Club Magazine

WINTER EDITION 2019

Luton & District MBC

.... a club NOT just for boats ....

CONTENTS

EDITORIAL

A VERY HAPPY CHRISTMAS TO ALL L&DMBC MAGAZINE READERS

Another calendar year has come to an end, however our Secretary has organised a number of events for us to enjoy during December they are all listed in the Diary section of the Club Web-Site, however, as you are already reading the magazine here is a reminder. The Christmas festivities kick off with the annual Fish and Chip Supper on Monday 9th at the Bushmead Hall followed by Pigs in Blankets and Mince Pies on Sunday 15th. at Wardown Lake. On the 22nd we have a Christmas Pudding Fun Day also at Wardown Lake and finally our Christmas Lunch at the Moat House on Friday 27th. at 12 noon. This will be preceded by a short sail commencing at 10am at the lake. I do hope to see you all at these events?

While at Wardown Lake in November a passing visitor enquired as to the origins of the greetings? AHOY. Nobody seemed to know, the gentleman's passing comment was that he thought the origins were Spanish. I decided to look the word up on the internet and this is the result (Wikipedia).

Ahoy is a signal word used to call to a ship or boat, stemming from the Middle English cry, 'Hoy!' The word had fallen into obsolescence before rising from obscurity as the sport of sailing increased in popularity. 'Ahoy' can also be used as a greeting, a warning, or a farewell.

The word can be found with similar pronunciation and writing in several other languages. In Indonesian, another greeting *Ahiy* is also used besides Ahoy. In Czech and Slovak also, *ahoj* is a common, colloquial greeting, while 'Hoi' is used in Modern Dutch and Swiss German, and 'oi' in Brazilian Portuguese, as an informal greeting equivalent to the English 'hi' or 'hey'. 'Ohøj' is used in Danish almost identically to the aforementioned usages. It stems from the sea-faring world, used as an interjection to catch the attention of other crew members, and as a general greeting. It can sometimes also be found on land spoken as a general greeting, again, especially in a maritime context.

Alexander Graham Bell originally suggested 'ahoy' should be adopted as the standard greeting when answering a telephone, before 'hello' (suggested by Thomas Edison) became common.

On the last page of this magazine an advertisement is shown for the forthcoming Plastic modelling exhibition, being held at the Shuttleworth Collection, Old Warden, Nr. Biggleswade on Sunday February 16th next year and yes, the Club will be exhibiting at this show so do come along and support us.

ED

A SHORT NOTE FROM OUR SECRETARY

I would just like to thank all those who have turned up to and supported all the events that we have attended during 2019.

Don't forget on the Friday 27th December we are having a sail from 10am down at the lake then onto the Moat house for a lunch from 12 noon.

I am compiling the show dates for 2020 so keep an eye out on the CLUB website.

From January at the monthly Club meetings, I will be carrying on with the basics of modelling. I have cut the bits out so will be gluing and talking about props shafts and alignments etc

PLEASE NOTE: **Models by Design have now ceased trading.**

PHOTOS FROM PREVIOUS EVENTS

Please find below a selection of photographs from some of our previous events. It may bring back happy memories for some readers? Have you got any old photos that I could print in future issues of the Magazine? If you have, make contact with me, the Editor and I will arrange to publish them in future issues of the Magazine.

Sad

Happy


D 105


745










BLACK PARK

Sept 1st was going to be a nice sunny day, and indeed it was! We got to Black Park at 8am, picked our spot, got the gazebo and tables up and then the rest of the team turned up. And a bumper team it was this year. Some faces were Terry and Jill, Peter and Andrea, Barry and Val, Brian, Mark and Anne, Mike S, Harvey Vaughan and myself, we also invited Roy Verden in from the St Albans club as he was alone. We were a happy bunch next to an equally happy bunch from Black Park MBC. They even took the mickey when we put the TEA stuff out! Terry had also bought homemade bread pudding. As usual there was the tombola and RNLI stand. The show was a bit bigger than last year, and hopefully that will grow again next year. There were several good boats on display, from rowing boats to warships that fired up to some large scale life boats. There was a nice Isle of Wight Cat tearing around the lake at various times and loads of sailing boats. As usual, I had forgotten my chair, so spent most of the time wandering around chatting. I spent a long time talking to another Robbe Atlantis owner about his boat as he had some rigging problems. The 2 large life boats were great, as they were advertising the Windermere challenge where they raise money for the RNLI by using the RC Lifeboats to cross the lake.

One thing that did take me by surprise was that I was asked to judge the best in show boats. I dragged Terry along with me. We had 3 categories, best in show, best Black Park member's boat and best novelty. We walked up and down the tables and looked on the lake. We chose HMS Iron Duke for best in show, as she had a good presence and was firing on the lake with volumes of smoke pouring out of her guns, best Black Park boat was a nice wooden large scale Starlet yacht, which had lovely lines and some good marquetry on the deck, and last was best Novelty which went to a newly finished rowing boat rowed by a skeleton! A Few pictures follow.

FENNY STRATFORD

Again, we were invited back to display and sail at Fenny Stratford. I had more than a few emails, phone calls and visits to see the site again, as more houses had been built on the adjacent land. I needed to ensure there would be enough car parking!

The show started for me and Terry on the Friday morning, as we met up and put the gazebos in the place we wanted, and not stuck on the end. This was quite fortuitous; as it turned out they had a mechanical organ there for the weekend!

Saturday was a nice bright day, we turned up early and put the gazebos up to full height, and clean the duck poo up!! After establishing base camp, and nesting we got the tea set up and watched several people attempt to park in large car parking spaces!!! Then we watched them attempt to put up their pop up gazebos!!! I was warned by a certain member of ours not to help them, to sit down and have a cup of tea!!!

This really set the tone for the whole weekend, tea, cakes and fresh cream scones and sunshine! We had setup with more space from the canal path so we could speak to the public more. There was a lot of interest in all the boats and many a person first saw the boats on the water then came over to speak to us. As usual the boat peeps were extremely interested in sailing them and a couple even had a go. We had a few

breakdowns, but fortunately we did not have to deploy the inflatable boat, we rescued them all with the pole.

As usual Greg and John Weedon turned up from Lincolnshire, Greg had brought a boat along, based on a Perkasa hull which was running quite well, but he wanted it to go faster, so we stuck one of my larger lipo's in it, boy did its shift! It went around tight corners as if it was on rails! Probably one of the most stable boats I had seen for a long while! Unfortunately, he handed me the controller and after 2 circuits, the speed controller blew! Typical!!!!

We had quite few boats on display, but I have no pictures!!!! When we are at shows remind me to take pics!!!!!!

BRAMBLETON AUTUMN MEETING

The model railway people at Brambleton had invited us to display at their open day in September. This is a short afternoon show for us, but it doesn't feel it! We started at 12 by putting up gazebos, tables and signs, then putting boats out, sitting down and having a cuppa! This is one of the few shows we don't take tea…. It's behind us in the tent. We always strike up a good conversation with tea ladies!

Brambleton railway run two gauges. O gauge and SM32. Having been there a few times in the last year, this is the busiest I had seen it. There were lots of trains running all afternoon, and one of the gauges runs steam trains! Ahhhh the smell.

Most of the show is running trains, and St Albans MES were also displaying, so there was a bit of variety. We had a good display of various boats with a couple of new members showing for the first time…again no pics!!!!! Really must take some! As usual I don't get to see much of the show, so this time I made an exception and had a wander. I ended up speaking to one of their members as he was running a battery-operated steam train using a Spektrum radio. He was having a few problems running, so I went through the radio options and sorted it out for him, he had no idea he could do this! I thought he would only use 1 channel for forward or reverse, but to my surprise, he had lights operating, a whistle and music playing in one of the carriages.

