.

My wish is that it can also be a point to understand the importance of artillery and in fact the battle was won thanks to wisely and accurately directed fire.

I am sorry that I was not able to identify the dead British soldier with the knife in the throat, a gruesome scene seen by my grandfather. I wrote to the CWCG, but they reported only 3 soldiers recovered south of that village but not close to where my grandfather said that dead were. I think there were killed at least 2 soldiers whose graves are not known and I wonder if they were recovered or not. CWCG answered that there are no cause of death in their reports.

Sadly it will be an unsolved mystery but one day I hope to find out who he was, search for a photo and bring a flower on his grave, because in the Netherlands some Americans and British soldiers were "adopted" by locals and here in Italy it is the same, I feel him closer due to the family story. In the end, I take advantage to thank you for the nice sheet written with a fountain pen, it is an honor for me!

Best Regards

Matteo D'Angella (see Autumn 2025 RAJ, page 25)

Letters and Submissions

The correspondence page of any professional journal is extremely important allowing, as it does, readers to air their views, comment on articles and correct any mistakes. The Editor therefore invites letters and emails from readers. A guide on the submission of letters and articles is given below.

Letters to the Editor

The Editor welcomes correspondence from readers on articles or book reviews and other matters arising from discussions in The Journal of the Royal Artillery.

Please mark all letters for the attention of the Editor, and send either by email to: RARHQ-RAJ@artycen.ra.mod.uk or by post to: The Journal of the Royal Artillery, RHQ RA, Royal Artillery Barracks, Larkhill, Salisbury SP4 8QT.

Letters should be no more than 700 words.

Publication in the Journal is at the discretion of the Editor. Offensive or anonymous letters will not be considered.

Submissions

The Editor invites the submission of unpublished manuscripts on all topics related to national and international defence and to the organisation, application and future development of artillery in all its forms, and military history with an artillery slant. Published articles will become the copyright of the RAJ.

Guidelines for submissions are:

- ⊕ Articles should be the author's original work. Where the work of other authors is quoted this must be clearly stipulated either within the text or as an endnote.
- ⊕ Articles should be relevant to the Journal's defence and artillery focus.
- ⊕ Submissions should be between 2,000 and 6,000 words and should be fully referenced by endnotes. Responsibility for factual accuracy lies with the author.

- ⊕ Pictures, tables or artwork should be supplied separately in high-resolution (minimum 300dpi) and not embedded in the text. Authors must ensure they have permission to use any supplied imagery. If asked, the Editor may be able to help with copyright issues.
- ⊕ Submissions should be sent electronically by email as Microsoft Word files. Please include a brief biography and contact details and send to: RARHQ-RAJ@artycen.ra.mod.uk
- ⊕ If accepted for publication articles will be edited to meet the Journal's house style. The Editor reserves the right to make alterations for space and clarity.
- ⊕ Anonymous articles will be accepted under a pen name, but the author must disclose his or her identity, in confidence, to the Editor.
- ⊕ Authors are not paid. However, they will receive complimentary copies of the issue in which they are published.

Book Reviews

The Editor welcomes the submission of unpublished reviews of important or useful new books on all aspects of defence and artillery. Reviews should be submitted in line with the guidelines for articles above and should be between 700 to 1,000 words. Wherever possible a high resolution picture of the book's cover should be submitted, as should details of the publisher and where it can be purchased. If you would like to suggest yourself as a reviewer for a newly published book please contact the Editor. Book reviewers are not paid, but where appropriate will be allowed to keep the copy of any book they are sent.

Royal Artillery Historical Society

2026 Programme

Date and Timings	Event	Subject	Lecturer/Lead	Bookings Close
Wednesday 15 April 1045 to 1600 hrs	Congreve Lecture Day and AGM. Lunch in RA Mess Artillery Centre Larkhill	Fishguard 1797: The last invasion of Britain The Royal Garrison Artillery 1899-1924	Mr Phil Carradice, Author Mr Philip Magrath, Curator of Artillery, RA Museum	Wednesday 01 April
Wednesday 24 June 1930 hrs	Webinar	Ready for the wrong war: the fate of Hannover and the German States 1866	Col Michael Phillips	Sun 21 June
Saturday in June	Summer Visit: Gosport, Hampshire	Explosion! The Museum of Naval Firepower and The Submarine Museum	Guide TBC	To be notified
Friday 18 to Sunday 20 September	Historical Field Tour to Dieppe	The Dieppe Raid 1942	Maj Magnus Thompson	Request Prospectus from Secretary
Friday 23 October 1045 to 1600 hrs	Shrapnel Lecture Day, Artillery Centre, Larkhill Buffet Lunch Newcome Hall	The threat in 1940. Operation SEALION: The planned invasion of Britain 1941 Defeating the V1- rapid adaptation to a threat. Lessons for the 21st Century? Cold War: Building for Nuclear Confrontation 1946-1989 British Nuclear Artillery	Dr Spencer Jones, RA Regimental Historian Lt Col Mike Blair Mr Roger Thomas, Fortress Study Group To be notified	Friday 09 October
Wednesday 18 November 1930 hrs	Webinar	The Schlieffen Plan: Myths and Realities	Mr Ross Beadle, Historian	Sunday 15 November

**Please book places with the RA Historical Society Secretary:
Lt Col R S (Dick) Clayton, 10 Harnwood Road, Salisbury, Wiltshire SP2 8DD**

E Mail: richard.clayton312@gmail.com