I had a long talk with Roy from St Albans MES as well about the lack of Verulamium lake, as it is now silted up. He wants to get the yachting side set up again, and was asking if their members could use Luton and Hemel, which in principle I said he could.

The show was very busy with the public, this is one of 2 outdoor shows and 1 indoor show they put on to help fund the railway.

FOXDALE SCHOOL 2019

Again, we were invited back to Foxdale School to put on a display and do a talk for the children about the importance and history of shipping. This is part of the School Curriculum called Land Ahoy. It concentrates of the history of ships, and encompasses drawing writing and science for the children. They learn about materials boats were made from and what they transported plus the type of power boats have used.

Last year, we ran out of time, slightly clashing with the lunch setup. So, this year, Jason suggested 1 talk instead of 2, then split the classes into 2 smaller groups for drawing time. We tried to put different types of boats out each year, and this year we had smaller boats from Tony Dalton, Dave Seath and John Millet as well as myself. Dave's submarine always attracts attention and the children loved it. Before asking, no photos could be taken due to school rules!!! Not me this time!

We had to contend with Diwali this year, so we did the talk, went to the staff room for tea then did the 2 drawing sessions!!! We even finished on time this year.

As usual, the teacher Jason Philbin, was excellent, he had prepped the children all week and they listened intently to what was being said and to the slide show. Questions were actively encouraged and the children asked quite a few! The drawing sessions were equally good, with some good pictures drawn of either whole boats or just sections.

I think we all enjoyed the morning, and we adjourned for a lunch to the Biscot Mill (the Moat house was Closed!).

St. ALBANS MES EXHIBITION 2019

The St Albans Model Engineering Exhibition is held at Townsend Church of England School located to the north of St. Albans (just off the A1081) at the end of September each year (Saturday 28th and Sunday 29th September 2019) with setting up on the Friday from 4pm. We were exhibiting in the sports hall with the tables positioned out as previously agreed, however it appears that the St. Albans organisation had decided something different without informing us. After a short discussion between the organisers and our secretary it was agreed that our proposed layout was acceptable.

With the stand location agreed and the tables in position, we added a riser all along the back edge of one side and then covered all the tables with our blue sheets. This then allowed us to position the models.

Saturday, the first full day of the exhibition commenced with a number of members visiting the Mulberrys cafe, London Road, St. Albans for breakfast. I being too lazy to get up early in the morning arrived a little later having purchased a coffee and a cake from the local Simmons Bakery. After having consumed my second breakfast as purchased from Simmons Bakery, I proceeded to walk around the stands and take a number of photographs in preparation for producing an article for the Club Magazine; all the photographs follow this article.

Firstly, I photographed the Club Stand and as always, we had put on a splendid display including a number of Cross Stitch pictures by Jill Martin. Alongside us was a static stand with posters and information for The Locomotive Club of Great Britain, Hanwell and District Model Society with some Boats and Lorries on display. Close by was St. Dunmore model railway (Owner Stephen Leighton) a large amount of the remaining area was used up by the St. Albans Club displaying boats, trains, Steam Engines, various vehicles and AI Models. Worth mentioning is some old boat models and radio control equipment that was manufactured by Triang, the Transmitter of which was the size of a small suitcase.

Next, I took a short walk to one of the side rooms to find Alban Rail displaying large scale railways for Home or Garden together with ship selling all the necessary wares. Further along I came to the Spithead Review which is a splendid display of hundreds of very small ships made from very thin plastic card.

Next, I came to the Meccano models. Firstly, a very fine Floating Crane followed by a model of USS Missouri by Stephen Briancourt which must have been at least eight feet long, a transportation nightmare? There was also a 1/24th scale model of Isambard Kingdom Brunell's Marine Steam Engine as used in the ship 'Great Eastern' made by Colin Davies. There were various other small Meccano models of Farming Machinery, Fairground amusements, Aircraft and Buses thus producing a good range of models for viewing.

Further along the corridor there were buildings constructed using Bayko Model Bricks and a display of Organs in the form of a 1/14th scale model of Wilhelm Kelders Dutch Touring Organs.

At the far end of the school I came to the display of Tamiya Trucks complete with roadways and bridges etc. Vehicles included diggers loading trucks with gravel, a tower crane and many types of vehicles driving around the road layout. This section of the exhibition is always very interesting to watch.

Verturing outside the back door there was a static display of live steam engines which included a Great Western Steam Train on a Rolling Road, a small shunting engine with no wheels, a traction Engine puffing away and a number of static steam engines on a mounting board.

Moving back into the main building I came across the School Restaurant (Canteen) which by now was open thus I took time for some refreshments. Next, I moved on to the main hall and just inside the door was The Association of Model Barge Owners displaying a number of excellent model barges. On the stage there was a display of vehicles being loaded and unloaded with pallets etc. Tucked in a corner was the Handley Page Association showing a number of the aircraft manufactured by this famous Company that was situated in Radlett before its demise. There was also a considerable amount of information on the history of the company available for those with an interest.

Moving around the hall there were a number of Clubs displaying models including The Life Boat Association, Welwyn Garden City Society of Model Engineers, Moorhen Model Boat Club and the Stevenage Model Boat Club.

Venturing outside to the airfield I found disappointing as there were not many aircraft to be seen, just one, a few Quad Copters and a loan basket of a model Hot Air Balloon, but no balloon, this was probably due to the damp weather conditions, thus I quickly returned to the main exhibition

Moving back to our stand in the Sports Hall I came across a nice display of model buses by the Tramway and Light Railway Society. These model buses were moving around a track layout. On enquiring I discovered that this was achieved with the use of a bicycle chain with magnets attached to it. The magnets were able to attract the metal buses through the base of the layout and thus move them along the road way.

Returning to the L&DMBC stand I found Terry Martin and his Wife munching away at a Roll/Sandwich – Lunch or Second Breakfast?

I had brought my fleet of Olympic vessels along in order to get some ‘on the water’ photographs of them and with Pete Carmen’s assistance help this task was duly completed, sorry no photographs you will have to wait for the article to be published in the Model Boats Magazine in about six months time.

Pete also assisted Nixon in getting the ballast corrected in his model aircraft carrier USS Enterprise so it could be sailed on the exhibition pond. This was duly accomplished and photos taken to prove it, nice model Nixon.

Well that concludes the report on the St. Albans Model Engineering Exhibition 2019. Hope you have enjoyed my report and the accompanying photographs. Many thanks to the St. Albans Club for the invitation to join their exhibition week end, meeting old friends and making new ones.

Finally, I am pleased to announce that this year the Roy Davis Shield was won by Jill Martin for her excellent display of Cross Stitch pictures which are shown below together with a picture of her being presented with the shield by our Chairman Terry Martin (Her Husband) at the AGM

Tony Dalton

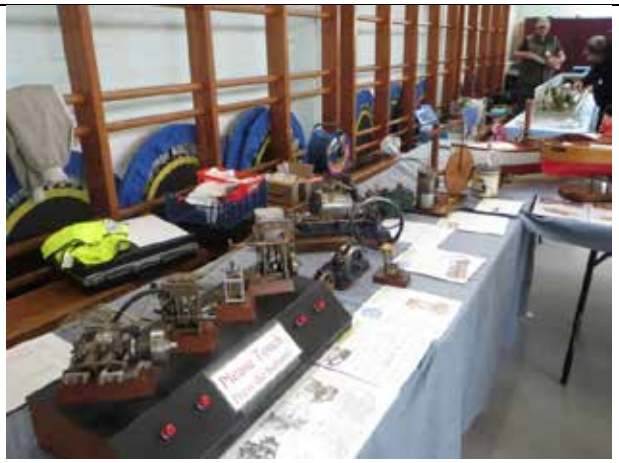
Cross Stitch Pictures by Jill Martin – Part of L&DMBC Stand

L&DMBC Stand

The Locomotive Club of Great Britian

Hanwell & District Model Society

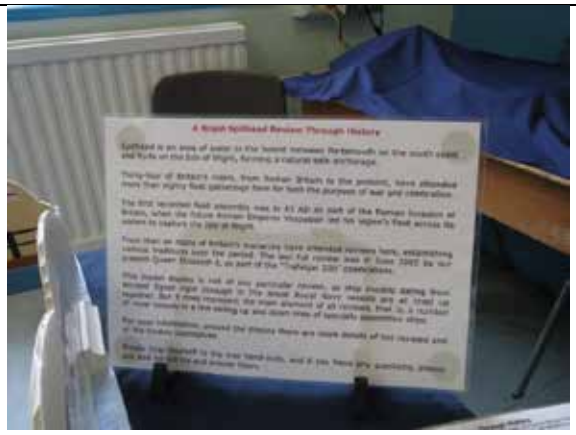
St Dunmore Railway – Owner Stephen Leighton




Triang
radio control

St Albans Model Engineering Society

Alban Rail Big Trains for Big Homes or Gardens



Royal Spithead Review

Meccano Floating Crane

USS Missouri by Steve Briancourt

1/24 Scale Marine Engine as used in Great Eastern - Designed by Brunel



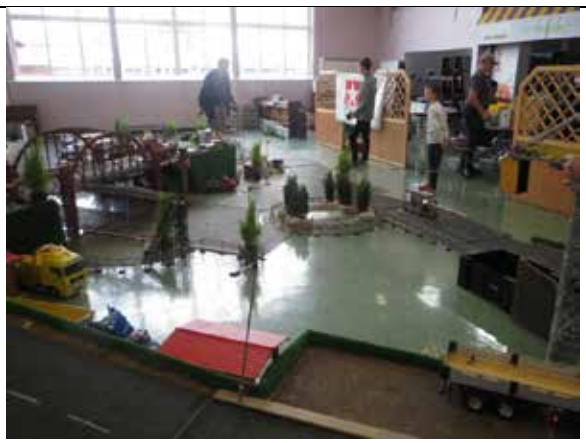

A Selection of Meccano Models



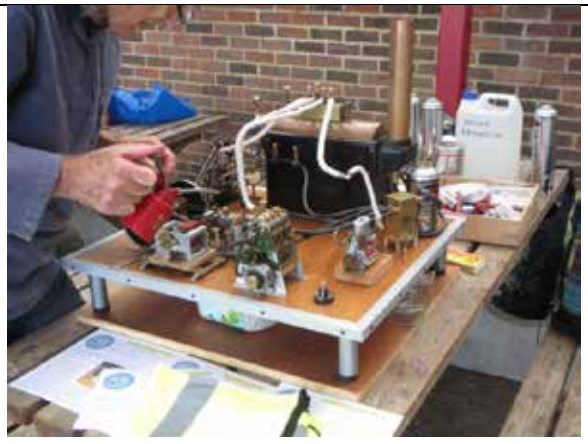

More Meccano Models

Model Buildings some made from BAYKO model bricks

Mini Victory on Tour Display – 1/14 Scale model of Willem Kelders Dutch Touring Organs



Tamiya Trucks Display Area



Static Live Steam Display – Situated in an outside covered area by the Tamiya Trucks

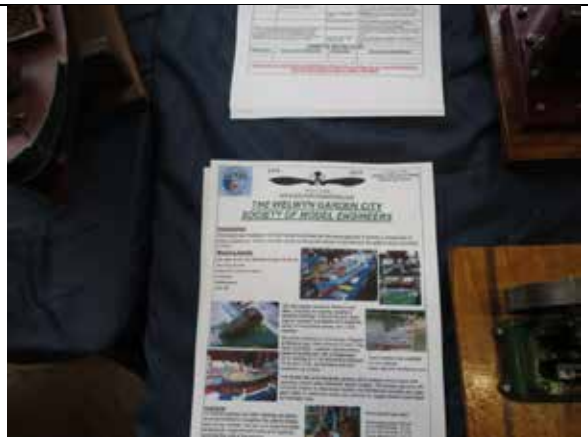
Resturant Area

The Association of Model Barge Owners

A Display of Lorries and Fork Lift Trucks Loading and Un-loading Pallets

A Display by the Handley Page Association

RNLI Lifeboat Display



Welyyn Garden City Society of Model Engineers

Moorhen Model Boat Club – Harlow Essex

Stevenage Model Boat Club

Outside Flying Display – Very Damp and not much flying

Tramway & Light Railway Society Display - The models move along following magnets that are attached to a chain positioned under the base board.

Well what a supprise! Terry and his Lady Wife Tucking into a Sandwitch?

Aircraft Carrier USS Enterprise owned by Nixon, after have its buoyancy corrected by Pete Carmen

MY NEXT PROJECT?

Some readers may have had the opportunity of seeing the steam engine that I have recently made (no boiler as yet) at the September Club meeting shown in **photo 01**. My next step is to decide what type of vessel I should build to fit the steam engine into. Most modern types of vessel are propelled by Diesel Engines, Gas Turbines or even Nuclear Power thus it would have to be an old design and in doing some research I found a reference to HMS Montagu, a Duncan class pre-dreadnought battleship (Referred to as a Second-Class Battleship). This type of vessel seemed to fit my requirements for a broad beamed steam propelled ship.

If I am to build such a vessel, I will need to create some plans as to my knowledge there are none available. I also need to decide on a scale that will allow the steam plant complete with boiler and gas burner etc. to be housed below the deck? Will it ever happen? Watch this space, in the mean time here is the history regarding the fate of HMS Montague.

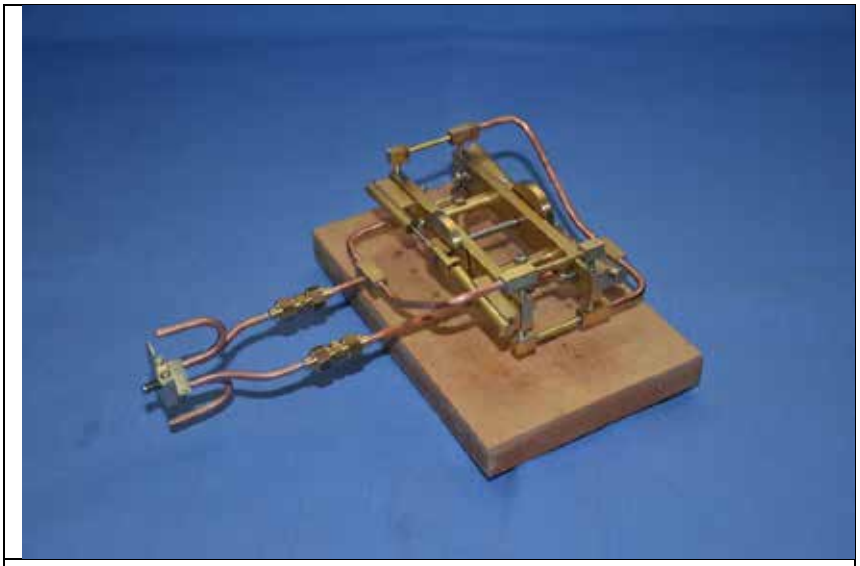


Photo 1

HMS MONTAGUE was a Duncan-class pre-dreadnought battleship of the British Royal Navy. Built to counter a group of fast Russian battleships, Montagu and her sister ships were capable of steaming at 19 knots (35 km/h; 22 mph), making them the fastest battleships in the world **Photo 02**. The Duncan-class battleships were armed with a main battery of four 12-inch (305 mm) guns and they were broadly similar to the London-class battleships, though of a slightly reduced displacement and thinner armour layout. As such, they reflected a development of the lighter second-class ships of the Canopus-class battleship. Montagu was built between her keel laying in November 1899 and her completion in July 1903. The ship had a brief career, serving for two years in the Mediterranean Fleet before transferring to the Channel Fleet in early 1905. During wireless telegraphy experiments in May 1906, she ran aground off Lundy Island. Repeated attempts to refloat the ship failed, and she proved to be a total loss. She was ultimately broken up in situ.

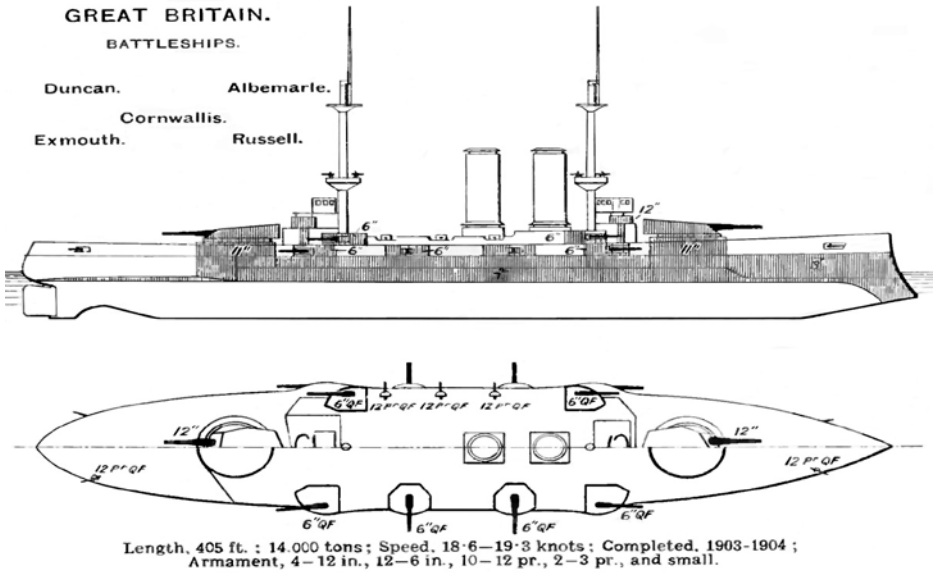


Photo 02 HMS Montague Right elevation & deck plan as depicted in Brassey's Naval Annual 1915

THE DESIGN

The six ships of the Duncan class were ordered in response to the Russian Peresvet-class battleships that had been launched in 1898. The Russian ships were fast second-class battleships, so William Henry White, the British Director of Naval Construction, designed the Duncan class to match the purported top speed of the Russian vessels. To achieve the higher speed while keeping displacement from growing, White was forced to reduce the ships' armour protection significantly, effectively making the ships enlarged and improved versions of the Canopus-class battleships of 1896, rather than derivatives of the more powerful Majestic, Formidable, and London series of first-class battleships. The Duncan Class proved to be disappointments in service, owing to their reduced defensive characteristics, though they were still markedly superior to the Peresvets they had been built to counter.

Montagu was 432 feet (132 m) long overall, with a beam of 75 ft 6 in (23.01 m) and a draft of 25 ft 9 in (7.85 m). The Duncan-class battleships displaced 13,270 to 13,745 long tons (13,483 to 13,966 t) normally and up to 14,900 to 15,200 long tons (15,100 to

15,400 t) fully loaded. Her crew numbered 720 officers and ratings. The Duncan-class ships were powered by a pair of 4-cylinder triple-expansion engines that drove two screws, with steam provided by twenty-four Belleville boilers. The boilers were trunked into two funnels located amidships. The Duncan-class ships had a top speed of 19 knots (35 km/h; 22 mph) from 18,000 indicated horsepower (13,000 kW).[2] This made Montagu and her sisters the fastest battleships in the world for several years. At a cruising speed of 10 knots (19 km/h; 12 mph), the ship could steam for 6,070 nautical miles (11,240 km; 6,990 mi).[3]

Montagu had four 12-inch (305 mm) 40-calibre guns mounted in twin-gun turrets fore and aft. The ships also mounted twelve 6-inch (152 mm) 45-calibre guns mounted in casemates, in addition to ten 12-pounder 3 in (76 mm) guns and six 3-pounder 47 mm (1.9 in) guns. As was customary for battleships of the period, she was also equipped with four 18-inch (457 mm) torpedo tubes submerged in the hull.[2]

Montagu had an armoured belt that was 7 in (178 mm) thick; the transverse bulkhead on the aft end of the belt was 7 to 11 in (178 to 279 mm) thick. The sides of her main battery turrets were 8 to 10 in (203 to 254 mm) thick, atop 11 in (279 mm) barbettes, and the casemate battery was protected with 6 in of Krupp steel. Her conning tower had 12-inch-thick sides. She was fitted with two armoured decks, 1 and 2 in (25 and 51 mm) thick, respectively.

SERVICE HISTORY

The keel for HMS Montagu was laid down on 23 November 1899, and her completed hull was launched on 5 March 1901. She began sea trials in February 1903 and was commissioned into the fleet on 28 July at Devonport Dockyard for service in the Mediterranean Fleet. In February 1905, she transferred to the Channel Fleet.

GROUNDING AND LOSS

In late May 1906, Montagu tested some new wireless telegraphy equipment in the Bristol Channel, sending and receiving test messages with wireless stations ashore. Late on 29 May, she was anchored off Lundy Island, but could not pick up the messages from the test station, so the ship weighed anchor to steam to the Isles of Scilly. Heavy fog forced her to reverse course and steam back to Lundy Island after four hours, but her navigator miscalculated the course, placing her some two miles off her original track. Montagu encountered a pilot cutter cruising in the vicinity of Lundy Island, slowed to a stop, and came alongside the cutter to request a distance and bearing for Hartland Point on the mainland. Though the cutter supplied these accurately, the voice from the battleship's bridge replied that they must be wrong and that the pilot cutter must have lost her bearings. As Montagu restarted her engines and began to move ahead, the cutter shouted back that on her present course Montagu would be on Shutter Rock within ten minutes, and a short time later the sound of the battleship running aground carried through the fog **Photo 03.**

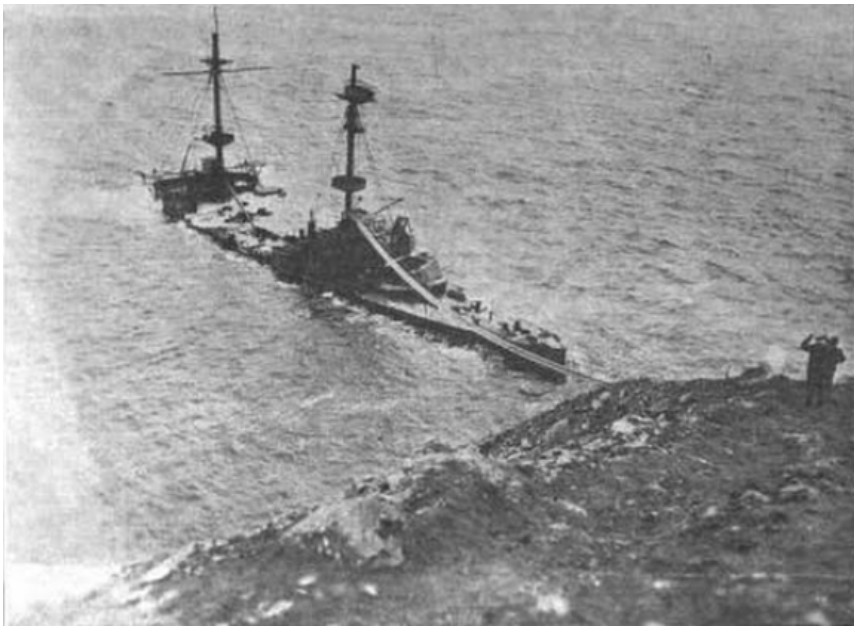


Photo 03 Montagu aground, c. 1907

At 02:00 on 30 May, Montagu ran aground on Shutter Rock, suffering a 91-foot (28 m) gash on her starboard side. Unable to free her from the rocks, she slowly filled with water; twenty-four hours later, her starboard engine room and all of her boiler rooms were flooded, among others. Her crew counter-flooded the port engine room to prevent her from listing further to starboard. Divers inspected the hull to determine the extent of the damage, which proved to be more serious than initially expected. The bottom of the ship also received extensive damage, including several other holes and the port propeller shaft having been torn from the hull. The starboard bilge keel was also ripped from the hull, as was the rudder. The wreck rested on a fairly even bottom, so there was hope that the ship could be refloated.

Since the Royal Navy had no dedicated salvage unit, it turned to Frederick Young, a former Royal Navy captain who now worked as the chief salvage officer of the Liverpool Salvage Association. Young was at that time the foremost expert on marine salvage in Britain, so he was hired to advise Admiral Sir Arthur Wilson, the commander of the Channel Fleet, who had no experience in salvage operations. The navy initially hoped to lighten the ship by removing the medium and small-calibre guns and other equipment that could be easily taken off and then to pump out the water so that the holes in the hull could be patched. By the end of June, some twenty pumps had been assembled on the scene, with a total pumping capacity of 8,600 tonnes (8,500 long tons; 9,500 short tons) of water per hour. Difficulties with pumping, owing in part to the subdivision of the internal compartments and the need to reflood the ship during high tide to keep her from suffering more damage before the hull could be patched, led the salvors to give up the operation.

Wilson next sought to remove armour plate from the sides of the ship and to erect a series of caissons, at which point a powerful air pump would be used to blow the water out of the hull. The caissons repeatedly broke free even in mild seas, and the air pump failed to have the desired effect. Her sister ship Duncan herself ran aground whilst trying to help the salvage effort, though she was successfully freed. At the end of the summer of 1906, salvage efforts were suspended for the year, with plans to resume them in 1907. However, an inspection of the ship conducted from 1 to 10 October 1906 found that the action of the sea was driving her further ashore and bending and warping her hull so that

her seams were beginning to open, her deck planking was coming apart, and her boat davits had collapsed. Having failed to refloat Montagu, the navy decided to abandon the project. Further material was removed from the wreck, including her main battery guns, which were later re-used in other vessels.

The Western Marine Salvage Company of Penzance completed salvage of the wreck for scrap metal over the next 15 years. The court martial convened for the affair blamed the thick fog and faulty navigation for the wreck. The trial was held aboard HMS Victory. The ship's captain, Thomas Adair and the navigation officer, Lieutenant James Dathan, were severely reprimanded, with both men being dismissed from HMS Montagu; Dathan lost two years of seniority in rank as well. The wreck site, which now amounts to little more than some armour plate on the sea floor, is a popular diving location. Divers have also located parts of her gun turrets and shells that were not recovered during the salvage operation. In September 2019 the British Government granted the wreck site—including the steps which had been chiselled out of the cliff during the salvage effort—protected status.

Tony Dalton

GCHQ IS 100 YEARS OLD

Government Communications Headquarters, commonly known as **GCHQ**, is an intelligence and security organisation responsible for providing signals intelligence (SIGINT) and information assurance to the government and armed forces of the United Kingdom. Based in "The Doughnut" in the suburbs of Cheltenham.

GCHQ is the responsibility of the country's Secretary of State for Foreign and Commonwealth Affairs, but it is not a part of the Foreign Office and its director ranks as a Permanent Secretary.

GCHQ was originally established after the First World War as the **Government Code and Cypher School** (**GC&CS**) and was known under that name until 1946. During the Second World War it was located at Bletchley Park, where it was responsible for breaking of the German Enigma codes. There are two main components of the GCHQ, the Composite Signals Organisation (CSO), which is responsible for gathering information, and the National Cyber Security Centre (NCSC), which is responsible for securing the UK's own communications. The Joint Technical Language Service (JTLS) is a small department and cross-government resource responsible for mainly technical language support and translation and interpreting services across government departments. It is co-located with GCHQ for administrative purposes.

In 2013, GCHQ received considerable media attention when the former National Security Agency contractor Edward Snowden revealed that the agency was in the process of collecting all online and telephone data in the UK via the Tempora programme. Snowden's revelations began a spate of ongoing disclosures of global surveillance. The Guardian newspaper was then forced to destroy all incriminating files given to them by Snowden because of the threats of lawsuits from the UK Government.

Structure

GCHQ is led by the Director of GCHQ, Jeremy Fleming, and a Corporate Board, made up of executive and non-executive directors. Reporting to the Corporate Board is:

- Sigint missions: comprising maths and cryptanalysis, IT and computer systems, linguistics and translation, and the intelligence analysis unit
- Enterprise: comprising applied research and emerging technologies, corporate knowledge and information systems, commercial supplier relationships, and biometrics
- Corporate management: enterprise resource planning, human resources, internal audit, and architecture
- Communications-Electronics Security Group

History

Government Code and Cypher School (GC&CS)

During the First World War, the British Army and Royal Navy had separate signals intelligence agencies, MI1b and NID25 (initially known as Room 40) respectively. In 1919, the Cabinet's Secret Service Committee, chaired by Lord Curzon, recommended that a peacetime code breaking agency should be created, a task given to the Director of Naval Intelligence, Hugh Sinclair. Sinclair merged staff from NID25 and MI1b into the new organisation, which initially consisted of around 25–30 officers and a similar number of clerical staff. It was titled the "Government Code and Cypher School", a cover-name chosen by Victor Forbes of the Foreign Office. Alastair Denniston, who had been a member of NID25, was appointed as its operational head. It was initially under the control

of the Admiralty and located in Watergate House, Adelphi, London. Its public function was "to advise as to the security of codes and cyphers used by all Government departments and to assist in their provision", but also had a secret directive to "study the methods of cypher communications used by foreign powers". GC&CS officially formed on 1 November 1919, and produced its first decrypt prior to that date, on 19 October.

Allidina Visram school in Mombasa, pictured above in 2006, was the location of the British "Kilindini" code breaking outpost during World War II

Before the Second World War, GC&CS was a relatively small department. By 1922, the main focus of GC&CS was on diplomatic traffic, with "no service traffic ever worth circulating" and so, at the initiative of Lord Curzon, it was transferred from the Admiralty to the Foreign Office. GC&CS came under the supervision of Hugh Sinclair, who by 1923 was both the Chief of SIS and Director of GC&CS. In 1925, both organisations were co-located on different floors of Broadway Buildings, opposite St. James's Park. Messages decrypted by GC&CS were distributed in blue-jacketed files that became known as "BJs". In the 1920s, GC&CS was successfully reading Soviet Union diplomatic ciphers. However, in May 1927, during a row over clandestine Soviet support for the General Strike and the distribution of subversive propaganda, Prime Minister Stanley Baldwin made details from the decrypts public.

During the Second World War, GC&CS was based largely at Bletchley Park, in present-day Milton Keynes, working on understanding the German Enigma machine and Lorenz ciphers. In 1940, GC&CS was working on the diplomatic codes and ciphers of 26 countries, tackling over 150 diplomatic cryptosystems. Senior staff included Alastair Denniston, Oliver Strachey, Dilly Knox, John Tiltman, Edward Travis, Ernst Fetterlein, Josh Cooper, Donald Michie, Alan Turing, Gordon Welchman, Joan Clarke, Max Newman, William Tutte, I. J. (Jack) Good, Peter Calvocoressi and Hugh Foss.

An outstation in the Far East, the Far East Combined Bureau was set up in Hong Kong in 1935, and moved to Singapore in 1939. Subsequently, with the Japanese advance down the Malay Peninsula, the Army and RAF code breakers went to the Wireless Experimental Centre in Delhi, India. The Navy code breakers in FECB went to Colombo, Ceylon, then to Kilindini, near Mombasa, Kenya.

GC&CS was renamed the "Government Communications Headquarters" in June 1946.

Post Second World War

GCHQ was at first based in Eastcote, but in 1951 moved to the outskirts of Cheltenham, setting up two sites there – Oakley and Benhall. Duncan Campbell and Mark Hosenball revealed the existence of GCHQ in 1976 in an article for Time Out; as a result, Hosenball was deported from the UK. GCHQ had a very low profile in the media until 1983 when the trial of Geoffrey Prime, a KGB mole within GCHQ, created considerable media interest.

Since the days of the Second World War, US and British intelligence have shared information. For the GCHQ this means that it shares information with, and gets information from, the National Security Agency (NSA) in the United States.

In 1984, GCHQ was the centre of a political row when the Conservative government of Margaret Thatcher prohibited its employees from belonging to a trade union. It was claimed that joining a union would be in conflict with national security. A number of mass national one-day strikes were held to protest this decision, seen as a first step to wider bans on trade unions. Appeals to British Courts and European Commission of Human Rights were unsuccessful. The government offered a sum of money to each employee who agreed to give up their union membership. Appeal to the ILO resulted in a decision that government's actions were in violation of Freedom of Association and Protection of the Right to Organise Convention.

The ban was eventually lifted by the incoming Labour government in 1997, with the Government Communications Group of the Public and Commercial Services Union (PCS) being formed to represent interested employees at all grades. In 2000, a group of 14 former GCHQ employees, who had been dismissed after refusing to give up their union membership, were offered re-employment, which three of them accepted.

1990s: Post-Cold War restructuring

The Intelligence Services Act 1994 placed the activities of the intelligence agencies on a legal footing for the first time, defining their purpose, and the British Parliament's Intelligence and Security Committee was given a remit to examine the expenditure, administration and policy of the three intelligence agencies.[34] The objectives of GCHQ were defined as working as "in the interests of national security, with particular reference to the defence and foreign policies of Her Majesty's government; in the interests of the economic wellbeing of the United Kingdom; and in support of the prevention and the detection of serious crime". During the introduction of the Intelligence Agency Act in late 1993, the former Prime Minister Jim Callaghan had described GCHQ as a "full blown bureaucracy", adding that future bodies created to provide oversight of the intelligence agencies should "investigate whether all the functions that GCHQ carries out today are still necessary."

In 1993, in the wake of the "Squidgygate" affair, GCHQ denied "intercepting, recording or disclosing" the telephone calls of the British Royal family.

In late 1993 civil servant Michael Quinlan advised a deep review of the work of GCHQ following the conclusion of his "Review of Intelligence Requirements and Resources", which had imposed a 3% cut on the agency. The Chief Secretary to the Treasury, Jonathan Aitken, subsequently held face to face discussions with the intelligence agency directors to assess further savings in the wake of Quinlan's review. Aldrich (2010) suggests that Sir John Adye, the then Director of GCHQ performed badly in meetings with Aitken, leading Aitken to conclude that GCHQ was "suffering from out-of-date

methods of management and out-of-date methods for assessing priorities". GCHQ's budget was £850 million in 1993, (£1.7 billion as of 2018) compared to £125 million for the Security Service and SIS (MI5 and MI6). In December 1994 the businessman Roger Hurn was commissioned to begin a review of GCHQ, which was concluded in March 1995. Hurn's report recommended a cut of £100 million in GCHQ's budget; such a large reduction had not been suffered by any British intelligence agency since the end of World War II. The J Division of GCHQ, which had collected SIGINT on Russia, disappeared as result of the cuts. The cuts had been mostly reversed by 2000 in the wake of threats from violent non-state actors, and risks from increased terrorism, organised crime and illegal access to nuclear, chemical and biological weapons.

David Omand became the Director of GCHQ in 1996, and greatly restructured the agency in the face of new and changing targets and rapid technological change. Omand introduced the concept of "Sinews" (or "SIGINT New Systems") which allowed more flexible working methods, avoiding overlaps in work by creating fourteen domains, each with a well-defined working scope. The tenure of Omand also saw the planning and the creation of The Doughnut, GCHQ's modern headquarters. Located on a 176-acre site in Benhall, near Cheltenham, The Doughnut would be the largest building constructed for secret intelligence operations outside the United States.

Operations at GCHQ's Chum Hom Kwok listening station in Hong Kong ended in 1994. GCHQ's Hong Kong operations were extremely important to their relationship with the NSA, who contributed investment and equipment to the station. In anticipation of the transfer of Hong Kong to the Chinese government in 1997, the Hong Kong stations operations were moved to Geraldton in Australia.

Operations that used GCHQ's intelligence-gathering capabilities in the 1990s included the monitoring of communications of Iraqi soldiers in the Gulf War, of dissident republican terrorists and the Real IRA, of the various factions involved in the Yugoslav Wars, and of the criminal Kenneth Noye. In the mid 1990s GCHQ began to assist in the investigation of cybercrime.

2000s: Coping with the Internet

At the end of 2003, GCHQ moved to a new circular HQ (popularly known as "The Doughnut"). At the time, it was the second-largest public-sector building project in Europe, with an estimated cost of £337 million. The new building, which was designed by Gensler and constructed by Carillion, became the base for all of GCHQ's Cheltenham operations.

The public spotlight fell on GCHQ in late 2003 and early 2004 following the sacking of Katharine Gun after she leaked to The Observer a confidential email from agents at the United States' National Security Agency addressed to GCHQ agents about the wiretapping of UN delegates in the run-up to the 2003 Iraq war.

GCHQ gains its intelligence by monitoring a wide variety of communications and other electronic signals. For this, a number of stations have been established in the UK and overseas. The listening stations are at Cheltenham itself, Bude, Scarborough, Ascension Island, and with the United States at Menwith Hill. Ayios Nikolaos Station in Cyprus is run by the British Army for GCHQ.

In March 2010, GCHQ was criticised by the Intelligence and Security Committee for problems with its IT security practices and failing to meet its targets for work targeted against cyber attacks.

As revealed by Edward Snowden in The Guardian, GCHQ spied on foreign politicians visiting the 2009 G-20 London Summit by eavesdropping phone calls and emails and monitoring their computers, and in some cases even ongoing after the summit via key loggers that had been installed during the summit.

According to Edward Snowden, GCHQ has two principal umbrella programs for collecting communications:

- "Mastering the Internet" (MTI) for Internet traffic, which is extracted from fibre-optic cables and can be searched by using the Tempora computer system.
- "Global Telecoms Exploitation" (GTE) for telephone traffic.

GCHQ also has had access to the US internet monitoring programme PRISM since at least June 2010. PRISM is said to give the National Security Agency and FBI easy access to the systems of nine of the world's top internet companies, including Google, Facebook, Microsoft, Apple, Yahoo, and Skype.

In February 2014, The Guardian, based on documents provided by Snowden, revealed that GCHQ had indiscriminately collected 1.8 million private Yahoo webcam images from users across the world. In the same month NBC and The Intercept, based on documents released by Snowden, revealed the Joint Threat Research Intelligence Group and the CNE units within GCHQ. Their mission was cyber operations based on "dirty tricks" to shut down enemy communications, discredit, and plant misinformation on enemies. These operations were 5% of all GCHQ operations according to a conference slideshow presented by the GCHQ.

Soon after becoming Director of GCHQ in 2014, Robert Hannigan wrote an article in the Financial Times on the topic of internet surveillance, stating that "however much large US technology companies may dislike it, they have become the command and control networks of choice for terrorists and criminals" and that GCHQ and its sister agencies "cannot tackle these challenges at scale without greater support from the private sector", arguing that most internet users "would be comfortable with a better and more sustainable relationship between the intelligence agencies and the tech companies". Since the 2013 global surveillance disclosures, large US technology companies have improved security and become less co-operative with foreign intelligence agencies, including those of the UK, generally requiring a US court order before disclosing data. However the head of the UK technology industry group techUK rejected these claims, stating that they understood the issues but that disclosure obligations "must be based upon a clear and transparent legal framework and effective oversight rather than, as suggested, a deal between the industry and government".

In 2015, documents obtained by The Intercept from US National Security Agency whistleblower Edward Snowden revealed that GCHQ had carried out a mass-surveillance operation, codenamed KARMA POLICE, since about 2008. The KARMA POLICE operation swept up the IP address of Internet users visiting websites. The program was established with no public scrutiny or oversight. KARMA POLICE is a powerful spying tool in conjunction with other GCHQ programs, because IP addresses could be cross-referenced with other data. The goal of the program, according to the documents, was

"either (a) a web browsing profile for every visible user on the internet, or (b) a user profile for every visible website on the internet."

In 2015, GCHQ admitted for the first time in court that it conducts computer hacking.

In 2017, US Press Secretary Sean Spicer alleged that GCHQ had conducted surveillance on US President Donald Trump, basing the allegation on statements made by a media commentator during a Fox News segment. The US government formally apologised for the allegations and promised they would not be repeated. However, surveillance of Russian agents did pick up contacts made by Trump's campaign team in the run up to his election, which was passed on to US agencies. On 31 October 2018, GCHQ joined Instagram.

Security mission

As well as a mission to gather intelligence, GCHQ has for a long-time had a corresponding mission to assist in the protection of the British government's own communications. When the Government Code and Cypher School (GC&CS) was created in 1919, its overt task was providing security advice. GC&CS's Security section was located in Mansfield College, Oxford during the Second World War.

In April 1946, GC&CS became GCHQ, and the now GCHQ Security section moved from Oxford to join the rest of the organisation at Eastcote later that year.

LCSA

From 1952 to 1954, the intelligence mission of GCHQ relocated to Cheltenham; the Security section remained at Eastcote, and in March 1954 became a separate, independent organisation: the **London Communications Security Agency** (LCSA), which in 1958 was renamed to the **London Communications-Electronic Security Agency** (LCESA).

In April 1965, GPO and MOD units merged with LCESA to become the **Communications-Electronic Security Department** (CESD).

CESG

In October 1969, CESD was merged into GCHQ and becoming **Communications-Electronic Security Group** (**CESG**).

In 1977 CESG relocated from Eastcote to Cheltenham.

CESG continued as the UK National Technical Authority for information assurance, including cryptography. CESG did not manufacture security equipment, but worked with industry to ensure the availability of suitable products and services, while GCHQ itself funded research into such areas, for example to the Centre for Quantum Computing at Oxford University and the Heilbronn Institute at the University of Bristol.

In the 21st century, CESG ran a number of assurance schemes such as CHECK, CLAS, Commercial Product Assurance (CPA) and CESG Assisted Products Service (CAPS).

Public key encryption
In late 1969 the concept for public key encryption was developed and proven by James H. Ellis, who had worked for CESG (and before it, CESD) since 1965. Ellis lacked the necessary number theory expertise necessary to build a workable system. Subsequently, a feasible implementation scheme via an asymmetric key algorithm was invented by another staff member Clifford Cocks, a mathematics graduate. This fact was kept secret until 1997.

NCSC
In 2016, the National Cyber Security Centre was established under GCHQ, but located in London, as the UK's authority on cyber security. It absorbed and replaced CESG as well as activities that had previously existed outside GCHQ: the Centre for Cyber Assessment (CCA), Computer Emergency Response Team UK (CERT UK) and the cyber-related responsibilities of the Centre for the Protection of National Infrastructure (CPNI).

Joint Technical Language Service
The Joint Technical Language Service (JTLS) was established in 1955,[80] drawing on members of the small Ministry of Defence technical language team and others, initially to provide standard English translations for organisational expressions in any foreign language, discover the correct English equivalents of technical terms in foreign languages and discover the correct expansions of abbreviations in any language. The remit of the JTLS has expanded in the ensuing years to cover technical language support and interpreting and translation services across the UK Government and to local public sector services in Gloucestershire and surrounding counties. The JTLS also produces and publishes foreign language working aids under crown copyright and conducts research into machine translation and on-line dictionaries and glossaries. The JTLS is co-located with GCHQ for administrative purposes.

International relationships
GCHQ operates in partnership with equivalent agencies worldwide in a number of bi-lateral and multi-lateral relationships. The principal of these is with the United States (National Security Agency), Canada (Communications Security Establishment), Australia (Australian Signals Directorate) and New Zealand (Government Communications Security Bureau), through the mechanism of the UK-US Security Agreement, a broad intelligence-sharing agreement encompassing a range of intelligence collection methods. Relationships are alleged to include shared collection methods, such as the system described in the popular media as ECHELON, as well as analysed product.

Legal basis
GCHQ's legal basis is enshrined in the Intelligence Services Act 1994 Section 3 as follows:

(1) There shall continue to be a Government Communications Headquarters under the authority of the Secretary of State; and, subject to subsection (2) below, its functions shall be—

(a) to monitor or interfere with electromagnetic, acoustic and other emissions and any equipment producing such emissions and to obtain and provide information derived from or related to such emissions or equipment and from encrypted material; and
(b) to provide advice and assistance about—
(i) languages, including terminology used for technical matters, and
(ii) cryptography and other matters relating to the protection of information and other material, to the armed forces of the Crown, to Her Majesty's Government in the United Kingdom or to a Northern Ireland Department or to any other organisation which is determined for the purposes of this section in such manner as may be specified by the Prime Minister.

(2) The functions referred to in subsection (1) (a) above shall be exercisable only—

(a) in the interests of national security, with particular reference to the defence and foreign policies of Her Majesty's Government in the United Kingdom; or
(b) in the interests of the economic well-being of the United Kingdom in relation to the actions or intentions of persons outside the British Islands; or
(c) in support of the prevention or detection of serious crime.

(3) In this Act the expression "GCHQ" refers to the Government Communications Headquarters and to any unit or part of a unit of the armed forces of the Crown which is for the time being required by the Secretary of State to assist the Government Communications Headquarters in carrying out its functions.

Activities that involve interception of communications are permitted under the Regulation of Investigatory Powers Act 2000; this kind of interception can only be carried out after a warrant has been issued by a Secretary of State. The Human Rights Act 1998 requires the intelligence agencies, including GCHQ, to respect citizens' rights as described in the European Convention on Human Rights.

Oversight

The Prime Minister nominates cross-party Members of Parliament to an Intelligence and Security Committee. The remit of the Committee includes oversight of intelligence and security activities and reports are made directly to Parliament. Its functions were increased under the Justice and Security Act 2013 to provide for further access and investigatory powers.

Judicial oversight of GCHQ's conduct is exercised by the Investigatory Powers Tribunal. The UK also has an independent Intelligence Services Commissioner and Interception of Communications Commissioner, both of whom are former senior judges.

The Investigatory Powers Tribunal ruled in December 2014 that GCHQ does not breach the European Convention of Human Rights, and that its activities are compliant with Articles 8 (right to privacy) and 10 (freedom of expression) of the European Convention of Human Rights. However, the Tribunal stated in February 2015 that one particular aspect, the data-sharing arrangement that allowed UK Intelligence services to request data from the US surveillance programmes Prism and Upstream, had been in contravention of human rights law prior to this until two paragraphs of additional information, providing details about the procedures and safeguards, were disclosed to the public in December 2014.

Furthermore, the IPT ruled that the legislative framework in the United Kingdom does not permit mass surveillance and that while GCHQ collects and analyses data in bulk, it does not practice mass surveillance. This complements independent reports by the Interception of Communications Commissioner, and a special report made by the Intelligence and Security Committee of Parliament; although several shortcomings and potential improvements to both oversight and the legislative framework were highlighted.

Abuses

Despite the inherent secrecy around much of GCHQ's work, investigations carried out by the UK government after the Snowden disclosures have admitted various abuses by the security services. A report by the Intelligence and Security Committee (ISC) in 2015 revealed that a small number of staff at UK intelligence agencies had been found to misuse their surveillance powers, in one case leading to the dismissal of a member of staff at GCHQ, although there were no laws in place at the time to make these abuses a criminal offence.

Later that year, a ruling by the Investigatory Powers Tribunal found that GCHQ acted unlawfully in conducting surveillance on two human rights organisations. The closed hearing found the government in breach of its internal surveillance policies in accessing and retaining the communications of the Egyptian Initiative for Personal Rights and the Legal Resources Centre in South Africa. This was only the second time in the IPT's history that it had made a positive determination in favour of applicants after a closed session.

At another IPT case in 2015, GCHQ conceded that "from January 2010, the regime for the interception/obtaining, analysis, use, disclosure and destruction of legally privileged material has not been in accordance with the law for the purposes of Article 8(2) of the European convention on human rights and was accordingly unlawful". This admission was made in connection with a case brought against them by Abdel Hakim Belhaj, a Libyan opponent of the former Gaddafi regime, and his wife Fatima Bouchar. The couple accused British ministers and officials of participating in their unlawful abduction, kidnapping and removal to Libya in March 2004, while Gaddafi was still in power.

Surveillance of parliamentarians

In 2015 there was a complaint by Green Party MP Caroline Lucas that British intelligence services, including GCHQ, had been spying on MPs allegedly "in defiance of laws prohibiting it." GCHQ had introduced a policy in March 2015 that did not require approval by the Prime Minister, or any minister, before deliberately targeting the communications of a parliamentarian.

Then-Home Secretary, Theresa May, had told Parliament in 2014 that:

> “ Obviously, the Wilson Doctrine applies to parliamentarians. It does not absolutely exclude the use of these powers against parliamentarians, but it sets certain requirements for those powers to be used in relation to a parliamentarian. It is not the case that parliamentarians are excluded and nobody else in the country is, but there is a certain set of rules and protocols that have to be met if there is a requirement to use any of these powers against a parliamentarian. ”

The Investigatory Powers Tribunal investigated the complaint, and ruled that contrary to the allegation, there was no law that gave the communications of parliament any special protection. The Wilson Doctrine merely acts as a political convention.

Constitutional legal case

A controversial GCHQ case determined the scope of judicial review of prerogative powers (the Crown's residual powers under common law). This was Council of Civil Service Unions v Minister for the Civil Service [1985] AC 374 (often known simply as the "GCHQ case"). In this case, a prerogative Order in Council had been used by the prime minister (who is the Minister for the Civil Service) to ban trade union activities by civil servants working at GCHQ. This order was issued without consultation. The House of Lords had to decide whether this was reviewable by judicial review. It was held that executive action is not immune from judicial review simply because it uses powers derived from common law rather than statute (thus the prerogative is reviewable).

Stations and former stations

The following are stations and former stations that have operated since the Cold War.

Stations:

- GCHQ Cheltenham
- GCHQ Ascension Island
- GCHQ Bude, Cornwall
- GCHQ Cyprus
- GCHQ Scarborough, North Yorkshire
- Joint Service Signal Unit (Digby), Lincolnshire
- GCHQ Manchester
- GCHQ London

Former stations:

- GCHQ Brora, Sutherland
- GCHQ Cheadle, Staffordshire
- GCHQ Culmhead, Somerset
- GCHQ Hawklaw, Fife
- GCHQ Hong Kong

GCHQ Certified Training

The GCHQ Certified Training (GCT) scheme was established to certify two main levels of cyber security training. There are also degree and masters level courses. These are:

- Awareness Level Training: giving an understanding and a foundation in cyber security concepts; and
- Application Level Training: a more in-depth course

The GCT scheme was designed to help organisations find the right training that also met GCHQ's exacting standards. It was designed to assure high quality cyber security training courses where the training provider had also undergone rigorous quality checks. The GCT process is carried out by APMG as the independent certification body. The scheme is part of the National Cyber Security Programme established by the

Government to develop knowledge, skills and capability in all aspects of cyber security in the, and is based on the IISP Skills Framework.

In popular culture

The historical drama film The Imitation Game (2014) featured Benedict Cumberbatch portraying Alan Turing's efforts to break the Enigma code while employed by the Government Code and Cypher School.

GCHQ have set a number of cryptic online challenges to the public, used to attract interest and for recruitment, starting in late 1999. The response to the 2004 challenge was described as "excellent", and the challenge set in 2015 had over 600,000 attempts. It also published the GCHQ puzzle book in 2016 which sold more than 300,000 copies, with the proceeds going to charity. A second book was published in October 2018.

SHUTTLEWORTH

Reg. Charity 307534

SCALE MODEL EXHIBITION

• Traders • Exhibitors • Competitions • Restaurant

SUNDAY 16th February 2020 From 10am

Adult £12 Children (up to age 16) FREE

Includes admission to the world famous aircraft & vehicle collection

Shuttleworth Collection

Old Warden Aerodrome Nr. Biggleswade Bedfordshire SG18 9EP

www.shuttleworth.org